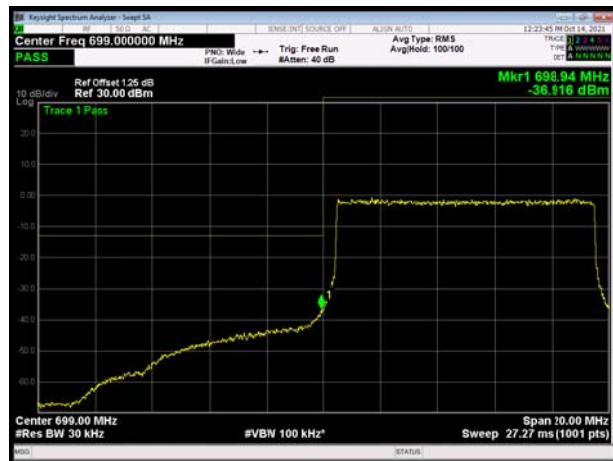




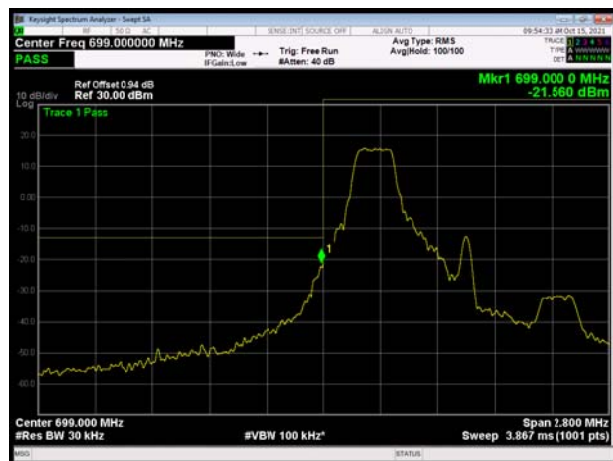
LTE Band 12 16QAM 10MHz CH-Low, 100%RB



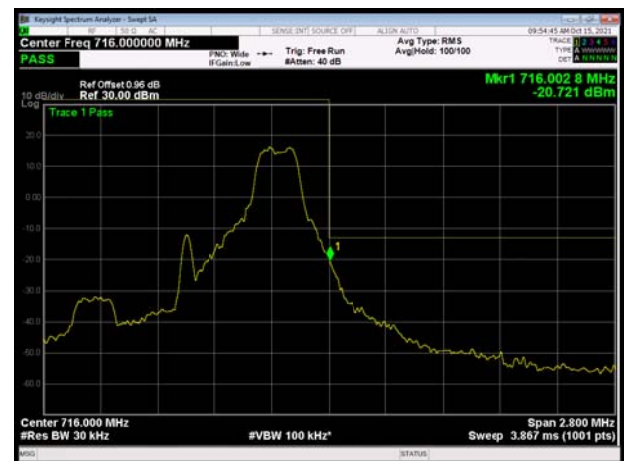
LTE Band 12 16QAM 10MHz CH-High, 100%RB



LTE Band 12 64QAM 1.4MHz CH-Low, 1 RB



LTE Band 12 64QAM 1.4MHz CH-High, 1 RB



LTE Band 12 64QAM 1.4MHz CH-Low, 100%RB

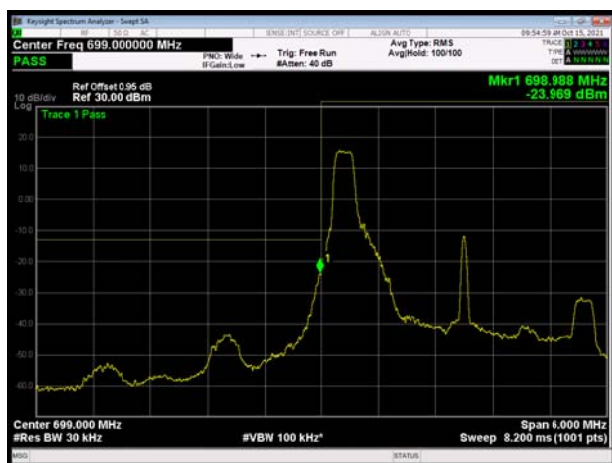


LTE Band 12 64QAM 1.4MHz CH-High, 100%RB

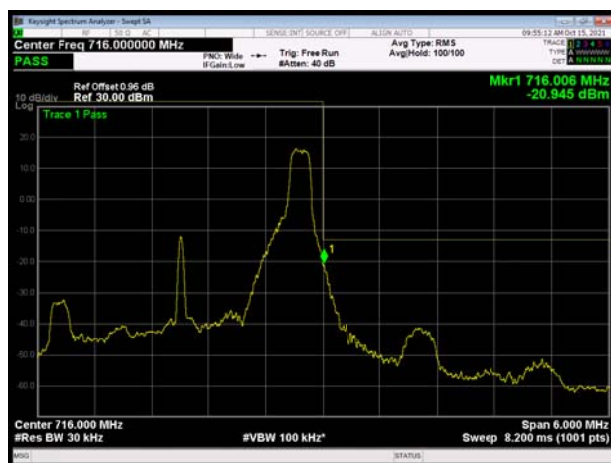




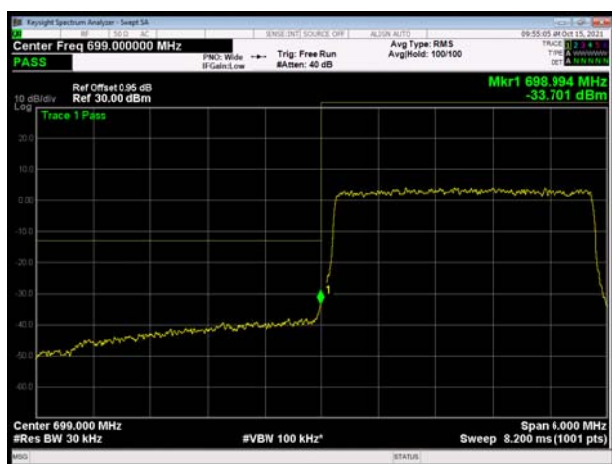
LTE Band 12 64QAM 3MHz CH-Low, 1 RB



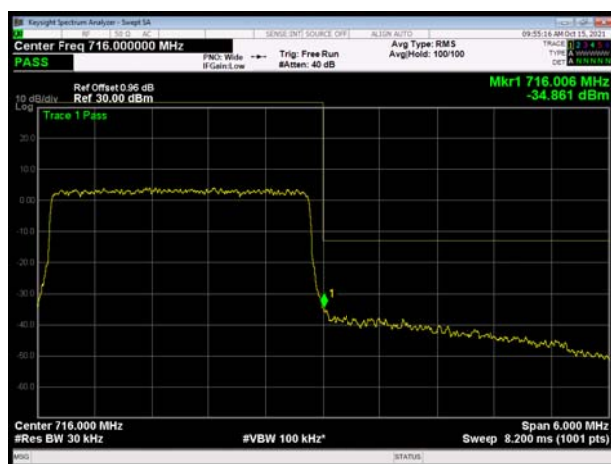
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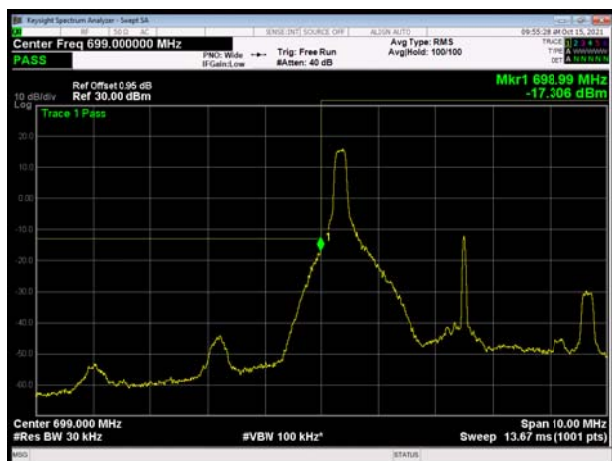
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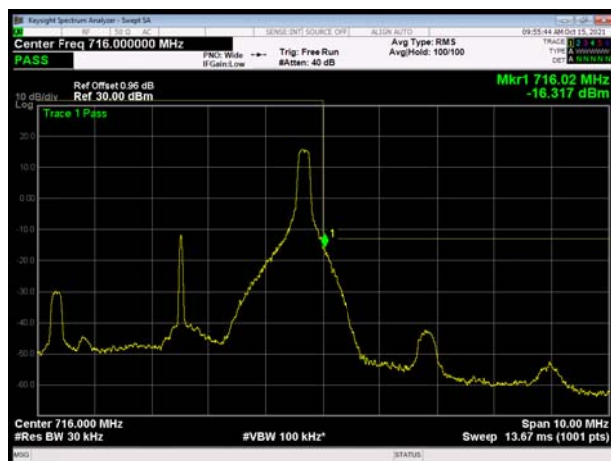
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LTE Band 12 64QAM 5MHz CH-Low, 1 RB

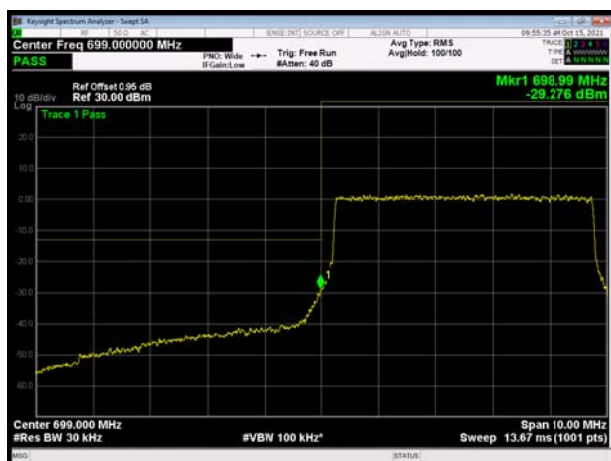


LTE Band 12 64QAM 5MHz CH-High, 1 RB

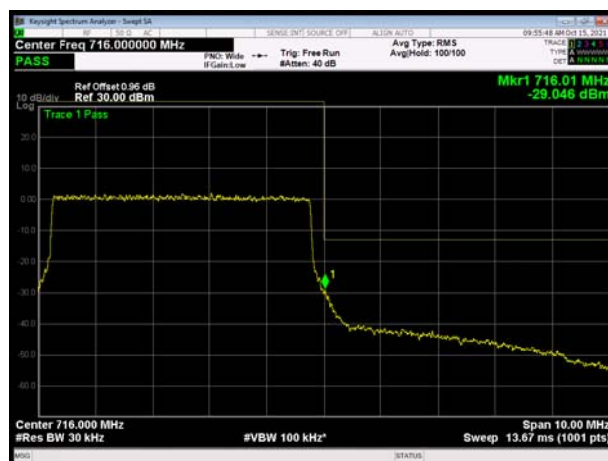




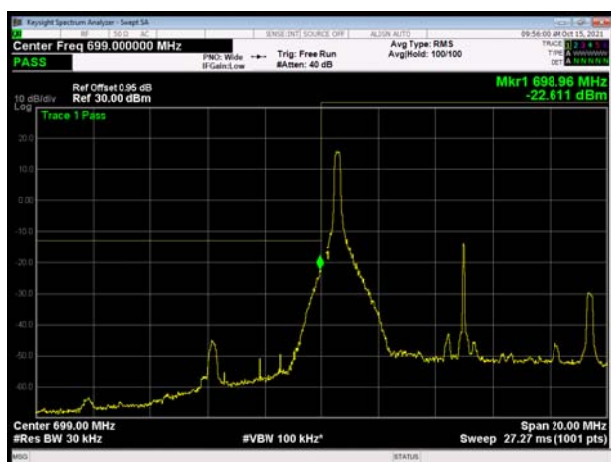
LTE Band 12 64QAM 5MHz CH-Low, 100%RB



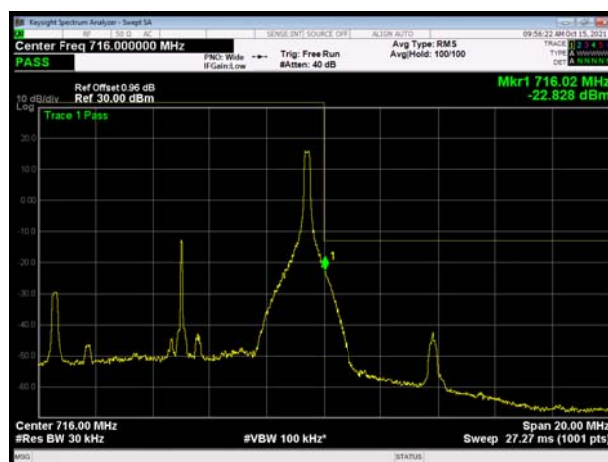
LTE Band 12 64QAM 5MHz CH-High, 100%RB



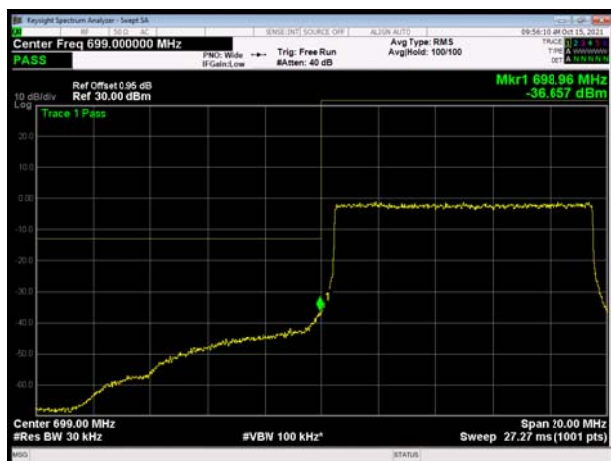
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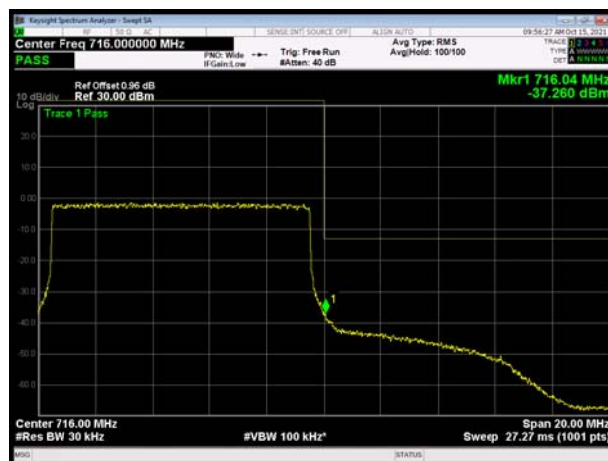
LTE Band 12 64QAM 10MHz CH-High, 1 RB



LTE Band 12 64QAM 10MHz CH-Low, 100%RB

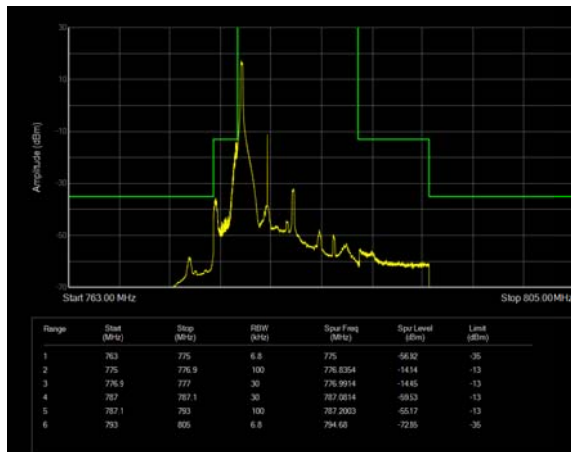


LTE Band 12 64QAM 10MHz CH-High, 100%RB

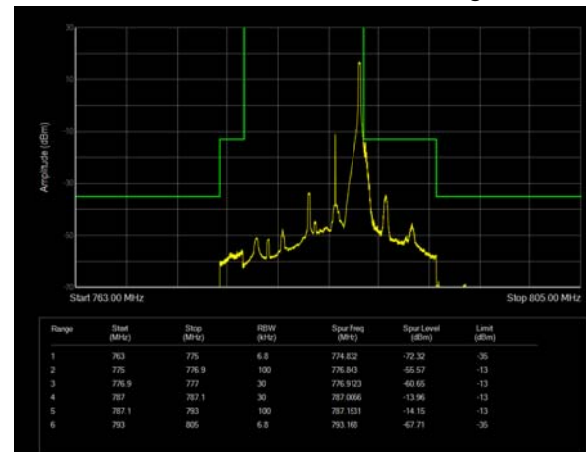




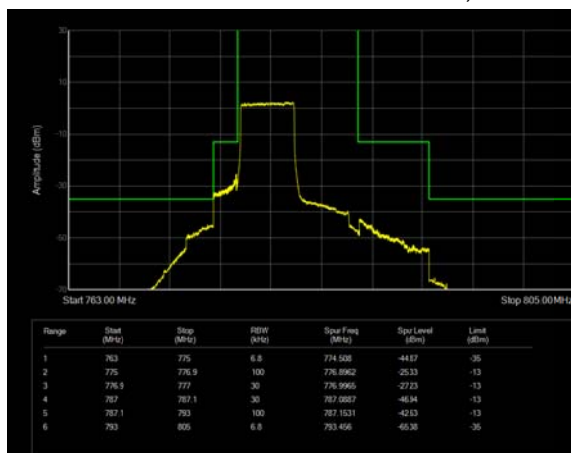
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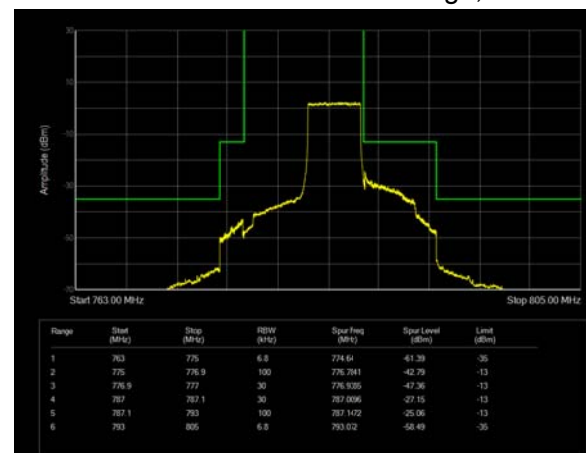
LTE Band 13 QPSK 5MHz CH-High, 1 RB



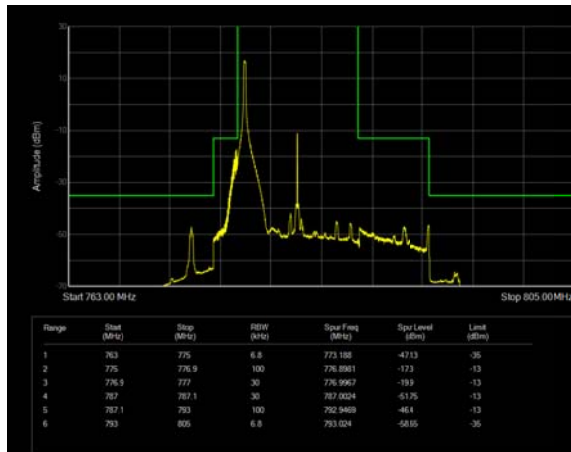
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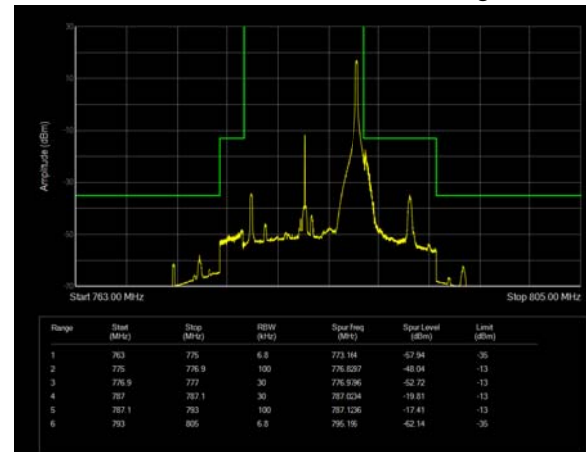
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LTE Band 13 QPSK 10MHz CH-Low, 1 RB

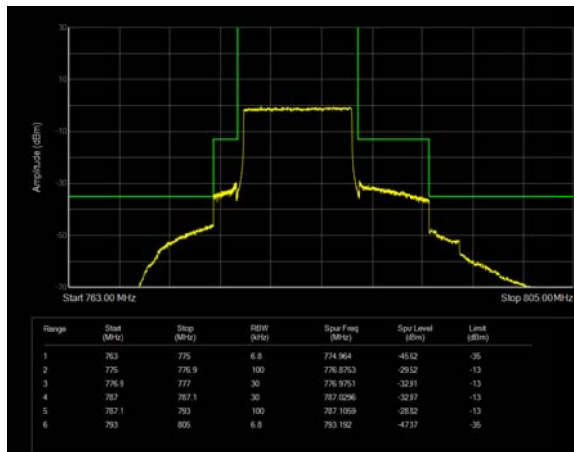


LTE Band 13 QPSK 10MHz CH-High, 1 RB

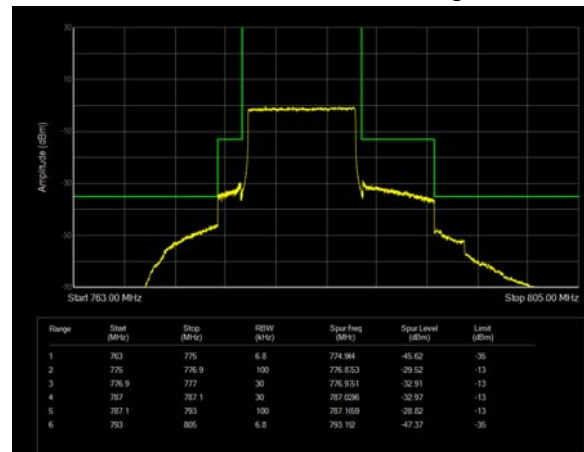




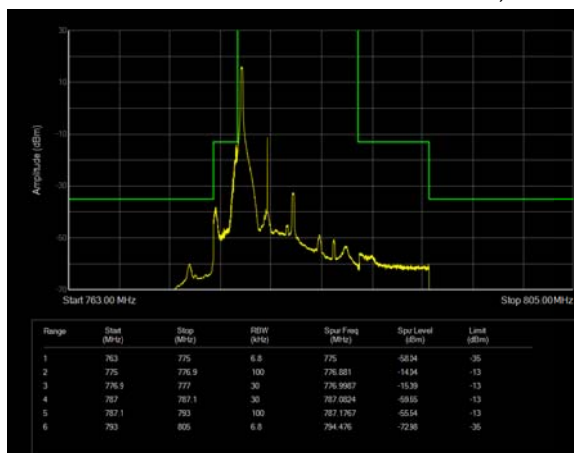
LTE Band 13 QPSK 10MHz CH-Low, 100%RB



LTE Band 13 QPSK 10MHz CH-High, 100%RB



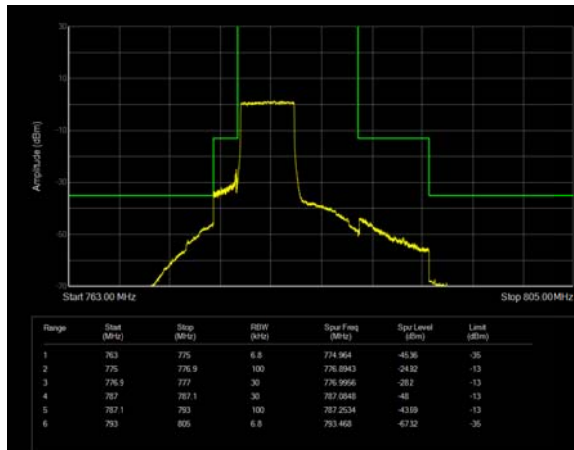
LTE Band 13 16QAM 5MHz CH-Low, 1 RB



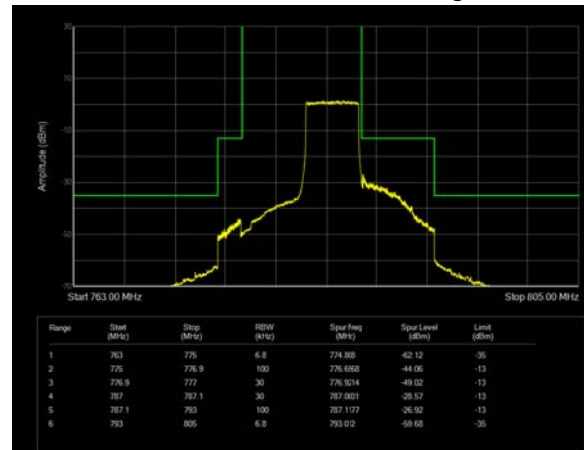
LTE Band 13 16QAM 5MHz CH-High, 1 RB



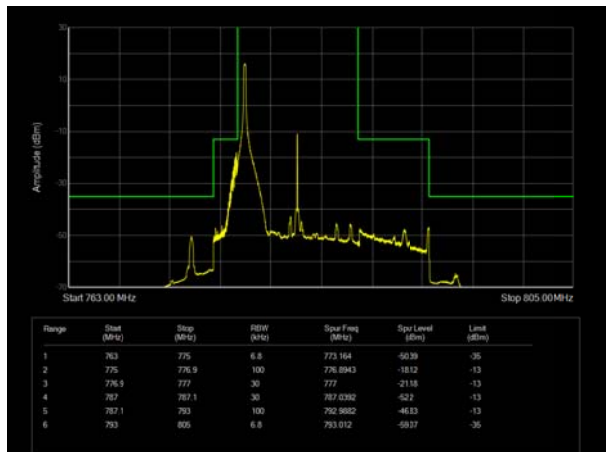
LTE Band 13 16QAM 5MHz CH-Low, 100%RB



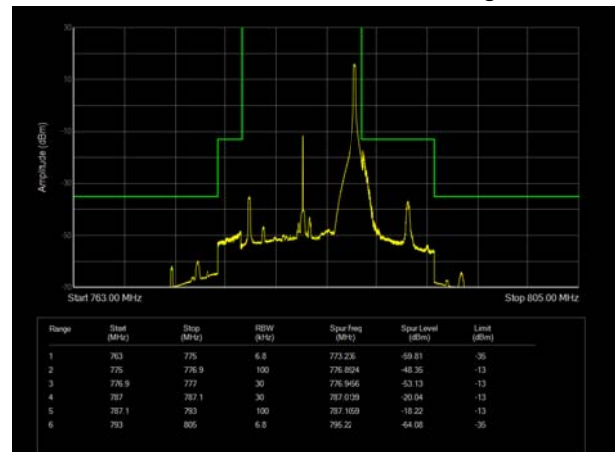
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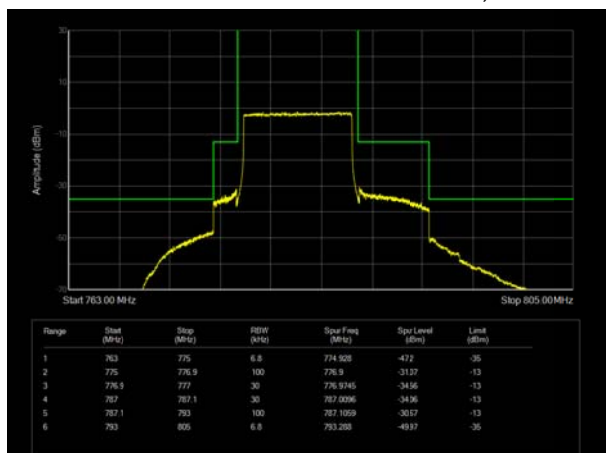
LTE Band 13 16QAM 10MHz CH-Low, 1 RB



