RF TEST REPORT

For

SHENZHEN ZHUOYONGHANG ELECTRONICS CO.,LTD

Product Name: Vehicle navigation

Test Model(s).: TS18

Report Reference No.	:	**POCE231127015RL003**
FCC ID	:	**2BECX-TS18**
Applicant's Name	:	SHENZHEN ZHUOYONGHANG ELECTRONICS CO.,LTD
Address	:	4th Floor, B1 Building, Libang Science Park, Xitian Third Industrial Zone, Gongming Street, Guangming New District, Shenzhen
Testing Laboratory	:	Shenzhen POCE Technology Co., Ltd.
Address	:	102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Test Specification Standard	:	**FCC PART 2, FCC Part 22(H), FCC Part 27(C)** **ANSI C63.26-2015** **KDB 971168 D01 Power Meas License Digital Systems v03r01**
Date of Receipt	:	November 27, 2023
Date of Test	:	November 27, 2023 to December 19, 2023
Data of Issue	:	December 19, 2023
Result	:	**Pass**

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	POCE231127015RL003	December 19, 2023

NOTE1:
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. 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.

Compiled by:	Supervised by:	Approved by:
Ben Tang /Test Engineer	Tom Chen / Project Engineer	Machael Mo / Manager

CONTENTS

1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

1.2 Summary of Test Result

Item	Method	Requirement	Result
Effective (Isotropic) Radiated Power Output	ANSI C63.26-2015, Section 5.2.4.2	47 CFR Part 2.1046, Part 22.913 47 CFR Part 2.1046, Part 27.50(h)(2)	Pass
Peak To Average Ratio	ANSI C63.26-2015, Section 5.2.3.4	47 CFR Part 2.1046, Part 22.913 (d) 47 CFR Part 2.1046, Part 27.50 47 CFR Part 2.1046, Part 96.41(g)	Pass
Bandwidth	ANSI C63.26-2015, Section 5.4	47 CFR Part 2.1049(h)	Pass
Out of Band Emission	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)	Pass
Spurious Unwanted Emission	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)	Pass
Field Strength of Radiated Emission-Below 1GHz	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)	Pass
Field Strength of Radiated Emission-Above 1GHz	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)	Pass
Frequency Stability	ANSI C63.26-2015, Section 5.6	47 CFR Part 2.1055, Part 22.355 47 CFR Part 2.1055, Part 27.54	Pass

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name	:	SHENZHEN ZHUOYONGHANG ELECTRONICS CO.,LTD
Address	:	4th Floor, B1 Building, Libang Science Park, Xitian Third Industrial Zone, Gongming Street, Guangming New District, Shenzhen
Manufacturer	:	SHENZHEN ZHUOYONGHANG ELECTRONICS CO.,LTD
Address	:	4th Floor, B1 Building, Libang Science Park, Xitian Third Industrial Zone, Gongming Street, Guangming New District, Shenzhen

2.2 Description of Device (EUT)

Product Name:	Vehicle navigation
Model/Type reference:	TS18
Series Model:	TS6,TS7,T3L,T100,T5,TS10,TQ919,T527,9213,9216,9210,9260L,7212,7216、7250,5716,9270,7260,5750,5760,9211,9212,5712,Y8,RK3326,RK3566,MK8163,MTK8321,MTK8227L,Y6 ,8581,7862
Model Difference:	The product has many models, only the model name is different, and the other parts such as the circuit principle, pcb and electrical structure are the same.
Trade Mark:	N/A
Power Supply:	DC12V
Support Band	FDD Band 5;FDD Band 7;TDD Band 38
Transmit Frequency:	FDD Band 5: 824.7~848.3MHz FDD Band 7: 2502.5~2567.5MHz TDD Band 38: 2572.5~2617.5MHz
Receive Frequency:	FDD Band 5: 869.7~893.3MHz FDD Band 7: 2622.5~2687.5MHz TDD Band 38: 2572.5~2617.5MHz
Modulation Type:	QPSK, 16QAM
Power Class:	Class 3
Antenna Type:	External Antenna
Antenna Gain:	FDD Band 5: 3dBi (Provided by customer) FDD Band 7: 3dBi (Provided by customer) TDD Band 38: 3dBi (Provided by customer)
Hardware Version:	V1.0
Software Version:	V1.0

(Remark:The Antenna Gain is supplied by the customer.POCE is not responsible for This data and the related calculations associated with it)

2.3 Description of Test Modes

No	Title	Description
TM1	FDD-LTE Band 5	Low, Middle, High Channels
TM2	FDD-LTE Band 7	Low, Middle, High Channels
TM3	TDD-LTE Band 38	Low, Middle, High Channels

Band5

Test Frequency ID	Bandwidth[MHz]	NUL	Frequency of Uplink(MHz)	NDL	Frequency of Downlink(MHz)
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10	20450	829	2450	874.0
Mid Range	all	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10	20600	844	2600	889.0

Band7

Test Frequency ID	Bandwidth[MHz]	NUL	Frequency of Uplink(MHz)	NDL	Frequency of Downlink(MHz)
Low Range	5	20775	2502.5	2775	2622.5
	10	20800	2505	2825	2627.5
	15	20825	2507.5	2825	2627.5
	20	20850	2510	2850	2630.0
Mid Range	all	21100	2535	3100	2655.0
High Range	5	21425	2567.5	3425	2687.5
	10	21400	2565	2400	2685.0
	15	21375	2562.5	3375	2682.5
	20	21350	2560	3350	2680.0

Band38

Test Frequency ID	Bandwidth[MHz]	EARFCN	Frequency (UL and DL)[MHz]
Low Range	5	37775	2572.5
	10	37800	2575
	15	37820	2577.5
	20	37850	2580
Mid Range	all	38000	2595
High Range	5	38225	2617.5
	10	38200	2615
	15	38175	2612.5
	20	38150	2610

2.4 Description of Support Units

The EUT was tested as an independent device.

