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FCC SAR TEST REPORT

The following samples were submitted and identified on behalf of the client as:

EUT Description	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC
Company Name	Sony Mobile Communications Inc.
Company Address	4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-0002, Japan
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013, KDB 248227D01v02r02, KDB 865664 D01v01r04, KDB 865664 D02v01r02, KDB 941225 D01v03r01, KDB 941225 D06v02r01, KDB 447498 D01v06, KDB 941225 D05v02r05, KDB 648474 D04 v01r03
FCC ID	PY7-54955X
Date of Receipt:	2021-01-15
Date of Test:	2021-01-22 to 2021-02-03
Date of Issue:	2021-03-13
Test Result:	**PASS ***

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this tes do not relate to other samples of the same product. The manufacturer should ensure that all proc series production are in conformity with the product sample detailed in this report.

Signed on behalf of SGS

Sr. Engineer	**Supervisor**
Jackson Li	**Simon Ling**
Date: Mar. 13, 2021	**Date: Mar. 13, 2021**

Authorized Signature:

Derek Yang

Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

REVISION HISTORY

Report Number	Revision	Description	Issue Date
ZR/2020/C003407	00	Original	2021-02-04
ZR/2020/C003407	01	1st revised	2021-03-13

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1 General Information

1.1 Testing Laboratory

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
Post code:	518057
Telephone:	+86 (0) 755 2601 2053
Fax:	+86 (0) 755 2671 0594

1.2 Details of Applicant

Applicant:	Sony Mobile Communications Inc.
Address:	4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-0002, Japan
Manufacturer:	Sony Mobile Communications Inc.
Address:	4-12-3 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-0002, Japan

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1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

• VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Industry Canada (IC)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006

IC#: 4620C.

1.4 Description of EUT

EUT Description	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC		
FCC ID	PY7-54955X		
SN:	001276ADNVM2		
Mode of Operation	☒GSM ☒GPRS ☒EGPRS ☒WCDMA ☒HSDPA ☒HSUPA ☒HSPA+ ☒LTE FDD ☒LTE TDD ☒WIFI 2.4G 802.11 b/g/n(20M) ☒WIFI 5G 802.11 a/ac(20M/40M/80M)/n(20M/40M) ☒Bluetooth		
Duty Cycle	GSM	1/8.3	
	GPRS (support multi class 33 max)	1/2.075 (1Dn4UP) 1/2.77 (1Dn3UP) 1/4.15 (1Dn2UP) 1/8.3 (1Dn1UP)	
	LTE FDD	1:1	
	LTE TDD	1:1.58	
	WCDMA	1:1	
	WLAN802.11 b	99%	
	WLAN802.11 a	94%	
	Bluetooth	77%	
TX Frequency Range (MHz)	GSM850	824 – 849	
	GSM1900	1850 – 1910	
	WCDMA Band IV	1710 – 1755	
	WCDMA Band V	824 – 849	
	LTE FDD Band 4	1710 – 1755	
	LTE FDD Band 5	824 – 849	
	LTE TDD Band 41	2496 – 2690	
	WiFi 2.4GHz	2412 – 2462	
	WiFi 5GHz	5150 – 5250	
		5250 – 5350	
		5470 – 5725	
		5725 – 5850	
	Bluetooth	2402 – 2480	

Note: This project WLAN 5GHz (5250-5350 & 5470-5725) does not support Hotspot.

TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)			
	Head	Body-worn	Hotspot	Product specific 10g SAR
GSM850	0.26	0.25	0.48	/
GSM1900	0.07	0.10	0.35	/
WCDMA Band IV	0.15	0.26	0.51	/
WCDMA Band V	0.33	0.43	0.48	/
LTE Band 4	0.10	0.17	0.30	/
LTE Band 5	0.32	0.40	0.45	/
LTE Band 41	0.12	**0.44**	**0.88**	/
WI-FI (2.4GHz)	**0.75**	0.12	0.27	/
WI-FI (5GHz)	0.48	0.14	0.40	**0.63**
BT	0.18	0.04	0.08	/
SAR Limited(W/kg)	1.6			
Maximum Simultaneous Transmission SAR (W/kg)				
Scenario	**Head**	**Body-worn**	**Hotspot**	**Product specific 10g SAR**
Sum SAR	1.26	0.61	1.36	0.63
SPLSR	N/A	N/A	N/A	NA
SPLSR Limited	0.04			

DUT Antenna Locations:

Please see the Appendix D for antenna locations.

The test device is a mobile phone. The overall diagonal dimension of this device is 163.0 mm. Per KDB 648474 D04, because the diagonal distance of this device is ≥160mm, so it is a phablet.

According to the distance between LTE/WCDMA/GSM&WIFI&BT antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing						
Mode	Front	Back	Left	Right	Top	Bottom
Main Ant (Ant0 & Ant1)	Yes	Yes	Yes	Yes	No	Yes
WIFI&BT Ant (Ant6 & Ant7)	Yes	Yes	Yes	Yes	Yes	No

Table 1： EUT Sides for SAR Testing

Note:
1) When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.

Power reduction by country code detection mechanism:

This device uses the mobile country code (MCC) to indicate whether the users in CE countries or FCC countries. The selection between CE countries and FCC countries power levels is based on the country code detection mechanism. It can determine the countries where users are and set the relevant power level for 2/3/4G/WiFi 2.4G antenna accordingly.

Antenna Power Level (dBm)	
Band	MCC OF FCC COUNTRY (FCC standard)
GSM1900	28.0
WCDMA Band IV	23.0
LTE Band 4	21.5
LTE Band 41	22.8
WiFi 2.4G 802.11b	19.0
WiFi 2.4G 802.11g	18.0
WiFi 2.4G 802.11n 20M	18.0

For FCC SAR test:

For FCC SAR test, SAR test should be evaluated at the power level of FCC mobile country code for each exposure conditions.

GSM - conducted power table:

GSM 850										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		128	190	251			128	190	251	
GSM(GMSK)	GSM	32.32	32.25	32.35	33.50	-9.19	23.13	23.06	23.16	24.31
GPRS/ EGPRS (GMSK)	1 TX Slot	32.35	32.39	32.40	33.50	-9.19	23.16	23.20	23.21	24.31
	2 TX Slots	31.23	31.00	30.71	31.50	-6.18	25.05	24.82	24.53	25.32
	3 TX Slots	29.63	29.41	29.13	30.00	-4.42	25.21	24.99	24.71	25.58
	4 TX Slots	28.51	**28.17**	27.81	29.00	-3.17	25.34	25.00	24.64	25.83
EGPRS (8PSK)	1 TX Slot	25.94	25.99	25.79	27.00	-9.19	16.75	16.80	16.60	17.81
	2 TX Slots	24.48	24.45	24.21	25.50	-6.18	18.30	18.27	18.03	19.32
	3 TX Slots	23.41	23.36	23.11	24.50	-4.42	18.99	18.94	18.69	20.08
	4 TX Slots	22.24	22.24	21.99	23.50	-3.17	19.07	19.07	18.82	20.33
GSM 1900										
Burst Output Power(dBm)					Tune up	Division Factors	Frame-Average Output Power(dBm)			Tune up
Channel		512	661	810			512	661	810	
GSM(GMSK)	GSM	26.77	26.84	27.11	28.00	-9.19	17.58	17.65	17.92	18.81
GPRS/ EGPRS (GMSK)	1 TX Slot	26.79	26.87	27.07	28.00	-9.19	17.60	17.68	17.88	18.81
	2 TX Slots	25.59	25.71	25.94	27.00	-6.18	19.41	19.53	19.76	20.82
	3 TX Slots	23.87	24.29	24.14	25.00	-4.42	19.45	19.87	19.72	20.58
	4 TX Slots	23.03	**23.17**	23.23	24.00	-3.17	19.86	20.00	20.06	20.83
EGPRS (8PSK)	1 TX Slot	23.87	24.12	24.07	24.50	-9.19	14.68	14.93	14.88	15.31
	2 TX Slots	22.97	23.29	23.18	23.50	-6.18	16.79	17.11	17.00	17.32
	3 TX Slots	20.89	21.21	21.16	21.50	-4.42	16.47	16.79	16.74	17.08
	4 TX Slots	19.28	19.48	19.56	20.50	-3.17	16.11	16.31	16.39	17.33

Note:

1）. CMW500 measures GSM peak and average output power for active timeslots. For SAR the time based average power is relevant. The difference in between depends on the duty cycle of the TDMA signal:

No. of timeslots	1	**2**	3	**4**
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.19	-6.18	-4.42	-3.17

2）. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8

3）. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used

WCDMA - conducted power table:

WCDMA Band IV					
Average Conducted Power(dBm)					
Channel		1312	1412	1513	Tune up
WCDMA	12.2kbps RMC	22.01	22.03	21.96	23.00
	12.2kbps AMR	22.01	21.95	21.87	23.00
HSDPA	Subtest 1	21.14	21.04	21.02	21.50
	Subtest 2	21.49	21.33	21.34	21.50
	Subtest 3	20.97	20.61	20.85	21.00
	Subtest 4	20.84	20.65	20.83	21.00
HSUPA	Subtest 1	21.15	21.12	21.19	21.50
	Subtest 2	19.36	18.93	19.06	19.50
	Subtest 3	20.32	20.02	19.93	20.50
	Subtest 4	19.39	19.14	19.29	19.50
	Subtest 5	21.16	21.13	21.35	21.50
DC-HSDPA	Subtest 1	21.03	20.90	21.03	21.50
	Subtest 2	21.46	21.13	21.45	21.50
	Subtest 3	20.77	20.78	20.83	21.00
	Subtest 4	20.69	20.48	20.63	21.00
HSPA+	16QAM	20.28	20.21	20.20	20.50
WCDMA Band V					
Average Conducted Power(dBm)					
Channel		4132	4182	4233	Tune up
WCDMA	12.2kbps RMC	23.39	23.40	23.24	24.50
	12.2kbps AMR	23.33	23.30	23.15	24.50
HSDPA	Subtest 1	22.93	22.64	22.50	23.00
	Subtest 2	22.77	22.62	22.65	23.00
	Subtest 3	22.24	22.32	22.16	22.50
	Subtest 4	22.36	22.13	22.34	22.50
HSUPA	Subtest 1	22.71	22.65	22.70	23.50
	Subtest 2	20.57	20.70	20.51	21.50
	Subtest 3	21.64	21.63	21.62	22.50
	Subtest 4	20.58	20.50	20.61	21.50
	Subtest 5	22.46	22.52	22.49	23.50
DC-HSDPA	Subtest 1	22.94	22.65	22.40	23.00
	Subtest 2	22.60	22.77	22.51	23.00
	Subtest 3	22.05	22.38	22.03	22.50
	Subtest 4	22.28	22.02	22.33	22.50
HSPA+	16QAM	21.96	21.95	21.91	22.00

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LTE - conducted power table:

LTE Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel 19957	Channel 20175	Channel 20393	Tune up
1.4MHz	QPSK	1	0	20.30	20.47	20.56	21.50
		1	2	20.55	20.57	20.50	21.50
		1	5	20.32	20.45	20.40	21.50
		3	0	20.36	20.51	20.53	21.50
		3	2	20.47	20.57	20.55	21.50
		3	3	20.42	20.48	20.49	21.50
		6	0	19.53	19.57	19.54	20.50
	16QAM	1	0	19.52	19.58	19.56	20.50
		1	2	19.42	20.05	20.14	20.50
		1	5	19.85	19.99	20.19	20.50
		3	0	19.61	19.57	19.64	20.50
		3	2	19.52	19.58	19.75	20.50
		3	3	19.44	19.62	19.55	20.50
		6	0	18.59	18.81	18.56	19.50
	64QAM	1	0	18.31	18.71	18.41	19.50
		1	2	18.21	19.00	19.04	19.50
		1	5	18.70	18.78	19.20	19.50
		3	0	18.73	18.69	18.46	19.50
		3	2	18.46	18.33	18.71	19.50
		3	3	18.34	18.40	18.62	19.50
		6	0	17.70	17.60	17.58	18.50
Bandwidth	Modulation	RB size	RB offset	Channel 19965	Channel 20175	Channel 20385	Tune up
3MHz	QPSK	1	0	20.51	20.62	20.57	21.50
		1	7	20.58	20.56	20.65	21.50
		1	14	20.58	20.52	20.61	21.50
		8	0	19.59	19.70	19.67	20.50
		8	4	19.59	19.74	19.73	20.50
		8	7	19.47	19.55	19.71	20.50
		15	0	19.56	19.60	19.59	20.50
	16QAM	1	0	19.89	19.74	20.17	20.50
		1	7	19.54	20.24	19.76	20.50
		1	14	20.07	19.74	20.24	20.50
		8	0	18.74	18.63	18.69	19.50
		8	4	18.89	18.85	18.75	19.50
		8	7	18.73	18.76	18.69	19.50
		15	0	18.55	18.62	18.66	19.50
	64QAM	1	0	18.73	18.77	19.20	19.50
		1	7	18.65	19.23	18.81	19.50

		1	14	19.03	18.57	19.21	19.50
		8	0	17.67	17.54	17.63	18.50
		8	4	17.92	17.82	17.80	18.50
		8	7	17.79	17.79	17.75	18.50
		15	0	17.44	17.53	17.46	18.50
Bandwidth	Modulation	RB size	RB offset	Channel 19975	Channel 20175	Channel 20375	Tune up
5MHz	QPSK	1	0	20.62	20.54	20.52	21.50
		1	13	20.56	20.72	20.56	21.50
		1	24	20.59	20.54	20.64	21.50
		12	0	19.59	19.70	19.65	20.50
		12	6	19.56	19.72	19.70	20.50
		12	13	19.59	19.73	19.62	20.50
		25	0	19.56	19.60	19.69	20.50
	16QAM	1	0	20.00	19.76	19.81	20.50
		1	13	19.97	20.21	20.03	20.50
		1	24	19.62	19.98	20.24	20.50
		12	0	18.71	18.71	18.72	19.50
		12	6	18.68	18.68	18.70	19.50
		12	13	18.63	18.65	18.61	19.50
		25	0	18.66	18.63	18.63	19.50
	64QAM	1	0	18.78	18.79	19.28	19.50
		1	13	18.39	18.99	18.81	19.50
		1	24	19.17	18.73	19.14	19.50
		12	0	17.73	17.62	17.54	18.50
		12	6	17.83	17.77	17.65	18.50
		12	13	17.57	17.79	17.74	18.50
		25	0	17.55	17.76	17.70	18.50
Bandwidth	Modulation	RB size	RB offset	Channel 20000	Channel 20175	Channel 20350	Tune up
10MHz	QPSK	1	0	20.31	20.58	20.59	21.50
		1	25	20.48	20.66	20.48	21.50
		1	49	20.29	20.41	20.90	21.50
		25	0	19.55	19.66	19.65	20.50
		25	13	19.66	19.70	19.74	20.50
		25	25	19.61	19.61	19.67	20.50
		50	0	19.51	19.61	19.70	20.50
	16QAM	1	0	19.89	19.52	19.66	20.50
		1	25	19.59	20.07	19.66	20.50
		1	49	20.26	20.05	20.14	20.50
		25	0	18.65	18.52	18.70	19.50
		25	13	18.61	18.68	18.80	19.50
		25	25	18.59	18.48	18.73	19.50
		50	0	18.66	18.76	18.58	19.50

