

5.6. Peak to Average Ratio Measurement

5.6.1. Test Limit

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

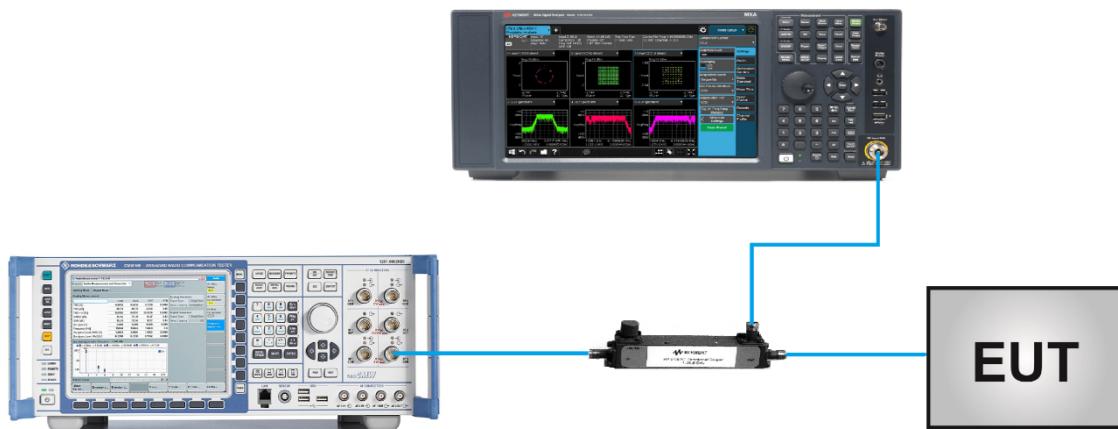
5.6.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.3.4 (CCDF).

5.6.3. Test Setting

1. Set the resolution / measurement bandwidth \geq signal's occupied bandwidth
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Record the maximum PARR level associated with a probability of 0.1%

