

5.3.Occupied Bandwidth

Ambient condition

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

Method of Measurement

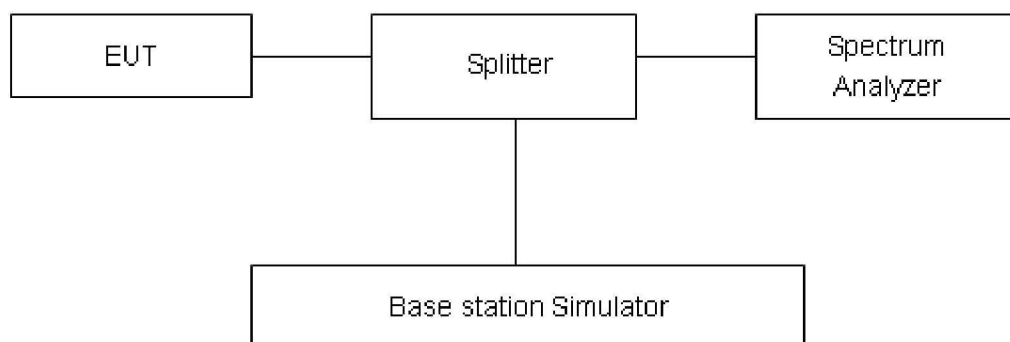
The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 3kHz, VBW is set to 10kHz for GSM 1900,

RBW is set to 51kHz, VBW is set to 160kHz for LTE Band 2/25

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 624\text{Hz}$.

Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
GPRS 1900 (GMSK)	512	1850.2	0.24637	0.3169
	661	1880.0	0.24585	0.3154
	810	1909.8	0.24375	0.3155
EGPRS 1900 (8-PSK)	512	1850.2	0.24164	0.3155
	661	1880.0	0.2447	0.3111
	810	1909.8	0.24768	0.3121

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Index	Bandwidth(MHz)	
						99% Power	-26dBc
Band2	1.4MHz	QPSK	18900/1880	6#0	0	1.1111	1.341
		16QAM	18900/1880	6#0	0	0.94755	1.300
	3MHz	QPSK	18900/1880	6#0	0	1.1621	1.896
		16QAM	18900/1880	6#0	0	0.98549	1.307
	5MHz	QPSK	18900/1880	6#0	0	1.1669	2.051
		16QAM	18900/1880	6#0	0	1.0119	1.558
	10MHz	QPSK	18900/1880	6#0	0	1.1876	1.955
		16QAM	18900/1880	6#0	0	1.1939	1.823
	15MHz	QPSK	18900/1880	6#0	0	1.2171	2.062
		16QAM	18900/1880	6#0	0	1.8960	1.865
	20MHz	QPSK	18900/1880	6#0	0	1.2544	2.005
		16QAM	18900/1880	6#0	0	1.1472	1.957

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	RB	Index	Bandwidth(MHz)	
						99% Power	-26dBc
LTE Band 25	1.4MHz	QPSK	26365/1882.5	6#0	0	1.1084	1.378
		16QAM	26365/1882.5	6#0	0	0.9513	1.369
	3MHz	QPSK	26365/1882.5	6#0	0	1.1634	1.780
		16QAM	26365/1882.5	6#0	0	0.9924	1.425
	5MHz	QPSK	26365/1882.5	6#0	0	1.1385	1.736
		16QAM	26365/1882.5	6#0	0	0.9751	1.369
	10MHz	QPSK	26365/1882.5	6#0	0	1.1808	1.813
		16QAM	26365/1882.5	6#0	0	1.0452	1.634
	15MHz	QPSK	26365/1882.5	6#0	0	1.1986	1.917
		16QAM	26365/1882.5	6#0	0	1.0619	1.717