	64QAM	1	0	18.71	18.72	19.17	19.50
		1	25	18.32	19.24	18.74	19.50
		1	49	18.85	18.82	19.08	19.50
		25	0	17.60	17.60	17.79	18.50
		25	13	17.84	17.86	17.70	18.50
		25	25	17.48	17.79	17.56	18.50
		50	0	17.61	17.50	17.80	18.50
Bandwidth	Modulation	RB size	RB offset	Channel 20025	Channel 20175	Channel 20325	Tune up
15MHz	QPSK	1	0	20.34	20.47	20.31	21.50
		1	38	20.31	20.55	20.41	21.50
		1	74	20.34	20.51	20.28	21.50
		36	0	19.50	19.56	19.58	20.50
		36	18	19.55	19.46	19.57	20.50
		36	39	19.52	19.57	19.43	20.50
		75	0	19.48	19.47	19.53	20.50
	16QAM	1	0	19.37	19.66	19.39	20.50
		1	38	19.93	19.90	19.79	20.50
		1	74	19.97	19.94	19.44	20.50
		36	0	18.45	18.54	18.45	19.50
		36	18	18.42	18.62	18.58	19.50
		36	39	18.42	18.50	18.59	19.50
		75	0	18.47	18.48	18.58	19.50
	64QAM	1	0	19.04	18.81	19.23	19.50
		1	38	18.52	19.04	18.81	19.50
		1	74	18.87	18.73	19.32	19.50
		36	0	17.60	17.61	17.67	18.50
		36	18	18.00	17.86	17.72	18.50
		36	39	17.68	17.71	17.63	18.50
		75	0	17.61	17.67	17.58	18.50
Bandwidth	Modulation	RB size	RB offset	Channel 20050	Channel 20175	Channel 20300	Tune up
20MHz	QPSK	1	0	20.43	**20.60**	20.59	21.50
		1	50	20.31	20.29	20.38	21.50
		1	99	20.29	20.32	20.29	21.50
		50	0	19.43	19.53	19.52	20.50
		50	25	19.55	19.39	**19.55**	20.50
		50	50	19.50	19.43	19.52	20.50
		100	0	19.51	19.61	19.56	20.50
	16QAM	1	0	19.48	19.71	20.10	20.50
		1	50	19.89	19.92	19.77	20.50
		1	99	19.63	19.60	19.51	20.50
		50	0	18.37	18.46	18.53	19.50
		50	25	18.49	18.56	18.56	19.50

		50	50	18.45	18.43	18.53	19.50
		100	0	18.56	18.54	18.61	19.50
	64QAM	1	0	18.72	18.85	19.09	19.50
		1	50	18.32	19.21	18.65	19.50
		1	99	19.04	18.58	19.19	19.50
		50	0	17.56	17.40	17.65	18.50
		50	25	17.71	17.79	17.90	18.50
		50	50	17.80	17.84	17.79	18.50
		100	0	17.52	17.43	17.75	18.50

LTE Band 5				**Conducted Power(dBm)**			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20407	20525	20643	
1.4MHz	QPSK	1	0	23.10	23.04	22.70	24.50
		1	2	23.09	23.05	22.82	24.50
		1	5	23.05	23.01	22.80	24.50
		3	0	23.12	23.05	23.14	24.50
		3	2	23.17	23.11	23.04	24.50
		3	3	23.07	23.05	23.29	24.50
		6	0	22.12	22.08	22.01	23.50
	16QAM	1	0	22.62	22.27	22.62	23.50
		1	2	22.63	22.64	22.64	23.50
		1	5	22.05	22.16	22.21	23.50
		3	0	22.21	22.16	21.92	23.50
		3	2	22.25	22.11	21.94	23.50
		3	3	22.16	22.08	21.92	23.50
		6	0	21.30	21.07	21.00	22.50
	64QAM	1	0	21.54	21.41	21.49	22.50
		1	2	21.74	21.63	21.60	22.50
		1	5	21.04	20.97	21.26	22.50
		3	0	21.03	21.07	20.99	22.50
		3	2	21.21	21.13	20.86	22.50
		3	3	20.91	21.17	21.07	22.50
		6	0	20.24	19.88	20.14	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20415	20525	20635	
3MHz	QPSK	1	0	23.19	22.99	23.34	24.50
		1	7	23.16	23.06	22.92	24.50
		1	14	23.06	23.22	23.05	24.50
		8	0	22.27	22.18	22.13	23.50
		8	4	22.25	22.14	22.01	23.50

		8	7	22.20	22.14	22.15	23.50
		15	0	22.23	22.24	22.45	23.50
	16QAM	1	0	22.61	22.45	22.02	23.50
		1	7	22.39	22.21	22.57	23.50
		1	14	22.86	22.29	22.91	23.50
		8	0	21.32	21.14	21.19	22.50
		8	4	21.30	21.42	21.10	22.50
		8	7	21.33	21.20	21.29	22.50
		15	0	21.16	21.11	21.15	22.50
	64QAM	1	0	21.47	21.40	20.84	22.50
		1	7	21.29	21.06	21.36	22.50
		1	14	21.77	21.40	21.80	22.50
		8	0	20.07	20.17	20.07	21.50
		8	4	20.41	20.27	20.20	21.50
		8	7	20.23	20.08	20.28	21.50
		15	0	20.30	20.09	20.20	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20425	20525	20625	
5MHz	QPSK	1	0	23.19	23.03	22.95	24.50
		1	13	23.10	23.10	23.05	24.50
		1	24	23.19	23.29	22.83	24.50
		12	0	22.14	22.19	22.01	23.50
		12	6	22.27	22.14	22.08	23.50
		12	13	22.25	22.13	22.12	23.50
		25	0	22.26	22.12	22.04	23.50
	16QAM	1	0	22.44	22.42	22.30	23.50
		1	13	22.78	22.51	21.92	23.50
		1	24	22.36	22.87	22.66	23.50
		12	0	21.34	21.24	21.18	22.50
		12	6	21.20	21.16	21.20	22.50
		12	13	21.32	21.20	21.17	22.50
		25	0	21.15	21.11	21.10	22.50
	64QAM	1	0	21.39	21.32	20.93	22.50
		1	13	21.41	21.04	21.70	22.50
		1	24	21.67	21.06	22.06	22.50
		12	0	20.46	19.97	20.18	21.50
		12	6	20.11	20.32	20.25	21.50
		12	13	20.41	20.26	20.41	21.50
		25	0	20.25	20.00	20.09	21.50
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20450	20525	20600	
10MHz	QPSK	1	0	**23.29**	23.28	23.16	24.50

		1	25	23.17	23.19	23.15	24.50
		1	49	23.16	23.07	22.86	24.50
		25	0	22.23	22.20	22.19	23.50
		25	13	22.15	**22.32**	22.18	23.50
		25	25	22.14	22.25	22.15	23.50
		50	0	22.23	22.04	22.07	23.50
	16QAM	1	0	22.76	22.12	22.57	23.50
		1	25	22.20	22.35	22.44	23.50
		1	49	22.27	22.13	22.45	23.50
		25	0	21.18	21.24	21.15	22.50
		25	13	21.21	21.27	21.17	22.50
		25	25	21.21	21.29	21.29	22.50
		50	0	21.34	21.09	21.16	22.50
	64QAM	1	0	21.71	21.37	21.06	22.50
		1	25	21.22	21.18	21.68	22.50
		1	49	22.01	21.33	21.74	22.50
		25	0	20.33	20.23	20.19	21.50
		25	13	20.35	20.18	19.97	21.50
		25	25	20.18	19.95	20.11	21.50
		50	0	20.09	20.26	20.28	21.50

LTE Band 41				Conducted Power(dBm)					
Bandwidth	Modulation	RB size	RB offset	Channel 39675	Channel 40148	Channel 40620	Channel 41093	Channel 41565	Tune up
5MHz	QPSK	1	0	21.42	21.80	21.78	21.61	21.42	22.80
		1	13	21.47	21.70	21.82	21.83	21.52	22.80
		1	24	21.32	21.76	21.73	21.74	21.50	22.80
		12	0	20.62	20.87	20.82	20.71	20.53	21.80
		12	6	20.56	20.81	20.86	20.87	20.61	21.80
		12	13	20.55	20.79	20.84	20.78	20.58	21.80
		25	0	20.60	20.76	20.80	20.75	20.48	21.80
	16QAM	1	0	20.72	20.94	21.00	20.92	20.64	21.80
		1	13	20.61	21.03	21.04	21.00	20.58	21.80
		1	24	20.77	20.97	20.93	20.99	20.63	21.80
		12	0	19.56	19.81	19.88	19.70	19.47	20.80
		12	6	19.66	19.88	19.85	19.90	19.56	20.80
		12	13	19.53	19.78	19.86	19.72	19.55	20.80
		25	0	19.66	19.83	19.91	19.85	19.62	20.80
	64QAM	1	0	19.32	19.60	19.56	19.43	19.30	20.80
		1	13	19.57	19.40	19.38	19.34	19.32	20.80
		1	24	19.47	19.54	19.34	19.59	19.33	20.80
		12	0	18.52	18.32	18.56	18.31	18.40	19.80
		12	6	18.30	18.49	18.56	18.50	18.51	19.80
		12	13	18.56	18.56	18.48	18.33	18.30	19.80
		25	0	18.33	18.59	18.56	18.51	18.55	19.80
Bandwidth	Modulation	RB size	RB offset	Channel 39700	Channel 40160	Channel 40620	Channel 41080	Channel 41540	Tune up
10MHz	QPSK	1	0	21.83	21.67	21.65	21.55	21.45	22.80
		1	25	21.42	21.77	21.71	21.58	21.4	22.80
		1	49	21.46	21.8	21.75	21.62	21.35	22.80
		25	0	20.59	20.82	20.87	20.74	20.63	21.80
		25	13	20.47	20.92	20.84	20.84	20.6	21.80
		25	25	20.6	20.71	20.78	20.87	20.51	21.80
		50	0	20.57	20.84	20.87	20.86	20.56	21.80
	16QAM	1	0	20.62	20.96	20.92	20.85	20.44	21.80
		1	25	20.59	20.8	20.92	20.65	20.58	21.80
		1	49	20.55	20.83	20.81	20.8	20.54	21.80
		25	0	19.74	19.83	19.79	19.9	19.64	20.80
		25	13	19.54	19.95	19.68	19.71	19.64	20.80
		25	25	19.59	19.88	19.73	19.75	19.43	20.80
		50	0	19.56	19.9	19.85	19.88	19.59	20.80
	64QAM	1	0	19.6	19.41	19.31	19.56	19.59	20.80
		1	25	19.46	19.53	19.52	19.39	19.49	20.80

		1	49	19.33	19.37	19.44	19.31	19.49	20.80
		25	0	18.54	18.39	18.45	18.44	18.35	19.80
		25	13	18.51	18.42	18.58	18.42	18.38	19.80
		25	25	18.52	18.59	18.49	18.44	18.47	19.80
		50	0	18.3	18.4	18.36	18.4	18.56	19.80
Bandwidth	Modulation	RB size	RB offset	Channel 39725	Channel 40173	Channel 40620	Channel 41068	Channel 41515	Tune up
15MHz	QPSK	1	0	21.41	21.32	21.55	21.50	21.14	22.80
		1	38	21.31	21.55	21.58	21.46	21.11	22.80
		1	74	21.42	21.67	21.59	21.39	21.32	22.80
		36	0	20.50	20.68	20.67	20.56	20.37	21.80
		36	18	20.41	20.65	20.60	20.67	20.43	21.80
		36	39	20.41	20.55	20.60	20.70	20.40	21.80
		75	0	20.48	20.66	20.63	20.49	20.45	21.80
	16QAM	1	0	20.50	20.74	20.78	20.74	20.46	21.80
		1	38	20.38	20.66	20.71	20.62	20.41	21.80
		1	74	20.53	20.76	20.86	20.72	20.41	21.80
		36	0	19.37	19.61	19.71	19.63	19.41	20.80
		36	18	19.42	19.60	19.57	19.57	19.38	20.80
		36	39	19.32	19.61	19.61	19.61	19.24	20.80
		75	0	19.45	19.80	19.69	19.66	19.45	20.80
	64QAM	1	0	19.56	19.54	19.35	19.56	19.58	20.80
		1	38	19.46	19.56	19.59	19.44	19.34	20.80
		1	74	19.51	19.39	19.41	19.30	19.60	20.80
		36	0	18.36	18.33	18.32	18.60	18.55	19.80
		36	18	18.34	18.43	18.59	18.49	18.39	19.80
		36	39	18.43	18.57	18.34	18.42	18.60	19.80
		75	0	18.52	18.36	18.35	18.42	18.52	19.80
Bandwidth	Modulation	RB size	RB offset	Channel 39750	Channel 40185	Channel 40620	Channel 41055	Channel 41490	Tune up
20MHz	QPSK	1	0	21.40	21.51	21.60	21.60	21.29	22.80
		1	50	**21.47**	**21.55**	**21.66**	**21.64**	**21.34**	22.80
		1	99	21.46	21.54	21.65	21.61	21.24	22.80
		50	0	**20.53**	**20.69**	**20.81**	**20.64**	**20.58**	21.80
		50	25	20.42	20.68	20.75	20.62	20.48	21.80
		50	50	20.50	20.66	20.75	20.52	20.44	21.80
		100	0	20.56	20.68	20.69	20.59	20.46	21.80
	16QAM	1	0	20.52	20.68	20.79	20.73	20.60	21.80
		1	50	20.50	20.73	20.73	20.52	20.39	21.80
		1	99	20.58	20.71	20.81	20.61	20.47	21.80
		50	0	19.41	19.73	19.76	19.79	19.38	20.80
		50	25	19.51	19.77	19.72	19.77	19.51	20.80
		50	50	19.48	19.67	19.62	19.51	19.37	20.80
		100	0	19.52	19.70	19.68	19.72	19.37	20.80

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	64QAM	1	0	19.53	19.37	19.59	19.59	19.50	20.80
		1	50	19.57	19.30	19.33	19.42	19.39	20.80
		1	99	19.45	19.57	19.49	19.48	19.44	20.80
		50	0	18.30	18.32	18.39	18.32	18.59	19.80
		50	25	18.55	18.46	18.56	18.55	18.33	19.80
		50	50	18.37	18.34	18.54	18.47	18.51	19.80
		100	0	18.39	18.36	18.57	18.46	18.34	19.80

DL LTE CA Class	PCC							SCC1				Power(dBm)		
	LTE Band	BW (MHz)	Modulation	UL Freq. (MHz)	UL Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	DL LTE CA Tx.Power	LTE Rel 8 Tx.Power	Tune-up
CA_41C	Band 41	20M	QPSK	2506	39750	1	50	Band 41	20M	2525.8	39948	21.41	21.47	22.80

WiFi 2.4G - conducted power table:

Chain0

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11b	1	2412	1	14.78	16.00	Yes
	6	2437		15.15	16.00	Yes
	11	2462		15.18	16.00	Yes
802.11g	1	2412	6	14.33	15.00	No
	6	2437		14.45	15.00	No
	11	2462		13.88	15.00	No
802.11n HT20	1	2412	6.5	14.15	15.00	No
	6	2437		14.28	15.00	No
	11	2462		13.72	15.00	No

