

FCC REPORT

(LTE)

Applicant: Anytrek Corporation

Address of Applicant: 4405 E Airport Dr, Suite 106, Ontario, CA 91761, USA

Equipment Under Test (EUT)

Product Name: TrackLight GPS Tracker

Model No.: VT1911 , VT1911-R40-**, VT1911-A40-**, VT1911-C40-**

Trade mark: TrackLight

FCC ID: 2ANJN-VT1911

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 90 Subpart S

Date of sample receipt: 04 Mar., 2020

Date of Test: 04 Mar., to 18 Mar., 2020

Date of report issued: 18 Mar., 2020

Test Result: PASS*

*In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

A blue circular stamp with the text "SHENZHEN ZHONGJIAN NANFANG TESTING CO., LTD." around the perimeter and "CCIS" in the center. A handwritten signature in blue ink is written over the stamp.

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2. Version

Version No.	Date	Description
00	18 Mar., 2020	Original

Tested by:

Mike Ou

Test Engineer

Date:

18 Mar., 2020

Reviewed by:

Winner Zhang

Project Engineer

Date:

18 Mar., 2020

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4. Test Summary

Test Items	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed (Please refer to SAR Report)
RF Output Power, ERP and EIRP	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c) Part 90.635 (b)	Pass
Peak-to-Average Ratio	Part 24.232 (d)	Pass*
Modulation Characteristics	Part 2.1047	Pass*
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 90.691(a)	Pass*
Out of band emission at antenna terminals	Part 2.1053 Part 22.917(a) Part 24.238 (a) Part 90.691(a)	Pass*
Field strength of spurious radiation	Part 22.917(a) Part 24.238 (a) Part 90.691(a)	Pass
Frequency stability vs. temperature	Part 22.355 Part 24.235 Part 90.213(a) Part 2.1055(a)(1)(b)	Pass*
Frequency stability vs. voltage	Part 22.355 Part 24.235 Part 90.213(a) Part 2.1055(d)(2)	Pass*
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. Pass*: refer to the FCC ID: 2AAGMSP150Q 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
Test Method:	ANSI/TIA-603-E-2016 ANSI C63.26-2015	

5. General Information

5.1 Client Information

Applicant:	Anytrek Corporation
Address:	4405 E Airport Dr, Suite 106, Ontario, CA 91761, USA
Manufacturer:	Shenzhen Anxingzhiyuan Technology Co., Ltd.
Address:	No.302, Building No.6, COFCO(Fuan)Robot Intelligent Building Industrial Park, No.90 Dayang Road, Fuhai Street, Baoan District, Shenzhen, Guangdong, China

5.2 General Description of E.U.T.

Product Name:	TrackLight GPS Tracker
Model No.:	VT1911 , VT1911-R40-**, VT1911-A40-**, VT1911-C40-**
Operation Frequency range:	LTE Band 25: TX: 1850MHz-1915MHz, RX: 1930MHz-1995MHz LTE Band 26: TX: 814MHz-849MHz, RX: 859MHz-894MHz
Modulation type:	QPSK, 16QAM
Antenna type:	Internal Antenna
Antenna gain:	LTE Band 25: 0dBi LTE Band 26: 0dBi
Power supply:	Rechargeable Li-Po Battery DC3.7V-3000mAh
Input Power:	DC12V 1A
Remark:	Model No.: VT1911 , VT1911-R40-**, VT1911-A40-**, VT1911-C40-** were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.
Test Sample Condition:	The applicant provided engineering samples for staying in continuously transmitting for testing.

Operation Frequency List:

LTE Band 25 (5MHz)		LTE Band 25 (10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26065	1852.50	26090	1855.00
26066	1852.60	26091	1855.10
....			
26364	1882.40	26364	1882.40
26365	1882.50	26365	1882.50
26366	1882.60	26366	1882.60
...	...	...	...
26664	1912.40	26639	1909.90
26665	1912.50	26640	1910.00
LTE Band 25 (15MHz)		LTE Band 25 (20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26115	1857.50	26140	1860.00
26116	1857.60	26139	1860.10
....			
26364	1882.40	26364	1882.40
26365	1882.50	26365	1882.50
36366	1882.60	26366	1882.60
...	...	...	...
26614	1907.40	26589	1904.90
26615	1907.50	26590	1905.00

