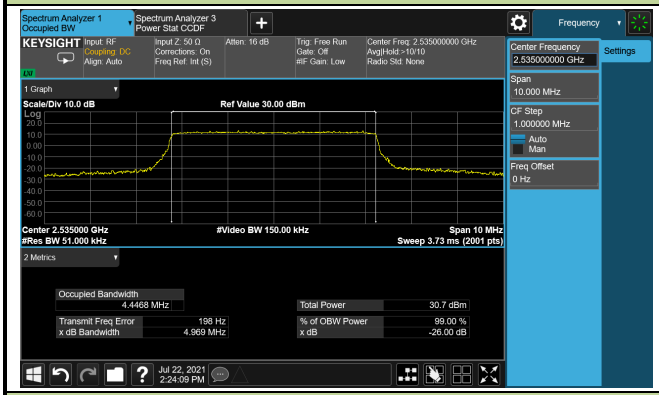
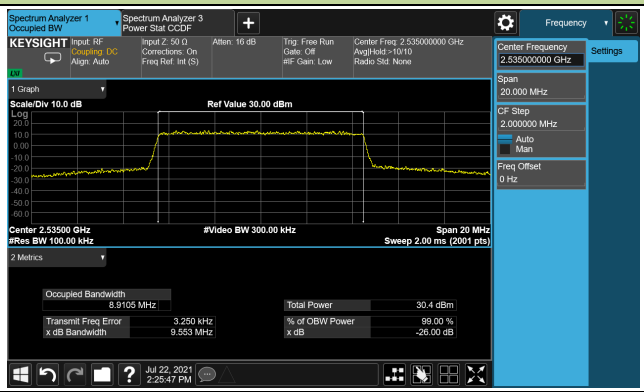
99% Bandwidth - QPSK

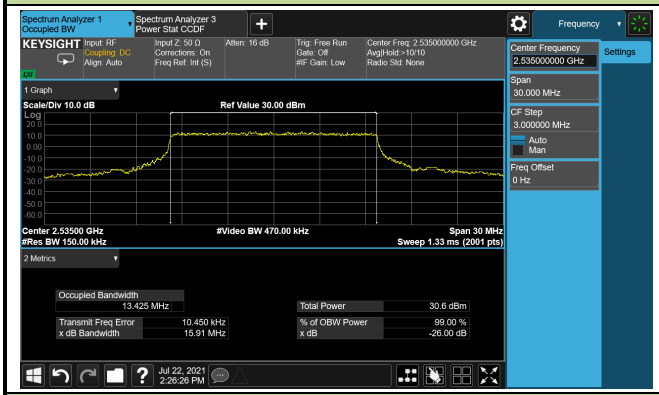
5MHz Channel Bandwidth



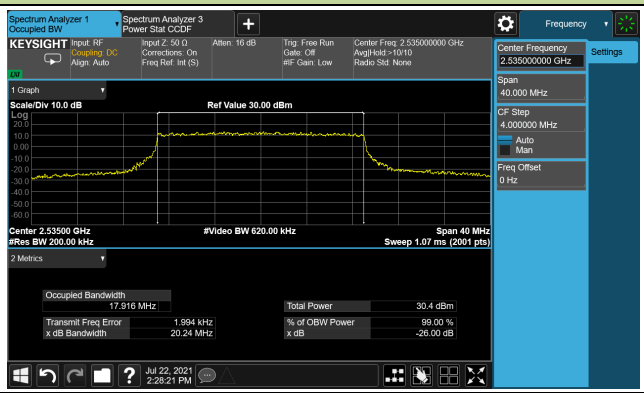
10MHz Channel Bandwidth



15MHz Channel Bandwidth

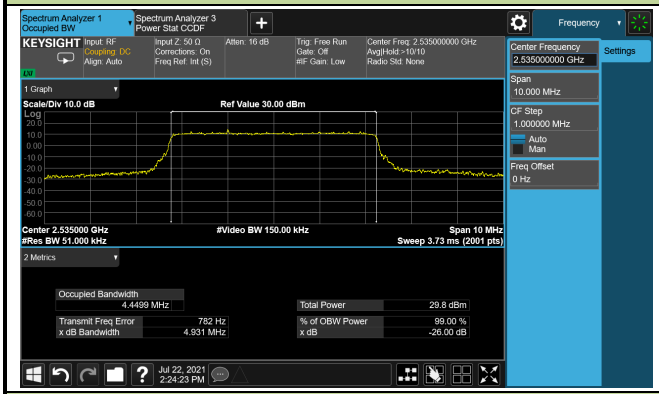


20MHz Channel Bandwidth

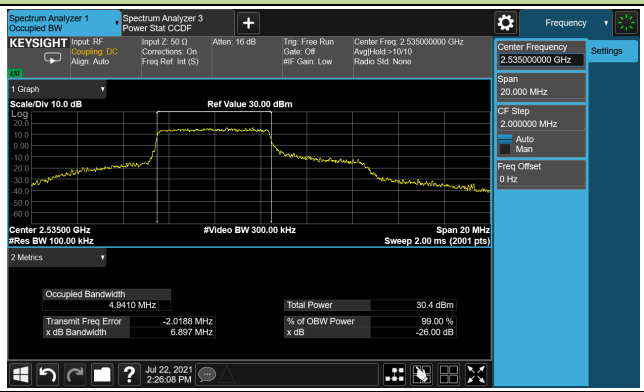


99% Bandwidth - 16QAM

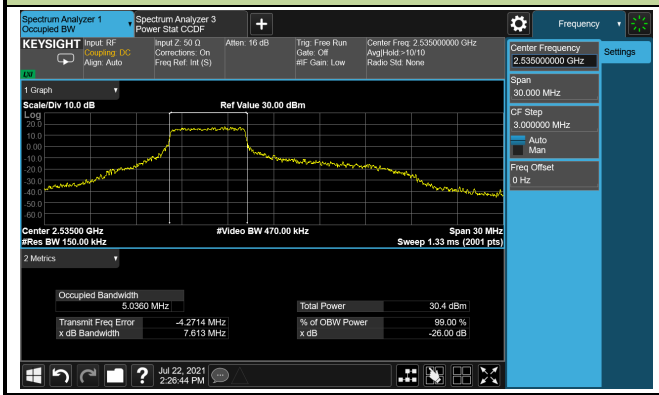
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

5.3. Frequency Stability Measurement

5.3.1.Test Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

5.3.2.Test Procedure

ANSI C63.26-2015 - Section 5.6

5.3.3.Test Setting

Frequency Stability Under Temperature Variations:

