



Report No.:

T220114R01-SF

WIFI FCC ID: XHM-211105
WWAN FCC ID: XHM-211130

Page: 1 / 60
Rev.: 00

SAR TEST REPORT

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

for
Mobile POS

Model Name.: M285

Prepared for:

FLYTECH Technology Co., Ltd.
No. 168, Sing-Ai Rd., Neihu District 11494, Taipei City, Taiwan

Prepared by

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Issue Date: April 14, 2022

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Report No.: T220114R01-SF

Page: 2 / 60
Rev.: 00

Revision History

Rev.	Issue Date	Revisions	Revised By
00	April 14, 2022	Initial Issue	Doris Chu



Table of Contents

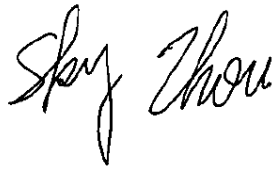
1	ATTESTATION OF TEST RESULTS	4
2	TEST SPECIFICATION, METHODS AND PROCEDURES	5
3	DEVICE UNDER TEST (DUT) INFORMATION	6
	3.1 DUT DESCRIPTION	6
	3.2 WIRELESS TECHNOLOGIES	7
	GENERAL LTE SAR TEST AND REPORTING CONSIDERATIONS	8
4	SAR MEASUREMENT SYSTEM	11
	4.1 SYSTEM COMPONENTS	12
	4.2 SAR SCAN PROCEDURES	15
5	MEASUREMENT UNCERTAINTY	17
6	RF EXPOSURE CONDITIONS (TEST CONFIGURATIONS)	18
	6.1 STANDALONE SAR TEST EXCLUSION CONSIDERATIONS	18
	6.2 REQUIRED TEST CONFIGURATIONS	20
7	DIELECTRIC PROPERTY MEASUREMENTS & SYSTEM CHECK	21
	7.1 DIELECTRIC PROPERTY MEASUREMENTS	21
	7.2 SYSTEM CHECK	24
8	CONDUCTED OUTPUT POWER MEASUREMENTS	26
	8.1 LTE	26
	8.2 WI-FI 2.4GHZ (DTS BAND)	46
	8.3 WI-FI 5GHZ (U-NII BANDS)	47
	8.4 BLUETOOTH	48
9	MEASURED AND REPORTED (SCALED) SAR RESULTS	50
	9.1 LTE BAND 1 (20MHZ BANDWIDTH)	50
	9.2 LTE BAND 4 (20MHZ BANDWIDTH)	50
	9.3 LTE BAND 5 (10MHZ BANDWIDTH)	50
	9.4 LTE BAND 12 (10MHZ BANDWIDTH)	50
	9.5 LTE BAND 13 (10MHZ BANDWIDTH)	50
	9.6 LTE BAND 14 (10MHZ BANDWIDTH)	50
	9.7 LTE BAND 26 (15MHZ BANDWIDTH)	50
	9.8 LTE BAND 41 (20MHZ BANDWIDTH)	51
	9.9 LTE BAND 48 (20MHZ BANDWIDTH)	51
	9.10 WI-FI 2.4GHZ	51
	9.11 WI-FI 5GHZ	52
	9.12 BLUETOOTH	52
10	SAR MEASUREMENT VARIABILITY	53
11	SIMULTANEOUS TRANSMISSION SAR ANALYSIS	54
	11.1 SUM OF THE SAR FOR LTE BAND 2 & WI-FI & BT	57
	11.2 SUM OF THE SAR FOR LTE BAND 4 & WI-FI & BT	57
	11.3 SUM OF THE SAR FOR LTE BAND 5 & WI-FI & BT	57
	11.4 SUM OF THE SAR FOR LTE BAND 12 & WI-FI & BT	57
	11.5 SUM OF THE SAR FOR LTE BAND 13 & WI-FI & BT	57
	11.6 SUM OF THE SAR FOR LTE BAND 14 & WI-FI & BT	57
	11.7 SUM OF THE SAR FOR LTE BAND 26 & WI-FI & BT	57
	11.8 SUM OF THE SAR FOR LTE BAND 41 & WI-FI & BT	58
	11.9 SUM OF THE SAR FOR LTE BAND 48 & WI-FI & BT	58
	11.10 SUM OF THE SAR FOR WI-FI & BT	58
12	EQUIPMENT LIST & CALIBRATION STATUS	59
13	FACILITIES	60
14	APPENDIXES	60



Report No.: T220114R01-SF

Page: 4 / 60
Rev.: 00

1 Attestation of Test Results

Applicant Name	FLYTECH Technology Co., Ltd.			
Model Name	M285			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average (1g of tissue)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population	1.6		4	
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Body	0.788	0.974	0.559	0.172
Simultaneous TX	1.575			
Receive EUT Date:	January 14, 2022			
Date Tested	January 29 ~ February 24, 2022			
Test Results	Pass			
Compliance Certification Services Inc. , tested the above equipment in accordance with the requirements set forth in the above standards. Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. All indications of Pass/Fail in this report are opinions expressed by Compliance Certification Services Inc, based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.				
Approved & Released By:		Tested by:		
				
Kevin Tsai Deputy Manager Compliance Certification Services Inc.		Sky Zhou Asst. Section Manager Compliance Certification Services Inc.		



2 Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v07
- 616217 D04 SAR for laptop and tablets v01r02
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D05 SAR for LTE Devices v02r05

In addition to the above, the following information was used:

- TCB workshop October, 2014; Page 37, RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop April 2015; Page 33, RF Exposure Procedures (Overlapping LTE Bands)
- TCB workshop October, 2015; Page 6, RF Exposure Procedures (KDB 941225 D05A)
- TCB workshop October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)



3 Device Under Test (DUT) Information

3.1 DUT Description

Applicant Name	FLYTECH Technology Co., Ltd.
Applicant Address	No. 168, Sing-Ai Rd., Neihu District 11494, Taipei City, Taiwan
Manufacturer Name	FLYTECH Technology Co., Ltd.
Manufacturer Address	No. 168, Sing-Ai Rd., Neihu District 11494, Taipei City, Taiwan
Product	Mobile POS
Trade Name	FLYTECH
Model No.	M285
Model Discrepancy	N/A
Device Dimension	Overall (Length x Width): 275 mm x 198 mm Overall Diagonal: 325 mm Display Diagonal: 260 mm
Back Cover	☒ Normal Battery Cover ☐ Normal Battery Cover with NFC ☐ Wireless Charger Battery Cover ☐ Wireless Charger Battery Cover with NFC ☐ The Back Cover is not removable.
Battery Options	☒ Standard – Lithium-ion battery, Rating 11.4Vdc, 52.5Wh ☐ Extended (large capacity) ☐ The rechargeable battery is not user accessible.
Hardware Version	V09C
Software Version	F8B0-017
Sample Stage	PVT

3.2 Wireless Technologies

Wireless technologies	Frequency bands	Peak Antenna Gain (dBi)	Operating mode	Duty Cycle used for SAR testing
LTE(Main)	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 13 FDD Band 14 FDD Band 26 TDD Band 41 TDD Band 48	3.99	QPSK 16QAM 64QAM	100% (FDD) 63.3% (TDD) ^{Power class3}
Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No				
Antenna Specification	Brand Name	ARISTOTLE		
	Type	Monopole		
	Parts Number	RFA-LTE-JP332M-4G350		
Wi-Fi(Main)	2.4 GHz	2.99	802.11b 802.11g 802.11n (HT20) 802.11n (HT40) 802.11ax (HE 20) 802.11ax (HE40)	99.05% (802.11b) 96.30% (802.11g) 99.06% (802.11n/ax 20MHz BW) 99.25% (802.11n/ax 40MHz BW)
	5.2 GHz ⁴	2.89	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80) 802.11ax (HE20) 802.11ax (HE40) 802.11ax (HE80)	98.17% (802.11a) 99.25% (802.11n/ac/ax 20MHz BW) 99.24% (802.11n/ac/ax 40MHz BW) 99.24% (802.11ac/ax 80MHz BW)
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
Antenna Specification	Brand Name	ARISTOTLE		
	Type	Monopole		
	Parts Number	RFA-25-JP308-4G-350		
Wi-Fi(Aux)	2.4 GHz	2.99	802.11b 802.11g 802.11n (HT20) 802.11n (HT40) 802.11ax (HE 20) 802.11ax (HE40)	99.05% (802.11b) 96.30% (802.11g) 99.06% (802.11n/ax 20MHz BW) 99.25% (802.11n/ax 40MHz BW)
	5.2 GHz ⁴	2.89	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80) 802.11ax (HE20) 802.11ax (HE40) 802.11ax (HE80)	98.17% (802.11a) 99.25% (802.11n/ac/ax 20MHz BW) 99.24% (802.11n/ac/ax 40MHz BW) 99.24% (802.11ac/ax 80MHz BW)
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
Bluetooth ⁵	2.4 GHz	2.99	BLE_2 Mbps	33.6%
Antenna Specification	Brand Name	ARISTOTLE		
	Type	Monopole		
	Parts Number	RFA-25-JP308-4B-135		

Notes:

- The sample selected for test was prototype that representative to production product and was provided by manufacturer
- Variant information between/among model numbers / trademarks is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.
- Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received
- The device turns off U-NII-2A , U-NII-2C and U-NII-3.
- The device turns off BR,EDR,LE(1 Mbps)

General LTE SAR Test and Reporting Considerations

Item	Description					
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	18700/ 1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5
	Mid	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100/ 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5
	Band 4	Frequency range: 1710 - 1755 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5
	Band 5	Frequency range: 824 - 849 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5
	Band 12	Frequency range: 698 - 716 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5
	Band 13	Frequency range: 777 - 787 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low				23205/ 779.5	
	Mid			23230/ 782	23230/ 782	
	High				23255/ 784.5	
	Band 14	Frequency range: 788 - 798 MHz				
		Channel Bandwidth				
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz
	Low				23305/ 790.5	
	Mid			23330/ 793	23330/ 793	
	High				23355/ 795.5	

Frequency range, Channel Bandwidth,
Numbers and Frequencies

Band 26	Frequency range: 814 - 849 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3
Band 41 ¹	Frequency range: 2496 - 2690 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	39750/2506					
Low-Mid	40185/2549.5					
Mid	40620/2593					
Mid-High	41055/2636.5					
High	41490/2680					
Band 48	Frequency range: 3550 - 3700 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	55340/ 3560	55315/ 3557.5	55290/ 3555	55265/ 3552.5		
Mid	55990/ 3625	55990/ 3625	55990/ 3625	55990/ 3625		
High	56640/ 3690	56665/ 3692.5	56690/ 3695	56715/ 3697.5		

Maximum power reduction (MPR)

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

M

The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values.

A-MPR (additional MPR) was disabled during SAR testing

Spectrum plots for RB configurations

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

Notes:

1. LTE band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
2. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI)

3.3 LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices v02r02, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$	$13152 \cdot T_s$	$12800 \cdot T_s$	-	-	-
9	$13168 \cdot T_s$			-	-	-
10	$13168 \cdot T_s$					

Table 4.2-2: Uplink-downlink configurations & Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink $\times (T_s) \times \#$ of S + $\#$ of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

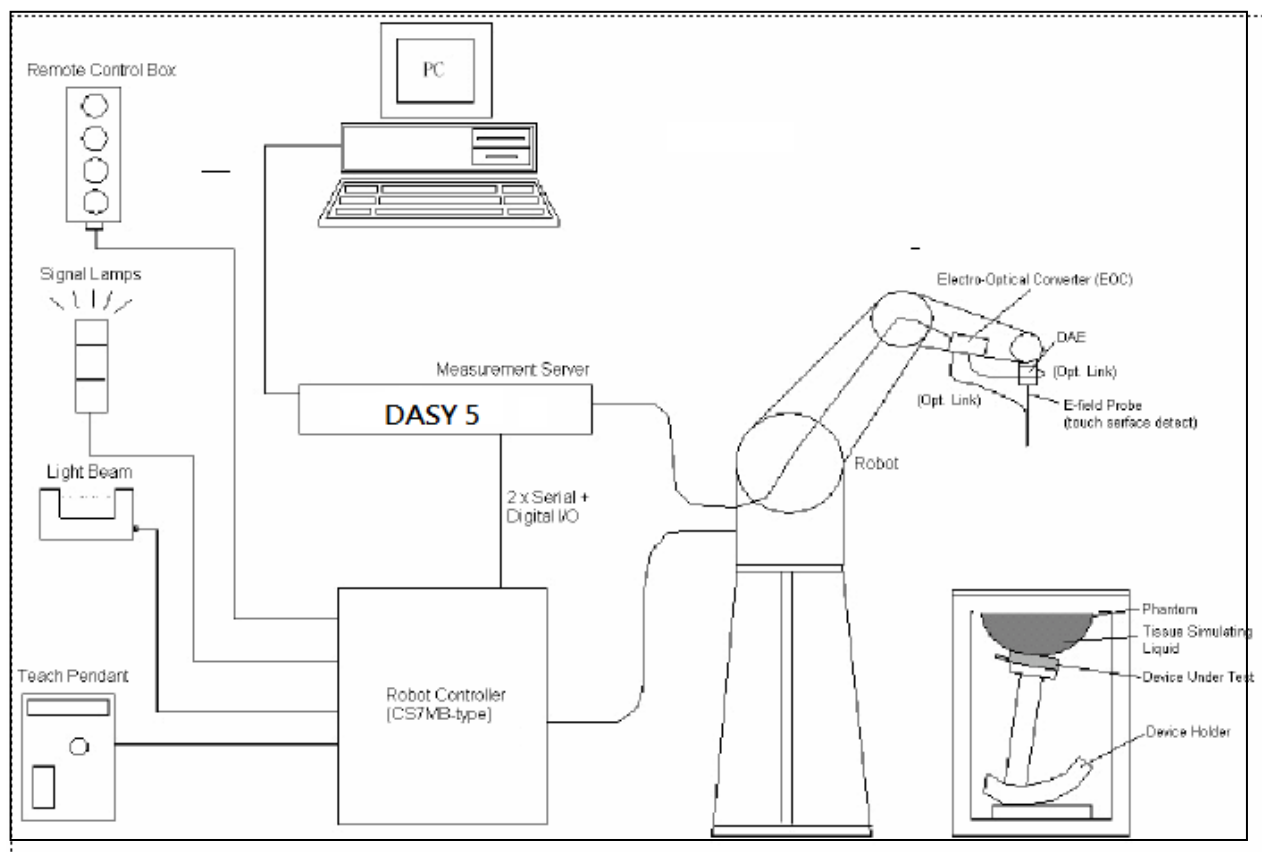
where

$T_s = 1/(15000 \times 2048)$ seconds

Note(s):

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle and Special Subframe 7.

