

# INTERTEK TESTING SERVICES

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## Analysis Report

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The equipment under test (EUT) is a TV SOUNDBAR, HOME THEATRE SYSTEM. The EUT was powered by AC 120V, 60Hz. For more detail information pls. refer to the user manual.

For BT (2.1+EDR) function:

Modulation Type: GFSK,  $\pi/4$ DQPSK, 8DPSK.

Antenna Type: Integral antenna

Antenna Gain: 2.0dBi

The nominal conducted output power specified: 3dBm (Tolerance: +/- 3dB)

The nominal radiated output power (e.i.r.p) specified: 5dBm (Tolerance: +/- 3dB)

According to the KDB 447498:

The maximum radiated emission for the EUT is 100.5dB $\mu$ V/m at 3m in the frequency 2.402GHz

=  $[(FS * D)^2 / 30]$  mW

= 5.27dBm which is within the production variation.

The minimum radiated emission for the EUT is 99.1dB $\mu$ V/m at 3m in the frequency 2.441GHz and 2480MHz

=  $[(FS * D)^2 / 30]$  mW

= 3.87dBm which is within the production variation.

The maximum conducted output power specified is 6dBm = 4.0mW

The source- based time-averaging conducted output power

= 4.0 \* Duty cycle mW < 4.0 mW (Duty Cycle < 100%)

The SAR Exclusion Threshold Level:

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

= 3.0 \* 5 / sqrt (2.480) mW

= 9.5 mW

Since the source-based time-averaging conducted output power is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

For 2.4GHz transmit function and operating frequency is 2404.5-2479.5MHz  
Modulation Type: GFSK  
Antenna Type: Integral antenna  
Antenna Gain: 0dBi

The nominal conducted output power specified: 0dBm (Tolerance: +/- 3dB)  
The nominal radiated output power (e.i.r.p) specified: 0dBm (Tolerance: +/- 3dB)

According to the KDB 447498:

The maximum radiated emission for the EUT is 97.7dB $\mu$ V/m at 3m in the frequency 2444.50MHz  
=  $[(FS \cdot D)^2 / 30]$  mW  
= 2.47dBm which is within the production variation.

The minimum radiated emission for the EUT is 97.0dB $\mu$ V/m at 3m in the frequency 2404.5MHz  
=  $[(FS \cdot D)^2 / 30]$  mW  
= 1.77dBm which is within the production variation.

The maximum conducted output power specified is 3.0dBm = 2.0mW  
The source- based time-averaging conducted output power  
= 2.0 \* Duty cycle mW < 2.0mW (Duty Cycle < 100%)

The SAR Exclusion Threshold Level:  
= 3.0 \* (min. test separation distance, mm) / sqrt(freq. in GHz)  
= 3.0 \* 5 / sqrt(2.4795) mW  
= 9.5 mW

Since the source-based time-averaging conducted output power is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

Simultaneous transmissions for both BT module and 2.4GHz module

According to the KDB 447498:

When both BT module and 2.4GHz module are simultaneous transmissions,  
The maximum conducted power for BT transmitter is 6dBm (4mW),  
The maximum conducted power for 2.4G transmitter is 3dBm (2mW),

In the simultaneous transmissions, BT transmitter estimated SAR value:  
= (max. power of channel, including tune-up tolerance, mW) / (min. test  
separation distance, mm) \* [sqrt(freq. in GHz)/7.5] W/kg  
= 4 / 5\*[sqrt (2.480) / 7.5] W/kg  
= 0.168 W/kg

In the simultaneous transmissions, 2.4GHz transmit's estimated SAR value:  
= (max. power of channel, including tune-up tolerance, mW) / (min. test  
separation distance, mm) \* [sqrt(freq. in GHz)/7.5] W/kg  
= 2 / 5\*[sqrt (2.4795) / 7.5]  
= 0.084 W/kg

Sum of 1-g SAR of all simultaneous transmission operating mode:  
BT transmitter estimated SAR + 2.4GHz transmitter estimated SAR  
= 0.168 + 0.084 W/kg  
= 0.252 W/kg

The estimated simultaneous SAR value = 0.252 W/kg  
≤ 0.4 W/kg (Exclusion Threshold Level)