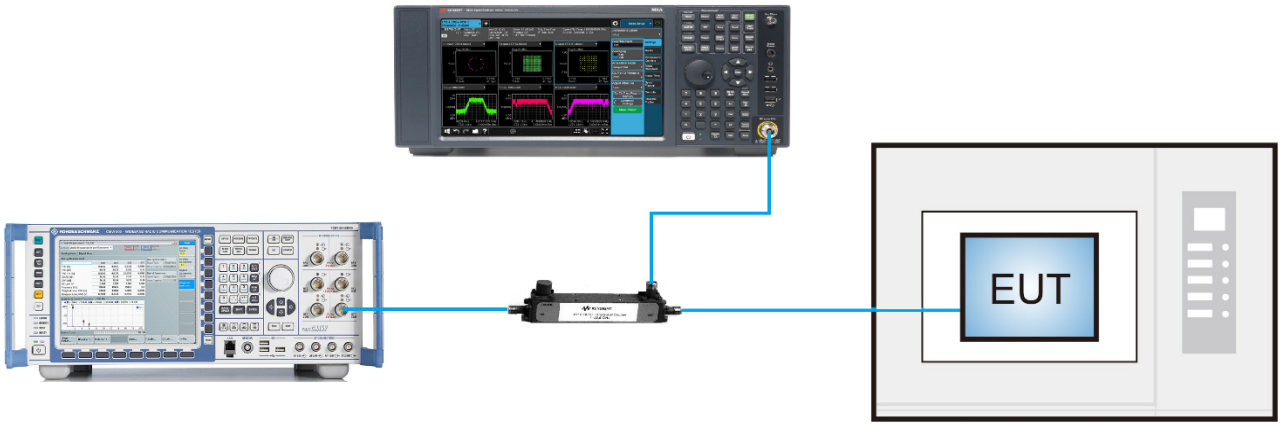
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

5.3.4.Test Setup



5.3.5.Test Result

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/22
Test Band	LTE Band 2		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0038
	- 20	-0.0036
	- 10	-0.0022
	0	-0.0042
	+ 10	-0.0044
	+ 20	-0.0059
	+ 30	-0.0029
	+ 40	-0.0025
	+ 50	-0.0066
4.2	+ 20	-0.0059
3.4	+ 20	-0.0070

Note: Normal Voltage = 3.8V

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/22
Test Band	LTE Band 4/66		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0012
	- 20	-0.0043
	- 10	-0.0058
	0	-0.0088
	+ 10	-0.0071
	+ 20	-0.0032
	+ 30	-0.0024
	+ 40	-0.0047
	+ 50	-0.0040
4.2	+ 20	-0.0060
3.4	+ 20	-0.0055

Note: Normal Voltage = 3.8V

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/22
Test Band	LTE Band 5		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	-0.0005
	- 20	-0.0050
	- 10	-0.0058
	0	-0.0089
	+ 10	-0.0080
	+ 20	-0.0069
	+ 30	-0.0083
	+ 40	-0.0100
	+ 50	-0.0080
4.2	+ 20	-0.0041
3.4	+ 20	-0.0077

Note: Normal Voltage = 3.8V

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/22
Test Band	LTE Band 7		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.8	- 30	0.0041
	- 20	-0.0034
	- 10	-0.0052
	0	-0.0060
	+ 10	-0.0077
	+ 20	-0.0033
	+ 30	-0.0033
	+ 40	-0.0041
	+ 50	-0.0024
4.2	+ 20	-0.0065
3.4	+ 20	-0.0044

Note: Normal Voltage = 3.8V

5.4. Equivalent Isotropically Radiated Power Measurement

5.4.1.Test Limit

Band 5:

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Band 2, 7:

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

Band 4/66:

Fixed, mobile stations operating in the 1710-1755 MHz band and mobile in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

5.4.2.Test Procedure

ANSI C63.26-2015 - Section 5.2

5.4.3.Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:

ERP or EIRP = P_{Meas} + G_T

where

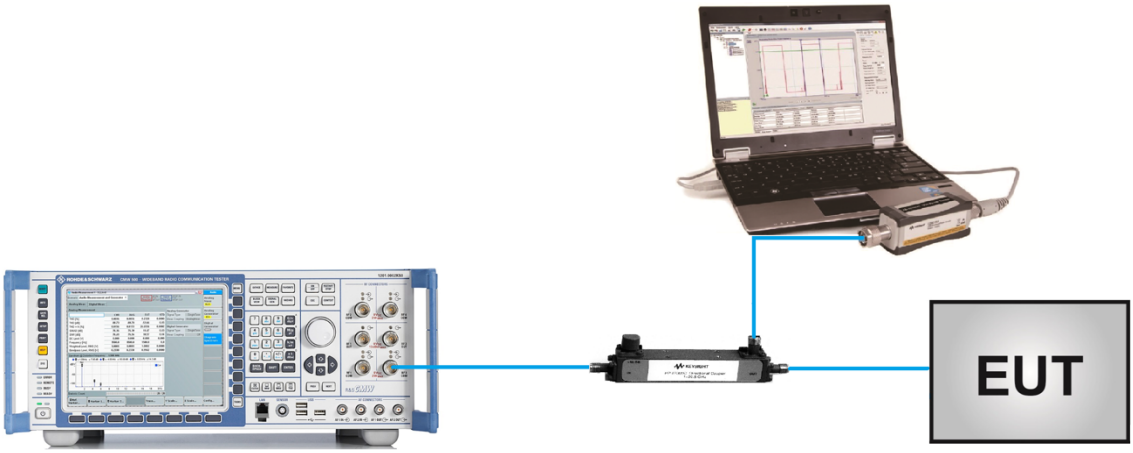
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

