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MPE Report

Test Report No.	:	SZ2102FS11
Applicant	:	Phonex Broadband Corporation dba ReadyNet
Product Type	:	Wireless Router
Trade Name	:	ReadyNet
Model Number	:	LTE520S
Received Date	:	Dec. 24, 2020
Test Period	:	Jan. 27, 2021
Issue Date	:	Feb. 23, 2021
Test Specification	:	ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013
		47 CFR § 2.1091
		47 CFR § 1.1310

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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1. Description of Equipment under Test (EUT)

Applicant	Phonex Broadband Corporation dba ReadyNet 6952 High Tech Drive Suite B, Midvale, Utah, United States				
Manufacturer	Phonex Broadband Corporation dba ReadyNet 6952 High Tech Drive Suite B, Midvale, Utah, United States				
Product Type	Wireless Router				
Trade Name	ReadyNet				
Model Number	LTE520S				
FCC ID	Y2P-LTE520S				
Frequency Range	Operate Band			Frequency Range (MHz)	
	IEEE 802.11b / 802.11g / 802.11n 2.4 GHz 20 MHz			2412 - 2462	
	IEEE 802.11n 2.4 GHz 40 MHz			2422 - 2452	
Antenna Information	ANT	Model	Type	Max. Gain (dBi)	
	ANT-0	12050023	Patch Antenna	2.4 GHz	2.2
	ANT-1	12050023	Patch Antenna	2.4 GHz	2.1
RF Evaluation	0.0959 mW/cm^2				
Temperature Range	-10 ~ +50℃				

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons. ” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$$S = \frac{PG}{4\pi R^2}$$ Where S: power density 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.

3. RF Output Power

The conducted power turn-up tolerance reference manufacturer specification.

Band	Date Rate (Mbps)	Frequency (MHz)	Peak Conducted power (dBm)	
			ANT-0	ANT-1
IEEE 802.11b	1	2412.0	21.36	20.36
		2437.0	21.15	20.45
		2462.0	21.34	20.68
IEEE 802.11g	6	2412.0	17.38	18.25
		2437.0	17.41	18.30
		2462.0	17.55	18.38
IEEE 802.11n 2.4 GHz 20 MHz	6.5	2412.0	18.53	19.12
		2437.0	18.51	19.11
		2462.0	18.65	19.39
IEEE 802.11n 2.4 GHz 40 MHz	13.5	2422.0	18.40	18.32
		2437.0	18.51	18.35
		2452.0	18.58	18.44

LTE Band 26(Part 90) Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	24.71	24.65	24.67
5	1	12		24.46	24.41	24.39
5	1	24		24.22	24.16	24.11
5	12	0		24.00	23.90	23.87
5	12	6		23.80	23.63	23.64
5	12	11		23.51	23.33	23.38
5	25	0		23.28	23.03	23.17
5	1	0	16-QAM	24.49	24.40	24.43
5	1	12		24.20	24.11	24.21
5	1	24		23.93	23.81	24.00
5	12	0		23.72	23.58	23.75
5	12	6		23.47	23.32	23.53
5	12	11		23.25	23.05	23.32
5	25	0		23.02	22.83	23.06
10	1	0	QPSK	N/A	24.83	N/A
10	1	24		N/A	24.56	N/A
10	1	49		N/A	24.26	N/A
10	25	0		N/A	23.98	N/A
10	25	12		N/A	23.75	N/A
10	25	24		N/A	23.45	N/A
10	50	0		N/A	23.19	N/A
10	1	0	16-QAM	N/A	24.55	N/A
10	1	24		N/A	24.34	N/A
10	1	49		N/A	24.10	N/A
10	25	0		N/A	23.86	N/A
10	25	12		N/A	23.59	N/A
10	25	24		N/A	23.34	N/A
10	50	0		N/A	23.08	N/A

Note: The relevant measured result has the offset with cable loss already.