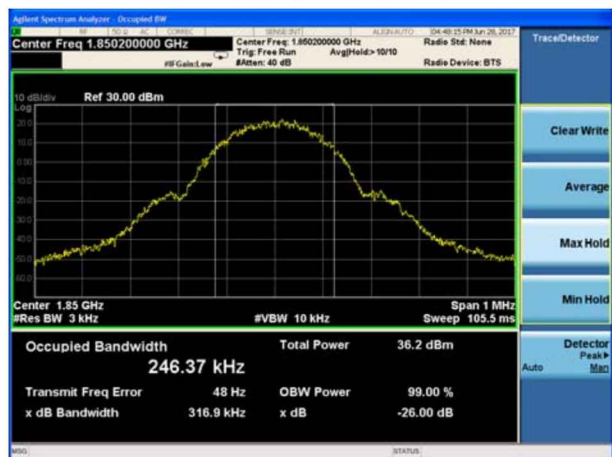


	20MHz	QPSK	26365/1882.5	6#0	0	1.2081	1.824
		16QAM	26365/1882.5	6#0	0	1.1054	1.889

GSM1900 EGPRS CH-Low



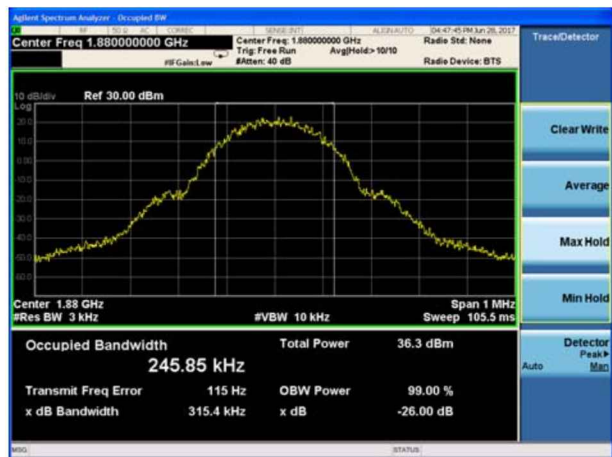
GSM1900 GPRS CH-Low



GSM 1900 EGPRS CH-Middle



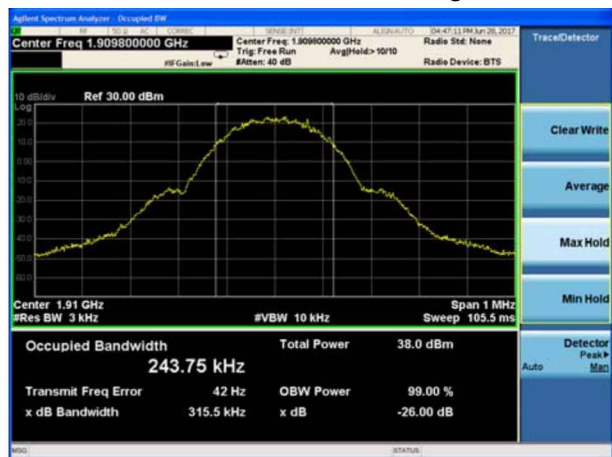
GSM 1900 GPRS CH-Middle



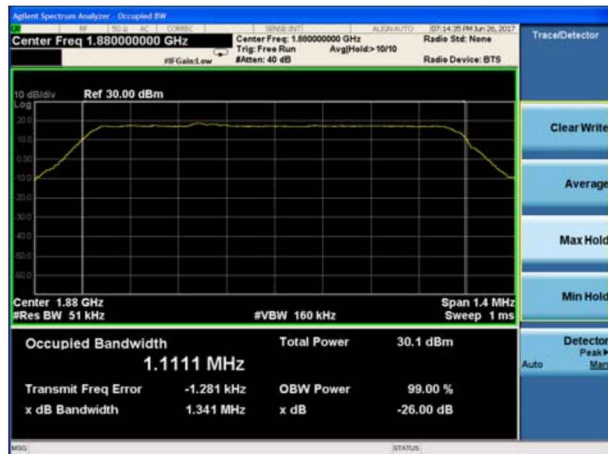
GSM 1900 EGPRS CH-High



GSM 1900 GPRS CH-High



LTE Band 2 1.4MHz QPSK CH-Middle



LTE Band 2 1.4MHz 16QAM CH-Middle



LTE Band 2 3MHz QPSK CH-Middle



LTE Band 2 3MHz 16QAM CH-Middle



LTE Band 2 5MHz QPSK CH-Middle



LTE Band 2 5MHz 16QAM CH-Middle



LTE Band 2 10MHz QPSK CH-Middle