ERP = EIRP -2.15

5.4.4.Test Setup



5.4.5.Test Result

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/21
Test Band	LTE Band 2		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18607	1850.70	1.4	1	0	22.22	23.12	< 33.01
18900	1880.00				23.09	23.99	< 33.01
19193	1909.30				22.71	23.61	< 33.01
18607	1850.70	1.4	1	2	22.27	23.17	< 33.01
18900	1880.00				23.44	24.34	< 33.01
19193	1909.30				22.88	23.78	< 33.01
18607	1850.70	1.4	1	6	21.71	22.61	< 33.01
18900	1880.00				22.71	23.61	< 33.01
19193	1909.30				22.19	23.09	< 33.01
18607	1850.70	1.4	6	0	21.34	22.24	< 33.01
18900	1880.00				22.39	23.29	< 33.01
19193	1909.30				21.90	22.80	< 33.01
18615	1851.50	3	1	0	21.90	22.80	< 33.01
18900	1880.00				23.08	23.98	< 33.01
19185	1908.50				22.86	23.76	< 33.01
18615	1851.50	3	1	7	22.62	23.52	< 33.01
18900	1880.00				23.73	24.63	< 33.01
19185	1908.50				23.20	24.10	< 33.01
18615	1851.50	3	1	14	21.14	22.04	< 33.01
18900	1880.00				22.16	23.06	< 33.01
19185	1908.50				21.53	22.43	< 33.01
18615	1851.50	3	15	0	21.41	22.31	< 33.01
18900	1880.00				22.49	23.39	< 33.01
19185	1908.50				22.18	23.08	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18625	1852.50	5	1	0	21.99	22.89	< 33.01
18900	1880.00				22.97	23.87	< 33.01
19175	1907.50				23.19	24.09	< 33.01
18625	1852.50	5	1	12	22.17	23.07	< 33.01
18900	1880.00				23.32	24.22	< 33.01
19175	1907.50				23.06	23.96	< 33.01
18625	1852.50	5	1	24	22.17	23.07	< 33.01
18900	1880.00				23.11	24.01	< 33.01
19175	1907.50				23.06	23.96	< 33.01
18625	1852.50	5	25	0	21.36	22.26	< 33.01
18900	1880.00				22.45	23.35	< 33.01
19175	1907.50				22.49	23.39	< 33.01
18650	1855.00	10	1	0	22.06	22.96	< 33.01
18900	1880.00				23.39	24.29	< 33.01
19150	1905.00				23.23	24.13	< 33.01
18650	1855.00	10	1	24	22.29	23.19	< 33.01
18900	1880.00				23.56	24.46	< 33.01
19150	1905.00				23.58	24.48	< 33.01
18650	1855.00	10	1	49	22.55	23.45	< 33.01
18900	1880.00				23.30	24.20	< 33.01
19150	1905.00				23.07	23.97	< 33.01
18650	1855.00	10	50	0	21.46	22.36	< 33.01
18900	1880.00				22.64	23.54	< 33.01
19150	1905.00				22.75	23.65	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
18675	1857.50	15	1	0	22.12	23.02	< 33.01
18900	1880.00				23.58	24.48	< 33.01
19125	1902.50				23.30	24.20	< 33.01
18675	1857.50	15	1	37	22.40	23.30	< 33.01
18900	1880.00				23.41	24.31	< 33.01
19125	1902.50				23.54	24.44	< 33.01
18675	1857.50	15	1	74	22.67	23.57	< 33.01
18900	1880.00				23.08	23.98	< 33.01
19125	1902.50				23.12	24.02	< 33.01
18675	1857.50	15	75	0	21.66	22.56	< 33.01
18900	1880.00				22.80	23.70	< 33.01
19125	1902.50				22.67	23.57	< 33.01
18700	1860.00	20	1	0	22.03	22.93	< 33.01
18900	1880.00				23.72	24.62	< 33.01
19100	1900.00				23.44	24.34	< 33.01
18700	1860.00	20	1	49	22.80	23.70	< 33.01
18900	1880.00				23.74	24.64	< 33.01
19100	1900.00				23.68	24.58	< 33.01
18700	1860.00	20	1	99	22.76	23.66	< 33.01
18900	1880.00				23.39	24.29	< 33.01
19100	1900.00				23.06	23.96	< 33.01
18700	1860.00	20	100	0	21.64	22.54	< 33.01
18900	1880.00				22.66	23.56	< 33.01
19100	1900.00				22.46	23.36	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
18607	1850.70	1.4	1	0	21.46	22.36	< 33.01
18900	1880.00				22.09	22.99	< 33.01
19193	1909.30				21.77	22.67	< 33.01
18607	1850.70	1.4	1	2	21.67	22.57	< 33.01
18900	1880.00				22.49	23.39	< 33.01
19193	1909.30				22.02	22.92	< 33.01
18607	1850.70	1.4	1	6	21.04	21.94	< 33.01
18900	1880.00				21.88	22.78	< 33.01
19193	1909.30				21.34	22.24	< 33.01
18607	1850.70	1.4	6	0	20.38	21.28	< 33.01
18900	1880.00				21.38	22.28	< 33.01
19193	1909.30				21.00	21.90	< 33.01
18615	1851.50	3	1	0	21.16	22.06	< 33.01
18900	1880.00				22.67	23.57	< 33.01
19185	1908.50				22.44	23.34	< 33.01
18615	1851.50	3	1	7	21.93	22.83	< 33.01
18900	1880.00				23.34	24.24	< 33.01
19185	1908.50				22.25	23.15	< 33.01
18615	1851.50	3	1	14	20.60	21.50	< 33.01
18900	1880.00				21.40	22.30	< 33.01
19185	1908.50				20.66	21.56	< 33.01
18615	1851.50	3	15	0	20.49	21.39	< 33.01
18900	1880.00				21.49	22.39	< 33.01
19185	1908.50				21.33	22.23	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
18625	1852.50	5	1	0	21.32	22.22	< 33.01
18900	1880.00				22.15	23.05	< 33.01
19175	1907.50				22.20	23.10	< 33.01
18625	1852.50	5	1	12	21.51	22.41	< 33.01
18900	1880.00				22.53	23.43	< 33.01
19175	1907.50				22.20	23.10	< 33.01
18625	1852.50	5	1	24	21.52	22.42	< 33.01
18900	1880.00				22.29	23.19	< 33.01
19175	1907.50				22.11	23.01	< 33.01
18625	1852.50	5	25	0	20.30	21.20	< 33.01
18900	1880.00				21.48	22.38	< 33.01
19175	1907.50				21.60	22.50	< 33.01
18650	1855.00	10	1	0	21.31	22.21	< 33.01
18900	1880.00				22.40	23.30	< 33.01
19150	1905.00				22.89	23.79	< 33.01
18650	1855.00	10	1	24	21.54	22.44	< 33.01
18900	1880.00				22.64	23.54	< 33.01
19150	1905.00				23.18	24.08	< 33.01
18650	1855.00	10	1	49	21.77	22.67	< 33.01
18900	1880.00				22.43	23.33	< 33.01
19150	1905.00				22.57	23.47	< 33.01
18650	1855.00	10	50	0	21.47	22.37	< 33.01
18900	1880.00				22.85	23.75	< 33.01
19150	1905.00				23.13	24.03	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
18675	1857.50	15	1	0	21.33	22.23	< 33.01
18900	1880.00				22.88	23.78	< 33.01
19125	1902.50				22.91	23.81	< 33.01
18675	1857.50	15	1	37	21.68	22.58	< 33.01
18900	1880.00				22.71	23.61	< 33.01
19125	1902.50				23.15	24.05	< 33.01
18675	1857.50	15	1	74	21.96	22.86	< 33.01