LTE Band 26 (5MHz)		LTE Band 26 (10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26715	816.50	26750	820.00
26716	816.60	26760	820.10
....			
26864	831.40	26864	831.40
26865	831.50	26865	831.50
26866	831.60	26866	831.60
...	...	...	...
27014	846.40	26980	843.90
27015	846.50	26990	844.00
LTE Band 26 (15MHz)			
Channel	Frequency (MHz)		
26775	822.50		
26776	822.60		
....			
26864	831.40		
26865	831.50		
26866	831.60		
...	...		
26964	841.40		
26965	841.50		

Regards to the operating frequency range, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channels as below:

LTE Band 25 (5MHz)			LTE Band 25 (10MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	26065	1852.50	Lowest channel	26090	1855.00
Middle channel	26365	1882.50	Middle channel	26365	1882.50
Highest channel	26665	1912.50	Highest channel	26640	1910.00
LTE Band 25 (15MHz)			LTE Band 25 (20MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	26115	1857.50	Lowest channel	26140	1860.00
Middle channel	26365	1882.50	Middle channel	26365	1882.50
Highest channel	26615	1907.50	Highest channel	26590	1905.00

LTE Band 26(5MHz) for Part 22			LTE Band 26(5MHz) for Part 90		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	26815	826.5	Lowest channel	26715	816.5
Middle channel	26915	836.5	Middle channel	26740	819.0
Highest channel	27015	846.5	Highest channel	26765	821.5
LTE Band 26(10MHz) for Part 22			LTE Band 26(10MHz) for Part 90		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	26840	829.0	Lowest channel	/	/
Middle channel	26915	836.5	Middle channel	26740	819.0
Highest channel	26990	844.0	Highest channel	/	/
LTE Band 26(15MHz) for Part 22H			LTE Band 26(15MHz) (Straddling Part 22H, 90S)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	26865	831.5	Lowest channel	26765	821.5
Middle Channel	26915	836.5	/	/	/
Highest channel	26965	841.5	/	/	/

5.3 Test environment and mode

Operating Environment:	
Temperature:	Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.7Vdc, Extreme: Low 3.5Vdc, High 4.2Vdc
Test mode:	
LTE QPSK mode	Keep the EUT communication with simulated station in QPSK mode
LTE 16-QAM mode	Keep the EUT communication with simulated station in 16-QAM mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report.	

5.4 Description of Support Units

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.38 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.36 dB (k=2)

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.
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5.7 Additions to, deviations, or exclusions from the method

No

5.8 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.9 Laboratory Location

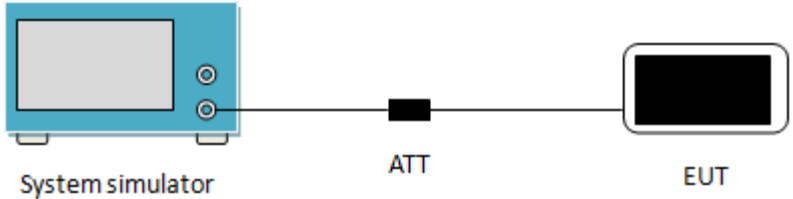
Shenzhen Zhongjian Nanfang Testing Co., Ltd.
 Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
 Bao'an District, Shenzhen, Guangdong, China
 Tel: +86-755-23118282, Fax: +86-755-23116366
 Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

5.10 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2019	11-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Pre-amplifier	CD	PAP-1G18	11804	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-18-2019	11-17-2020
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Signal Generator	R&S	SMR20	1008100050	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2019	03-17-2020
				03-18-2020	03-17-2021
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	09-25-2019	09-24-2020
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	11-01-2019	10-31-2020
Simulated Station	Rohde & Schwarz	CMW500	140493	07-22-2019	07-21-2020

6. Test results

6.1 Conducted Output Power, ERP and EIRP

Test Requirement:	Part 22.913(a)(5), Part 24.232(c), Part 90.635 (b)
Limit:	LTE Band 25: 2W, LTE Band 26: 7W(for Part 22H), 100W (for Part 90S)
Test Setup:	 The diagram illustrates the test setup. On the left is a blue rectangular box labeled 'System simulator'. A line connects it to a small black square labeled 'ATT' (attenuator). Another line connects the 'ATT' to a black rectangular box labeled 'EUT' (Equipment Under Test).
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMW500. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Conducted Output Power refer to the FCC ID: 2AAGMSP150Q