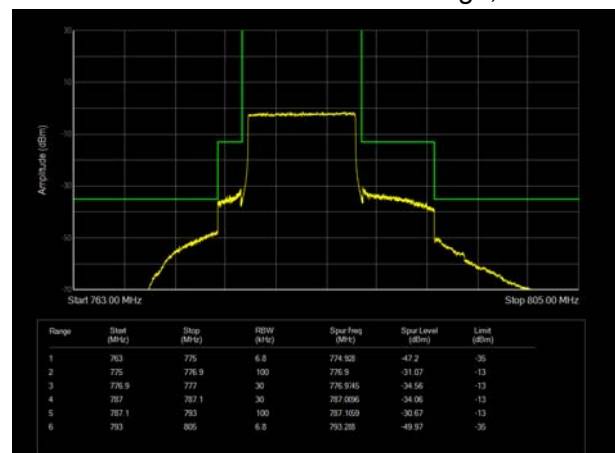
LTE Band 13 16QAM 10MHz CH-High, 1 RB



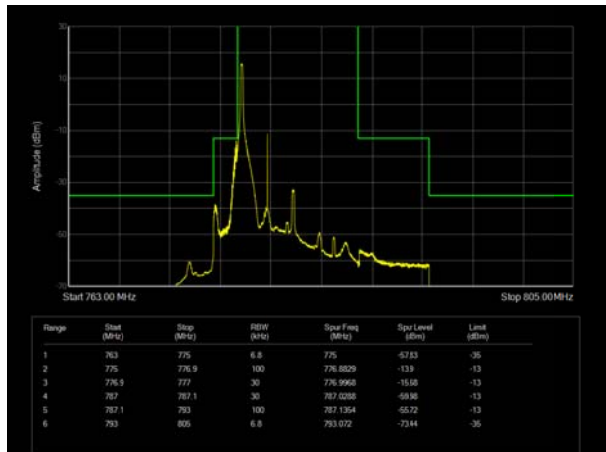
LTE Band 13 16QAM 10MHz CH-Low, 100%RB



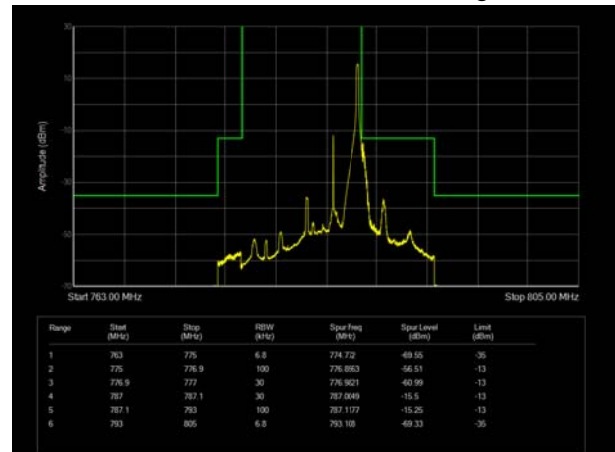
LTE Band 13 16QAM 10MHz CH-High, 100%RB



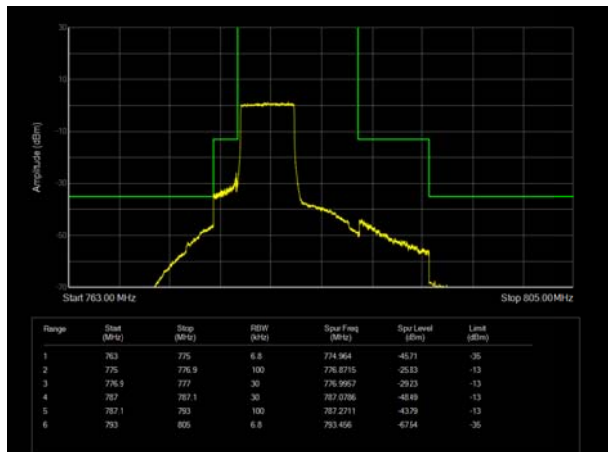
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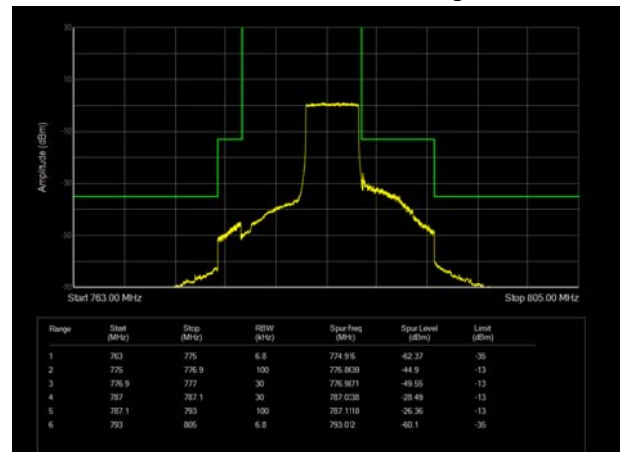
LTE Band 13 64QAM 5MHz CH-High, 1 RB



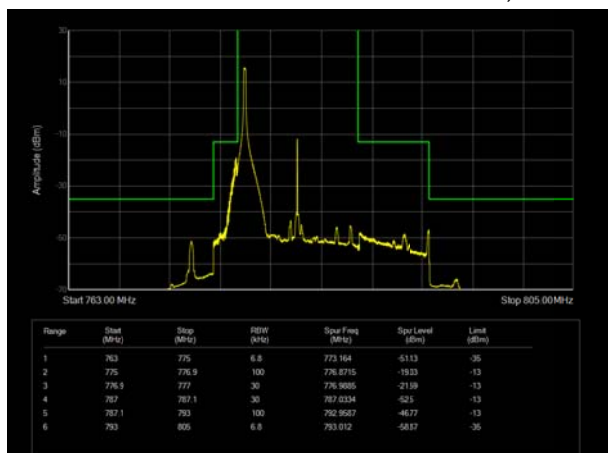
LTE Band 13 64QAM 5MHz CH-Low, 100%RB



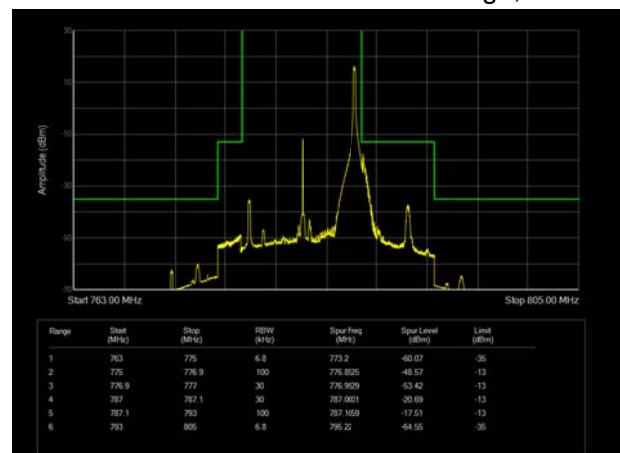
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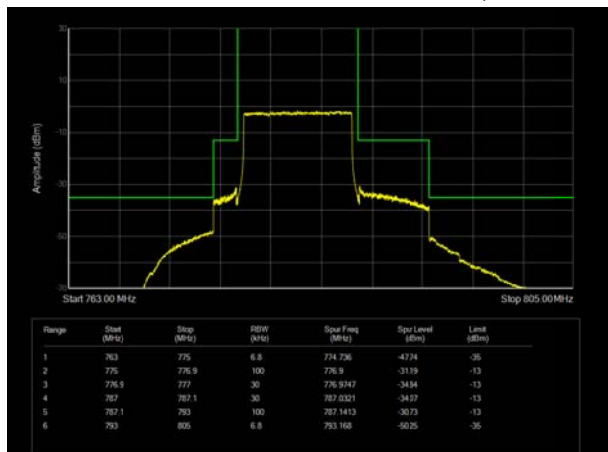
LTE Band 13 64QAM 10MHz CH-Low, 1 RB



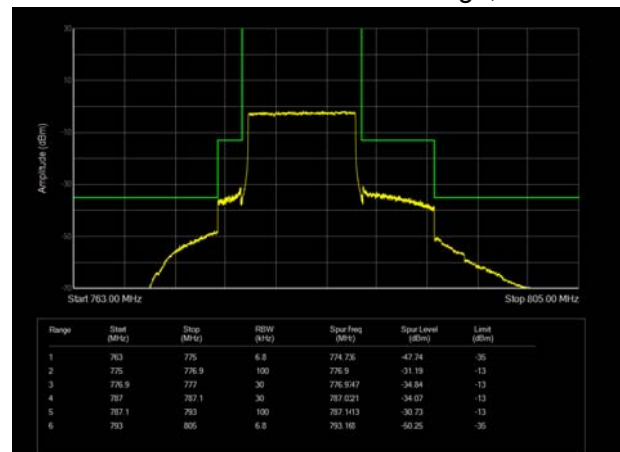
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LTE Band 13 64QAM 10MHz CH-Low, 100%RB

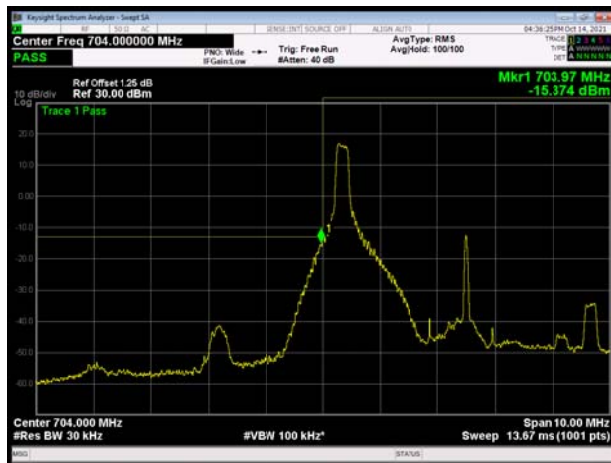


LTE Band 13 64QAM 10MHz CH-High, 100%RB

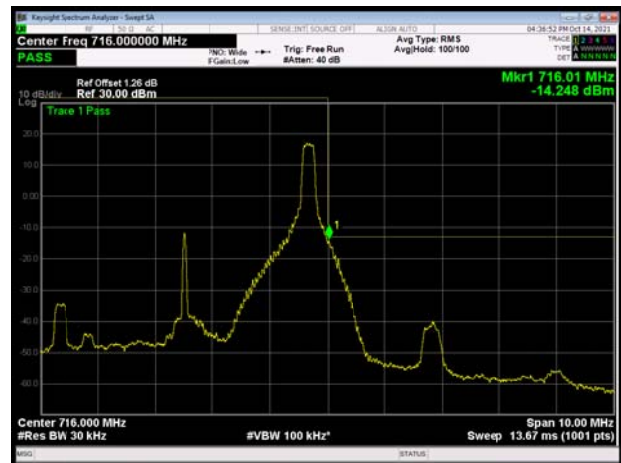




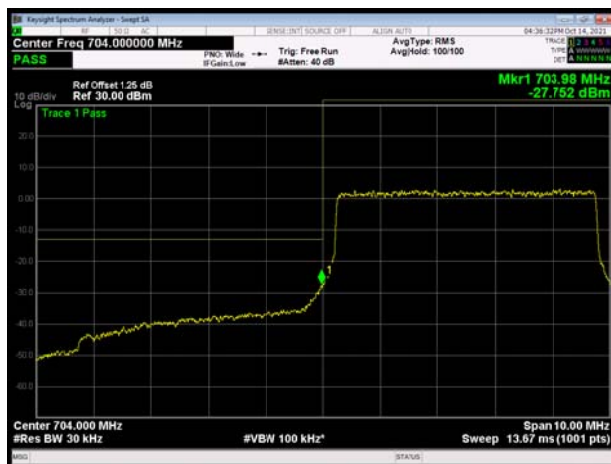
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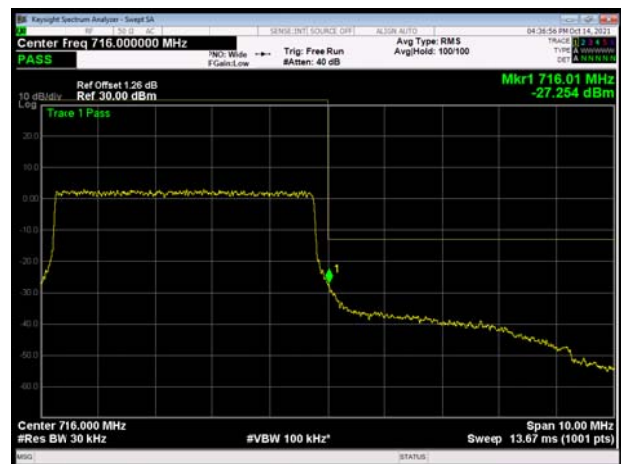
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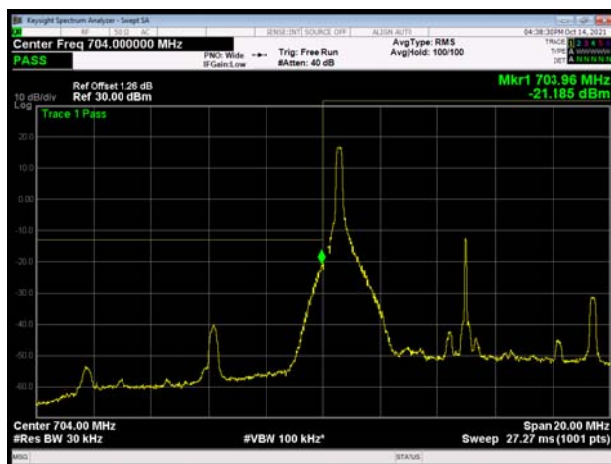
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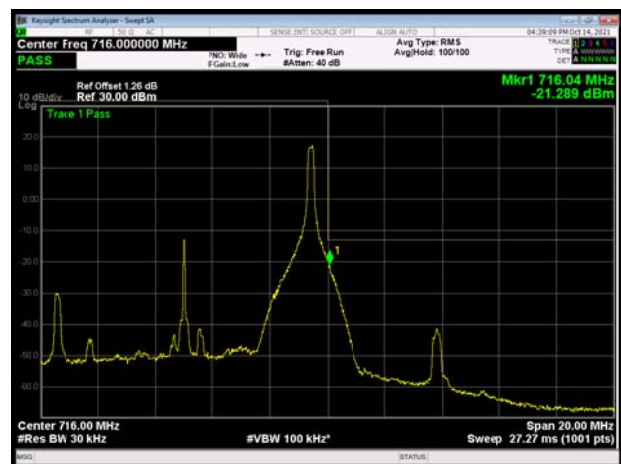
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LTE Band 17 QPSK 10MHz CH-Low, 1 RB

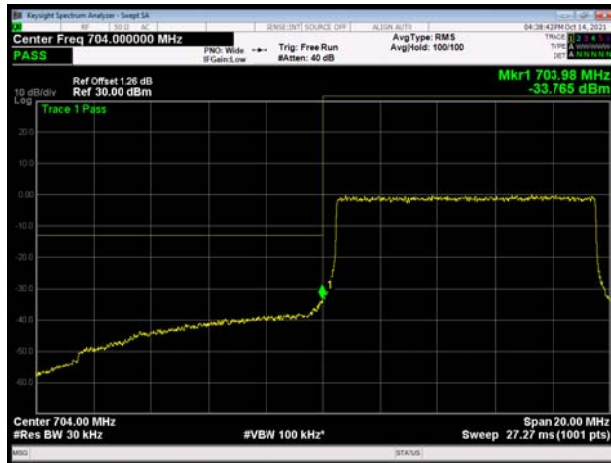


LTE Band 17 QPSK 10MHz CH-High, 1 RB





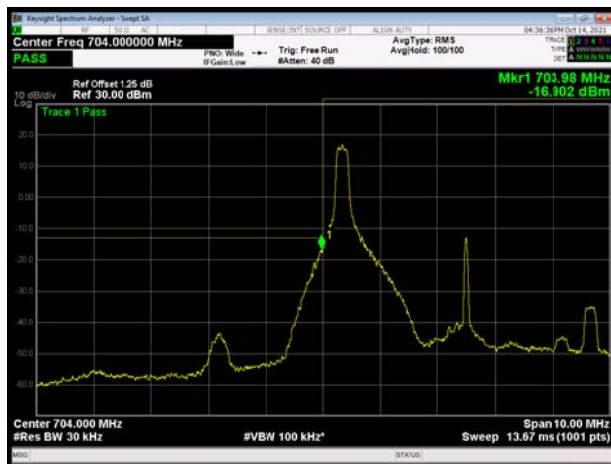
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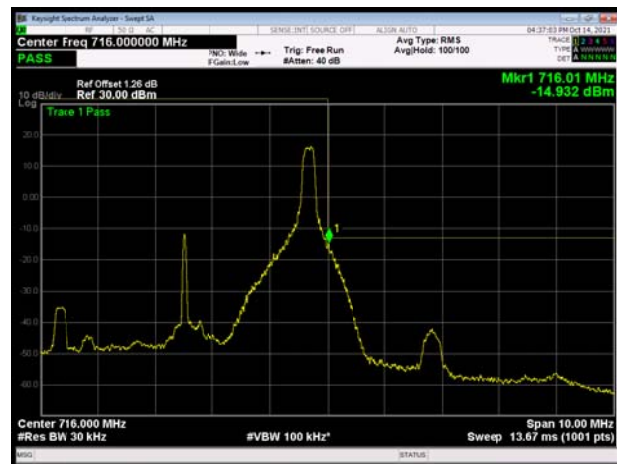
LTE Band 17 QPSK 10MHz CH-High, 100%RB



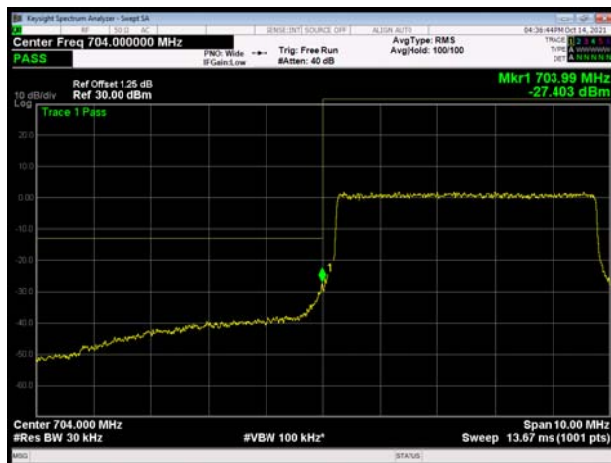
LTE Band 17 16QAM 5MHz CH-Low, 1 RB



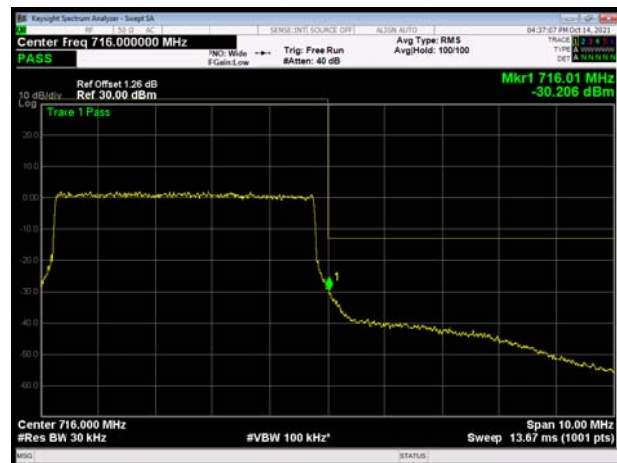
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LTE Band 17 16QAM 5MHz CH-Low, 100%RB

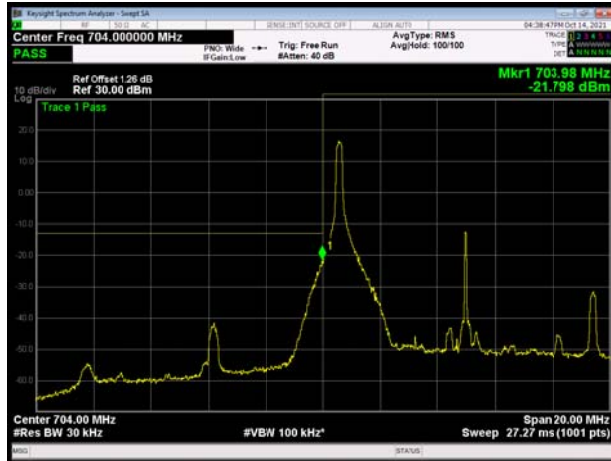


LTE Band 17 16QAM 5MHz CH-High, 100%RB

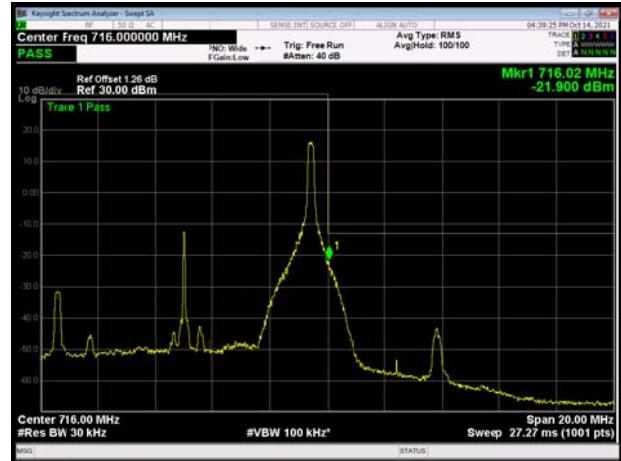




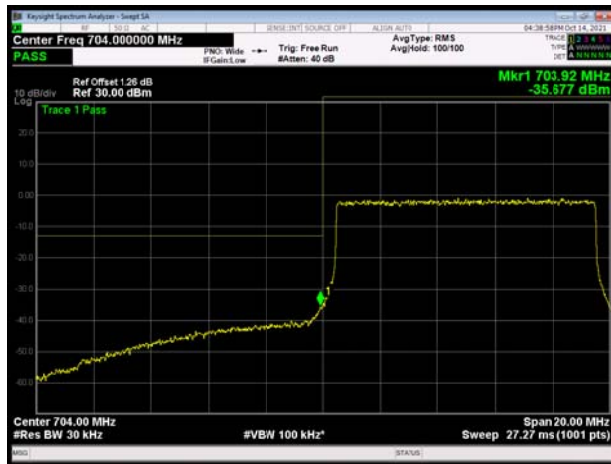
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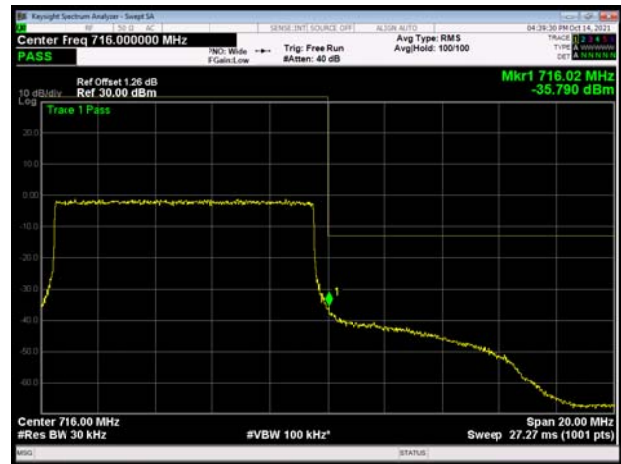
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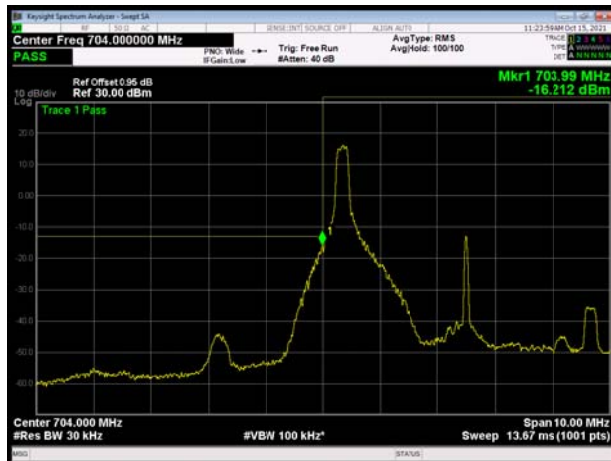
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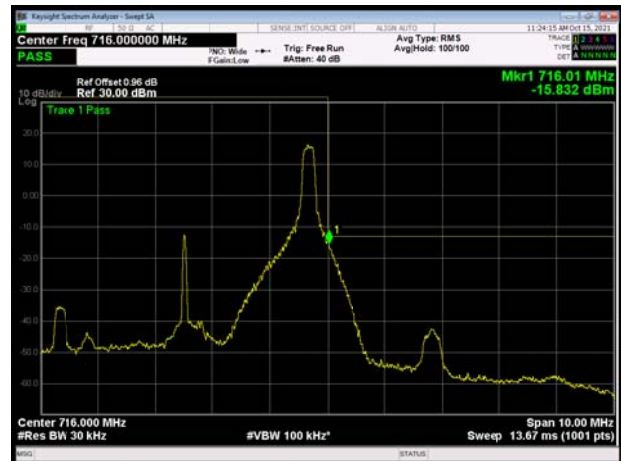
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LTE Band 17 64QAM 5MHz CH-Low, 1 RB