Chain1

Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11b	1	2412	1	15.12	16.00	Yes
	6	2437		14.93	16.00	Yes
	11	2462		14.82	16.00	Yes
802.11g	1	2412	6	13.90	15.00	No
	6	2437		13.88	15.00	No
	11	2462		13.74	15.00	No
802.11n HT20	1	2412	6.5	14.35	15.00	No
	6	2437		14.15	15.00	No
	11	2462		14.15	15.00	No

MIMO

Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up	SAR Test
802.11b	1	2412	1	15.34	15.12	18.24	19.00	Yes
	6	2437		15.72	15.11	18.44	19.00	Yes
	11	2462		15.02	14.89	17.97	19.00	Yes
802.11g	1	2412	6	14.43	14.44	17.45	18.00	No
	6	2437		14.45	13.78	17.14	18.00	No
	11	2462		13.77	13.52	16.66	18.00	No
802.11n HT20	1	2412	6.5	14.12	14.15	17.15	18.00	No
	6	2437		14.78	14.15	17.49	18.00	No
	11	2462		14.16	13.96	17.07	18.00	No

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WiFi 5G - conducted power table:

Chain0

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11a	U-NII-1	36	5180	6	14.19	15.00	No
		40	5200		13.88	15.00	No
		44	5220		14.15	15.00	No
		48	5240		14.23	15.00	No
	U-NII-2A	52	5260		14.05	15.00	No
		56	5280		13.85	15.00	No
		60	5300		14.18	15.00	No
		64	5320		13.88	15.00	No
	U-NII-2C	100	5500		12.45	13.00	No
		104	5520		14.02	15.00	No
		108	5540		14.25	15.00	No
		112	5560		13.95	15.00	No
		116	5580		9.56	10.50	No
		120	5600		14.09	15.00	No
		124	5620		14.08	15.00	No
		128	5640		14.03	15.00	No
		132	5660		13.96	15.00	No
		136	5680		13.85	15.00	No
		140	5700		12.85	14.00	No
		144	5720		14.31	15.00	No
	U-NII-3	149	5745		13.2	14.50	No
		153	5765		14.15	15.00	No
		157	5785		14.06	15.00	No
		161	5805		14.06	15.00	No
		165	5825		14.02	15.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT20	U-NII-1	36	5180	MCS0	14.05	15.00	No
		40	5200		14.18	15.00	No
		44	5220		14.03	15.00	No
		48	5240		14.07	15.00	No
	U-NII-2A	52	5260		13.91	15.00	No
		56	5280		13.70	15.00	No
		60	5300		14.05	15.00	No
		64	5320		13.72	15.00	No
	U-NII-2C	100	5500		12.23	13.00	No
		104	5520		13.84	15.00	No
		108	5540		14.07	15.00	No
		112	5560		14.22	15.00	No
		116	5580		10.74	11.50	No
		120	5600		13.91	15.00	No
		124	5620		13.87	15.00	No
		128	5640		13.85	15.00	No
		132	5660		13.77	15.00	No
		136	5680		14.12	15.00	No

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		140	5700		13.18	14.00	No
		144	5720		14.12	15.00	No
	U-NII-3	149	5745		13.58	14.50	No
		153	5765		13.96	15.00	No
		157	5785		13.88	15.00	No
		161	5805		13.91	15.00	No
		165	5825		13.88	15.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT40	U-NII-1	38	5190	MCS0	14.21	15.00	No
		46	5230		13.88	15.00	No
	U-NII-2A	54	5270		13.79	15.00	No
		62	5310		13.84	15.00	No
	U-NII-2C	102	5510		13.24	14.00	No
		110	5550		10.95	12.00	No
		118	5590		13.85	15.00	No
		126	5630		13.75	15.00	No
		134	5670		13.13	14.00	No
		142	5710		13.05	15.00	No
	U-NII-3	151	5755		13.35	14.50	No
		159	5795		13.78	15.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac-20	U-NII-1	36	5180	MCS0	14.05	15.00	No
		40	5200		14.22	15.00	No
		44	5220		14.05	15.00	No
		48	5240		14.02	15.00	No
	U-NII-2A	52	5260		13.98	15.00	No
		56	5280		14.17	15.00	No
		60	5300		14.08	15.00	No
		64	5320		14.12	15.00	No
	U-NII-2C	100	5500		12.20	13.50	No
		104	5520		13.85	15.00	No
		108	5540		14.05	15.00	No
		112	5560		14.21	15.00	No
		116	5580		10.12	11.00	No
		120	5600		13.95	15.00	No
		124	5620		13.87	15.00	No
		128	5640		13.89	15.00	No
		132	5660		13.81	15.00	No
		136	5680		14.15	15.00	No
		140	5700		13.18	14.00	No
		144	5720		14.15	15.00	No
	U-NII-3	149	5745		13.02	14.50	No
		153	5765		13.98	15.00	No
		157	5785		13.94	15.00	No
		161	5805		13.92	15.00	No
		165	5825		13.89	15.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power	Tune up	SAR Test

					(dBm)		
802.11ac-40	U-NII-1	38	5190	MCS0	14.23	15.00	No
		46	5230		13.87	15.00	No
	U-NII-2A	54	5270		13.81	15.00	No
		62	5310		13.82	15.00	No
	U-NII-2C	102	5510		12.66	13.50	No
		110	5550		10.94	12.00	No
		118	5590		13.87	15.00	No
		126	5630		13.74	15.00	No
		134	5670		13.12	14.00	No
		142	5710		14.05	15.00	No
	U-NII-3	151	5755		13.85	15.00	No
		159	5795		13.82	15.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac 80M	U-NII-1	42	5210	MCS0	13.84	15.00	Yes
	U-NII-2A	58	5290		14.21	15.00	Yes
	U-NII-2C	106	5530		13.78	14.00	No
		122	5610		11.84	13.00	No
		138	5690		13.95	15.00	Yes
	U-NII-3	155	5775		13.94	15.00	Yes

Chain1

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11a	U-NII-1	36	5180	6	13.38	14.00	No
		40	5200		13.31	14.00	No
		44	5220		13.18	14.00	No
		48	5240		13.13	14.00	No
	U-NII-2A	52	5260		13.02	14.00	No
		56	5280		12.85	14.00	No
		60	5300		12.83	14.00	No
		64	5320		12.82	14.00	No
	U-NII-2C	100	5500		10.88	12.00	No
		104	5520		13.25	14.00	No
		108	5540		12.81	14.00	No
		112	5560		12.78	14.00	No
		116	5580		8.66	9.50	No
		120	5600		13.11	14.00	No
		124	5620		12.95	14.00	No
		128	5640		12.85	14.00	No
		132	5660		13.23	14.00	No
		136	5680		13.91	14.00	No
		140	5700		11.78	13.00	No
		144	5720		12.92	14.00	No
	U-NII-3	149	5745		12.57	13.50	No
		153	5765		12.95	14.00	No
		157	5785		12.78	14.00	No

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		161	5805		12.75	14.00	No
		165	5825		12.91	14.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT20	U-NII-1	36	5180	MCS0	13.15	14.00	No
		40	5200		13.14	14.00	No
		44	5220		13.05	14.00	No
		48	5240		12.96	14.00	No
	U-NII-2A	52	5260		12.85	14.00	No
		56	5280		12.78	14.00	No
		60	5300		13.11	14.00	No
		64	5320		13.15	14.00	No
	U-NII-2C	100	5500		11.34	12.00	No
		104	5520		13.07	14.00	No
		108	5540		13.24	14.00	No
		112	5560		13.16	14.00	No
		116	5580		9.75	10.50	No
		120	5600		12.92	14.00	No
		124	5620		12.78	14.00	No
		128	5640		13.28	14.00	No
		132	5660		13.05	14.00	No
		136	5680		13.32	14.00	No
		140	5700		12.05	13.00	No
		144	5720		12.13	14.00	No
	U-NII-3	149	5745		12.41	13.50	No
		153	5765		12.81	14.00	No
		157	5785		13.13	14.00	No
		161	5805		13.18	14.00	No
		165	5825		13.28	14.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT40	U-NII-1	38	5190	MCS0	12.99	14.00	No
		46	5230		12.98	14.00	No
	U-NII-2A	54	5270		12.77	14.00	No
		62	5310		12.96	14.00	No
	U-NII-2C	102	5510		11.81	13.00	No
		110	5550		10.15	11.00	No
		118	5590		13.13	14.00	No
		126	5630		13.11	14.00	No
		134	5670		12.3	13.00	No
		142	5710		12.97	14.00	No
	U-NII-3	151	5755		12.16	13.50	No
		159	5795		12.95	14.00	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac-20	U-NII-1	36	5180	MCS0	13.18	14.00	No
		40	5200		13.15	14.00	No
		44	5220		13.05	14.00	No
		48	5240		12.98	14.00	No

	U-NII-2A	52	5260		12.81	14.00	No
		56	5280		13.28	14.00	No
		60	5300		13.12	14.00	No
		64	5320		13.13	14.00	No
	U-NII-2C	100	5500		11.48	12.50	No
		104	5520		13.07	14.00	No
		108	5540		13.24	14.00	No
		112	5560		13.17	14.00	No
		116	5580		9.14	10.00	No
		120	5600		12.97	14.00	No
		124	5620		12.85	14.00	No
		128	5640		13.28	14.00	No
		132	5660		13.11	14.00	No
		136	5680		12.75	14.00	No
		140	5700		12.05	13.00	No
		144	5720		13.32	14.00	No
	U-NII-3	149	5745		12.41	13.50	No
		153	5765		12.81	14.00	No
		157	5785		13.22	14.00	No
		161	5805		13.15	14.00	No
		165	5825		13.27	14.00	No

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac-40	U-NII-1	38	5190	MCS0	12.81	14.00	No
		46	5230		12.91	14.00	No
	U-NII-2A	54	5270		13.18	14.00	No
		62	5310		12.98	14.00	No
	U-NII-2C	102	5510		11.64	12.50	No
		110	5550		10.12	11.00	No
		118	5590		13.05	14.00	No
		126	5630		13.08	14.00	No
		134	5670		12.25	13.00	No
		142	5710		12.95	14.00	No
	U-NII-3	151	5755		13.25	14.00	No
		159	5795		12.91	14.00	No

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac 80M	U-NII-1	42	5210	MCS0	**13.21**	14.00	Yes
	U-NII-2A	58	5290		**12.95**	14.00	Yes
	U-NII-2C	106	5530		12.12	13.00	No
		122	5610		10.90	12.00	No
		138	5690		**12.83**	14.00	Yes
	U-NII-3	155	5775		**13.26**	14.00	Yes

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MIMO

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11a	U-NII-1	36	5180	6	16.77	17.80	No
		40	5200		16.91	17.80	No
		44	5220		16.90	17.80	No
		48	5240		16.84	17.80	No
	U-NII-2A	52	5260		16.81	17.80	No
		56	5280		16.58	17.80	No
		60	5300		16.49	17.80	No
		64	5320		16.78	17.80	No
	U-NII-2C	100	5500		14.80	15.80	No
		104	5520		16.42	17.80	No
		108	5540		16.34	17.80	No
		112	5560		16.21	17.80	No
		116	5580		11.72	13.30	No
		120	5600		16.69	17.80	No
		124	5620		16.60	17.80	No
		128	5640		16.55	17.80	No
		132	5660		16.82	17.80	No
		136	5680		16.94	17.80	No
		140	5700		15.41	16.80	No
		144	5720		16.35	17.80	No
	U-NII-3	149	5745		16.18	17.30	No
		153	5765		16.60	17.80	No
		157	5785		16.45	17.80	No
		161	5805		16.44	17.80	No
		165	5825		16.45	17.80	No

5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT20	U-NII-1	36	5180	MCS0	16.47	17.80	No
		40	5200		16.74	17.80	No
		44	5220		16.68	17.80	No
		48	5240		16.59	17.80	No
	U-NII-2A	52	5260		16.61	17.80	No
		56	5280		16.36	17.80	No
		60	5300		16.45	17.80	No
		64	5320		16.90	17.80	No
	U-NII-2C	100	5500		14.55	15.80	No
		104	5520		16.38	17.80	No
		108	5540		16.45	17.80	No
		112	5560		16.48	17.80	No
		116	5580		12.87	14.30	No
		120	5600		16.48	17.80	No
		124	5620		16.49	17.80	No
		128	5640		16.76	17.80	No
		132	5660		16.67	17.80	No
		136	5680		16.70	17.80	No
		140	5700		15.71	16.80	No

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		144	5720		16.15	17.80	No
	U-NII-3	149	5745		16.07	17.30	No
		153	5765		16.38	17.80	No
		157	5785		16.78	17.80	No
		161	5805		16.82	17.80	No
		165	5825		16.77	17.80	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11n-HT40	U-NII-1	38	5190	MCS0	16.51	17.80	No
		46	5230		16.62	17.80	No
	U-NII-2A	54	5270		16.50	17.80	No
		62	5310		16.49	17.80	No
	U-NII-2C	102	5510		15.26	16.80	No
		110	5550		13.45	14.80	No
		118	5590		16.53	17.80	No
		126	5630		16.69	17.80	No
		134	5670		16.16	16.80	No
		142	5710		16.56	17.80	No
	U-NII-3	151	5755		15.88	17.30	No
		159	5795		16.59	17.80	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac-20	U-NII-1	36	5180	MCS0	16.42	17.80	No
		40	5200		16.78	17.80	No
		44	5220		16.63	17.80	No
		48	5240		16.59	17.80	No
	U-NII-2A	52	5260		16.62	17.80	No
		56	5280		16.72	17.80	No
		60	5300		16.67	17.80	No
		64	5320		16.78	17.80	No
	U-NII-2C	100	5500		14.72	16.30	No
		104	5520		16.46	17.80	No
		108	5540		16.60	17.80	No
		112	5560		16.69	17.80	No
		116	5580		12.73	13.80	No
		120	5600		16.67	17.80	No
		124	5620		16.59	17.80	No
		128	5640		16.80	17.80	No
		132	5660		16.83	17.80	No
		136	5680		16.46	17.80	No
		140	5700		15.88	16.80	No
		144	5720		16.88	17.80	No
	U-NII-3	149	5745		16.16	17.30	No
		153	5765		16.43	17.80	No
		157	5785		16.96	17.80	No
		161	5805		16.80	17.80	No
		165	5825		16.82	17.80	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test

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802.11ac-40	U-NII-1	38	5190	MCS0	16.55	17.80	No
		46	5230		16.68	17.80	No
	U-NII-2A	54	5270		16.66	17.80	No
		62	5310		16.53	17.80	No
	U-NII-2C	102	5510		14.85	16.30	No
		110	5550		13.44	14.80	No
		118	5590		16.63	17.80	No
		126	5630		16.87	17.80	No
		134	5670		16.01	16.80	No
		142	5710		16.53	17.80	No
	U-NII-3	151	5755		16.74	17.80	No
		159	5795		16.74	17.80	No
5GHz	mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up	SAR Test
802.11ac 80M	U-NII-1	42	5210	MCS0	**16.71**	17.80	Yes
	U-NII-2A	58	5290		**16.49**	17.80	Yes
	U-NII-2C	106	5530		15.48	16.80	No
		122	5610		14.51	15.80	No
		138	5690		**16.35**	17.80	Yes
	U-NII-3	155	5775		**16.82**	17.80	Yes

BT - conducted power table:

BT		Average Conducted Power(dBm)			
Band	Channel	0	39	78	Tune up
BT	GFSK	9.97	12.15	11.35	12.50
	π/4DQPSK	7.18	9.48	8.72	12.50
	8DPSK	7.18	9.47	8.70	12.50
Band	Channel	0	19	39	Tune up
BLE	1M	5.82	6.43	5.93	7.50
BLE	2M	5.71	6.24	5.85	7.50

1.5 Test Environment

Ambient Temperature: 22±2° C
Tissue Simulating Liquid: 22±2° C

1.6 Operation Description

1. The EUT is controlled by using a Radio Communication Tester (MT8821C & CMU200), and the communication between the EUT and the tester is established by air link.

