

FCC 47 CFR § 2.1093

RF EVALUATION REPORT (Digitizer)

FOR

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

MODEL NUMBER: SM-X510

FCC ID: A3LSMX510

REPORT NUMBER: 4790841159-S2V1

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Prepared for

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Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	8/1/2023	Initial Issue	--

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1. Attestation of SAR Characterization

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.
FCC ID	A3LSMX510
Model Number	SM-X510
Applicable Standards	FCC 47 CFR § 2.1093 KDB 447498 D01v06
Test Results	COMPLIES
UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government	
Approved & Released By:	Prepared By:
	
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2. Digitizer function information

Digitizer has four operations at different frequencies. And Depending on Operational description (provided by manufacturer), The digitizer has a maximum output of 50mW.

Frequency (kHz)	Maximum output power (mW)	Operations
562.5	50.0	Detect Pen tip.
531	50.0	When pressing Button of Pen.
593	50.0	Detect Pen's erase.
656.25	50.0	Keyboard cover closing detection.

3. RF exposure evaluation for portable conditions

3.1. KDB 447498 D01 4.3.1.c) :

For frequencies below 100 MHz, the following may be considered for SAR test exclusion.

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances $\leq 50\text{mm}$, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by 1/2.
- 3) SAR measurement procedures are not established below 100 MHz.

3.2. Standalone test exclusion for Digitizer function

Standalone SAR test is not required for Digitizer function according to calculation results.

Frequency range (kHz)	maximum output power (mW)	Threshold (mW)	SAR test exclusion
531.00	50.0	776.2	Yes
562.50	50.0	770.2	Yes
593.00	50.0	764.8	Yes
656.25	50.0	754.4	Yes

3.3. Simultaneous transmission SAR test exclusion considerations

When an antenna qualifies for the standalone SAR test exclusion of 4.3.1 of KDB 447498 D01v06 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria.

- 1) $[(\text{max.power of channel, including tune-up tolerance, mW})/(\text{min.test separation distance, mm})] * [\sqrt{f(\text{GHz})}/x] \text{ W/kg}$, for test separation distance $\leq 50 \text{ mm}$;

Where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

The Digitizer function operate at DUT's front (display). In this case, we expect exposure mainly from the hands. So we consider 10-g estimated SAR.

Frequency range (kHz)	maximum output power (mW)	min.test separation distance (mm)	10-g estimated SAR (W/kg)
531.00	50.0	5.0	0.01
562.50	50.0	5.0	0.01
593.00	50.0	5.0	0.01
656.25	50.0	5.0	0.01

Digitizer function's 10-g estimated SAR is 0.01 W/kg. the value is below 0.25% of the extremity SAR limit. So simultaneous transmission is not consider with other transmitters due to too lower ratio.

END OF REPORT