RF Exposure Evaluation Report

APPLICANT	:	Mikrotikls SIA
EQUIPMENT	:	R11e-LTE-US
BRAND NAME	:	MikroTik
MODEL NAME	:	R11e-LTE-US
FCC ID	:	TV7R11ELTE
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 / Manager

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.
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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA761625	Rev. 01	Initial issue of report	Jul. 19, 2017

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	Mikrotikls SIA
Address	Pernavas 46 street

Manufacturer	
Company Name	Mikrotikls SIA
Address	Pernavas 46 street

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	R11e-LTE-US
Brand Name	MikroTik
Model Name	R11e-LTE-US
FCC ID	TV7R11ELTE
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz
Mode	RMC12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM
HW Version	A1
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. Maximum RF average output power among production units

Mode		Maximun Average Power(dBm)
WCDMA	Band II	24
	Band V	24
LTE	Band 2	24
	Band 4	24
	Band 5	24
	Band 12	24

4. 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/f2)	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/f2)	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

5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone 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)
WCDMA II	1852.4	0.6	24.0	24.600	0.288	288.403	0.057	1.000
WCDMA V	826.4	-3.5	24.0	20.500	0.112	112.202	0.022	0.551
LTE Band 2	1850.7	0.6	24.0	24.600	0.288	288.403	0.057	1.000
LTE Band 4	1710.7	0.6	24.0	24.600	0.288	288.403	0.057	1.000
LTE Band 5	824.7	-3.5	24.0	20.500	0.112	112.202	0.022	0.550
LTE Band 12	699.7	-3.5	24.0	20.500	0.112	112.202	0.022	0.466

Note: For conservativeness, the lowest 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.