2.5 Equipments Used During The Test

Effective (Isotropic) Radiated Power Output
Peak To Average Ratio
Bandwidth
Out of Band Emission
Spurious Unwanted Emission
Frequency Stability

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	TACHOY	RTS-01	V2.0.0.0	/	/
High Pass filter	ZHINAN	OQHPF1-M1.5-18G-224	6210075	/	/
Power divider	MIDEWEST	PWD-2533	SMA-79	2023-05-11	2026-05-10
DC power	HP	66311B	38444359	/	/
RF Sensor Unit	Tachoy Information Technology(shenzhen) Co.,Ltd.	TR1029-2	000001	/	/
Wideband radio communication tester	R&S	CMW500	113410	2023-06-13	2024-06-12
Vector signal generator	Keysight	N5181A	MY48180415	2023-11-09	2024-11-08
Signal generator	Keysight	N5182A	MY50143455	2023-12-28	2024-12-27
Spectrum Analyzer	Keysight	N9020A	MY53420323	2023-12-28	2024-12-27

Field Strength of Radiated Emission-Below 1GHz
Field Strength of Radiated Emission-Above 1GHz

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	V1.1.42	/	/
Positioning Controller	/	MF-7802	/	/	/
High Pass filter	ZHINAN	OQHPF1-M1.5-18G-224	6210075	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2022-04-05	2025-04-04
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2023-04-05	2025-04-04
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2021-07-05	2024-07-04
Cable(LF)#2	Schwarzbeck	/	/	2023-02-27	2024-02-26
Cable(LF)#1	Schwarzbeck	/	/	2023-02-27	2024-02-26
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2023-02-28	2024-02-27
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2023-02-27	2024-02-26
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2023-06-13	2024-06-12
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2023-06-13	2024-06-12
Wideband radio communication tester	R&S	CMW500	113410	2023-06-13	2024-06-12
Spectrum Analyzer	R&S	FSP30	1321.3008K40-101729-jR	2023-06-14	2024-06-13
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023-05-13	2025-05-12
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2023-05-21	2025-05-20
Test Receiver	R&S	ESCI	102109	2023-06-13	2024-06-12

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	±3.41dB
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
RF power density	±0.234%
Conducted Spurious emissions	±1.98dB
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration Number:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

(1) The test report reference to the report template version v0.
(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
(3) The test report is invalid if there is any evidence and/or falsification.
(4) This document may not be altered or revised in any way unless done so by POCE and all revisions are duly noted in the revisions section.
(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

3 Evaluation Results (Evaluation)

3.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.1.1 Conclusion:

4 Radio Spectrum Matter Test Results (RF)

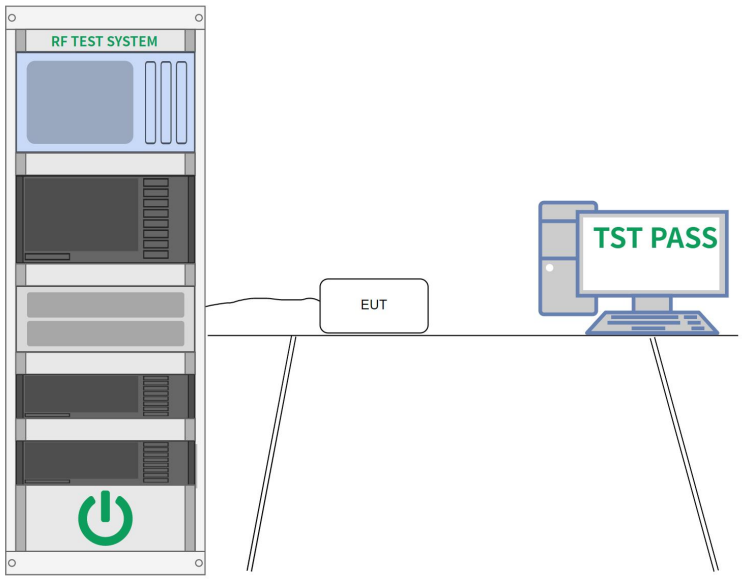
4.1 Effective (Isotropic) Radiated Power Output

Test Requirement:	47 CFR Part 2.1046, Part 22.913 47 CFR Part 2.1046, Part 27.50(h)(2)
Test Limit:	The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
Test Method:	ANSI C63.26-2015, Section 5.2.4.2
Procedure:	If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter: a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels. b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to [10 log (1/duty cycle)]. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

4.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.1.2 Test Setup Diagram:



4.1.3 Test Data:

LTE Band 5						
Bandwidth	Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
1.4MHz	QPSK	Low	22.48	23.65	38.45	PASS
		Mid	22.75	21.71		
		High	23.31	22.68		
	16QAM	Low	22.45	23.60		PASS
		Mid	22.97	22.01		
		High	23.75	23.71		
3MHz	QPSK	Low	22.48	21.16	38.45	PASS
		Mid	21.10	22.62		
		High	21.37	21.14		
	16QAM	Low	21.73	21.40		PASS
		Mid	21.23	22.10		
		High	21.21	21.31		
5MHz	QPSK	Low	21.85	21.70	38.45	PASS
		Mid	21.35	21.19		
		High	21.50	21.28		
	16QAM	Low	21.31	21.53		PASS
		Mid	21.08	21.65		
		High	21.37	21.45		
10MHz	QPSK	Low	21.17	21.05	38.45	PASS
		Mid	21.03	21.10		
		High	21.21	21.11		
	16QAM	Low	21.14	21.72		PASS
		Mid	21.93	21.25		
		High	21.28	21.06		

LTE Band 7						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
5MHz	QPSK	Low	22.37	22.45	33.00	PASS
		Mid	22.77	22.96		
		High	22.53	22.61		
	16QAM	Low	22.28	22.28		PASS
		Mid	22.67	22.93		
		High	22.64	22.75		
10MHz	QPSK	Low	22.85	23.51	33.00	PASS
		Mid	22.04	22.25		
		High	22.94	22.49		
	16QAM	Low	22.36	22.47		PASS
		Mid	22.08	22.60		
		High	22.73	23.72		
15MHz	QPSK	Low	22.14	22.40	33.00	PASS
		Mid	22.52	23.78		
		High	23.35	23.31		
	16QAM	Low	22.59	22.27		PASS
		Mid	23.89	22.13		
		High	23.62	22.47		
20MHz	QPSK	Low	22.17	22.28	33.00	PASS
		Mid	22.38	22.22		
		High	22.64	23.64		
	16QAM	Low	22.75	24.77		PASS
		Mid	22.79	23.28		
		High	23.96	24.62		

LTE Band 38						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
5MHz	QPSK	Low	24.93	25.54	33.00	PASS
		Mid	24.84	25.61		
		High	25.51	23.79		
	16QAM	Low	24.87	24.83		PASS
		Mid	26.24	25.49		
		High	24.01	24.78		
10MHz	QPSK	Low	24.06	24.32	33.00	PASS
		Mid	23.50	23.07		
		High	23.46	24.46		
15MHz	16QAM	Low	25.28	24.91		PASS
		Mid	24.05	24.81		
		High	24.70	24.52		
	QPSK	Low	23.54	24.81	33.00	PASS
		Mid	24.79	24.39		
		High	24.17	24.81		
	16QAM	Low	23.53	23.10		PASS
		Mid	23.61	24.45		
		High	23.56	24.12		
20MHz	QPSK	Low	24.77	24.45	33.00	PASS
		Mid	24.88	23.82		
		High	24.22	23.59		
	16QAM	Low	23.30	24.01		PASS
		Mid	24.40	24.18		
		High	23.91	24.36		

Max. Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

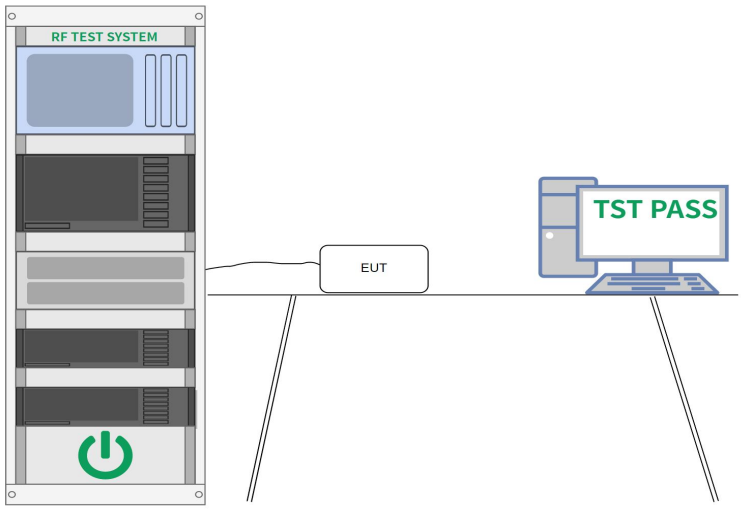
4.2 Peak To Average Ratio

Test Requirement:	47 CFR Part 2.1046, Part 22.913 (d) 47 CFR Part 2.1046, Part 27.50 47 CFR Part 2.1046, Part 96.41(g)
Test Limit:	The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.
Test Method:	ANSI C63.26-2015, Section 5.2.3.4
Procedure:	a) Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth. b) Set the number of counts to a value that stabilizes the measured CCDF curve. c) Set the measurement interval as follows: 1) For continuous transmissions, set to the greater of [10 × (number of points in sweep) × (transmission symbol period)] or 1 ms. 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration. 3) If there are several carriers in a single antenna port, the peak power shall be determined foreach individual carrier (by disabling the other carriers while measuring the required carrier)and the total peak power calculated from the sum of the individual carrier peak powers. d) Record the maximum PAPR level associated with a probability of 0.1%. e) The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