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
25	5	QPSK	1	0	21.70	22.09	21.79
			1	24	21.50	21.97	21.23
			12	0	20.65	20.98	20.77
			12	11	20.57	21.03	20.65
			25	0	20.57	20.96	20.65
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		22.09		
			EIRP Limit(dBm):		33.00		
		16QAM	1	0	20.63	20.83	20.84
			1	24	20.47	20.75	20.45
			12	0	19.55	19.95	19.62
			12	11	19.50	19.94	19.56
			25	0	21.30	21.73	21.12
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		21.73		
			EIRP Limit(dBm):		33.00		
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18650	18900	19150
					1855.0MHz	1880.0MHz	1905.0MHz
25	10	QPSK	1	0	21.53	21.96	21.83
			1	49	21.38	21.93	21.52
			25	0	20.59	21.74	20.97
			25	24	20.53	21.00	21.01
			50	0	20.45	20.94	20.87
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		21.96		
			EIRP Limit(dBm):		33.00		
		16QAM	1	0	20.46	20.66	20.43
			1	26	20.87	21.19	21.24
			27	0	20.98	21.10	21.02
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		21.24		
			EIRP Limit(dBm):		33.00		

Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi).

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
25	15	QPSK	1	0	22.06	22.31	21.92
			1	74	21.81	22.03	21.89
			36	0	20.38	20.88	20.64
			36	37	20.34	20.74	20.80
			75	0	21.51	21.83	20.99
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		22.31		
			EIRP Limit(dBm):		33.00		
		16QAM	1	0	20.39	21.01	20.65
			1	26	20.37	20.57	21.04
			27	0	20.68	20.86	20.97
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		21.04		
			EIRP Limit(dBm):		33.00		
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
25	20	QPSK	1	0	22.50	22.68	22.34
			1	99	22.36	22.46	22.34
			50	0	20.67	21.16	20.58
			50	49	20.61	21.01	20.97
			100	0	21.89	22.24	21.38
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		22.68		
			EIRP Limit(dBm):		33.00		
		16QAM	1	0	20.92	21.43	21.05
			1	26	20.21	21.00	20.59
			27	0	20.59	19.38	19.19
			Antenna Gain(dBi):		0		
			Max. EIRP(dBm):		21.43		
			EIRP Limit(dBm):		33.00		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi).							

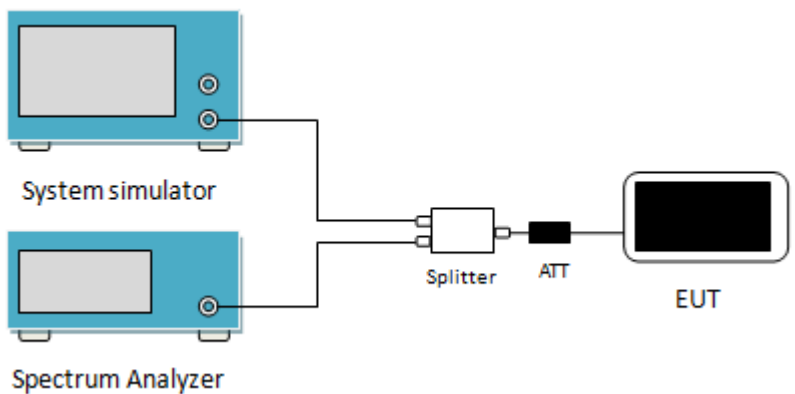
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26815	26915	27015
					826.5MHz	836.5MHz	846.5MHz
26 (Part 22H)	5	QPSK	1	0	20.36	20.64	20.40
			1	24	20.35	20.50	20.39
			12	0	19.17	19.51	19.55
			12	11	19.13	19.48	19.57
			25	0	19.15	19.48	19.53
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		18.49		
			ERP Limit (dBm):		38.45		
		16QAM	1	0	19.32	19.73	19.43
			1	24	19.35	19.67	19.52
			12	0	18.16	18.53	18.60
			12	11	18.15	18.53	18.60
			25	0	20.11	20.38	19.75
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		18.23		
			ERP Limit (dBm):		38.45		
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26840	26915	26990
					829 MHz	836.5MHz	844 MHz
26 (Part 22H)	10	QPSK	1	0	20.27	20.62	20.68
			1	49	20.21	20.08	20.28
			25	0	19.02	19.43	19.46
			25	24	19.22	19.38	19.43
			50	0	19.12	19.36	19.23
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		18.53		
			ERP Limit (dBm):		38.45		
		16QAM	1	0	19.10	19.39	19.67
			1	26	18.89	19.39	19.58
			27	0	19.57	19.15	20.03
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		17.88		
			ERP Limit (dBm):		38.45		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi). ERP (dBm) = EIRP (dBm) - 2.15 (dB).							