2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.

3. During the SAR testing, the DASY 5 system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.

4. SAR test reduction for GPRS mode is determined by the source-based time-averaged output power. The data mode with highest specified time-averaged output power should be tested for SAR compliance.

5. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA).

6. The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA).

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7. LTE modes test according to KDB 941225D05v02r05.

a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.

- Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
- When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation

- The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation

- For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg.
- Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

d. Per Section 5.2.4, Higher order modulations

- For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

e. Per Section 5.3, other channel bandwidth standalone SAR test requirements

- For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

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The EUT LTE test information：

Test Modulation	QPSK/16QAM/64QAM			
TX Frequency Range (MHz)	LTE FDD Band 4		1710 – 1755	
	LTE FDD Band 5		824 – 849	
	LTE TDD Band 41		2496 – 2690	
Bands	**Test Frequency ID**	**Bandwidths**	**Channels**	**Frequencies**
LTE B4	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19975	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Mid-Range	1.4/3/5/10/15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745
LTE B5	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Mid-Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844
LTE B41	Low Range	5	39675	2498.5
		10	39700	2501
		15	39725	2503.5
		20	39750	2506
	Mid-Range	5/10/15/20	40620	2593
	High Range	5	41565	2687.5
		10	41540	2685
		15	41515	2682.5
		20	41490	2680

<table>
<tr><td>LTE transmitter and antenna implementation</td><td>For each LTE Band the device has one integral antenna used for transmitting.</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth configuration [RB]</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>A properly configured base station simulator was used for the SAR and power measurements, therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

8. WLAN

Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

1）. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).

2）. When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.

3）. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to reported SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

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When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is ≤ 1.2 W/kg or all required channels are tested.

Subsequent Test Configuration Procedure

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

1）. When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.

2）. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

3）. The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.

a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.

b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the reported SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.

4）. SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:

a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)

b) replace “initial test configuration” with “all tested higher output power configurations”

2.4 GHz WiFi SAR Procedures:

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 exposure configuration 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 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

1）. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2）. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

5 GHz WiFi SAR Procedures:

U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following：

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.

2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.

3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands 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, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands 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. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.

2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.

3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.

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a) The channel closest to mid-band frequency is selected for SAR measurement.

b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

SAR Test Requirements for OFDM configurations:

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

WiFi CDD/MIMO SAR Considerations

Per KDB 248227D01v02r02, simultaneous transmission provisions in KDB Publication 447498 should be used to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1-g SAR single transmission SAR measurement is <1.6W/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.

9. According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100MHz.

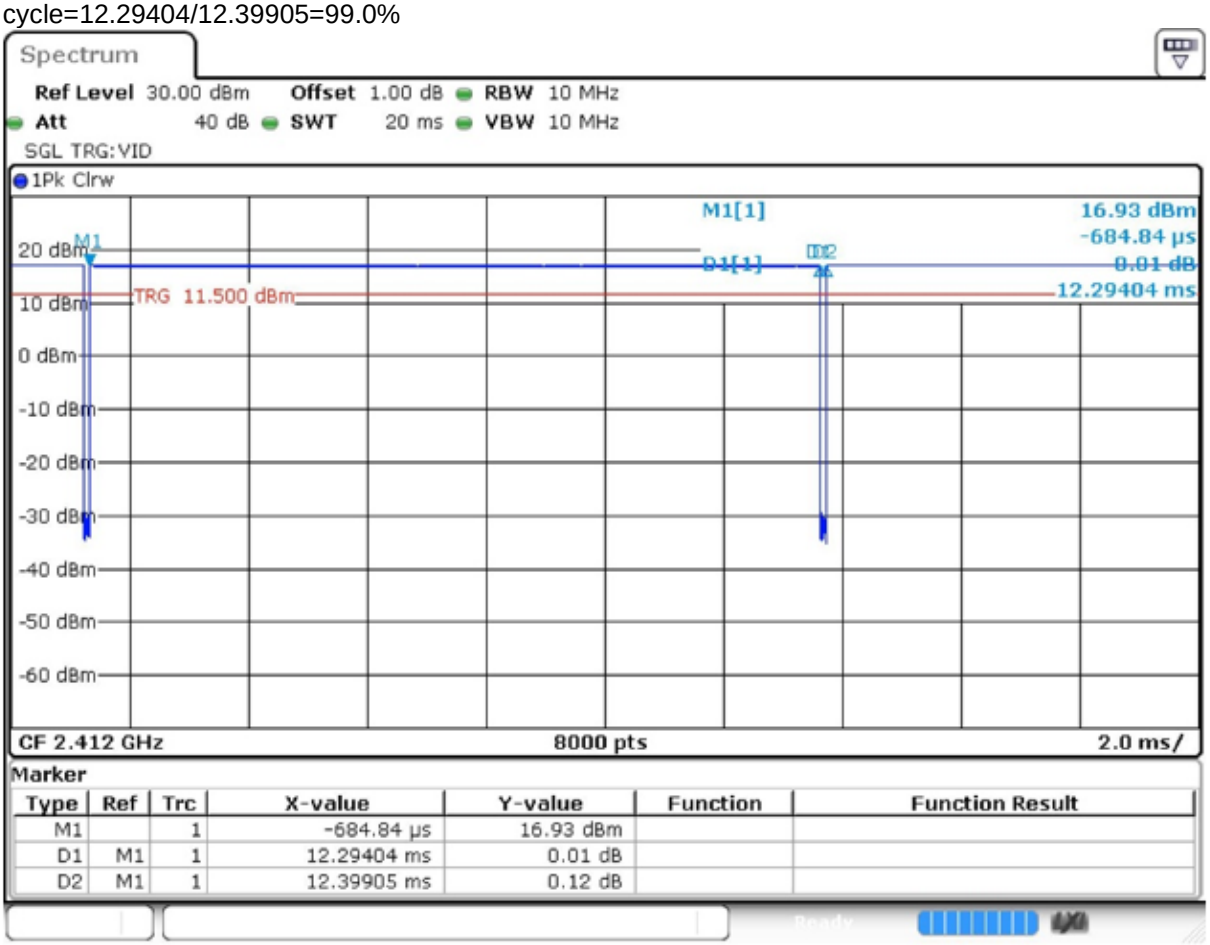
10. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit)

11. According to KDB447498D01v06 – The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for product specific 10-g SAR.

Duty cycle:

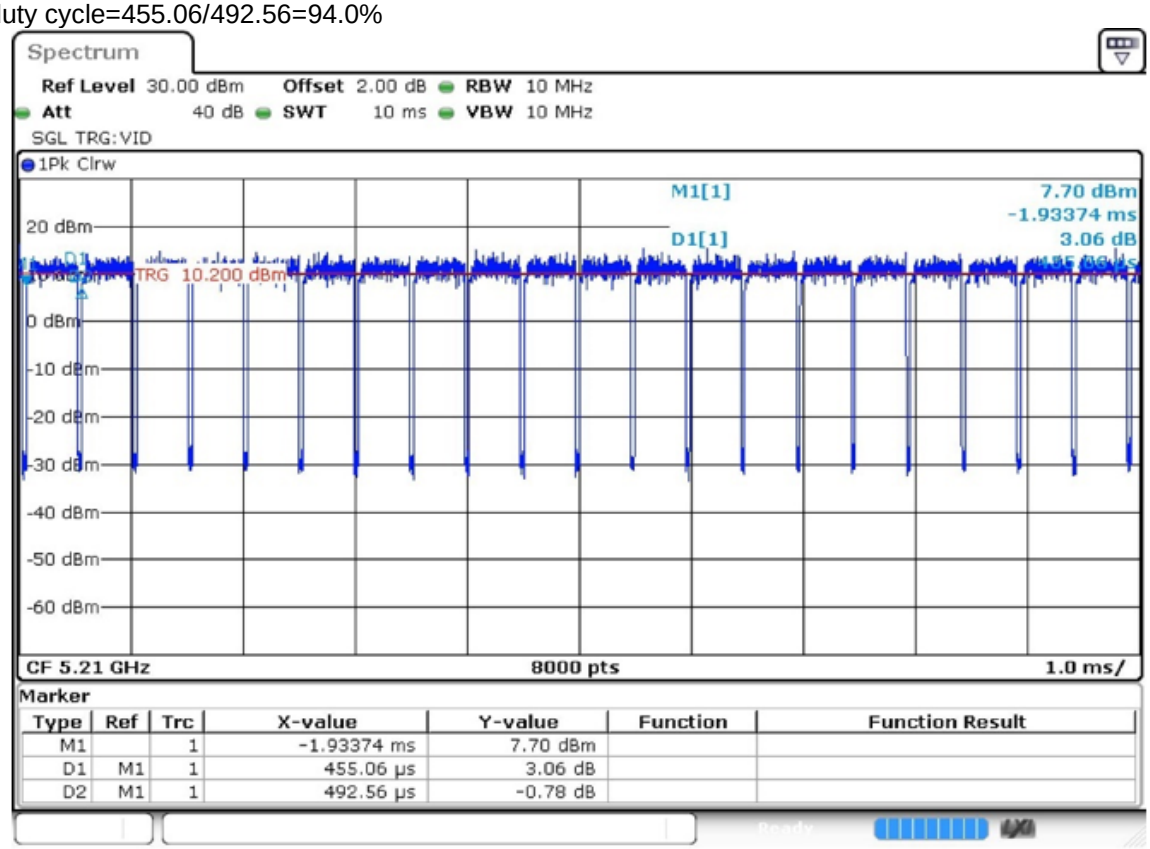
2.4GHz Wi-Fi 802.11b:

duty cycle=12.29404/12.39905=99.0%



5GHz Wi-Fi 802.11ac 80M:

duty cycle=455.06/492.56=94.0%



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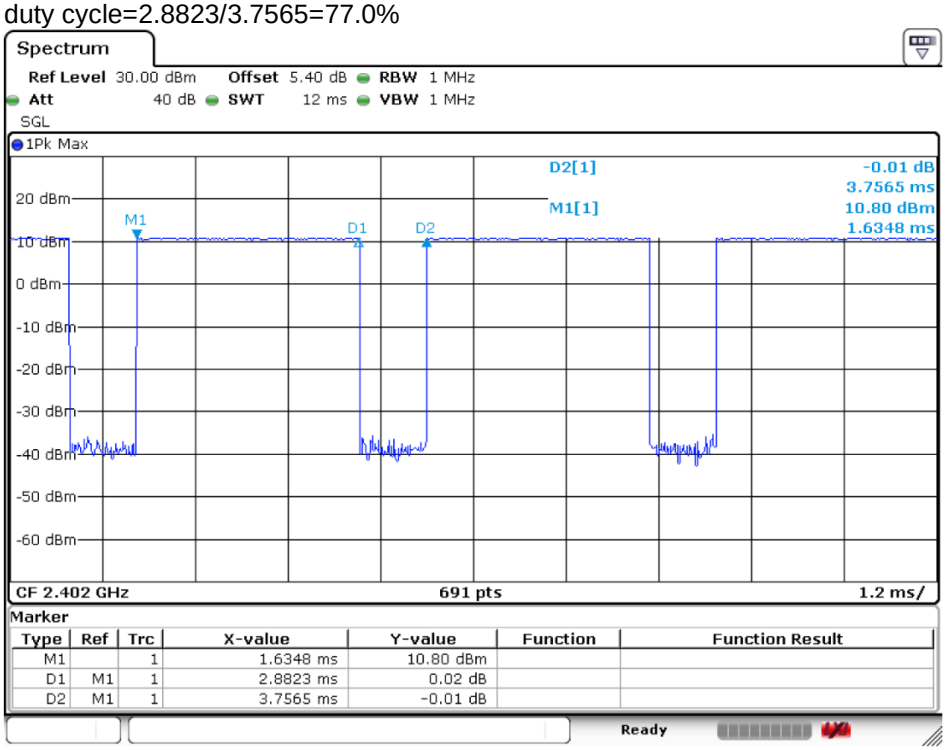
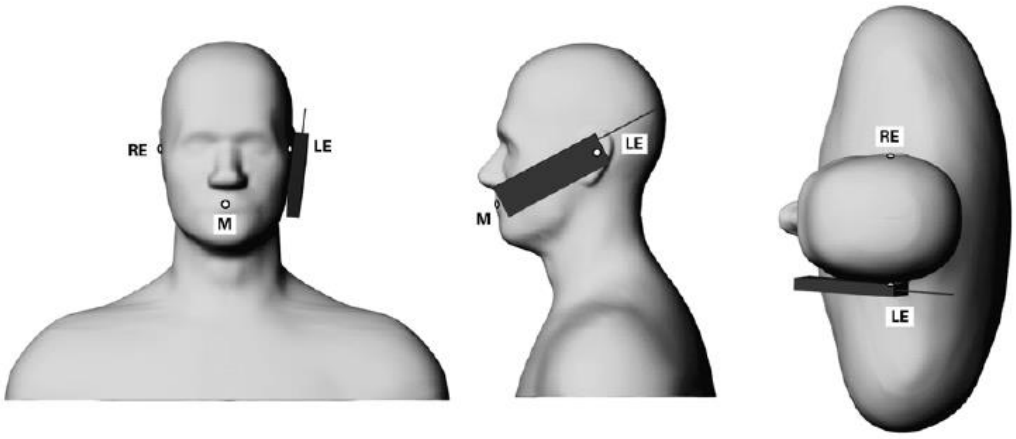
BT:

duty cycle=2.8823/3.7565=77.0%

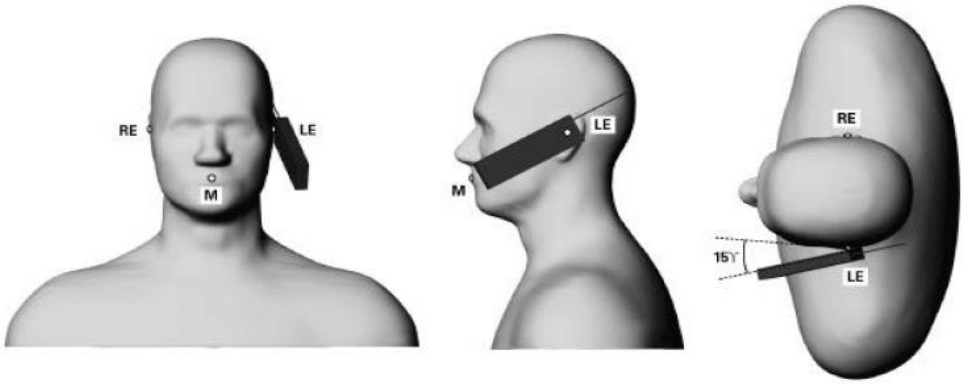


1.7 Positioning Procedure

Head SAR measurement statement



Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:
The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.
Ear/Tilt Position:
With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

Body SAR measurement statement

1. Body-worn exposure: 15mm

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

2. Hotspot exposure: 10mm

A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge when the form factor of a handset is larger than 9 cm × 5 cm,

Test configurations of WWAN:

(1) Front side
(2) Back side
(3) Bottom side
(4) Right side
(5) Left side

Test configurations of WLAN:

(1) Front side
(2) Back side
(3) Top side
(4) Right side
(5) Left side

3. Extremity exposure conditions

Per FCC KDB 648474D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”.