4.3 Bandwidth

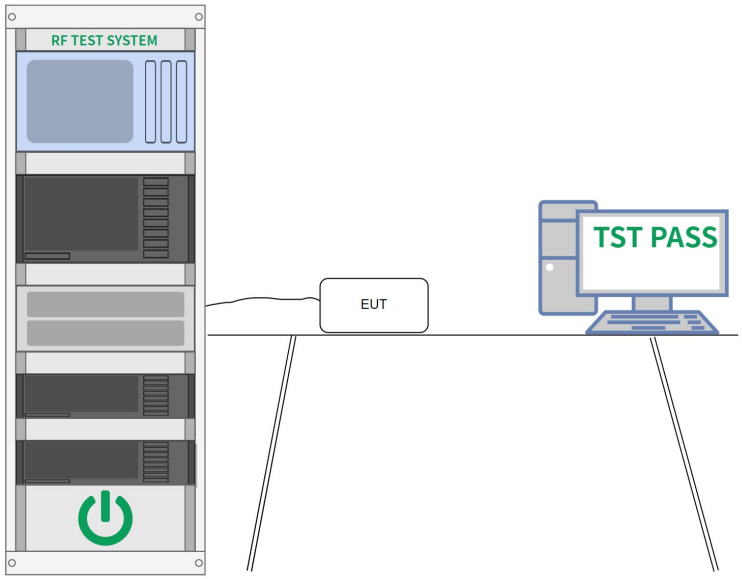
Test Requirement:	47 CFR Part 2.1049(h)
Test Limit:	OBW: No limit, only for report use. EBW: No limit, only for report use.
Test Method:	ANSI C63.26-2015, Section 5.4
Procedure:	OBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient). b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) Set the detection mode to peak, and the trace mode to max-hold. e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies. f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s). EBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement. b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level. e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold. f) Determine the reference value by either of the following: 1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). 2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier. g) Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function. h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on,then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new

	trace to stabilize. Otherwise the trace from step f) shall be used for step i). i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "-X dB amplitude" determined in step f). If a marker is below this "-X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.The spectral envelope can cross the "-X dB amplitude" at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the "-X dB amplitude." j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

4.4 Out of Band Emission

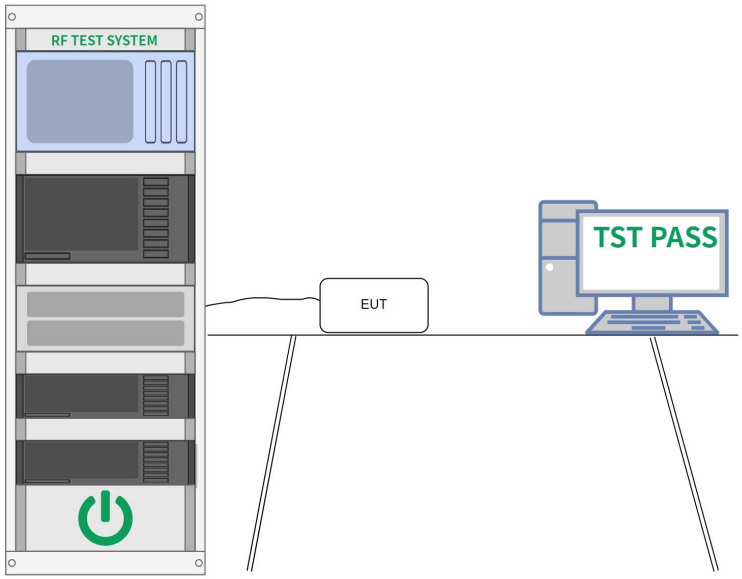
Test Requirement:	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)
Test Limit:	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Test Method:	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3
Procedure:	Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep ≥ 2 × span / RBW. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle ≥ 98%), set the (sweep time) > (number of points in sweep) × (symbol period) (e.g., by a factor of 10 × symbol period × number of points). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols 2) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) × (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time. 3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively

	constant (duty cycle variation ≤ ±2%). 4) If the device cannot be configured to transmit continuously and a free-running sweep must beused, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > ±2%),set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) × (number of points), while also maintaining the sweep time <(transmitter on-time). The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured. e) The test report shall include the plots of the measuring instrument display and the measured data. f) See Annex I for example emission mask plots.

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

4.5 Spurious Unwanted Emission

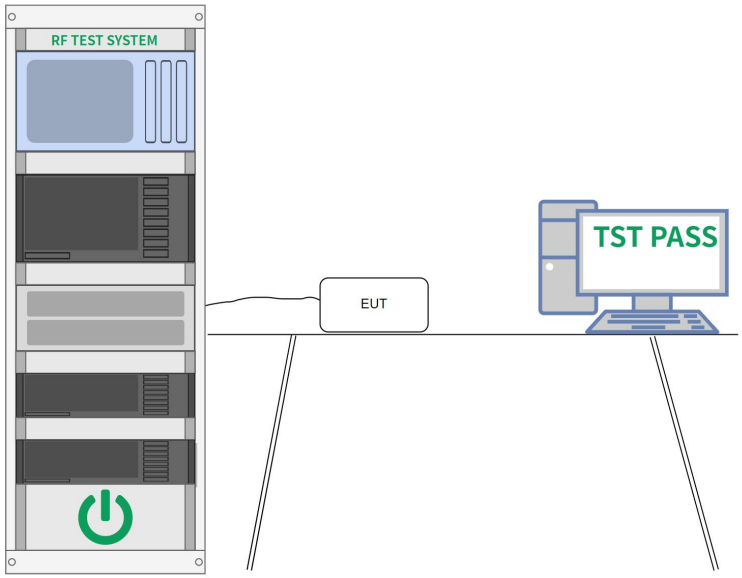
Test Requirement:	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)
Test Limit:	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Test Method:	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3
Procedure:	Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep ≥ 2 × span / RBW. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle ≥ 98%), set the (sweep time) > (number of points in sweep) × (symbol period) (e.g., by a factor of 10 × symbol period × number of points). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols 2) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) × (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time. 3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%). 4) If the device cannot be configured to transmit continuously and a free-running

	sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > ±2%),set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) × (number of points), while also maintaining the sweep time <(transmitter on-time). The trace mode shall be set to max hold, since not every display pointwill be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured. e) The test report shall include the plots of the measuring instrument display and the measured data. f) See Annex I for example emission mask plots.

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

4.6 Field Strength of Radiated Emission-Above 1GHz

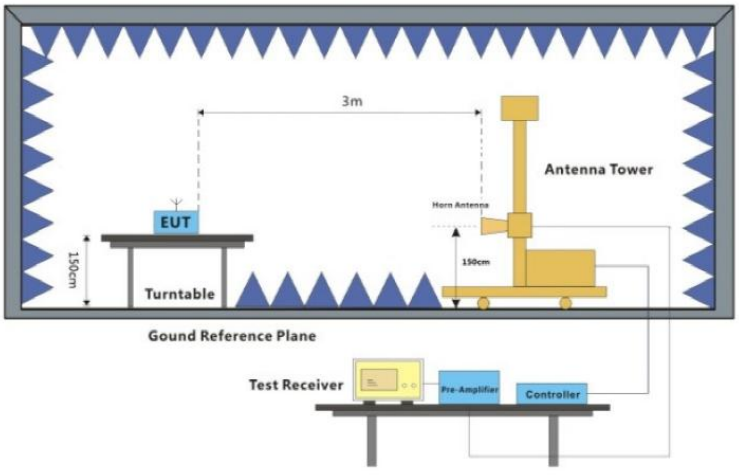
Test Requirement:	47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)
Test Limit:	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Test Method:	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3 47 CFR Part 27 ANSI C63.26-2015, Section 5.7.3
Procedure:	Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep ≥ 2 × span / RBW. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle ≥ 98%), set the (sweeptime) > (number of points in sweep) × (symbol period) (e.g., by a factor of 10 × symbol period × number of points). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols 2) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) × (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time.

	3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%). 4) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > ±2%), set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) × (number of points), while also maintaining the sweep time < (transmitter on-time). The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured. e) The test report shall include the plots of the measuring instrument display and the measured data. f) See Annex I for example emission mask plots.

4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.6.2 Test Setup Diagram:



4.6.3 Test Data:

LTE Band 5								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1.4MHz	Low	1649.40	Vertical	-40.51	7.29	-33.22	-13.00	PASS
		2474.10	V	-52.27	9.41	-42.86		
		3298.80	V	-54.58	12.69	-41.89		
		1649.40	Horizontal	-43.16	7.29	-35.87	-13.00	PASS
		2474.10	H	-53.36	9.41	-43.95		
		3298.80	H	-55.04	12.69	-42.35		
	Mid	1673.00	Vertical	-40.62	7.32	-33.30	-13.00	PASS
		2509.50	V	-53.26	9.39	-43.87		
		3346.00	V	-54.80	12.78	-42.02		
		1673.00	Horizontal	-42.81	7.32	-35.49	-13.00	PASS
		2509.50	H	-53.13	9.39	-43.74		
		3346.00	H	-55.54	12.78	-42.76		
	High	1696.60	Vertical	-41.23	7.33	-33.90	-13.00	PASS
		2544.90	V	-50.93	9.46	-41.47		
		3393.20	V	-55.75	12.71	-43.04		
		1696.60	Horizontal	-40.63	7.33	-33.30	-13.00	PASS
		2544.90	H	-52.32	9.46	-42.86		
		3393.20	H	-56.01	12.71	-43.30		
3MHz	Low	1651.00	Vertical	-41.11	7.36	-33.75	-13.00	PASS
		2476.50	V	-51.16	9.51	-41.65		
		3302.00	V	-55.41	12.72	-42.69		
		1651.00	Horizontal	-41.39	7.36	-34.03	-13.00	PASS
		2476.50	H	-50.69	9.51	-41.18		
		3302.00	H	-56.59	12.72	-43.87		
	Mid	1673.00	Vertical	-41.54	7.41	-34.13	-13.00	PASS
		2509.50	V	-51.51	9.52	-41.99		
		3346.00	V	-55.83	12.73	-43.10		
		1673.00	Horizontal	-41.88	7.41	-34.47	-13.00	PASS
		2509.50	H	-52.18	9.52	-42.66		
		3346.00	H	-54.99	12.73	-42.26		
	High	1695.00	Vertical	-42.81	7.52	-35.29	-13.00	PASS
		2542.50	V	-51.57	9.46	-42.11		
		3390.00	V	-55.74	12.81	-42.93		
		1695.00	Horizontal	-43.46	7.52	-35.94		

