

RADIO FREQUENCY RADIATION EXPOSURE

MAGICARD LTD

Magicard 600 Family

General SAR test reduction & exclusion guidance

KDB 447498

Report no. TRA-064793-47-26B

Test Report Number: TRA-064793-47-26B
Works Order Number: TRA-064783-09
Equipment Under Test (EUT): Magicard 600 Family
FCCID: XDW3652-0900
Contains FCCID: KA2AN3UA1 (2.4 GHz)
Contains FCCID: WP5TWN4F3 (13.56MHz + 125kHz)
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Section 4.3 General SAR test reduction and exclusion guidance

For Standalone SAR exclusion consideration, when SAR Exclusion Threshold requirement in KDB 447498 is satisfied, standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.

The SAR Test Exclusion Threshold for frequencies in the range 100 MHz to 6 GHz, and for test separation distance of ≤ 50 mm, is determined as follows.

$$\text{SAR Exclusion Threshold (SARET)} = (\text{NT} \times \text{TSD}_A) / \sqrt{f_{\text{GHz}}}$$

Where,

NT = Numeric Threshold (3.0 for 1-g SAR and 7.5 for 10-g SAR)

TSD_A = Minimum Test separation distance or 50 mm (whichever is lower)

f_{GHz} = Transmit frequency in GHz

The SAR Test Exclusion Threshold for frequencies below 100 MHz, and for test separation distance of ≤ 50 mm, is determined as follows.

$$\text{SAR Exclusion Threshold (SARET)} = [(\text{NT} \times \text{TSD}_A) / \sqrt{0.1}] \times [1 + \text{Log} (100 / F_{\text{MHz}})] \times 1/2$$

Where,

NT = Numeric Threshold (3.0 for 1-g SAR and 7.5 for 10-g SAR)

TSD_B = 50 mm

f_{MHz} = Transmit frequency in MHz

When an antenna qualifies for the standalone SAR test exclusion 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

for test separation distances ≤ 50 mm

$$[\text{MP} / \text{TSD}_B] \times [\sqrt{f_{\text{GHz}}/x}] \text{ W/kg,}$$

Where,

MP = max. power of channel, including tune-up tolerance, mW

TSD_B = Minimum Test separation distance or 50 mm (whichever is lower)

f_{GHz} = Transmit frequency in GHz

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

125 kHz Operation - Eletec:

<i>Radio Type</i>	<i>Frequency (MHz)</i>	<i>Maximum Conducted Power (mW)</i>	<i>Min Test Separation Distance (mm)</i>	<i>SAR value (W/Kg)</i>	<i>Sum of SAR Values (W/Kg)</i>	<i>SAR Limit (W/Kg)</i>
RFID	0.125	0.000000018	5	5.30E-12	0.16000000000530	1.6
Wi-Fi	2437	770.0	5	0.16		

Note: Wi-Fi maximum conducted power taken from FCC ID: KA2AN3UA1 Grant of Equipment Authorization,
SAR Value taken from SAR Test report USSC248365001
RFID maximum conducted power taken from Test report TRA-064783-47-08B: filed under FCC ID: XDW3652-0900

13.56 MHz Operation – Eletec:

<i>Radio Type</i>	<i>Frequency (MHz)</i>	<i>Maximum Conducted Power (mW)</i>	<i>Min Test Separation Distance (mm)</i>	<i>SAR value (W/Kg)</i>	<i>Sum of SAR Values (W/Kg)</i>	<i>SAR Limit (W/Kg)</i>
RFID	13.56	0.000004	5	1.24E-08	0.16000001236228	1.6
Wi-Fi	2437	770.0	5	0.16		

Note: Wi-Fi maximum conducted power taken from FCC ID: KA2AN3UA1 Grant of Equipment Authorization,
SAR Value taken from SAR Test report USSC248365001
RFID maximum conducted power taken from Test report TRA-064783-47-08B : filed under FCC ID: XDW3652-0900

13.56 MHz Operation – Consumable:

<i>Radio Type</i>	<i>Frequency (MHz)</i>	<i>Maximum Conducted Power (mW)</i>	<i>Min Test Separation Distance (mm)</i>	<i>SAR value (W/Kg)</i>	<i>Sum of SAR Values (W/Kg)</i>	<i>SAR Limit (W/Kg)</i>
RFID	13.56	0.000010	5	3.11E-08	0.16000003105264	1.6
Wi-Fi	2437	770.0	5	0.16		

Note: Wi-Fi maximum conducted power taken from FCC ID: KA2AN3UA1 Grant of Equipment Authorization,
SAR Value taken from SAR Test report USSC248365001
RFID maximum conducted power taken from Test report TRA-064783-47-07B: filed under FCC ID: XDW3652-0900

Therefore standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.