



# A Test Lab Techno Corp.

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## MPE Report

Test Report No.	:	1801FS12-01
Applicant	:	Superior Communications DBA PureGear
Product Type	:	PURECAM
Trade Name	:	PureGear
Model Number	:	07614PG
Date of Received	:	Oct. 23, 2017
Test Period	:	Nov. 01, 2017 ~ Jan. 08, 2018
Date of Issued	:	Mar. 13, 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 Tested By : Eric Chao  
(Yung Tan Tsai) (Eric Chao)



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## 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			
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/ 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-GWG	Internal Antenna	WLAN 2.4G	2.0
Bluetooth BR / EDR / LE			2.0	
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



## 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

Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band2	1.4MHz	QPSK	18607	1850.7	1	0	22.68	0.185
					1	2	22.75	0.188
					1	5	22.68	0.185
					3	0	22.54	0.179
					3	1	22.59	0.182
					3	3	22.61	0.182
			18900	1880.0	6	0	21.59	0.144
					1	0	22.70	0.186
					1	2	<b>22.83</b>	<b>0.192</b>
					1	5	22.72	0.187
					3	0	22.78	0.190
					3	1	22.79	0.190
			19193	1909.3	3	3	22.80	0.191
					6	0	21.62	0.145
					1	0	22.61	0.182
					1	2	22.74	0.188
					1	5	22.58	0.181
					3	0	22.51	0.178
		16QAM	18607	1850.7	3	1	22.45	0.176
					3	3	22.22	0.167
					6	0	21.64	0.146
					1	0	22.02	0.159
					1	2	22.08	0.161
					1	5	22.00	0.158
			18900	1880.0	3	0	21.58	0.144
					3	1	21.66	0.147
					3	3	21.64	0.146
					6	0	20.54	0.113
					1	0	21.93	0.156
					1	2	22.07	0.161
			19193	1909.3	1	5	22.06	0.161
					3	0	21.66	0.147
					3	1	21.68	0.147
					3	3	21.70	0.148
					6	0	20.54	0.113
					1	0	21.92	0.156
19193	1909.3	1	2	21.95	0.157			
		1	5	21.98	0.158			
		3	0	21.56	0.143			
		3	1	21.53	0.142			
		3	3	21.31	0.135			
		6	0	20.56	0.114			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power		
					Size	Offset	(dBm)	(W)	
LTE Band2	3MHz	QPSK	18615	1851.5	1	0	22.62	0.183	
					1	7	22.73	0.187	
					1	14	22.53	0.179	
					8	0	21.66	0.147	
					8	3	21.73	0.149	
					8	7	21.68	0.147	
			15	0	21.71	0.148			
			1	0	22.67	0.185			
			1	7	<b>22.76</b>	<b>0.189</b>			
			1	14	22.66	0.185			
			8	0	21.71	0.148			
			8	3	21.75	0.150			
			8	7	21.64	0.146			
			15	0	21.80	0.151			
			1	0	22.50	0.178			
			1	7	22.60	0.182			
			1	14	22.58	0.181			
			8	0	21.72	0.149			
			8	3	21.75	0.150			
			8	7	21.72	0.149			
			15	0	21.69	0.148			
			1	0	21.87	0.154			
			1	7	21.89	0.155			
			1	14	21.79	0.151			
		8	0	20.62	0.115				
		8	3	20.63	0.116				
		8	7	20.61	0.115				
		15	0	20.55	0.114				
		1	0	21.84	0.153				
		1	7	21.92	0.156				
		1	14	21.84	0.153				
		8	0	20.58	0.114				
		8	3	20.60	0.115				
		8	7	20.53	0.113				
		15	0	20.50	0.112				
		1	0	21.79	0.151				
		1	7	21.91	0.155				
		1	14	21.88	0.154				
		8	0	20.61	0.115				
		8	3	20.63	0.116				
		8	7	20.65	0.116				
		15	0	20.56	0.114				
		16QAM	18615	1851.5	1851.5	1	0	21.87	0.154
						1	7	21.89	0.155
						1	14	21.79	0.151
						8	0	20.62	0.115
						8	3	20.63	0.116
						8	7	20.61	0.115
15	0		20.55	0.114					
1	0		21.84	0.153					
1	7		21.92	0.156					
1	14		21.84	0.153					
8	0		20.58	0.114					
8	3		20.60	0.115					
8	7	20.53	0.113						
15	0	20.50	0.112						
1	0	21.79	0.151						
1	7	21.91	0.155						
1	14	21.88	0.154						
8	0	20.61	0.115						
8	3	20.63	0.116						
8	7	20.65	0.116						
15	0	20.56	0.114						