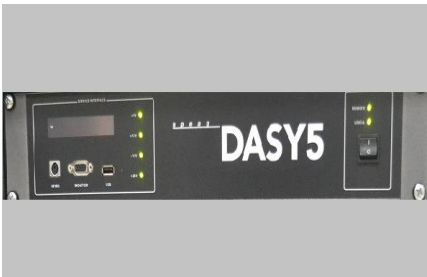
4 SAR Measurement System



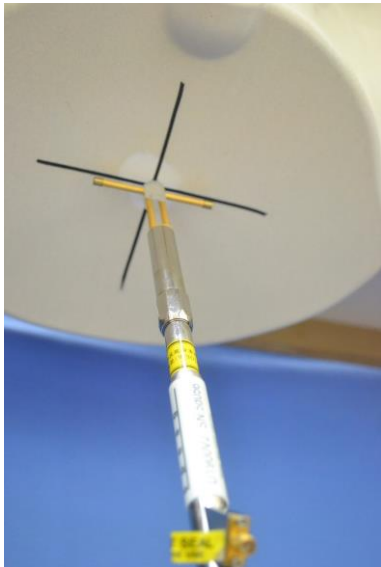
The DASYS5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating 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 the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- 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 or Windows XP.
- DASYS software version: NEO52 D10.3 S14.6.13.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

4.1 System Components

DASY5 Measurement Server	
	The DASY5 measurement server is based on a PC/104 CPU board with a 166MHz low-power Pentium, 32MB chip disk and 64MB RAM. The necessary circuits for communication with either the DAE4 electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY5 I/O-board, which is directly connected to the PC/104 bus of the CPU board. The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
	The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pinout and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server. Calibration: No calibration required.
Data Acquisition Electronics (DAE)	
	The data acquisition electronics (DAE4) consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE4 box is 200MΩ; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 Isotropic E-Field Probe for Dosimetric Measurements	
	Construction: Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
	Calibration: Basic Broad Band Calibration in air: 10-3000 MHz. Conversion Factors (CF) for HSL 900 and HSL 1800 CF-Calibration for other liquids and frequencies upon request. Frequency: 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz) Directivity: ± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in HSL (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: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1 mm Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
SAM Phantom	
	Construction: The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE1528: 2013. 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 manually teaching three points with the robot. Shell Thickness: 2 ± 0.2 mm Filling Volume: Approx. 25 liters Dimensions: Height: 810mm; Length: 1000mm; Width: 500mm
ELI Phantom	
	Construction: Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEEE1528: 2013 and all known tissue simulating liquids. ELI4 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 supported by software version DASY5 and higher and is compatible with all SPEAG dosimetric probes and dipoles Shell Thickness: 2.0 ± 0.2 mm (sagging: <1%) Filling Volume: Approx. 25 liters Dimensions: Major ellipse axis: 600 mm Minor axis: 400 mm 500mm

Device Holder for SAM Twin Phantom	
	Construction: In combination with the Twin SAM Phantom V4.0 or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, and flat phantom).
System Validation Kits for SAM Phantom	
	Construction: Symmetrical dipole with 1/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor. Frequency: 2450, 5300, 5600, 5800 MHz Return loss: > 20 dB at specified validation position Power capability: > 100 W (f < 1GHz); > 40 W (f > 1GHz) Dimensions: D2450V2: dipole length: 51.5 mm; overall height: 290 mm D5GHzV2: dipole length: 20.6 mm; overall height: 300 mm
System Validation Kits for ELI phantom	
	Construction: Symmetrical dipole with 1/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor. Frequency: 2450, 5300, 5600, 5800 MHz Return loss: > 20 dB at specified validation position Power capability: > 100 W (f < 1GHz); > 40 W (f > 1GHz) Dimensions: D2450V2: dipole length: 51.5 mm; overall height: 290 mm D5GHzV2: dipole length: 20.6 mm; overall height: 300 mm

4.2 SAR Scan Procedures

Step 1: Power Reference Measurement

The reference and drift jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE1528 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe abgle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

- Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}$
Maximum zoom scan spatial resolution, normal to phantom surface	Uniform grid: $\Delta z_{\text{Zoom}}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Maximum zoom scan volume	x, y, z	$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$	

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction



Report No.: T220114R01-SF

Page: 17 / 60
Rev.: 00

5 Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE1528: 2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.



6 RF Exposure Conditions (Test Configurations)

Refer to Appendixes 1 for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

6.1 Standalone SAR Test Exclusion Considerations

Since the Dedicated Host Approach is applied, the SAR-based exemption in Appendix B of KDB 447498 is applied together with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.



SAR Test Exclusion Calculations for $0.3 \text{ GHz} \leq f < 1.5 \text{ GHz}$

Tx Interface	Frequency (GHz)	Output Power		Separation Distances (cm)					P _{avg} (mW)					Exemption result				
		dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
0.3GHz ≤ f < 1.5GHz																		
LTE Band 5	0.844	24.30	269	1	6.7	25.4	6.4	1	24	364	1722	341	24	-MEASURE-	1.182	0.250	1.262	-MEASURE-
LTE Band 12	0.711	24.00	251	1	6.7	25.4	6.4	1	29	346	1450	326	29	-MEASURE-	1.161	0.277	1.232	-MEASURE-
LTE Band 13	0.782	24.00	251	1	6.7	25.4	6.4	1	26	356	1595	334	26	-MEASURE-	1.128	0.252	1.202	-MEASURE-
LTE Band 14	0.793	24.00	251	1	6.7	25.4	6.4	1	26	358	1618	336	26	-MEASURE-	1.122	0.248	1.195	-MEASURE-
LTE Band 26	0.8415	24.00	251	1	6.7	25.4	6.4	1	24	364	1717	341	24	-MEASURE-	1.103	0.234	1.178	-MEASURE-

SAR Test Exclusion Calculations for $1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}$

Tx Interface	Frequency (GHz)	Output Power		Separation Distances (cm)						P _{avg} (mW)					Exemption result				
		dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4	
1.5GHz ≤ f ≤ 6GHz																			
LTE Band 2	1.9	24.00	251	1	6.7	25.4	6.4	1	12	406	3060	373	12	-MEASURE-	0.989	0.131	1.077	-MEASURE-	
LTE Band 4	1.745	24.00	251	1	6.7	25.4	6.4	1	13	414	3060	381	13	-MEASURE-	0.970	0.131	1.054	-MEASURE-	
LTE Band 41	2.68	23.80	240	1	6.7	25.4	6.4	1	10	374	3060	343	10	-MEASURE-	1.027	0.125	1.120	-MEASURE-	
LTE Band 48	3.69	23.80	240	1	6.7	25.4	6.4	1	8	347	3060	317	8	-MEASURE-	1.107	0.125	1.211	-MEASURE-	
WiFi 2.4GHz (Main)	2.462	21.50	141	0.6	6	0.9	11.5	26.3	4	309	8	1067	3060	-MEASURE-	0.730	-MEASURE-	0.211	0.074	
WiFi 5.2GHz (Main)	5.24	15.50	35	0.6	6	0.9	11.5	26.3	2	254	5	975	3060	-MEASURE-	0.220	-MEASURE-	0.057	0.018	
WiFi 2.4GHz (Aux)	2.462	19.50	89	0.6	3.2	26.1	14.3	1.1	4	94	3060	1615	12	-MEASURE-	1.515	0.047	0.088	-MEASURE-	
WiFi 5.2GHz (Aux)	5.24	17.00	50	0.6	3.2	26.1	14.3	1.1	2	69	3060	1529	8	-MEASURE-	1.159	0.026	0.052	-MEASURE-	
WiFi 2.4GHz (MIMO)	2.462	21.01	126	0.6	3.2	0.9	11.5	1.1	4	94	8	1067	12	-MEASURE-	-MEASURE-	-MEASURE-	0.189	-MEASURE-	
Bluetooth (Aux)	2.48	10.00	10	0.6	3.2	26.1	14.3	1.1	4	93	3060	1615	12	-MEASURE-	0.172	0.005	0.010	1.333	

6.2 Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 6.1:

Test Configurations	Rear	Edge1	Edge2	#REF!	Edge3	Edge4
0.3GHz ≤ f < 1.5GHz						
LTE Band 5	Yes	No	No	No	No	Yes
LTE Band 12	Yes	No	No	No	No	Yes
LTE Band 13	Yes	No	No	No	No	Yes
LTE Band 14	Yes	No	No	No	No	Yes
LTE Band 26	Yes	No	No	No	No	Yes
1.5GHz ≤ f ≤ 6GHz						
LTE Band 2	Yes	No	No	No	No	Yes
LTE Band 4	Yes	No	No	No	No	Yes
LTE Band 41	Yes	No	No	No	No	Yes
LTE Band 48	Yes	No	No	No	No	Yes
WiFi 2.4GHz(Main)	Yes	No	Yes	No	No	No
WiFi 5.2GHz(Main)	Yes	No	Yes	No	No	No
WiFi 2.4GHz(Aux)	Yes	No	No	No	No	Yes
WiFi 5.2GHz(Aux)	Yes	No	No	No	No	Yes
WiFi 2.4GHz(MIMO)	Yes	Yes	Yes	No	No	Yes
Bluetooth(Aux)	Yes	No	No	No	No	Yes

Note(s):

Yes = Testing is required.

No = Testing is not required.

7 Dielectric Property Measurements & System Check

7.1 Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

The dielectric constant (ϵ_r) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within $\pm 5\%$ of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for ϵ_r and σ may be relaxed to $\pm 10\%$. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Typical Composition of Ingredients for Liquid Tissue Phantoms

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

alt: 99+% Pure Sodium Chloride

Sugar: 98+% Pure Sucrose

Water: De-ionized, 16 MΩ⁺ resistivity

HEC: Hydroxy thyl Cellulose

DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]

Triton X-100 (ultra-pure): Polyethylene glycol mono [4-(1, 1, 3, 3-tetramethylbutyl)phenyl]ether

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

Dielectric Property Measurements Results:

Date	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
			Measured	Target	Delta (%)	Measured	Target	Delta (%)
2022/2/17	Head	700	40.92	42.17	-2.96	0.84	0.89	-4.85
		750	40.75	41.90	-2.74	0.86	0.89	-3.48
		810	40.54	41.62	-2.59	0.88	0.90	-1.90
2022/2/17	Head	810	40.54	41.62	-2.59	0.88	0.90	-1.90
		835	40.43	41.50	-2.58	0.89	0.90	-1.22
		860	40.39	41.50	-2.67	0.90	0.93	-3.13
2022/2/23	Head	1710	41.62	40.14	3.69	1.28	1.35	-4.75
		1750	41.63	40.10	3.82	1.32	1.37	-4.01
		1810	41.29	40.00	3.23	1.37	1.40	-2.14
2022/2/18	Head	1810	40.28	40.00	0.70	1.34	1.40	-4.64
		1900	40.13	40.00	0.33	1.38	1.40	-1.71
		1920	40.13	40.00	0.33	1.38	1.40	-1.14
2022/1/29	Head	2400	38.62	39.30	-1.73	1.84	1.76	4.50
		2450	38.51	39.20	-1.76	1.88	1.80	4.28
		2500	38.47	39.13	-1.69	1.93	1.85	3.89
2022/2/24	Head	2400	40.03	39.30	1.86	1.84	1.76	4.89
		2450	39.94	39.20	1.89	1.89	1.80	4.72
		2500	39.90	39.13	1.97	1.93	1.85	4.32
2022/2/18	Head	2500	37.84	39.13	-3.30	1.91	1.85	2.81
		2600	37.48	39.00	-3.90	2.02	1.96	2.86
		2680	37.21	38.90	-4.34	2.11	2.05	2.88
2022/2/23	Head	3500	38.36	37.95	1.08	2.80	2.92	-3.88
		3550	38.30	37.90	1.06	2.84	2.97	-4.28
		3600	38.19	37.84	0.92	2.88	3.02	-4.64
2022/2/23	Head	3600	38.19	37.84	0.92	2.88	3.02	-4.64
		3650	38.09	37.79	0.79	2.92	3.07	-4.89
		3700	38.00	37.73	0.72	2.97	3.12	-4.90
2022/2/7	Head	5090	35.64	36.11	-1.30	4.54	4.55	-0.13
		5200	35.18	36.00	-2.28	4.64	4.66	-0.36
		5250	35.01	35.95	-2.61	4.71	4.71	0.08
2022/2/9	Head	5090	34.82	36.11	-3.57	4.37	4.55	-3.87
		5200	34.46	36.00	-4.28	4.45	4.66	-4.53
		5250	34.40	35.95	-4.31	4.56	4.71	-3.14

7.2 System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15 mm (below 1 GHz) and 10 mm (above 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube
- Distance between probe sensors and phantom surface was set to 2 mm.
- The dipole input power (forward power) was 250 mW (below 2GHz) and 100 mW
- The results are normalized to 1 W input power.