18900	1880.00				22.48	23.38	< 33.01
19125	1902.50				22.56	23.46	< 33.01
18675	1857.50	15	75	0	21.47	22.37	< 33.01
18900	1880.00				23.18	24.08	< 33.01
19125	1902.50				22.84	23.74	< 33.01
18700	1860.00	20	1	0	21.16	22.06	< 33.01
18900	1880.00				23.24	24.14	< 33.01
19100	1900.00				22.76	23.66	< 33.01
18700	1860.00	20	1	49	22.29	23.19	< 33.01
18900	1880.00				22.88	23.78	< 33.01
19100	1900.00				23.05	23.95	< 33.01
18700	1860.00	20	1	99	22.47	23.37	< 33.01
18900	1880.00				22.70	23.60	< 33.01
19100	1900.00				22.25	23.15	< 33.01
18700	1860.00	20	100	0	20.92	21.82	< 33.01
18900	1880.00				23.33	24.23	< 33.01
19100	1900.00				22.35	23.25	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/21
Test Band	LTE Band 4/66		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131979	1710.70	1.4	1	0	21.74	23.14	< 30.00
132322	1745.00				22.06	23.46	< 30.00
132665	1779.30				21.85	23.25	< 30.00
131979	1710.70	1.4	1	2	21.84	23.24	< 30.00
132322	1745.00				22.04	23.44	< 30.00
132665	1779.30				21.89	23.29	< 30.00
131979	1710.70	1.4	1	6	21.28	22.68	< 30.00
132322	1745.00				21.47	22.87	< 30.00
132665	1779.30				21.63	23.03	< 30.00
131979	1710.70	1.4	6	0	20.78	22.18	< 30.00
132322	1745.00				21.04	22.44	< 30.00
132665	1779.30				20.91	22.31	< 30.00
131987	1711.50	3	1	0	21.73	23.13	< 30.00
132322	1745.00				22.06	23.46	< 30.00
132657	1778.50				20.73	22.13	< 30.00
131987	1711.50	3	1	7	22.23	23.63	< 30.00
132322	1745.00				22.45	23.85	< 30.00
132657	1778.50				22.09	23.49	< 30.00
131987	1711.50	3	1	14	21.01	22.41	< 30.00
132322	1745.00				20.83	22.23	< 30.00
132657	1778.50				21.68	23.08	< 30.00
131987	1711.50	3	15	0	21.01	22.41	< 30.00
132322	1745.00				21.16	22.56	< 30.00
132657	1778.50				21.00	22.40	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
131997	1712.50	5	1	0	21.72	23.12	< 30.00
132322	1745.00				21.94	23.34	< 30.00
132647	1777.50				20.74	22.14	< 30.00
131997	1712.50	5	1	12	21.94	23.34	< 30.00
132322	1745.00				21.88	23.28	< 30.00
132647	1777.50				21.49	22.89	< 30.00
131997	1712.50	5	1	24	22.03	23.43	< 30.00
132322	1745.00				20.78	22.18	< 30.00
132647	1777.50				21.53	22.93	< 30.00
131997	1712.50	5	25	0	21.08	22.48	< 30.00
132322	1745.00				21.06	22.46	< 30.00
132647	1777.50				20.82	22.22	< 30.00
132022	1715.00	10	1	0	21.37	22.77	< 30.00
132322	1745.00				21.73	23.13	< 30.00
132622	1775.00				20.55	21.95	< 30.00
132022	1715.00	10	1	24	22.26	23.66	< 30.00
132322	1745.00				22.12	23.52	< 30.00
132622	1775.00				21.66	23.06	< 30.00
132022	1715.00	10	1	49	22.26	23.66	< 30.00
132322	1745.00				21.06	22.46	< 30.00
132622	1775.00				21.72	23.12	< 30.00
132022	1715.00	10	50	0	21.30	22.70	< 30.00
132322	1745.00				21.13	22.53	< 30.00
132622	1775.00				20.81	22.21	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
132047	1717.50	15	1	0	20.88	22.28	< 30.00
132322	1745.00				22.10	23.50	< 30.00
132597	1772.50				21.01	22.41	< 30.00
132047	1717.50	15	1	37	22.18	23.58	< 30.00
132322	1745.00				22.04	23.44	< 30.00
132597	1772.50				21.34	22.74	< 30.00
132047	1717.50	15	1	74	22.19	23.59	< 30.00
132322	1745.00				20.92	22.32	< 30.00
132597	1772.50				21.77	23.17	< 30.00
132047	1717.50	15	75	0	21.35	22.75	< 30.00
132322	1745.00				21.13	22.53	< 30.00
132597	1772.50				20.65	22.05	< 30.00
132072	1720.00	20	1	0	20.91	22.31	< 30.00
132322	1745.00				22.89	24.29	< 30.00
132572	1770.00				21.09	22.49	< 30.00
132072	1720.00	20	1	49	22.54	23.94	< 30.00
132322	1745.00				22.14	23.54	< 30.00
132572	1770.00				21.42	22.82	< 30.00
132072	1720.00	20	1	99	21.94	23.34	< 30.00
132322	1745.00				20.55	21.95	< 30.00
132572	1770.00				21.83	23.23	< 30.00
132072	1720.00	20	100	0	21.26	22.66	< 30.00
132322	1745.00				21.00	22.40	< 30.00
132572	1770.00				20.49	21.89	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
131979	1710.70	1.4	1	0	20.73	22.13	< 30.00
132322	1745.00				21.30	22.70	< 30.00
132665	1779.30				20.66	22.06	< 30.00
131979	1710.70	1.4	1	2	21.05	22.45	< 30.00
132322	1745.00				21.29	22.69	< 30.00
132665	1779.30				20.87	22.27	< 30.00
131979	1710.70	1.4	1	6	20.51	21.91	< 30.00
132322	1745.00				20.61	22.01	< 30.00
132665	1779.30				20.79	22.19	< 30.00
131979	1710.70	1.4	6	0	19.84	21.24	< 30.00
132322	1745.00				20.03	21.43	< 30.00
132665	1779.30				19.76	21.16	< 30.00
131987	1711.50	3	1	0	20.92	22.32	< 30.00
132322	1745.00				21.04	22.44	< 30.00
132657	1778.50				20.35	21.75	< 30.00
131987	1711.50	3	1	7	21.26	22.66	< 30.00
132322	1745.00				21.62	23.02	< 30.00
132657	1778.50				21.56	22.96	< 30.00
131987	1711.50	3	1	14	19.92	21.32	< 30.00
132322	1745.00				20.46	21.86	< 30.00
132657	1778.50				21.00	22.40	< 30.00
131987	1711.50	3	15	0	20.11	21.51	< 30.00
132322	1745.00				20.11	21.51	< 30.00
132657	1778.50				19.77	21.17	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
131997	1712.50	5	1	0	21.77	23.17	< 30.00
132322	1745.00				21.98	23.38	< 30.00
132647	1777.50				20.62	22.02	< 30.00
131997	1712.50	5	1	12	21.26	22.66	< 30.00
132322	1745.00				21.05	22.45	< 30.00
132647	1777.50				20.54	21.94	< 30.00
131997	1712.50	5	1	24	21.25	22.65	< 30.00
132322	1745.00				20.04	21.44	< 30.00
132647	1777.50				20.59	21.99	< 30.00
131997	1712.50	5	25	0	20.09	21.49	< 30.00
132322	1745.00				20.04	21.44	< 30.00
132647	1777.50				19.77	21.17	< 30.00
132022	1715.00	10	1	0	20.47	21.87	< 30.00
132322	1745.00				20.72	22.12	< 30.00
132622	1775.00				20.15	21.55	< 30.00
