



RF Exposure Report

(Part 0: SAR Char Evaluation)

FCC ID : UZ7MC345A
Equipment : Mobile Computer
Brand Name : ZEBRA
Model Name : MC345A
Applicant : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
Manufacturer : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
Standard : FCC 47 CFR Part 2 (2.1093)

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

Sporton International Inc. EMC & Wireless Communications Laboratory
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan



Table of Contents

1. Introduction 4

2. SAR Characterization..... 4

 2.1 SAR design target and uncertainty..... 5

 2.2 SAR Char Table 6



History of this test report

Report No.	Version	Description	Issued Date
FA4O2228A	01	Initial issue of report	Jan. 15, 2025

1. Introduction

The RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency $\leq$ 6GHz) to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement. Cannot operate without SAR characterization at the device level, beforehand.

This report describes the procedures for the SAR char and the parameters obtained from SAR characterization (referred to as SAR char respectively) will be used as input for Smart Transmit. Both SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

Terminologies in this report

Plimit	The time-averaged RF power which corresponds to SAR_design_target.
Pmax	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR char	Plimit for all the technologies/bands for all applicable DSI

Test Lab Information

Test Firm Name	Sporton International Inc.
Test Firm Information	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan TEL: +886-3-327-3456 FAX: +886-3-328-4978
FCC Designation No.	TW1190
Test Engineers	Steven Chang, Aaron Chen
Report Producer	Paula Chen

2. SAR Characterization

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for $f < 6$ GHz.

2.1 SAR design target and uncertainty

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

Band	Antenna	Duty Cycle	WLAN OFF (P limit)		WLAN ON (P limit)	Power Back off for WLAN ON
			Free Space Mode	Body-worn 1g SAR / Extremity 10g SAR	Hotspot 1g SAR	Body-worn 1g SAR / Extremity 10g SAR
			DS10	DS11	DS13	DS11
WCDMA II	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
WCDMA IV	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
WCDMA V	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B7	5	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B12/17	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B13	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B14	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B25/2	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B26/5	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B30	5	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B66/4	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B71	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B41/38 PC3	5	63.30%	0.840	0.84/2.26	0.422	0.422/1.13
LTE B48	8	63.30%	0.840	0.84/2.26	0.422	0.422/1.13
n7	5	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n12	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n13	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n14	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n25/2	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n26/5	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n30	5	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n66	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n71	1	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n41/38 PC3	5	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n41 PC2	5	50.00%	0.840	0.84/2.26	0.422	0.422/1.13
n41 PC3 SRS	2	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n41 PC3 SRS	3	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n41 PC3 SRS	4	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n48	8	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q/96 PC3	9	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q PC2	9	50.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q PC3	8	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q PC2	8	50.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 96 PC3	8	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q PC3	3	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 96 PC3 SRS	3	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 27O/27Q PC3	4	100.00%	0.840	0.84/2.26	0.422	0.422/1.13
n77/78_Part 96 PC3 SRS	4	100.00%	0.840	0.84/2.26	0.422	0.422/1.13

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

2.2 SAR Char Table

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + 1.5dB uncertainty.

**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).

The max allowed output power is the P_{limit} + 1.5dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Band	Config	Antenna	Duty Cycle	P _{max}	WLAN OFF (P _{limit}) (dBm)		WLAN ON (P _{limit}) (dBm)	Power Back off for WLAN ON (dB)	
					Free Space Mode	Body-worn / Extremity	Hotspot	Free Space Mode	Body-worn / Extremity
				DSI0	DSI0	DSI1	DSI3	DSI0	DSI1
WCDMA II	TX0	1	100.00%	23.0	36.2	22.4	19.5		2.9
WCDMA IV	TX0	1	100.00%	23.5	36.7	21.8	19.0		2.8
WCDMA V	TX0	1	100.00%	23.5	30.7	24.1	21.5		2.0
LTE B7	TX0	5	100.00%	24.2	33.0	25.2	21.0		1.9
LTE B12/17	TX0	1	100.00%	24.2	33.3	28.2	24.2		
LTE B13	TX0	1	100.00%	24.2	31.6	26.0	23.4		0.8
LTE B14	TX0	1	100.00%	24.2	31.7	25.9	23.4		0.8
LTE B25/2	TX0	1	100.00%	24.2	36.1	23.2	20.5		2.7
LTE B26/5	TX0	1	100.00%	24.2	30.9	25.4	22.0		2.2
LTE B30	TX0	5	100.00%	24.2	32.1	24.8	21.6		2.6
LTE B66/4	TX0	1	100.00%	24.2	36.0	21.1	19.1		2.0
LTE B71	TX0	1	100.00%	23.5	34.9	30.3	23.5		
LTE B41/38 PC3	TX0	5	63.30%	21.5	32.6	24.4	20.0		
LTE B48	TX0	8	63.30%	20.8	29.1	24.3	19.0		
n7	TX0	5	100.00%	24.2	33.2	24.2	21.0		3.2
n12	TX0	1	100.00%	24.2	34.2	28.3	24.2		
n13	TX0	1	100.00%	24.2	39.3	26.4	23.3		0.9
n14	TX0	1	100.00%	24.2	31.7	26.2	23.3		0.9
n25/2	TX0	1	100.00%	24.2	36.4	22.4	20.0		2.3
n26/5	TX0	1	100.00%	24.2	30.4	24.4	21.0		3.2
n30	TX0	5	100.00%	24.2	32.0	24.6	21.0		3.2
n66	TX0	1	100.00%	24.2	36.6	21.3	18.8		2.5
n71	TX0	1	100.00%	23.5	34.5	31.2	23.5		
n41/38 PC3	TX0	5	100.00%	24.2	32.3	24.4	20.5		2.2
n41 PC2	TX0	5	50.00%	23.0					
n41 PC3 SRS	TX1	2	100.00%	21.5	32.4	23.4	21.5		
n41 PC3 SRS	MIMO0	3	100.00%	21.0	36.2	33.6	21.0		
n41 PC3 SRS	MIMO1	4	100.00%	21.0	35.6	27.1	21.0		
n48	TX0	8	100.00%	22.8	30.3	25.6	19.0		2.0
n77/78_Part 27O/27Q/96 PC3	TX0	9	100.00%	20.0	32.8	23.1	17.0		
n77/78_Part 27O/27Q PC2	TX0	9	50.00%	20.0					
n77/78_Part 27O/27Q PC3	TX1	8	100.00%	23.5	30.4	21.8	17.0		3.0
n77/78_Part 27O/27Q PC2	TX1	8	50.00%	23.0					
n77/78_Part 96 PC3	TX1	8	100.00%	21.9					
n77/78_Part 27O/27Q PC3	MIMO0	3	100.00%	20.5	32.8	22.3	19.2		
n77/78_Part 96 PC3 SRS	MIMO0	3	100.00%	18.9					
n77/78_Part 27O/27Q PC3	MIMO1	4	100.00%	20.5	36.6	17.7	14.8		2.9
n77/78_Part 96 PC3 SRS	MIMO1	4	100.00%	18.9					