LTE Band 2 10MHz 16QAM CH-Middle



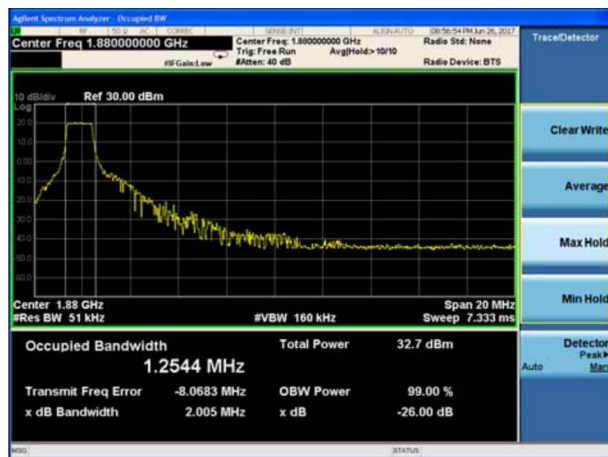
LTE Band 2 15MHz QPSK CH-Middle



LTE Band 2 15MHz 16QAM CH-Middle



LTE Band 2 20MHz QPSK CH-Middle

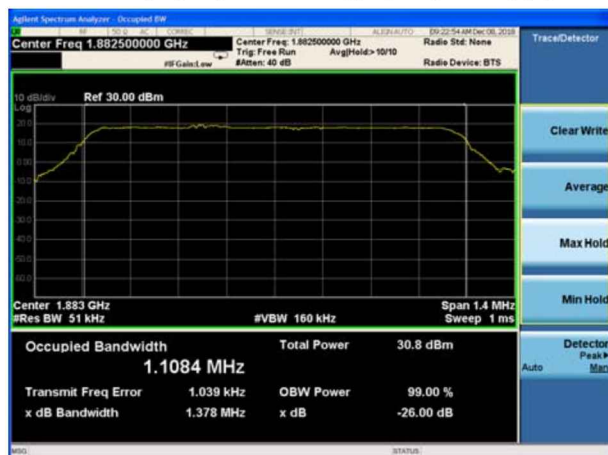


LTE Band 2 20MHz 16QAM CH-Middle





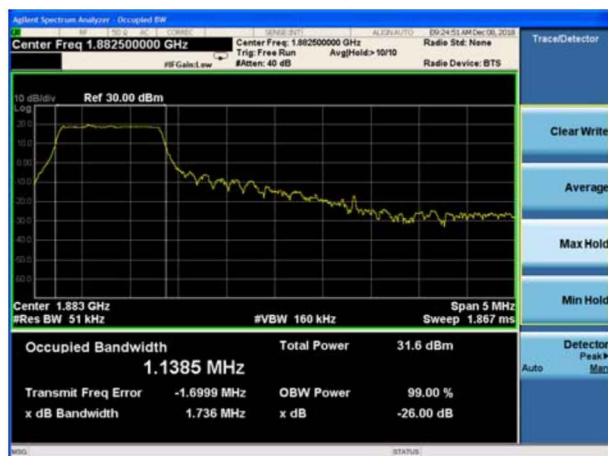
LTE Band 25 1.4MHz QPSK CH-Middle



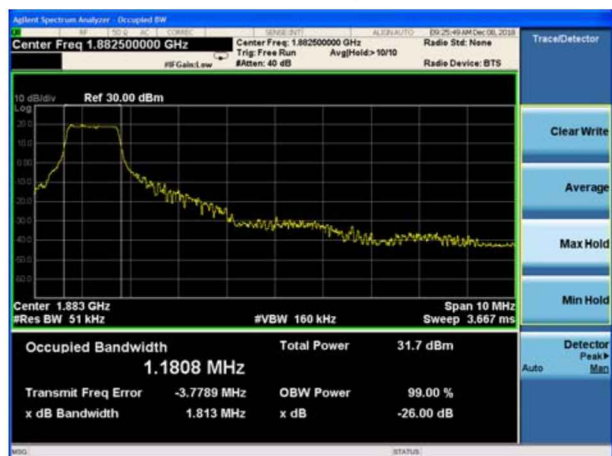
LTE Band 25 3MHz QPSK CH-Middle



LTE Band 25 5MHz QPSK CH-Middle



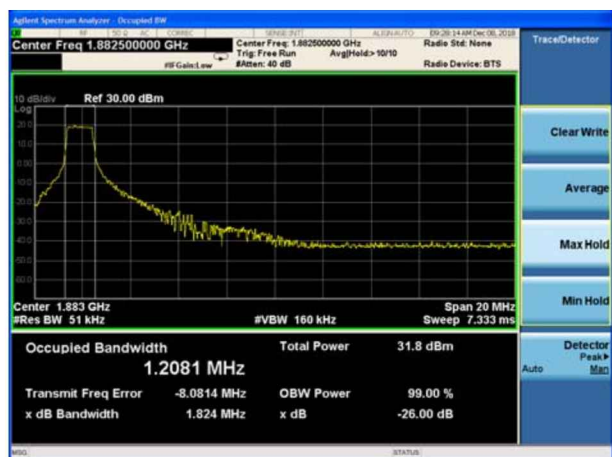
LTE Band 25 10MHz QPSK CH-Middle



LTE Band 25 15MHz QPSK CH-Middle



LTE Band 25 20MHz QPSK CH-Middle





LTE Band 25 1.4MHz 16QAM CH-Middle



