A Test Lab Techno Corp.

Changan Lab：N o. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C)
Tel：886-3-271-0188 / Fax：886-3-271-0190

MPE Report

Test Report No.	:	1807FS13
Applicant	:	Superior Communications DBA PureGear
Product Type	:	PURECAM
Trade Name	:	PureGear
Model Number	:	07614PG
Date of Received	:	Oct. 23, 2017
Test Period	:	Jun. 29 ~ Jul. 01, 2018
Date of Issued	:	Aug. 02, 2018
Test Specification	:	ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013
		47 CFR § 2.1091
		47 CFR § 1.1310
Location of Test Lab.	:	Chang-an Lab.
Test Firm MRA designation number	:	TW0010

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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Approved By : Yung-Tan Tsai (Yung Tan Tsai)

Tested By : Yanzen Liao (Yanzen Liao)

Contents

1. Description of Equipment under Test (EUT)

Applicant	Superior Communications DBA PureGear 5082 4th Street Irwindale California USA, Irwindale, California, 91706, United States			
Manufacturer	Shenzhen Auto Range Tech Co., Limited 5/F, Bldg. A1, Atomic Power Industrial Park, Fuming, Guanlan, Shenzhen, Guangdong. P. R. China.			
Product Type	PURECAM			
Trade Name	PureGear			
Model Number	07614PG			
FCC ID	2AIIF-07614PG			
Class II Permissive Change	1. change the BT/LE/WLAN/GPS antenna's location 2. change the BT//LE/WLAN/GPS antenna's gain to 2.3dBi (the original is 2dBi, and the antenna type remains the same) 3. add a heat sink, and the appearance changes accordingly 4. change the camera module and the module's layout partly changed 5. add an accessory: car charger 6. software version changes to V8.0_000_20180808 Above changes do not affect the EUT's RF function.			
IMEI No.	35316305670667			
Frequency Range	Operate Band			Frequency Range (MHz)
	LTE Band 2 (1.4M, 3M, 5MHz, 10MHz, 15MHz, 20MHz)			1850.7 - 1909.3
	LTE Band 4 (1.4M, 3M, 5MHz, 10MHz, 15MHz, 20MHz)			1710.7 - 1754.3
	LTE Band 12 (1.4M, 3M, 5MHz, 10MHz)			699 - 716
	LTE Band 17 (5MHz, 10MHz)			704.0 - 715.9
	IEEE 802.11b / 802.11g / 802.11n 2.4GHz 20MHz			2412 - 2462
	IEEE 802.11n 2.4GHz 40MHz			2422 - 2452
	Bluetooth BR/EDR			2402 - 2480
	Bluetooth LE			2402 - 2480
Antenna Information	Model	Type	Max. Gain (dBi)	
	DVR-19-Main	Internal Antenna	LTE Band 2	2.8
			LTE Band 4	0.2
			LTE Band 12	2.0
			LTE Band 17	2.0
	DVR-19-DWG	Internal Antenna	WLAN 2.4GHz	2.3
			Bluetooth BR / EDR / LE	2.3
RF Evaluation	0.086			
Operate Temp. Range	-10 ~ +70°C			

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

EUT Modify Description：

Modify Description: Class II Permissive change for FCC ID:2AIIF-07614PG, compare to the original EUT, the changes are as below: 1. change the BT/LE/WLAN/GPS antenna's location 2. change the BT//LE/WLAN/GPS antenna's gain to 2.3dBi (the original is 2dBi, and the antenna type remains the same) 3. add a heat sink, and the appearance changes accordingly 4. change the camera module and the module's layout partly changed 5. add an accessory: car charger 6. software version changes to V8.0_000_20180808 Above changes do not affect the EUT's RF function. Performance Checking: Maximum Permissible Exposure Note : Maximum Permissible Exposure of WWAN LTE Band 2/4/12/17 are base on original test report
Original Report : 1801FS12-01 Modify: 1807FS13

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. Test Result

Antenna	Band	Distance [R] (cm)	Power (dBm)	Max tune-up Power [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle [TP] (mW)	Power Density [S] (mw)/cm^2
Bluetooth Antenna	Bluetooth BR / EDR	20	5.14	6.00	2.30	1.7	1	6.77	0.001
	Bluetooth LE	20	-0.85	0.50	2.30	1.7	1	1.91	0.0004
WLAN Antenna	2.4GHz	20	14.22	14.90	2.30	1.7	1	52.54	0.010
WWAN Antenna	LTE Band 2	20	22.88	23.00	2.80	1.91	1	381.1	0.076
	LTE Band 4	20	22.93	23.00	0.20	1.05	1	209.5	0.042
	LTE Band 12	20	22.85	22.90	2.00	1.58	1	308.08	0.061
	LTE Band 17	20	22.85	22.90	2.00	1.58	1	308.08	0.061

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 20cm, 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.
4. The MPE results are evaluated by lowest data rate for WLAN.
5. The device operating IEEE 802.11 b/g/n mode is 1TX (SISO).
6. The WiFi and BT can not support simultaneous transmission.
7. The WWAN LTE Band 2 / 4 / 12 /17 simultaneous transmitting value refer to test report number 1801FS12-01.

Simultaneous Transmitting：

Total MPE = Wi-Fi MPE + LTE Band 2 MPE = (0.01/1) + (0.076/1) = 0.086 < 1

Total MPE = BT MPE + LTE Band 2 MPE = (0.001/1) + (0.076/1) = 0.077 < 1

*Choose maximum power density value calcuation .