Report No.: T220114R01-SF

Page: 25 / 60
Rev.: 00

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within $\pm 10\%$ of the manufacturer calibrated dipole SAR target. Refer to Appendix 2 for the SAR System Check Plots.

Date	Tissue Type	Dipole S/N	Input Power (mW)	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Delta 1g ± 10 (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Delta 10g ± 10 (%)	Plot No.
2022/2/17	Head	D750V3-1078	250	2.30	8.58	9.2	7.23	1.49	5.59	5.96	6.62	1
2022/2/17	Head	D835V2-4d063	250	2.31	9.64	9.24	-4.15	1.49	6.29	5.96	-5.25	2
2022/2/23	Head	D1750V2-1111	250	8.80	36.40	35.2	-3.30	4.61	19.00	18.44	-2.95	3
2022/2/18	Head	D1900V2-5d173	250	10.10	39.30	40.4	2.80	5.19	20.50	20.76	1.27	4
2022/1/29	Head	D2450V2-727	250	12.20	53.90	48.8	-9.46	5.87	25.10	23.48	-6.45	5
2022/2/24	Head	D2450V2-727	250	12.80	53.90	51.2	-5.01	6.17	25.10	24.68	-1.67	6
2022/2/18	Head	D2600V2-1058	250	15.00	55.40	60	8.30	6.69	24.40	26.76	9.67	7
2022/2/23	Head	D3500V2-1009	100	6.87	65.50	68.7	4.89	2.62	24.80	26.2	5.65	8
2022/2/23	Head	D3700V2-1057	100	6.94	66.30	69.4	4.68	2.55	24.00	25.5	6.25	9
2022/2/7	Head	D5GHzV2-1040-5200	100	7.89	76.90	78.9	2.60	2.24	21.80	22.4	2.75	10
2022/2/9	Head	D5GHzV2-1040-5200	100	7.51	76.90	75.1	-2.34	2.14	21.80	21.4	-1.83	11

8 Conducted Output Power Measurements

8.1 LTE

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18700	18900	19100	
						1860 MHz	1880 MHz	1900 MHz	
LTE Band 2	20	QPSK	1	0	0	23.11	23.22	23.50	24.0
			1	49	0	22.92	23.14	23.26	24.0
			1	99	0	22.80	22.96	23.19	24.0
			50	0	1	22.02	22.18	22.41	23.0
			50	24	1	21.99	22.20	22.38	23.0
			50	50	1	21.88	22.16	22.27	23.0
			100	0	1	22.04	22.21	22.37	23.0
		16QAM	1	0	1	22.31	22.36	22.77	23.0
			1	49	1	22.22	22.29	22.44	23.0
			1	99	1	22.05	22.26	22.41	23.0
			50	0	2	20.88	21.18	21.26	22.0
			50	24	2	20.79	21.07	21.13	22.0
			50	50	2	20.70	20.99	21.10	22.0
			100	0	2	20.73	21.02	21.15	22.0
		64QAM	1	0	2	22.32	22.38	22.70	22.0
			1	49	2	22.16	22.28	22.45	22.0
			1	99	2	21.88	22.14	22.32	22.0
			50	0	3	20.75	20.95	20.98	21.0
			50	24	3	20.72	20.86	20.89	21.0
			50	50	3	20.64	20.85	20.92	21.0
			100	0	3	20.66	20.89	20.90	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18675	18900	19125	
						1857.5 MHz	1880 MHz	1902.5 MHz	
LTE Band 2	15	QPSK	1	0	0	23.10	23.19	23.37	24.0
			1	37	0	22.82	23.01	23.07	24.0
			1	74	0	22.77	22.94	23.08	24.0
			36	0	1	21.87	21.99	22.24	23.0
			36	20	1	21.87	21.96	22.17	23.0
			36	39	1	21.78	21.82	22.14	23.0
			75	0	1	21.81	21.93	22.26	23.0
		16QAM	1	0	1	22.24	22.41	22.58	23.0
			1	37	1	22.08	22.33	22.52	23.0
			1	74	1	22.00	22.34	22.45	23.0
			36	0	2	20.72	21.48	21.48	22.0
			36	20	2	20.66	21.41	21.55	22.0
			36	39	2	20.60	21.42	21.58	22.0
			75	0	2	20.65	21.42	21.47	22.0
		64QAM	1	0	2	21.40	21.50	21.70	22.0
			1	37	2	21.13	21.69	21.56	22.0
			1	74	2	21.02	21.59	21.60	22.0
			36	0	3	19.84	20.65	20.56	21.0
			36	20	3	19.73	20.60	20.68	21.0
			36	39	3	19.68	20.56	20.55	21.0
			75	0	3	19.81	20.53	20.57	21.0

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18650	18900	19150	
						1855 MHz	1880 MHz	1905 MHz	
LTE Band 2	10	QPSK	1	0	0	22.96	23.10	23.32	24.0
			1	25	0	22.88	22.95	23.27	24.0
			1	49	0	22.74	22.82	23.18	24.0
			25	0	1	21.91	22.06	22.21	23.0
			25	12	1	21.84	22.00	22.12	23.0
			25	25	1	21.80	21.98	22.16	23.0
			50	0	1	21.83	21.94	22.22	23.0
		16QAM	1	0	1	22.12	22.23	22.49	23.0
			1	25	1	22.05	22.33	22.47	23.0
			1	49	1	22.21	22.33	22.53	23.0
			25	0	2	21.04	21.19	21.43	22.0
			25	12	2	21.06	21.21	21.48	22.0
			25	25	2	21.06	21.18	21.34	22.0
			50	0	2	21.12	21.30	21.41	22.0
		64QAM	1	0	2	21.42	21.53	21.79	22.0
			1	25	2	21.31	21.61	21.74	22.0
			1	49	2	21.44	21.56	21.86	22.0
			25	0	3	20.30	20.70	20.79	21.0
			25	12	3	20.43	20.71	20.85	21.0
			25	25	3	20.42	20.70	20.71	21.0
			50	0	3	20.39	20.57	20.76	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18625	18900	19175	
						1852.5 MHz	1880 MHz	1907.5 MHz	
LTE Band 2	5	QPSK	1	0	0	22.91	23.04	23.22	24.0
			1	12	0	22.84	22.97	23.20	24.0
			1	24	0	22.83	22.88	23.26	24.0
			12	0	1	21.94	21.89	22.12	23.0
			12	7	1	21.93	21.91	22.18	23.0
			12	13	1	21.85	21.88	22.14	23.0
			25	0	1	21.89	22.00	22.28	23.0
		16QAM	1	0	1	22.05	22.14	22.32	23.0
			1	12	1	22.07	22.07	22.24	23.0
			1	24	1	22.15	22.01	22.20	23.0
			12	0	2	21.11	21.06	21.31	22.0
			12	7	2	21.09	21.15	21.21	22.0
			12	13	2	21.05	21.11	21.15	22.0
			25	0	2	21.10	21.17	21.25	22.0
		64QAM	1	0	2	21.32	21.44	21.75	22.0
			1	12	2	21.25	21.51	21.89	22.0
			1	24	2	21.23	21.45	21.79	22.0
			12	0	3	20.28	20.56	20.88	21.0
			12	7	3	20.29	20.51	20.79	21.0
			12	13	3	20.24	20.58	20.78	21.0
			25	0	3	20.25	20.39	20.85	21.0

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18615	18900	19185	
						1851.5 MHz	1880 MHz	1908.5 MHz	
LTE Band 2	3	QPSK	1	0	0	22.84	23.02	23.15	24.0
			1	8	0	22.69	22.93	23.14	24.0
			1	14	0	22.76	22.98	23.18	24.0
			8	0	1	21.72	21.89	22.07	23.0
			8	4	1	21.78	22.04	22.22	23.0
			8	7	1	21.78	21.87	22.14	23.0
			15	0	1	21.75	21.87	22.21	23.0
		16QAM	1	0	1	21.94	22.04	22.24	23.0
			1	8	1	21.81	22.14	22.29	23.0
			1	14	1	21.79	22.05	22.14	23.0
			8	0	2	20.79	21.17	21.21	22.0
			8	4	2	20.86	21.03	21.14	22.0
			8	7	2	20.98	21.16	21.18	22.0
			15	0	2	20.91	21.20	21.20	22.0
		64QAM	1	0	2	21.22	21.31	21.60	22.0
			1	8	2	21.21	21.38	21.62	22.0
			1	14	2	21.07	21.33	21.77	22.0
			8	0	3	20.12	20.34	20.69	21.0
			8	4	3	20.22	20.41	20.69	21.0
			8	7	3	20.15	20.26	20.63	21.0
			15	0	3	20.09	20.29	20.63	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						18607	18900	19193	
						1850.7 MHz	1880 MHz	1909.3 MHz	
LTE Band 2	1.4	QPSK	1	0	0	22.74	22.89	23.07	24.0
			1	3	0	22.77	22.95	23.03	24.0
			1	5	0	22.86	22.86	23.20	24.0
			3	0	0	22.18	22.27	22.46	24.0
			3	1	0	22.27	22.27	22.44	24.0
			3	3	0	22.32	22.33	22.54	24.0
			6	0	1	21.77	22.04	22.02	23.0
		16QAM	1	0	1	21.88	21.92	22.15	23.0
			1	3	1	21.84	21.82	22.20	23.0
			1	5	1	21.89	21.84	22.10	23.0
			3	0	1	21.24	21.22	21.32	23.0
			3	1	1	21.26	21.15	21.45	23.0
			3	3	1	21.27	21.16	21.46	23.0
			6	0	2	20.84	20.84	21.12	22.0
		64QAM	1	0	2	21.01	21.09	21.13	22.0
			1	3	2	21.03	21.09	21.02	22.0
			1	5	2	20.99	21.03	20.96	22.0
			3	0	2	20.06	20.10	20.23	22.0
			3	1	2	20.18	20.11	20.33	22.0
			3	3	2	20.03	20.14	20.31	22.0
			6	0	3	20.03	20.00	20.13	21.0

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20050	20175	20300	
						1720 MHz	1732.5 MHz	1745 MHz	
LTE Band 4	20	QPSK	1	0	0	23.49	23.41	23.59	24.0
			1	49	0	23.47	23.40	23.53	24.0
			1	99	0	23.48	23.31	23.56	24.0
			50	0	1	22.37	22.26	22.42	23.0
			50	24	1	22.46	22.28	22.57	23.0
			50	50	1	22.31	22.34	22.39	23.0
			100	0	1	22.41	22.29	22.53	23.0
		16QAM	1	0	1	22.52	22.52	22.65	23.0
			1	49	1	22.53	22.39	22.67	23.0
			1	99	1	22.50	22.38	22.72	23.0
			50	0	2	21.59	21.50	21.61	22.0
			50	24	2	21.60	21.48	21.65	22.0
			50	50	2	21.44	21.38	21.67	22.0
			100	0	2	21.62	21.55	21.55	22.0
		64QAM	1	0	2	21.93	21.81	21.94	22.0
			1	49	2	21.77	21.82	21.93	22.0
			1	99	2	21.77	21.68	21.86	22.0
			50	0	3	20.86	20.71	20.98	21.0
			50	24	3	20.83	20.83	20.96	21.0
			50	50	3	20.80	20.85	20.86	21.0
			100	0	3	20.88	20.76	20.96	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20025	20175	20325	
						1717.5 MHz	1732.5 MHz	1747.5 MHz	
LTE Band 4	15	QPSK	1	0	0	23.42	23.35	23.46	24.0
			1	37	0	23.53	23.29	23.45	24.0
			1	74	0	23.52	23.31	23.30	24.0
			36	0	1	22.45	22.45	22.38	23.0
			36	20	1	22.56	22.46	22.44	23.0
			36	39	1	22.57	22.46	22.37	23.0
			75	0	1	22.43	22.35	22.38	23.0
		16QAM	1	0	1	22.48	22.49	22.59	23.0
			1	37	1	22.45	22.54	22.48	23.0
			1	74	1	22.39	22.45	22.49	23.0
			36	0	2	21.39	21.41	21.49	22.0
			36	20	2	21.50	21.50	21.57	22.0
			36	39	2	21.48	21.54	21.54	22.0
			75	0	2	21.40	21.49	21.63	22.0
		64QAM	1	0	2	21.66	21.59	21.75	22.0
			1	37	2	21.76	21.52	21.59	22.0
			1	74	2	21.69	21.54	21.65	22.0
			36	0	3	20.75	20.55	20.67	21.0
			36	20	3	20.69	20.59	20.73	21.0
			36	39	3	20.75	20.65	20.66	21.0
			75	0	3	20.82	20.66	20.78	21.0

