

Analysis Report

The Equipment Under Test (EUT), is a pair of portable 2.4GHz Transmitter (Controller Unit) for two RC cars. The sample supplied operated on 2 channels. Controller #1 normally works at 2460MHz, and Controller #2 normally works at 2450MHz.

Both Controller #1 and Controller #2 (the EUT) are powered by 2 x 1.5V AAA batteries. After switch on the EUT, the car(s) will be moved forward around the track when we pressed the button on the controller(s).

For FCC, the Model: 83151, 83152, 83153, 83154, 83155, 83156, 83157, 83158, 83159, 83162, 83163, 83164, 83165, 83166, 83167, 83168 and 83169 are the same as the Model: 83161 in hardware aspect as declared by client. The difference in model number serves as marketing strategy as declared by client. The models are different in non-conductive outer casing only as declared by client.

Antenna Type: Internal, Integral

For Controller #1

Antenna Type: Internal integral antenna

Antenna Gain: 0dBi

Nominal rated field strength: 90.5dB μ V/m at 3m

Maximum allowed field strength of production tolerance: +/- 3dB

According to the KDB 447498:

Based on the Maximum allowed field strength of production tolerance was 93.5dB μ V/m at 3m.

Thus, it below calculated field strength according to minimum SAR exclusion threshold level as follows:

The worst case of SAR Exclusion Threshold Level:

= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)

= 3.0 * 5 / sqrt(2.4835) mW

= 9.52 mW

According to the KDB 412172 D01:

EIRP = [(FS*D) ^2*1000 / 30]

Calculated Field Strength for 9.52mW is 105dB μ V/m at 3m

Since maximum field strength plus production tolerance $\leq 105\text{dB}\mu\text{V}/\text{m}$ at 3m and antenna gain $s \geq 0.0\text{dBi}$, it is concluded that maximum Conducted Power and Field Strength are well below the SAR Exclusion threshold level, so the EUT is considered to comply with SAR requirement without testing.

For Controller #2

Antenna Type: Internal integral antenna

Antenna Gain: 0dBi

Nominal rated field strength: 92.0dB $\mu\text{V}/\text{m}$ at 3m

Maximum allowed field strength of production tolerance: +/- 3dB

According to the KDB 447498:

Based on the Maximum allowed field strength of production tolerance was 95.0dB $\mu\text{V}/\text{m}$ at 3m.

Thus, it below calculated field strength according to minimum SAR exclusion threshold level as follows:

The worst case of SAR Exclusion Threshold Level:

$$= 3.0 * (\text{min. test separation distance, mm}) / \text{sqrt}(\text{freq. in GHz})$$

$$= 3.0 * 5 / \text{sqrt}(2.4835) \text{ mW}$$

$$= 9.52 \text{ mW}$$

According to the KDB 412172 D01:

$$\text{EIRP} = [(\text{FS} * \text{D})^2 * 1000 / 30]$$

Calculated Field Strength for 9.52mW is 105dB $\mu\text{V}/\text{m}$ at 3m

Since maximum field strength plus production tolerance $\leq 105\text{dB}\mu\text{V}/\text{m}$ at 3m and antenna gain $s \geq 0.0\text{dBi}$, it is concluded that maximum Conducted Power and Field Strength are well below the SAR Exclusion threshold level, so the EUT is considered to comply with SAR requirement without testing.