LTE Band 25 3MHz 16QAM CH-Middle



LTE Band 25 5MHz 16QAM CH-Middle



LTE Band 25 10MHz 16QAM CH-Middle



LTE Band 25 15MHz 16QAM CH-Middle



LTE Band 25 20MHz 16QAM CH-Middle



5.4. Band Edge Compliance

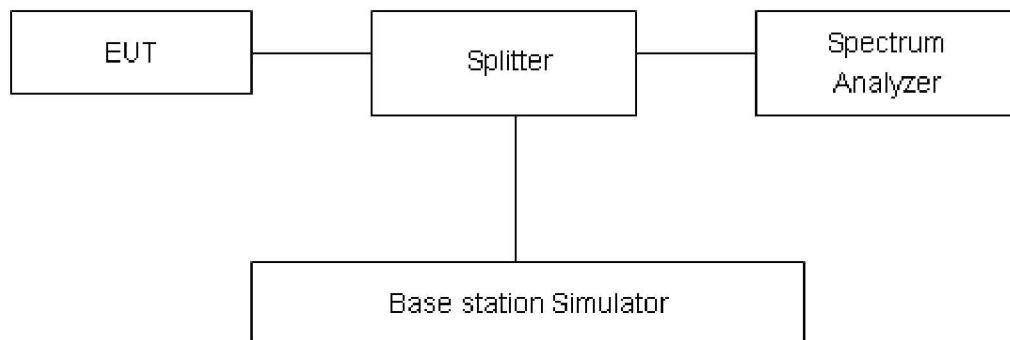
Ambient condition

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 band edge of the lowest and highest channels were measured. The Average detector is used and RBW is set to 3kHz, VBW is set to 10kHz for GSM 1900, RBW is set to 51kHz, VBW is set to 160kHz for LTE Band 2/25. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee’s frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10} (P)$ dB.”