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20000	20175	20350	
						1715 MHz	1732.5 MHz	1750 MHz	
LTE Band 4	10	QPSK	1	0	0	23.24	23.23	23.40	24.0
			1	25	0	23.28	23.15	23.39	24.0
			1	49	0	23.20	23.23	23.35	24.0
			25	0	1	22.22	22.14	22.36	23.0
			25	12	1	22.29	22.18	22.30	23.0
			25	25	1	22.15	22.14	22.41	23.0
			50	0	1	22.32	22.23	22.27	23.0
		16QAM	1	0	1	22.47	22.48	22.61	23.0
			1	25	1	22.39	22.57	22.55	23.0
			1	49	1	22.36	22.47	22.58	23.0
			25	0	2	21.35	21.47	21.45	22.0
			25	12	2	21.36	21.43	21.53	22.0
			25	25	2	21.37	21.44	21.60	22.0
			50	0	2	21.47	21.54	21.52	22.0
		64QAM	1	0	2	21.62	21.62	21.72	22.0
			1	25	2	21.73	21.69	21.75	22.0
			1	49	2	21.62	21.59	21.71	22.0
			25	0	3	20.59	20.67	20.79	21.0
			25	12	3	20.74	20.74	20.76	21.0
			25	25	3	20.71	20.75	20.68	21.0
			50	0	3	20.65	20.68	20.76	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						19975	20175	20375	
						1712.5 MHz	1732.5 MHz	1752.5 MHz	
LTE Band 4	5	QPSK	1	0	0	23.20	23.29	23.32	24.0
			1	12	0	23.11	23.25	23.32	24.0
			1	24	0	23.13	23.28	23.18	24.0
			12	0	1	22.16	22.25	22.27	23.0
			12	7	1	22.20	22.41	22.23	23.0
			12	13	1	22.20	22.27	22.24	23.0
			25	0	1	22.17	22.25	22.34	23.0
		16QAM	1	0	1	22.22	22.40	22.50	23.0
			1	12	1	22.24	22.28	22.46	23.0
			1	24	1	22.38	22.40	22.46	23.0
			12	0	2	21.25	21.31	21.50	22.0
			12	7	2	21.33	21.29	21.51	22.0
			12	13	2	21.22	21.42	21.44	22.0
			25	0	2	21.28	21.26	21.41	22.0
		64QAM	1	0	2	21.60	21.66	21.74	22.0
			1	12	2	21.48	21.65	21.65	22.0
			1	24	2	21.49	21.82	21.80	22.0
			12	0	3	20.56	20.71	20.70	21.0
			12	7	3	20.61	20.72	20.72	21.0
			12	13	3	20.61	20.84	20.79	21.0
			25	0	3	20.53	20.68	20.66	21.0

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						19965	20175	20385	
						1711.5 MHz	1732.5 MHz	1753.5 MHz	
LTE Band 4	3	QPSK	1	0	0	23.12	23.43	23.13	24.0
			1	8	0	23.11	23.57	23.17	24.0
			1	14	0	22.98	23.58	23.15	24.0
			8	0	1	22.10	22.52	22.16	23.0
			8	4	1	22.09	22.44	22.23	23.0
			8	7	1	22.07	22.58	22.24	23.0
		16QAM	15	0	1	22.01	22.57	22.24	23.0
			1	0	1	22.12	22.27	22.32	23.0
			1	8	1	22.10	22.39	22.43	23.0
			1	14	1	21.97	22.36	22.33	23.0
			8	0	2	21.07	21.32	21.40	22.0
			8	4	2	20.93	21.37	21.39	22.0
			8	7	2	20.96	21.30	21.34	22.0
			15	0	2	21.09	21.33	21.39	22.0
		64QAM	1	0	2	21.42	21.64	21.45	22.0
			1	8	2	21.41	21.58	21.29	22.0
			1	14	2	21.45	21.64	21.38	22.0
			8	0	3	20.50	20.67	20.45	21.0
			8	4	3	20.35	20.64	20.36	21.0
			8	7	3	20.46	20.66	20.38	21.0
			15	0	3	20.37	20.66	20.43	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						19957	20175	20393	
						1710.7 MHz	1732.5 MHz	1754.3 MHz	
LTE Band 4	1.4	QPSK	1	0	0	22.00	22.21	22.27	24.0
			1	3	0	22.09	22.37	22.30	24.0
			1	5	0	22.05	22.26	22.21	24.0
			3	0	0	22.05	22.23	22.28	24.0
			3	1	0	22.07	22.29	22.31	24.0
			3	3	0	22.06	22.29	22.22	24.0
		16QAM	6	0	1	21.06	21.29	21.26	23.0
			1	0	1	22.18	22.31	22.38	23.0
			1	3	1	22.05	22.21	22.32	23.0
			1	5	1	22.16	22.28	22.34	23.0
			3	0	1	21.06	21.27	21.29	23.0
			3	1	1	21.10	21.35	21.28	23.0
			3	3	1	21.15	21.40	21.31	23.0
			6	0	2	21.06	21.34	21.35	22.0
		64QAM	1	0	2	21.27	21.37	21.17	22.0
			1	3	2	21.28	21.34	21.17	22.0
			1	5	2	21.28	21.36	21.10	22.0
			3	0	2	20.28	20.29	20.17	22.0
			3	1	2	20.25	20.24	20.10	22.0
			3	3	2	20.20	20.34	20.15	22.0
			6	0	3	20.14	20.33	20.10	21.0

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20450	20525	20600	
						829 MHz	836.5 MHz	844 MHz	
LTE Band 5	10	QPSK	1	0	0	24.03	23.89	23.88	24.3
			1	25	0	23.88	23.65	23.72	24.3
			1	49	0	23.66	23.59	23.69	24.3
			25	0	1	22.81	22.72	22.78	23.3
			25	12	1	22.84	22.70	22.84	23.3
			25	25	1	22.80	22.63	22.79	23.3
			50	0	1	22.75	22.73	22.80	23.3
		16QAM	1	0	1	23.24	23.08	23.06	23.3
			1	25	1	23.15	23.11	23.05	23.3
			1	49	1	23.19	23.01	23.00	23.3
			25	0	2	22.29	22.04	22.07	22.3
			25	12	2	22.18	22.02	21.98	22.3
			25	25	2	22.14	22.18	22.11	22.3
			50	0	2	22.24	22.09	21.98	22.3
		64QAM	1	0	2	22.22	22.09	22.05	22.3
			1	25	2	22.26	22.15	22.15	22.3
			1	49	2	22.15	22.06	21.99	22.3
			25	0	3	21.17	21.10	21.15	21.3
			25	12	3	21.19	20.97	21.06	21.3
			25	25	3	21.28	20.98	21.16	21.3
			50	0	3	21.29	21.10	21.08	21.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20425	20525	20625	
						826.5 MHz	836.5 MHz	846.5 MHz	
LTE Band 5	5	QPSK	1	0	0	23.78	23.94	23.65	24.3
			1	12	0	23.74	23.99	23.83	24.3
			1	24	0	23.73	23.98	23.81	24.3
			12	0	1	22.68	22.91	22.64	23.3
			12	7	1	22.76	22.85	22.78	23.3
			12	13	1	22.72	22.80	22.67	23.3
			25	0	1	22.59	22.94	22.82	23.3
		16QAM	1	0	1	22.85	22.98	22.88	23.3
			1	12	1	22.88	22.89	22.78	23.3
			1	24	1	22.91	22.92	22.87	23.3
			12	0	2	21.94	21.85	21.92	22.3
			12	7	2	21.88	21.94	21.96	22.3
			12	13	2	21.91	21.87	21.81	22.3
			25	0	2	21.80	21.96	21.86	22.3
		64QAM	1	0	2	20.74	20.92	20.84	22.3
			1	12	2	22.09	22.02	21.88	22.3
			1	24	2	22.06	21.95	21.79	22.3
			12	0	3	20.93	20.94	20.72	21.3
			12	7	3	21.02	20.91	20.83	21.3
			12	13	3	21.05	20.89	20.70	21.3
			25	0	3	21.06	20.85	20.85	21.3

LTE Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20415	20525	20635	
						825.5 MHz	836.5 MHz	847.5 MHz	
LTE Band 5	3	QPSK	1	0	0	23.77	23.76	23.55	24.3
			1	8	0	23.83	23.77	23.49	24.3
			1	14	0	23.71	23.78	23.48	24.3
			8	0	1	22.80	22.63	22.56	23.3
			8	4	1	22.77	22.69	22.57	23.3
			8	7	1	22.69	22.75	22.59	23.3
			15	0	1	22.79	22.75	22.65	23.3
		16QAM	1	0	1	22.76	22.88	22.76	23.3
			1	8	1	22.77	23.00	22.73	23.3
			1	14	1	22.80	22.93	22.69	23.3
			8	0	2	21.72	21.99	21.61	22.3
			8	4	2	21.62	21.95	21.77	22.3
			8	7	2	21.71	21.93	21.64	22.3
			15	0	2	21.66	22.03	21.79	22.3
		64QAM	1	0	2	21.96	21.89	21.70	22.3
			1	8	2	21.88	21.86	21.57	22.3
			1	14	2	21.82	21.86	21.62	22.3
			8	0	3	20.83	20.91	20.55	21.3
			8	4	3	20.90	20.94	20.60	21.3
			8	7	3	20.86	20.77	20.53	21.3
			15	0	3	20.85	20.85	20.62	21.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						20407	20525	20643	
						824.7 MHz	836.5 MHz	848.3 MHz	
LTE Band 5	1.4	QPSK	1	0	0	22.68	22.75	22.58	24.3
			1	3	0	22.76	22.90	22.59	24.3
			1	5	0	22.74	22.84	22.57	24.3
			3	0	0	22.47	22.56	22.47	24.3
			3	1	0	22.42	22.65	22.33	24.3
			3	3	0	22.34	22.73	22.36	24.3
			6	0	1	21.69	21.93	21.56	23.3
		16QAM	1	0	1	22.73	22.81	22.69	23.3
			1	3	1	22.54	22.73	22.67	23.3
			1	5	1	22.71	22.80	22.66	23.3
			3	0	1	21.70	21.77	21.77	23.3
			3	1	1	21.65	21.75	21.68	23.3
			3	3	1	21.69	21.69	21.84	23.3
			6	0	2	21.69	21.75	21.81	22.3
		64QAM	1	0	2	21.74	21.77	21.70	22.3
			1	3	2	21.77	21.78	21.71	22.3
			1	5	2	21.71	21.81	21.58	22.3
			3	0	2	20.74	20.75	20.67	22.3
			3	1	2	20.77	20.76	20.71	22.3
			3	3	2	20.71	20.78	20.72	22.3
			6	0	3	20.65	20.71	20.72	21.3

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23060	23095	23130	
						704 MHz	707.5 MHz	711 MHz	
LTE Band 12	10	QPSK	1	0	0	23.29	23.47	23.45	24.0
			1	25	0	23.28	23.28	23.31	24.0
			1	49	0	23.25	23.29	23.34	24.0
			25	0	1	22.12	22.28	22.29	23.0
			25	12	1	22.16	22.34	22.41	23.0
			25	25	1	22.21	22.45	22.43	23.0
			50	0	1	22.27	22.33	22.38	23.0
		16QAM	1	0	1	22.58	22.77	22.89	23.0
			1	25	1	22.71	22.74	22.83	23.0
			1	49	1	22.65	22.91	22.85	23.0
			25	0	2	21.54	21.75	21.84	22.0
			25	12	2	21.58	21.73	21.73	22.0
			25	25	2	21.58	21.82	21.81	22.0
			50	0	2	21.69	21.82	21.78	22.0
		64QAM	1	0	2	21.77	21.89	21.93	22.0
			1	25	2	21.68	21.89	21.91	22.0
			1	49	2	21.80	21.81	21.77	22.0
			25	0	3	20.80	20.83	20.81	21.0
			25	12	3	20.74	20.80	20.83	21.0
			25	25	3	20.68	20.88	20.92	21.0
			50	0	3	20.78	20.83	20.77	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23035	23095	23155	
						701.5 MHz	707.5 MHz	713.5 MHz	
LTE Band 12	5	QPSK	1	0	0	23.30	23.23	23.31	24.0
			1	12	0	23.31	23.31	23.27	24.0
			1	24	0	23.42	23.16	23.16	24.0
			12	0	1	22.65	22.40	22.41	23.0
			12	7	1	22.65	22.39	22.53	23.0
			12	13	1	22.59	22.45	22.54	23.0
			25	0	1	22.68	22.39	22.44	23.0
		16QAM	1	0	1	22.71	22.59	22.78	23.0
			1	12	1	22.54	22.75	22.86	23.0
			1	24	1	22.56	22.75	22.83	23.0
			12	0	2	21.58	21.70	21.82	22.0
			12	7	2	21.65	21.67	21.79	22.0
			12	13	2	21.62	21.64	21.85	22.0
			25	0	2	21.63	21.59	21.74	22.0
		64QAM	1	0	2	21.93	21.86	21.95	22.0
			1	12	2	21.98	21.82	21.96	22.0
			1	24	2	21.88	21.81	21.98	22.0
			12	0	3	20.89	20.89	20.97	21.0
			12	7	3	20.82	20.92	20.90	21.0
			12	13	3	20.92	20.86	20.97	21.0
			25	0	3	20.82	20.87	20.91	21.0