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band2	5MHz	QPSK	18625	1852.5	1	0	22.77	0.189
					1	12	22.65	0.184
					1	24	22.72	0.187
					12	0	21.73	0.149
					12	6	21.75	0.150
					12	13	21.74	0.149
					25	0	21.76	0.150
			1	0	<b>22.88</b>	<b>0.194</b>		
			1	12	22.72	0.187		
			1	24	22.76	0.189		
			12	0	21.90	0.155		
			12	6	21.84	0.153		
			12	13	21.75	0.150		
			25	0	21.84	0.153		
			1	0	22.86	0.193		
			1	12	22.62	0.183		
			1	24	22.68	0.185		
			12	0	21.78	0.151		
			12	6	21.73	0.149		
			12	13	21.70	0.148		
			25	0	21.66	0.147		
		1	0	22.05	0.160			
		1	12	21.80	0.151			
		1	24	21.93	0.156			
		12	0	20.64	0.116			
		12	6	20.69	0.117			
		12	13	20.66	0.116			
		25	0	20.65	0.116			
		1	0	22.07	0.161			
		1	12	21.87	0.154			
		1	24	21.89	0.155			
		12	0	20.78	0.120			
		12	6	20.71	0.118			
		12	13	20.61	0.115			
		25	0	20.66	0.116			
		1	0	22.10	0.162			
1	12	21.77	0.150					
1	24	21.95	0.157					
12	0	20.72	0.118					
12	6	20.63	0.116					
12	11	20.62	0.115					
25	0	20.56	0.114					
16QAM		18625	1852.5	1	0	22.05	0.160	
				1	12	21.80	0.151	
				1	24	21.93	0.156	
				12	0	20.64	0.116	
				12	6	20.69	0.117	
				12	13	20.66	0.116	
		25	0	20.65	0.116			
		1	0	22.07	0.161			
		1	12	21.87	0.154			
		1	24	21.89	0.155			
		12	0	20.78	0.120			
		12	6	20.71	0.118			
12	13	20.61	0.115					
25	0	20.66	0.116					
1	0	22.10	0.162					
1	12	21.77	0.150					
1	24	21.95	0.157					
12	0	20.72	0.118					
12	6	20.63	0.116					
12	11	20.62	0.115					
25	0	20.56	0.114					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band2	10MHz	QPSK	18650	1855.0	1	0	22.85	0.193
					1	24	22.80	0.191
					1	49	22.83	0.192
					25	0	22.05	0.160
					25	12	21.97	0.157
					25	25	21.92	0.156
			50	0	21.96	0.157		
			1	0	<b>22.86</b>	<b>0.193</b>		
			1	24	22.78	0.190		
			1	49	22.85	0.193		
			25	0	22.03	0.160		
			25	12	21.82	0.152		
			25	25	21.82	0.152		
			50	0	21.97	0.157		
			1	0	22.85	0.193		
			1	24	22.50	0.178		
			1	49	22.60	0.182		
			25	0	21.91	0.155		
		25	12	21.72	0.149			
		25	25	21.67	0.147			
		50	0	21.72	0.149			
		1	0	22.04	0.160			
		1	24	21.98	0.158			
		1	49	22.09	0.162			
		25	0	20.94	0.124			
		25	12	20.85	0.122			
		25	25	20.77	0.119			
		50	0	20.79	0.120			
		1	0	22.12	0.163			
		1	24	21.92	0.156			
		1	49	22.05	0.160			
		25	0	20.84	0.121			
		25	12	20.66	0.116			
		25	25	20.63	0.116			
		50	0	20.79	0.120			
		1	0	22.01	0.159			
1	24	21.76	0.150					
1	49	21.86	0.153					
25	0	20.73	0.118					
25	12	20.55	0.114					
25	25	20.55	0.114					
50	0	20.57	0.114					
16QAM	18650	1855.0	1	0	22.04	0.160		
			1	24	21.98	0.158		
			1	49	22.09	0.162		
			25	0	20.94	0.124		
			25	12	20.85	0.122		
			25	25	20.77	0.119		
	50	0	20.79	0.120				
	1	0	22.12	0.163				
	1	24	21.92	0.156				
	1	49	22.05	0.160				
	25	0	20.84	0.121				
	25	12	20.66	0.116				
	25	25	20.63	0.116				
	50	0	20.79	0.120				
	1	0	22.01	0.159				
	1	24	21.76	0.150				
	1	49	21.86	0.153				
	25	0	20.73	0.118				
25	12	20.55	0.114					
25	25	20.55	0.114					
50	0	20.57	0.114					





Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band2	15MHz	QPSK	18675	1857.5	1	0	22.70	0.186
					1	37	22.47	0.177
					1	74	22.79	0.190
					36	0	21.73	0.149
					36	19	21.79	0.151
					36	39	21.84	0.153
					75	0	21.76	0.150
			1	0	<b>22.84</b>	<b>0.192</b>		
			1	37	22.43	0.175		
			1	74	22.78	0.190		
			36	0	21.84	0.153		
			36	19	21.85	0.153		
			36	39	21.84	0.153		
			75	0	21.89	0.155		
			1	0	22.81	0.191		
			1	37	22.34	0.171		
			1	74	22.73	0.187		
			36	0	21.82	0.152		
			36	19	21.80	0.151		
			36	39	21.78	0.151		
			75	0	21.78	0.151		
		1	0	21.96	0.157			
		1	37	21.94	0.156			
		1	74	21.95	0.157			
		36	0	20.58	0.114			
		36	19	20.63	0.116			
		36	39	20.66	0.116			
		75	0	20.67	0.117			
		1	0	21.98	0.158			
		1	37	22.01	0.159			
		1	74	22.06	0.161			
		36	0	20.64	0.116			
		36	19	20.69	0.117			
		36	39	20.69	0.117			
		75	0	20.71	0.118			
		1	0	22.27	0.169			
1	37	21.92	0.156					
1	74	22.05	0.160					
36	0	20.66	0.116					
36	19	20.59	0.115					
36	39	20.61	0.115					
75	0	20.74	0.119					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band2	20MHz	QPSK	18700	1860.0	1	0	22.68	0.185
					1	49	22.60	0.182
					1	99	22.72	0.187
					50	0	21.90	0.155
					50	25	21.81	0.152
					50	50	21.92	0.156
			100	0	21.93	0.156		
			1	0	22.77	0.189		
			1	49	22.70	0.186		
			1	99	<b>22.85</b>	<b>0.193</b>		
			50	0	21.90	0.155		
			50	25	21.83	0.152		
			50	50	21.90	0.155		
			100	0	21.99	0.158		
			1	0	22.79	0.190		
			1	49	22.58	0.181		
			1	99	22.67	0.185		
			50	0	21.75	0.150		
		50	25	21.68	0.147			
		50	50	21.79	0.151			
		100	0	21.79	0.151			
		1	0	22.06	0.161			
		1	49	21.86	0.153			
		1	99	22.07	0.161			
		50	0	20.70	0.117			
		50	25	20.67	0.117			
		50	50	20.69	0.117			
		100	0	20.80	0.120			
		1	0	22.02	0.159			
		1	49	21.88	0.154			
		1	99	22.26	0.168			
		50	0	20.72	0.118			
		50	25	20.71	0.118			
		50	50	20.74	0.119			
		100	0	20.76	0.119			
		1	0	22.09	0.162			
1	49	21.80	0.151					
1	99	22.17	0.165					
50	0	20.58	0.114					
50	25	20.56	0.114					
50	50	20.59	0.115					
100	0	20.67	0.117					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	1.4MHz	QPSK	19957	1710.7	1	0	22.67	0.185
					1	2	22.81	0.191
					1	5	22.78	0.190
					3	0	22.67	0.185
					3	1	22.69	0.186
					3	3	22.62	0.183
			20175	1732.5	6	0	21.59	0.144
					1	0	22.79	0.190
					1	2	<b>22.93</b>	<b>0.196</b>
					1	5	22.84	0.192
					3	0	22.57	0.181
					3	1	22.61	0.182
			20393	1754.3	3	3	22.48	0.177
					6	0	21.66	0.147
					1	0	22.52	0.179
					1	2	22.80	0.191
					1	5	22.51	0.178
					3	0	22.14	0.164
		16QAM	19957	1710.7	3	1	22.21	0.166
					3	3	22.64	0.184
					6	0	21.54	0.143
					1	0	22.17	0.165
					1	2	22.15	0.164
					1	5	22.12	0.163
			20175	1732.5	3	0	21.73	0.149
					3	1	21.78	0.151
					3	3	21.80	0.151
					6	0	20.69	0.117
					1	0	22.11	0.163
					1	2	22.13	0.163
			20393	1754.3	1	5	22.12	0.163
					3	0	21.82	0.152
					3	1	21.86	0.153
					3	3	21.73	0.149
					6	0	20.85	0.122
					1	0	22.08	0.161
20175	1732.5	1	2	22.11	0.163			
		1	5	22.07	0.161			
		3	0	21.63	0.146			
		3	1	21.71	0.148			
		3	3	21.74	0.149			
		6	0	20.64	0.116			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	3MHz	QPSK	19965	1711.5	1	0	22.64	0.184
					1	7	22.76	0.189
					1	14	22.69	0.186
					8	0	21.69	0.148
					8	3	21.63	0.146
					8	7	21.71	0.148
			15	0	21.71	0.148		
			1	0	22.79	0.190		
			1	7	<b>22.91</b>	<b>0.195</b>		
			1	14	22.67	0.185		
			8	0	21.72	0.149		
			8	3	21.74	0.149		
			8	7	21.75	0.150		
			15	0	21.73	0.149		
			1	0	22.50	0.178		
			1	7	22.61	0.182		
			1	14	22.57	0.181		
			8	0	21.61	0.145		
		8	3	21.62	0.145			
		8	7	21.60	0.145			
		15	0	21.61	0.145			
		1	0	22.02	0.159			
		1	7	22.04	0.160			
		1	14	22.04	0.160			
		8	0	20.69	0.117			
		8	3	20.67	0.117			
		8	7	20.73	0.118			
		15	0	20.67	0.117			
		1	0	22.10	0.162			
		1	7	22.13	0.163			
		1	14	21.93	0.156			
		8	0	20.97	0.125			
		8	3	21.12	0.129			
		8	7	21.07	0.128			
		15	0	20.80	0.120			
		1	0	21.95	0.157			
1	7	21.99	0.158					
1	14	21.86	0.153					
8	0	20.66	0.116					
8	3	20.70	0.117					
8	7	20.64	0.116					
15	0	20.58	0.114					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	5MHz	QPSK	19975	1712.5	1	0	22.74	0.188
					1	12	22.63	0.183
					1	24	22.76	0.189
					12	0	21.77	0.150
					12	6	21.75	0.150
					12	13	21.70	0.148
			25	0	21.71	0.148		
			1	0	<b>22.89</b>	<b>0.195</b>		
			1	12	22.72	0.187		
			1	24	22.72	0.187		
			12	0	21.82	0.152		
			12	6	21.77	0.150		
			12	13	21.70	0.148		
			25	0	21.75	0.150		
			1	0	22.71	0.187		
			1	12	22.53	0.179		
			1	24	22.63	0.183		
			12	0	21.67	0.147		
		12	6	21.63	0.146			
		12	13	21.61	0.145			
		25	0	21.61	0.145			
		1	0	21.99	0.158			
		1	12	21.96	0.157			
		1	24	22.01	0.159			
		12	0	20.81	0.121			
		12	6	20.78	0.120			
		12	13	20.75	0.119			
		25	0	20.72	0.118			
		1	0	21.96	0.157			
		1	12	21.91	0.155			
		1	24	22.06	0.161			
		12	0	21.13	0.130			
		12	6	21.09	0.129			
		12	13	20.97	0.125			
		25	0	20.85	0.122			
		1	0	21.94	0.156			
1	12	21.84	0.153					
1	24	22.02	0.159					
12	0	20.76	0.119					
12	6	20.68	0.117					
12	11	20.68	0.117					
25	0	20.64	0.116					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	10MHz	QPSK	20000	1715.0	1	0	22.79	0.190
					1	24	22.63	0.183
					1	49	22.83	0.192
					25	0	21.76	0.150
					25	12	21.76	0.150
					25	25	21.77	0.150
			20175	1732.5	50	0	21.77	0.150
					1	0	22.82	0.191
					1	24	22.69	0.186
					1	49	<b>22.88</b>	<b>0.194</b>
					25	0	21.75	0.150
					25	12	21.81	0.152
			20350	1750.0	25	25	21.77	0.150
					50	0	21.76	0.150
					1	0	22.64	0.184
					1	24	22.45	0.176
					1	49	22.71	0.187
					25	0	21.63	0.146
		16QAM	20000	1715.0	25	12	21.59	0.144
					25	25	21.59	0.144
					50	0	21.66	0.147
					1	0	22.09	0.162
					1	24	22.03	0.160
					1	49	22.08	0.161
			20175	1732.5	25	0	20.75	0.119
					25	12	20.79	0.120
					25	25	20.73	0.118
					50	0	20.71	0.118
					1	0	22.01	0.159
					1	24	21.98	0.158
			20350	1750.0	1	49	22.05	0.160
					25	0	20.74	0.119
					25	12	20.83	0.121
					25	25	20.81	0.121
					50	0	20.73	0.118
					1	0	22.03	0.160
20350	1750.0	1	24	21.78	0.151			
		1	49	22.02	0.159			
		25	0	20.65	0.116			
		25	12	20.58	0.114			
		25	25	20.58	0.114			
		50	0	20.64	0.116			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	15MHz	QPSK	20025	1717.5	1	0	22.62	0.183
					1	37	22.75	0.188
					1	74	22.67	0.185
					36	0	21.86	0.153
					36	19	21.94	0.156
					36	39	21.87	0.154
					75	0	21.90	0.155
			20175	1732.5	1	0	22.69	0.186
					1	37	<b>22.80</b>	<b>0.191</b>
					1	74	22.58	0.181
					36	0	21.90	0.155
					36	19	22.04	0.160
					36	39	21.89	0.155
					75	0	21.91	0.155
			20325	1747.5	1	0	22.70	0.186
					1	37	22.77	0.189
					1	74	22.47	0.177
					36	0	21.90	0.155
					36	19	21.92	0.156
					36	39	21.72	0.149
					75	0	21.88	0.154
		16QAM	20025	1717.5	1	0	21.65	0.146
					1	37	21.95	0.157
					1	74	21.70	0.148
					36	0	20.55	0.114
					36	19	20.64	0.116
					36	39	20.55	0.114
					75	0	20.63	0.116
			20175	1732.5	1	0	21.74	0.149
					1	37	21.96	0.157
					1	74	21.62	0.145
					36	0	20.51	0.112
					36	19	20.69	0.117
					36	39	20.53	0.113
					75	0	20.56	0.114
			20325	1747.5	1	0	21.74	0.149
1	37	21.94			0.156			
1	74	21.55			0.143			
36	0	20.61			0.115			
36	19	20.62			0.115			
36	39	20.41			0.110			
75	0	20.57			0.114			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band4	20MHz	QPSK	20050	1720.0	1	0	22.42	0.175
					1	49	22.75	0.188
					1	99	22.45	0.176
					50	0	21.67	0.147
					50	25	21.75	0.150
					50	50	21.64	0.146
			20175	1732.5	100	0	21.66	0.147
					1	0	22.50	0.178
					1	49	22.77	0.189
					1	99	22.47	0.177
					50	0	21.67	0.147
					50	25	21.75	0.150
			20300	1745.0	50	50	21.69	0.148
					100	0	21.69	0.148
					1	0	22.67	0.185
					1	49	<b>22.81</b>	<b>0.191</b>
					1	99	22.45	0.176
					50	0	21.80	0.151
		16QAM	20050	1720.0	50	25	21.81	0.152
					50	50	21.70	0.148
					100	0	21.72	0.149
					1	0	21.62	0.145
					1	49	21.97	0.157
					1	99	21.67	0.147
			20175	1732.5	50	0	20.54	0.113
					50	25	20.60	0.115
					50	50	20.43	0.110
					100	0	20.56	0.114
					1	0	21.68	0.147
					1	49	21.93	0.156
			20300	1745.0	1	99	21.66	0.147
					50	0	20.51	0.112
					50	25	20.61	0.115
					50	50	20.47	0.111
					100	0	20.49	0.112
					1	0	21.81	0.152
20300	1745.0	1	49	22.01	0.159			
		1	99	21.67	0.147			
		50	0	20.69	0.117			
		50	25	20.70	0.117			
		50	50	20.51	0.112			
		100	0	20.58	0.114			





Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band12	1.4MHz	QPSK	23017	699.7	1	0	22.58	0.181
					1	2	22.59	0.182
					1	5	22.57	0.181
					3	0	22.58	0.181
					3	1	22.54	0.179
					3	3	22.37	0.173
			6	0	21.41	0.138		
			1	0	<b>22.74</b>	<b>0.188</b>		
			1	2	22.68	0.185		
			1	5	22.70	0.186		
			3	0	22.45	0.176		
			3	1	22.64	0.184		
			3	3	22.38	0.173		
			6	0	21.50	0.141		
			1	0	22.59	0.182		
			1	2	22.68	0.185		
			1	5	22.51	0.178		
			3	0	22.32	0.171		
		3	1	22.47	0.177			
		3	3	22.31	0.170			
		6	0	21.49	0.141			
		1	0	22.04	0.160			
		1	2	22.01	0.159			
		1	5	22.00	0.158			
		3	0	21.28	0.134			
		3	1	21.26	0.134			
		3	3	21.29	0.135			
		6	0	20.84	0.121			
		1	0	22.15	0.164			
		1	2	22.17	0.165			
		1	5	22.16	0.164			
		3	0	21.74	0.149			
		3	1	21.95	0.157			
		3	3	21.65	0.146			
		6	0	20.84	0.121			
		1	0	22.15	0.164			
1	2	22.13	0.163					
1	5	22.14	0.164					
3	0	21.38	0.137					
3	1	21.50	0.141					
3	3	21.84	0.153					
6	0	20.84	0.121					



