

MPERREPORT

FCC ID: 2AT35-P21

Date of issue: Aug. 16, 2019

Report Number:	MTi19071025-1E4
Sample Description:	LTE Wireless Router
Model(s):	P21, P21B, P22, P25, P11, S10, S12
Applicant:	Xiamen Yifan Communication Technology Co., Ltd.
Address:	G612-2, Room601, Building 2, No. 151, YueHua Road, Huli District, Xiamen, 361006
Date of Test:	July 07, 2019 to Aug. 16, 2019

ShenzhenMicrotest Co., Ltd.

<http://www.mtitest.com>

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TEST RESULT CERTIFICATION	
Applicant's name:	Xiamen Yifan Communication Technology Co., Ltd.
Address:	G612-2, Room601, Building 2, No. 151, YueHua Road, Huli District, Xiamen, 361006
Manufacture's Name:	Xiamen Yifan Communication Technology Co., Ltd.
Address:	G612-2, Room601, Building 2, No. 151, YueHua Road, Huli District, Xiamen, 361006
Product name:	LTE Wireless Router
Trademark:	Yeacomm
Model and/or type reference:	P21
Serial Model:	P21B, P22, P25, P11, S10, S12
RF Exposure Procedures:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:

Demi Mu

Aug. 16, 2019

Reviewed by:

Blue Zheng

Aug. 16, 2019

Approved by:

Smith Chen

Aug. 16, 2019



RF EXPOSURE EVALUATION

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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) \cdot (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm (20cm)

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



Measurement Result

R=20cm

2.4G WIFI:

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna		Evaluation result at 20cm			Power density Limits
		(dBm)		(dBm)		tune-up power				Gain		Power density(mW/cm2)			(mW/cm2)
						(dBm)		(mW)		Numeric					
		Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Sum	
2412	802.11b	10.11	10.11	10±1	10±1	11	11	12.589	12.589	3	3	0.00751	0.00751	/	1
2437		10.17	10.17	10±1	10±1	11	11	12.589	12.589	3	3	0.00751	0.00751	/	1
2462		9.67	9.67	10±1	10±1	11	11	12.589	12.589	3	3	0.00751	0.00751	/	1
2412	802.11g	11.79	11.79	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	/	1
2437		11.68	11.68	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	/	1
2462		10.55	10.55	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	/	1
2412	802.11n H20	11.72	11.72	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	0.01892	1
2437		11.09	11.09	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	0.01892	1
2462		10.48	10.48	11±1	11±1	12	12	15.849	15.849	3	3	0.00946	0.00946	0.01892	1
2422	802.11n H40	6.37	6.37	6±1	6±1	7	7	5.0119	5.012	3	3	0.00299	0.00299	0.00598	1
2437		6.4	6.4	6±1	6±1	7	7	5.0119	5.012	3	3	0.00299	0.00299	0.00598	1
2452		6.13	6.13	6±1	6±1	7	7	5.0119	5.012	3	3	0.00299	0.00299	0.00598	1

GPRS850:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
			(dBm)	(mW)	(dBi)	Nume ric		
128	32.02	32±1	33	1995.262	3.00	2.00	0.7920	0.56
190	31.97	32±1	33	1995.262	3.00	2.00	0.7920	0.56
251	31.92	32±1	33	1995.262	3.00	2.00	0.7920	0.56

EGPRS850:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
128	26.6	26±1	27	501.187	3.00	2.00	0.1989	0.56
190	26.63	26±1	27	501.187	3.00	2.00	0.1989	0.56
251	26.64	26±1	27	501.187	3.00	2.00	0.1989	0.56

GPRS1900:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
			(dBm)	(mW)	(dBi)	Numeric		
512	31.02	31±1	32	1584.89	3.00	2.00	0.6291	1
661	31.05	31±1	32	1584.89	3.00	2.00	0.6291	1
810	31.17	31±1	32	1584.89	3.00	2.00	0.6291	1

EGPRS1900:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
512	27.04	27±1	28	630.957	3.00	2.00	0.2504	1
661	26.80	27±1	28	630.957	3.00	2.00	0.2504	1
810	26.24	27±1	28	630.957	3.00	2.00	0.2504	1

WCDMA BAND II:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
9262	23.78	23±1	24	251.189	3.00	2.00	0.0997	1
9400	23.72	23±1	24	251.189	3.00	2.00	0.0997	1
9538	23.78	23±1	24	251.189	3.00	2.00	0.0997	1

WCDMA BAND V:

Channel	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
	(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
			(dBm)	(mW)	(dBi)	Numeric		
4132	24.59	24±1	25	316.228	3.00	2.00	0.1255	0.55
4182	23.51	24±1	25	316.228	3.00	2.00	0.1255	0.56
4233	23.77	24±1	25	316.228	3.00	2.00	0.1255	0.56

LTE:

Band	Channel Freq. (MHz)	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power	Gain				
				(dBm)	(mW)	(dBi)	Numeric	(mW/cm2)	(mW/cm2)
2	1880	23.1	23±1	24	251.189	3.00	2.00	0.0997	1
4	1732.5	22.72	23±1	24	251.189	3.00	2.00	0.0997	1
5	846.5	22.56	23±1	24	251.189	3.00	2.00	0.0997	0.56

simultaneous transmit:

WIFI+ GPRS850 =0.01892+0.7920=0.81723 mW/cm²

WIFI + EGPRS850 =0.01892+0.1989=0.21782 mW/cm²

WIFI + GPRS1900 =0.01892+0.6291=0.64802 mW/cm²

WIFI + EGPRS1900 =0.01892+0.2504=0.26932 mW/cm²

WIFI + WCDMA BAND II =0.01892+0.0997=0.11862 mW/cm²

WIFI + (WCDMA BAND V/ Power density Limits) =0.01892+(0.1255/0.56)=
0.01892+0.2241=0.24302mW/cm²

WIFI + LTE Band 2 = 0.01892+0.0997=0.11862mW/cm²

WIFI + LTE Band 4 = 0.01892+0.0997=0.11862mW/cm²

WIFI+ (LTE Band 5/ Power density Limits) =

0.01892+(0.0997/0.56)= 0.01892+0.1780=0.19692mW/cm²

Conclusion:

For the max result: 0.7920≤ 1.0 for 1g SAR, No SAR is required

----END OF REPORT----