LTE Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23025	23095	23165	
						700.5 MHz	707.5 MHz	714.5 MHz	
LTE Band 12	3	QPSK	1	0	0	23.42	23.37	23.44	24.0
			1	8	0	23.35	23.32	23.44	24.0
			1	14	0	23.43	23.34	23.45	24.0
			8	0	1	22.41	22.32	22.47	23.0
			8	4	1	22.37	22.36	22.52	23.0
			8	7	1	22.53	22.36	22.44	23.0
			15	0	1	22.39	22.21	22.50	23.0
		16QAM	1	0	1	22.61	22.42	22.74	23.0
			1	8	1	22.45	22.46	22.77	23.0
			1	14	1	22.48	22.36	22.81	23.0
			8	0	2	21.57	21.53	21.79	22.0
			8	4	2	21.48	21.39	21.72	22.0
			8	7	2	21.59	21.47	21.83	22.0
			15	0	2	21.61	21.52	21.73	22.0
		64QAM	1	0	2	21.86	21.80	21.82	22.0
			1	8	2	21.92	21.88	21.88	22.0
			1	14	2	21.76	21.78	21.96	22.0
			8	0	3	20.85	20.74	20.79	21.0
			8	4	3	20.87	20.72	20.97	21.0
			8	7	3	20.75	20.82	20.93	21.0
			15	0	3	20.92	20.75	20.83	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23017	23095	23173	
						699.7 MHz	707.5 MHz	715.3 MHz	
LTE Band 12	1.4	QPSK	1	0	0	23.42	23.37	23.38	24.0
			1	3	0	23.28	23.35	23.36	24.0
			1	5	0	23.40	23.20	23.42	24.0
			3	0	0	22.37	22.35	22.67	24.0
			3	1	0	22.35	22.33	22.61	24.0
			3	3	0	22.34	22.20	22.63	24.0
			6	0	1	22.31	22.22	22.64	23.0
		16QAM	1	0	1	22.59	22.41	22.72	23.0
			1	3	1	22.59	22.53	22.76	23.0
			1	5	1	22.62	22.58	22.70	23.0
			3	0	1	21.58	21.55	21.61	23.0
			3	1	1	21.60	21.44	21.79	23.0
			3	3	1	21.65	21.51	21.63	23.0
			6	0	2	21.59	21.51	21.61	22.0
		64QAM	1	0	2	21.80	21.64	21.88	22.0
			1	3	2	21.68	21.67	21.88	22.0
			1	5	2	21.85	21.64	21.84	22.0
			3	0	2	20.75	20.54	20.84	22.0
			3	1	2	20.79	20.65	20.95	22.0
			3	3	2	20.85	20.61	20.81	22.0
			6	0	3	20.73	20.62	20.94	21.0

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
							23230 782 MHz		
LTE Band 13	10	QPSK	1	0	0		23.16		24.0
			1	25	0		23.15		24.0
			1	49	0		23.07		24.0
			25	0	1		22.05		23.0
			25	12	1		21.99		23.0
			25	25	1		22.00		23.0
			50	0	1		22.11		23.0
		16QAM	1	0	1		22.10		23.0
			1	25	1		22.09		23.0
			1	49	1		21.98		23.0
			25	0	2		21.04		22.0
			25	12	2		21.07		22.0
			25	25	2		21.09		22.0
			50	0	2		21.07		22.0
		64QAM	1	0	2		21.13		22.0
			1	25	2		21.16		22.0
			1	49	2		21.00		22.0
			25	0	3		20.03		21.0
			25	12	3		20.02		21.0
			25	25	3		20.04		21.0
			50	0	3		19.99		21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23205 779.5 MHz	23230 782 MHz	23255 784.5 MHz	
LTE Band 13	5	QPSK	1	0	0	23.13	23.09	23.04	24.0
			1	12	0	23.11	23.07	22.83	24.0
			1	24	0	23.08	23.05	22.93	24.0
			12	0	1	22.15	22.13	22.26	23.0
			12	7	1	22.16	22.01	22.21	23.0
			12	13	1	22.21	22.12	22.23	23.0
			25	0	1	22.14	22.12	22.26	23.0
		16QAM	1	0	1	22.03	22.01	21.98	23.0
			1	12	1	22.29	22.13	22.11	23.0
			1	24	1	22.41	22.14	22.23	23.0
			12	0	2	21.18	21.04	21.23	22.0
			12	7	2	21.21	21.07	21.26	22.0
			12	13	2	21.26	21.01	21.24	22.0
			25	0	2	21.14	21.09	21.22	22.0
		64QAM	1	0	2	21.09	21.11	21.88	22.0
			1	12	2	21.72	21.15	21.49	22.0
			1	24	2	21.83	21.01	21.59	22.0
			12	0	3	19.85	19.97	19.96	21.0
			12	7	3	19.84	20.15	19.97	21.0
			12	13	3	19.91	20.03	19.92	21.0
			25	0	3	19.83	20.09	19.94	21.0

LTE Band 14 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
							23330 793 MHz		
LTE Band 14	10	QPSK	1	0	0		23.05		24.0
			1	25	0		22.87		24.0
			1	49	0		23.03		24.0
			25	0	1		22.03		23.0
			25	12	1		21.87		23.0
			25	25	1		21.99		23.0
			50	0	1		21.92		23.0
		16QAM	1	0	1		21.98		23.0
			1	25	1		21.94		23.0
			1	49	1		21.91		23.0
			25	0	2		20.95		22.0
			25	12	2		20.93		22.0
			25	25	2		20.98		22.0
			50	0	2		20.99		22.0
		64QAM	1	0	2		20.97		22.0
			1	25	2		20.87		22.0
			1	49	2		20.89		22.0
			25	0	3		19.99		21.0
			25	12	3		19.92		21.0
			25	25	3		19.99		21.0
			50	0	3		20.04		21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						23305 790.5 MHz	23330 793 MHz	23355 795.5 MHz	
LTE Band 14	5	QPSK	1	0	0	22.92	22.95	22.90	24.0
			1	12	0	22.90	22.95	22.92	24.0
			1	24	0	22.87	23.05	22.95	24.0
			12	0	1	21.97	21.88	21.97	23.0
			12	7	1	21.95	22.00	22.09	23.0
			12	13	1	21.92	21.99	22.03	23.0
			25	0	1	21.95	21.99	22.04	23.0
		16QAM	1	0	1	22.24	21.91	22.22	23.0
			1	12	1	22.17	21.86	22.28	23.0
			1	24	1	22.18	21.90	22.27	23.0
			12	0	2	21.00	20.91	20.97	22.0
			12	7	2	21.02	20.95	21.08	22.0
			12	13	2	20.93	20.98	21.03	22.0
			25	0	2	20.96	21.01	21.07	22.0
		64QAM	1	0	2	21.13	20.99	21.12	22.0
			1	12	2	21.09	21.04	21.22	22.0
			1	24	2	21.05	21.04	21.16	22.0
			12	0	3	19.98	20.02	19.98	21.0
			12	7	3	19.98	19.91	20.09	21.0
			12	13	3	19.95	19.87	20.04	21.0
			25	0	3	19.94	20.03	20.05	21.0

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						26765	26865	26965	
						821.5 MHz	831.5 MHz	841.5 MHz	
LTE Band 26	15	QPSK	1	0	0	23.52	23.62	23.79	24.0
			1	37	0	23.34	23.60	23.75	24.0
			1	74	0	23.28	23.55	23.66	24.0
			36	0	1	22.42	22.48	22.61	23.0
			36	20	1	22.30	22.50	22.69	23.0
			36	39	1	22.45	22.60	22.76	23.0
			75	0	1	22.38	22.47	22.71	23.0
		16QAM	1	0	1	22.68	22.56	22.90	23.0
			1	37	1	22.66	22.62	22.88	23.0
			1	74	1	22.62	22.64	22.90	23.0
			36	0	2	21.80	21.47	21.80	22.0
			36	20	2	21.62	21.55	21.82	22.0
			36	39	2	21.72	21.63	21.86	22.0
			75	0	2	21.67	21.49	21.78	22.0
		64QAM	1	0	2	21.69	21.67	21.84	22.0
			1	37	2	21.65	21.68	21.72	22.0
			1	74	2	21.63	21.72	21.83	22.0
			36	0	3	20.62	20.75	20.88	21.0
			36	20	3	20.61	20.71	20.81	21.0
			36	39	3	20.71	20.85	20.81	21.0
			75	0	3	20.63	20.73	20.87	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						26740	26865	26990	
						819 MHz	831.5 MHz	844 MHz	
LTE Band 26	10	QPSK	1	0	0	23.43	23.56	23.51	24.0
			1	25	0	23.39	23.55	23.51	24.0
			1	49	0	23.30	23.36	23.60	24.0
			25	0	1	22.36	22.43	22.44	23.0
			25	12	1	22.31	22.46	22.44	23.0
			25	25	1	22.47	22.43	22.44	23.0
			50	0	1	22.29	22.44	22.50	23.0
		16QAM	1	0	1	22.59	22.64	22.68	23.0
			1	25	1	22.65	22.55	22.77	23.0
			1	49	1	22.60	22.57	22.68	23.0
			25	0	2	21.64	21.54	21.83	22.0
			25	12	2	21.63	21.56	21.71	22.0
			25	25	2	21.73	21.56	21.70	22.0
			50	0	2	21.62	21.64	21.75	22.0
		64QAM	1	0	2	21.62	21.75	21.71	22.0
			1	25	2	21.71	21.86	21.66	22.0
			1	49	2	21.61	21.84	21.74	22.0
			25	0	3	20.62	20.76	20.70	21.0
			25	12	3	20.58	20.78	20.80	21.0
			25	25	3	20.64	20.84	20.71	21.0
			50	0	3	20.73	20.82	20.73	21.0

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						26715	26865	27015	
						816.5 MHz	831.5 MHz	846.5 MHz	
LTE Band 26	5	QPSK	1	0	0	23.29	23.48	23.52	24.0
			1	12	0	23.14	23.52	23.56	24.0
			1	24	0	23.28	23.58	23.58	24.0
			12	0	1	22.25	22.50	22.40	23.0
			12	7	1	22.16	22.49	22.54	23.0
			12	13	1	22.16	22.52	22.42	23.0
			25	0	1	22.25	22.41	22.55	23.0
		16QAM	1	0	1	22.49	22.61	22.74	23.0
			1	12	1	22.49	22.61	22.73	23.0
			1	24	1	22.31	22.65	22.68	23.0
			12	0	2	21.48	21.68	21.86	22.0
			12	7	2	21.38	21.63	21.72	22.0
			12	13	2	21.39	21.78	21.71	22.0
			25	0	2	21.46	21.69	21.70	22.0
		64QAM	1	0	2	21.52	21.64	21.76	22.0
			1	12	2	21.44	21.71	21.82	22.0
			1	24	2	21.53	21.73	21.82	22.0
			12	0	3	20.39	20.63	20.69	21.0
			12	7	3	20.48	20.74	20.85	21.0
			12	13	3	20.33	20.82	20.81	21.0
			25	0	3	20.38	20.81	20.81	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						26705	26865	27025	
						815.5 MHz	831.5 MHz	847.5 MHz	
LTE Band 26	3	QPSK	1	0	0	23.36	23.52	23.32	24.0
			1	8	0	23.36	23.46	23.17	24.0
			1	14	0	23.33	23.48	23.31	24.0
			8	0	1	22.37	22.45	22.23	23.0
			8	4	1	22.41	22.50	22.33	23.0
			8	7	1	22.40	22.47	22.22	23.0
			15	0	1	22.31	22.49	22.14	23.0
		16QAM	1	0	1	22.54	22.61	22.58	23.0
			1	8	1	22.59	22.52	22.59	23.0
			1	14	1	22.53	22.52	22.53	23.0
			8	0	2	21.51	21.65	21.45	22.0
			8	4	2	21.65	21.69	21.55	22.0
			8	7	2	21.57	21.70	21.45	22.0
			15	0	2	21.64	21.51	21.49	22.0
		64QAM	1	0	2	21.58	21.68	21.53	22.0
			1	8	2	21.51	21.60	21.70	22.0
			1	14	2	21.48	21.79	21.66	22.0
			8	0	3	20.42	20.77	20.57	21.0
			8	4	3	20.56	20.61	20.56	21.0
			8	7	3	20.57	20.70	20.64	21.0
			15	0	3	20.55	20.65	20.53	21.0



Report No.: T220114R01-SF

Page: 41 / 60
Rev.: 00

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						26697	26865	27033	
						814.7 MHz	831.5 MHz	848.3 MHz	
LTE Band 26	1.4	QPSK	1	0	0	23.37	22.59	23.32	24.0
			1	3	0	23.32	22.66	23.37	24.0
			1	5	0	23.27	22.69	23.42	24.0
			3	0	0	22.85	22.17	22.93	24.0
			3	1	0	22.81	22.16	22.82	24.0
			3	3	0	22.88	22.05	22.80	24.0
			6	0	1	22.32	21.70	22.36	23.0
		16QAM	1	0	1	22.55	22.77	22.43	23.0
			1	3	1	22.65	22.77	22.41	23.0
			1	5	1	22.66	22.85	22.39	23.0
			3	0	1	21.54	21.78	21.37	23.0
			3	1	1	21.69	21.76	21.33	23.0
			3	3	1	21.60	21.86	21.40	23.0
			6	0	2	21.67	21.80	21.39	22.0
		64QAM	1	0	2	21.51	21.70	21.40	22.0
			1	3	2	21.61	21.61	21.33	22.0
			1	5	2	21.60	21.68	21.35	22.0
			3	0	2	20.43	20.62	20.51	22.0
			3	1	2	20.49	20.59	20.36	22.0
			3	3	2	20.50	20.58	20.38	22.0
			6	0	3	20.51	20.60	20.34	21.0