132022	1715.00	10	1	24	21.48	22.88	< 30.00
132322	1745.00				21.28	22.68	< 30.00
132622	1775.00				21.27	22.67	< 30.00
132022	1715.00	10	1	49	21.48	22.88	< 30.00
132322	1745.00				20.09	21.49	< 30.00
132622	1775.00				21.27	22.67	< 30.00
132022	1715.00	10	27	0	21.10	22.50	< 30.00
132322	1745.00				21.43	22.83	< 30.00
132622	1775.00				20.55	21.95	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
132047	1717.50	15	1	0	20.15	21.55	< 30.00
132322	1745.00				21.40	22.80	< 30.00
132597	1772.50				20.59	21.99	< 30.00
132047	1717.50	15	1	37	21.50	22.90	< 30.00
132322	1745.00				21.50	22.90	< 30.00
132597	1772.50				20.88	22.28	< 30.00
132047	1717.50	15	1	74	21.75	23.15	< 30.00
132322	1745.00				20.75	22.15	< 30.00
132597	1772.50				21.01	22.41	< 30.00
132047	1717.50	15	27	0	20.80	22.20	< 30.00
132322	1745.00				21.53	22.93	< 30.00
132597	1772.50				20.48	21.88	< 30.00
132072	1720.00	20	1	0	20.26	21.66	< 30.00
132322	1745.00				22.27	23.67	< 30.00
132572	1770.00				20.67	22.07	< 30.00
132072	1720.00	20	1	49	21.91	23.31	< 30.00
132322	1745.00				21.58	22.98	< 30.00
132572	1770.00				21.05	22.45	< 30.00
132072	1720.00	20	1	99	21.17	22.57	< 30.00
132322	1745.00				20.00	21.40	< 30.00
132572	1770.00				21.45	22.85	< 30.00
132072	1720.00	20	27	0	21.39	22.79	< 30.00
132322	1745.00				20.16	21.56	< 30.00
132572	1770.00				20.53	21.93	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/21
Test Band	LTE Band 5		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20407	824.70	1.4	1	0	22.68	22.03	< 38.45
20525	836.50				22.40	21.75	< 38.45
20643	848.30				21.19	20.54	< 38.45
20407	824.70	1.4	1	2	22.68	22.03	< 38.45
20525	836.50				22.48	21.83	< 38.45
20643	848.30				21.88	21.23	< 38.45
20407	824.70	1.4	1	6	22.49	21.84	< 38.45
20525	836.50				21.87	21.22	< 38.45
20643	848.30				21.86	21.21	< 38.45
20407	824.70	1.4	6	0	21.57	20.92	< 38.45
20525	836.50				21.34	20.69	< 38.45
20643	848.30				20.68	20.03	< 38.45
20415	825.50	3	1	0	22.57	21.92	< 38.45
20525	836.50				22.43	21.78	< 38.45
20635	847.50				21.15	20.50	< 38.45
20415	825.50	3	1	7	22.91	22.26	< 38.45
20525	836.50				22.83	22.18	< 38.45
20635	847.50				22.24	21.59	< 38.45
20415	825.50	3	1	14	22.02	21.37	< 38.45
20525	836.50				21.61	20.96	< 38.45
20635	847.50				21.88	21.23	< 38.45
20415	825.50	3	15	0	21.60	20.95	< 38.45
20525	836.50				21.53	20.88	< 38.45
20635	847.50				20.95	20.30	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK							
20425	826.50	5	1	0	22.67	22.02	< 38.45
20525	836.50				22.33	21.68	< 38.45
20625	846.50				21.86	21.21	< 38.45
20425	826.50	5	1	12	22.23	21.58	< 38.45
20525	836.50				22.29	21.64	< 38.45
20625	846.50				21.86	21.21	< 38.45
20425	826.50	5	1	24	22.01	21.36	< 38.45
20525	836.50				22.07	21.42	< 38.45
20625	846.50				21.96	21.31	< 38.45
20425	826.50	5	25	0	21.41	20.76	< 38.45
20525	836.50				21.49	20.84	< 38.45
20625	846.50				21.10	20.45	< 38.45
20450	829.00	10	1	0	22.75	22.10	< 38.45
20525	836.50				22.46	21.81	< 38.45
20600	844.00				22.27	21.62	< 38.45
20450	829.00	10	1	24	22.23	21.58	< 38.45
20525	836.50				22.45	21.80	< 38.45
20600	844.00				22.39	21.74	< 38.45
20450	829.00	10	1	49	22.78	22.13	< 38.45
20525	836.50				22.37	21.72	< 38.45
20600	844.00				21.94	21.29	< 38.45
20450	829.00	10	50	0	21.51	20.86	< 38.45
20525	836.50				21.74	21.09	< 38.45
20600	844.00				21.47	20.82	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
16QAM							
20407	824.70	1.4	1	0	21.86	21.21	< 38.45
20525	836.50				21.54	20.89	< 38.45
20643	848.30				20.33	19.68	< 38.45
20407	824.70	1.4	1	2	21.80	21.15	< 38.45
20525	836.50				21.46	20.81	< 38.45
20643	848.30				21.07	20.42	< 38.45
20407	824.70	1.4	1	6	21.64	20.99	< 38.45
20525	836.50				21.11	20.46	< 38.45
20643	848.30				21.06	20.41	< 38.45
20407	824.70	1.4	6	0	20.66	20.01	< 38.45
20525	836.50				20.45	19.80	< 38.45
20643	848.30				19.80	19.15	< 38.45
20415	825.50	3	1	0	21.67	21.02	< 38.45
20525	836.50				21.35	20.70	< 38.45
20635	847.50				20.73	20.08	< 38.45
20415	825.50	3	1	7	22.04	21.39	< 38.45
20525	836.50				21.73	21.08	< 38.45
20635	847.50				21.74	21.09	< 38.45
20415	825.50	3	1	14	21.15	20.50	< 38.45
20525	836.50				20.58	19.93	< 38.45
20635	847.50				21.31	20.66	< 38.45
20415	825.50	3	15	0	20.69	20.04	< 38.45
20525	836.50				20.66	20.01	< 38.45
20635	847.50				20.02	19.37	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
16QAM							
20425	826.50	5	1	0	21.66	21.01	< 38.45
20525	836.50				21.71	21.06	< 38.45
20625	846.50				21.22	20.57	< 38.45
20425	826.50	5	1	12	21.34	20.69	< 38.45
20525	836.50				21.13	20.48	< 38.45
20625	846.50				21.17	20.52	< 38.45
20425	826.50	5	1	24	21.21	20.56	< 38.45
20525	836.50				21.16	20.51	< 38.45
20625	846.50				21.23	20.58	< 38.45
20425	826.50	5	25	0	20.53	19.88	< 38.45
20525	836.50				20.60	19.95	< 38.45
20625	846.50				20.11	19.46	< 38.45
20450	829.00	10	1	0	22.41	21.76	< 38.45
20525	836.50				21.47	20.82	< 38.45
20600	844.00				21.73	21.08	< 38.45
20450	829.00	10	1	24	21.40	20.75	< 38.45
20525	836.50				21.96	21.31	< 38.45
20600	844.00				21.51	20.86	< 38.45
20450	829.00	10	1	49	22.15	21.50	< 38.45
20525	836.50				21.26	20.61	< 38.45
20600	844.00				21.14	20.49	< 38.45
20450	829.00	10	27	0	21.13	20.48	< 38.45
20525	836.50				21.71	21.06	< 38.45
20600	844.00				20.98	20.33	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15							