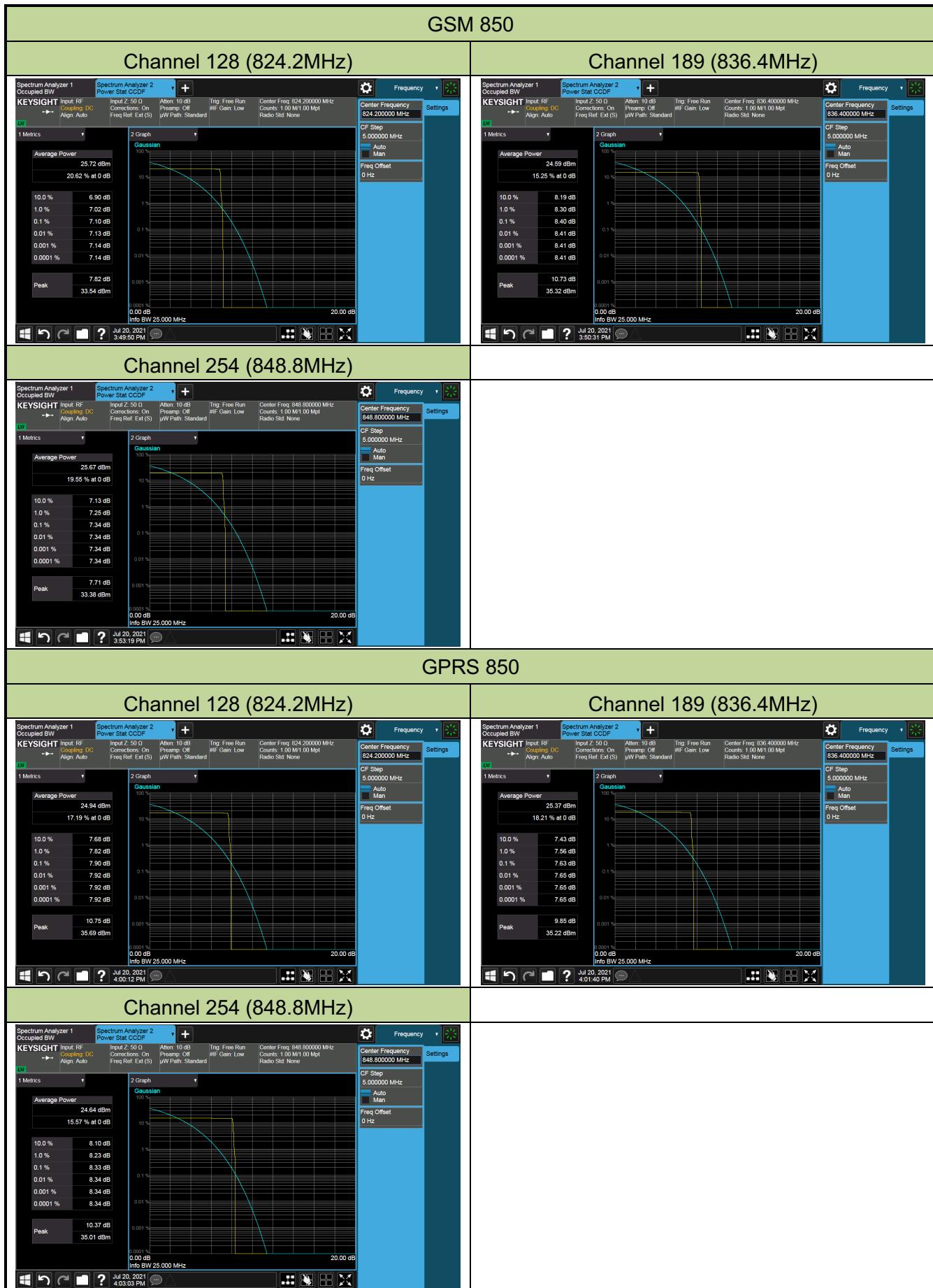
5.6.4. Test Setup

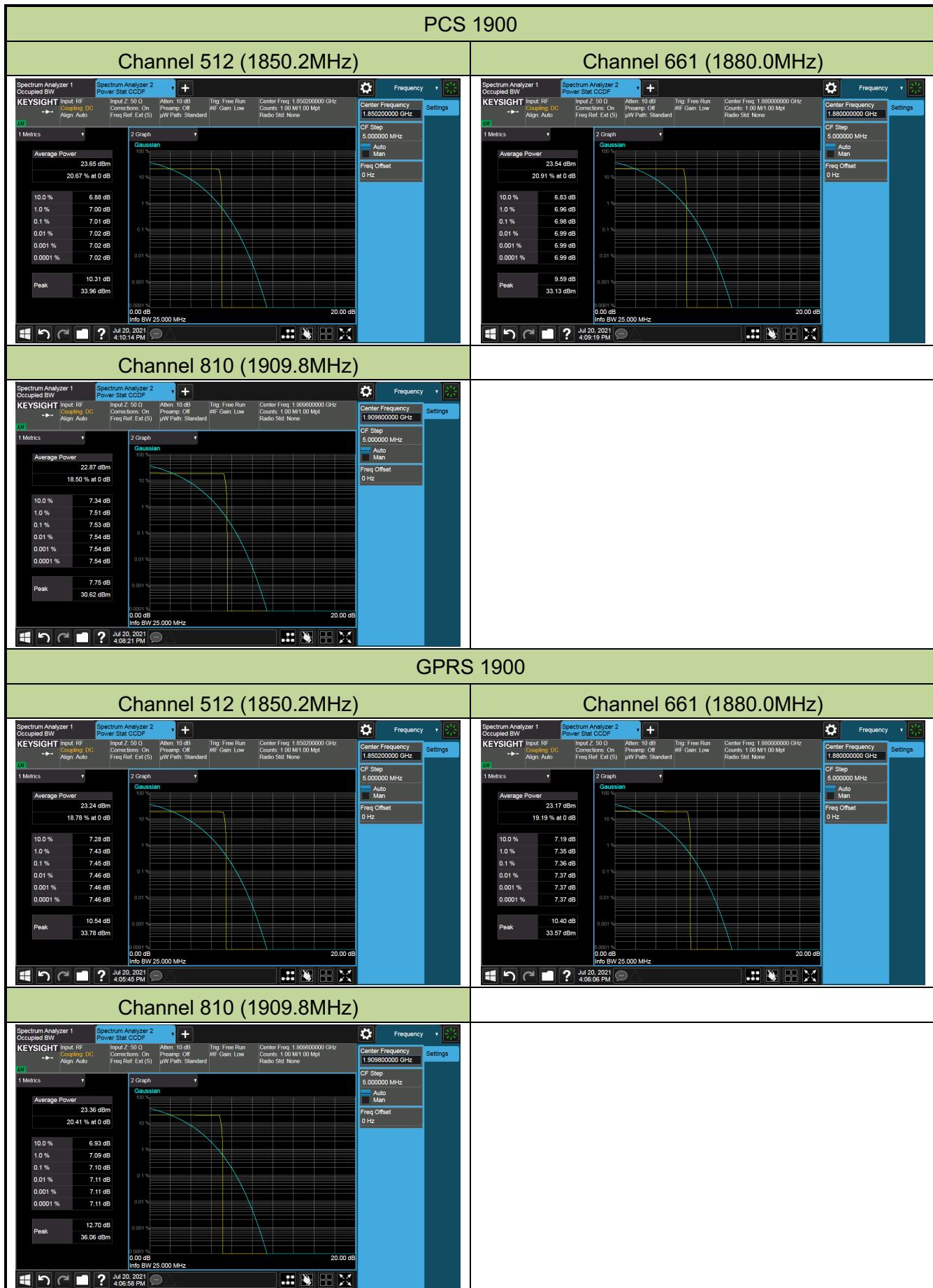


5.6.5. Test Result

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/20

Channel No.	Frequency (MHz)	Channel Bandwidth (KHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
GSM 850					
128	824.2	200	7.10	≤ 13.00	Pass
189	836.4	200	8.40	≤ 13.00	Pass
251	848.8	200	7.34	≤ 13.00	Pass
GSPRS850					
128	824.2	200	7.90	≤ 13.00	Pass
189	836.4	200	7.63	≤ 13.00	Pass
251	848.8	200	8.33	≤ 13.00	Pass
PCS 1900					
512	1850.2	200	7.01	≤ 13.00	Pass
661	1880.0	200	6.98	≤ 13.00	Pass
810	1909.8	200	7.53	≤ 13.00	Pass
GPRS 1900					
512	1850.2	200	7.45	≤ 13.00	Pass
661	1880.0	200	7.36	≤ 13.00	Pass
810	1909.8	200	7.10	≤ 13.00	Pass





5.7. Conducted Spurious Emission Measurement

5.7.1. Test Limit

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the Low frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

5.7.2. Test Procedure

ANSI C63.26-2015 - Section 5.7

5.7.3. Test Setting

1. Set the analyzer frequency to low, mid, high channel.
2. RBW = 1MHz
3. VBW $\geq 3 \times$ 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.

5.7.4. Test Setup



5.7.5. Test Result

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/07/20