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684$ dB.



Test Result:

GSM1900 GPRS CH-Low



GSM 1900 GPRS CH-High



GSM1900 EGPRS CH-Low



GSM 1900 EGPRS CH-High



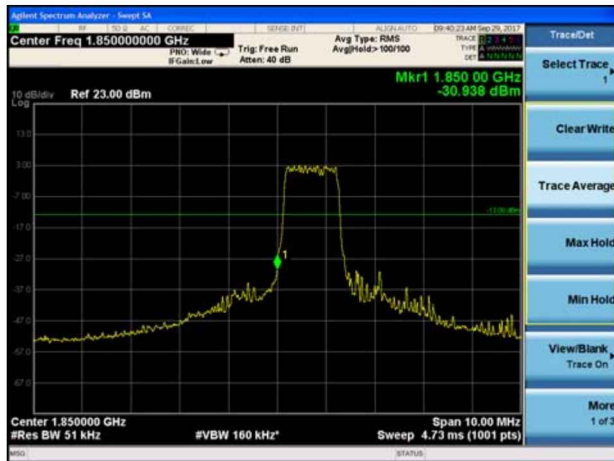
LTE Band 2 1.4MHz QPSK 1RB CH-Low



LTE Band 2 1.4MHz QPSK 1RB CH-High



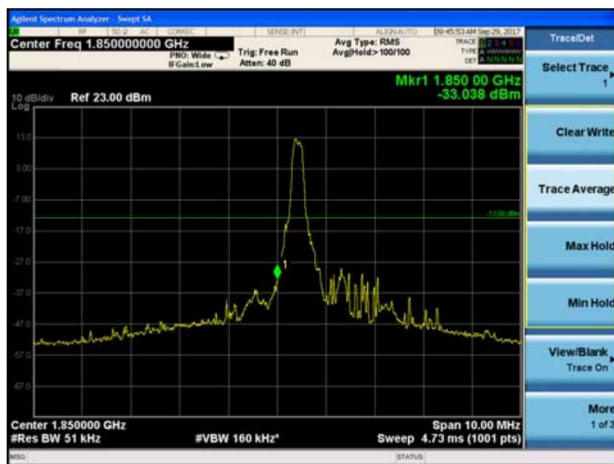
LTE Band 2 1.4MHz QPSK 100%RB CH-Low



LTE Band 2 1.4MHz QPSK 100%RB CH-High



LTE Band 2 3MHz QPSK 1RB CH-Low



LTE Band 2 3MHz QPSK 1RB CH-High