		2542.50	H	-52.45	9.46	-42.99	-13.00	PASS
		3390.00	H	-56.46	12.81	-43.65		
5MHz	Low	1653.00	Vertical	-41.01	7.61	-33.40	-13.00	PASS
		2479.50	V	-53.48	9.49	-43.99		
		3306.00	V	-56.21	12.86	-43.35		
		1653.00	Horizontal	-43.35	7.61	-35.74	-13.00	PASS
		2479.50	H	-50.57	9.49	-41.08		
		3306.00	H	-55.49	12.86	-42.63		
	Mid	1673.00	Vertical	-42.58	7.72	-34.86	-13.00	PASS
		2509.50	V	-53.20	9.53	-43.67		
		3346.00	V	-56.03	12.84	-43.19		
		1673.00	Horizontal	-41.22	7.72	-33.50	-13.00	PASS
		2509.50	H	-52.55	9.53	-43.02		
		3346.00	H	-55.99	12.84	-43.15		
	High	1693.00	Vertical	-42.21	7.79	-34.42	-13.00	PASS
		2539.50	V	-50.52	9.53	-40.99		
		3386.00	V	-56.36	12.89	-43.47		
		1693.00	Horizontal	-43.17	7.79	-35.38	-13.00	PASS
		2539.50	H	-50.77	9.53	-41.24		
		3386.00	H	-56.79	12.89	-43.90		
10MHz	Low	1658.00	Vertical	-40.98	7.81	-33.17	-13.00	PASS
		2487.00	V	-53.14	9.56	-43.58		
		3316.00	V	-56.66	12.91	-43.75		
		1658.00	Horizontal	-41.49	7.81	-33.68	-13.00	PASS
		2487.00	H	-53.19	9.56	-43.63		
		3316.00	H	-55.67	12.91	-42.76		
	Mid	1673.00	Vertical	-40.54	7.83	-32.71	-13.00	PASS
		2509.50	V	-51.68	9.59	-42.09		
		3346.00	V	-56.94	12.94	-44.00		
		1673.00	Horizontal	-43.01	7.83	-35.18	-13.00	PASS
		2509.50	H	-50.72	9.59	-41.13		
		3346.00	H	-57.29	12.94	-44.35		
	High	1688.00	Vertical	-42.23	7.89	-34.34	-13.00	PASS
		2532.00	V	-52.43	9.62	-42.81		
		3376.00	V	-40.51	7.29	-33.22		
		1688.00	Horizontal	-52.27	9.41	-42.86	-13.00	PASS
		2532.00	H	-54.58	12.69	-41.89		
		3376.00	H	-43.16	7.29	-35.87		

LTE Band 7								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
5MHz	Low	5005.00	Vertical	-42.48	7.29	-35.19	-25.00	PASS
		7507.50	V	-52.82	9.41	-43.41		
		10010.00	V	-55.76	12.69	-43.07		
		5005.00	Horizontal	-41.02	7.29	-33.73	-25.00	PASS
		7507.50	H	-52.12	9.41	-42.71		
		10010.00	H	-54.75	12.69	-42.06		
	Mid	5070.00	Vertical	-42.80	7.32	-35.48	-25.00	PASS
		7605.00	V	-51.24	9.39	-41.85		
		10140.00	V	-55.16	12.78	-42.38		
		5070.00	Horizontal	-41.92	7.32	-34.60	-25.00	PASS
		7605.00	H	-51.20	9.39	-41.81		
		10140.00	H	-55.61	12.78	-42.83		
	High	5135.00	Vertical	-41.47	7.33	-34.14	-25.00	PASS
		7702.50	V	-50.78	9.46	-41.32		
		10270.00	V	-55.46	12.71	-42.75		
		5135.00	Horizontal	-41.24	7.33	-33.91	-25.00	PASS
		7702.50	H	-52.16	9.46	-42.70		
		10270.00	H	-57.49	12.71	-44.78		
10MHz	Low	5010.00	Vertical	-42.97	7.36	-35.61	-25.00	PASS
		7515.00	V	-51.51	9.51	-42.00		
		10020.00	V	-57.42	12.72	-44.70		
		5010.00	Horizontal	-42.00	7.36	-34.64	-25.00	PASS
		7515.00	H	-53.45	9.51	-43.94		
		10020.00	H	-56.61	12.72	-43.89		
	Mid	5070.00	Vertical	-41.00	7.41	-33.59	-25.00	PASS
		7605.00	V	-51.89	9.52	-42.37		
		10140.00	V	-55.90	12.73	-43.17		
		5070.00	Horizontal	-42.81	7.41	-35.40	-25.00	PASS
		7605.00	H	-50.81	9.52	-41.29		
		10140.00	H	-54.76	12.73	-42.03		
	High	5130.00	Vertical	-40.56	7.52	-33.04	-25.00	PASS
		7695.00	V	-52.57	9.46	-43.11		
		10260.00	V	-57.35	12.81	-44.54		
		5130.00	Horizontal	-41.45	7.52	-33.93	-25.00	PASS
		7695.00	H	-52.56	9.46	-43.10		