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for Product Specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

Due to the SAR result, WWAN bands do not need to be test with 0mm for the Product Specific 10-g SAR.

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1.8 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1.The extraction of the measured data (grid and values) from the Zoom Scan.

2.The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).

3.The generation of a high-resolution mesh within the measured volume.

4.The interpolation of all measured values from the measurement grid to the high-resolution grid.

5.The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.

6.The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.9 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.9.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = C \frac{\delta T}{\delta t},$$

Whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

1. Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

2.The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.

3.The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.

The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.

4.Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is ±5% (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

1.9.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

1.The setup must enable accurate determination of the incident power.

2.The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.

3.Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

1) N. Kuster, Q. Balzano, and J.C. Lin, Eds., Mobile Communications Safety, Chapman & Hall, London, 1997.

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3) K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", IEEE Transactions on Instrumentation and Measurements, vol. 47, no. 2, pp. 432{438, Apr. 1998.

1.10 The SAR Measurement System

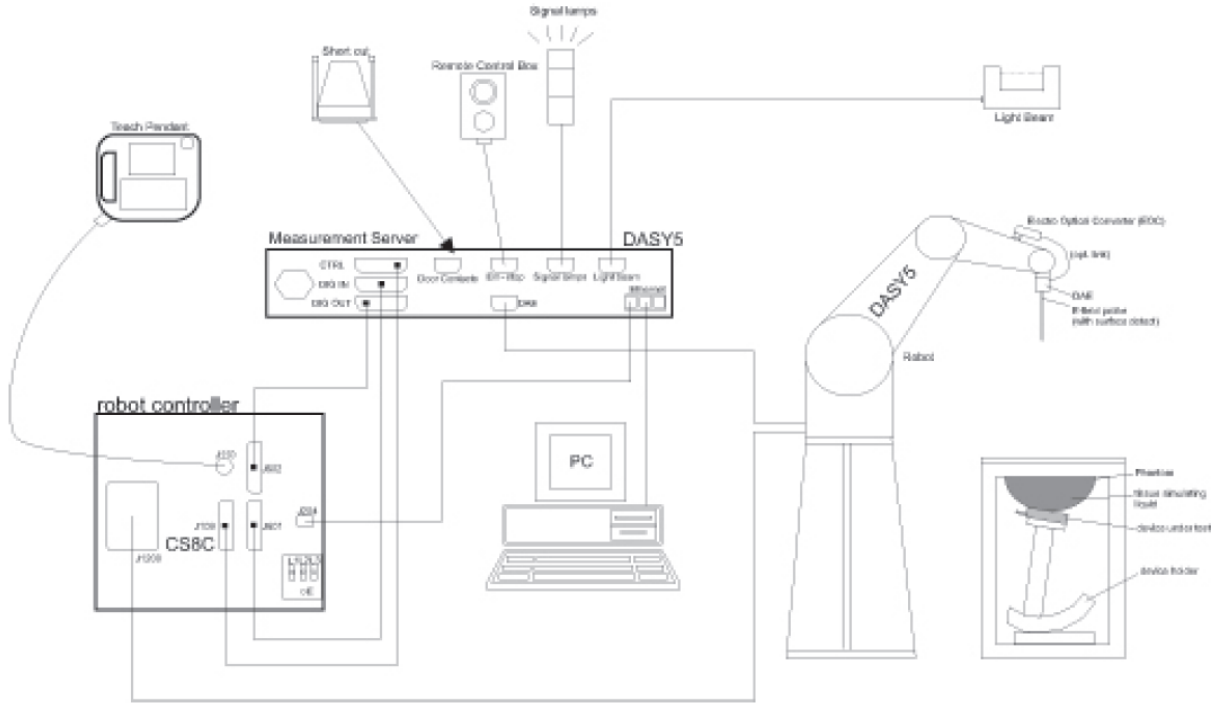
This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY5 professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

The DASY5 system for performing compliance tests consists of the following items:
A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software .An arm extension for accommodation the data acquisition electronics (DAE).

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



F-1. SAR Measurement System Configuration

- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validating the proper functioning of the system.

1.11 System Component

EX3DV4 E-Field Probe

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

Data Acquisition Electronics (DAE)

Model	DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV,400mV)
Input Offset Voltage	< 5µV (with auto zero)
Input Bias Current	< 50 f A
Dimensions	60 x 60 x 68 mm

SAM Twin Phantom

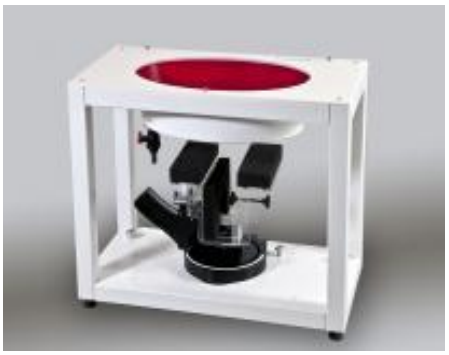
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Wooden Support	SPEAG standard phantom table

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table



Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.

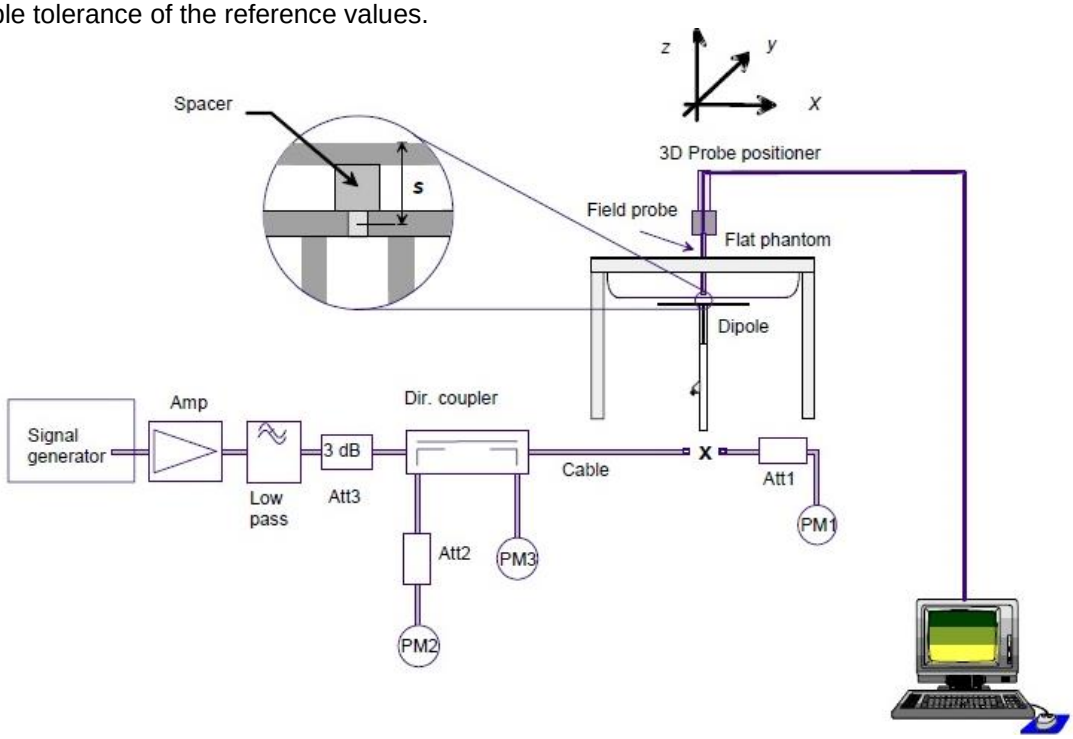
Device Holder for Transmitters

F-2. **Device Holder for Transmitters**

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

1.12 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range 22±2°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15±0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-12. The block diagram of system check

Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W) (±10%)	Target SAR (normalized to 1W) (±10%)	Liquid Temp. (℃)	Measured Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D835V2	Head	2.58	1.68	10.32	6.72	9.64 (8.68~10.60)	6.29 (5.66~6.92)	22.1	2021/1/26
D1750V2	Head	9.69	5.16	38.76	20.64	36.3 (32.67~39.93)	19.2 (17.28~21.12)	21.5	2021/1/28
D1900V2	Head	10.00	5.28	40.00	21.12	39.3 (35.37~43.23)	20.2 (18.18~22.22)	22.3	2021/1/29
D2450V2	Head	12.90	6.07	51.60	24.28	51.9 (46.71~57.09)	23.8 (21.42~26.18)	22.0	2021/1/22
D2600V2	Head	13.80	6.41	55.20	25.64	56.8 (51.12~62.48)	24.9 (22.41~27.39)	22.2	2021/1/23
Validation Kit		**Measured SAR 100mW**	**Measured SAR 100mW**	**Measured SAR (normalized to 1W)**	**Measured SAR (normalized to 1W)**	**Target SAR (normalized to 1W) (±10%)**	**Target SAR (normalized to 1W) (±10%)**	**Liquid Temp. (℃)**	**Measured Date**
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)		
D5GHzV2	Head(5.25GHz)	7.35	2.10	73.50	21.00	75.2 (67.68~82.72)	21.5 (19.35~23.65)	22.3	2021/2/1
	Head(5.6GHz)	7.90	2.25	79.00	22.50	80 (72~88)	22.7 (20.43~24.97)	21.9	2021/1/30
	Head(5.75GHz)	7.96	2.27	79.60	22.70	78.7 (70.83~86.57)	22.3 (20.07~24.53)	21.6	2021/1/31

Table 1. Results of system check

1.13 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Tissue Simulate Liquids were measured by using the Agilent Model 85070E Dielectric Probe in conjunction with Agilent E5071C Network Analyzer (300 KHz-8500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was 22±2°C.

Tissue Type	Measured Frequency （MHz）	Target Tissue (±5%)		Measured Tissue		Liquid Temp. (℃)	Measured Date
		εr	σ(S/m)	εr	σ(S/m)		
835 Head	835	41.5 (39.43~43.58)	0.90 (0.86~0.95)	42.883	0.927	22.1	2021/1/26
1750 Head	1750	40.1 (38.10~42.11)	1.37 (1.30~1.44)	40.658	1.395	21.5	2021/1/28
1900 Head	1900	40.0 (38.00~42.00)	1.40 (1.33~1.47)	40.568	1.426	22.3	2021/1/29
2450 Head	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.224	1.805	22.0	2021/1/22
2600 Head	2600	39.0 (37.05~40.95)	1.96 (1.86~2.06)	39.726	1.967	22.2	2021/1/23
5250Head	5250	35.9 (34.11~37.70)	4.71 (4.47~4.95)	36.182	4.779	22.3	2021/2/1
5600 Head	5600	35.5 (33.73~37.28)	5.07 (4.82~5.32)	35.314	5.166	21.9	2021/1/30
5750 Head	5750	35.4 (33.63~37.17)	5.22 (4.96~5.48)	35.133	5.361	21.6	2021/1/31

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the tissue simulating liquid:

Ingredients (% by weight)	Frequency (MHz)				
	450	900	1800-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85

Salt: 99+% Pure Sodium Chloride Sucrose: 98+% Pure Sucrose

Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose

Tween: Polyoxyethylene (20) sorbitan monolaurate

HSL5GHz is composed of the following ingredients：

Water：50-65%

Mineral oil：10-30%

Emulsifiers：8-25%

Sodium salt：0-1.5%

Table 3. Recipes for tissue simulating liquid

1.14 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (“SAR”) in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in “Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,” NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. 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. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

2. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section(Table .4)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	**1.60 W/kg**	8.00 W/kg
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	**4.00 W/kg**	20.00 W/kg

Table 4. RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.

2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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2 Summary of Results

<GSM 850>

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	190/836.6	1:2.075	0.213	-0.02	28.17	29.00	1.211	0.258	22.1
Left tilted	GPRS 4TS	190/836.6	1:2.075	0.120	0.11	28.17	29.00	1.211	0.145	22.1
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.215	-0.04	28.17	29.00	1.211	**0.260**	22.1
Right tilted	GPRS 4TS	190/836.6	1:2.075	0.132	-0.07	28.17	29.00	1.211	0.160	22.1
Head Test data at the worst case with SIM2										
Right cheek	GPRS 4TS	190/836.6	1:2.075	0.211	0.02	28.17	29.00	1.211	0.255	22.1
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.181	-0.01	28.17	29.00	1.211	0.219	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.207	-0.06	28.17	29.00	1.211	**0.251**	22.1
Body worn Test Data at the worst case with SIM2										
Back side	GPRS 4TS	190/836.6	1:2.075	0.205	0.09	28.17	29.00	1.211	0.248	22.1
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	190/836.6	1:2.075	0.271	0.19	28.17	29.00	1.211	0.328	22.1
Back side	GPRS 4TS	190/836.6	1:2.075	0.398	0.02	28.17	29.00	1.211	**0.482**	22.1
Left side	GPRS 4TS	190/836.6	1:2.075	0.226	-0.03	28.17	29.00	1.211	0.274	22.1
Right side	GPRS 4TS	190/836.6	1:2.075	0.308	0.05	28.17	29.00	1.211	0.373	22.1
Bottom side	GPRS 4TS	190/836.6	1:2.075	0.226	-0.11	28.17	29.00	1.211	0.274	22.1
Hotspot Test Data at the worst case with SIM2										
Back side	GPRS 4TS	190/836.6	1:2.075	0.397	0.03	28.17	29.00	1.211	0.481	22.1

<GSM 1900>

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	GPRS 4TS	661/1880	1:2.075	0.054	0.05	23.17	24.00	1.211	**0.065**	22.3
Left tilted	GPRS 4TS	661/1880	1:2.075	0.002	0.15	23.17	24.00	1.211	0.002	22.3
Right cheek	GPRS 4TS	661/1880	1:2.075	0.002	0.03	23.17	24.00	1.211	0.002	22.3
Right tilted	GPRS 4TS	661/1880	1:2.075	0.001	0.00	23.17	24.00	1.211	0.001	22.3
Head Test data at the worst case with SIM2										
Left cheek	GPRS 4TS	661/1880	1:2.075	0.050	0.02	23.17	24.00	1.211	0.061	22.3
Body worn Test data(Separate 15mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.048	0.17	23.17	24.00	1.211	0.058	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.085	0.18	23.17	24.00	1.211	**0.103**	22.3
Body worn Test Data at the worst case with SIM2										
Back side	GPRS 4TS	661/1880	1:2.075	0.081	0.15	23.17	24.00	1.211	0.098	22.3
Hotspot Test data(Separate 10mm)										
Front side	GPRS 4TS	661/1880	1:2.075	0.221	-0.03	23.17	24.00	1.211	0.268	22.3
Back side	GPRS 4TS	661/1880	1:2.075	0.287	0.07	23.17	24.00	1.211	**0.347**	22.3
Left side	GPRS 4TS	661/1880	1:2.075	0.142	0.03	23.17	24.00	1.211	0.172	22.3
Right side	GPRS 4TS	661/1880	1:2.075	0.043	-0.03	23.17	24.00	1.211	0.052	22.3
Bottom side	GPRS 4TS	661/1880	1:2.075	0.147	0.16	23.17	24.00	1.211	0.178	22.3
Hotspot Test Data at the worst case with SIM2										
Back side	GPRS 4TS	661/1880	1:2.075	0.280	0.02	23.17	24.00	1.211	0.339	22.3