4. Test Results

WLAN Mode

ANT-0

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)/cm^2	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw/cm^2)
IEEE 802.11b CDD	1	2412.0	1	20	21.36	2.2	1.66	1	227.043	0.0230
		2437.0	1	20	21.15	2.2	1.66	1	216.326	0.0220
		2462.0	1	20	21.34	2.2	1.66	1	226.000	0.0229
IEEE 802.11g CDD	6	2412.0	1	20	17.38	2.2	1.66	1	90.805	0.0092
		2437.0	1	20	17.41	2.2	1.66	1	91.434	0.0093
		2462.0	1	20	17.55	2.2	1.66	1	94.430	0.0096
IEEE 802.11n 2.4 GHz 20 MHz CDD	6.5	2412.0	1	20	18.53	2.2	1.66	1	118.334	0.0120
		2437.0	1	20	18.51	2.2	1.66	1	117.790	0.0120
		2462.0	1	20	18.65	2.2	1.66	1	121.649	0.0123
IEEE 802.11n 2.4 GHz 40 MHz CDD	13.5	2422.0	1	20	18.4	2.2	1.66	1	114.844	0.0117
		2437.0	1	20	18.51	2.2	1.66	1	117.790	0.0120
		2452.0	1	20	18.58	2.2	1.66	1	119.704	0.0122

ANT-1

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)/cm^2	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw/cm^2)
IEEE 802.11b CDD	1	2412.0	1	20	20.36	2.1	1.62	1	176.001	0.0179
		2437.0	1	20	20.45	2.1	1.62	1	179.686	0.0182
		2462.0	1	20	20.68	2.1	1.62	1	189.459	0.0192
IEEE 802.11g CDD	6	2412.0	1	20	18.25	2.1	1.62	1	108.272	0.0110
		2437.0	1	20	18.3	2.1	1.62	1	109.525	0.0111
		2462.0	1	20	18.38	2.1	1.62	1	111.562	0.0113
IEEE 802.11n 2.4 GHz 20 MHz CDD	6.5	2412.0	1	20	19.12	2.1	1.62	1	132.286	0.0134
		2437.0	1	20	19.11	2.1	1.62	1	131.982	0.0134
		2462.0	1	20	19.39	2.1	1.62	1	140.772	0.0143
IEEE 802.11n 2.4 GHz 40 MHz CDD	13.5	2422.0	1	20	18.32	2.1	1.62	1	110.031	0.0112
		2437.0	1	20	18.35	2.1	1.62	1	110.794	0.0112
		2452.0	1	20	18.44	2.1	1.62	1	113.114	0.0115

MIMO

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)/cm^2	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw/cm^2)
IEEE 802.11n 2.4 GHz 20 MHz MIMO	6.5	2412.0	1	20	21.85	5.16	3.28	1	501.685	0.0509
		2437.0	1	20	21.83	5.16	3.28	1	499.994	0.0508
		2462.0	1	20	22.05	5.16	3.28	1	525.410	0.0533
IEEE 802.11n 2.4 GHz 40 MHz MIMO	13.5	2422.0	1	20	21.37	5.16	3.28	1	449.598	0.0456
		2437.0	1	20	21.44	5.16	3.28	1	456.963	0.0464
		2452.0	1	20	21.52	5.16	3.28	1	465.440	0.0472

WLAN+WWAN Mode

Band	Data Rate (Mbps)	Frequency (MHz)	Limit (mw)/cm^2	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw/cm^2)
IEEE 802.11n 2.4 GHz 20 MHz MIMO	6.5	2412.0	1	20	21.85	5.16	3.28	1	501.685	0.0509
		2437.0	1	20	21.83	5.16	3.28	1	499.994	0.0508
		2462.0	1	20	22.05	5.16	3.28	1	525.410	0.0533
LTE BAND 26(PART 90) 10M	RB1#0	Middle	1	20	24.83	1.4	1.38	1	419.642	0.0426

Simultaneous Power Density[S](mw/cm^2)=0.0533+0.0426=0.0959 mw/cm2

Note:

1.Mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less.

2.The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).

3.Each band max power which perform MPE of any configurations.