



**Part 0: SAR Characterization
EUT RF Exposure Compliance Test Report**

For
GSM/WCDMA/LTE/5G NR Tablet + BT/BLE, DTS/UNII a/b/g/n/ac/ax and Digitizer

**FCC ID: A3LSMX626B
Model Name: SM-X626B**

**Report Number: 15605535-S5V2
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Prepared for
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Revision History

Rev.	Date	Revisions	Revised By
V1	2025/02/11	Initial Issue	--
V2	2025/02/13	1. §1: Updated <i>Date Tested</i> to the correct dates 2. §4.3: Added verbiage to state LTE Band coverage	Nathan Sousa

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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO., LTD.	
FCC ID	A3LSMX626B	
Model Name	SM-X626B	
Reference SAR Report	15605535-S1	
Exposure Category	SAR Limits (W/Kg)	
	Peak Spatial Average (1-g of tissue)	Extremities (hands, wrists, ankles, etc.) (10-g of tissue)
General Population (Uncontrolled Exposure)	1.6	4
Date Tested	2024/12/23 to 2025/02/05	
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the U.S. Government, or any agency of the U.S. government.		
Approved & Released By:		Prepared By:
		
Justin Park Operations Leader UL Verification Services Inc.		Nathan Sousa Senior Laboratory Engineer UL Verification Services Inc.

2. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

47173 Benicia Street
SAR Labs A, E, F, G, H, I

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05

3. Introduction

The equipment under test (EUT) is a smart phone. It contains the Samsung modem supporting 2G/3G/4G/5G WWAN technologies. These WWAN modems enable Samsung's S.LSI TAS feature to control and manage transmitting power, in real time, and to ensure the time-averaged RF exposure is always in compliance with the FCC requirement.

In this report, Part 0, the EUT SAR is characterized for WWAN radios (2G/3G/4G/5G) to determine the power limit that corresponds to the exposure design target after accounting for all device design related uncertainties, i.e., $SAR_{Design\ Target} (< FCC\ SAR\ limit)$ for Sub-6 GHz radio. The SAR Characterization is denoted as *SAR Char*.

SAR Char will be used as input for Samsung S.LSI TAS to operate. *SAR Char* will be loaded and stored in the EUT's software.

The EUT supports WLAN/BT radio(s) as well, but the WLAN/BT modem is not enabled with Samsung's S.LSI TAS feature.

4. SAR Characterization

SAR Char is generated to cover all radio configurations and usage scenarios that are reported in the initial FCC submission.

4.1. Worst-case SAR Determination

Based on FCC KDBs, in general, for a smartphone, the SAR evaluation is required for the exposure scenarios shown in Figure 4-1.

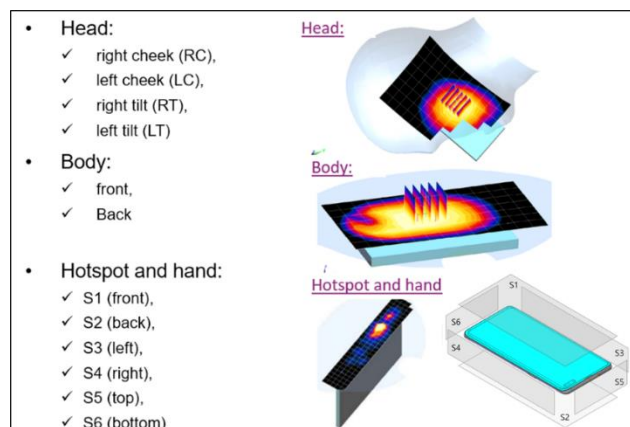


Figure 4-1: SAR evaluation for smartphone application

The *Device/Radio State Index* (D/RSI) used represents each exposure scenario. Depending on the detection scheme implemented in the EUT, the worst-case SAR is further grouped and determined for each or combined exposure scenario(s). Note, for the 1-g SAR versus 10-g SAR exposure scenario, the worst-case is determined in term of exposure ratio (i.e., exposure level relative to the corresponding 1-g or 10-g SAR limit).