Mode	Frequency (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
GSM 850	824.2	30 ~ 1000	-40.37	≤ -13.00	Pass
		1000 ~ 10000	-24.12	≤ -13.00	Pass
	836.4	30 ~ 1000	-42.52	≤ -13.00	Pass
		1000 ~ 10000	-23.27	≤ -13.00	Pass
	848.8	30 ~ 1000	-39.80	≤ -13.00	Pass
		1000 ~ 10000	-23.48	≤ -13.00	Pass
	824.2	30 ~ 1000	-40.72	≤ -13.00	Pass
		1000 ~ 10000	-22.53	≤ -13.00	Pass
GPRS 850	836.4	30 ~ 1000	-42.57	≤ -13.00	Pass
		1000 ~ 10000	-23.01	≤ -13.00	Pass
	848.8	30 ~ 1000	-40.70	≤ -13.00	Pass
		1000 ~ 10000	-22.55	≤ -13.00	Pass
	1850.2	30 ~ 1000	-40.11	≤ -13.00	Pass
		1000 ~ 20000	-22.91	≤ -13.00	Pass
	1880.0	30 ~ 1000	-40.51	≤ -13.00	Pass
		1000 ~ 20000	-22.49	≤ -13.00	Pass
PCS 1900	1909.8	30 ~ 1000	-40.71	≤ -13.00	Pass
		1000 ~ 20000	-21.48	≤ -13.00	Pass
	1850.2	30 ~ 1000	-40.30	≤ -13.00	Pass
		1000 ~ 20000	-22.36	≤ -13.00	Pass
	1880.0	30 ~ 1000	-41.86	≤ -13.00	Pass
		1000 ~ 20000	-22.73	≤ -13.00	Pass
	1909.8	30 ~ 1000	-39.56	≤ -13.00	Pass
		1000 ~ 20000	-23.14	≤ -13.00	Pass
GPRS 1900	1850.2	30 ~ 1000	-40.30	≤ -13.00	Pass
		1000 ~ 20000	-22.36	≤ -13.00	Pass
	1880.0	30 ~ 1000	-41.86	≤ -13.00	Pass
		1000 ~ 20000	-22.73	≤ -13.00	Pass
	1909.8	30 ~ 1000	-39.56	≤ -13.00	Pass
		1000 ~ 20000	-23.14	≤ -13.00	Pass