		10260.00	H	-55.23	12.81	-42.42		
15MHz	Low	5015.00	Vertical	-40.72	7.61	-33.11	-25.00	PASS
		7522.50	V	-51.19	9.49	-41.70		
		10030.00	V	-55.75	12.86	-42.89		
		5015.00	Horizontal	-43.02	7.61	-35.41	-25.00	PASS
		7522.50	H	-52.38	9.49	-42.89		
		10030.00	H	-56.55	12.86	-43.69		
	Mid	5070.00	Vertical	-42.25	7.72	-34.53	-25.00	PASS
		7605.00	V	-51.39	9.53	-41.86		
		10140.00	V	-54.84	12.84	-42.00		
		5070.00	Horizontal	-42.63	7.72	-34.91	-25.00	PASS
		7605.00	H	-51.15	9.53	-41.62		
		10140.00	H	-57.33	12.84	-44.49		
	High	5125.00	Vertical	-42.05	7.79	-34.26	-25.00	PASS
		7687.50	V	-52.29	9.53	-42.76		
		10250.00	V	-56.98	12.89	-44.09		
		5125.00	Horizontal	-41.00	7.79	-33.21	-25.00	PASS
		7687.50	H	-52.23	9.53	-42.70		
		10250.00	H	-55.54	12.89	-42.65		
20MHz	Low	5020.00	Vertical	-41.81	7.81	-34.00	-25.00	PASS
		7530.00	V	-52.47	9.56	-42.91		
		10040.00	V	-55.35	12.91	-42.44		
		5020.00	Horizontal	-40.98	7.81	-33.17	-25.00	PASS
		7530.00	H	-51.77	9.56	-42.21		
		10040.00	H	-55.70	12.91	-42.79		
	Mid	5070.00	Vertical	-41.86	7.83	-34.03	-25.00	PASS
		7605.00	V	-50.68	9.59	-41.09		
		10140.00	V	-56.11	12.94	-43.17		
		5070.00	Horizontal	-41.57	7.83	-33.74	-25.00	PASS
		7605.00	H	-52.63	9.59	-43.04		
		10140.00	H	-55.29	12.94	-42.35		
	High	5120.00	Vertical	-41.39	7.89	-33.50	-25.00	PASS
		7680.00	V	-53.37	9.62	-43.75		
		10240.00	V	-42.48	7.29	-35.19		
		5120.00	Horizontal	-52.82	9.41	-43.41	-25.00	PASS
		7680.00	H	-55.76	12.69	-43.07		
		10240.00	H	-41.02	7.29	-33.73		

LTE Band 38								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
5MHz	Low	5145.00	Vertical	-40.58	7.29	-33.29	-25.00	PASS
		7717.50	V	-51.89	9.41	-42.48		
		10290.00	V	-55.21	12.69	-42.52		
		5145.00	Horizontal	-41.25	7.29	-33.96	-25.00	PASS
		7717.50	H	-53.18	9.41	-43.77		
		10290.00	H	-57.47	12.69	-44.78		
	Mid	5190.00	Vertical	-42.18	7.32	-34.86	-25.00	PASS
		7785.00	V	-52.27	9.39	-42.88		
		10380.00	V	-56.60	12.78	-43.82		
		5190.00	Horizontal	-42.52	7.32	-35.20	-25.00	PASS
		7785.00	H	-50.72	9.39	-41.33		
		10380.00	H	-55.41	12.78	-42.63		
	High	5235.00	Vertical	-41.75	7.33	-34.42	-25.00	PASS
		7852.50	V	-51.50	9.46	-42.04		
		10470.00	V	-54.99	12.71	-42.28		
		5235.00	Horizontal	-41.40	7.33	-34.07	-25.00	PASS
		7852.50	H	-51.20	9.46	-41.74		
		10470.00	H	-56.61	12.71	-43.90		
10MHz	Low	5150.00	Vertical	-40.91	7.36	-33.55	-25.00	PASS
		7725.00	V	-52.34	9.51	-42.83		
		10300.00	V	-56.61	12.72	-43.89		
		5150.00	Horizontal	-40.65	7.36	-33.29	-25.00	PASS
		7725.00	H	-51.00	9.51	-41.49		
		10300.00	H	-55.12	12.72	-42.40		
	Mid	5190.00	Vertical	-42.23	7.41	-34.82	-25.00	PASS
		7785.00	V	-52.76	9.52	-43.24		
		10380.00	V	-56.26	12.73	-43.53		
		5190.00	Horizontal	-42.78	7.41	-35.37	-25.00	PASS
		7785.00	H	-51.23	9.52	-41.71		
		10380.00	H	-54.56	12.73	-41.83		
	High	5230.00	Vertical	-42.90	7.52	-35.38	-25.00	PASS
		7845.00	V	-50.81	9.46	-41.35		
		10460.00	V	-56.50	12.81	-43.69		
		5230.00	Horizontal	-41.35	7.52	-33.83		