- If the device does not have any detection mechanism, then the worst-case SAR is determined by taking the maximum SAR value among all exposure scenarios, e.g., worst-case SAR = $\max \{SAR_{head}, SAR_{body/extremity}, SAR_{hotspot}, SAR_{standalone}\}$
- If the device can distinguish each of the above scenarios, then the worst-case SAR for each individual exposure scenario is given by corresponding SAR_{head} , $SAR_{body/extremity}$, $SAR_{hotspot}$, and $SAR_{standalone}$.
- If the device can only distinguish a subset of the scenarios, then the worst-case SAR is given by:
 - Corresponding SAR for each exposure scenario that can be distinguished (D/RSI=yes)
 - Worst-case SAR among all other exposure scenario(s) that cannot be distinguished (D/RSI=no)

4.2. Usage Scenarios in SAR Evaluation

The EUT has a detection mechanism to distinguish between max and reduced powers, which is represented using *D/RSI 0* and *Grip*. These states were used to determine the power limit for S.LSI TAS to operate; where the exposure scenario is managed, all other exposures which cannot be distinguished, in this particular instance and based on the worst-case SAR determination criteria described in §4.1, the maximum SAR (or the minimum P_{Limit}) among all remaining exposure scenarios (e.g., Body-worn 1-g SAR evaluation at a specified test separation distance, phablet extremity 10-g SAR evaluation at a specified test separation distance, and maximum RF tune-up power (P_{Max}) supported by the device if SAR measurement is not performed for this tech/band/antenna because of meeting SAR test exclusion criteria) is used to determine the power limit for S.LSI TAS to operate.

The corresponding usage scenarios supported by EUT are summarized in Table 4-1:

Table 4-1: Usage/Exposure Scenario

Scenario	Power Mode	Description	SAR Definition	Worst-case SAR
Standalone	RSI 0 Grip	▪ Device transmits in Standalone mode and assumed to be located next to human body ▪ 1-g SAR is evaluated for all six surfaces of the EUT (S1-S6 as shown in Figure 4-1) at variable test separation distance relative to the flat/ELI phantom	$SAR_{standalone} = \max \{SAR_{s1}, SAR_{s2}, SAR_{s3}, SAR_{s4}, SAR_{s5}, SAR_{s6}\}$	$SAR_{standalone}$

4.3. SAR_{Design Target} and Characterization

The total device design and related uncertainties of the EUT is shown below (in dB), which includes TxAGC and device to device variation.

To account for the total uncertainty, $SAR_{Design Target}$ needs to be:

$$SAR_{Design Target} < SAR_{regulatory limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

For the FCC SAR requirement of 1.6 W/kg and 4.0 W/kg, 1-g and 10-g SAR respectively, the $SAR_{Design Target}$ for the EUT is determined as:

Table 4-2: SAR_{Design Targets}, SAR_{Design Limits}, and SAR Characterizations

Technology	Antenna	Power Mode	P _{Limit} at SAR _{Design Target} (dBm)	P _{Limit} at SAR _{Design Limit} (dBm)	1-g SAR _{Design Target} (W/kg)	1-g SAR _{Design Limit} (W/kg)	P _{Max} (dBm)	P _{Limit} (dBm)	P _{Limit, meas} (dBm)	Worst-case 1-g Meas. SAR (W/kg)	Worst-case 1-g Scaled SAR (W/kg)
GSM 850	Main 1	RSI 0	32.3	33.3	1.010	1.271	27.5	27.5	26.4	0.260	0.335
GSM 850	Main 1	Grip	24.6	25.6	1.010	1.271	27.5	18.0	16.8	0.166	0.219
GSM 1900	Main 1	RSI 0	31.0	32.0	1.010	1.271	25.5	24.5	23.7	0.189	0.227
GSM 1900	Main 1	Grip	20.6	21.6	1.010	1.271	25.5	16.0	14.5	0.247	0.349
W-CDMA B2	Main 1	RSI 0	33.4	34.4	1.010	1.271	25.0	25.0	23.9	0.113	0.146
W-CDMA B2	Main 1	Grip	16.9	17.9	1.010	1.271	25.0	15.0	13.7	0.487	0.657
W-CDMA B4	Main 1	RSI 0	29.5	30.4	1.010	1.271	25.0	25.0	24.1	0.294	0.363
W-CDMA B4	Main 1	Grip	16.3	17.3	1.010	1.271	25.0	15.0	13.7	0.556	0.750
W-CDMA B5	Main 1	RSI 0	28.5	29.5	1.010	1.271	25.0	25.0	24.2	0.374	0.450
W-CDMA B5	Main 1	Grip	20.0	21.0	1.010	1.271	25.0	15.0	13.7	0.237	0.320
LTE B5	Main 1	RSI 0	29.0	30.0	1.010	1.271	25.0	25.0	24.5	0.362	0.406
LTE B5	Main 1	Grip	20.9	21.9	1.010	1.271	25.0	18.0	17.0	0.407	0.512
LTE B12	Main 1	RSI 0	30.5	31.5	1.010	1.271	25.0	25.0	24.4	0.246	0.282
LTE B12	Main 1	Grip	22.5	23.5	1.010	1.271	25.0	20.0	18.9	0.436	0.562
LTE B13	Main 1	RSI 0	29.2	30.2	1.010	1.271	25.0	25.0	24.3	0.330	0.388
LTE B13	Main 1	Grip	22.8	23.8	1.010	1.271	25.0	20.0	18.9	0.408	0.526
LTE B25	Main 1	RSI 0	27.9	28.9	1.010	1.271	26.0	26.0	24.9	0.508	0.654
LTE B25	Main 1	Grip	17.1	18.1	1.010	1.271	26.0	17.0	16.0	0.790	0.995
LTE B26	Main 1	RSI 0	29.9	30.9	1.010	1.271	25.5	25.5	24.7	0.306	0.368
LTE B26	Main 1	Grip	21.0	22.0	1.010	1.271	25.5	17.5	17.1	0.415	0.455
LTE B41 PC3	Main 1	RSI 0	31.2	32.2	1.010	1.271	26.0	26.0	25.0	0.241	0.303
LTE B41 PC3	Main 1	Grip	16.4	17.4	1.010	1.271	26.0	16.0	15.0	0.737	0.928
LTE B66	Main 1	RSI 0	30.3	31.3	1.010	1.271	26.0	26.0	25.1	0.308	0.379
LTE B66	Main 1	Grip	16.8	17.8	1.010	1.271	26.0	17.0	15.7	0.776	1.047
FR1 n5	Main 1	RSI 0	31.4	32.4	1.010	1.271	25.0	25.0	24.5	0.207	0.232
FR1 n5	Main 1	Grip	21.4	22.4	1.010	1.271	25.0	15.0	14.4	0.201	0.231
FR1 n41 PC3	Main 1	RSI 0	33.0	34.0	1.010	1.271	25.0	19.0	18.9	0.039	0.040
FR1 n41 PC3	Main 1	Grip	21.0	22.0	1.010	1.271	25.0	11.0	10.7	0.094	0.101
FR1 n41 PC3	Sub 3	RSI 0	12.6	13.4	1.010	1.271	22.0	11.0	10.1	0.567	0.731
FR1 n66	Main 1	RSI 0	31.1	32.1	1.010	1.271	25.0	25.0	24.5	0.222	0.249
FR1 n66	Main 1	Grip	17.5	18.5	1.010	1.271	25.0	14.0	12.9	0.352	0.453
FR1 n77 (Block A) PC3	Main 2	RSI 0	25.6	26.6	1.010	1.271	25.5	19.5	18.7	0.206	0.248
FR1 n77 (Block A) PC3	Main 2	Grip	14.9	15.9	1.010	1.271	25.5	10.0	9.4	0.283	0.325
FR1 n77 (Block A) PC2	Main 2	RSI 0	23.1	24.1	1.010	1.271	27.5	21.5	21.1	0.639	0.701
FR1 n77 (Block A) PC2	Main 2	Grip	14.9	15.9	1.010	1.271	27.5	10.0	9.4	0.283	0.325
FR1 n77 (Block C) PC3	Main 2	RSI 0	26.3	27.3	1.010	1.271	25.5	19.5	19.3	0.203	0.213
FR1 n77 (Block C) PC3	Main 2	Grip	13.9	14.9	1.010	1.271	25.5	10.0	9.6	0.377	0.413
FR1 n77 (Block C) PC2	Main 2	RSI 0	22.4	23.4	1.010	1.271	27.5	21.5	20.7	0.679	0.816
FR1 n77 (Block C) PC2	Main 2	Grip	13.9	14.9	1.010	1.271	27.5	10.0	9.6	0.377	0.413

Note(s):

- LTE Bands 2, 4, and 17 are covered by LTE Bands 25, 66, and 12 respectively.

Referring to the initial FCC submission, the worst-case *reported* SAR for each antenna/technology/band/power mode is summarized in Table 4-2:

Using the reported SAR listed in Table 4-2, and following the procedure described in §4.1, the SAR_{Char} of this EUT, i.e., P_{Limit} corresponding to $SAR_{Design Target}$, is determined for each supported antenna/technology/band/power mode as:

1. For *RSI 0* and *Grip*, P_{Limit} is calculated based on Standalone 1-g SAR evaluation at variable spacing.

$$P_{Limit} = \min \left\{ \begin{array}{l} P_{Limit} \text{ corresponding to 1 - g SAR evaluation at variable spacing} \\ P_{Max} \text{ maximum RF tuneup power for the case that the SAR test is excluded} \end{array} \right.$$

The SAR Char is also listed in Table 4-2.

END OF REPORT