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Tune-up Limit
						39750	40185	40620	41055	41490	
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	20	QPSK	1	0	0	23.24	23.27	23.23	23.26	22.99	23.8
			1	49	0	23.06	23.23	23.14	23.20	22.86	23.8
			1	99	0	23.11	23.21	23.21	23.15	22.87	23.8
			50	0	1	22.08	22.09	22.39	22.08	21.80	22.8
			50	24	1	22.08	22.24	22.32	22.14	21.93	22.8
			50	50	1	22.07	22.21	22.27	22.17	21.96	22.8
			100	0	1	22.07	22.14	22.29	22.25	21.87	22.8
		16QAM	1	0	1	22.25	22.31	22.29	22.24	22.02	22.8
			1	49	1	22.17	22.31	22.35	22.17	21.91	22.8
			1	99	1	22.26	22.32	22.31	22.10	22.03	22.8
			50	0	2	21.10	21.37	21.35	21.05	20.90	21.8
			50	24	2	21.24	21.45	21.41	21.11	21.00	21.8
			50	50	2	21.21	21.43	21.39	21.19	21.06	21.8
			100	0	2	21.15	21.34	21.40	21.17	21.03	21.8
		64QAM	1	0	2	21.19	21.21	21.06	21.22	21.07	21.8
			1	49	2	21.13	21.21	21.03	21.13	21.12	21.8
			1	99	2	21.08	21.11	21.03	21.25	21.16	21.8
			50	0	3	20.17	20.21	20.12	20.20	20.26	20.8
			50	24	3	20.20	20.25	20.21	20.21	20.12	20.8
			50	50	3	20.09	20.27	20.08	20.09	20.27	20.8
			100	0	3	20.22	20.17	20.11	20.27	20.13	20.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Tune-up Limit
						39750	40185	40620	41055	41490	
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	15	QPSK	1	0	0	22.96	23.11	23.19	23.20	22.98	23.8
			1	37	0	22.82	23.06	23.26	23.24	22.94	23.8
			1	74	0	22.89	23.01	23.23	23.18	23.01	23.8
			36	0	1	21.89	22.03	22.32	22.31	21.99	22.8
			36	20	1	21.91	22.08	22.35	22.25	22.04	22.8
			36	39	1	21.85	21.93	22.34	22.35	21.97	22.8
			75	0	1	21.95	22.00	22.20	22.20	21.96	22.8
		16QAM	1	0	1	22.15	22.06	22.27	22.16	21.98	22.8
			1	37	1	22.01	22.14	22.42	22.17	22.08	22.8
			1	74	1	22.14	22.13	22.25	22.20	22.00	22.8
			36	0	2	21.05	21.07	21.34	21.19	21.11	21.8
			36	20	2	21.19	21.05	21.23	21.07	21.11	21.8
			36	39	2	21.04	21.16	21.35	21.08	20.98	21.8
			75	0	2	21.10	21.08	21.26	21.03	20.97	21.8
		64QAM	1	0	2	21.06	21.07	21.08	21.24	20.93	21.8
			1	37	2	21.14	20.94	21.26	21.14	20.98	21.8
			1	74	2	21.16	20.99	21.12	21.23	20.90	21.8
			36	0	3	20.14	19.89	20.23	20.11	19.90	20.8
			36	20	3	20.04	20.02	20.12	20.26	19.88	20.8
			36	39	3	20.12	19.95	20.24	20.13	19.90	20.8
			75	0	3	20.18	20.07	20.18	20.13	19.88	20.8

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Tune-up Limit
						39750	40185	40620	41055	41490	
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	10	QPSK	1	0	0	23.06	23.09	23.13	23.09	22.91	23.8
			1	25	0	23.04	22.98	23.23	23.11	22.78	23.8
			1	49	0	22.99	23.09	23.21	23.11	22.80	23.8
			25	0	1	22.02	22.01	22.29	22.09	21.77	22.8
			25	12	1	22.00	22.05	22.21	21.99	21.91	22.8
			25	25	1	21.92	21.99	22.10	22.13	21.88	22.8
			50	0	1	22.09	21.95	22.11	22.10	21.86	22.8
		16QAM	1	0	1	22.12	22.13	22.22	22.11	22.02	22.8
			1	25	1	22.21	22.20	22.17	22.18	22.01	22.8
			1	49	1	22.11	22.17	22.17	22.11	22.00	22.8
			25	0	2	21.05	21.14	21.22	21.04	21.00	21.8
			25	12	2	21.05	21.14	21.22	21.07	21.01	21.8
			25	25	2	21.16	21.13	21.28	21.13	21.04	21.8
			50	0	2	21.16	21.24	21.30	21.22	21.11	21.8
		64QAM	1	0	2	21.08	21.08	21.04	21.12	20.89	21.8
			1	25	2	21.09	21.02	21.04	21.14	21.00	21.8
			1	49	2	21.22	21.06	20.99	21.27	20.94	21.8
			25	0	3	20.12	20.03	19.96	20.16	20.03	20.8
			25	12	3	20.20	19.95	19.99	20.12	20.02	20.8
			25	25	3	20.07	20.00	20.11	20.21	20.06	20.8
			50	0	3	20.22	19.95	20.01	20.20	19.93	20.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Tune-up Limit
						39750	40185	40620	41055	41490	
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	5	QPSK	1	0	0	23.10	23.07	23.18	23.08	22.90	23.8
			1	12	0	23.11	23.05	23.13	22.98	22.89	23.8
			1	24	0	23.19	23.21	23.11	22.99	22.95	23.8
			12	0	1	22.19	22.12	22.15	22.06	21.94	22.8
			12	7	1	22.20	22.17	22.13	21.91	22.03	22.8
			12	13	1	22.12	22.09	22.03	21.93	21.88	22.8
			25	0	1	22.10	22.21	22.09	22.06	21.90	22.8
		16QAM	1	0	1	22.13	22.14	22.24	22.17	21.97	22.8
			1	12	1	22.26	22.02	22.19	22.19	21.90	22.8
			1	24	1	22.19	22.07	22.12	22.14	21.93	22.8
			12	0	2	21.14	21.01	21.15	21.27	20.97	21.8
			12	7	2	21.20	21.03	21.23	21.10	20.87	21.8
			12	13	2	21.12	21.10	21.20	21.14	20.89	21.8
			25	0	2	21.09	21.09	21.19	21.17	20.97	21.8
		64QAM	1	0	2	21.12	21.08	21.10	21.22	20.91	21.8
			1	12	2	21.12	21.12	21.10	21.26	20.87	21.8
			1	24	2	21.01	21.08	21.18	21.20	20.90	21.8
			12	0	3	19.95	20.05	20.18	20.18	19.95	20.8
			12	7	3	20.01	20.11	20.09	20.24	19.87	20.8
			12	13	3	20.11	20.20	20.12	20.17	19.96	20.8
			25	0	3	20.05	20.14	20.05	20.22	19.82	20.8

LTE Band 48 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						55340	55990	56640	
						3560 MHz	3625 MHz	3690 MHz	
LTE Band 48	20	QPSK	1	0	0	23.60	23.75	23.57	23.8
			1	49	0	23.33	23.38	23.32	23.8
			1	99	0	23.27	23.35	23.38	23.8
			50	0	1	21.99	22.05	21.78	22.8
			50	24	1	21.88	21.92	21.75	22.8
			50	50	1	21.87	21.89	21.64	22.8
			100	0	1	21.98	21.93	21.79	22.8
		16QAM	1	0	1	22.13	22.11	22.30	22.8
			1	49	1	21.75	21.91	21.99	22.8
			1	99	1	21.73	21.87	21.95	22.8
			50	0	2	20.99	21.07	20.87	21.8
			50	24	2	20.86	20.95	20.78	21.8
			50	50	2	20.79	20.89	20.73	21.8
			100	0	2	20.87	20.98	20.81	21.8
		64QAM	1	0	2	20.83	20.78	21.04	21.8
			1	49	2	20.62	20.57	20.80	21.8
			1	99	2	20.47	20.53	20.79	21.8
			50	0	3	19.86	19.79	19.90	20.8
			50	24	3	19.90	20.10	19.77	20.8
			50	50	3	19.85	19.94	19.69	20.8
			100	0	3	19.93	20.06	19.83	20.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						55315	55990	56665	
						3557.5 MHz	3625 MHz	3692.5 MHz	
LTE Band 48	15	QPSK	1	0	0	23.64	23.64	23.36	23.8
			1	37	0	23.38	23.39	23.26	23.8
			1	74	0	23.24	23.42	23.22	23.8
			36	0	1	21.88	22.05	21.80	22.8
			36	20	1	21.77	21.90	21.72	22.8
			36	39	1	21.74	21.88	21.71	22.8
			75	0	1	21.78	21.92	21.75	22.8
		16QAM	1	0	1	22.31	22.11	22.23	22.8
			1	37	1	22.18	21.91	22.08	22.8
			1	74	1	22.08	21.86	22.02	22.8
			36	0	2	20.82	21.01	20.74	21.8
			36	20	2	20.79	20.99	20.83	21.8
			36	39	2	20.74	20.96	20.71	21.8
			75	0	2	20.85	20.92	20.78	21.8
		64QAM	1	0	2	20.70	20.75	20.79	21.8
			1	37	2	20.68	21.02	20.90	21.8
			1	74	2	20.57	20.73	20.86	21.8
			36	0	3	19.63	19.98	19.82	20.8
			36	20	3	19.74	20.03	19.85	20.8
			36	39	3	19.75	19.94	19.70	20.8
			75	0	3	19.93	19.98	19.68	20.8

LTE Band 48 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						55290	55990	56690	
						3555 MHz	3625 MHz	3695 MHz	
LTE Band 48	10	QPSK	1	0	0	23.54	23.58	23.29	23.8
			1	25	0	23.16	23.36	23.10	23.8
			1	49	0	23.14	23.40	23.01	23.8
			25	0	1	21.75	22.02	21.58	22.8
			25	12	1	21.68	21.76	21.59	22.8
			25	25	1	21.67	21.64	21.62	22.8
			50	0	1	21.64	21.83	21.65	22.8
		16QAM	1	0	1	22.28	22.06	22.27	22.8
			1	25	1	21.98	21.66	22.01	22.8
			1	49	1	22.05	21.78	22.02	22.8
			25	0	2	20.82	20.89	20.63	21.8
			25	12	2	20.65	20.98	20.73	21.8
			25	25	2	20.62	20.89	20.77	21.8
			50	0	2	20.79	20.96	20.92	21.8
		64QAM	1	0	2	20.68	20.71	20.75	21.8
			1	25	2	20.63	20.80	20.92	21.8
			1	49	2	20.51	20.60	20.90	21.8
			25	0	3	19.61	19.71	19.95	20.8
			25	12	3	19.58	19.90	19.99	20.8
			25	25	3	19.70	19.81	19.86	20.8
			50	0	3	19.89	19.81	19.73	20.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Tune-up Limit
						55265	55990	56715	
						3552.5 MHz	3625 MHz	3697.5 MHz	
LTE Band 48	5	QPSK	1	0	0	23.29	23.58	23.25	23.8
			1	12	0	23.22	23.47	23.22	23.8
			1	24	0	23.26	23.34	23.08	23.8
			12	0	1	22.35	22.45	22.30	22.8
			12	7	1	22.31	22.35	22.26	22.8
			12	13	1	22.24	22.36	22.23	22.8
			25	0	1	22.27	22.46	22.22	22.8
		16QAM	1	0	1	22.01	22.60	21.93	22.8
			1	12	1	21.91	22.52	21.82	22.8
			1	24	1	21.85	22.58	21.89	22.8
			12	0	2	21.34	21.36	21.31	21.8
			12	7	2	21.29	21.41	21.27	21.8
			12	13	2	21.28	21.34	21.22	21.8
			25	0	2	21.31	21.40	21.26	21.8
		64QAM	1	0	2	21.41	21.31	21.26	21.8
			1	12	2	21.38	21.28	21.43	21.8
			1	24	2	21.26	21.32	21.28	21.8
			12	0	3	20.30	20.35	20.32	20.8
			12	7	3	20.32	20.40	20.29	20.8
			12	13	3	20.36	20.36	20.13	20.8
			25	0	3	20.37	20.27	20.28	20.8

8.2 Wi-Fi 2.4GHz (DTS Band)

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11g/n/ac/ax mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

SAR testing is not required for OFDM mode(s) 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.

Measured Results

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Tune-up Limit (dBm)		SAR Test (Yes/No)	
					Chain A Aux	Chain B Main	Chain A Aux	Chain B Main	Chain A Aux	Chain B Main
2.4GHz (DTS)	802.11b	1 Mbps	1	2412	19.27	21.49	19.5	21.5	Yes	Yes
			6	2437	19.24	21.41				
			11	2462	19.33	21.48				
	802.11g	6 Mbps	1	2412	17.92	17.97	18.0	18.0	No	No
			6	2437	17.97	17.94				
			11	2462	17.98	17.86				

MIMO Measured Results

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)			Tune-up Limit (dBm)	SAR Test (Yes/No)
					Chain A Aux	Chain B Main	MIMO		
2.4GHz (DTS)	802.11n (HT20)	MCS0	1	2412	17.91	17.88	20.91	21.0	Yes
			6	2437	17.88	17.86	20.88		
			11	2462	17.86	17.81	20.85		
	802.11ax (HE20)	MCS0	1	2412	17.77	17.83	20.81	21.0	No
			6	2437	17.72	17.75	20.75		
			11	2462	17.75	17.67	20.72		
	802.11n (HT40)	MCS0	3	2422	17.27	16.68	20.00	20.2	No
			6	2437	17.12	16.58	19.87		
			9	2452	17.45	16.62	20.07		
	802.11ax (HE40)	MCS0	3	2422	17.24	16.71	19.99	20.2	No
			6	2437	17.17	16.64	19.92		
			9	2452	17.43	16.67	20.08		

8.3 Wi-Fi 5GHz (U-NII Bands)

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n then ac) is selected.

SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

Measured Results

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Tune-up Limit (dBm)		SAR Test (Yes/No)	
					Chain A Aux	Chain B Main	Chain A Aux	Chain B Main	Chain A Aux	Chain B Main
5.2GHz (U-NII 1)	802.11a	6 Mbps	36	5180	16.62	15.28	17.0	15.5	Yes	Yes
			40	5200	16.73	15.36				
			44	5220	16.61	15.31				
			48	5240	16.57	15.43				
	802.11n (HT20)	MCS0	36	5180	16.73	15.28	17.0	15.5	No	No
			40	5200	16.71	15.29				
			44	5220	16.68	15.24				
			48	5240	16.65	15.11				
	802.11ac (VHT20)	MCS0	36	5180	16.70	15.30	17.0	15.5	No	No
			40	5200	16.68	15.26				
			44	5220	16.66	15.22				
			48	5240	16.62	15.24				
	802.11ax (HE20)	MCS0	36	5180	16.72	15.33	17.0	15.5	No	No
			40	5200	16.67	15.29				
			44	5220	16.68	15.26				
			48	5240	16.60	15.27				
	802.11n (HT40)	MCS0	38	5190	16.42	14.94	16.5	15.0	No	No
			46	5230	16.23	14.73				
	802.11ac (VHT40)	MCS0	38	5190	16.32	14.70	16.5	15.0	No	No
			46	5230	16.26	14.41				
	802.11ax (HE40)	MCS0	38	5190	16.28	14.68	16.5	15.0	No	No
			46	5230	16.23	14.37				
	802.11ac (VHT80)	MCS0	42	5210	16.34	14.82	16.5	15.0	No	No
	802.11ax (HE80)	MCS0	42	5210	16.3	14.57	16.5	15.0	No	No



8.4 Bluetooth.

Maximum tune-up tolerance limit is 10.00 dBm. This power level qualifies for Measure of SAR testing.

Max. RF Output Power	Antenna Gain	2.99 dBi	Frequency	At separation distance of	Exemption Limits (mW)	Result
	(dBm)	(mW)				
Conducted	10.00	10.00	2450 MHz	≤ 5 mm	4	Measure SAR
E.I.R.P	12.99	19.91				

Average Power Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Meas. Avg Pwr (mW)	Tune-up Limit (dBm)	SAR Test (Yes/No)
2.4	LE, GFSK	2 Mbps	0	2402	9.72	9.38	10.0	Yes
			19	2440	9.92	9.82		
			39	2480	9.97	9.93		

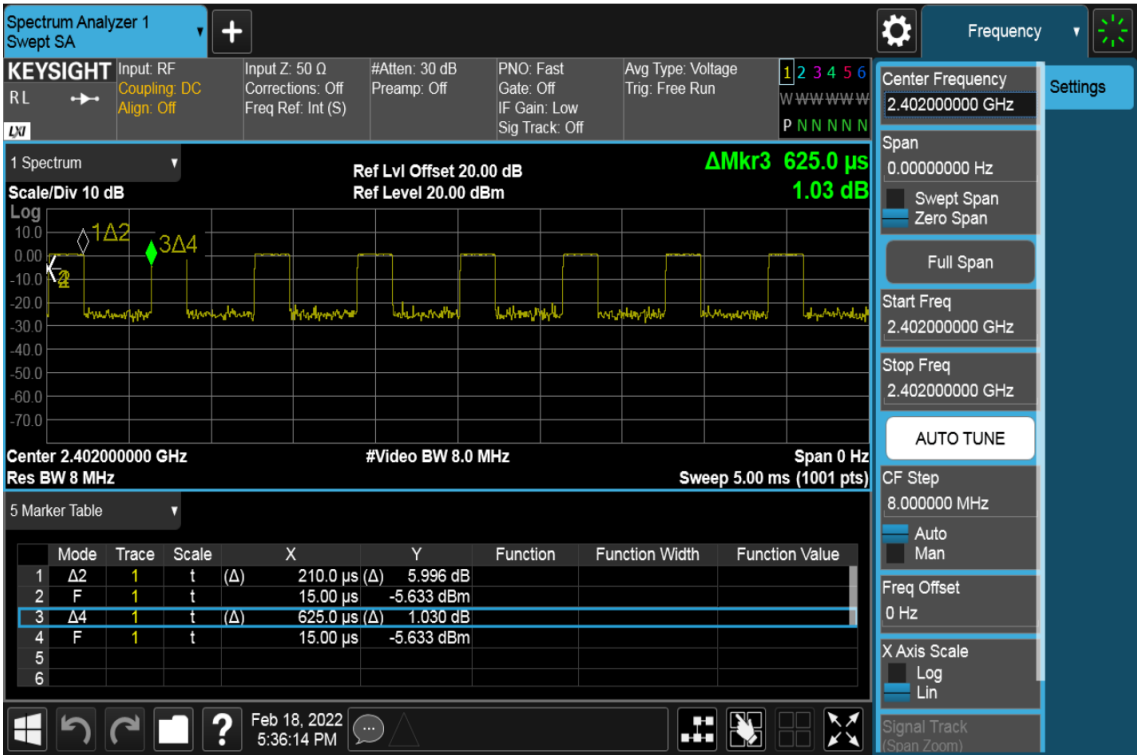
Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	0.21	0.625	33.60%	2.98



Duty Cycle plots

GFSK



9 Measured and Reported (Scaled) SAR Results

9.1 LTE Band 1 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	19100	1900.0	1	0	24.0	23.50	0.433	0.486	0.239	0.268	1
			Rear			50	0	23.0	22.41	0.513	0.588	0.346	0.396	
			Edge 4	19100	1900.0	1	0	24.0	23.50	0.702	0.788	0.375	0.421	
			Edge 4			50	0	23.0	22.41	0.597	0.684	0.317	0.363	

9.2 LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	20300	1745.0	1	0	24.0	23.59	0.604	0.664	0.330	0.363	2
			Rear			50	24	23.0	22.57	0.627	0.692	0.343	0.379	
			Edge 4	20300	1745.0	1	0	24.0	23.59	0.629	0.691	0.347	0.381	
			Edge 4			50	24	23.0	22.57	0.677	0.747	0.367	0.405	

9.3 LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	20450	829.0	1	0	24.3	24.03	0.255	0.271	0.159	0.169	3
			Rear			25	0	23.3	22.81	0.204	0.228	0.128	0.143	
			Edge 4	20450	829.0	1	0	24.3	24.03	0.398	0.424	0.232	0.247	
			Edge 4			25	0	23.3	22.81	0.320	0.358	0.187	0.209	

9.4 LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	23095	707.5	1	0	24.0	23.47	0.291	0.329	0.213	0.241	4
			Rear			25	25	23.0	22.45	0.234	0.266	0.175	0.199	
			Edge 4	23095	707.5	1	0	24.0	23.47	0.201	0.227	0.132	0.149	
			Edge 4			25	25	23.0	22.45	0.159	0.180	0.105	0.119	

9.5 LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	23230	782.0	1	0	24.0	23.16	0.187	0.227	0.147	0.178	5
			Rear			25	0	23.0	22.05	0.223	0.278	0.170	0.212	
			Edge 4	23230	782.0	1	0	24.0	23.16	0.142	0.172	0.086	0.104	
			Edge 4			25	0	23.0	22.05	0.203	0.253	0.121	0.151	

9.6 LTE Band 14 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	23330	793.0	1	0	24.0	23.05	0.211	0.263	0.135	0.168	6
			Rear			25	0	23.0	22.03	0.171	0.214	0.110	0.138	
			Edge 4	23330	793.0	1	0	24.0	23.05	0.145	0.180	0.085	0.106	
			Edge 4			25	0	23.0	22.03	0.268	0.335	0.161	0.201	

9.7 LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	26965	841.5	1	0	24.0	23.79	0.230	0.241	0.141	0.148	7
			Rear			36	39	23.0	22.76	0.180	0.190	0.110	0.116	
			Edge 4	26965	841.5	1	0	24.0	23.79	0.371	0.389	0.217	0.228	
			Edge 4			36	39	23.0	22.76	0.303	0.320	0.178	0.188	

9.8 LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	39750	2506.0	1	0	23.8	23.24	0.198	0.225	0.099	0.113	8
			Rear			50	0	22.8	22.08	0.156	0.184	0.078	0.092	
			Rear	40185	2549.5	1	0	23.8	23.27	0.295	0.333	0.244	0.276	
			Rear			50	24	22.8	22.24	0.262	0.298	0.226	0.257	
			Rear	40620	2593.0	1	0	23.8	23.23	0.183	0.209	0.092	0.105	
			Rear			50	0	22.8	22.39	0.144	0.158	0.073	0.080	
			Rear	41055	2636.5	1	0	23.8	23.26	0.224	0.254	0.112	0.127	
			Rear			50	50	22.8	22.17	0.175	0.202	0.087	0.101	
			Rear	41490	2680.0	1	0	23.8	22.99	0.192	0.231	0.095	0.114	
			Rear			50	50	22.8	21.96	0.137	0.166	0.068	0.083	
			Edge 4	40185	2549.5	1	0	23.8	23.27	0.230	0.260	0.116	0.131	
			Edge 4			50	24	22.8	22.24	0.180	0.205	0.090	0.102	

9.9 LTE Band 48 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	QPSK	0	Rear	55990	3625.0	1	0	23.8	23.75	0.476	0.482	0.202	0.204	9
			Rear			50	0	22.8	22.05	0.232	0.276	0.099	0.118	
			Edge 4	55990	3625.0	1	0	23.8	23.75	0.601	0.608	0.191	0.193	
			Edge 4			50	0	22.8	22.05	0.306	0.364	0.097	0.115	

9.10 Wi-Fi 2.4GHz

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	802.11b	SISO Main B	0	Rear	1	2412	99.05%	21.5	21.49	0.471	0.477	0.221	0.224	10
				Edge 2	1	2412	99.05%	21.5	21.49	0.854	0.864	0.399	0.404	
				Edge 2	6	2437	99.05%	21.5	21.41	0.837	0.863	0.392	0.404	
				Edge 2	11	2462	99.05%	21.5	21.48	0.960	0.974	0.452	0.458	
Body	802.11b	SISO Aux A	0	Rear	11	2462	99.05%	19.5	19.33	0.257	0.270	0.148	0.155	11
				Edge 4	11	2462	99.05%	19.5	19.33	0.656	0.689	0.328	0.344	
Body	802.11n (HT20)	MIMO A+B	0	Rear	1	2412	99.06%	21.0	20.91	0.211	0.218	0.118	0.122	12
				Edge 1	1	2412	99.06%	21.0	20.91	0.072	0.074	0.038	0.039	
				Edge 2	1	2412	99.06%	21.0	20.91	0.319	0.330	0.151	0.156	
				Edge 4	1	2412	99.06%	21.0	20.91	0.442	0.457	0.222	0.229	



Report No.: T220114R01-SF

Page: 52 / 60
Rev.: 00

9.11 Wi-Fi 5GHz

Frequency Band	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
5.2GHz (U-NII 1)	802.11a	SISO Main B	0	Rear	48	5240	98.17%	15.5	15.43	0.271	0.281	0.097	0.100	
				Edge 2	48	5240	98.17%	15.5	15.43	0.540	0.559	0.192	0.199	13
5.2GHz (U-NII 1)	802.11a	SISO Aux A	0	Rear	40	5200	98.17%	17.0	16.73	0.486	0.527	0.183	0.198	14
				Edge 4	40	5200	98.17%	17.0	16.73	0.388	0.421	0.131	0.142	

9.12 Bluetooth

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Body	LE_2Mbps	Aux A	0	Rear	39	2480	33.60%	10.0	9.97	0.025	0.075	0.012	0.036	
				Edge 4	39	2480	33.60%	10.0	9.97	0.057	0.172	0.029	0.088	15



10 SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These 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 < 0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), 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 or 3.6 W/kg ($\sim 10\%$ from the 1-g or 10-g respective SAR limit).
- 4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Test Results

WiFi 2.4GHz

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio	Delta Target $\leq 5\%$
							Original	Repeated		
Body	802.11b	SISO Main B	0	Edge 2	11	2462	0.960	0.955	1.01	-1%

Note(s):

Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is < 1.20 .



11 Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon Sum of SAR the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$\text{SPLSR} = (\text{SAR}_1 + \text{SAR}_2)^{1.5} / R_i$$

Where:

SAR₁ is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest measured or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

R_i is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(\text{SAR}_1 + \text{SAR}_2)^{1.5} / R_i \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest reported SAR for the frequency bands should be used to determine SAR₁ or SAR₂. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01



Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations			
Standalone	1	LTE	+	DTS (Main)	
	2	LTE	+	DTS (Main)	+ BT
	3	LTE	+	DTS (Aux)	
	4	LTE	+	U-NII (Main)	
	5	LTE	+	U-NII (Main)	+ BT
	6	LTE	+	U-NII (Aux)	
	7	LTE	+	BT	
	8	LTE	+	DTS (MIMO)	
	9	LTE	+	U-NII (MIMO)	+ BT
	10	DTS (Main)	+	BT	
	11	U-NII (Main)	+	BT	
	12	U-NII (MIMO)	+	BT	

Notes:

1. Wi-Fi 2.4GHz & Wi-Fi 5GHz cannot transmit simultaneously.
2. Bluetooth is used with Wi-Fi and WWAN antennas are active.
3. Wi-Fi SISO mode SAR result can also represent for MIMO mode SAR and is used for MIMO mode simultaneous transmission analysis because antennas are not overlapping and the MIMO mode maximum power is equal or less than SISO mode.