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band12	3MHz	QPSK	23025	700.5	1	0	22.49	0.177
					1	7	22.69	0.186
					1	14	<b>22.72</b>	<b>0.187</b>
					8	0	21.56	0.143
					8	3	21.60	0.145
					8	7	21.68	0.147
			23095	707.5	15	0	21.63	0.146
					1	0	22.47	0.177
					1	7	22.54	0.179
					1	14	22.61	0.182
					8	0	21.62	0.145
					8	3	21.66	0.147
			23165	714.5	8	7	21.51	0.142
					15	0	21.66	0.147
					1	0	22.49	0.177
					1	7	22.50	0.178
					1	14	22.44	0.175
					8	0	21.53	0.142
		16QAM	23025	700.5	8	3	21.61	0.145
					8	7	21.51	0.142
					15	0	21.48	0.141
					1	0	22.05	0.160
					1	7	22.15	0.164
					1	14	22.14	0.164
			23095	707.5	8	0	20.72	0.118
					8	3	20.72	0.118
					8	7	20.76	0.119
					15	0	20.72	0.118
					1	0	22.07	0.161
					1	7	22.14	0.164
			23165	714.5	1	14	22.13	0.163
					8	0	20.74	0.119
					8	3	20.74	0.119
					8	7	20.60	0.115
					15	0	20.65	0.116
					1	0	22.01	0.159
23025	700.5	1	7	21.94	0.156			
		1	14	22.11	0.163			
		8	0	20.54	0.113			
		8	3	20.61	0.115			
		8	7	20.58	0.114			
		15	0	20.59	0.115			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band12	5MHz	QPSK	23035	701.5	1	0	22.61	0.182
					1	12	22.57	0.181
					1	24	<b>22.79</b>	<b>0.190</b>
					12	0	21.67	0.147
					12	6	21.89	0.155
					12	13	21.73	0.149
			23095	707.5	25	0	21.75	0.150
					1	0	22.68	0.185
					1	12	22.72	0.187
					1	24	22.74	0.188
					12	0	21.52	0.142
					12	6	21.56	0.143
			23155	713.5	12	13	21.67	0.147
					25	0	21.83	0.152
					1	0	22.64	0.184
					1	12	22.43	0.175
					1	24	22.78	0.190
					12	0	21.70	0.148
		16QAM	23035	701.5	12	6	21.68	0.147
					12	13	21.69	0.148
					25	0	21.68	0.147
					1	0	22.10	0.162
					1	12	21.90	0.155
					1	24	22.05	0.160
			23095	707.5	12	0	20.75	0.119
					12	6	20.86	0.122
					12	13	20.83	0.121
					25	0	20.77	0.119
					1	0	22.13	0.163
					1	12	21.94	0.156
			23155	713.5	1	24	22.14	0.164
					12	0	20.67	0.117
					12	6	20.69	0.117
					12	13	20.76	0.119
					25	0	20.87	0.122
					1	0	22.15	0.164
23155	713.5	1	12	22.06	0.161			
		1	24	22.13	0.163			
		12	0	20.81	0.121			
		12	6	20.74	0.119			
		12	11	20.86	0.122			
		25	0	20.78	0.120			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band12	10MHz	QPSK	23060	704.0	1	0	22.69	0.186
					1	24	22.72	0.187
					1	49	22.80	0.191
					25	0	21.50	0.141
					25	12	21.59	0.144
					25	25	21.84	0.153
			23095	707.5	50	0	21.65	0.146
					1	0	22.65	0.184
					1	24	22.77	0.189
					1	49	<b>22.85</b>	<b>0.193</b>
					25	0	21.56	0.143
					25	12	21.90	0.155
			23130	711.0	25	25	21.75	0.150
					50	0	21.94	0.156
					1	0	22.76	0.189
					1	24	22.72	0.187
					1	49	22.82	0.191
					25	0	21.85	0.153
		16QAM	23060	704.0	25	12	21.71	0.148
					25	25	21.75	0.150
					50	0	21.86	0.153
					1	0	22.01	0.159
					1	24	22.11	0.163
					1	49	22.14	0.164
			23095	707.5	25	0	20.83	0.121
					25	12	20.97	0.125
					25	25	21.22	0.132
					50	0	20.91	0.123
					1	0	21.91	0.155
					1	24	22.15	0.164
			23130	711.0	1	49	22.11	0.163
					25	0	20.88	0.122
					25	12	20.84	0.121
					25	25	20.71	0.118
					50	0	20.87	0.122
					1	0	22.07	0.161
23060	704.0	1	24	22.04	0.160			
		1	49	22.08	0.161			
		25	0	20.78	0.120			
		25	12	20.70	0.117			
		25	25	20.84	0.121			
		50	0	20.79	0.120			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band17	5MHz	QPSK	23755	706.5	1	0	22.57	0.181
					1	12	22.60	0.182
					1	24	<b>22.85</b>	<b>0.193</b>
					12	0	21.73	0.149
					12	6	21.81	0.152
					12	13	21.80	0.151
			23790	710.0	25	0	21.88	0.154
					1	0	22.75	0.188
					1	12	22.68	0.185
					1	24	22.81	0.191
					12	0	21.86	0.153
					12	6	21.92	0.156
			23825	713.5	12	13	21.79	0.151
					25	0	21.88	0.154
					1	0	22.72	0.187
					1	12	22.63	0.183
					1	24	22.77	0.189
					12	0	21.79	0.151
		16QAM	23755	706.5	12	6	21.84	0.153
					12	13	21.90	0.155
					25	0	21.84	0.153
					1	0	22.31	0.170
					1	12	22.13	0.163
					1	24	22.37	0.173
			23790	710.0	12	0	20.76	0.119
					12	6	20.83	0.121
					12	13	20.96	0.125
					25	0	20.88	0.122
					1	0	22.38	0.173
					1	12	22.12	0.163
			23825	713.5	1	24	22.34	0.171
					12	0	20.95	0.124
					12	6	20.97	0.125
					12	13	20.90	0.123
					25	0	20.83	0.121
					1	0	22.22	0.167
23755	706.5	1	12	22.21	0.166			
		1	24	22.25	0.168			
		12	0	20.91	0.123			
		12	6	20.87	0.122			
		12	11	20.97	0.125			
		25	0	20.96	0.125			