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/21
Test Band	LTE Band 7		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20775	2502.50	5	1	0	22.42	24.72	< 33.01
21100	2535.00				22.03	24.33	< 33.01
21425	2567.50				21.68	23.98	< 33.01
20775	2502.50	5	1	12	22.56	24.86	< 33.01
21100	2535.00				22.21	24.51	< 33.01
21425	2567.50				21.57	23.87	< 33.01
20775	2502.50	5	1	24	22.52	24.82	< 33.01
21100	2535.00				22.34	24.64	< 33.01
21425	2567.50				22.33	24.63	< 33.01
20775	2502.50	5	25	0	21.68	23.98	< 33.01
21100	2535.00				21.31	23.61	< 33.01
21425	2567.50				20.59	22.89	< 33.01
20800	2505.00	10	1	0	22.58	24.88	< 33.01
21100	2535.00				21.93	24.23	< 33.01
21400	2565.00				21.59	23.89	< 33.01
20800	2505.00	10	1	24	22.64	24.94	< 33.01
21100	2535.00				22.31	24.61	< 33.01
21400	2565.00				21.37	23.67	< 33.01
20800	2505.00	10	1	49	22.27	24.57	< 33.01
21100	2535.00				22.65	24.95	< 33.01
21400	2565.00				21.95	24.25	< 33.01
20800	2505.00	10	50	0	21.82	24.12	< 33.01
21100	2535.00				21.43	23.73	< 33.01
21400	2565.00				20.56	22.86	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK							
20825	2507.50	15	1	0	22.78	25.08	< 33.01
21100	2535.00				21.88	24.18	< 33.01
21375	2562.50				22.07	24.37	< 33.01
20825	2507.50	15	1	37	22.39	24.69	< 33.01
21100	2535.00				22.23	24.53	< 33.01
21375	2562.50				21.20	23.50	< 33.01
20825	2507.50	15	1	74	21.94	24.24	< 33.01
21100	2535.00				22.88	25.18	< 33.01
21375	2562.50				22.13	24.43	< 33.01
20825	2507.50	15	75	0	21.57	23.87	< 33.01
21100	2535.00				21.31	23.61	< 33.01
21375	2562.50				20.44	22.74	< 33.01
20850	2510.00	20	1	0	22.84	25.14	< 33.01
21100	2535.00				21.82	24.12	< 33.01
21350	2560.00				22.16	24.46	< 33.01
20850	2510.00	20	1	49	22.46	24.76	< 33.01
21100	2535.00				22.39	24.69	< 33.01
21350	2560.00				21.25	23.55	< 33.01
20850	2510.00	20	1	99	21.62	23.92	< 33.01
21100	2535.00				22.72	25.02	< 33.01
21350	2560.00				21.53	23.83	< 33.01
20850	2510.00	20	100	0	21.45	23.75	< 33.01
21100	2535.00				21.22	23.52	< 33.01
21350	2560.00				20.29	22.59	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
20775	2502.50	5	1	0	21.57	23.87	< 33.01
21100	2535.00				21.23	23.53	< 33.01
21425	2567.50				20.75	23.05	< 33.01
20775	2502.50	5	1	12	21.66	23.96	< 33.01
21100	2535.00				21.42	23.72	< 33.01
21425	2567.50				20.50	22.80	< 33.01
20775	2502.50	5	1	24	21.62	23.92	< 33.01
21100	2535.00				21.27	23.57	< 33.01
21425	2567.50				21.68	23.98	< 33.01
20775	2502.50	5	25	0	20.77	23.07	< 33.01
21100	2535.00				20.40	22.70	< 33.01
21425	2567.50				19.74	22.04	< 33.01
20800	2505.00	10	1	0	22.17	24.47	< 33.01
21100	2535.00				21.14	23.44	< 33.01
21400	2565.00				20.86	23.16	< 33.01
20800	2505.00	10	1	24	22.29	24.59	< 33.01
21100	2535.00				21.55	23.85	< 33.01
21400	2565.00				20.59	22.89	< 33.01
20800	2505.00	10	1	49	21.69	23.99	< 33.01
21100	2535.00				21.87	24.17	< 33.01
21400	2565.00				21.06	23.36	< 33.01
20800	2505.00	10	27	0	21.61	23.91	< 33.01
21100	2535.00				21.17	23.47	< 33.01
21400	2565.00				20.35	22.65	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
16QAM							
20825	2507.50	15	1	0	22.15	24.45	< 33.01
21100	2535.00				21.11	23.41	< 33.01
21375	2562.50				21.60	23.90	< 33.01
20825	2507.50	15	1	37	21.91	24.21	< 33.01
21100	2535.00				21.40	23.70	< 33.01
21375	2562.50				20.64	22.94	< 33.01
20825	2507.50	15	1	74	21.44	23.74	< 33.01
21100	2535.00				22.20	24.50	< 33.01
21375	2562.50				21.54	23.84	< 33.01
20825	2507.50	15	27	0	21.29	23.59	< 33.01
21100	2535.00				21.09	23.39	< 33.01
21375	2562.50				19.95	22.25	< 33.01
20850	2510.00	20	1	0	22.10	24.40	< 33.01
21100	2535.00				21.21	23.51	< 33.01
21350	2560.00				21.91	24.21	< 33.01
20850	2510.00	20	1	49	21.89	24.19	< 33.01
21100	2535.00				21.63	23.93	< 33.01
21350	2560.00				20.95	23.25	< 33.01
20850	2510.00	20	1	99	20.95	23.25	< 33.01
21100	2535.00				22.13	24.43	< 33.01
21350	2560.00				21.08	23.38	< 33.01
20850	2510.00	20	27	0	21.61	23.91	< 33.01
21100	2535.00				21.13	23.43	< 33.01
21350	2560.00				21.05	23.35	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)							

