

RF Exposure Evaluation Declaration

Product Name : IP-STB
Model No. : 4210X,4230X,4210X1,4230X1,4200X1,4205X1
FCC ID : TC2-R1011

Applicant : Roku Inc.
Address : 12980 Saratoga Ave, Suite D Saratoga, CA 95070

Date of Receipt : Jul. 07, 2015
Issued Date : Sept.18, 2015
Report No. : 1570212R-RF-US-P20V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by any agency of the government.

The test report shall not be reproduced without the written approval of QuieTek Corporation.

Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC,TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1570212R-RF-US-P20V01	V1.0	Initial Issued Report	Sept. 18, 2015

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	IP-STB
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- **Antenna Gain:**

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2dBi for 2.4GHz and 1dBi for 5GHz in logarithm scale.

- **Output Power into Antenna & RF Exposure Evaluation Distance:**

Frequency Band (MHz)	Maximum Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
2412-2462	390.84	0.0778
5150-5250	44.67	0.0112
5785-5825	145.88	0.0290

Note:

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².

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