<WCDMA Band IV>

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	1412/1732.4	1:1	0.113	-0.16	22.03	23.00	1.250	0.141	22.2
Left tilted	RMC	1412/1732.4	1:1	0.084	0.06	22.03	23.00	1.250	0.105	22.2
Right cheek	RMC	1412/1732.4	1:1	0.122	0.01	22.03	23.00	1.250	**0.153**	22.2
Right tilted	RMC	1412/1732.4	1:1	0.096	-0.13	22.03	23.00	1.250	0.120	22.2
Head Test data at the worst case with SIM2										
Right cheek	RMC	1412/1732.4	1:1	0.115	0.06	22.03	23.00	1.250	0.144	22.2
Body worn Test data(Separate 15mm)										
Front side	RMC	1412/1732.4	1:1	0.195	0.07	22.03	23.00	1.250	0.244	22.2
Back side	RMC	1412/1732.4	1:1	0.205	-0.06	22.03	23.00	1.250	**0.256**	22.2
Body worn Test Data at the worst case with SIM2										
Back side	RMC	1412/1732.4	1:1	0.195	0.01	22.03	23.00	1.250	0.244	22.2
Hotspot Test data(Separate 10mm)										
Front side	RMC	1412/1732.4	1:1	0.315	-0.07	22.03	23.00	1.250	0.394	22.2
Back side	RMC	1412/1732.4	1:1	0.408	0.14	22.03	23.00	1.250	**0.510**	22.2
Left side	RMC	1412/1732.4	1:1	0.178	0.19	22.03	23.00	1.250	0.223	22.2
Right side	RMC	1412/1732.4	1:1	0.091	-0.03	22.03	23.00	1.250	0.114	22.2
Bottom side	RMC	1412/1732.4	1:1	0.276	0.08	22.03	23.00	1.250	0.345	22.2
Hotspot Test Data at the worst case with SIM2										
Back side	RMC	1412/1732.4	1:1	0.400	0.16	22.03	23.00	1.250	0.500	22.2

<WCDMA Band V>

Test position	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp
Head Test data										
Left cheek	RMC	4182/836.4	1:1	0.232	0.14	23.40	24.50	1.288	0.299	22.1
Left tilted	RMC	4182/836.4	1:1	0.170	0.01	23.40	24.50	1.288	0.219	22.1
Right cheek	RMC	4182/836.4	1:1	0.253	0.12	23.40	24.50	1.288	**0.326**	22.1
Right tilted	RMC	4182/836.4	1:1	0.181	0.00	23.40	24.50	1.288	0.233	22.1
Head Test data at the worst case with SIM2										
Right cheek	RMC	4182/836.4	1:1	0.251	0.16	23.40	24.50	1.288	0.323	22.1
Body worn Test data(Separate 15mm)										
Front side	RMC	4182/836.4	1:1	0.266	0.11	23.40	24.50	1.288	0.343	22.1
Back side	RMC	4182/836.4	1:1	0.336	0.02	23.40	24.50	1.288	**0.433**	22.1
Body worn Test Data at the worst case with SIM2										
Back side	RMC	4182/836.4	1:1	0.310	0.08	23.40	24.50	1.288	0.399	22.1
Hotspot Test data(Separate 10mm)										
Front side	RMC	4182/836.4	1:1	0.258	0.07	23.40	24.50	1.288	0.332	22.1
Back side	RMC	4182/836.4	1:1	0.372	0.17	23.40	24.50	1.288	**0.479**	22.1
Left side	RMC	4182/836.4	1:1	0.177	-0.13	23.40	24.50	1.288	0.228	22.1
Right side	RMC	4182/836.4	1:1	0.250	0.06	23.40	24.50	1.288	0.322	22.1
Bottom side	RMC	4182/836.4	1:1	0.155	0.05	23.40	24.50	1.288	0.200	22.1
Hotspot Test Data at the worst case with SIM2										
Back side	RMC	4182/836.4	1:1	0.350	0.15	23.40	24.50	1.288	0.451	22.1

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<LTE Band 4>

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.074	-0.10	20.60	21.50	1.230	0.091	22.2
Left tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.056	0.05	20.60	21.50	1.230	0.069	22.2
Right cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.080	0.07	20.60	21.50	1.230	**0.099**	22.2
Right tilted	20	QPSK 1RB_0	20175/1732.5	1:1	0.044	0.07	20.60	21.50	1.230	0.054	22.2
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_25	20300/1745	1:1	0.063	-0.18	19.55	20.50	1.245	0.078	22.2
Left tilted	20	QPSK 50RB_25	20300/1745	1:1	0.048	-0.08	19.55	20.50	1.245	0.060	22.2
Right cheek	20	QPSK 50RB_25	20300/1745	1:1	0.068	-0.10	19.55	20.50	1.245	0.085	22.2
Right tilted	20	QPSK 50RB_25	20300/1745	1:1	0.001	-0.11	19.55	20.50	1.245	0.001	22.2
Head Test data at the worst case with SIM2											
Right cheek	20	QPSK 1RB_0	20175/1732.5	1:1	0.075	0.05	20.60	21.50	1.230	0.092	22.2
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.124	0.15	20.60	21.50	1.230	0.153	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.134	0.01	20.60	21.50	1.230	**0.165**	22.2
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_25	20300/1745	1:1	0.103	0.01	19.55	20.50	1.245	0.128	22.2
Back side	20	QPSK 50RB_25	20300/1745	1:1	0.121	0.03	19.55	20.50	1.245	0.151	22.2
Body worn Test Data at the worst case with SIM2											
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.130	0.05	20.60	21.50	1.230	0.160	22.2
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_0	20175/1732.5	1:1	0.205	0.03	20.60	21.50	1.230	0.252	22.2
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.242	-0.02	20.60	21.50	1.230	**0.298**	22.2
Left side	20	QPSK 1RB_0	20175/1732.5	1:1	0.082	0.01	20.60	21.50	1.230	0.101	22.2
Right side	20	QPSK 1RB_0	20175/1732.5	1:1	0.042	0.00	20.60	21.50	1.230	0.052	22.2
Bottom side	20	QPSK 1RB_0	20175/1732.5	1:1	0.182	-0.19	20.60	21.50	1.230	0.224	22.2
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_25	20300/1745	1:1	0.166	-0.16	19.55	20.50	1.245	0.207	22.2
Back side	20	QPSK 50RB_25	20300/1745	1:1	0.199	0.05	19.55	20.50	1.245	0.248	22.2
Left side	20	QPSK 50RB_25	20300/1745	1:1	0.063	0.15	19.55	20.50	1.245	0.078	22.2
Right side	20	QPSK 50RB_25	20300/1745	1:1	0.010	-0.12	19.55	20.50	1.245	0.012	22.2
Bottom side	20	QPSK 50RB_25	20300/1745	1:1	0.148	0.05	19.55	20.50	1.245	0.184	22.2
Hotspot Test Data at the worst case with SIM2											
Back side	20	QPSK 1RB_0	20175/1732.5	1:1	0.231	0.01	20.60	21.50	1.230	0.284	22.2

<LTE Band 5>

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	10	QPSK 1RB_0	20450/829	1:1	0.218	0.05	23.29	24.50	1.321	0.288	22.1
Left tilted	10	QPSK 1RB_0	20450/829	1:1	0.147	0.05	23.29	24.50	1.321	0.194	22.1
Right cheek	10	QPSK 1RB_0	20450/829	1:1	0.240	0.00	23.29	24.50	1.321	**0.317**	22.1
Right tilted	10	QPSK 1RB_0	20450/829	1:1	0.147	0.13	23.29	24.50	1.321	0.194	22.1
Head Test data(50%RB)											
Left cheek	10	QPSK 25RB_13	20525/836.5	1:1	0.188	-0.09	22.32	23.50	1.312	0.247	22.1
Left tilted	10	QPSK 25RB_13	20525/836.5	1:1	0.111	0.14	22.32	23.50	1.312	0.146	22.1
Right cheek	10	QPSK 25RB_13	20525/836.5	1:1	0.193	0.07	22.32	23.50	1.312	0.253	22.1
Right tilted	10	QPSK 25RB_13	20525/836.5	1:1	0.121	-0.11	22.32	23.50	1.312	0.159	22.1
Head Test data at the worst case with SIM2											
Right cheek	10	QPSK 1RB_0	20450/829	1:1	0.230	0.01	23.29	24.50	1.321	0.304	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	10	QPSK 1RB_0	20450/829	1:1	0.227	0.14	23.29	24.50	1.321	0.300	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.301	0.00	23.29	24.50	1.321	**0.398**	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	10	QPSK 25RB_13	20525/836.5	1:1	0.188	0.00	22.32	23.50	1.312	0.247	22.1
Back side	10	QPSK 25RB_13	20525/836.5	1:1	0.247	0.00	22.32	23.50	1.312	0.324	22.1
Body worn Test Data at the worst case with SIM2											
Back side	10	QPSK 1RB_0	20450/829	1:1	0.277	0.05	23.29	24.50	1.321	0.366	22.1
Hotspot Test data(Separate 10mm 1RB)											

Front side	10	QPSK 1RB_0	20450/829	1:1	0.229	-0.03	23.29	24.50	1.321	0.303	22.1
Back side	10	QPSK 1RB_0	20450/829	1:1	0.340	0.00	23.29	24.50	1.321	**0.449**	22.1
Left side	10	QPSK 1RB_0	20450/829	1:1	0.159	0.03	23.29	24.50	1.321	0.210	22.1
Right side	10	QPSK 1RB_0	20450/829	1:1	0.216	-0.06	23.29	24.50	1.321	0.285	22.1
Bottom side	10	QPSK 1RB_0	20450/829	1:1	0.127	-0.18	23.29	24.50	1.321	0.168	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	10	QPSK 25RB_13	20525/836.5	1:1	0.184	0.15	22.32	23.50	1.312	0.241	22.1
Back side	10	QPSK 25RB_13	20525/836.5	1:1	0.280	0.06	22.32	23.50	1.312	0.367	22.1
Left side	10	QPSK 25RB_13	20525/836.5	1:1	0.127	-0.18	22.32	23.50	1.312	0.167	22.1
Right side	10	QPSK 25RB_13	20525/836.5	1:1	0.179	0.06	22.32	23.50	1.312	0.235	22.1
Bottom side	10	QPSK 25RB_13	20525/836.5	1:1	0.100	0.03	22.32	23.50	1.312	0.131	22.1
Hotspot Test Data at the worst case with SIM2											
Back side	10	QPSK 1RB_0	20450/829	1:1	0.320	0.09	23.29	24.50	1.321	0.423	22.1

<LTE Band 41>

Test position	BW.	Test mode	Test Ch./Freq.	Duty Cycle	SAR (W/kg)1-g	Power Drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data(1RB)											
Left cheek	20	QPSK 1RB_50	40620/2593	1:1.58	0.092	0.04	21.66	22.80	1.300	**0.119**	22.1
Left tilted	20	QPSK 1RB_50	40620/2593	1:1.58	0.032	0.08	21.66	22.80	1.300	0.042	22.1
Right cheek	20	QPSK 1RB_50	40620/2593	1:1.58	0.043	-0.09	21.66	22.80	1.300	0.056	22.1
Right tilted	20	QPSK 1RB_50	40620/2593	1:1.58	0.034	0.07	21.66	22.80	1.300	0.045	22.1
Head Test data(50%RB)											
Left cheek	20	QPSK 50RB_0	40620/2593	1:1.58	0.070	0.02	20.81	21.80	1.256	0.088	22.1
Left tilted	20	QPSK 50RB_0	40620/2593	1:1.58	0.028	0.02	20.81	21.80	1.256	0.035	22.1
Right cheek	20	QPSK 50RB_0	40620/2593	1:1.58	0.034	0.06	20.81	21.80	1.256	0.043	22.1
Right tilted	20	QPSK 50RB_0	40620/2593	1:1.58	0.027	0.00	20.81	21.80	1.256	0.033	22.1
Head Test data at the worst case with SIM2											
Left cheek	20	QPSK 1RB_50	40620/2593	1:1.58	0.090	0.01	21.66	22.80	1.300	0.117	22.1
Body worn Test data(Separate 15mm 1RB)											
Front side	20	QPSK 1RB_50	40620/2593	1:1.58	0.133	0.15	21.66	22.80	1.300	0.173	22.1
Back side	20	QPSK 1RB_50	40620/2593	1:1.58	0.336	0.02	21.66	22.80	1.300	**0.437**	22.1
Body worn Test data (Separate 15mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.108	0.07	20.81	21.80	1.256	0.136	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.273	0.03	20.81	21.80	1.256	0.343	22.1
Body worn Test Data at the worst case with SIM2											
Back side	20	QPSK 1RB_50	40620/2593	1:1.58	0.321	0.05	21.66	22.80	1.300	0.417	22.1
Hotspot Test data(Separate 10mm 1RB)											
Front side	20	QPSK 1RB_50	40620/2593	1:1.58	0.237	0.15	21.66	22.80	1.300	0.308	22.1
Back side	20	QPSK 1RB_50	40620/2593	1:1.58	0.676	0.08	21.66	22.80	1.300	**0.879**	22.1
Back side	20	QPSK 1RB_50	39750/2506	1:1.58	0.580	0.03	21.47	22.80	1.358	0.788	22.1
Back side	20	QPSK 1RB_50	41490/2680	1:1.58	0.527	0.08	21.34	22.80	1.400	0.738	22.1
Back side	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.551	0.06	21.55	22.80	1.334	0.735	22.1
Back side	20	QPSK 1RB_50	41055/2636.5	1:1.58	0.543	0.01	21.64	22.80	1.306	0.709	22.1
Left side	20	QPSK 1RB_50	40620/2593	1:1.58	0.120	-0.06	21.66	22.80	1.300	0.156	22.1
Right side	20	QPSK 1RB_50	40620/2593	1:1.58	0.072	0.06	21.66	22.80	1.300	0.094	22.1
Bottom side	20	QPSK 1RB_50	40620/2593	1:1.58	0.581	-0.09	21.66	22.80	1.300	0.755	22.1
Bottom side	20	QPSK 1RB_50	39750/2506	1:1.58	0.483	0.03	21.47	22.80	1.358	0.656	22.1
Bottom side	20	QPSK 1RB_50	41490/2680	1:1.58	0.517	0.07	21.34	22.80	1.400	0.724	22.1
Bottom side	20	QPSK 1RB_50	40185/2549.5	1:1.58	0.543	0.01	21.55	22.80	1.334	0.724	22.1
Bottom side	20	QPSK 1RB_50	41055/2636.5	1:1.58	0.556	0.05	21.64	22.80	1.306	0.726	22.1
Hotspot Test data (Separate 10mm 50%RB)											
Front side	20	QPSK 50RB_0	40620/2593	1:1.58	0.193	0.00	20.81	21.80	1.256	0.242	22.1
Back side	20	QPSK 50RB_0	40620/2593	1:1.58	0.566	0.10	20.81	21.80	1.256	0.711	22.1
Back side	20	QPSK 50RB_0	39750/2506	1:1.58	0.544	0.01	20.53	21.80	1.340	0.729	22.1
Back side	20	QPSK 50RB_0	41490/2680	1:1.58	0.543	0.06	20.58	21.80	1.324	0.719	22.1
Back side	20	QPSK 50RB_0	40185/2549.5	1:1.58	0.523	0.07	20.69	21.80	1.291	0.675	22.1
Back side	20	QPSK 50RB_0	41055/2636.5	1:1.58	0.521	0.06	20.64	21.80	1.306	0.681	22.1
Left side	20	QPSK 50RB_0	40620/2593	1:1.58	0.098	-0.02	20.81	21.80	1.256	0.122	22.1
Right side	20	QPSK 50RB_0	40620/2593	1:1.58	0.062	0.18	20.81	21.80	1.256	0.077	22.1
Bottom side	20	QPSK 50RB_0	40620/2593	1:1.58	0.495	-0.03	20.81	21.80	1.256	0.622	22.1
Bottom side	20	QPSK 50RB_0	39750/2506	1:1.58	0.487	0.03	20.53	21.80	1.340	0.652	22.1