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26865	26915	26965
					831.5 MHz	836.5MHz	841.5 MHz
26 (Part 22H)	15	QPSK	1	0	20.21	20.07	20.65
			1	74	20.57	20.32	20.56
			36	0	19.03	19.19	19.32
			36	37	19.31	19.22	19.27
			75	0	20.28	20.15	20.15
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		18.50		
			Limit (dBm):		38.45		
		16QAM	1	0	19.09	19.14	19.56
			1	26	19.35	19.59	19.81
			27	0	19.50	19.37	19.67
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		17.66		
			Limit (dBm):		38.45		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi). ERP (dBm) = EIRP (dBm) - 2.15 (dB).							

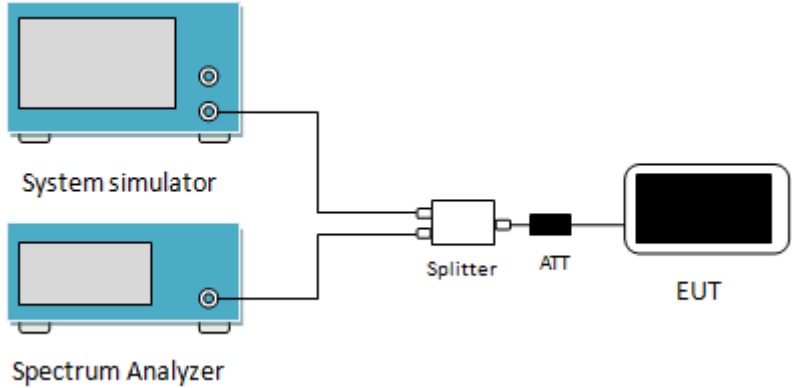
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26715	26740	26765
					816.5MHz	819.0MHz	821.5MHz
26 (Part 90S)	5	QPSK	1	0	22.06	21.67	20.88
			1	24	21.37	20.97	19.78
			12	0	20.52	20.10	19.59
			12	11	20.28	19.92	19.44
			25	0	20.31	20.01	19.60
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		22.06		
		ERP Limit (dBm):		38.45			
		16QAM	1	0	21.10	20.72	20.06
			1	24	20.55	20.08	19.55
			12	0	19.49	19.12	18.84
			12	11	19.27	18.98	18.51
			25	0	21.03	20.95	20.48
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		21.10		
		ERP Limit (dBm):		38.45			
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					/	26740	/
					/	819MHz	/
26 (Part 90S)	10	QPSK	1	0	/	22.06	/
			1	49	/	20.04	/
			25	0	/	19.94	/
			25	24	/	19.66	/
			50	0	/	19.69	/
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		22.06		
		ERP Limit (dBm):		38.45			
		16QAM	1	0	/	20.97	/
			1	26	/	19.83	/
			27	0	/	19.98	/
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		20.97		
			ERP Limit (dBm):		38.45		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi). ERP (dBm) = EIRP (dBm) - 2.15 (dB).							

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					26765	/	/
					821.5MHz	/	/
26 (Part 22H &Part 90S)	15	QPSK	1	0	21.11	/	/
			1	74	20.03	/	/
			36	0	19.61	/	/
			36	37	19.04	/	/
			75	0	20.66	/	/
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		21.11		
			Limit (dBm):		38.45		
		16QAM	1	0	20.11	/	/
			1	26	19.59	/	/
			27	0	19.57	/	/
			Antenna Gain(dBi):		0		
			Max. ERP (dBm):		20.11		
			Limit (dBm):		38.45		
Note: EIRP (dBm) = Burst Average power (dBm) + Antenna Gain (dBi). ERP (dBm) = EIRP (dBm) - 2.15 (dB).							

