



RF Exposure Evaluation Report

APPLICANT : Samsung Electronics Co Ltd
EQUIPMENT : Verizon 4G LTE Network Extender
BRAND NAME : SAMSUNG
MODEL NAME : SLS-BU103
FCC ID : A3LSLS-BU103
STANDARD : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA542147-01	Rev. 01	Initial issue of report	Sep. 11, 2015



1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Samsung Electronics Co Ltd
Address	19 Chapin Rd., Building D, Pine Brook, NJ 07058

Manufacturer	
Company Name	1. MitraStar Technology Corporation 2. WuXi MitraStar Technology Co. Ltd
Address	1. No. 6, Innovation Rd II, Hsinchu Science Park, Hsinchu 30076, Taiwan 2. 60#-E, Minshan Road, Wuxi New district Jangsu, P.R.C.

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Verizon 4G LTE Network Extender
Brand Name	SAMSUNG
Model Name	SLS-BU103
FCC ID	A3LSLS-BU103
Wireless Technology and Frequency Range	LTE Band 4: Tx: 2110 MHz ~ 2155 MHz Rx: 1710 MHz ~ 1755 MHz LTE Band 13: Tx: 746 MHz ~ 756 MHz Rx: 777 MHz ~ 787 MHz
Mode	QPSK, 16QAM, 64QAM
Antenna Type	PCB Antenna
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



4. Maximum RF average output power among production units

LTE Band	Average Power (dBm)
Band 13	20.00
Band 4	21.00

5. Radio Frequency Radiation Exposure Evaluation

5.1. Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
LTE Band 13	746.0	2.50	20.00	24.500	0.282	281.838	0.056	0.497
LTE Band 4	2110.0	3.50	21.00	24.500	0.282	281.838	0.056	1.000

Note:

1. For conservativeness, the lowest Tx frequency of each band is used to determine the MPE limit of that band.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.