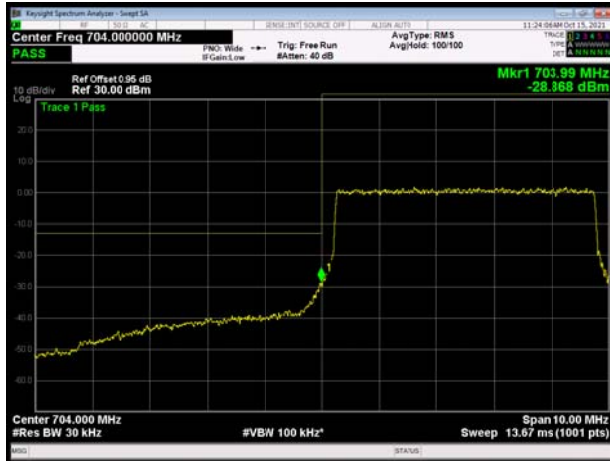


LTE Band 17 64QAM 5MHz CH-High, 1 RB

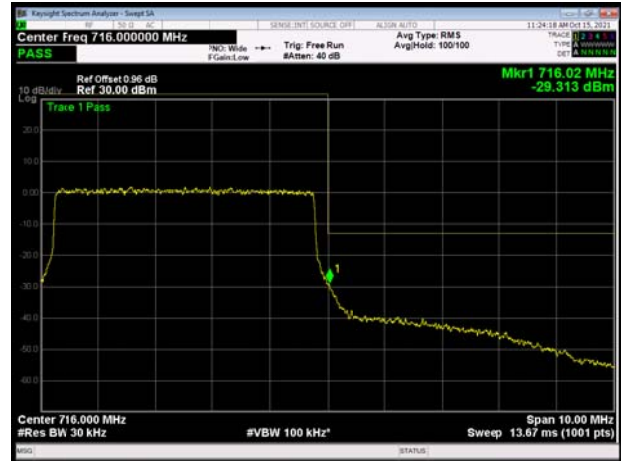




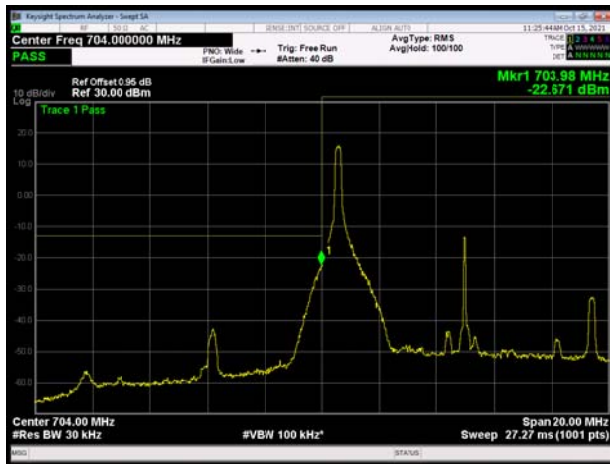
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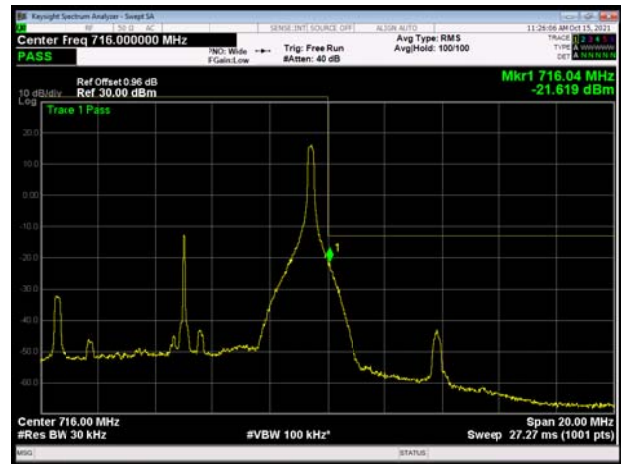
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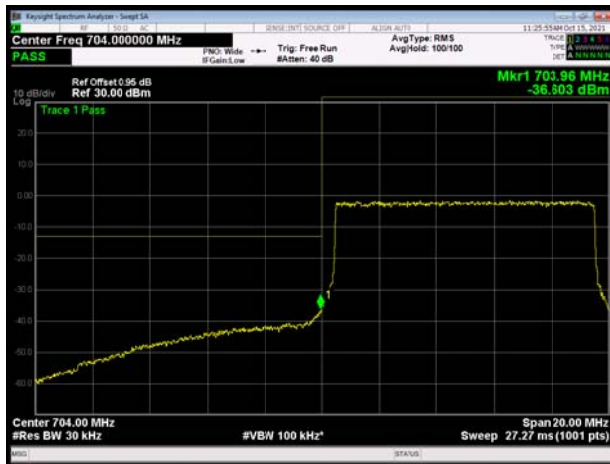
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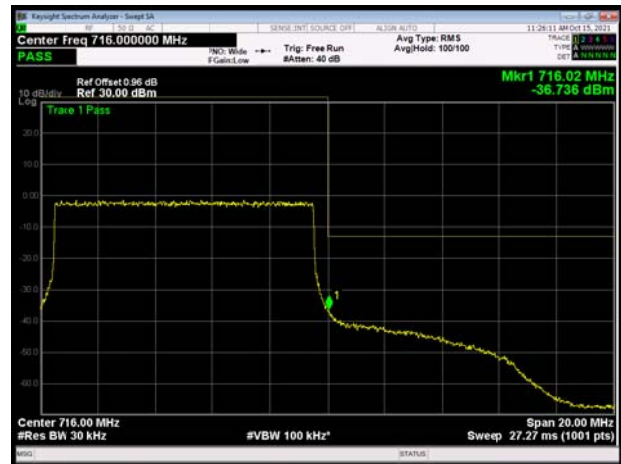
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LTE Band 17 64QAM 10MHz CH-Low, 100%RB

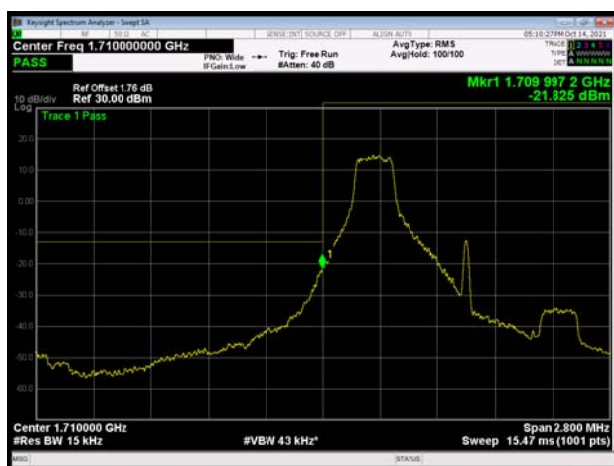


LTE Band 17 64QAM 10MHz CH-High, 100%RB

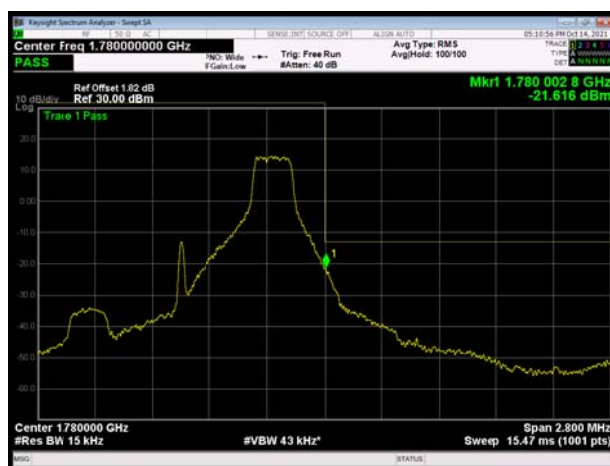




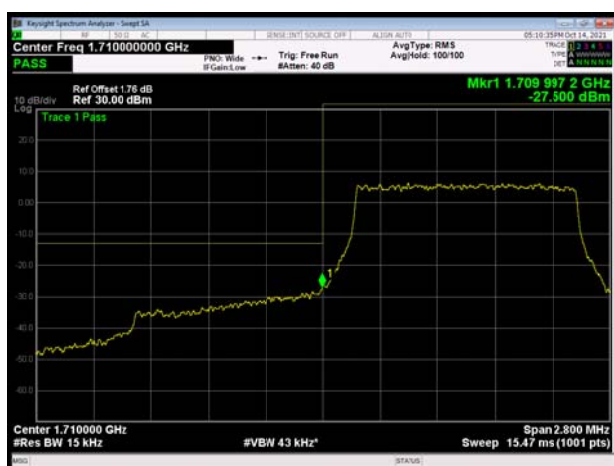
LTE Band 66 QPSK 1.4MHz CH-Low, 1 RB



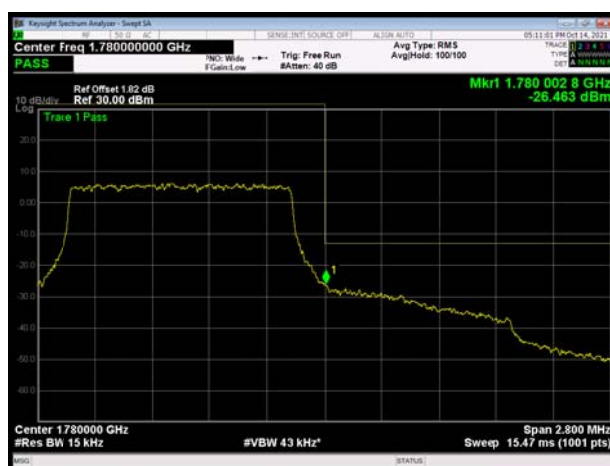
LTE Band 66 QPSK 1.4MHz CH-High, 1 RB



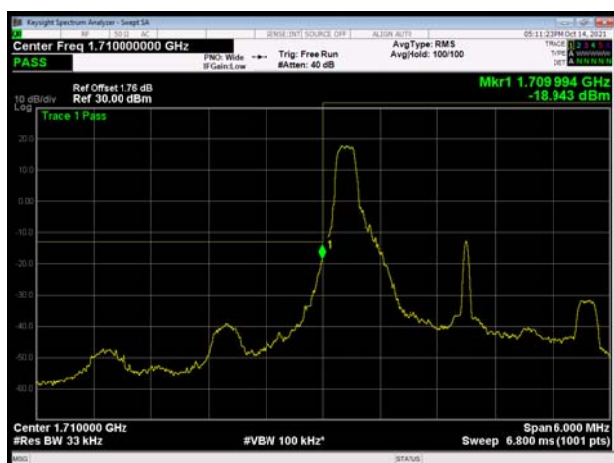
LTE Band 66 QPSK 1.4MHz CH-Low, 100%RB



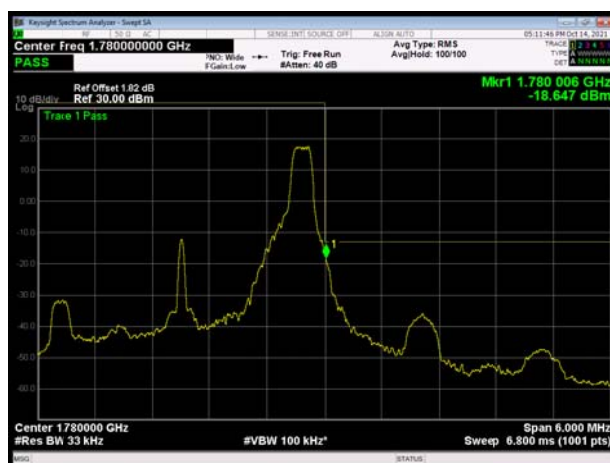
LTE Band 66 QPSK 1.4MHz CH-High, 100%RB



LTE Band 66 QPSK 3MHz CH-Low, 1 RB



LTE Band 66 QPSK 3MHz CH-High, 1 RB





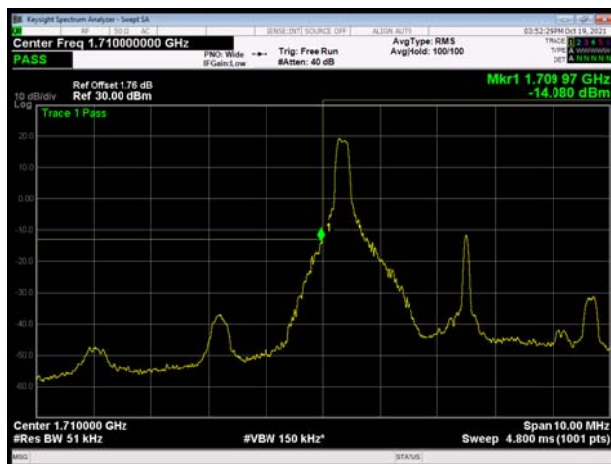
LTE Band 66 QPSK 3MHz CH-Low, 100%RB



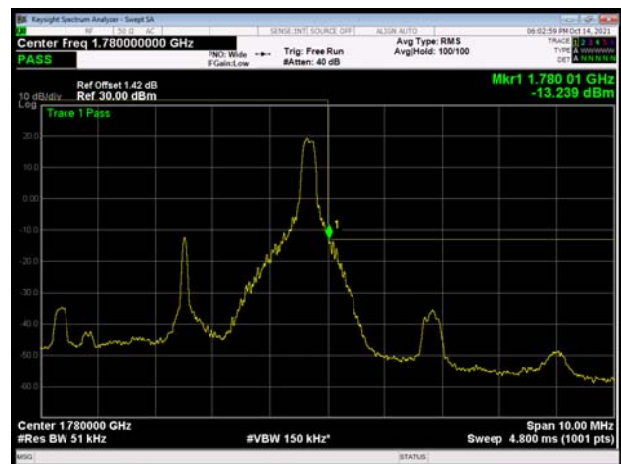
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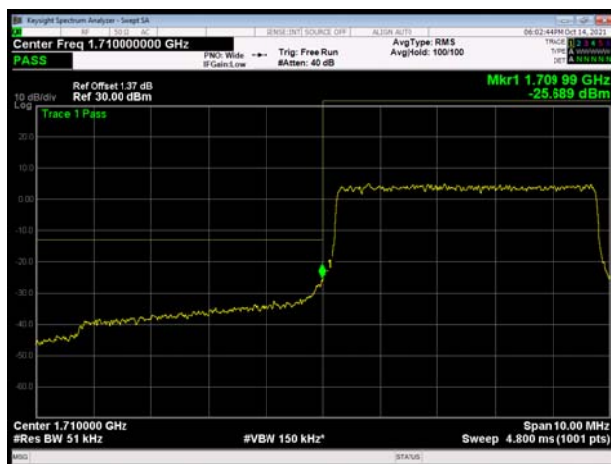
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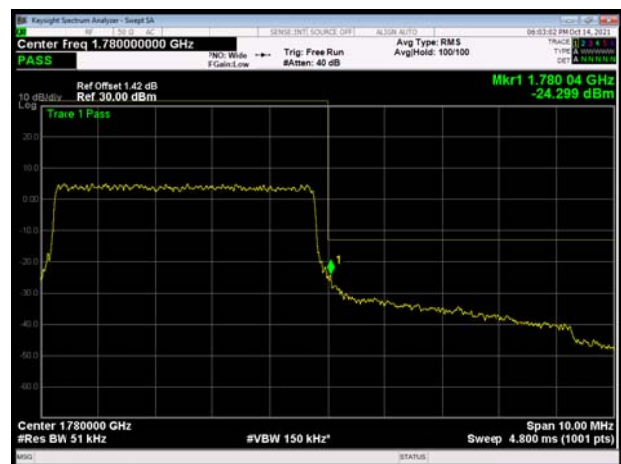
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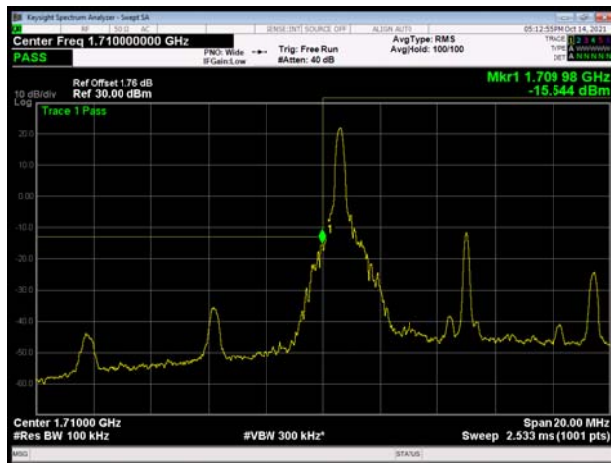
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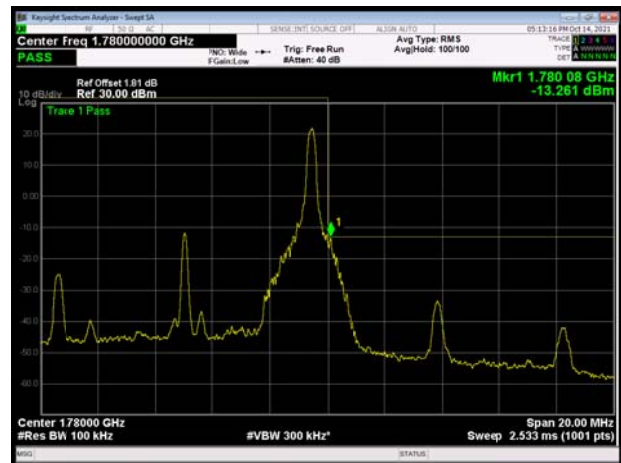
LTE Band 66 QPSK 5MHz CH-High, 100%RB



LTE Band 66 QPSK 10MHz CH-Low, 1 RB



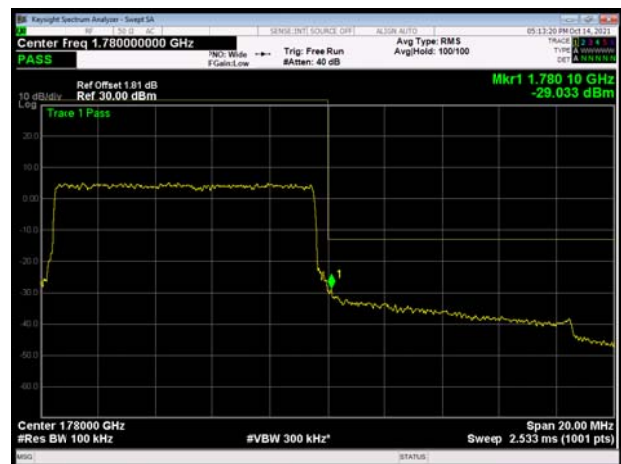
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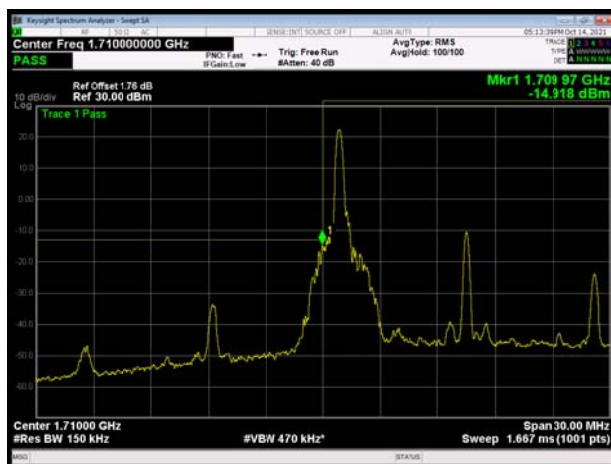
LTE Band 66 QPSK 10MHz CH-Low, 100%RB



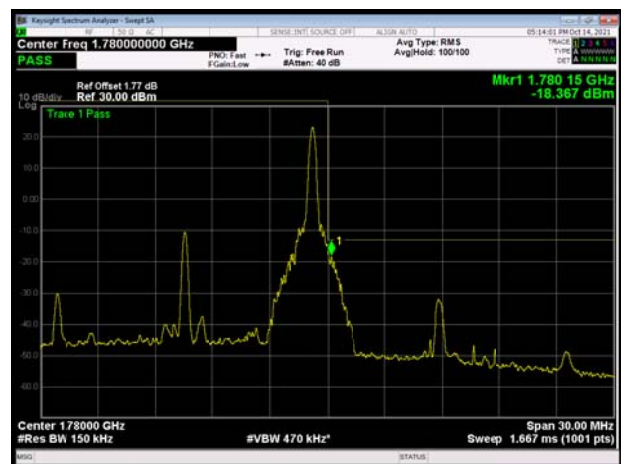
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LTE Band 66 QPSK 15MHz CH-Low, 1 RB



LTE Band 66 QPSK 15MHz CH-High, 1 RB





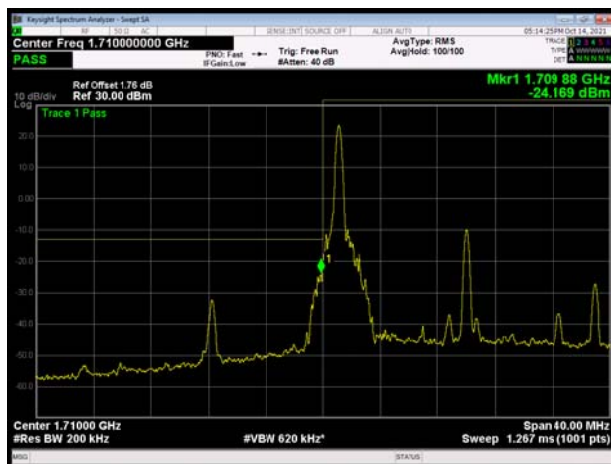
LTE Band 66 QPSK 15MHz CH-Low, 100%RB



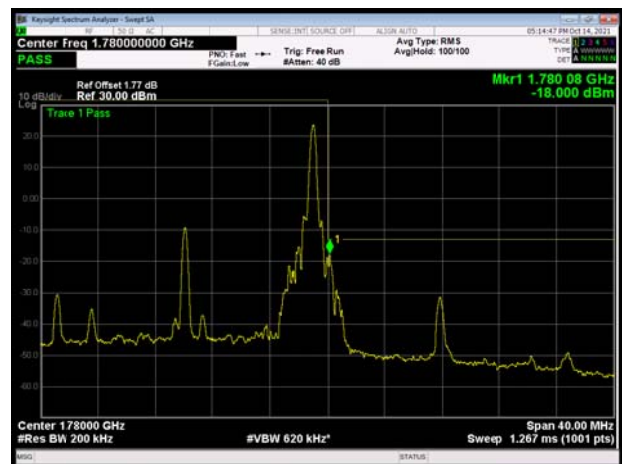
LTE Band 66 QPSK 15MHz CH-High, 100%RB



LTE Band 66 QPSK 20MHz CH-Low, 1 RB



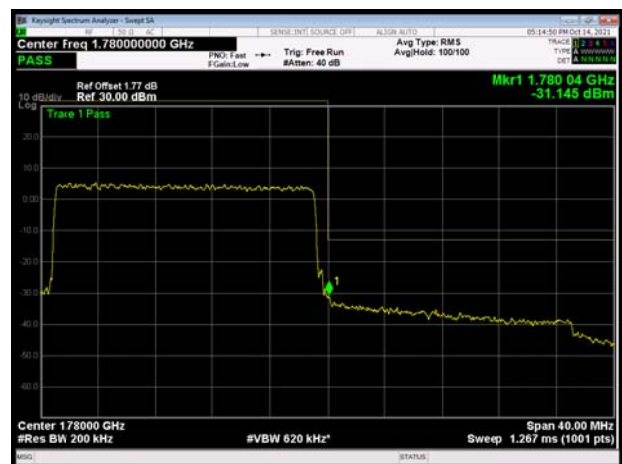
LTE Band 66 QPSK 20MHz CH-High, 1 RB



LTE Band 66 QPSK 20MHz CH-Low, 100%RB

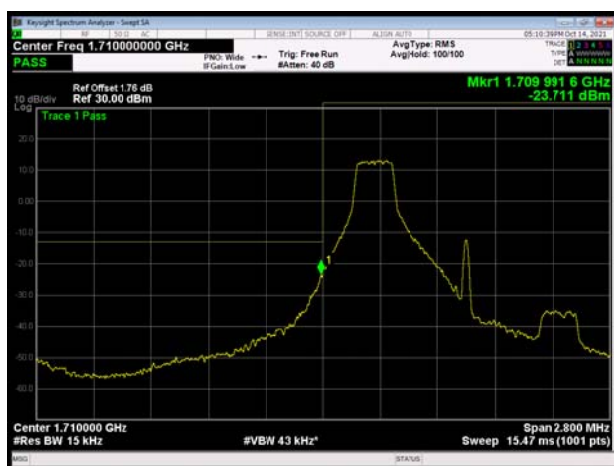


LTE Band 66 QPSK 20MHz CH-High, 100%RB

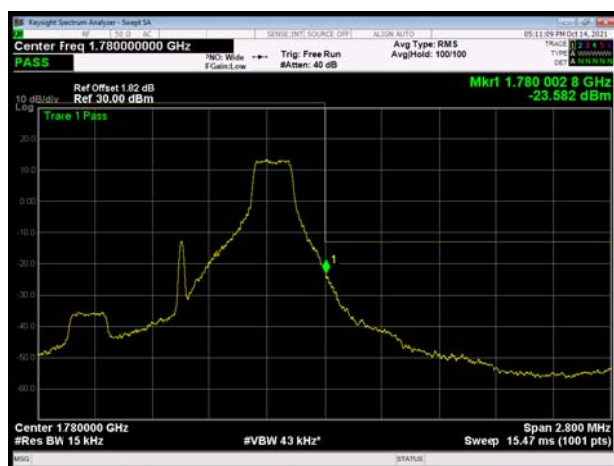




LTE Band 66 16QAM 1.4MHz CH-Low, 1 RB



LTE Band 66 16QAM 1.4MHz CH-High, 1 RB



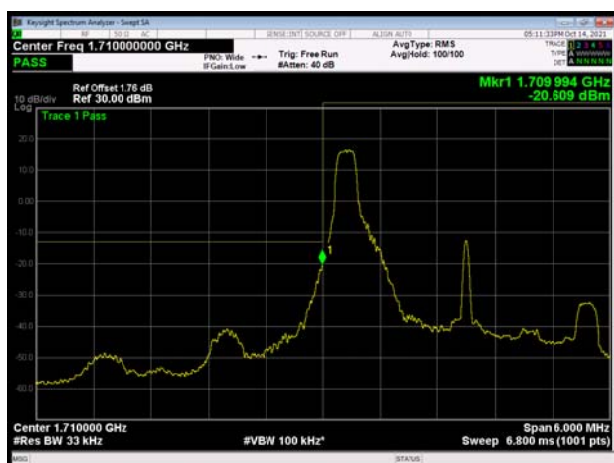
LTE Band 66 16QAM 1.4MHz CH-Low, 100%RB



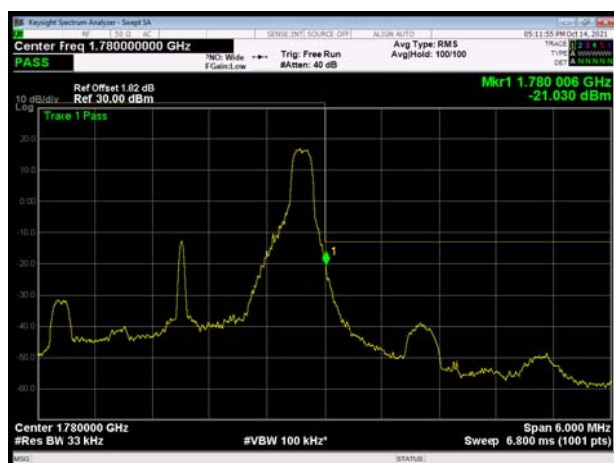
LTE Band 66 16QAM 1.4MHz CH-High, 100%RB