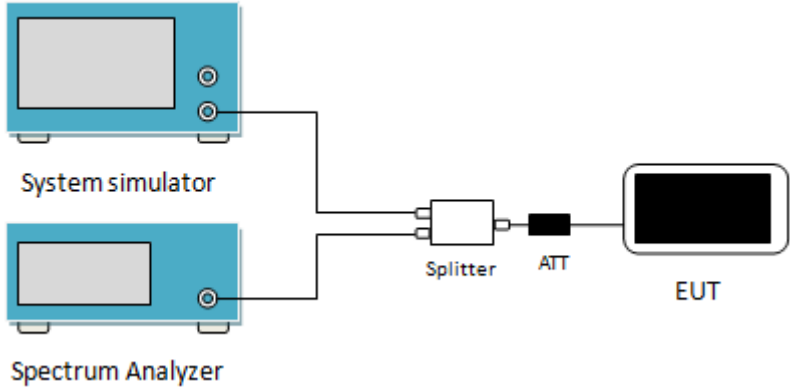
6.2 Peak-to-Average Ratio

Test Requirement:	Part 24.232 (d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test Setup:	 The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to the input of a 'Splitter' (a white rectangular unit with two output ports). One output of the Splitter is connected to an 'ATT' (Attenuator, a small black rectangular unit). The other output of the Splitter is connected to the 'EUT' (Equipment Under Test, a white rectangular unit with a black screen).
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, $RBW \geq OBW$, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to the FCC ID: 2AAGMSP150Q

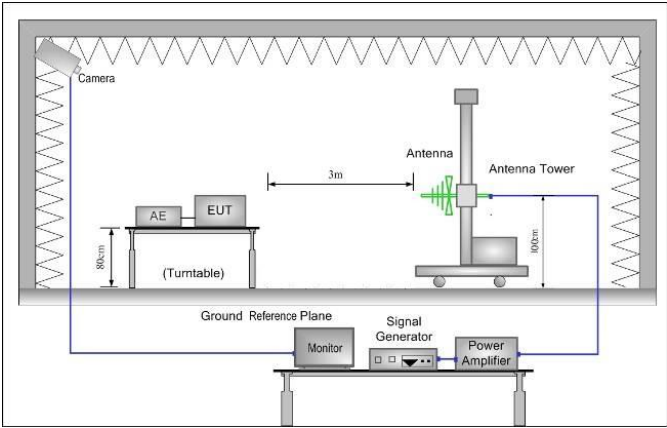
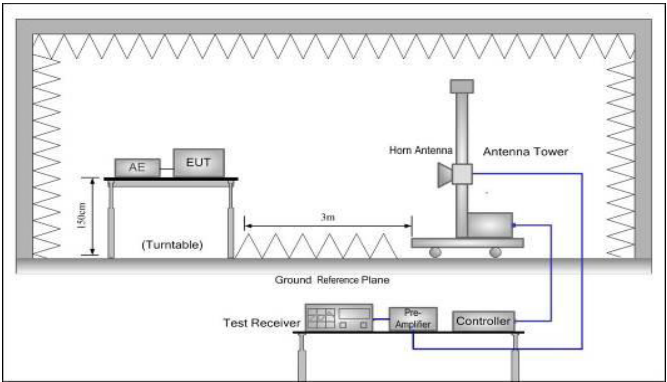
6.3 Occupy Bandwidth

Test Requirement:	Part 22.917(b), Part 24.238(b), Part 90.691(a)
Test Setup:	 The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to a single input port of a white rectangular unit labeled 'Splitter'. The 'Splitter' has two output ports. One output port is connected to a black rectangular unit labeled 'ATT' (Attenuator). The other output port is connected to a white rectangular unit with a black screen labeled 'EUT' (Equipment Under Test).
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to the FCC ID: 2AAGMSP150Q

6.4 Out of band emission at antenna terminals

Test Requirement:	Part 22.917(b), Part 24.238 (a), Part 90.691(a)
Limit:	LTE Band 25 & 26 : The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB (-13 dBm).
Test Setup:	 The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to a central 'Splitter' unit. From the 'Splitter', one line goes to an 'ATT' (Attenuator) unit, and another line goes to the 'EUT' (Equipment Under Test), which is represented by a black rectangular device.
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to the FCC ID: 2AAGMSP150Q

6.5 Field strength of spurious radiation measurement

Test Requirement:	Part 22.917(b), Part 24.238 (a), Part 90.691(a)
Limit:	LTE Band 25 & 26: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB (-13 dBm).
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $ERP / EIRP = S.G. \text{ output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed
Remark:	Pre-scan all WB and the report shows only the worst case test data.