Band	Channel Bandwidth	Modulation	Channel	Frequency (MHz)	RB Configuration		Average Power	
					Size	Offset	(dBm)	(W)
LTE Band17	10MHz	QPSK	23780	709.0	1	0	22.55	0.180
					1	24	22.61	0.182
					1	49	22.57	0.181
					25	0	21.75	0.150
					25	12	21.84	0.153
					25	25	21.69	0.148
			23790	710.0	50	0	21.83	0.152
					1	0	22.54	0.179
					1	24	22.58	0.181
					1	49	22.54	0.179
					25	0	21.87	0.154
					25	12	21.78	0.151
			23800	711.0	25	25	21.71	0.148
					50	0	21.84	0.153
					1	0	22.56	0.180
					1	24	22.54	0.179
					1	49	<b>22.70</b>	<b>0.186</b>
					25	0	21.87	0.154
		16QAM	23780	709.0	25	12	21.77	0.150
					25	25	21.85	0.153
					50	0	21.90	0.155
					1	0	22.02	0.159
					1	24	22.05	0.160
					1	49	22.16	0.164
			23790	710.0	25	0	20.61	0.115
					25	12	20.83	0.121
					25	25	20.69	0.117
					50	0	20.88	0.122
					1	0	21.95	0.157
					1	24	22.02	0.159
			23800	711.0	1	49	22.24	0.167
					25	0	20.86	0.122
					25	12	20.76	0.119
					25	25	20.76	0.119
					50	0	20.88	0.122
					1	0	22.07	0.161
23780	709.0	1	24	22.08	0.161			
		1	49	22.21	0.166			
		25	0	20.87	0.122			
		25	12	20.73	0.118			
		25	25	20.90	0.123			
		50	0	20.93	0.124			