LTE Band 66 16QAM 3MHz CH-Low, 1 RB

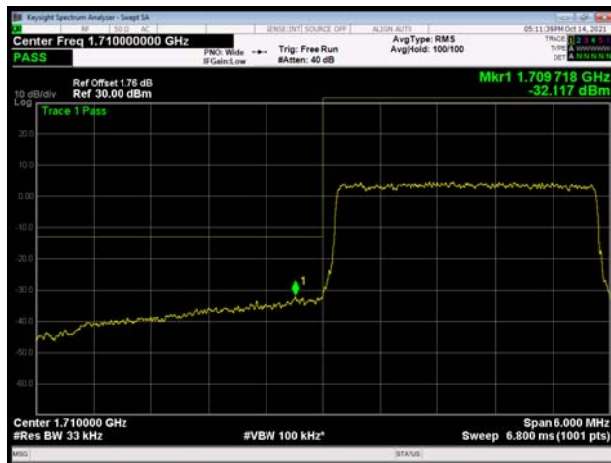


LTE Band 66 16QAM 3MHz CH-High, 1 RB





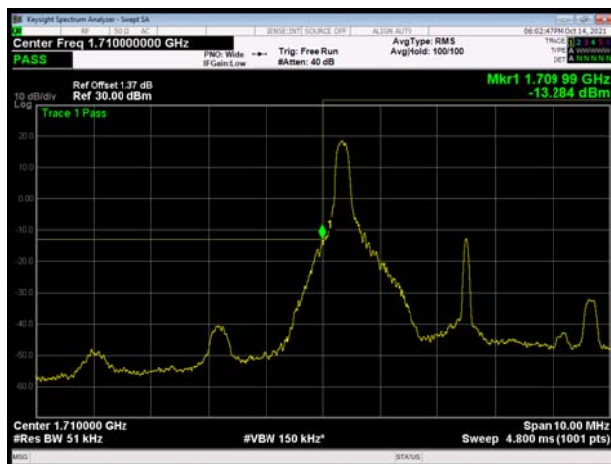
LTE Band 66 16QAM 3MHz CH-Low, 100%RB



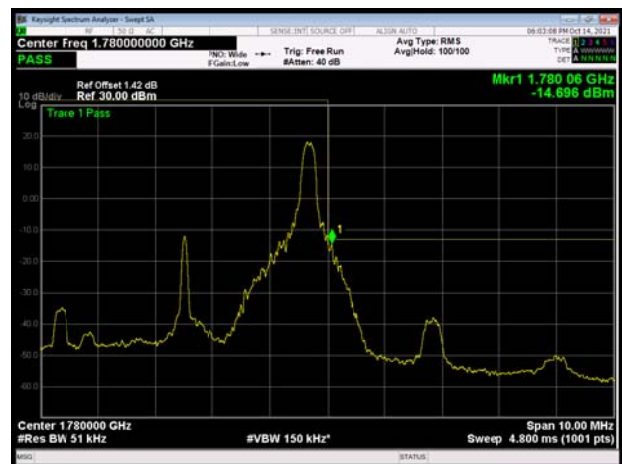
LTE Band 66 16QAM 3MHz CH-High, 100%RB



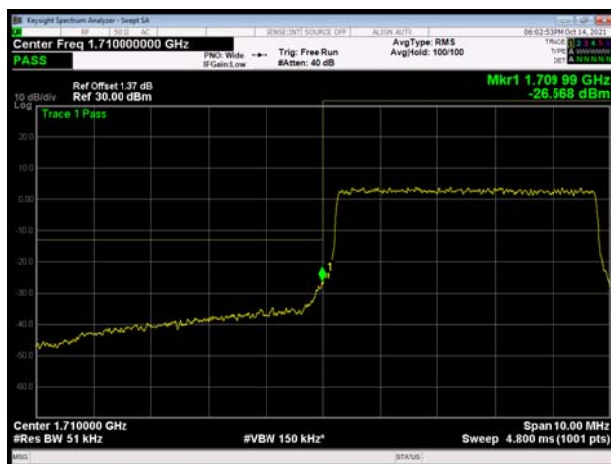
LTE Band 66 16QAM 5MHz CH-Low, 1 RB



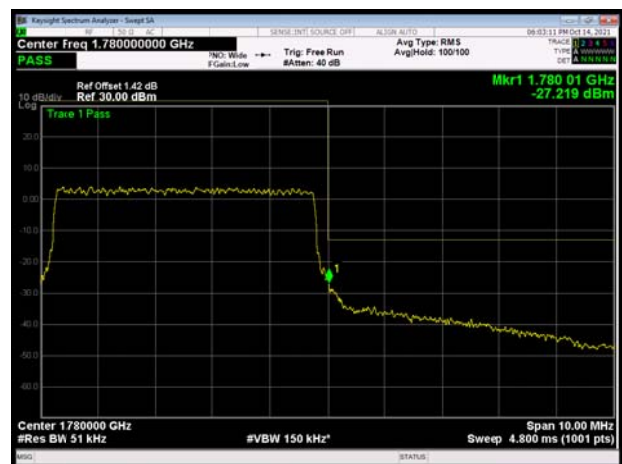
LTE Band 66 16QAM 5MHz CH-High, 1 RB



LTE Band 66 16QAM 5MHz CH-Low, 100%RB

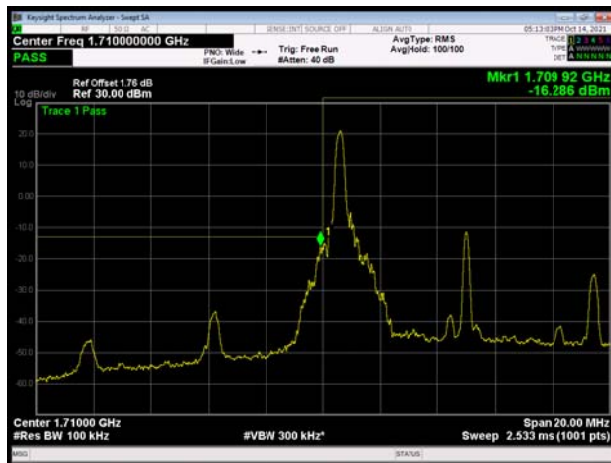


LTE Band 66 16QAM 5MHz CH-High, 100%RB

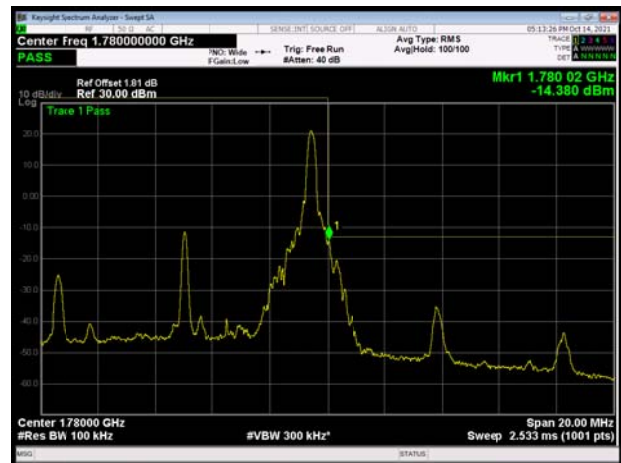




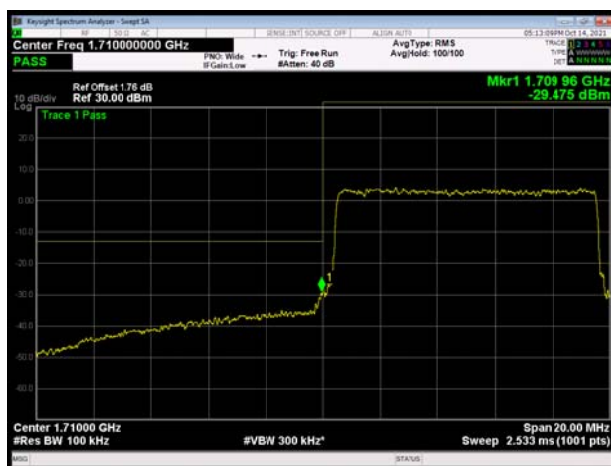
LTE Band 66 16QAM 10MHz CH-Low, 1 RB



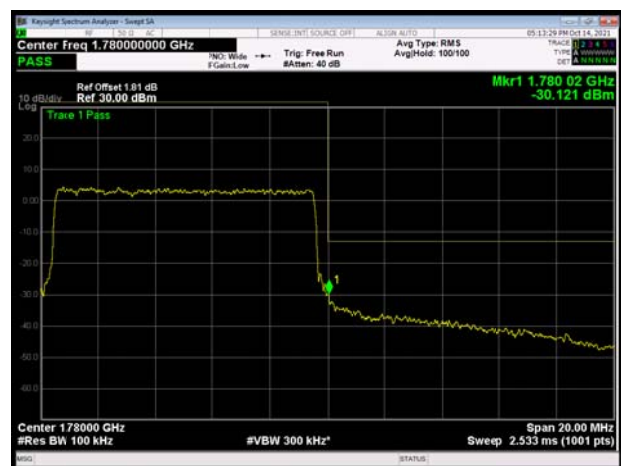
LTE Band 66 16QAM 10MHz CH-High, 1 RB



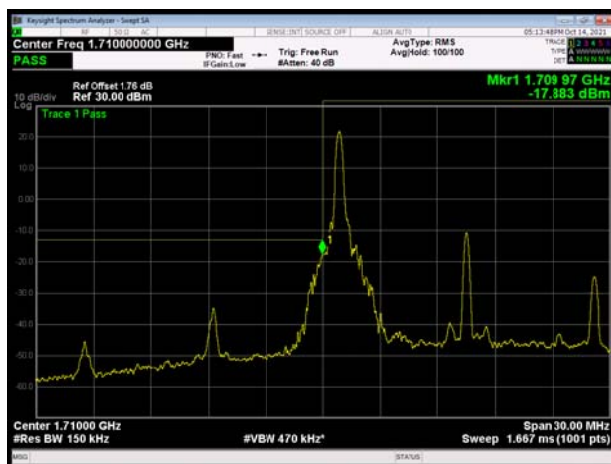
LTE Band 66 16QAM 10MHz CH-Low, 100%RB



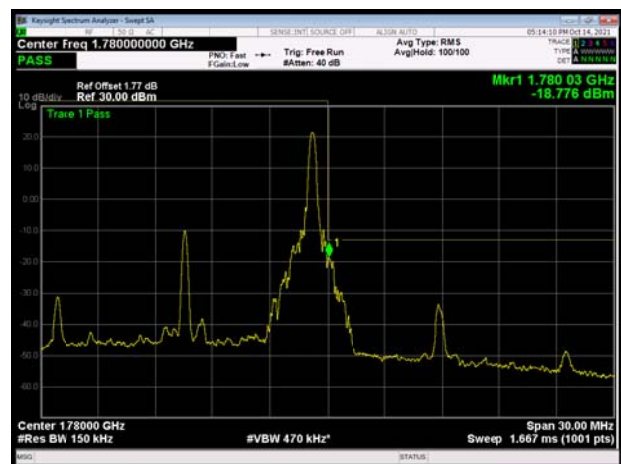
LTE Band 66 16QAM 10MHz CH-High, 100%RB



LTE Band 66 16QAM 15MHz CH-Low, 1 RB

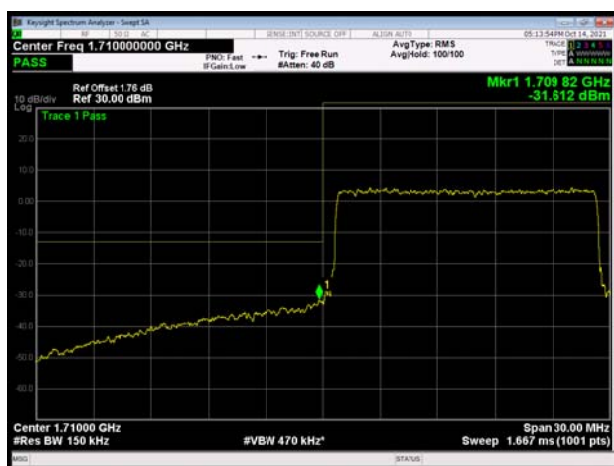


LTE Band 66 16QAM 15MHz CH-High, 1 RB

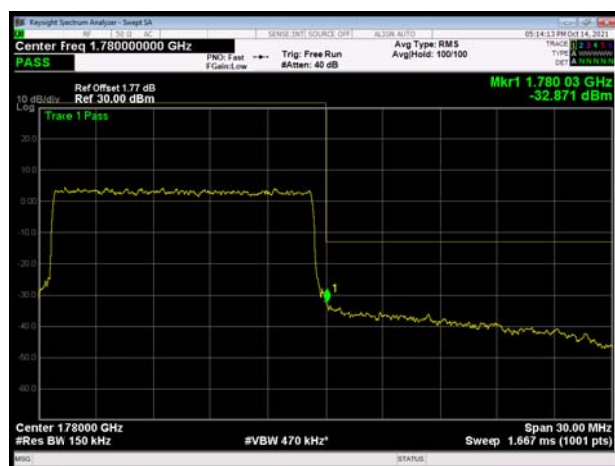




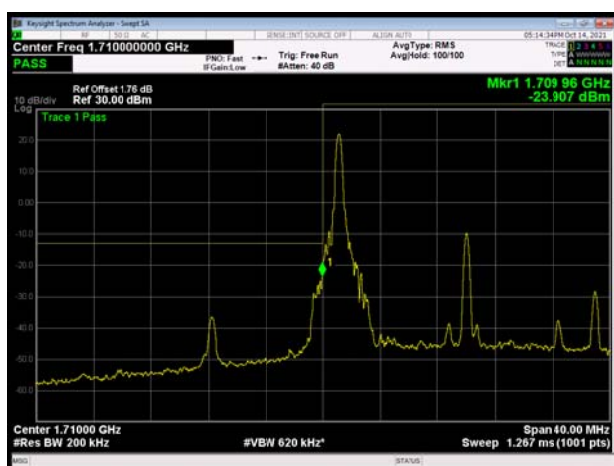
LTE Band 66 16QAM 15MHz CH-Low, 100%RB



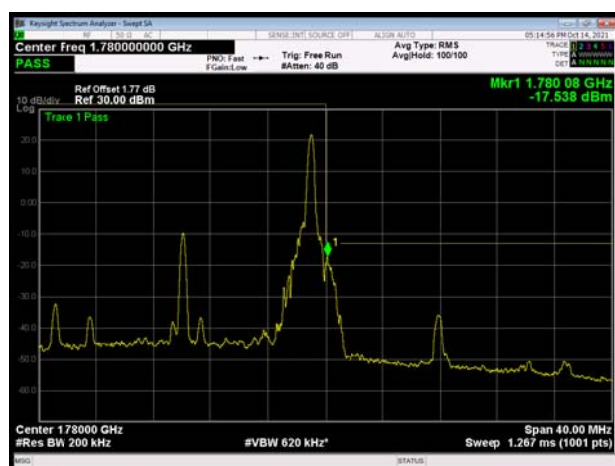
LTE Band 66 16QAM 15MHz CH-High, 100%RB



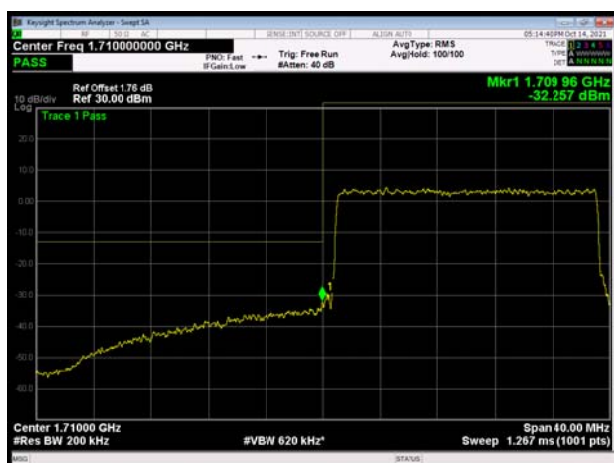
LTE Band 66 16QAM 20MHz CH-Low, 1 RB



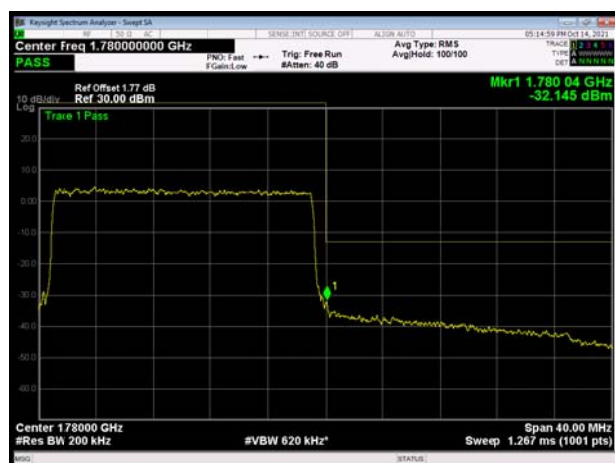
LTE Band 66 16QAM 20MHz CH-High, 1 RB



LTE Band 66 16QAM 20MHz CH-Low, 100%RB

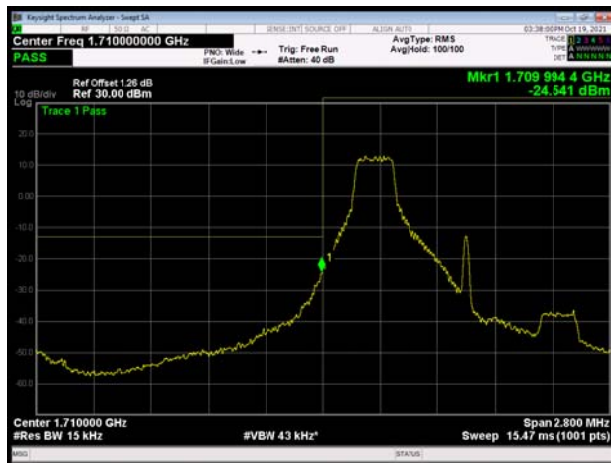


LTE Band 66 16QAM 20MHz CH-High, 100%RB





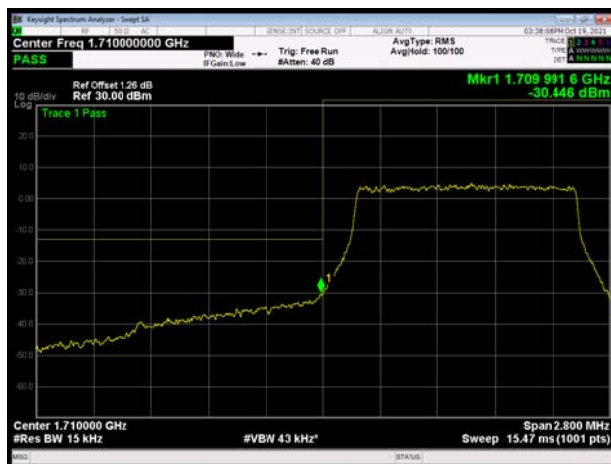
LTE Band 66 64QAM 1.4MHz CH-Low, 1 RB



LTE Band 66 64QAM 1.4MHz CH-High, 1 RB



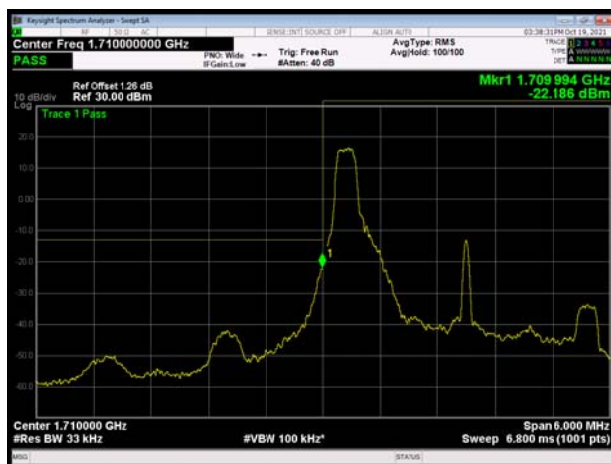
LTE Band 66 64QAM 1.4MHz CH-Low, 100%RB



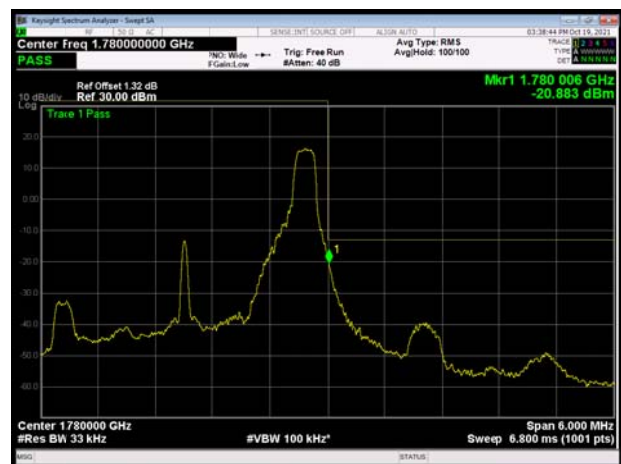
LTE Band 66 64QAM 1.4MHz CH-High, 100%RB



