



UNDP-1 HP HSTNN-I70C Collocated RF Analysis

80-VH688-18 Rev. A

April 21, 2009

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**QUALCOMM Incorporated
5775 Morehouse Drive
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Revision history

Revision	Date	Description
A	April 2009	Initial release

1 Overview

This document provides collocated SAR analysis of the notebook model HSTNN-I70C in reference to KDB 616217.

The change filed under this application is adding notebook model HSTNN-I70C collocated with Bluetooth FCC ID: QDS-BRCM1010, WLAN FCC ID: QDS-BRCM1030.

1.1 Definitions

$$N_x = P_x / (60/f) - 1$$

P= average power

F= frequency in MHz

1.2 Collocation Calculations

Table 1-1 Antenna Separation Distances

Antenna	Distance (cm)
WLAN Main-to-user	16.1
WLAN Aux-to-user	16.1
WWAN main-to-user	5.2
WLAN Aux-to-WWAN main	5.4
WLAN main-to-WWAN main	19.2

Table 1-2 Individual Transmitter SAR Evaluation

Technology	Freq (MHz)	Measured Burst Avg Pwr (GPRS only) (dBm)	Average Power (dBm)	Measured Average Power (mW)	60/F _(G Hz) (mW)	n = (P / (60/f) - 1) cm	1/2*n (cm) per FCC Procedure	Minimum Antenna-User Separation Requirement (cm)	Actual Antenna-User Distance (cm)	Highest Measured SAR (mW/g 1g)
GPRS 850 MHz	850	32.6	26.58	454.9	70.6	5.4	3	8.0	5.2	0.125
UMTS 1900 MHz	1850		24.52	283.1	32.4	7.7	4	9	5.2	0.106
WLAN (QDS-BRCM1030)	2480		23.1	202.0	24.2	7	4.0	9	16.1	0.012

Note: Burst Average power for GPRS effectively results in peak power since it is the average power during the transmission slot. The average GPRS power represents the power over 8 slots.

Table 1-3 Simultaneous Transmitter SAR Requirements

Mode	(5 + 1/2 Nx + 1/2 Ny) cm	Actual Separation (cm)	Result
GPRS 850 MHz + WLAN Aux	12.0	5.4	SAR eval required. >5cm: Sum SAR
UMTS 1900 MHz + WLAN	13.0	5.4	SAR eval required. >5cm: Sum SAR

Table 1-4 Simultaneous SAR Summation

Mode	Highest Measured SAR (mW/g (1g))
WWAN 850 Max SAR (UMTS 850MHz)	0.125
WWAN 1900 MHz SAR (UMTS 1900MHz)	0.106
WLAN MAX SAR from QDS-BRCM1030 SAR report	0.012

WWAN 850MHz + WLAN:

$$\text{WWAN 850} + \text{WLAN SAR} = 0.125 \text{ mW/g} + 0.012 \text{ mW/g} = 0.137 \text{ mW/g (1g)}$$

WWAN 850MHz + WLAN:

$$\text{WWAN 1900} + \text{WLAN SAR} = 0.106 \text{ mW/g} + 0.012 \text{ mW/g} = 0.118 \text{ mW/g (1g)}$$