Measurement Data:

LTE Band 25 part:

LTE Band 25, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest Channel				
3705.00	Vertical	-38.70	-25.00	Pass
5557.50	V	-39.23		
7410.00	V	-38.70		
3705.00	Horizontal	-45.87		
5557.50	H	-42.93		
7410.00	H	-39.31		
Middle Channel				
3765.00	Vertical	-38.60	-25.00	Pass
5647.50	V	-39.34		
7530.00	V	-38.69		
3765.00	Horizontal	-45.92		
5647.50	H	-42.86		
7530.00	H	-39.74		
Highest Channel				
3825.00	Vertical	-38.93	-25.00	Pass
5737.50	V	-39.35		
7650.00	V	-38.87		
3825.00	Horizontal	-45.91		
5737.50	H	-42.86		
7650.00	H	-39.37		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

LTE Band 25, WB: 20MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest Channel				
3720.00	Vertical	-38.67	-25.00	Pass
5580.00	V	-39.56		
7440.00	V	-38.92		
3720.00	Horizontal	-45.85		
5580.00	H	-42.98		
7440.00	H	-39.42		
Middle Channel				
3765.00	Vertical	-38.69	-25.00	Pass
5647.50	V	-39.54		
7530.00	V	-38.73		
3765.00	Horizontal	-45.59		
5647.50	H	-42.67		
7530.00	H	-39.86		
Highest Channel				
3810.00	Vertical	-38.98	-25.00	Pass
5715.00	V	-39.75		
7620.00	V	-39.21		
3810.00	Horizontal	-46.03		
5715.00	H	-42.96		
7620.00	H	-39.64		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

Part 22

LTE Band 26 part:

LTE Band 26, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest Channel				
1653.00	Vertical	-29.32	-13.00	Pass
2479.50	V	-49.33		
3306.00	V	-49.68		
1653.00	Horizontal	-32.66		
2479.50	H	-46.29		
3306.00	H	-50.78		
Middle Channel				
1673.00	Vertical	-29.54	-13.00	Pass
2509.50	V	-49.83		
3346.00	V	-49.78		
1673.00	Horizontal	-32.87		
2509.50	H	-46.89		
3346.00	H	-50.92		
Highest Channel				
1693.00	Vertical	-30.06	-13.00	Pass
2539.50	V	-49.84		
3386.00	V	-49.93		
1693.00	Horizontal	-32.97		
2539.50	H	-47.21		
3386.00	H	-50.89		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

LTE Band 26, WB: 15MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest Channel				
1663.00	Vertical	-29.87	-13.00	Pass
2494.50	V	-49.73		
3326.00	V	-49.75		
1663.00	Horizontal	-32.64		
2494.50	H	-46.83		
3326.00	H	-50.92		
Middle Channel				
1673.00	Vertical	-30.06	-13.00	Pass
2509.00	V	-49.87		
3346.00	V	-49.83		
1673.00	Horizontal	-32.91		
2509.00	H	-47.21		
3346.00	H	-50.89		
Highest Channel				
1683.00	Vertical	-30.21	-13.00	Pass
2524.50	V	-49.97		
3366.00	V	-49.83		
1683.00	Horizontal	-32.97		
2524.50	H	-47.53		
3366.00	H	-50.98		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