Estimated SAR for Simultaneous Transmission SAR Analysis Considerations for SAR estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Please refer to Estimated SAR Tables to see which test positions are inherently compliant as they consist of only estimated SAR values for all applicable transmitters and consequently will always have sum of SAR values < 1.2 W/kg. Simultaneous transmission SAR analysis was therefore not performed for these test positions.
3. Refer to Appendix C of KDB 447498 D01 and multiply the corresponding ratio by the 1-g SAR limit of 1.6 W/kg SAR.

Estimated SAR for $0.3 \text{ GHz} \leq f < 1.5 \text{ GHz}$

Tx Interface	Frequency (GHz)	Output Power		Separation Distances (cm)					P _{EM} (mW)					Exemption result				
		dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
LTE Band 5	0.844	24.30	269	1	6.7	25.4	6.4	1	24	364	1722	341	24	-MEASURE-	1.182	0.250	1.262	-MEASURE-
LTE Band 12	0.711	24.00	251	1	6.7	25.4	6.4	1	29	346	1450	326	29	-MEASURE-	1.161	0.277	1.232	-MEASURE-
LTE Band 13	0.782	24.00	251	1	6.7	25.4	6.4	1	26	356	1595	334	26	-MEASURE-	1.128	0.252	1.202	-MEASURE-
LTE Band 14	0.793	24.00	251	1	6.7	25.4	6.4	1	26	358	1618	336	26	-MEASURE-	1.122	0.248	1.195	-MEASURE-
LTE Band 26	0.8415	24.00	251	1	6.7	25.4	6.4	1	24	364	1717	341	24	-MEASURE-	1.103	0.234	1.178	-MEASURE-

Estimated SAR for $1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}$

Tx Interface	Frequency (GHz)	Output Power		Separation Distances (cm)					P _{EM} (mW)					Exemption result				
		dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4	Rear	Edge1	Edge2	Edge3	Edge4
LTE Band 2	1.9	24.00	251	1	6.7	25.4	6.4	1	12	406	3060	373	12	-MEASURE-	0.989	0.131	1.077	-MEASURE-
LTE Band 4	1.745	24.00	251	1	6.7	25.4	6.4	1	13	414	3060	381	13	-MEASURE-	0.970	0.131	1.054	-MEASURE-
LTE Band 41	2.68	23.80	240	1	6.7	25.4	6.4	1	10	374	3060	343	10	-MEASURE-	1.027	0.125	1.120	-MEASURE-
LTE Band 48	3.69	23.80	240	1	6.7	25.4	6.4	1	8	347	3060	317	8	-MEASURE-	1.107	0.125	1.211	-MEASURE-
WiFi 2.4GHz(Main)	2.462	21.50	141	0.6	6	0.9	11.5	26.3	4	309	8	1067	3060	-MEASURE-	0.730	-MEASURE-	0.211	0.074
WiFi 5.2GHz(Main)	5.24	15.50	35	0.6	6	0.9	11.5	26.3	2	254	5	975	3060	-MEASURE-	0.220	-MEASURE-	0.057	0.018
WiFi 2.4GHz(Aux)	2.462	19.50	89	0.6	3.2	26.1	14.3	1.1	4	94	3060	1616	12	-MEASURE-	1.515	0.047	0.088	-MEASURE-
WiFi 5.2GHz(Aux)	5.24	17.00	50	0.6	3.2	26.1	14.3	1.1	2	69	3060	1529	8	-MEASURE-	1.159	0.026	0.052	-MEASURE-
WiFi 2.4GHz(MIMO)	2.462	21.01	126	0.6	3.2	0.9	11.5	1.1	4	94	8	1067	12	-MEASURE-	-MEASURE-	-MEASURE-	0.189	-MEASURE-
Bluetooth(Aux)	2.48	10.00	10	0.6	3.2	26.1	14.3	1.1	4	93	3060	1615	12	-MEASURE-	0.172	0.005	0.010	1.333

11.1 Sum of the SAR for LTE Band 2 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	①+②	①+②+⑦	①+③	①+⑦	①+④	①+⑤	①+⑤+⑦	①+⑥	①+⑤+⑥+⑦
Rear	0.588	0.477	0.270	0.218	0.281	0.527	0.075	1.065	1.140	0.858	0.663	0.806	0.869	0.944	1.115	1.471
Edge 1	0.989			0.074			0.172					1.063				
Edge 2	0.131	0.974	0.047	0.330	0.559	0.026	0.005	1.105	1.110	0.178	0.136	0.461	0.690	0.695	0.157	0.721
Edge 4	0.788	0.074	0.689	0.457	0.018	0.421	0.172	0.862	1.034	1.477	0.960	1.245	0.806	0.978	1.209	1.399

11.2 Sum of the SAR for LTE Band 4 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.692	0.477	0.270	0.218	0.281	0.527	0.075	1.169	1.244	0.962	0.767	0.910	0.973	1.048	1.219	1.575
Edge 1	0.970			0.074			0.172					1.044				
Edge 2	0.131	0.974	0.047	0.330	0.559	0.026	0.005	1.105	1.110	0.178	0.136	0.461	0.690	0.695	0.157	0.721
Edge 4	0.747	0.074	0.689	0.457	0.018	0.421	0.172	0.821	0.993	1.436	0.919	1.204	0.765	0.937	1.168	1.358

11.3 Sum of the SAR for LTE Band 5 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.271	0.477	0.270	0.218	0.281	0.527	0.075	0.748	0.823	0.541	0.346	0.489	0.552	0.627	0.798	1.154
Edge 1	1.182			0.074			0.172					1.256				
Edge 2	0.250	0.974	0.047	0.330	0.559	0.026	0.005	1.224	1.229	0.297	0.255	0.580	0.809	0.814	0.276	0.840
Edge 4	0.424	0.074	0.689	0.457	0.018	0.421	0.172	0.498	0.670	1.113	0.596	0.881	0.442	0.614	0.845	1.035

11.4 Sum of the SAR for LTE Band 12 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.329	0.477	0.270	0.218	0.281	0.527	0.075	0.806	0.881	0.599	0.404	0.547	0.610	0.685	0.856	1.212
Edge 1	1.161			0.074			0.172					1.235				
Edge 2	0.277	0.974	0.047	0.330	0.559	0.026	0.005	1.251	1.256	0.324	0.282	0.607	0.836	0.841	0.303	0.867
Edge 4	0.227	0.074	0.689	0.457	0.018	0.421	0.172	0.301	0.473	0.916	0.399	0.684	0.245	0.417	0.648	0.838

11.5 Sum of the SAR for LTE Band 13 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.278	0.477	0.270	0.218	0.281	0.527	0.075	0.755	0.830	0.548	0.353	0.496	0.559	0.634	0.805	1.161
Edge 1	1.128			0.074			0.172					1.202				
Edge 2	0.252	0.974	0.047	0.330	0.559	0.026	0.005	1.226	1.231	0.299	0.257	0.582	0.811	0.816	0.278	0.842
Edge 4	0.253	0.074	0.689	0.457	0.018	0.421	0.172	0.327	0.499	0.942	0.425	0.710	0.271	0.443	0.674	0.864

11.6 Sum of the SAR for LTE Band 14 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.263	0.477	0.270	0.218	0.281	0.527	0.075	0.740	0.815	0.533	0.338	0.481	0.544	0.619	0.790	1.146
Edge 1	1.122			0.074			0.172					1.196				
Edge 2	0.248	0.974	0.047	0.330	0.559	0.026	0.005	1.222	1.227	0.295	0.253	0.578	0.807	0.812	0.274	0.838
Edge 4	0.335	0.074	0.689	0.457	0.018	0.421	0.172	0.409	0.581	1.024	0.507	0.792	0.353	0.525	0.756	0.946

11.7 Sum of the SAR for LTE Band 26 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)								
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII	WWAN + U-NII + BT
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥	① + ⑤ + ⑥ + ⑦
Rear	0.241	0.477	0.270	0.218	0.281	0.527	0.075	0.718	0.793	0.511	0.316	0.459	0.522	0.597	0.768	1.124
Edge 1	1.103			0.074			0.172					1.177				
Edge 2	0.234	0.974	0.047	0.330	0.559	0.026	0.005	1.208	1.213	0.281	0.239	0.564	0.793	0.798	0.260	0.824
Edge 4	0.389	0.074	0.689	0.457	0.018	0.421	0.172	0.463	0.635	1.078	0.561	0.846	0.407	0.579	0.810	1.000

11.8 Sum of the SAR for LTE Band 41 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)							
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥
Rear	0.333	0.477	0.270	0.218	0.281	0.527	0.075	0.810	0.885	0.603	0.408	0.551	0.614	0.689	0.860
Edge 1	1.027			0.074			0.172					1.101			
Edge 2	0.125	0.974	0.047	0.330	0.559	0.026	0.005	1.099	1.104	0.172	0.130	0.455	0.684	0.689	0.151
Edge 4	0.260	0.074	0.689	0.457	0.018	0.421	0.172	0.334	0.506	0.949	0.432	0.717	0.278	0.450	0.681

11.9 Sum of the SAR for LTE Band 48 & Wi-Fi & BT

Test Position	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)							
	WWAN		DTS		U-NII		BT	WWAN + DTS	WWAN + DTS + BT	WWAN + DTS	WWAN + BT	WWAN + DTS	WWAN + U-NII	WWAN + U-NII + BT	WWAN + U-NII
	①	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	① + ②	① + ② + ⑦	① + ③	① + ⑦	① + ④	① + ⑤	① + ⑤ + ⑦	① + ⑥
Rear	0.482	0.477	0.270	0.218	0.281	0.527	0.075	0.959	1.034	0.752	0.557	0.700	0.763	0.838	1.009
Edge 1	1.107			0.074			0.172					1.181			
Edge 2	0.125	0.974	0.047	0.330	0.559	0.026	0.005	1.099	1.104	0.172	0.130	0.455	0.684	0.689	0.151
Edge 4	0.608	0.074	0.689	0.457	0.018	0.421	0.172	0.682	0.854	1.297	0.780	1.065	0.626	0.798	1.029

11.10 Sum of the SAR for Wi-Fi & BT

Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)			
	DTS		U-NII		BT		DTS + BT	U-NII + U-NII	U-NII + BT	U-NII + BT
	Chain B ②	Chain A ③	MIMO ④	Chain B ⑤	Chain A ⑥	⑦	② + ⑦	⑤ + ⑥	⑤ + ⑦	⑤ + ⑥ + ⑦
Rear	0.477	0.270	0.218	0.281	0.527	0.075	0.552	0.808	0.356	0.883
Edge 1			0.074			0.172	0.172	0.000	0.172	0.172
Edge 2	0.974	0.047	0.330	0.559	0.026	0.005	0.979	0.585	0.564	0.590
Edge 4	0.074	0.689	0.457	0.018	0.421	0.172	0.246	0.439	0.190	0.611

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12 Equipment List & Calibration Status

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements				
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	SPEAG	DAKS_VNA R140	0140417	2023/1/24
Dielectric Assessment Kit	SPEAG	DAKS-3.5	1001	2023/1/26
Thermometer	TES	TES-1306	210801061	2022/10/21

System Check				
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	Agilent	N5181A	MY50144143	2022/5/13
Power Meter	Agilent	E4417A	MY52240003	2022/10/26
Power Sensor	Agilent	E9301H	MY52200004	2022/10/24
Power Sensor	Agilent	E9301H	MY51470002	2022/3/22
Dual Directional Coupler	Agilent	772D	MY46151242	2022/9/10
Dual Directional Coupler(0-2G)	Agilent	778D	MY48220468	2022/9/10
Amplifier	EMCI	ZHL-42	S1900976	N/A
Amplifier	EMCI	ZVE-8G	S1900977	N/A
Data Acquisition Electronics	SPEAG	DAE4	1260	2022/9/19
Dosimetric E-Field Probe	SPEAG	EX3DV4	3665	2022/8/24
Dosimetric E-Field Probe	SPEAG	EX3DV4	7686	2022/10/5
System Validation Dipole	SPEAG	D750V3	1078	2022/6/21
System Validation Dipole	SPEAG	D835V2	4d063	2022/10/18
System Validation Dipole	SPEAG	D1750V2	1111	2022/4/14
System Validation Dipole	SPEAG	D1900V2	5d173	2022/4/15
System Validation Dipole	SPEAG	D2450V2	727	2022/4/14
System Validation Dipole	SPEAG	D2600V2	1058	2022/8/26
System Validation Dipole	SPEAG	D3500V2	1009	2022/10/21
System Validation Dipole	SPEAG	D3700V2	1057	2022/11/23
System Validation Dipole	SPEAG	D5GHzV2	1040	2022/6/3
Humidity/Temp meter	TECPEL	DTM-303A	TP130074	2022/4/26
Thermometer	TES	TES-1306	210801061	2022/10/21

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Wideband Radio Communication Tester	Anritsu	MT-8820C	00000568	2022/12/21
Wideband Radio Communication Tester	R&S	CMW500	165070	2022/10/11



Report No.: T220114R01-SF

Page: 60 / 60
Rev.: 00

13 Facilities

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

14 Appendixes

Exhibit	Content
1	SAR Setup Photos
2	SAR System Check Plots
3	Highest SAR Test Plots
4	SAR DAE and Probe Calibration Certificates
5	SAR Dipole Calibration Certificates

END OF REPORT