		7845.00	H	-50.82	9.46	-41.36	-25.00	PASS
		10460.00	H	-56.45	12.81	-43.64		
15MHz	Low	5155.00	Vertical	-42.11	7.61	-34.50	-25.00	PASS
		7732.50	V	-51.27	9.49	-41.78		
		10310.00	V	-56.89	12.86	-44.03		
		5155.00	Horizontal	-41.10	7.61	-33.49	-25.00	PASS
		7732.50	H	-52.07	9.49	-42.58		
		10310.00	H	-55.62	12.86	-42.76		
	Mid	5190.00	Vertical	-41.04	7.72	-33.32	-25.00	PASS
		7785.00	V	-52.65	9.53	-43.12		
		10380.00	V	-56.69	12.84	-43.85		
		5190.00	Horizontal	-41.63	7.72	-33.91	-25.00	PASS
		7785.00	H	-51.37	9.53	-41.84		
		10380.00	H	-56.48	12.84	-43.64		
	High	5225.00	Vertical	-42.38	7.79	-34.59	-25.00	PASS
		7837.50	V	-52.29	9.53	-42.76		
		10450.00	V	-56.05	12.89	-43.16		
		5225.00	Horizontal	-41.25	7.79	-33.46	-25.00	PASS
		7837.50	H	-52.50	9.53	-42.97		
		10450.00	H	-55.94	12.89	-43.05		
20MHz	Low	5160.00	Vertical	-42.80	7.81	-34.99	-25.00	PASS
		7740.00	V	-51.04	9.56	-41.48		
		10320.00	V	-57.13	12.91	-44.22		
		5160.00	Horizontal	-41.67	7.81	-33.86	-25.00	PASS
		7740.00	H	-52.27	9.56	-42.71		
		10320.00	H	-55.93	12.91	-43.02		
	Mid	5190.00	Vertical	-41.97	7.83	-34.14	-25.00	PASS
		7785.00	V	-51.51	9.59	-41.92		
		10380.00	V	-57.12	12.94	-44.18		
		5190.00	Horizontal	-41.40	7.83	-33.57	-25.00	PASS
		7785.00	H	-51.80	9.59	-42.21		
		10380.00	H	-55.70	12.94	-42.76		
	High	5220.00	Vertical	-41.09	7.89	-33.20	-25.00	PASS
		7830.00	V	-51.18	9.62	-41.56		
		10440.00	V	-40.58	7.29	-33.29		
		5220.00	Horizontal	-51.89	9.41	-42.48	-25.00	PASS
		7830.00	H	-55.21	12.69	-42.52		
		10440.00	H	-41.25	7.29	-33.96		

4.7 Frequency Stability

Test Requirement:	47 CFR Part 2.1055, Part 22.355 47 CFR Part 2.1055, Part 27.54
Test Limit:	+/- 2.5ppm The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.
Test Method:	ANSI C63.26-2015, Section 5.6
Procedure:	Frequency stability over variations in temperature: a) Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT. b) If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible. c) Turn on the EUT, and tune it to the center frequency of the operating band. d) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away). NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument. e) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits. f) Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit. g) Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 50 °C. h) While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize. i) Measure the frequency. j) Switch off the EUT, but do not switch off the oscillator heater. k) Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 10 °C. l) Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be -30 °C.

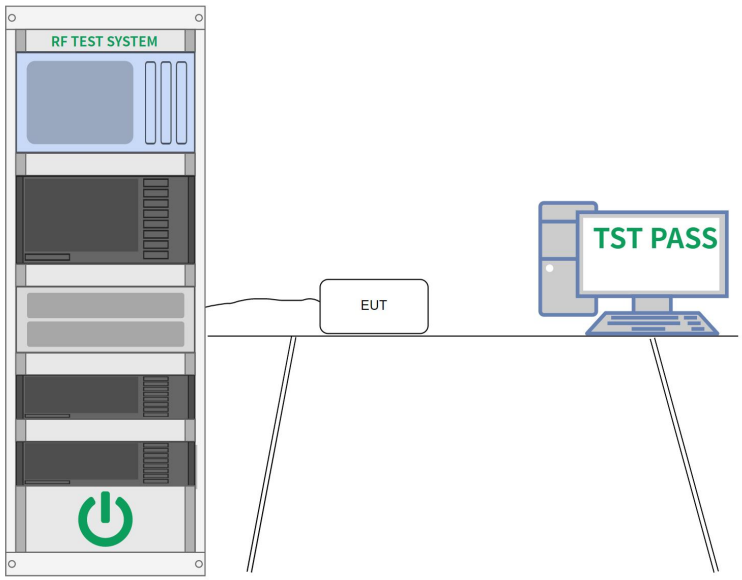
	When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as fL and fH respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of fL and fH and the resulting frequencies must remain within the band. m) The following additional information is required for equipment incorporating heater type crystal oscillators to be used in mobile stations except for battery powered, hand carried, and portable equipment having mean output power lower than the threshold specified. 1) Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels required by the standard. 2) Beginning at each temperature level specified, the frequency shall be measured within 60 s after application of primary power to the transmitter and at intervals of no more than 60 s thereafter until 10 min have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. 3) The elapsed time necessary for the frequency to stabilize within the applicable tolerance from each beginning temperature level as determined from the tests specified in this paragraph shall be specified in the instruction book for the transmitter furnished to the user. 4) When it is impracticable to subject the complete transmitter to this test because of its physical dimensions or power rating, only its frequency determining and stabilizing portions need be tested. Frequency stability when varying supply voltage: a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away) b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme

	also shall be shown. c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument. d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits. NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument. e) Measure the frequency. f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment. g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer. h) Repeat the frequency measurement. NOTE—For band-edge compliance, it can be required to make these measurements at the low and high channel of the operating band.

4.7.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	55.8 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

4.7.2 Test Setup Diagram:



4.7.3 Test Data:

Please Refer to FCC-LTE Appendix Test Data B5,B7,B38 for Details.

5 TEST SETUP PHOTOS

Refer to Appendix - Test Setup Photos

6 PHOTOS OF THE EUT

Refer to Appendix - EUT Photos

********** **End of Report** **********