RF Exposure

Project #:	**100900227**	Test Area:	Intertek Louisville
Test Method:	FCC CFR47 Part 1.1310	Test Date:	Sep-2012
EUT Model #:	ID:058		
EUT Serial #:	EMC1		
Manufacturer:	Echostar Technologies, LLC		
EUT Description:	The ID:058 is a satellite set-top box incorporating Sling place shifting technology designed to operate as a server in the whole home DVR system. The ID:058 has a RF4CE 2.4GHz Synkro solution to interface to a remote control , a Bluetooth Class 2 transceiver for supported accessories, and an 802.11a/b/g/n Wi-Fi transceiver for connection to the customer's internet wirelessly.		
Notes:			

The following limit is from table 1 (B) Limits for General Population/Uncontrolled Exposure in FCC part 1.1310:

1 mW/cm^2

The following calculation was used to determine compliance to the above limit. The calculation is from FCC OET bulletin 65.

$S=PG/4\pi R^2$

Where:
S=power density (in appropriate units, e.g. mW/cm^2)
P=power input to the antenna.
G=power gain of the antenna in the direction of interest relative to an isotropic radiator.
R=distance to the center of radiation of the antenna (appropriate unit, e.g., cm)
In this case 20cm will be used.

RF4CE Radio 2.4GHz
Maximum conducted output power = .4mW (see test report 100900227DEN-001)
Maximum gain declared by the manufacture = 2.15 dBi

Power Density

Power (mW)	Gain (dbi)	Gain numeric	Distance (cm)	Power Density (mW/cm^2)
0.4	2.15	1.64	20	0.00013

Bluetooth Radio 2.4GHz
Maximum conducted output power = 1.98 mW (see test report 100900227DEN-002)
Maximum gain declared by the manufacture = 0 dBi

Power Density

Power (mW)	Gain (dbi)	Gain numeric	Distance (cm)	Power Density (mW/cm²)
1.98	0	1.0	20	0.00039

WiFi Radio 5GHz
Maximum conducted output power = 705.7 mW (see test report 100900227DEN-003)
Maximum gain declared by the manufacture = 3.2 dBi

Power Density

Power (mW)	Gain (dbi)	Gain numeric	Distance (cm)	Power Density (mW/cm²)
705.7	3.2	2.09	20	0.29333

FCC OET bulletin 65
Multiple-Transmitter Sites and Complex Environments

The sum of the worst case power density from each radio = .29736 mW/cm²
MPE limit = 1 mW/cm²
Delta = -0.70264 mW/cm²

Results:
The unit complies with the requirements for Maximum Permissible Exposure (MPE) under FCC part 1.1310.