LTE Band 66 64QAM 3MHz CH-Low, 1 RB

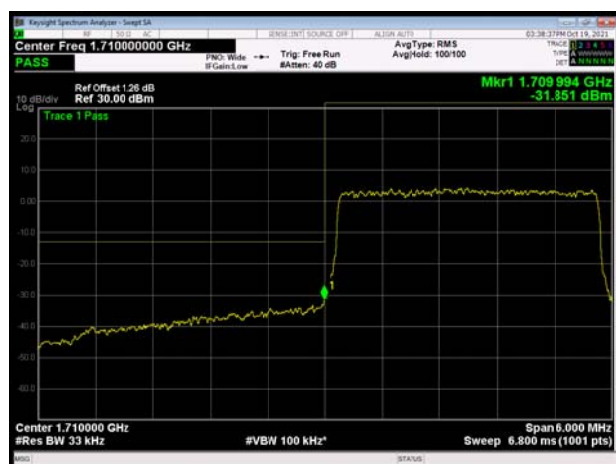


LTE Band 66 64QAM 3MHz CH-High, 1 RB

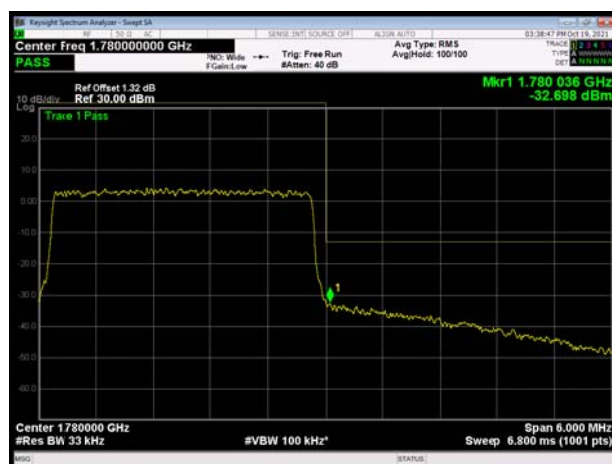




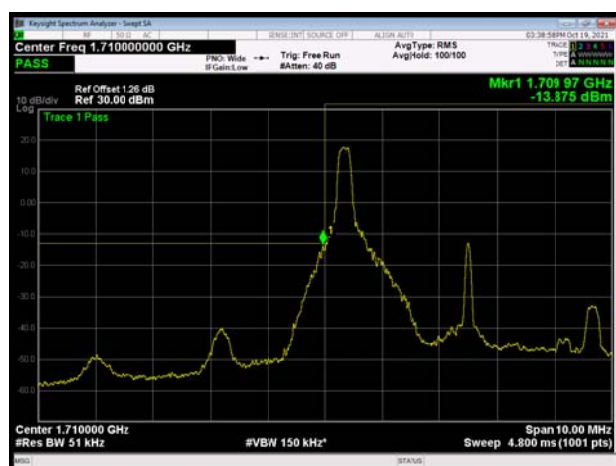
LTE Band 66 64QAM 3MHz CH-Low, 100%RB



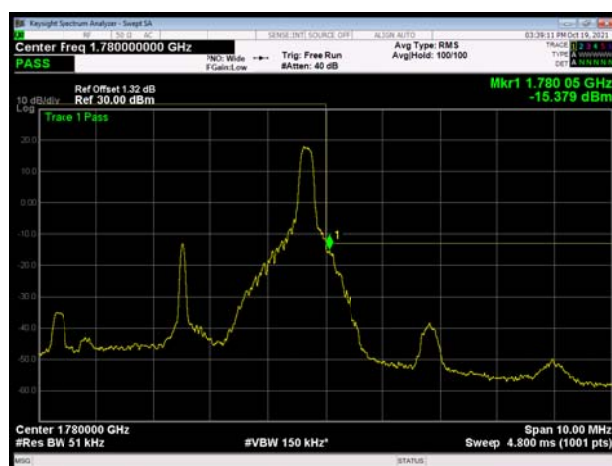
LTE Band 66 64QAM 3MHz CH-High, 100%RB



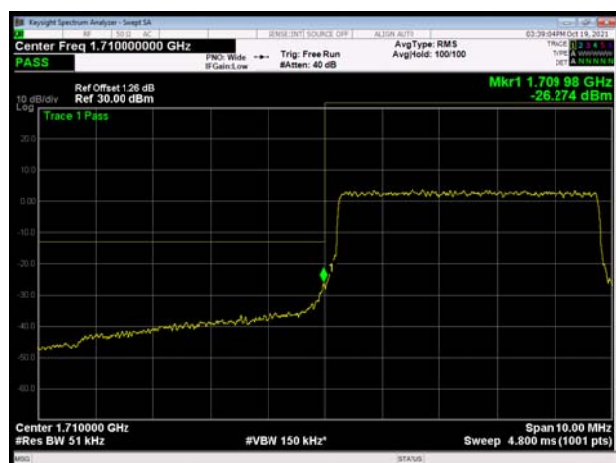
LTE Band 66 64QAM 5MHz CH-Low, 1 RB



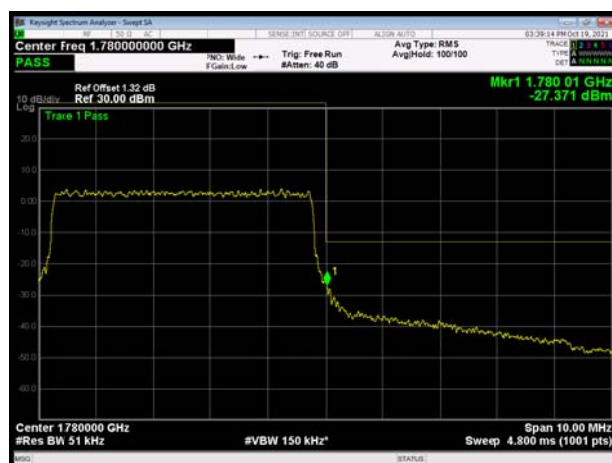
LTE Band 66 64QAM 5MHz CH-High, 1 RB



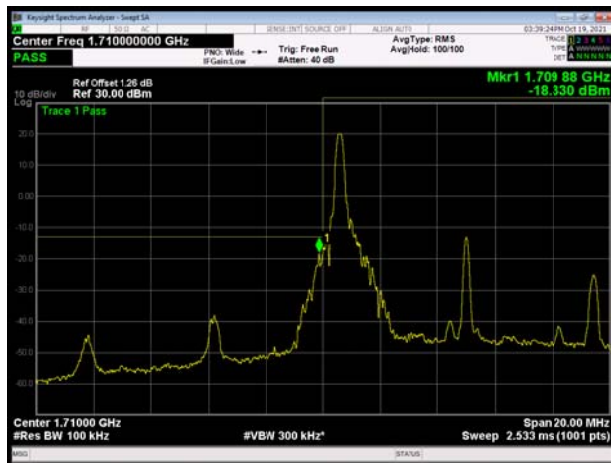
LTE Band 66 64QAM 5MHz CH-Low, 100%RB



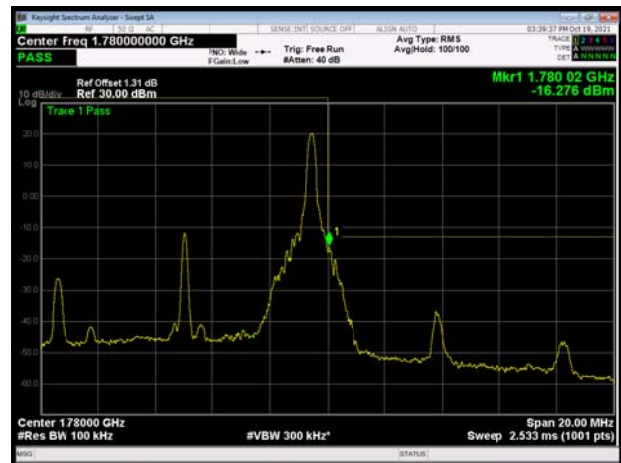
LTE Band 66 64QAM 5MHz CH-High, 100%RB



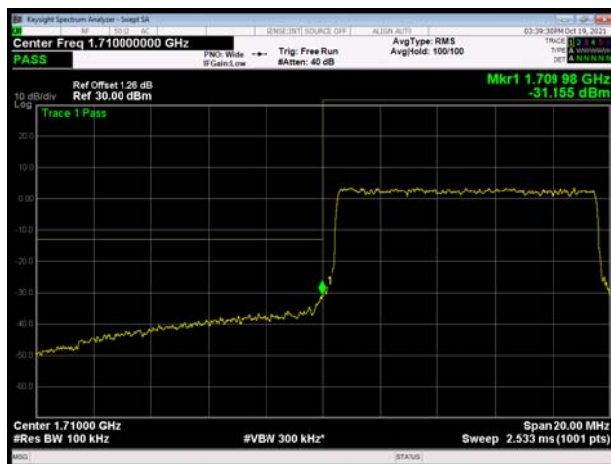
LTE Band 66 64QAM 10MHz CH-Low, 1 RB



LTE Band 66 64QAM 10MHz CH-High, 1 RB



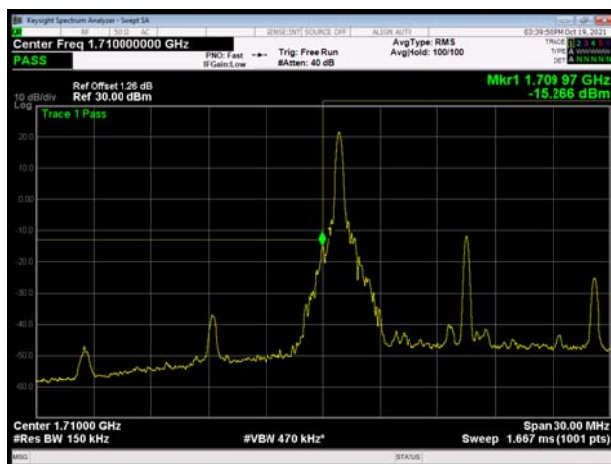
LTE Band 66 64QAM 10MHz CH-Low, 100%RB



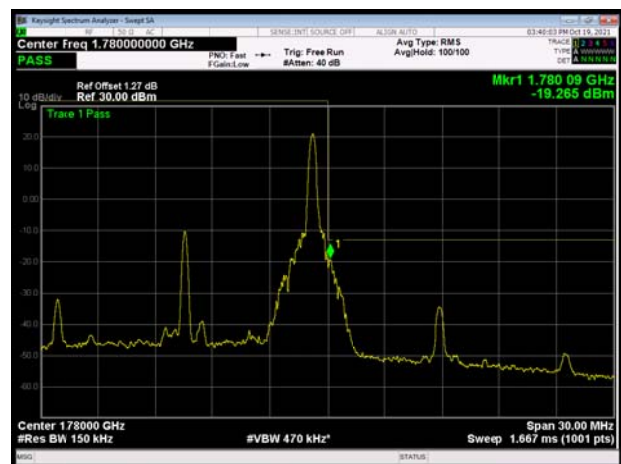
LTE Band 66 64QAM 10MHz CH-High, 100%RB



LTE Band 66 64QAM 15MHz CH-Low, 1 RB

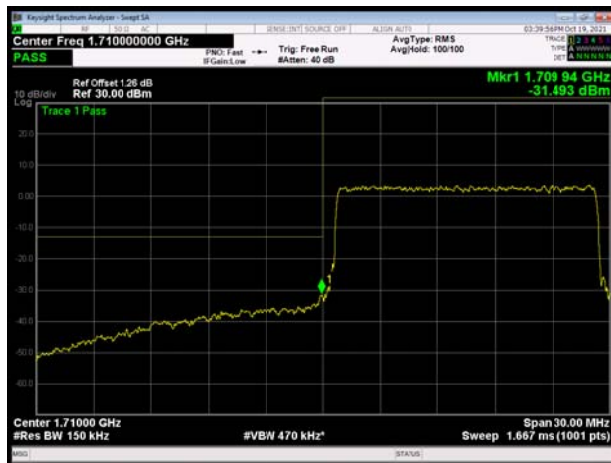


LTE Band 66 64QAM 15MHz CH-High, 1 RB





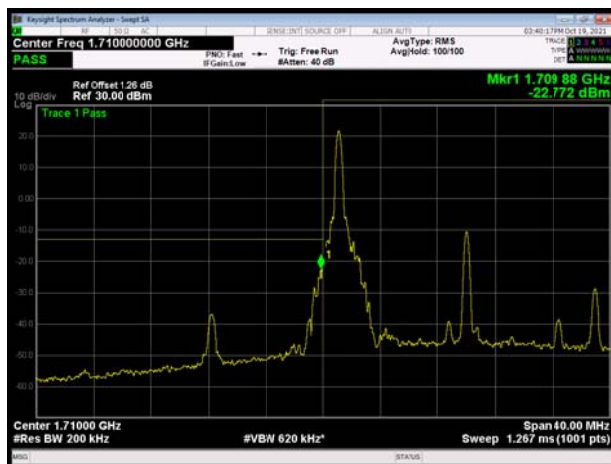
LTE Band 66 64QAM 15MHz CH-Low, 100%RB



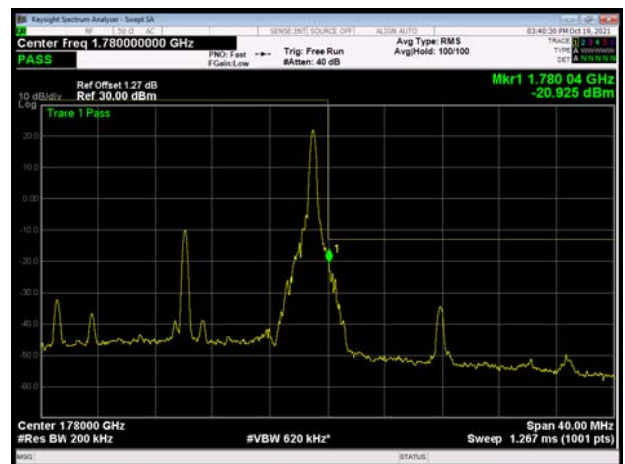
LTE Band 66 64QAM 15MHz CH-High, 100%RB



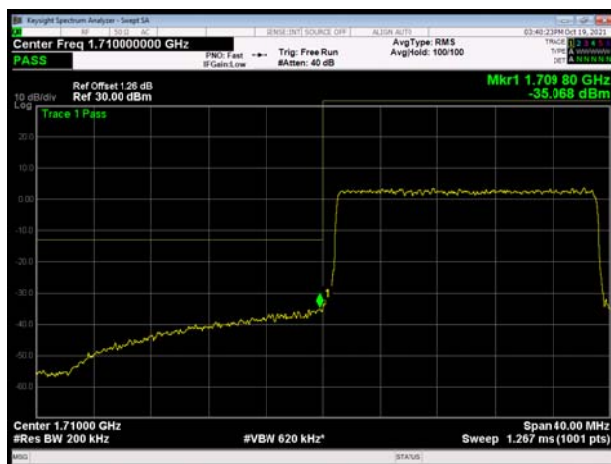
LTE Band 66 64QAM 20MHz CH-Low, 1 RB



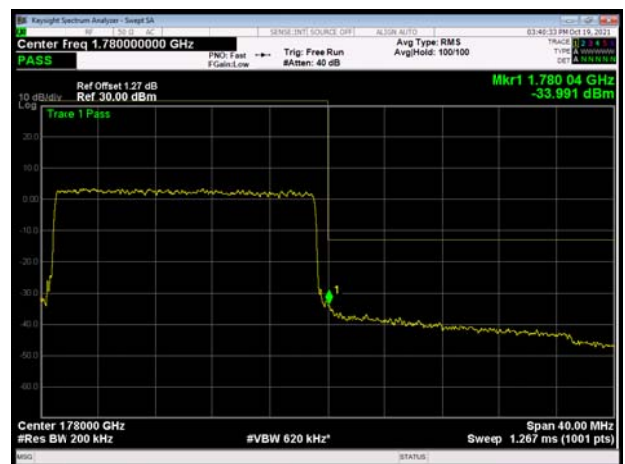
LTE Band 66 64QAM 20MHz CH-High, 1 RB



LTE Band 66 64QAM 20MHz CH-Low, 100%RB



LTE Band 66 64QAM 20MHz CH-High, 100%RB



5.4 Peak-to-Average Power Ratio (PAPR)

Ambient condition

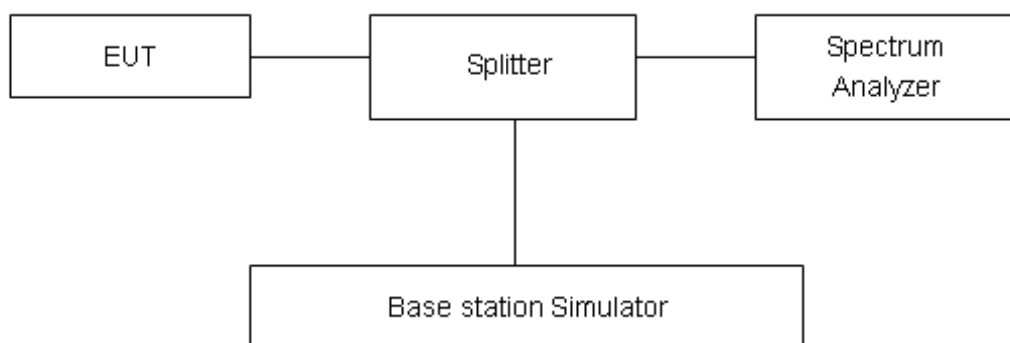
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

Test Setup



Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.



Test Results

LTE Band 12								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	23017	699.7	28.09	23.24	4.85	≤13	PASS
		23095	707.5	27.98	23.29	4.69	≤13	PASS
		23173	715.3	27.97	23.30	4.67	≤13	PASS
	3	23025	700.5	28.24	23.22	5.02	≤13	PASS
		23095	707.5	28.05	23.29	4.76	≤13	PASS
		23165	714.5	28.15	23.27	4.88	≤13	PASS
	5	23035	701.5	28.34	23.25	5.09	≤13	PASS
		23095	707.5	28.16	23.28	4.88	≤13	PASS
		23155	713.5	28.24	23.28	4.96	≤13	PASS
	10	23060	704	28.35	23.32	5.03	≤13	PASS
		23095	707.5	28.32	23.32	5.00	≤13	PASS
		23130	711	28.31	23.29	5.02	≤13	PASS
16QAM	1.4	23017	699.7	27.95	22.22	5.73	≤13	PASS
		23095	707.5	27.82	22.29	5.53	≤13	PASS
		23173	715.3	27.88	22.33	5.55	≤13	PASS
	3	23025	700.5	28.13	22.25	5.88	≤13	PASS
		23095	707.5	27.93	22.29	5.64	≤13	PASS
		23165	714.5	28.01	22.29	5.72	≤13	PASS
	5	23035	701.5	28.09	22.25	5.84	≤13	PASS
		23095	707.5	27.97	22.30	5.67	≤13	PASS
		23155	713.5	28.09	22.29	5.80	≤13	PASS
	10	23060	704	28.16	22.32	5.84	≤13	PASS
		23095	707.5	28.11	22.29	5.82	≤13	PASS
		23130	711	28.08	22.26	5.82	≤13	PASS
64QAM	1.4	23017	699.7	27.64	22.02	5.62	≤13	PASS
		23095	707.5	27.62	22.13	5.49	≤13	PASS
		23173	715.3	27.54	22.05	5.49	≤13	PASS
	3	23025	700.5	27.85	22.03	5.82	≤13	PASS
		23095	707.5	27.69	22.06	5.63	≤13	PASS
		23165	714.5	27.75	22.02	5.73	≤13	PASS
	5	23035	701.5	27.87	22.04	5.83	≤13	PASS
		23095	707.5	27.71	22.08	5.63	≤13	PASS
		23155	713.5	27.77	22.04	5.73	≤13	PASS
	10	23060	704	27.91	22.10	5.81	≤13	PASS
		23095	707.5	27.83	22.08	5.75	≤13	PASS
		23130	711	27.85	22.04	5.81	≤13	PASS



LTE Band 13								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23205	779.5	27.96	23.21	4.75	≤13	PASS
		23230	782	27.93	23.25	4.68	≤13	PASS
		23255	784.5	27.87	23.26	4.61	≤13	PASS
	10	23230	782	28.08	23.28	4.80	≤13	PASS
16QAM	5	23205	779.5	27.84	22.28	5.56	≤13	PASS
		23230	782	27.77	22.29	5.48	≤13	PASS
		23255	784.5	27.75	22.29	5.46	≤13	PASS
	10	23230	782	27.92	22.33	5.59	≤13	PASS
64QAM	5	23205	779.5	27.67	22.08	5.59	≤13	PASS
		23230	782	27.58	22.07	5.51	≤13	PASS
		23255	784.5	27.52	22.10	5.42	≤13	PASS
	10	23230	782	27.69	22.07	5.62	≤13	PASS

LTE Band 17								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	23755	706.5	28.03	23.28	4.75	≤13	PASS
		23790	710	28.06	23.30	4.76	≤13	PASS
		23825	713.5	28.12	23.29	4.83	≤13	PASS
	10	23780	709	28.15	23.29	4.86	≤13	PASS
		23790	710	28.19	23.28	4.91	≤13	PASS
		23800	711	28.16	23.27	4.89	≤13	PASS
16QAM	5	23755	706.5	27.81	22.27	5.54	≤13	PASS
		23790	710	27.87	22.30	5.57	≤13	PASS
		23825	713.5	27.91	22.29	5.62	≤13	PASS
	10	23780	709	27.96	22.27	5.69	≤13	PASS
		23790	710	27.98	22.27	5.71	≤13	PASS
		23800	711	27.96	22.26	5.70	≤13	PASS
64QAM	5	23755	706.5	27.60	22.01	5.59	≤13	PASS
		23790	710	27.58	22.04	5.54	≤13	PASS
		23825	713.5	27.67	22.03	5.64	≤13	PASS
	10	23780	709	27.77	22.07	5.70	≤13	PASS



		23790	710	27.75	22.05	5.70	≤13	PASS
		23800	711	27.79	22.05	5.74	≤13	PASS

LTE Band 66								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	131979	1710.7	27.73	23.35	4.38	≤13	PASS
		132322	1745	27.87	23.33	4.54	≤13	PASS
		132665	1779.3	27.67	23.41	4.26	≤13	PASS
	3	131987	1711.5	27.81	23.28	4.53	≤13	PASS
		132322	1745	27.89	23.25	4.64	≤13	PASS
		132657	1778.5	27.81	23.31	4.50	≤13	PASS
	5	131997	1712.5	27.94	23.24	4.70	≤13	PASS
		132322	1745	28.00	23.24	4.76	≤13	PASS
		132647	1777.5	27.94	23.32	4.62	≤13	PASS
	10	132022	1715	28.09	23.30	4.79	≤13	PASS
		132322	1745	28.03	23.27	4.76	≤13	PASS
		132622	1775	28.05	23.31	4.74	≤13	PASS
	15	132047	1717.5	28.56	23.42	5.14	≤13	PASS
		132322	1745	28.46	23.36	5.10	≤13	PASS
		132597	1772.5	28.48	23.36	5.12	≤13	PASS
	20	132072	1720	28.40	23.29	5.11	≤13	PASS
		132322	1745	28.32	23.23	5.09	≤13	PASS
		132572	1770	28.43	23.27	5.16	≤13	PASS
16QAM	1.4	131979	1710.7	27.53	22.27	5.26	≤13	PASS
		132322	1745	27.66	22.29	5.37	≤13	PASS
		132665	1779.3	27.56	22.37	5.19	≤13	PASS
	3	131987	1711.5	27.66	22.24	5.42	≤13	PASS
		132322	1745	27.75	22.26	5.49	≤13	PASS
		132657	1778.5	27.65	22.28	5.37	≤13	PASS
	5	131997	1712.5	27.75	22.24	5.51	≤13	PASS
		132322	1745	27.79	22.24	5.55	≤13	PASS
		132647	1777.5	27.80	22.32	5.48	≤13	PASS
	10	132022	1715	27.88	22.28	5.60	≤13	PASS
		132322	1745	27.85	22.28	5.57	≤13	PASS
		132622	1775	27.87	22.28	5.59	≤13	PASS
	15	132047	1717.5	28.17	22.36	5.81	≤13	PASS
		132322	1745	28.08	22.31	5.77	≤13	PASS
		132597	1772.5	28.13	22.32	5.81	≤13	PASS



	20	132072	1720	28.17	22.27	5.90	≤13	PASS
		132322	1745	28.04	22.21	5.83	≤13	PASS
		132572	1770	28.14	22.25	5.89	≤13	PASS
64QAM	1.4	131979	1710.7	27.07	21.79	5.28	≤13	PASS
		132322	1745	27.23	21.80	5.43	≤13	PASS
		132665	1779.3	27.11	21.88	5.23	≤13	PASS
	3	131987	1711.5	27.27	21.75	5.52	≤13	PASS
		132322	1745	27.33	21.74	5.59	≤13	PASS
		132657	1778.5	27.25	21.82	5.43	≤13	PASS
	5	131997	1712.5	27.32	21.79	5.53	≤13	PASS
		132322	1745	27.33	21.75	5.58	≤13	PASS
		132647	1777.5	27.39	21.82	5.57	≤13	PASS
	10	132022	1715	27.50	21.83	5.67	≤13	PASS
		132322	1745	27.39	21.77	5.62	≤13	PASS
		132622	1775	27.41	21.81	5.60	≤13	PASS
	15	132047	1717.5	27.73	21.87	5.86	≤13	PASS
		132322	1745	27.64	21.84	5.80	≤13	PASS
		132597	1772.5	27.63	21.81	5.82	≤13	PASS
	20	132072	1720	27.71	21.78	5.93	≤13	PASS
		132322	1745	27.59	21.74	5.85	≤13	PASS
		132572	1770	27.63	21.74	5.89	≤13	PASS

5.5 Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +60°C in 10°C step size.

(1) With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +60°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

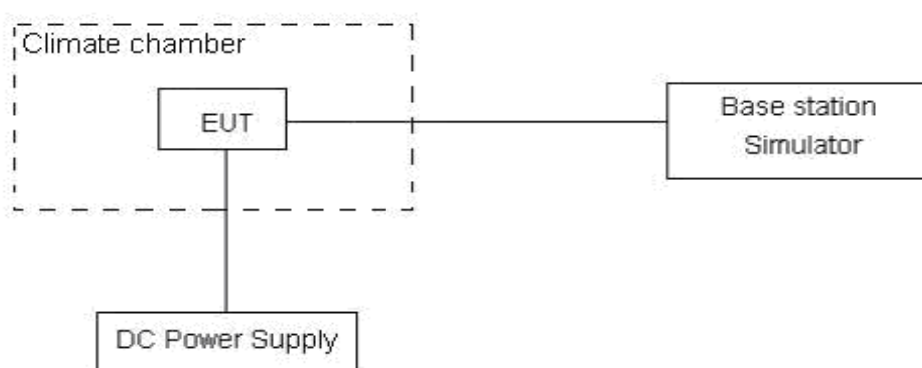
Frequency Stability (Voltage Variation)

The frequency stability shall be measured with variation of primary supply voltage as follows:

Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 4.45 V and 3.6 V, with a nominal voltage of 3.87V.

Test setup



Limits

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3$, $U = 0.01\text{ppm}$.