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Bottom side	20	QPSK 50RB_0	41490/2680	1:1.58	0.445	-0.06	20.58	21.80	1.324	0.589	22.1
Bottom side	20	QPSK 50RB_0	40185/2549.5	1:1.58	0.449	-0.02	20.69	21.80	1.291	0.580	22.1
Bottom side	20	QPSK 50RB_0	41055/2636.5	1:1.58	0.426	0.08	20.64	21.80	1.306	0.556	22.1
Hotspot Test data (Separate 10mm 100%RB)											
Back side	20	QPSK 100RB_0	40620/2593	1:1.58	0.556	0.06	20.69	21.80	1.291	0.718	22.1
Hotspot Test Data at the worst case with SIM2											
Back side	20	QPSK 1RB_50	40620/2593	1:1.58	0.651	0.09	21.66	22.80	1.300	0.846	22.1

<WiFi 2.4G>

Wi-Fi 2.4G SAR Test Record (Chain0)

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	11/2462	0.99	1.009	0.193	0.05	15.18	16.00	1.208	0.235	22.0
Left tilted	802.11b	11/2462	0.99	1.009	0.126	0.15	15.18	16.00	1.208	0.154	22.0
Right cheek	802.11b	11/2462	0.99	1.009	0.618	-0.17	15.18	16.00	1.208	**0.753**	22.0
Right tilted	802.11b	11/2462	0.99	1.009	0.273	-0.16	15.18	16.00	1.208	0.333	22.0
Body worn Test data(Separate 15mm)											
Front side	802.11b	11/2462	0.99	1.009	0.045	0.05	15.18	16.00	1.208	0.055	22.0
Back side	802.11b	11/2462	0.99	1.009	0.099	0.08	15.18	16.00	1.208	**0.121**	22.0
Hotspot Test data (Separate 10mm)											
Front side	802.11b	11/2462	0.99	1.009	0.080	0.10	15.18	16.00	1.208	0.097	22.0
Back side	802.11b	11/2462	0.99	1.009	0.223	0.02	15.18	16.00	1.208	**0.272**	22.0
Left side	802.11b	11/2462	0.99	1.009	0.061	0.16	15.18	16.00	1.208	0.074	22.0
Right side	802.11b	11/2462	0.99	1.009	0.002	-0.09	15.18	16.00	1.208	0.002	22.0
Top side	802.11b	11/2462	0.99	1.009	0.109	-0.05	15.18	16.00	1.208	0.133	22.0

Wi-Fi 2.4G SAR Test Record (Chain1)

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	1/2412	0.99	1.008	0.082	0.04	15.12	16.00	1.225	**0.101**	22.0
Left tilted	802.11b	1/2412	0.99	1.008	0.007	-0.01	15.12	16.00	1.225	0.009	22.0
Right cheek	802.11b	1/2412	0.99	1.008	0.005	0.19	15.12	16.00	1.225	0.006	22.0
Right tilted	802.11b	1/2412	0.99	1.008	0.002	-0.19	15.12	16.00	1.225	0.002	22.0
Body worn Test data(Separate 15mm)											
Front side	802.11b	1/2412	0.99	1.008	0.006	-0.08	15.12	16.00	1.225	**0.007**	22.0
Back side	802.11b	1/2412	0.99	1.008	0.001	0.16	15.12	16.00	1.225	0.001	22.0
Hotspot Test data (Separate 10mm)											
Front side	802.11b	1/2412	0.99	1.008	0.002	-0.17	15.12	16.00	1.225	0.002	22.0
Back side	802.11b	1/2412	0.99	1.008	0.065	-0.14	15.12	16.00	1.225	**0.080**	22.0
Left side	802.11b	1/2412	0.99	1.008	0.002	0.16	15.12	16.00	1.225	0.002	22.0
Right side	802.11b	1/2412	0.99	1.008	0.005	0.18	15.12	16.00	1.225	0.006	22.0
Top side	802.11b	1/2412	0.99	1.008	0.003	0.05	15.12	16.00	1.225	0.004	22.0

Wi-Fi 2.4G SAR Test Record (MIMO)

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	802.11b	6/2437	0.99	1.009	0.192	-0.08	18.44	19.00	1.139	0.221	22.0
Left tilted	802.11b	6/2437	0.99	1.009	0.149	0.06	18.44	19.00	1.139	0.171	22.0
Right cheek	802.11b	6/2437	0.99	1.009	0.547	-0.09	18.44	19.00	1.139	**0.628**	22.0
Right tilted	802.11b	6/2437	0.99	1.009	0.285	-0.02	18.44	19.00	1.139	0.327	22.0
Body worn Test data(Separate 15mm)											
Front side	802.11b	6/2437	0.99	1.009	0.046	0.10	18.44	19.00	1.139	0.053	22.0
Back side	802.11b	6/2437	0.99	1.009	0.078	0.03	18.44	19.00	1.139	**0.089**	22.0

Hotspot Test data (Separate 10mm)											
Front side	802.11b	6/2437	0.99	1.009	0.078	-0.02	18.44	19.00	1.139	0.090	22.0
Back side	802.11b	6/2437	0.99	1.009	0.176	0.17	18.44	19.00	1.139	**0.202**	22.0
Left side	802.11b	6/2437	0.99	1.009	0.058	0.13	18.44	19.00	1.139	0.067	22.0
Right side	802.11b	6/2437	0.99	1.009	0.049	-0.15	18.44	19.00	1.139	0.056	22.0
Top side	802.11b	6/2437	0.99	1.009	0.134	-0.18	18.44	19.00	1.139	0.154	22.0

<WiFi 5G>

Wi-Fi 5G SAR Test Record Chain0											
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)1-g**	**Power drift(dB)**	**Conducted power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Head Test data of U-NII-2A											
Left cheek	802.11ac 80M	58/5290	0.94	1.065	0.220	-0.04	14.21	15.00	1.199	0.281	22.2
Left tilted	802.11ac 80M	58/5290	0.94	1.065	0.238	-0.01	14.21	15.00	1.199	0.304	22.2
Right cheek	802.11ac 80M	58/5290	0.94	1.065	0.370	0.09	14.21	15.00	1.199	**0.473**	22.2
Right tilted	802.11ac 80M	58/5290	0.94	1.065	0.286	0.19	14.21	15.00	1.199	0.365	22.2
Head Test data of U-NII-2C											
Left cheek	802.11ac 80M	138/5690	0.94	1.065	0.106	0.09	13.95	15.00	1.274	0.144	22.2
Left tilted	802.11ac 80M	138/5690	0.94	1.065	0.157	0.13	13.95	15.00	1.274	0.213	22.2
Right cheek	802.11ac 80M	138/5690	0.94	1.065	0.141	-0.07	13.95	15.00	1.274	0.191	22.2
Right tilted	802.11ac 80M	138/5690	0.94	1.065	0.136	-0.16	13.95	15.00	1.274	0.184	22.2
Head Test data of U-NII-3											
Left cheek	802.11ac 80M	155/5775	0.94	1.065	0.112	-0.11	13.94	15.00	1.276	0.152	22.2
Left tilted	802.11ac 80M	155/5775	0.94	1.065	0.104	-0.02	13.94	15.00	1.276	0.141	22.2
Right cheek	802.11ac 80M	155/5775	0.94	1.065	0.108	0.18	13.94	15.00	1.276	0.147	22.2
Right tilted	802.11ac 80M	155/5775	0.94	1.065	0.107	-0.18	13.94	15.00	1.276	0.145	22.2
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.078	-0.14	14.21	15.00	1.199	0.100	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.109	0.00	14.21	15.00	1.199	**0.139**	22.2
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.057	-0.10	13.95	15.00	1.274	0.077	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.093	0.18	13.95	15.00	1.274	0.126	22.2
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.100	-0.14	13.94	15.00	1.276	0.136	22.2
Back side	802.11ac 80M	155/5775	0.94	1.065	0.095	-0.14	13.94	15.00	1.276	0.129	22.2
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11ac 80M	42/5210	0.94	1.065	0.084	0.07	13.84	15.00	1.306	0.117	22.2
Back side	802.11ac 80M	42/5210	0.94	1.065	0.286	0.00	13.84	15.00	1.306	**0.398**	22.2
Left side	802.11ac 80M	42/5210	0.94	1.065	0.121	-0.16	13.84	15.00	1.306	0.168	22.2
Right side	802.11ac 80M	42/5210	0.94	1.065	0.079	-0.08	13.84	15.00	1.306	0.110	22.2
Top side	802.11ac 80M	42/5210	0.94	1.065	0.193	-0.15	13.84	15.00	1.306	0.268	22.2
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.062	0.03	13.94	15.00	1.276	0.084	22.2
Back side	802.11ac 80M	155/5775	0.94	1.065	0.147	0.15	13.94	15.00	1.276	0.200	22.2
Left side	802.11ac 80M	155/5775	0.94	1.065	0.091	0.19	13.94	15.00	1.276	0.124	22.2
Right side	802.11ac 80M	155/5775	0.94	1.065	0.087	-0.15	13.94	15.00	1.276	0.118	22.2
Top side	802.11ac 80M	155/5775	0.94	1.065	0.158	-0.03	13.94	15.00	1.276	0.215	22.2
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)10-g**	**Power drift(dB)**	**Conducted power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Product specific 10gSAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.170	-0.01	14.21	15.00	1.199	0.217	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.420	0.00	14.21	15.00	1.199	0.537	22.2
Left side	802.11ac 80M	58/5290	0.94	1.065	0.186	0.16	14.21	15.00	1.199	0.238	22.2
Right side	802.11ac 80M	58/5290	0.94	1.065	0.114	0.17	14.21	15.00	1.199	0.146	22.2
Top side	802.11ac 80M	58/5290	0.94	1.065	0.305	0.13	14.21	15.00	1.199	0.390	22.2
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.086	-0.03	13.95	15.00	1.274	0.117	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.418	-0.08	13.95	15.00	1.274	**0.567**	22.2
Left side	802.11ac 80M	138/5690	0.94	1.065	0.127	-0.09	13.95	15.00	1.274	0.172	22.2

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Right side	802.11ac 80M	138/5690	0.94	1.065	0.102	-0.17	13.95	15.00	1.274	0.138	22.2
Top side	802.11ac 80M	138/5690	0.94	1.065	0.170	-0.17	13.95	15.00	1.274	0.231	22.2

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Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data of U-NII-2A											
Left cheek	802.11ac 80M	58/5290	0.94	1.065	0.023	-0.07	12.95	14.00	1.274	0.031	22.2
Left tilted	802.11ac 80M	58/5290	0.94	1.065	0.013	-0.13	12.95	14.00	1.274	0.017	22.2
Right cheek	802.11ac 80M	58/5290	0.94	1.065	0.019	0.00	12.95	14.00	1.274	0.026	22.2
Right tilted	802.11ac 80M	58/5290	0.94	1.065	0.010	0.19	12.95	14.00	1.274	0.014	22.2
Head Test data of U-NII-2C											
Left cheek	802.11ac 80M	138/5690	0.94	1.065	0.041	-0.15	12.83	14.00	1.309	0.057	22.2
Left tilted	802.11ac 80M	138/5690	0.94	1.065	0.016	-0.13	12.83	14.00	1.309	0.022	22.2
Right cheek	802.11ac 80M	138/5690	0.94	1.065	0.02	-0.11	12.83	14.00	1.309	0.028	22.2
Right tilted	802.11ac 80M	138/5690	0.94	1.065	0.012	-0.10	12.83	14.00	1.309	0.017	22.2
Head Test data of U-NII-3											
Left cheek	802.11ac 80M	155/5775	0.94	1.065	0.050	-0.19	13.26	14.00	1.186	**0.063**	22.2
Left tilted	802.11ac 80M	155/5775	0.94	1.065	0.011	-0.02	13.26	14.00	1.186	0.014	22.2
Right cheek	802.11ac 80M	155/5775	0.94	1.065	0.033	-0.06	13.26	14.00	1.186	0.042	22.2
Right tilted	802.11ac 80M	155/5775	0.94	1.065	0.019	-0.02	13.26	14.00	1.186	0.024	22.2
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.081	-0.09	12.95	14.00	1.274	0.110	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.085	0.00	12.95	14.00	1.274	**0.115**	22.2
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.074	-0.03	12.83	14.00	1.309	0.103	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.081	-0.18	12.83	14.00	1.309	0.113	22.2
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.062	-0.17	13.26	14.00	1.186	0.078	22.2
Back side	802.11ac 80M	155/5775	0.94	1.065	0.076	0.15	13.26	14.00	1.186	0.096	22.2
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11ac 80M	42/5210	0.94	1.065	0.124	0.18	13.21	14.00	1.199	0.158	22.2
Back side	802.11ac 80M	42/5210	0.94	1.065	0.134	0.13	13.21	14.00	1.199	0.171	22.2
Left side	802.11ac 80M	42/5210	0.94	1.065	0.108	-0.19	13.21	14.00	1.199	0.138	22.2
Right side	802.11ac 80M	42/5210	0.94	1.065	0.086	-0.01	13.21	14.00	1.199	0.110	22.2
Top side	802.11ac 80M	42/5210	0.94	1.065	0.060	0.02	13.21	14.00	1.199	0.077	22.2
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.084	0.11	13.26	14.00	1.186	0.106	22.2
Back side	802.11ac 80M	155/5775	0.94	1.065	0.137	0.00	13.26	14.00	1.186	**0.173**	22.2
Left side	802.11ac 80M	155/5775	0.94	1.065	0.100	0.02	13.26	14.00	1.186	0.126	22.2
Right side	802.11ac 80M	155/5775	0.94	1.065	0.129	-0.14	13.26	14.00	1.186	0.163	22.2
Top side	802.11ac 80M	155/5775	0.94	1.065	0.097	0.10	13.26	14.00	1.186	0.122	22.2
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)10-g**	**Power drift(dB)**	**Conducted power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Product specific 10gSAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.029	0.02	12.95	14.00	1.274	0.039	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.384	0.13	12.95	14.00	1.274	0.521	22.2
Left side	802.11ac 80M	58/5290	0.94	1.065	0.022	0.05	12.95	14.00	1.274	0.030	22.2
Right side	802.11ac 80M	58/5290	0.94	1.065	0.154	-0.04	12.95	14.00	1.274	0.209	22.2
Top side	802.11ac 80M	58/5290	0.94	1.065	0.020	-0.09	12.95	14.00	1.274	0.027	22.2
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.024	-0.09	12.83	14.00	1.309	0.033	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.448	0.01	12.83	14.00	1.309	**0.625**	22.2
Left side	802.11ac 80M	138/5690	0.94	1.065	0.027	0.13	12.83	14.00	1.309	0.038	22.2
Right side	802.11ac 80M	138/5690	0.94	1.065	0.200	-0.18	12.83	14.00	1.309	0.279	22.2
Top side	802.11ac 80M	138/5690	0.94	1.065	0.034	-0.10	12.83	14.00	1.309	0.047	22.2

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Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.