5.5. Band Edge Measurement

5.5.1.Test Limit

22.917(a), 24.238 (a), 27.53 (g) (h)

For operations in the 824 ~ 849 MHz, 1850 ~ 1910 MHz, 1930 ~ 1990 MHz, 600MHz & 698 ~ 746 MHz and 1710 ~ 1755 MHz, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(m)(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.

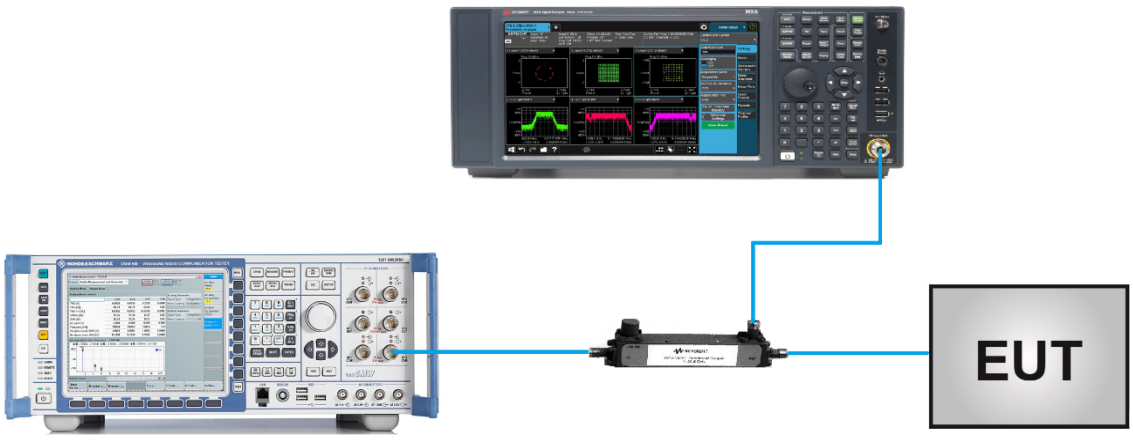
5.5.2.Test Procedure

ANSI C63.26-2015 - Section 5.7

5.5.3.Test Setting

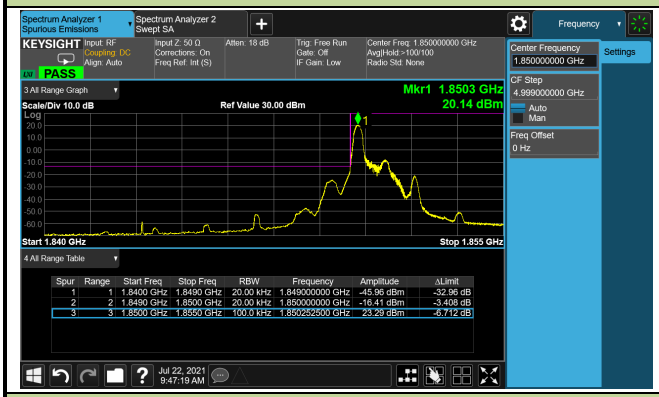
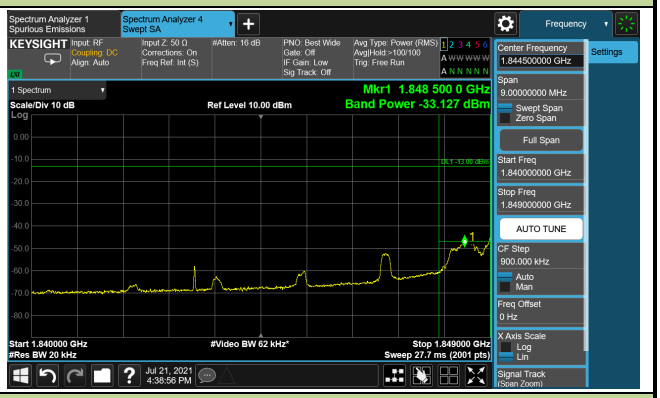
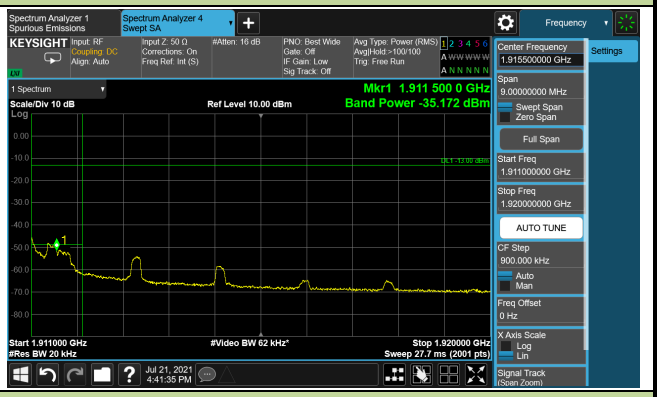
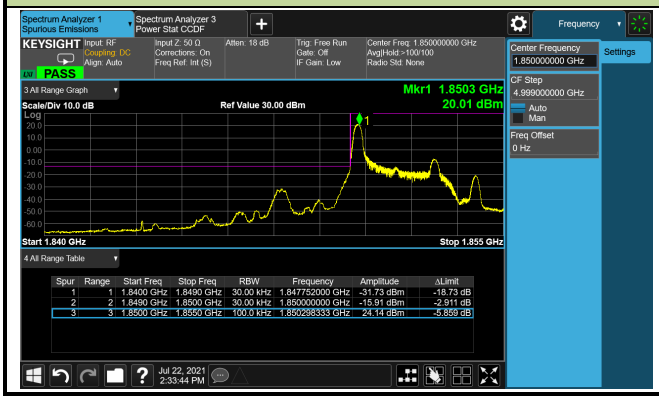
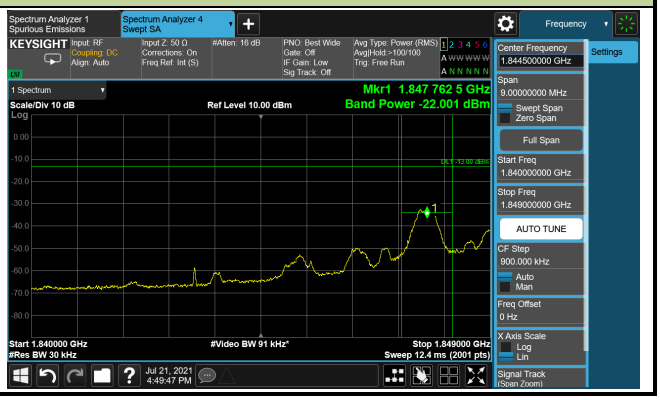
1. Set the analyzer frequency to low or high channel
2. RBW ≥ The nominal RBW shall be in the range of 1% of the anticipated OBW (in the 1MHz band immediately outside and adjacent to the band edge). For improvement of the accuracy in the measurement of the average power of a noise-like emission, a RBW narrower than the specified reference bandwidth can be used (generally limited to no less than 1% of the OBW), provided that a subsequent integration is performed over the full required measurement bandwidth. This integration should be performed using the spectrum analyzer's band power functions.
3. VBW ≥ 3*RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to "free run."
7. User gate triggered such that the analyzer only sweeps when the device is transmitting at full power
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