Test Result

LTE Band 12								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	9.53	12.01	8.33	0.01347	0.01698	0.01177	PASS
Extreme (60℃)		12.55	13.07	5.80	0.01774	0.01847	0.00820	PASS
Extreme (50℃)		17.20	5.97	14.09	0.02431	0.00843	0.01992	PASS
Extreme (40℃)		4.59	15.74	3.10	0.00649	0.02224	0.00438	PASS
Extreme (30℃)		17.58	4.13	10.63	0.02485	0.00584	0.01503	PASS
Extreme (20℃)		3.27	17.17	1.75	0.00462	0.02426	0.00248	PASS
Extreme (10℃)		11.30	3.79	1.00	0.01597	0.00536	0.00142	PASS
Extreme (0℃)		15.08	11.92	3.63	0.02132	0.01685	0.00512	PASS
Extreme (-10℃)		13.88	11.58	14.40	0.01962	0.01636	0.02035	PASS
Extreme (-20℃)		8.47	17.38	4.22	0.01198	0.02457	0.00596	PASS
Extreme (-30℃)		8.84	15.53	13.09	0.01250	0.02195	0.01850	PASS
25℃	LV	2.91	14.80	3.77	0.00411	0.02092	0.00533	PASS
	HV	12.35	11.96	10.12	0.01746	0.01690	0.01430	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	6.71	13.04	9.37	0.00949	0.01843	0.01324	PASS
Extreme (60℃)		6.13	2.56	5.27	0.00866	0.00361	0.00744	PASS
Extreme (50℃)		10.24	9.49	11.10	0.01447	0.01342	0.01569	PASS
Extreme (40℃)		4.15	14.81	17.13	0.00587	0.02093	0.02421	PASS
Extreme (30℃)		17.64	3.51	11.83	0.02494	0.00496	0.01672	PASS
Extreme (20℃)		12.49	4.21	7.12	0.01765	0.00595	0.01006	PASS
Extreme (10℃)		14.01	3.56	2.70	0.01980	0.00504	0.00381	PASS
Extreme (0℃)		17.81	11.91	4.88	0.02517	0.01684	0.00689	PASS
Extreme (-10℃)		12.16	9.80	2.15	0.01719	0.01386	0.00303	PASS
Extreme (-20℃)		2.08	12.10	9.71	0.00293	0.01710	0.01373	PASS
Extreme (-30℃)		2.02	6.15	7.58	0.00286	0.00869	0.01071	PASS
25℃	LV	9.78	17.44	12.03	0.01383	0.02465	0.01700	PASS
	HV	15.26	3.67	15.82	0.02156	0.00519	0.02235	PASS



Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	17.26	9.03	13.33	0.02439	0.01276	0.01884	PASS
Extreme (60℃)		4.16	16.68	1.10	0.00588	0.02358	0.00155	PASS
Extreme (50℃)		12.61	16.00	14.79	0.01782	0.02261	0.02090	PASS
Extreme (40℃)		10.00	8.60	16.28	0.01413	0.01215	0.02301	PASS
Extreme (30℃)		8.30	12.81	12.84	0.01173	0.01810	0.01815	PASS
Extreme (20℃)		9.81	13.24	3.05	0.01386	0.01871	0.00430	PASS
Extreme (10℃)		16.57	14.79	9.29	0.02342	0.02090	0.01312	PASS
Extreme (0℃)		3.42	11.57	11.14	0.00484	0.01636	0.01575	PASS
Extreme (-10℃)		14.78	1.91	7.92	0.02089	0.00270	0.01120	PASS
Extreme (-20℃)		9.16	12.38	10.90	0.01295	0.01750	0.01541	PASS
Extreme (-30℃)		4.26	9.00	12.80	0.00602	0.01272	0.01809	PASS
25℃	LV	15.58	15.92	3.41	0.02202	0.02250	0.00481	PASS
	HV	8.57	2.20	11.97	0.01211	0.00311	0.01692	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	15.23	4.03	8.17	0.02153	0.00569	0.01155	PASS
Extreme (60℃)		2.06	10.81	9.27	0.00291	0.01528	0.01310	PASS
Extreme (50℃)		1.06	15.56	12.75	0.00149	0.02199	0.01802	PASS
Extreme (40℃)		10.70	16.42	8.24	0.01512	0.02321	0.01165	PASS
Extreme (30℃)		15.29	13.15	13.45	0.02160	0.01859	0.01900	PASS
Extreme (20℃)		1.60	1.16	15.38	0.00226	0.00163	0.02174	PASS
Extreme (10℃)		1.99	16.51	15.34	0.00282	0.02333	0.02169	PASS
Extreme (0℃)		11.69	13.10	13.26	0.01653	0.01851	0.01875	PASS
Extreme (-10℃)		1.77	9.53	14.91	0.00251	0.01346	0.02107	PASS
Extreme (-20℃)		3.71	1.27	5.38	0.00524	0.00179	0.00760	PASS
Extreme (-30℃)		5.75	7.66	16.11	0.00813	0.01082	0.02277	PASS
25℃	LV	11.14	4.70	12.91	0.01574	0.00664	0.01824	PASS
	HV	7.14	5.32	4.41	0.01008	0.00753	0.00623	PASS



LTE Band13								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	4.95	12.57	14.28	0.00633	0.01607	0.01827	PASS
Extreme (60℃)		13.95	11.95	1.28	0.01784	0.01528	0.00164	PASS
Extreme (50℃)		16.25	16.09	8.00	0.02078	0.02058	0.01023	PASS
Extreme (40℃)		6.23	13.63	4.68	0.00797	0.01744	0.00598	PASS
Extreme (30℃)		7.57	17.17	10.96	0.00968	0.02196	0.01402	PASS
Extreme (20℃)		11.50	15.28	4.01	0.01470	0.01954	0.00513	PASS
Extreme (10℃)		2.20	6.68	15.71	0.00281	0.00854	0.02009	PASS
Extreme (0℃)		2.90	11.68	5.67	0.00370	0.01494	0.00726	PASS
Extreme (-10℃)		3.75	13.11	4.93	0.00479	0.01677	0.00630	PASS
Extreme (-20℃)		14.02	9.84	9.60	0.01793	0.01259	0.01228	PASS
Extreme (-30℃)		9.89	17.81	2.61	0.01264	0.02278	0.00334	PASS
25℃	LV	9.42	16.71	3.40	0.01204	0.02137	0.00435	PASS
	HV	9.37	17.46	3.22	0.01198	0.02233	0.00411	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	9.30	15.85	6.44	0.01189	0.02026	0.00823	PASS
Extreme (60℃)		10.30	8.97	14.44	0.01317	0.01147	0.01846	PASS
Extreme (50℃)		6.16	9.97	10.70	0.00787	0.01275	0.01369	PASS
Extreme (40℃)		7.29	1.88	7.43	0.00932	0.00241	0.00950	PASS
Extreme (30℃)		16.65	12.79	8.67	0.02130	0.01635	0.01108	PASS
Extreme (20℃)		16.84	13.68	15.59	0.02153	0.01750	0.01994	PASS
Extreme (10℃)		11.28	1.24	17.82	0.01443	0.00159	0.02279	PASS
Extreme (0℃)		3.39	14.07	6.45	0.00434	0.01799	0.00825	PASS
Extreme (-10℃)		2.10	10.26	7.17	0.00269	0.01311	0.00917	PASS
Extreme (-20℃)		1.11	6.25	8.83	0.00142	0.00799	0.01129	PASS
Extreme (-30℃)		8.74	2.16	10.84	0.01118	0.00276	0.01386	PASS
25℃	LV	7.29	7.86	16.08	0.00932	0.01005	0.02057	PASS
	HV	3.60	12.18	13.25	0.00460	0.01558	0.01694	PASS



LTE Band17								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	12.20	10.87	1.38	0.01719	0.01531	0.00195	PASS
Extreme (60℃)		17.20	8.93	6.38	0.02423	0.01258	0.00899	PASS
Extreme (50℃)		14.82	7.90	9.65	0.02088	0.01113	0.01359	PASS
Extreme (40℃)		16.93	5.16	14.34	0.02384	0.00727	0.02019	PASS
Extreme (30℃)		2.09	9.19	15.28	0.00294	0.01295	0.02152	PASS
Extreme (20℃)		16.00	4.09	7.46	0.02254	0.00577	0.01050	PASS
Extreme (10℃)		12.58	16.18	15.57	0.01771	0.02280	0.02193	PASS
Extreme (0℃)		13.55	10.18	4.34	0.01909	0.01434	0.00611	PASS
Extreme (-10℃)		13.93	4.94	17.86	0.01962	0.00696	0.02515	PASS
Extreme (-20℃)		17.86	1.75	9.76	0.02515	0.00247	0.01375	PASS
Extreme (-30℃)		11.82	3.30	10.55	0.01665	0.00465	0.01486	PASS
25℃	LV	1.18	3.51	9.88	0.00166	0.00494	0.01392	PASS
	HV	1.17	13.72	17.26	0.00165	0.01932	0.02431	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	17.45	1.07	8.89	0.02458	0.00150	0.01251	PASS
Extreme (60℃)		13.45	16.12	3.89	0.01894	0.02270	0.00547	PASS
Extreme (50℃)		7.28	8.93	2.78	0.01026	0.01258	0.00391	PASS
Extreme (40℃)		5.49	12.06	5.97	0.00773	0.01699	0.00841	PASS
Extreme (30℃)		12.75	14.31	17.88	0.01796	0.02015	0.02518	PASS
Extreme (20℃)		8.32	14.87	11.55	0.01172	0.02094	0.01626	PASS
Extreme (10℃)		7.19	9.43	9.20	0.01013	0.01328	0.01296	PASS
Extreme (0℃)		1.30	7.13	3.78	0.00183	0.01005	0.00532	PASS
Extreme (-10℃)		8.14	13.57	9.96	0.01147	0.01912	0.01402	PASS
Extreme (-20℃)		9.61	10.01	4.59	0.01354	0.01410	0.00647	PASS
Extreme (-30℃)		1.26	5.67	8.58	0.00178	0.00799	0.01208	PASS
25℃	LV	8.45	9.82	12.26	0.01190	0.01383	0.01727	PASS
	HV	8.92	1.75	11.36	0.01257	0.00247	0.01600	PASS



LTE Band66								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	7.00	8.00	10.00	0.00401	0.00458	0.00573	PASS
Extreme (60℃)		1.00	6.00	15.00	0.00057	0.00344	0.00860	PASS
Extreme (50℃)		5.00	13.00	7.00	0.00287	0.00745	0.00401	PASS
Extreme (40℃)		5.00	3.00	13.00	0.00287	0.00172	0.00745	PASS
Extreme (30℃)		14.00	12.00	16.00	0.00802	0.00688	0.00917	PASS
Extreme (20℃)		12.00	11.00	15.00	0.00688	0.00630	0.00860	PASS
Extreme (10℃)		16.00	14.00	8.00	0.00917	0.00802	0.00458	PASS
Extreme (0℃)		9.00	10.00	11.00	0.00516	0.00573	0.00630	PASS
Extreme (-10℃)		12.00	15.00	2.00	0.00688	0.00860	0.00115	PASS
Extreme (-20℃)		13.00	15.00	2.00	0.00745	0.00860	0.00115	PASS
Extreme (-30℃)		10.00	14.00	10.00	0.00573	0.00802	0.00573	PASS
25℃	LV	7.00	9.00	17.00	0.00401	0.00516	0.00974	PASS
	HV	3.00	15.00	16.00	0.00172	0.00860	0.00917	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	13.00	16.00	3.00	0.00745	0.00917	0.00172	PASS
Extreme (60℃)		15.00	16.00	4.00	0.00860	0.00917	0.00229	PASS
Extreme (50℃)		3.00	11.00	6.00	0.00172	0.00630	0.00344	PASS
Extreme (40℃)		7.00	12.00	3.00	0.00401	0.00688	0.00172	PASS
Extreme (30℃)		12.00	8.00	6.00	0.00688	0.00458	0.00344	PASS
Extreme (20℃)		4.00	13.00	11.00	0.00229	0.00745	0.00630	PASS
Extreme (10℃)		15.00	6.00	10.00	0.00860	0.00344	0.00573	PASS
Extreme (0℃)		5.00	4.00	4.00	0.00287	0.00229	0.00229	PASS
Extreme (-10℃)		9.00	17.00	3.00	0.00516	0.00974	0.00172	PASS
Extreme (-20℃)		3.00	16.00	12.00	0.00172	0.00917	0.00688	PASS
Extreme (-30℃)		12.00	10.00	13.00	0.00688	0.00573	0.00745	PASS
25℃	LV	14.00	16.00	17.00	0.00802	0.00917	0.00974	PASS
	HV	3.00	9.00	13.00	0.00172	0.00516	0.00745	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	14.00	13.00	7.00	0.00802	0.00745	0.00401	PASS



Extreme (60℃)		4.00	10.00	12.00	0.00229	0.00573	0.00688	PASS
Extreme (50℃)		9.00	5.00	8.00	0.00516	0.00287	0.00458	PASS
Extreme (40℃)		3.00	6.00	8.00	0.00172	0.00344	0.00458	PASS
Extreme (30℃)		3.00	6.00	11.00	0.00172	0.00344	0.00630	PASS
Extreme (20℃)		12.00	11.00	11.00	0.00688	0.00630	0.00630	PASS
Extreme (10℃)		7.00	7.00	14.00	0.00401	0.00401	0.00802	PASS
Extreme (0℃)		16.00	14.00	4.00	0.00917	0.00802	0.00229	PASS
Extreme (-10℃)		9.00	4.00	4.00	0.00516	0.00229	0.00229	PASS
Extreme (-20℃)		9.00	17.00	17.00	0.00516	0.00974	0.00974	PASS
Extreme (-30℃)		12.00	17.00	10.00	0.00688	0.00974	0.00573	PASS
25℃	LV	14.00	4.00	3.00	0.00802	0.00229	0.00172	PASS
	HV	4.00	5.00	13.00	0.00229	0.00287	0.00745	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	17.00	17.00	15.00	0.00974	0.00974	0.00860	PASS
Extreme (60℃)		11.00	15.00	2.00	0.00630	0.00860	0.00115	PASS
Extreme (50℃)		2.00	5.00	12.00	0.00115	0.00287	0.00688	PASS
Extreme (40℃)		1.00	8.00	2.00	0.00057	0.00458	0.00115	PASS
Extreme (30℃)		15.00	1.00	13.00	0.00860	0.00057	0.00745	PASS
Extreme (20℃)		6.00	10.00	8.00	0.00344	0.00573	0.00458	PASS
Extreme (10℃)		11.00	2.00	6.00	0.00630	0.00115	0.00344	PASS
Extreme (0℃)		13.00	8.00	10.00	0.00745	0.00458	0.00573	PASS
Extreme (-10℃)		4.00	13.00	13.00	0.00229	0.00745	0.00745	PASS
Extreme (-20℃)		4.00	12.00	8.00	0.00229	0.00688	0.00458	PASS
Extreme (-30℃)		3.00	14.00	2.00	0.00172	0.00802	0.00115	PASS
25℃	LV	17.00	6.00	16.00	0.00974	0.00344	0.00917	PASS
	HV	2.00	10.00	4.00	0.00115	0.00573	0.00229	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	7.00	14.00	17.00	0.00401	0.00802	0.00974	PASS
Extreme (60℃)		8.00	3.00	11.00	0.00458	0.00172	0.00630	PASS
Extreme (50℃)		11.00	2.00	16.00	0.00630	0.00115	0.00917	PASS
Extreme (40℃)		6.00	9.00	13.00	0.00344	0.00516	0.00745	PASS
Extreme (30℃)		5.00	16.00	11.00	0.00287	0.00917	0.00630	PASS
Extreme (20℃)		3.00	9.00	4.00	0.00172	0.00516	0.00229	PASS
Extreme (10℃)		14.00	14.00	15.00	0.00802	0.00802	0.00860	PASS
Extreme (0℃)		4.00	10.00	8.00	0.00229	0.00573	0.00458	PASS



Extreme (-10℃)		8.00	14.00	17.00	0.00458	0.00802	0.00974	PASS
Extreme (-20℃)		4.00	10.00	8.00	0.00229	0.00573	0.00458	PASS
Extreme (-30℃)		8.00	14.00	17.00	0.00458	0.00802	0.00974	PASS
25℃	LV	2.00	7.00	11.00	0.00115	0.00401	0.00630	PASS
	HV	10.00	1.00	5.00	0.00573	0.00057	0.00287	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	15.00	12.00	17.00	0.00860	0.00688	0.00974	PASS
Extreme (60℃)		12.00	15.00	14.00	0.00688	0.00860	0.00802	PASS
Extreme (50℃)		7.00	1.00	16.00	0.00401	0.00057	0.00917	PASS
Extreme (40℃)		11.00	2.00	10.00	0.00630	0.00115	0.00573	PASS
Extreme (30℃)		2.00	15.00	2.00	0.00115	0.00860	0.00115	PASS
Extreme (20℃)		2.00	16.00	2.00	0.00115	0.00917	0.00115	PASS
Extreme (10℃)		13.00	12.00	13.00	0.00745	0.00688	0.00745	PASS
Extreme (0℃)		10.00	13.00	14.00	0.00573	0.00745	0.00802	PASS
Extreme (-10℃)		5.00	4.00	8.00	0.00287	0.00229	0.00458	PASS
Extreme (-20℃)		3.00	7.00	4.00	0.00172	0.00401	0.00229	PASS
Extreme (-30℃)		16.00	17.00	13.00	0.00917	0.00974	0.00745	PASS
25℃	LV	10.00	12.00	16.00	0.00573	0.00688	0.00917	PASS
	HV	3.00	12.00	2.00	0.00172	0.00688	0.00115	PASS

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),

RBW is set to 10 kHz (0.15 MHz~ 30 MHz)

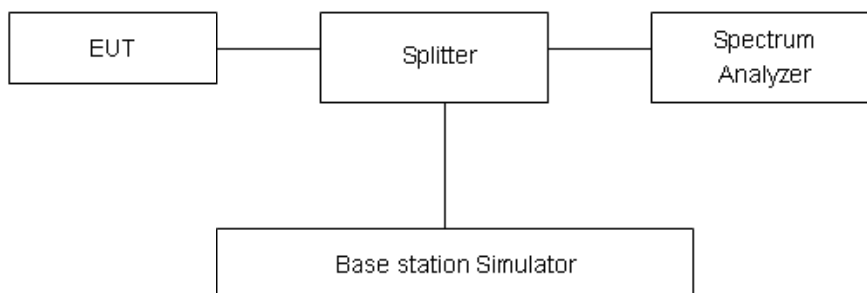
RBW is set to 100 kHz (30MHz~1000 MHz)

RBW is set to 1000 kHz (above 1000MHz)

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, 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..”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least

30 kHz may be employed.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Part 27.53(h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

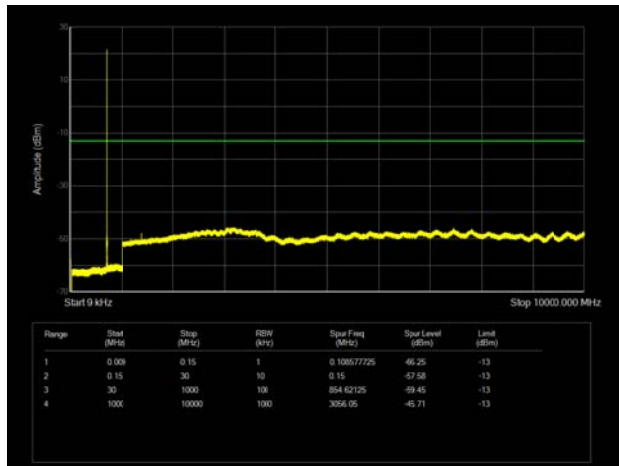


Test Result

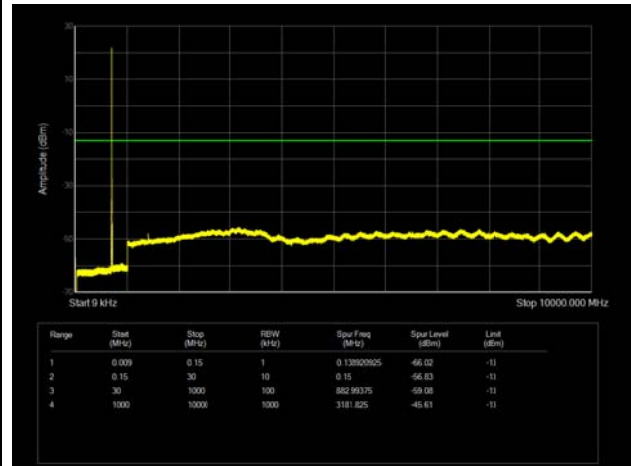
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

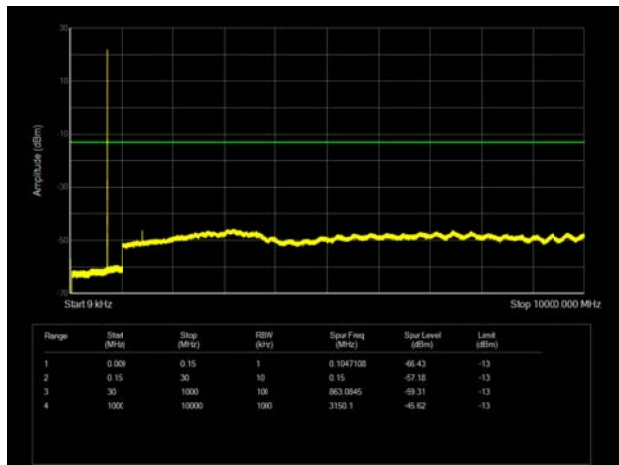
LTE Band 12 1.4MHz CH-Low 9kHz ~10GHz



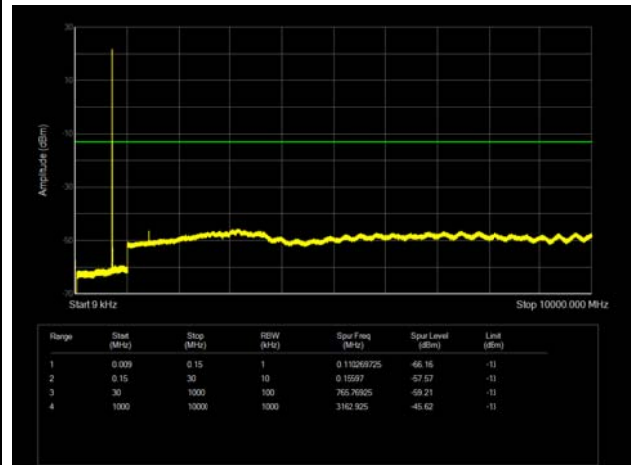
LTE Band 12 3MHz CH-Low 9kHz ~10GHz



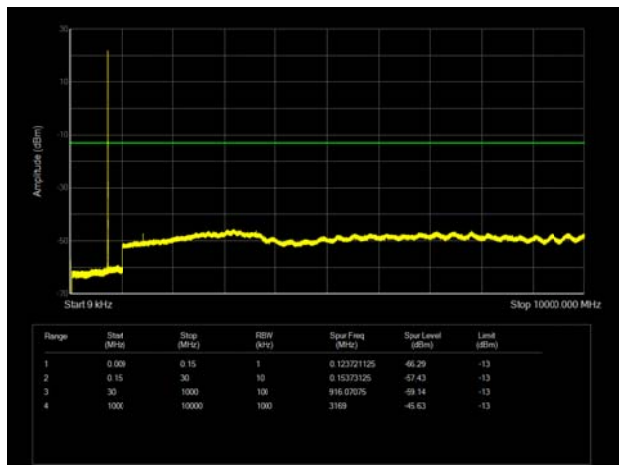
LTE Band 12 1.4MHz CH- Middle 9kHz ~10GHz



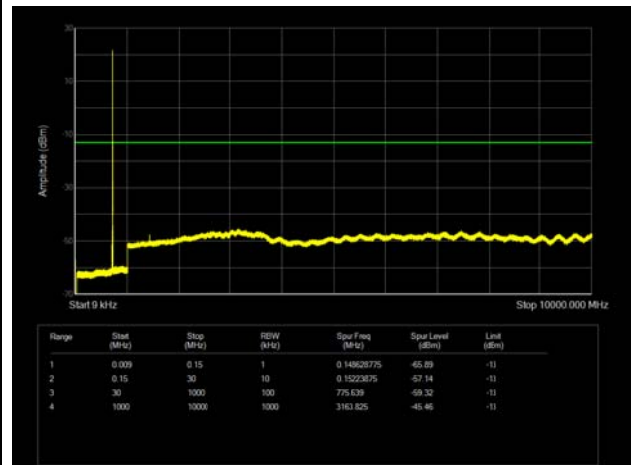
LTE Band 12 3MHz CH- Middle 9kHz ~10GHz



LTE Band 12 1.4MHz CH-High 9kHz ~10GHz

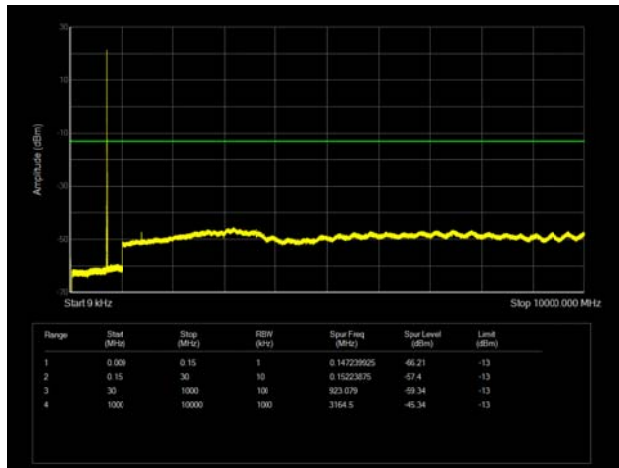


LTE Band 12 3MHz CH-High 9kHz ~10GHz

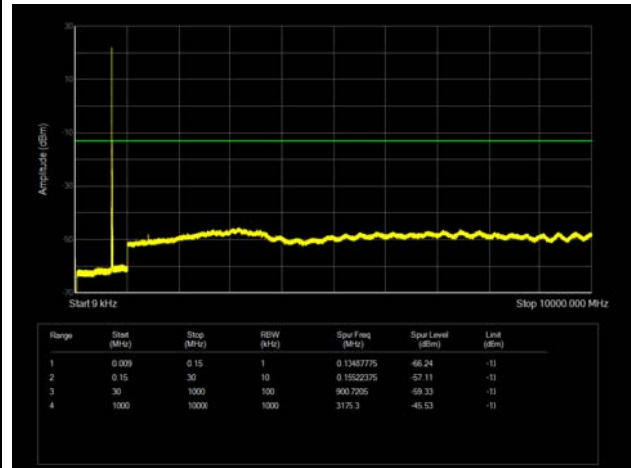




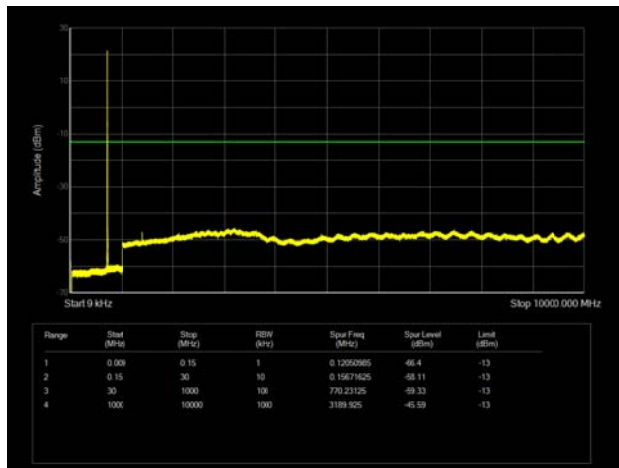
LTE Band 12 5MHz CH-Low 9kHz ~10GHz



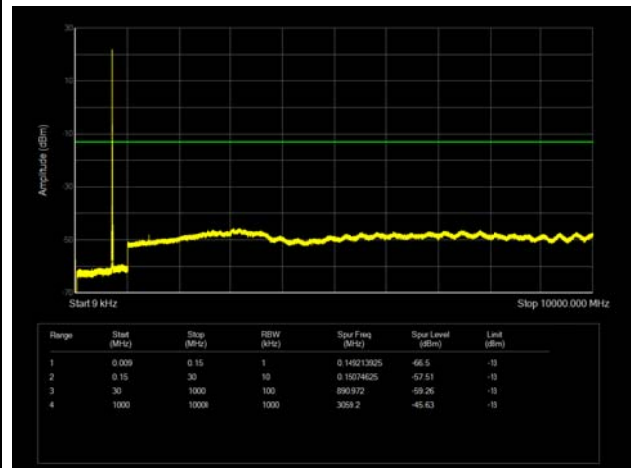
LTE Band 12 10MHz CH-Low 9kHz ~10GHz



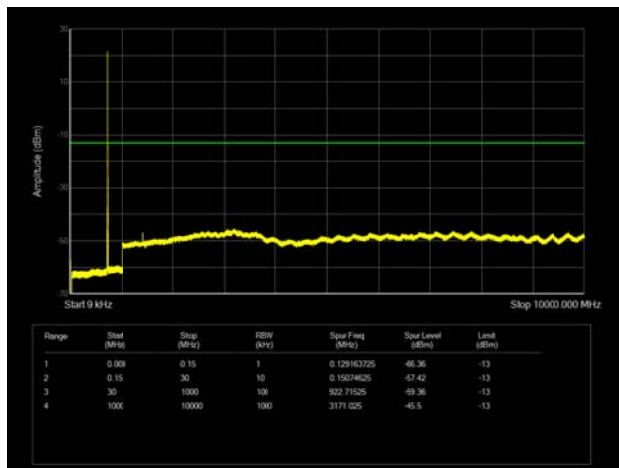
LTE Band 12 5MHz CH- Middle 9kHz ~10GHz



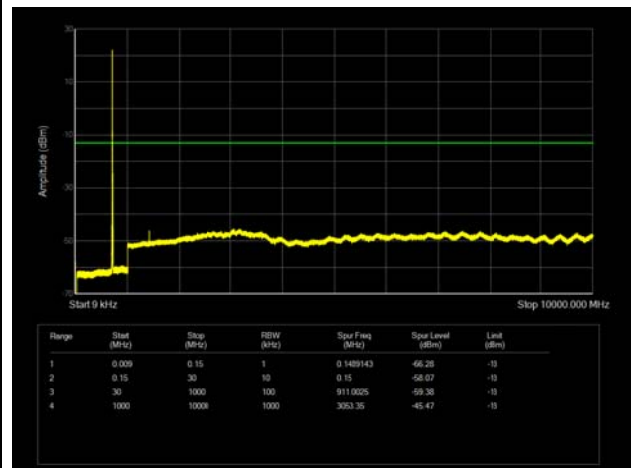
LTE Band 12 10MHz CH- Middle 9kHz ~10GHz