Band	Data Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)
			ANT-0
IEEE 802.11b	1	2412.0	14.74
		2437.0	<b>14.81</b>
		2462.0	14.78
	2	2437.0	14.29
	5.5	2437.0	14.23
	11	2437.0	14.18
IEEE 802.11g	6	2412.0	<b>7.80</b>
		2437.0	7.71
		2462.0	7.50
	9	2437.0	7.76
	12	2437.0	7.73
	18	2437.0	7.70
	24	2437.0	7.69
	36	2437.0	7.65
	48	2437.0	7.63
54	2437.0	7.62	
IEEE 802.11n 2.4GHz 20Hz	6.5	2412.0	<b>6.56</b>
		2437.0	6.51
		2462.0	6.47
	14.4	2437.0	6.50
	21.7	2437.0	6.48
	28.9	2437.0	6.43
	43.3	2437.0	6.40
	57.8	2437.0	6.37
	65	2437.0	6.36
72.2	2437.0	6.34	
IEEE 802.11n 2.4GHz 40Hz	13.5	2422.0	<b>7.79</b>
		2437.0	7.32
		2452.0	7.26
	30	2437.0	7.30
	45	2437.0	7.28
	60	2437.0	7.24
	90	2437.0	7.21
	120	2437.0	7.20
	135	2437.0	7.18
150	2437.0	7.16	

Operate Band	Frequency (MHz)	Packet Type	Average Conducted power (dBm)
Bluetooth BR GFSK	2402	DH1	1.57
		DH3	4.96
		DH5	<b>5.90</b>
	2441	DH1	1.37
		DH3	4.97
		DH5	5.48
	2480	DH1	0.77
		DH3	4.14
		DH5	4.87
Bluetooth EDR $\pi/4$ -DQPSK	2402	DH1	-0.46
		DH3	2.67
		DH5	<b>3.65</b>
	2441	DH1	-0.51
		DH3	1.75
		DH5	3.22
	2480	DH1	-1.37
		DH3	1.82
		DH5	3.52
Bluetooth EDR 8DPSK	2402	DH1	-0.33
		DH3	2.75
		DH5	<b>4.63</b>
	2441	DH1	-0.22
		DH3	2.27
		DH5	3.92
	2480	DH1	-1.36
		DH3	2.61
		DH5	4.23
Bluetooth LE	2402	---	<b>0.38</b>
	2440		0.32
	2480		-0.43