Head Test data of U-NII-2A											
Left cheek	802.11ac 80M	58/5290	0.94	1.065	0.193	0.01	16.49	17.80	1.353	0.278	22.2
Left tilted	802.11ac 80M	58/5290	0.94	1.065	0.224	-0.02	16.49	17.80	1.353	0.323	22.2
Right cheek	802.11ac 80M	58/5290	0.94	1.065	0.262	-0.06	16.49	17.80	1.353	0.377	22.2
Right tilted	802.11ac 80M	58/5290	0.94	1.065	0.335	0.09	16.49	17.80	1.353	**0.483**	22.2
Head Test data of U-NII-2C											
Left cheek	802.11ac 80M	138/5690	0.94	1.065	0.112	0.16	16.35	17.80	1.397	0.167	22.2
Left tilted	802.11ac 80M	138/5690	0.94	1.065	0.115	-0.05	16.35	17.80	1.397	0.171	22.2
Right cheek	802.11ac 80M	138/5690	0.94	1.065	0.151	-0.12	16.35	17.80	1.397	0.225	22.2
Right tilted	802.11ac 80M	138/5690	0.94	1.065	0.162	-0.09	16.35	17.80	1.397	0.241	22.2
Head Test data of U-NII-3											
Left cheek	802.11ac 80M	155/5775	0.94	1.065	0.105	0.13	16.82	17.80	1.253	0.140	22.2
Left tilted	802.11ac 80M	155/5775	0.94	1.065	0.103	0.11	16.82	17.80	1.253	0.137	22.2
Right cheek	802.11ac 80M	155/5775	0.94	1.065	0.135	-0.11	16.82	17.80	1.253	0.180	22.2
Right tilted	802.11ac 80M	155/5775	0.94	1.065	0.141	0.10	16.82	17.80	1.253	0.188	22.2
Body worn Test data of U-NII-2A (Separate 15mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.045	-0.01	16.49	17.80	1.353	0.065	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.061	-0.17	16.49	17.80	1.353	0.088	22.2
Body worn Test data of U-NII-2C(Separate 15mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.042	0.18	16.35	17.80	1.397	0.062	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.062	-0.05	16.35	17.80	1.397	0.092	22.2
Body worn Test data of U-NII-3(Separate 15mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.053	-0.19	16.82	17.80	1.253	0.071	22.2
Back side	802.11ac 80M	155/5775	88.36%	1.132	0.077	-0.12	16.82	17.80	1.253	**0.109**	22.2
Hotspot Test data of U-NII-1(Separate 10mm)											
Front side	802.11ac 80M	42/5210	0.94	1.065	0.141	-0.14	16.71	17.80	1.286	0.193	22.2
Back side	802.11ac 80M	42/5210	0.94	1.065	0.230	0.01	16.71	17.80	1.286	**0.315**	22.2
Left side	802.11ac 80M	42/5210	0.94	1.065	0.124	-0.15	16.71	17.80	1.286	0.170	22.2
Right side	802.11ac 80M	42/5210	0.94	1.065	0.106	-0.18	16.71	17.80	1.286	0.145	22.2
Top side	802.11ac 80M	42/5210	0.94	1.065	0.201	0.12	16.71	17.80	1.286	0.275	22.2
Hotspot Test data of U-NII-3 (Separate 10mm)											
Front side	802.11ac 80M	155/5775	0.94	1.065	0.093	-0.06	16.82	17.80	1.253	0.124	22.2
Back side	802.11ac 80M	155/5775	0.94	1.065	0.176	0.14	16.82	17.80	1.253	0.235	22.2
Left side	802.11ac 80M	155/5775	0.94	1.065	0.087	-0.09	16.82	17.80	1.253	0.116	22.2
Right side	802.11ac 80M	155/5775	0.94	1.065	0.087	0.18	16.82	17.80	1.253	0.116	22.2
Top side	802.11ac 80M	155/5775	0.94	1.065	0.093	-0.10	16.82	17.80	1.253	0.124	22.2
Test position	**Test mode**	**Test Ch./Freq.**	**Duty Cycle**	**Duty Cycle Scaled factor**	**SAR (W/kg)10-g**	**Power drift(dB)**	**Conducted power(dBm)**	**Tune up Limit(dBm)**	**Scaled factor**	**Scaled SAR(W/kg)**	**Liquid Temp.**
Product specific 10gSAR Test data of U-NII-2A(Separate 0mm)											
Front side	802.11ac 80M	58/5290	0.94	1.065	0.148	0.12	16.49	17.80	1.353	0.213	22.2
Back side	802.11ac 80M	58/5290	0.94	1.065	0.375	0.00	16.49	17.80	1.353	0.540	22.2
Left side	802.11ac 80M	58/5290	0.94	1.065	0.163	-0.06	16.49	17.80	1.353	0.235	22.2
Right side	802.11ac 80M	58/5290	0.94	1.065	0.106	0.06	16.49	17.80	1.353	0.153	22.2
Top side	802.11ac 80M	58/5290	0.94	1.065	0.269	-0.17	16.49	17.80	1.353	0.388	22.2
Product specific 10gSAR Test data of U-NII-2C(Separate 0mm)											
Front side	802.11ac 80M	138/5690	0.94	1.065	0.088	0.13	16.35	17.80	1.397	0.131	22.2
Back side	802.11ac 80M	138/5690	0.94	1.065	0.406	-0.01	16.35	17.80	1.397	**0.604**	22.2
Left side	802.11ac 80M	138/5690	0.94	1.065	0.114	-0.02	16.35	17.80	1.397	0.170	22.2
Right side	802.11ac 80M	138/5690	0.94	1.065	0.138	-0.09	16.35	17.80	1.397	0.205	22.2
Top side	802.11ac 80M	138/5690	0.94	1.065	0.181	0.18	16.35	17.80	1.397	0.269	22.2

Note: This project WLAN 5GHz (5250-5350 & 5470-5725) does not support Hotspot.

<BT>

Test position	Test mode	Test Ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg)1-g	Power drift(dB)	Conducted power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR(W/kg)	Liquid Temp.
Head Test data											
Left cheek	DH5	39/2441	0.77	1.31	0.065	-0.09	12.15	12.50	1.084	0.092	22
Left tilted	DH5	39/2441	0.77	1.31	0.036	-0.03	12.15	12.50	1.084	0.051	22
Right cheek	DH5	39/2441	0.77	1.31	0.126	0.08	12.15	12.50	1.084	**0.178**	22
Right tilted	DH5	39/2441	0.77	1.31	0.081	0.03	12.15	12.50	1.084	0.115	22
Body worn Test data(Separate 15mm)											
Front side	DH5	39/2441	0.77	1.31	0.002	-0.14	12.15	12.50	1.084	0.003	22
Back side	DH5	39/2441	0.77	1.31	0.025	-0.01	12.15	12.50	1.084	**0.035**	22
Hotspot Test data (Separate 10mm)											
Front side	DH5	39/2441	0.77	1.31	0.003	0.03	12.15	12.50	1.084	0.004	22
Back side	DH5	39/2441	0.77	1.31	0.056	0.09	12.15	12.50	1.084	**0.079**	22
Left side	DH5	39/2441	0.77	1.31	0.041	0.07	12.15	12.50	1.084	0.058	22
Right side	DH5	39/2441	0.77	1.31	0.052	0.08	12.15	12.50	1.084	0.074	22
Top side	DH5	39/2441	0.77	1.31	0.042	-0.12	12.15	12.50	1.084	0.059	22

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3 Simultaneous Transmission Analysis

3.1 Simultaneous Transmission Scenarios:

NO.	Simultaneous Transmission Configuration	Head	Body worn	Hotspot
1	GSM + WiFi	Yes	Yes	Yes
2	GSM + BT	Yes	Yes	Yes
3	WCDMA + WiFi	Yes	Yes	Yes
4	WCDMA + BT	Yes	Yes	Yes
5	LTE + WiFi	Yes*	Yes	Yes
6	LTE + BT	Yes	Yes	Yes
7	BT + 5G WIFI	Yes	Yes	Yes
8	BT + 2.4G WIFI(Chain0)	No	No	No
9	BT + 2.4G WIFI(Chain1)	Yes	Yes	Yes
10	GSM + BT + 5G WIFI	Yes	Yes	Yes
11	WCDMA + BT + 5G WIFI	Yes	Yes	Yes
12	LTE + BT + 5G WIFI	Yes*	Yes	Yes

Note:

1) Wi-Fi 2.4G(Chain0) and Bluetooth can't transmit simultaneously.

2) The device does not support DTM function.

3) * VoLTE or pre-installed VOIP applications are considered.

4) This project WLAN 5GHz (5250-5350 & 5470-5725) does not support Hotspot.

3.2 Simultaneous Transmission Combination Scenario

Test position		1							2	3	4	5	1+2	1+3	1+4	1+3+4	1+4+5
		Main Antenna SARmax (W/kg)							WiFi/BT Antenna SARmax (W/kg)			WiFI 2.4G (Chain1)	Summed 1g SARmax (W/kg)	Summed 1g SARmax (W/kg)	Summed 1g SARmax (W/kg)	Summed 1g SARmax (W/kg)	Summed 1g SARmax (W/kg)
		GSM850	GSM1900	WCDMA Band IV	WCDMA Band V	LTE Band 4	LTE Band 5	LTE Band 41	WiFi 2.4G	WiFi 5G	BT	WiFi 2.4G					
Head	Left Touch	0.258	0.065	0.141	0.299	0.091	0.288	0.119	0.235	0.281	0.092	0.101	0.534	0.580	0.391	0.672	0.492
	Left Tilt	0.145	0.002	0.105	0.219	0.069	0.194	0.042	0.171	0.323	0.051	0.009	0.390	0.542	0.270	0.593	0.279
	Right Touch	0.260	0.002	0.153	0.326	0.099	0.317	0.056	0.753	0.473	0.178	0.006	**1.079**	0.799	0.504	0.977	0.510
	Right Tilt	0.160	0.001	0.120	0.233	0.054	0.194	0.045	0.333	0.483	0.115	0.002	0.566	0.716	0.348	0.831	0.350
Body 15mm	Front	0.219	0.058	0.244	0.343	0.153	0.300	0.173	0.055	0.136	0.003	0.007	0.398	0.479	0.346	0.482	0.353
	Back	0.251	0.103	0.256	0.433	0.165	0.398	0.437	0.121	0.139	0.035	0.001	0.558	0.576	0.472	**0.611**	0.473
Hotspot	Front	0.328	0.268	0.394	0.332	0.252	0.303	0.308	0.097	0.193	0.004	0.002	0.491	0.587	0.398	0.591	0.400
	Back	0.482	0.347	0.510	0.479	0.298	0.449	0.879	0.272	0.398	0.079	0.080	1.151	1.277	0.958	**1.356**	1.038
	Left	0.274	0.172	0.223	0.228	0.101	0.210	0.156	0.074	0.170	0.058	0.002	0.348	0.444	0.332	0.502	0.334
	Right	0.373	0.052	0.114	0.322	0.052	0.285	0.094	0.056	0.163	0.074	0.006	0.429	0.536	0.447	0.610	0.453
	Top	/	/	/	/	/	/	/	0.154	0.275	0.059	0.004	0.154	0.275	0.059	0.334	0.063
	Bottom	0.274	0.178	0.345	0.200	0.224	0.168	0.755	/	/	/	/	0.755	0.755	0.755	0.755	0.755

Test position		Main Antenna SARmax (W/kg)							WiFi/BT Antenna SARmax (W/kg)				Summed 10g SARmax	Summed 10g SARmax	Summed 10g SARmax	Summed 10g SARmax	Summed 10g SARmax
		GSM850	GSM1900	WCDMA Band IV	WCDMA Band V	LTE Band 4	LTE Band 5	LTE Band 41	WiFi 2.4G	WiFi 5G	BT						
Product specific 10g SAR	Front	/	/	/	/	/	/	/	/	0.217	/		/	0.217	/	0.217	/
	Back	/	/	/	/	/	/	/	/	0.625	/		/	0.625	/	**0.625**	/
	Left	/	/	/	/	/	/	/	/	0.238	/		/	0.238	/	0.238	/
	Right	/	/	/	/	/	/	/	/	0.279	/		/	0.279	/	0.279	/
	Top	/	/	/	/	/	/	/	/	0.390	/		/	0.390	/	0.390	/
	Bottom	/	/	/	/	/	/	/	/	/	/		/	/	/	/	/

Note: Wi-Fi 2.4G(Chain0) and Bluetooth can't transmit simultaneously.

4 Instruments List

Test Platform	SPEAG DASY5 Professional
Location	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Description	SAR Test System (Frequency range 300MHz-6GHz)
Software Reference	DASY52; SEMCAD

Hardware Reference

Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Twin Phantom	SPEAG	SAM 2	1913	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 3	1912	NCR	NCR
☒	Twin Phantom	SPEAG	SAM 11	1410	NCR	NCR
☒	DAE	SPEAG	DAE4	1267	2020-06-12	2021-06-11
☒	E-Field Probe	SPEAG	EX3DV4	3748	2020-07-29	2021-07-28
☒	Validation Kits	SPEAG	D835V2	4d105	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D1750V2	1149	2019-05-21	2022-05-20
☒	Validation Kits	SPEAG	D1900V2	5d028	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2450V2	733	2019-12-17	2022-12-16
☒	Validation Kits	SPEAG	D2600V2	1125	2019-05-20	2022-05-19
☒	Validation Kits	SPEAG	D5GHzV2	1165	2019-12-20	2022-12-19
☒	Agilent Network Analyzer	Agilent	E5071C	MY46523590	2020-04-02	2021-04-01
☒	Dielectric Probe Kit	Agilent	85070E	US01440210	NCR	NCR
☒	Universal Radio Communication Tester	R&S	CMW500	124587	2020-04-02	2021-04-01
☒	Radio Communication Analyzer	Anritsu Corporation	MT8821C	6201502984	2020-06-11	2021-06-10
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	Agilent	N5171B	MY53050736	2020-04-15	2021-04-14
☒	Preamplifier	Mini-Circuits	ZHL-42W	15542	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	073501433	NCR	NCR
☒	Power Meter	Agilent	E4416A	GB41292095	2020-04-15	2021-04-14
☒	Power Sensor	Agilent	8481H	MY41091234	2020-04-15	2021-04-14
☒	Power Sensor	R&S	NRP-Z92	100025	2020-04-16	2021-04-15
☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
☒	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
☒	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR

☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	MingGao	T809	NA	2020-04-15	2021-04-14
☒	Humidity and Temperature Indicator	KIMTOKA	KIMTOKA	NA	2020-04-21	2021-04-20

Note: All the equipments are within the valid period when the tests are performed.

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5 Measurements

Please see the Appendix B

6 SAR System Performance Check

Please see the Appendix A

7 Photographs

Please see the Appendix D

8 DAE & Probe Calibration Certificate

Please see the Appendix C

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9 SAR measurement variability and uncertainty

SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ⩾ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ⩾ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ⩾1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

SAR measurement variability

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

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