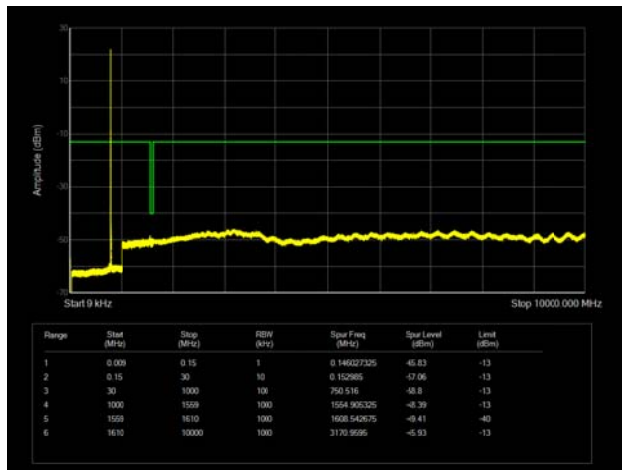
LTE Band 12 5MHz CH-High 9kHz ~10GHz



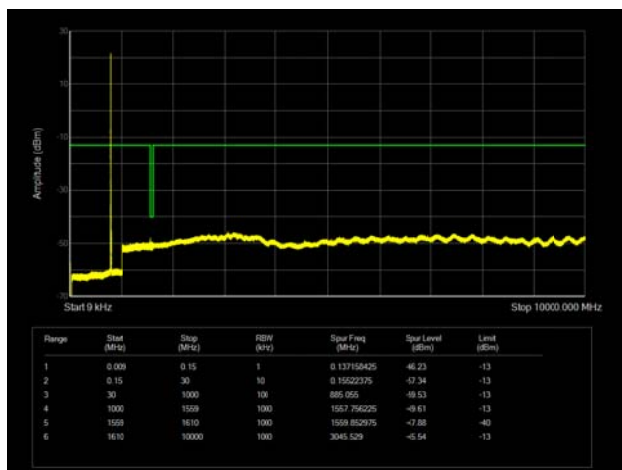
LTE Band 12 10MHz CH-High 9kHz ~10GHz



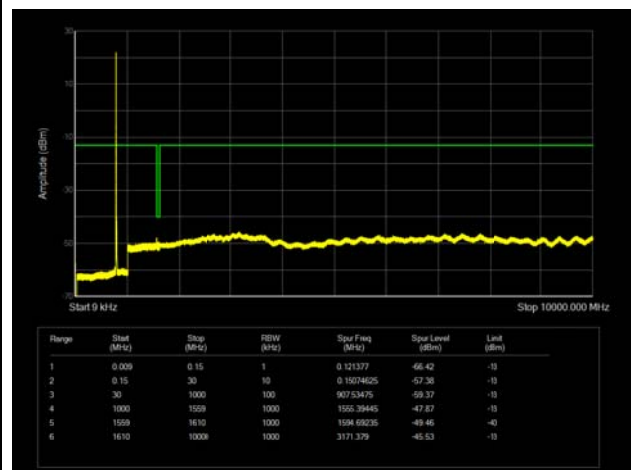
LTE Band 13 5MHz CH-Low 9kHz ~10GHz



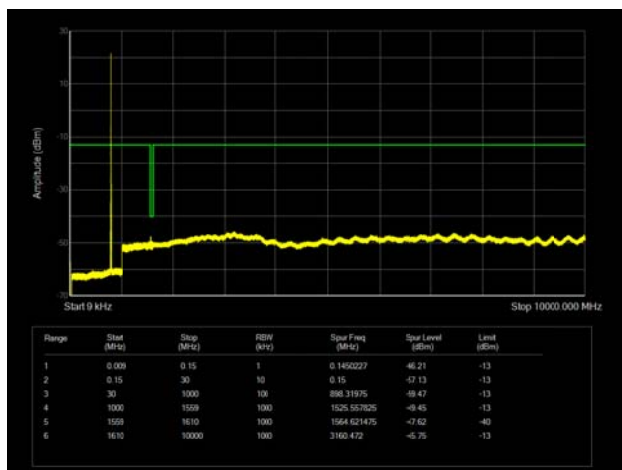
LTE Band 13 5MHz CH-Middle 9kHz ~10GHz



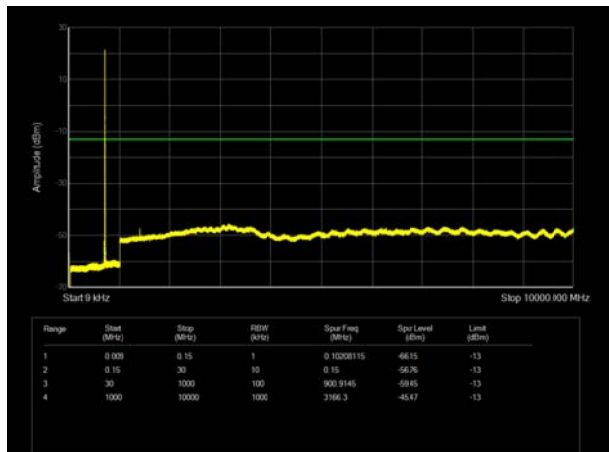
LTE Band 13 10MHz CH-Middle 9kHz ~10GHz



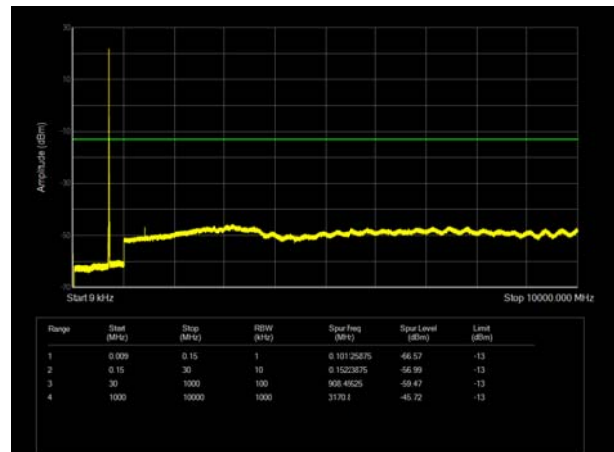
LTE Band 13 5MHz CH-High 9kHz ~10GHz



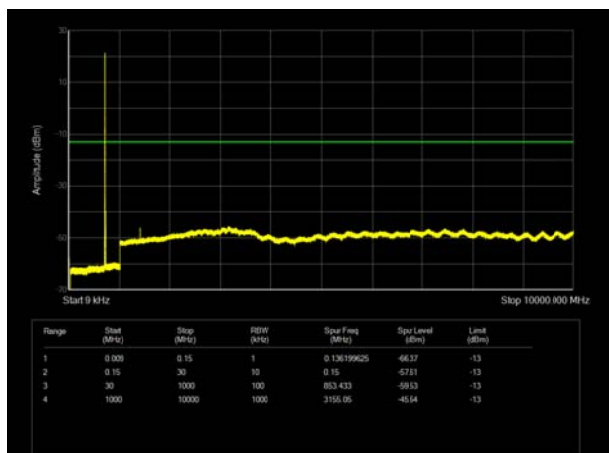
LTE Band 17 5MHz CH-Low 9kHz ~10GHz



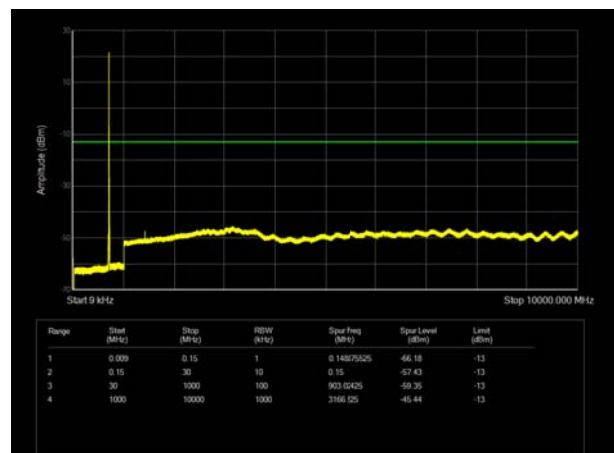
LTE Band 17 10MHz CH-Low 9kHz ~10GHz



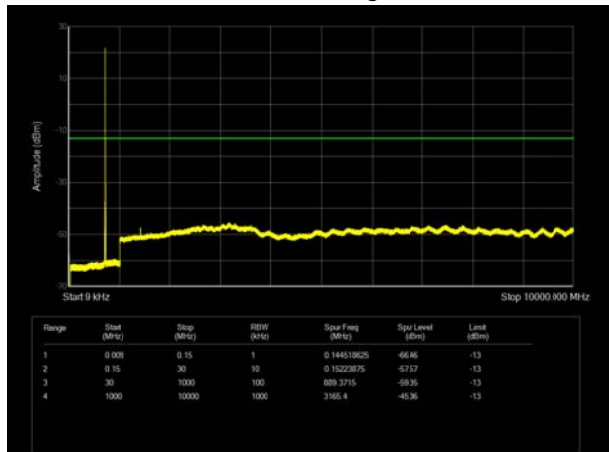
LTE Band 17 5MHz CH-Middle 9kHz ~10GHz



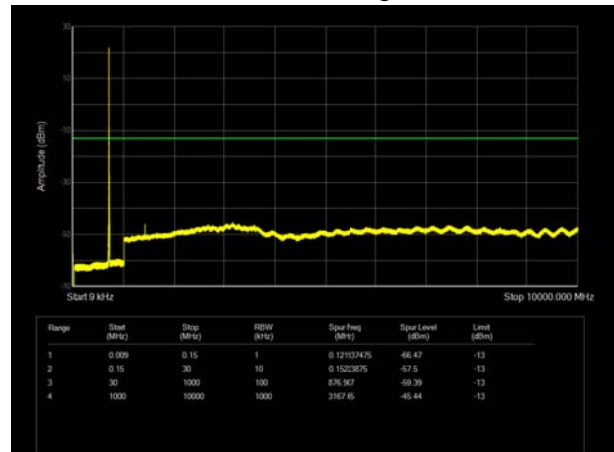
LTE Band 17 10MHz CH-Middle 9kHz ~10GHz



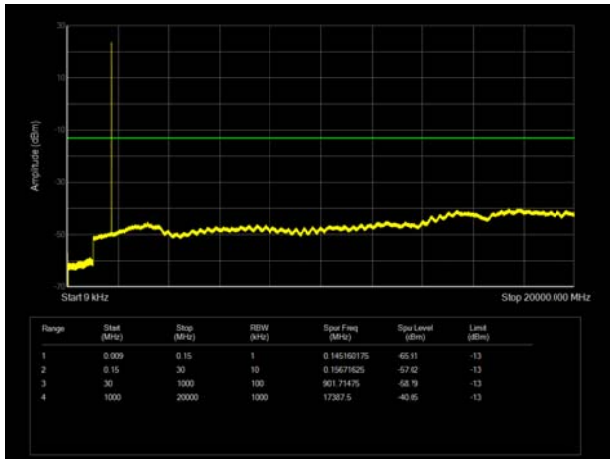
LTE Band 17 5MHz CH-High 9kHz ~10GHz



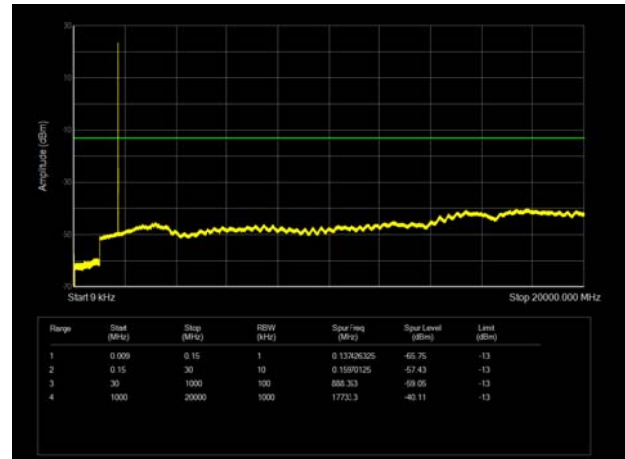
LTE Band 17 10MHz CH-High 9kHz ~10GHz



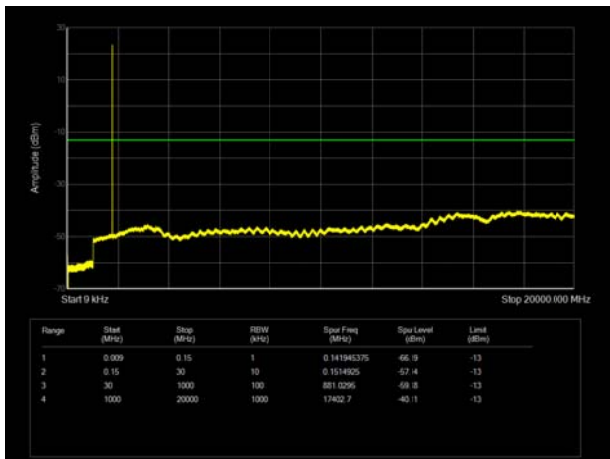
LTE Band 66 1.4MHz CH-Low 9kHz ~20GHz



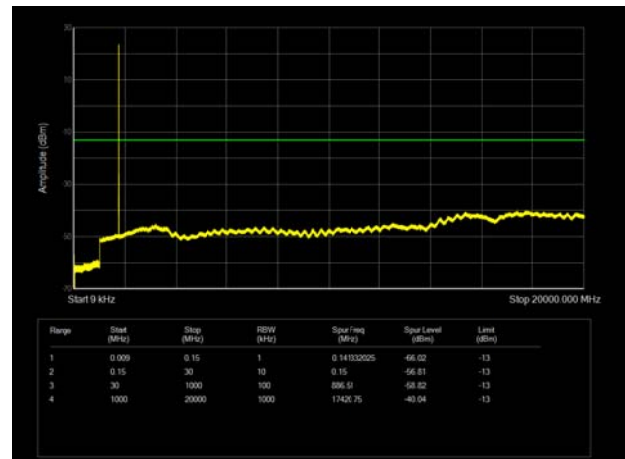
LTE Band 66 3MHz CH-Low 9kHz ~20GHz



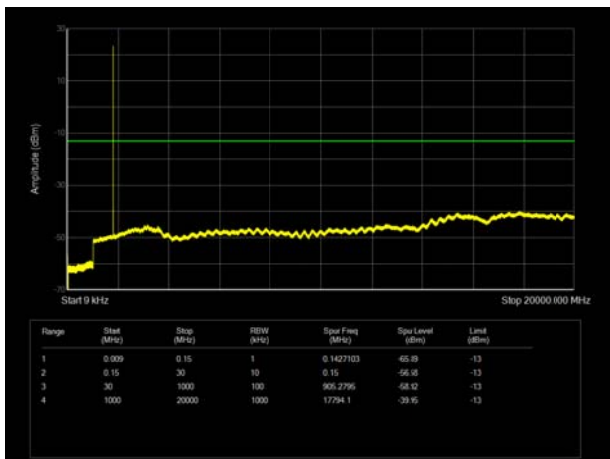
LTE Band 66 1.4MHz CH-Middle 9kHz ~20GHz