#### 4. Test Result

Antenna	Band	Test mode/RB/Data rate	Frequency (MHz)	Limit (mw)/cm <sup>2</sup>	Distance [R] (cm)	max tune-up Power [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle (mW) [TP]	Power Density (mw)/cm <sup>2</sup> [S]
Bluetooth Antenna	Bluetooth BT	1M(DH5)	2402.0	1	20	6.00	2.00	1.58	1	6.29	0.001
			2441.0	1	20	6.00	2.00	1.58	1	6.29	0.001
			2480.0	1	20	6.00	2.00	1.58	1	6.29	0.001
	Bluetooth LE	-	2402.0	1	20	0.50	2.00	1.58	1	1.77	0.000
			2440.0	1	20	0.40	2.00	1.58	1	1.73	0.000
WLAN Antenna	IEEE 802.11b	1M	2412.0	1	20	14.90	2.00	1.58	1	48.83	0.010
			2437.0	1	20	14.90	2.00	1.58	1	48.83	0.010
			2462.0	1	20	14.90	2.00	1.58	1	48.83	0.010
	IEEE 802.11g	6M	2412.0	1	20	7.90	2.00	1.58	1	9.74	0.002
			2437.0	1	20	7.90	2.00	1.58	1	9.74	0.002
			2462.0	1	20	7.90	2.00	1.58	1	9.74	0.002
	IEEE 802.11n 2.4GHz 20MHz	6.5M	2412.0	1	20	6.70	2.00	1.58	1	7.39	0.001
			2437.0	1	20	6.70	2.00	1.58	1	7.39	0.001
			2462.0	1	20	6.70	2.00	1.58	1	7.39	0.001
	IEEE 802.11n 2.4GHz 40MHz	13.5M	2422.0	1	20	7.90	2.00	1.58	1	9.74	0.002
			2437.0	1	20	7.90	2.00	1.58	1	9.74	0.002
			2452.0	1	20	7.90	2.00	1.58	1	9.74	0.002
WWAN Antenna	LTE Band2 QPSK_5MHz	1RB	1852.5	1	20	23.00	2.80	1.91	1	381.10	0.076
			1880.0	1	20	23.00	2.80	1.91	1	381.10	0.076
			1907.5	1	20	23.00	2.80	1.91	1	381.10	0.076
		50%RB	1852.5	1	20	22.00	2.80	1.91	1	302.71	0.060
			1880.0	1	20	22.00	2.80	1.91	1	302.71	0.060
			1907.5	1	20	22.00	2.80	1.91	1	302.71	0.060
		100%RB	1852.5	1	20	21.90	2.80	1.91	1	295.82	0.059
			1880.0	1	20	21.90	2.80	1.91	1	295.82	0.059
			1907.5	1	20	21.90	2.80	1.91	1	295.82	0.059
	LTE Band4 QPSK_1.4MHz	1RB	1710.7	1	20	23.00	0.20	1.05	1	209.50	0.042
			1732.5	1	20	23.00	0.20	1.05	1	209.50	0.042
			1754.3	1	20	23.00	0.20	1.05	1	209.50	0.042
		50%RB	1710.7	1	20	22.80	0.20	1.05	1	200.07	0.040
			1732.5	1	20	22.80	0.20	1.05	1	200.07	0.040
			1754.3	1	20	22.80	0.20	1.05	1	200.07	0.040
		100%RB	1710.7	1	20	21.80	0.20	1.05	1	158.92	0.032
			1732.5	1	20	21.80	0.20	1.05	1	158.92	0.032
			1754.3	1	20	21.80	0.20	1.05	1	158.92	0.032
	LTE Band12 QPSK_10MHz	1RB	704.0	0.469	20	22.90	2.00	1.58	1	308.08	0.061
			707.5	0.472	20	22.90	2.00	1.58	1	308.08	0.061
			711.0	0.474	20	22.90	2.00	1.58	1	308.08	0.061
		50%RB	704.0	0.469	20	22.00	2.00	1.58	1	250.41	0.050
			707.5	0.472	20	22.00	2.00	1.58	1	250.41	0.050
			711.0	0.474	20	22.00	2.00	1.58	1	250.41	0.050
100%RB		704.0	0.469	20	22.00	2.00	1.58	1	250.41	0.050	
		707.5	0.472	20	22.00	2.00	1.58	1	250.41	0.050	
		711.0	0.474	20	22.00	2.00	1.58	1	250.41	0.050	
LTE Band17 QPSK_5MHz	1RB	706.5	0.471	20	22.90	2.00	1.58	1	308.08	0.061	
		710.0	0.473	20	22.90	2.00	1.58	1	308.08	0.061	
		713.5	0.476	20	22.90	2.00	1.58	1	308.08	0.061	
	50%RB	706.5	0.471	20	22.00	2.00	1.58	1	250.41	0.050	
		710.0	0.473	20	22.00	2.00	1.58	1	250.41	0.050	
		713.5	0.476	20	22.00	2.00	1.58	1	250.41	0.050	
	100%RB	706.5	0.471	20	22.00	2.00	1.58	1	250.41	0.050	
		710.0	0.473	20	22.00	2.00	1.58	1	250.41	0.050	
		713.5	0.476	20	22.00	2.00	1.58	1	250.41	0.050	



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  $10^{(\text{ant. Gain(dBi)}/10)}$ .
3. Each band max power which perform MPE of any configurations.
4. 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 Wi-Fi and BT can not support simultaneous transmission.

Simultaneous Transmitting :

$$\text{Total MPE} = \text{WiFi MPE} + \text{LTE Band 2 MPE} = (0.010/1) + (0.076/1) = 0.086 < 1$$

$$\text{Total MPE} = \text{BT MPE} + \text{LTE Band 2 MPE} = (0.001/1) + (0.076/1) = 0.077 < 1$$

\* Choose maximum power density value calculation .