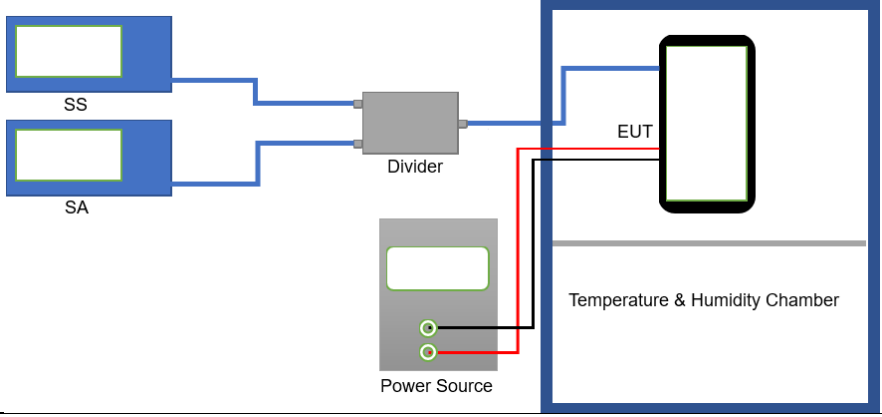
Part 90

LTE Band 26 part:

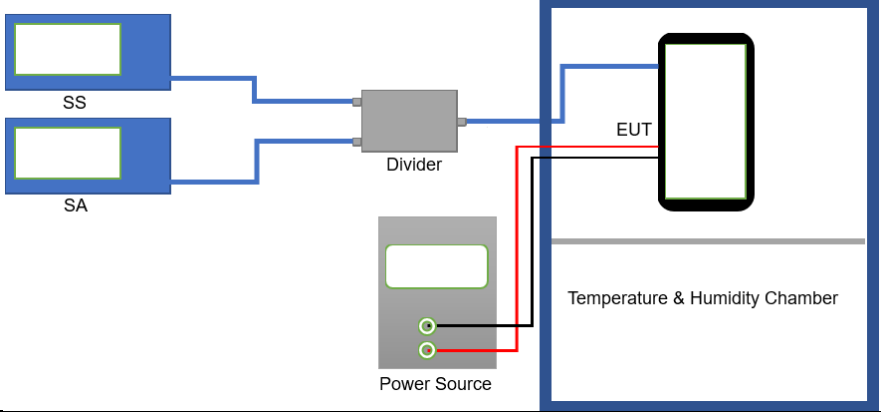
LTE Band 26, WB: 5MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest Channel				
1633.00	Vertical	-28.44	-13.00	Pass
2449.50	V	-55.87		
3266.00	V	-50.80		
1633.00	Horizontal	-36.71		
2449.50	H	-51.51		
3266.00	H	-50.65		
Middle Channel				
1638.00	Vertical	-28.75	-13.00	Pass
2457.00	V	-55.92		
3276.00	V	-50.83		
1638.00	Horizontal	-36.97		
2457.00	H	-51.58		
3276.00	H	-50.79		
Highest Channel				
1643.00	Vertical	-29.32	-13.00	Pass
2464.50	V	-55.96		
3286.00	V	-50.89		
1643.00	Horizontal	-36.67		
2464.50	H	-51.83		
3286.00	H	-50.64		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

LTE Band 26, WB: 15MHz				
RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Middle Channel				
1643.00	Vertical	-28.64	-13.00	Pass
2464.50	V	-55.89		
3286.00	V	-51.21		
1643.00	Horizontal	-36.89		
2464.50	H	-51.67		
3286.00	H	-50.96		
Note:				
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.				
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.				

6.6 Frequency stability V.S. Temperature measurement

Test Requirement:	Part 22.355, Part 24.235, Part 90.213(a), Part 2.1055(a)(1)(b)
Limit:	$\pm 2.5\text{ppm}$
Test setup:	 The diagram illustrates the test setup. A signal source (SS) and a spectrum analyzer (SA) are connected to a divider. The divider is connected to the EUT (Equipment Under Test) inside a Temperature & Humidity Chamber. A power source is also connected to the EUT.
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to the FCC ID: 2AAGMSP150Q

6.7 Frequency stability V.S. Voltage measurement

Test Requirement:	Part 22.355, Part 24.235, Part 90.213(a), Part 2.1055(d)(2)
Limit:	±2.5ppm
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer (SA) and a Signal Source (SS) are connected to a Divider. The Divider is connected to the EUT (Equipment Under Test) inside a Temperature & Humidity Chamber. A Power Source is also connected to the EUT.
Test procedure:	1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Refer to the FCC ID: 2AAGMSP150Q