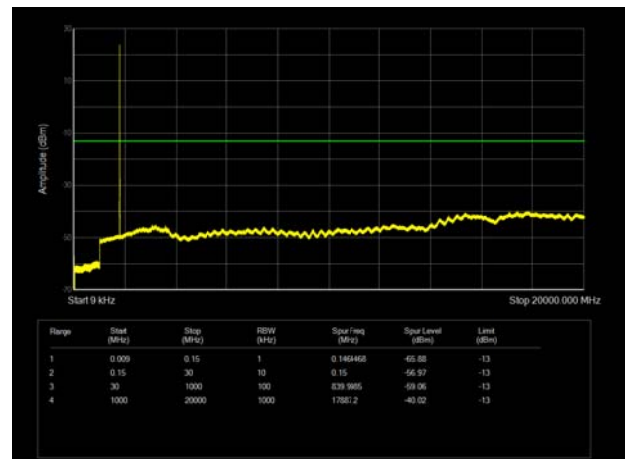
LTE Band 66 3MHz CH-Middle 9kHz ~20GHz



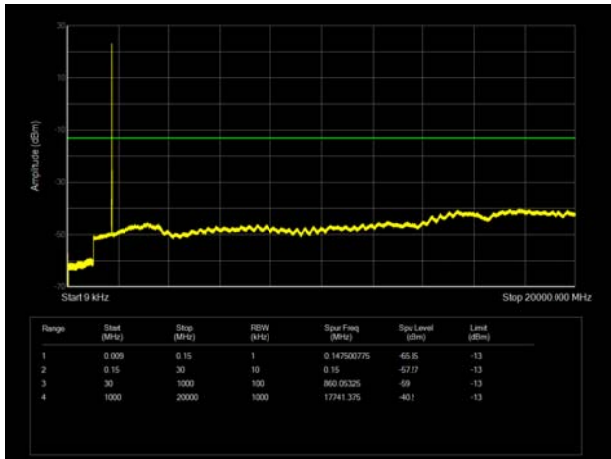
LTE Band 66 1.4MHz CH-High 9kHz ~20GHz



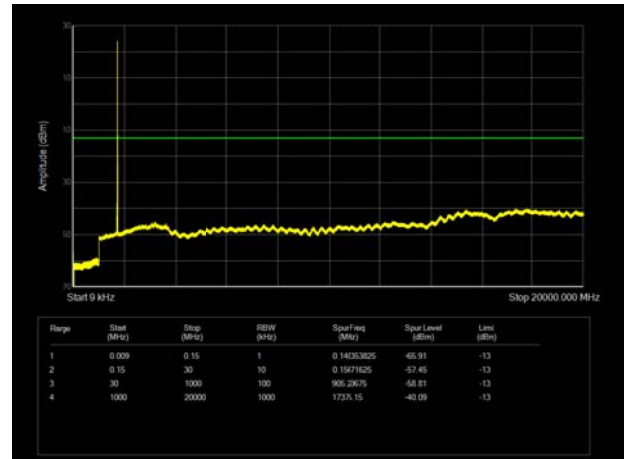
LTE Band 66 3MHz CH-High 9kHz ~20GHz



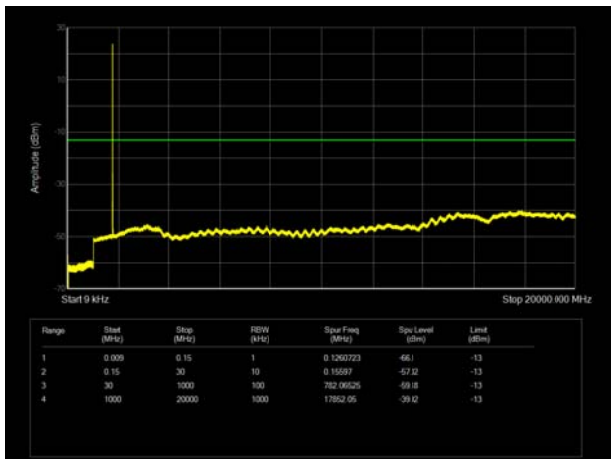
LTE Band 66 5MHz CH-Low 9kHz ~20GHz



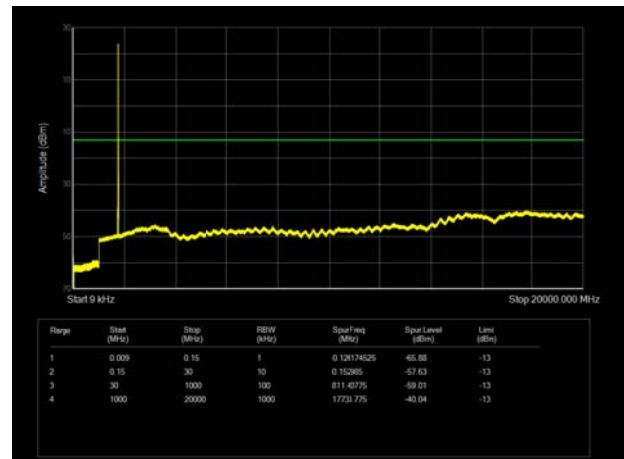
LTE Band 66 10MHz CH-Low 9kHz ~20GHz



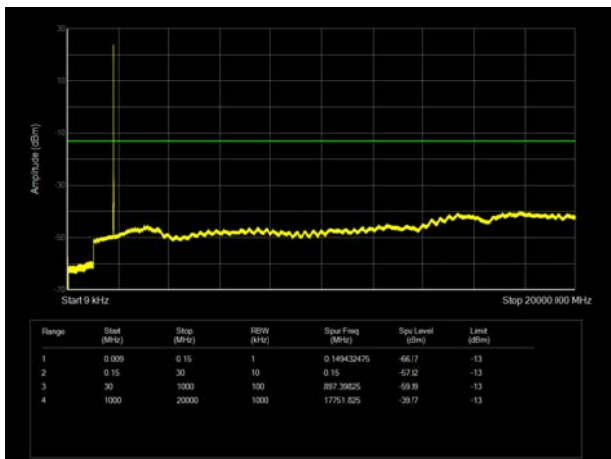
LTE Band 66 5MHz CH-Middle 9kHz ~20GHz



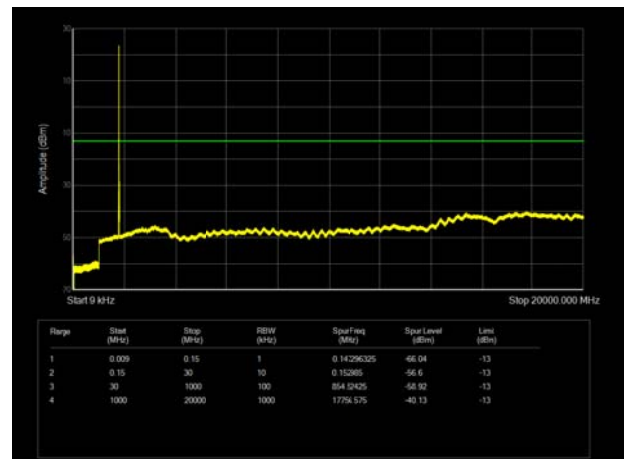
LTE Band 66 10MHz CH-Middle 9kHz ~20GHz



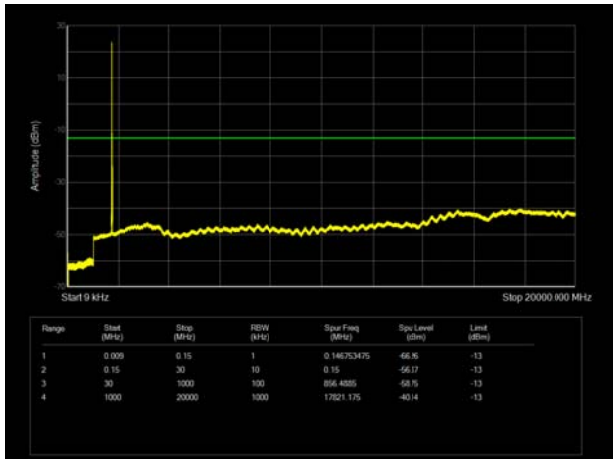
LTE Band 66 5MHz CH-High 9kHz ~20GHz



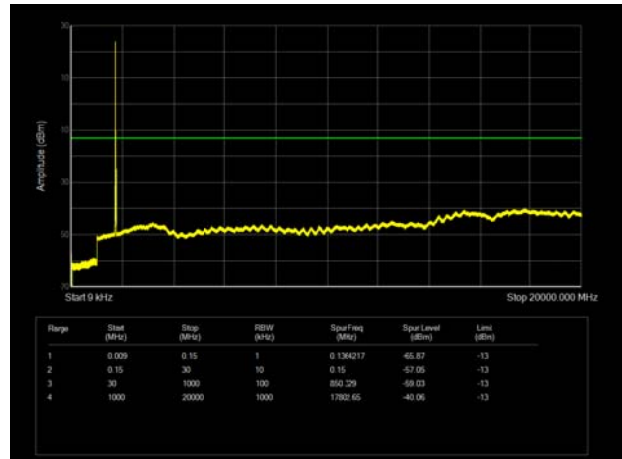
LTE Band 66 10MHz CH-High 9kHz ~20GHz



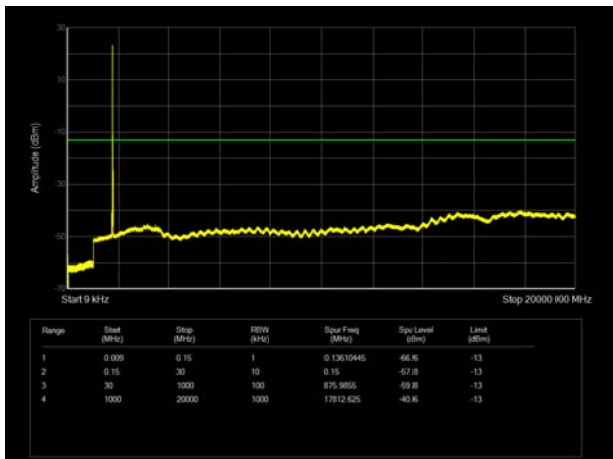
LTE Band 66 15MHz CH-Low 9kHz ~20GHz



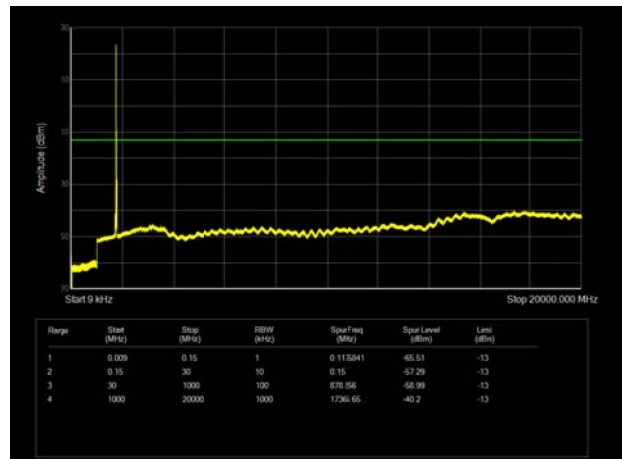
LTE Band 66 20MHz CH-Low 9kHz ~20GHz



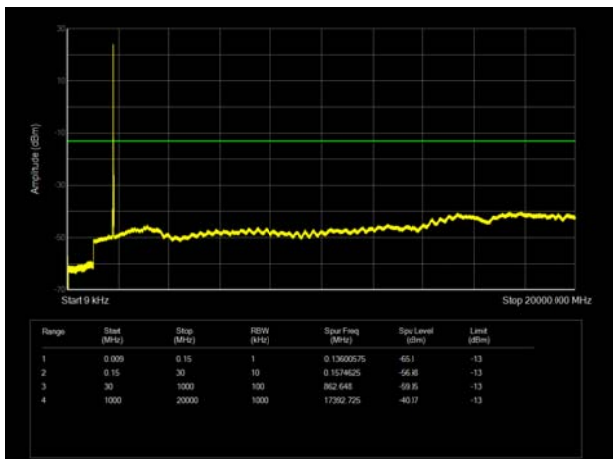
LTE Band 66 15MHz CH-Middle 9kHz ~20GHz



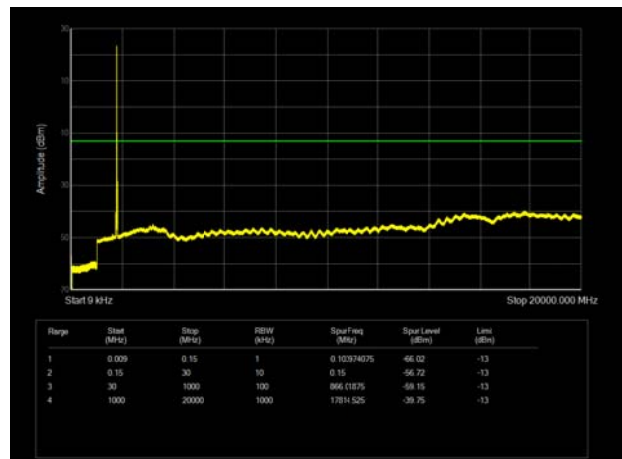
LTE Band 66 20MHz CH-Middle 9kHz ~20GHz



LTE Band 66 15MHz CH-High 9kHz ~20GHz



LTE Band 66 20MHz CH-High 9kHz ~20GHz





5.7 Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

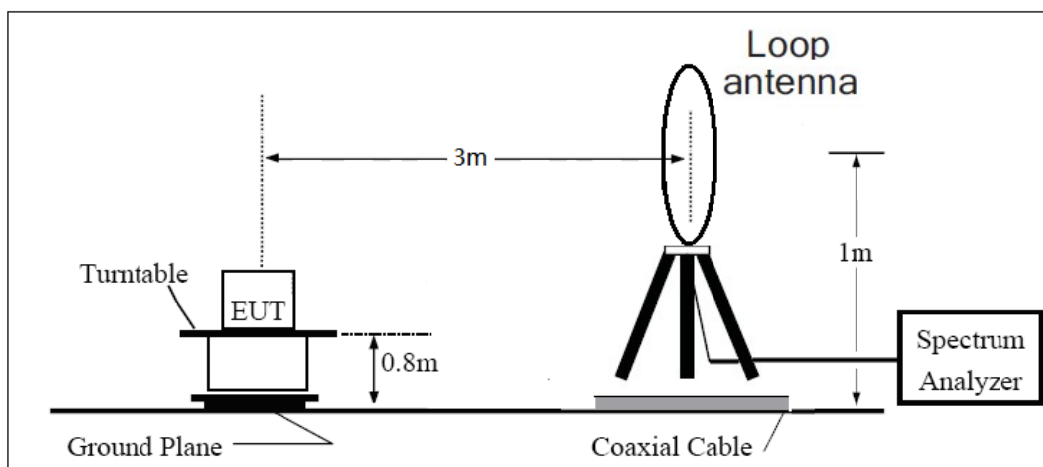
1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=100kHz, VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, and the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAG) should be recorded after test.
7. The measurement results are obtained as described below:
$$\text{Power(EIRP)} = \text{PMea} - \text{PAG} - \text{Pcl} + \text{Ga}$$

The measurement results are amend as described below:
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dB}$.

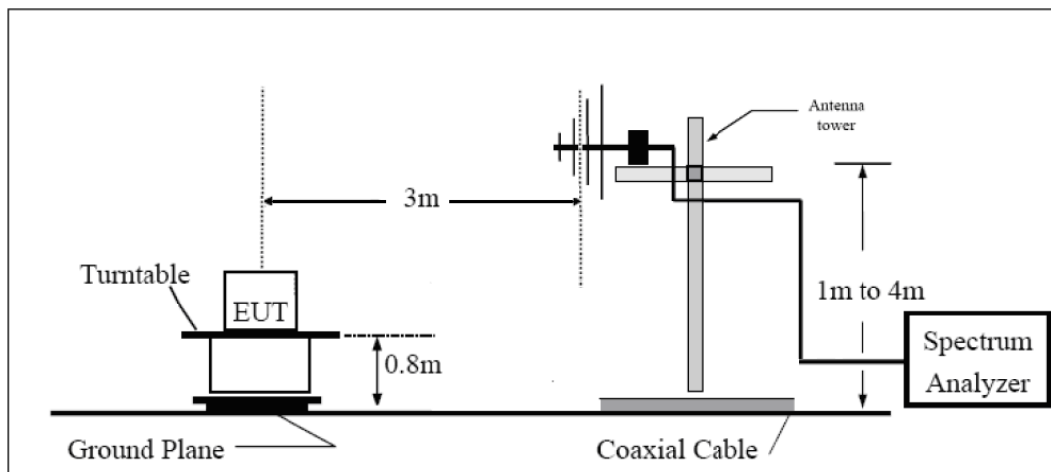
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

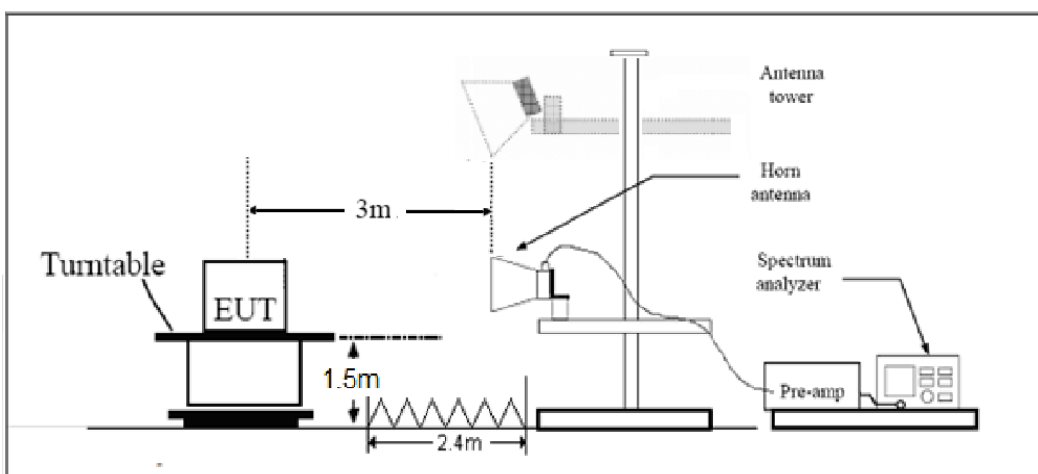
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits



Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, 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.”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Part 27.53(h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

**Test Result**

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

Low Antenna

LTE Band 12 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1413.93	-61.30	1.70	8.70	Vertical	-56.45	-13.00	43.45	45
3	2120.86	-61.35	2.10	11.10	Vertical	-54.50	-13.00	41.50	90
4	2830.46	-67.17	2.30	13.10	Vertical	-58.52	-13.00	45.52	135
5	3537.50	-64.29	2.60	12.70	Vertical	-56.34	-13.00	43.34	45
6	4245.00	-62.42	3.30	12.50	Vertical	-55.37	-13.00	42.37	90
7	4952.50	-62.58	3.40	12.50	Vertical	-55.63	-13.00	42.63	225
8	5660.00	-62.71	3.30	12.50	Vertical	-55.66	-13.00	42.66	0
9	6367.50	-58.32	3.80	11.50	Vertical	-52.77	-13.00	39.77	0
10	7075.00	-54.46	4.20	11.80	Vertical	-49.01	-13.00	36.01	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 12 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.66	-61.68	1.70	8.70	Vertical	-56.83	-13.00	43.83	90
3	2116.06	-61.14	2.10	11.10	Vertical	-54.29	-13.00	41.29	135
4	2821.66	-68.16	2.30	13.10	Vertical	-59.51	-13.00	46.51	45
5	3537.50	-65.33	2.60	12.70	Vertical	-57.38	-13.00	44.38	45
6	4245.00	-63.93	3.30	12.50	Vertical	-56.88	-13.00	43.88	135
7	4952.50	-63.05	3.40	12.50	Vertical	-56.10	-13.00	43.10	90
8	5660.00	-62.39	3.30	12.50	Vertical	-55.34	-13.00	42.34	45
9	6367.50	-58.82	3.80	11.50	Vertical	-53.27	-13.00	40.27	135
10	7075.00	-54.40	4.20	11.80	Vertical	-48.95	-13.00	35.95	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 12 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1405.80	-65.69	1.70	8.70	Vertical	-60.84	-13.00	47.84	45
3	2109.60	-61.58	2.10	11.10	Vertical	-54.73	-13.00	41.73	90
4	2810.53	-65.80	2.30	13.10	Vertical	-57.15	-13.00	44.15	135
5	3525.00	-65.23	2.60	12.70	Vertical	-57.28	-13.00	44.28	45
6	4230.00	-63.03	3.30	12.50	Vertical	-55.98	-13.00	42.98	135
7	4935.00	-63.15	3.40	12.50	Vertical	-56.20	-13.00	43.20	90
8	5640.00	-62.12	3.30	12.50	Vertical	-55.07	-13.00	42.07	135
9	6345.00	-58.40	3.80	11.50	Vertical	-52.85	-13.00	39.85	0
10	7050.00	-54.48	4.20	11.80	Vertical	-49.03	-13.00	36.03	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 13 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.00	-63.93	1.70	8.70	Vertical	-59.08	-40.00	19.08	45
Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
3	2338.50	-65.67	2.10	12.00	Vertical	-55.77	-13.00	42.77	135
4	3118.00	-68.17	2.30	13.10	Vertical	-57.37	-13.00	44.37	0
5	3897.50	-65.06	2.90	12.50	Vertical	-55.46	-13.00	42.46	45
6	4677.00	-64.89	3.10	12.50	Vertical	-55.49	-13.00	42.49	90
7	5456.50	-65.21	3.30	12.50	Vertical	-56.01	-13.00	43.01	135
8	6236.00	-62.69	3.50	12.80	Vertical	-53.39	-13.00	40.39	225
9	7015.50	-58.43	4.20	11.80	Vertical	-50.83	-13.00	37.83	90
10	7795.00	-57.09	4.40	12.30	Vertical	-49.19	-13.00	36.19	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 13 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.00	-63.52	1.70	8.70	Vertical	-58.67	-40.00	18.67	45
Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
3	2346.00	-64.82	2.10	12.00	Vertical	-54.92	-13.00	41.92	135
4	3108.00	-67.29	2.30	13.10	Vertical	-56.49	-13.00	43.49	135
5	3885.00	-65.41	2.90	12.50	Vertical	-55.81	-13.00	42.81	90
6	4662.00	-65.84	3.10	12.50	Vertical	-56.44	-13.00	43.44	45
7	5439.00	-64.92	3.30	12.50	Vertical	-55.72	-13.00	42.72	0
8	6216.00	-62.32	3.50	12.80	Vertical	-53.02	-13.00	40.02	135
9	6993.00	-59.49	4.20	11.80	Vertical	-51.89	-13.00	38.89	90
10	7770.00	-56.44	4.40	12.30	Vertical	-48.54	-13.00	35.54	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 17 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-61.09	1.70	8.70	Vertical	-56.24	-13.00	43.24	90
3	2122.50	-59.94	2.10	11.10	Vertical	-53.09	-13.00	40.09	135
4	2830.00	-65.47	2.50	13.10	Vertical	-57.02	-13.00	44.02	45
5	3537.50	-64.30	2.60	12.70	Vertical	-56.35	-13.00	43.35	45
6	4245.00	-64.04	3.30	12.50	Vertical	-56.99	-13.00	43.99	90
7	4952.50	-62.29	3.40	12.50	Vertical	-55.34	-13.00	42.34	225
8	5660.00	-62.47	3.40	12.80	Vertical	-55.22	-13.00	42.22	0
9	6367.50	-58.12	4.10	11.50	Vertical	-52.87	-13.00	39.87	0
10	7075.00	-55.57	4.20	12.20	Vertical	-49.72	-13.00	36.72	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 17 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-61.52	1.70	8.70	Vertical	-56.67	-13.00	43.67	45
3	2115.00	-58.27	2.10	11.10	Vertical	-51.42	-13.00	38.42	90
4	2820.00	-65.90	2.50	13.10	Vertical	-57.45	-13.00	44.45	135
5	3525.00	-65.00	2.60	12.70	Vertical	-57.05	-13.00	44.05	45
6	4230.00	-62.71	3.30	12.50	Vertical	-55.66	-13.00	42.66	135
7	4935.00	-62.98	3.40	12.50	Vertical	-56.03	-13.00	43.03	90
8	5640.00	-63.17	3.40	12.80	Vertical	-55.92	-13.00	42.92	45
9	6345.00	-58.29	4.10	11.50	Vertical	-53.04	-13.00	40.04	135
10	7050.00	-55.57	4.20	12.20	Vertical	-49.72	-13.00	36.72	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 66 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3489.00	-60.88	2.70	12.70	Vertical	-50.88	-13.00	37.88	0
3	5233.50	-63.39	3.20	12.50	Vertical	-54.09	-13.00	41.09	225
4	6930.00	-55.25	4.20	11.80	Vertical	-47.65	-13.00	34.65	45
5	8722.50	-55.59	4.40	12.50	Vertical	-47.49	-13.00	34.49	180
6	10395.00	-52.90	4.70	11.80	Vertical	-45.80	-13.00	32.80	315
7	12211.50	-52.59	5.20	13.80	Vertical	-43.99	-13.00	30.99	90
8	13860.00	-48.35	5.70	13.20	Vertical	-40.85	-13.00	27.85	270
9	15701.25	-55.69	6.10	16.80	Vertical	-44.99	-13.00	31.99	315
10	17325.00	-50.42	6.10	14.20	Vertical	-42.32	-13.00	29.32	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 66 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3485.00	-60.63	2.70	12.70	Vertical	-50.63	-13.00	37.63	225
3	5227.50	-64.57	3.20	12.50	Vertical	-55.27	-13.00	42.27	0
4	6970.00	-55.71	4.20	11.80	Vertical	-48.11	-13.00	35.11	180
5	8712.50	-55.92	4.40	12.50	Vertical	-47.82	-13.00	34.82	90
6	10395.00	-54.08	4.70	11.80	Vertical	-46.98	-13.00	33.98	225
7	12199.50	-54.96	5.20	13.80	Vertical	-46.36	-13.00	33.36	45
8	13860.00	-50.46	5.70	13.20	Vertical	-42.96	-13.00	29.96	0
9	15685.50	-55.63	6.10	16.80	Vertical	-44.93	-13.00	31.93	315
10	17325.00	-50.11	6.10	14.20	Vertical	-42.01	-13.00	29.01	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

LTE Band 66 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3470.00	-61.92	2.70	12.70	Vertical	-51.92	-13.00	38.92	180
3	5205.00	-64.57	3.20	12.50	Vertical	-55.27	-13.00	42.27	45
4	6940.00	-54.31	4.20	11.80	Vertical	-46.71	-13.00	33.71	90
5	8675.00	-55.26	4.40	12.50	Vertical	-47.16	-13.00	34.16	270
6	10410.00	-53.67	4.70	11.80	Vertical	-46.57	-13.00	33.57	0
7	12145.00	-53.58	5.20	13.80	Vertical	-44.98	-13.00	31.98	45
8	13880.00	-49.92	5.70	13.20	Vertical	-42.42	-13.00	29.42	180
9	15615.00	-56.24	6.10	16.80	Vertical	-45.54	-13.00	32.54	225
10	17350.00	-49.75	6.10	14.20	Vertical	-41.65	-13.00	28.65	45
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									



Upper Antenna

LTE Band 12 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-61.69	1.70	8.70	Vertical	-56.84	-13.00	43.84	45
3	2122.50	-56.23	2.10	11.10	Vertical	-49.38	-13.00	36.38	90
4	2830.00	-65.10	2.30	13.10	Vertical	-56.45	-13.00	43.45	135
5	3537.50	-64.62	2.60	12.70	Vertical	-56.67	-13.00	43.67	45
6	4245.00	-63.28	3.30	12.50	Vertical	-56.23	-13.00	43.23	90
7	4952.50	-62.70	3.40	12.50	Vertical	-55.75	-13.00	42.75	225
8	5660.00	-62.55	3.30	12.50	Vertical	-55.50	-13.00	42.50	0
9	6367.50	-58.57	3.80	11.50	Vertical	-53.02	-13.00	40.02	0
10	7075.00	-54.57	4.20	11.80	Vertical	-49.12	-13.00	36.12	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 12 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.60	-63.74	1.70	8.70	Vertical	-58.89	-13.00	45.89	90
3	2115.90	-53.87	2.10	11.10	Vertical	-47.02	-13.00	34.02	135
4	2821.20	-65.08	2.30	13.10	Vertical	-56.43	-13.00	43.43	45
5	3537.50	-65.08	2.60	12.70	Vertical	-57.13	-13.00	44.13	45
6	4245.00	-63.80	3.30	12.50	Vertical	-56.75	-13.00	43.75	135
7	4952.50	-62.42	3.40	12.50	Vertical	-55.47	-13.00	42.47	90
8	5660.00	-62.50	3.30	12.50	Vertical	-55.45	-13.00	42.45	45
9	6367.50	-58.17	3.80	11.50	Vertical	-52.62	-13.00	39.62	135
10	7075.00	-55.01	4.20	11.80	Vertical	-49.56	-13.00	36.56	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 12 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1406.40	-60.86	1.70	8.70	Vertical	-56.01	-13.00	43.01	45
3	2109.60	-51.02	2.10	11.10	Vertical	-44.17	-13.00	31.17	90
4	2812.80	-64.88	2.30	13.10	Vertical	-56.23	-13.00	43.23	135
5	3525.00	-64.22	2.60	12.70	Vertical	-56.27	-13.00	43.27	45
6	4230.00	-63.28	3.30	12.50	Vertical	-56.23	-13.00	43.23	135
7	4935.00	-62.88	3.40	12.50	Vertical	-55.93	-13.00	42.93	90
8	5640.00	-62.47	3.30	12.50	Vertical	-55.42	-13.00	42.42	135
9	6345.00	-58.78	3.80	11.50	Vertical	-53.23	-13.00	40.23	0
10	7050.00	-54.71	4.20	11.80	Vertical	-49.26	-13.00	36.26	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 13 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.00	-61.98	1.70	8.70	Vertical	-57.13	-40.00	17.13	45
Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
3	2338.50	-64.80	2.10	12.00	Vertical	-54.90	-13.00	41.90	135
4	3118.00	-67.04	2.30	13.10	Vertical	-56.24	-13.00	43.24	0
5	3897.50	-65.42	2.90	12.50	Vertical	-55.82	-13.00	42.82	45
6	4677.00	-65.47	3.10	12.50	Vertical	-56.07	-13.00	43.07	90
7	5456.50	-64.81	3.30	12.50	Vertical	-55.61	-13.00	42.61	135
8	6236.00	-63.08	3.50	12.80	Vertical	-53.78	-13.00	40.78	225
9	7015.50	-57.88	4.20	11.80	Vertical	-50.28	-13.00	37.28	90
10	7795.00	-57.88	4.40	12.30	Vertical	-49.98	-13.00	36.98	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 13 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1555.60	-62.97	1.70	8.70	Vertical	-58.12	-40.00	18.12	45
Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
3	2332.50	-63.78	2.10	12.00	Vertical	-53.88	-13.00	40.88	135
4	3108.00	-67.23	2.30	13.10	Vertical	-56.43	-13.00	43.43	135
5	3885.00	-65.89	2.90	12.50	Vertical	-56.29	-13.00	43.29	90
6	4662.00	-65.57	3.10	12.50	Vertical	-56.17	-13.00	43.17	45
7	5439.00	-64.76	3.30	12.50	Vertical	-55.56	-13.00	42.56	0
8	6216.00	-63.78	3.50	12.80	Vertical	-54.48	-13.00	41.48	135
9	6993.00	-59.05	4.20	11.80	Vertical	-51.45	-13.00	38.45	90
10	7770.00	-56.55	4.40	12.30	Vertical	-48.65	-13.00	35.65	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 17 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-63.15	1.70	8.70	Vertical	-58.30	-13.00	45.30	90
3	2122.50	-58.70	2.10	11.10	Vertical	-51.85	-13.00	38.85	135
4	2830.00	-65.05	2.50	13.10	Vertical	-56.60	-13.00	43.60	45
5	3537.50	-64.22	2.60	12.70	Vertical	-56.27	-13.00	43.27	45
6	4245.00	-63.56	3.30	12.50	Vertical	-56.51	-13.00	43.51	90
7	4952.50	-62.97	3.40	12.50	Vertical	-56.02	-13.00	43.02	225
8	5660.00	-62.52	3.40	12.80	Vertical	-55.27	-13.00	42.27	0
9	6367.50	-57.90	4.10	11.50	Vertical	-52.65	-13.00	39.65	0
10	7075.00	-55.41	4.20	12.20	Vertical	-49.56	-13.00	36.56	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 17 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.00	-62.61	1.70	8.70	Vertical	-57.76	-13.00	44.76	45
3	2115.00	-56.66	2.10	11.10	Vertical	-49.81	-13.00	36.81	90
4	2820.00	-64.98	2.50	13.10	Vertical	-56.53	-13.00	43.53	135
5	3525.00	-64.27	2.60	12.70	Vertical	-56.32	-13.00	43.32	45
6	4230.00	-62.29	3.30	12.50	Vertical	-55.24	-13.00	42.24	135
7	4935.00	-62.16	3.40	12.50	Vertical	-55.21	-13.00	42.21	90
8	5640.00	-62.46	3.40	12.80	Vertical	-55.21	-13.00	42.21	45
9	6345.00	-57.15	4.10	11.50	Vertical	-51.90	-13.00	38.90	135
10	7050.00	-55.13	4.20	12.20	Vertical	-49.28	-13.00	36.28	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.

LTE Band 66 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3489.00	-57.99	2.70	12.70	Vertical	-47.99	-13.00	34.99	0
3	5233.50	-64.86	3.20	12.50	Vertical	-55.56	-13.00	42.56	225
4	6930.00	-60.03	4.20	11.80	Vertical	-52.43	-13.00	39.43	45
5	8722.50	-57.07	4.40	12.50	Vertical	-48.97	-13.00	35.97	180
6	10395.00	-53.63	4.70	11.80	Vertical	-46.53	-13.00	33.53	315
7	12211.50	-55.26	5.20	13.80	Vertical	-46.66	-13.00	33.66	90
8	13860.00	-51.33	5.70	13.20	Vertical	-43.83	-13.00	30.83	270
9	15701.25	-57.49	6.10	16.80	Vertical	-46.79	-13.00	33.79	315
10	17325.00	-52.18	6.10	14.20	Vertical	-44.08	-13.00	31.08	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Vertical position.



LTE Band 66 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3485.00	-59.01	2.70	12.70	Vertical	-49.01	-13.00	36.01	225
3	5227.50	-64.48	3.20	12.50	Vertical	-55.18	-13.00	42.18	0
4	6970.00	-58.61	4.20	11.80	Vertical	-51.01	-13.00	38.01	180
5	8712.50	-56.33	4.40	12.50	Vertical	-48.23	-13.00	35.23	90
6	10395.00	-53.43	4.70	11.80	Vertical	-46.33	-13.00	33.33	225
7	12199.50	-54.67	5.20	13.80	Vertical	-46.07	-13.00	33.07	45
8	13860.00	-51.29	5.70	13.20	Vertical	-43.79	-13.00	30.79	0
9	15685.50	-56.33	6.10	16.80	Vertical	-45.63	-13.00	32.63	315
10	17325.00	-50.36	6.10	14.20	Vertical	-42.26	-13.00	29.26	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

LTE Band 66 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3470.00	-58.65	2.70	12.70	Vertical	-48.65	-13.00	35.65	180
3	5205.00	-64.42	3.20	12.50	Vertical	-55.12	-13.00	42.12	45
4	6940.00	-59.92	4.20	11.80	Vertical	-52.32	-13.00	39.32	90
5	8675.00	-56.82	4.40	12.50	Vertical	-48.72	-13.00	35.72	270
6	10410.00	-53.47	4.70	11.80	Vertical	-46.37	-13.00	33.37	0
7	12145.00	-53.53	5.20	13.80	Vertical	-44.93	-13.00	31.93	45
8	13880.00	-50.20	5.70	13.20	Vertical	-42.70	-13.00	29.70	180
9	15615.00	-56.78	6.10	16.80	Vertical	-46.08	-13.00	33.08	225
10	17350.00	-51.53	6.10	14.20	Vertical	-43.43	-13.00	30.43	45
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									



6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2021-05-15	2022-05-14
Climate Chamber	Weiss	VT4002	582261194500 10	2021-05-15	2022-05-14
Spectrum Analyzer	Key sight	N9020	MY52330084	2021-05-15	2022-05-14
Signal Analyzer	R&S	FSV3030	101411	2020-12-13	2021-12-12
Signal Analyzer	R&S	FSV30	100815	2020-12-13	2021-12-12
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01111	2019-09-12	2022-09-11
Horn Antenna	Schwarzbeck	BBHA 9120D	1594	2020-12-17	2021-12-16

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.