

SAR EXEMPTION EXHIBIT

FCC

APPLICANT

Socket Mobile, Inc.

MODEL NAME

D600

FCC ID

LUBD600-1

REPORT NUMBER

HA211208-SOC-004-R06

TEST REPORT

Date of Issue
February 11, 2022

Test Site
Hyundai C-Tech, Inc. dba HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

Applicant	Socket Mobile, Inc.
Applicant Address	39700 Eureka Drive, Newark, CA 94560, U.S.A.
FCC ID	LUBD600-1
Model Name	D600
EUT Type	NFC & RFID Contactless Reader/Writer
FCC Rule Part(s)	Part 2 (§2.1091)
Test Procedure	KDB 447498 D01 v06

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was in accordance with the procedures specified in §2.947. The results in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Hyundai C-Tech, Inc. dba HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

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REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA211208-SOC-004-R06	02/11/2022	Initial Issue

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1. EUT DESCRIPTION

Model	D600	
EUT Type	NFC & RFID Contactless Reader/Writer	
Power Supply	Battery Charging : 5 V d.c. Lithium-Ion Battery ; 3.7 VDC, 1400 mAh	
RF Specification	13.56 MHz : ASK Bluetooth LE V5.0 (1 Mbps) : GFSK	
Bluetooth LE V5.0	Model: BGM13P32	FCC ID: QOQBGM13P IC ID: 5123A-BGM13P
Frequency Range	NFC : 13.56 MHz Bluetooth LE : 2402 MHz - 2480 MHz	
Max. RF Output Power	Bluetooth LE : Max tune up power including the tolerance : 8.9 dBm	
Modulation Type	NFC : ASK Bluetooth LE : GFSK	
Number of Channels	NFC : 1 Channel Bluetooth LE : 40 Channels	
Antenna Specification ¹⁾	NFC : Loop Antenna Bluetooth LE : Chip Antenna (Peak Gain : 1.0 dBi)	
Transmitter Chain	1	
Operating Environment ²⁾	Indoor	
Operating Temperature ²⁾	-20 °C ~ 70 °C	
Firmware Version ³⁾	v1.51 (Build 52)	
Hardware Version ³⁾	Rev F	

Note :

1. Antenna information is based on the document provided.
2. Environmental operating condition is declared by the manufacturer.
3. Firmware and Hardware Versions are provided by the client.

2. INTRODUCTION

2.1. LIMIT

The RF exposure from portable device, as defined by FCC, must be evaluated with respect to FCC-adopted limits for SAR in accordance with 47 CFR §2.1091.

If no other RF exposure testing or reporting are required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exclusion.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table, Appendix A, KDB 447498 D01 v06, 'General RF Exposure Guidance'.

MHz	5	10	15	20	25	30	35	40	45	50	mm
150	39	77	116	155	194	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	164	192	219	246	274	
450	22	45	67	89	112	134	157	179	201	224	
835	16	33	49	66	82	98	115	131	148	164	
900	16	32	47	63	79	95	111	126	142	158	
1500	12	24	37	49	61	73	86	98	110	122	
1900	11	22	33	44	54	65	76	87	98	109	
2450	10	19	29	38	48	57	67	77	86	96	
3600	8	16	24	32	40	47	55	63	71	79	
5200	7	13	20	26	33	39	46	53	59	66	
5400	6	13	19	26	32	39	45	52	58	65	
5800	6	12	19	25	31	37	44	50	56	62	

Note : 10-g Extremity SAR Test Exclusion Power Threshold are 2.5 times higher than the 1g SAR Test Exclusion Threshold indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following equation according to 4.3.1 a), KDB 447498 D01 v06 :

1-g SAR Test Exclusion Thresholds

$$\frac{(\text{max. power of channel, including tuneup tolerance, mW})}{(\text{min. test separation distance, mm})} \times [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR}$$

10-g SAR Test Exclusion Thresholds

$$\frac{(\text{max. power of channel, including tuneup tolerance, mW})}{(\text{min. test separation distance, mm})} \times [\sqrt{f(\text{GHz})}] \leq 7.5 \text{ for 10-g Extremity SAR}$$

3. RESULT

3.1. SUMMARY OF RESULTS

Mode	Frequency (MHz)	Max Power ¹⁾ (dBm)	Max. Power (mW)	Calculated Threshold
Bluetooth LE	2402	8.90	7.76	2.41
	2440	8.90	7.76	2.43
	2480	8.90	7.76	2.44

Note :

1. Maximum output power including tune-up tolerance.

Sample Calculation (Worst case) :

1g-SAR Exclusion Threshold :

(max. power of channel including tune-up tolerance in mW) / (min. test separation distance) x SQRT(frequency in GHz)
= (7.76 mW) / (5 mm) x SQRT(2.480 GHz) = 2.44 ≤ 3.0 (1g-SAR exclusion threshold)

10g-SAR Exclusion Threshold :

The same result is also less than 7.5 (10g-SAR exclusion threshold)

3.2. CONCLUSION

The calculated worst-case threshold is 2.44 at the frequency 2480 MHz, which is less than 3.0 (1-g SAR Exclusion limit) and 7.5 (10-g SAR exclusion limit), therefore SAR evaluation is not required for the EUT.

END OF TEST REPORT