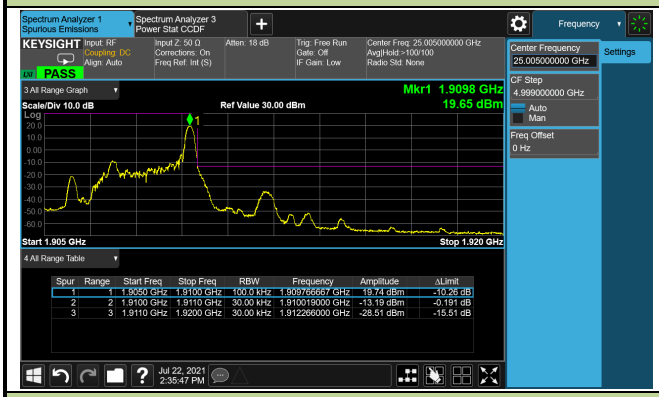
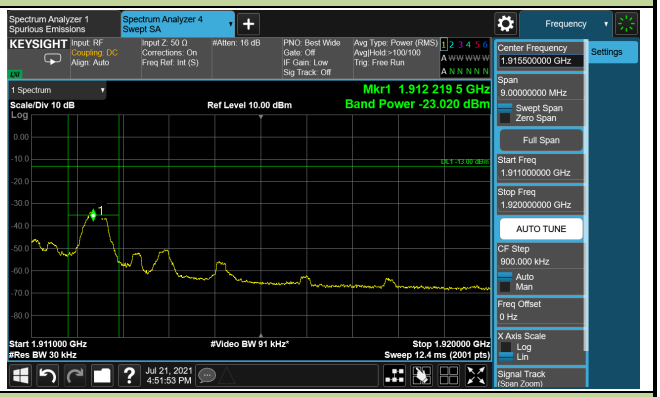
5.5.4.Test Setup



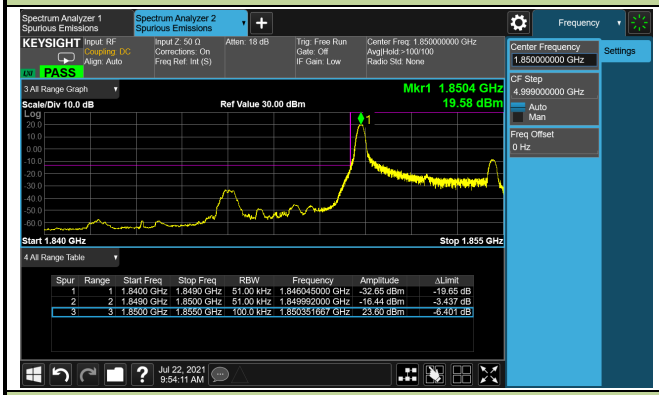
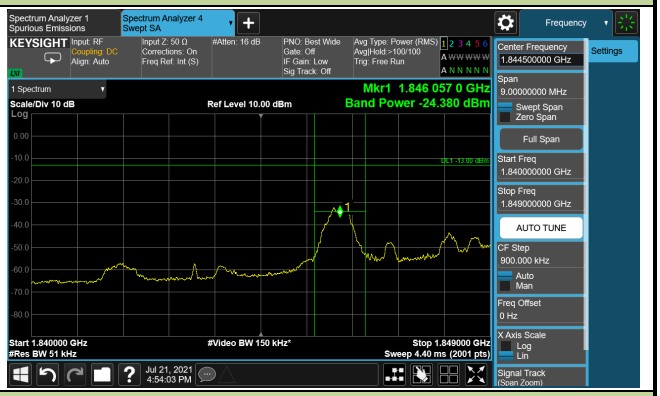
5.5.5.Test Result

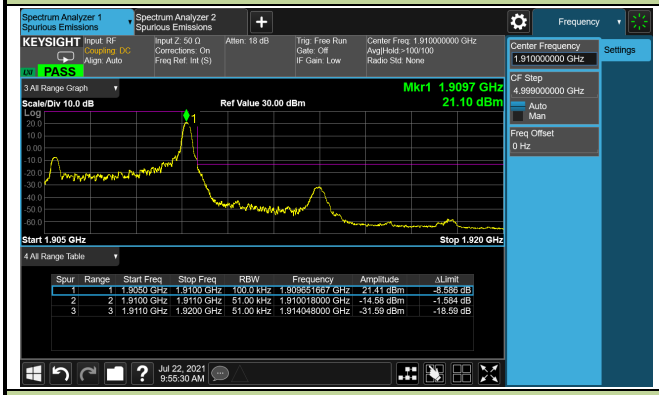
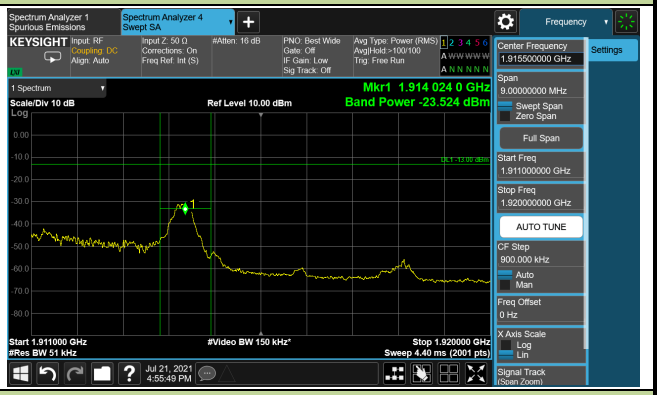
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/21 ~ 2021/07/22
Test Band	LTE Band 2		

1.4MHz Channel Bandwidth - 1RB	
Lower Band Edge	Lower Extended Band Edge
	
Upper Band Edge	Upper Extended Band Edge
	
3MHz Channel Bandwidth - 1RB	
Lower Band Edge	Lower Extended Band Edge
	

Upper Band Edge	Upper Extended Band Edge
	

5MHz Channel Bandwidth - 1RB

Lower Band Edge	Lower Extended Band Edge
	

Upper Band Edge	Upper Extended Band Edge
	

10MHz Channel Bandwidth - 1RB

Lower Band Edge	Lower Extended Band Edge