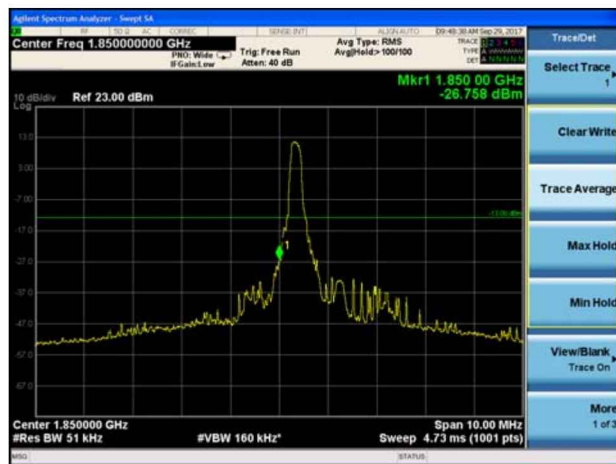
LTE Band 2 3MHz QPSK 100%RB CH-Low



LTE Band 2 3MHz QPSK 100%RB CH-High



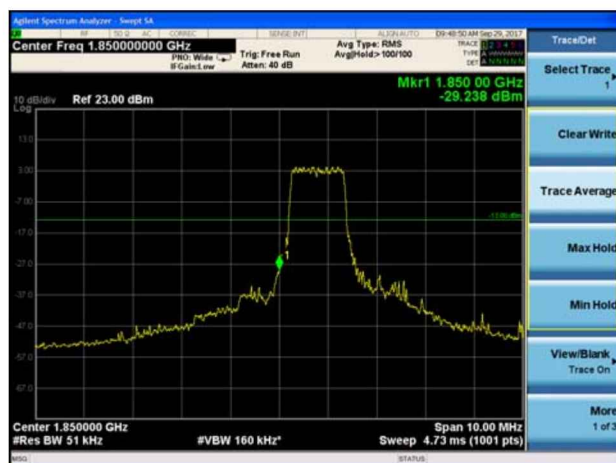
LTE Band 2 5MHz QPSK 1RB CH-Low



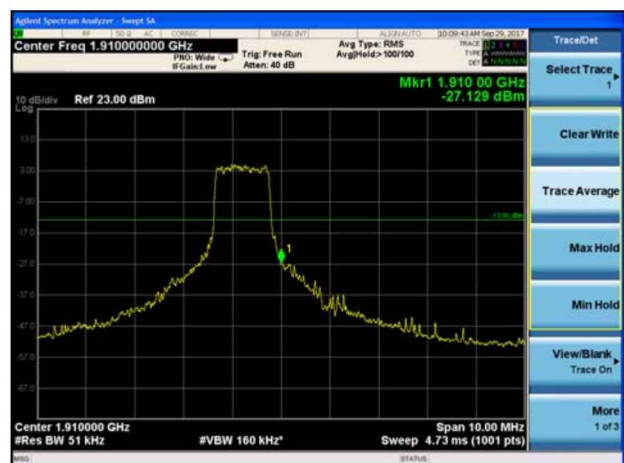
LTE Band 2 5MHz QPSK 1RB CH-High



LTE Band 2 5MHz QPSK 100%RB CH-Low



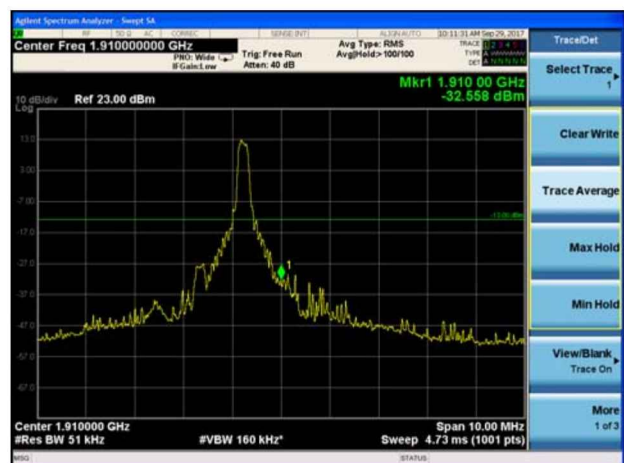
LTE Band 2 5MHz QPSK 100%RB CH-High



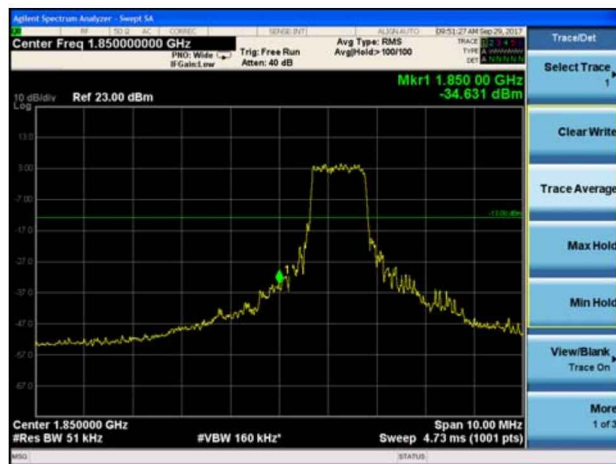
LTE Band 2 10MHz QPSK 1RB CH-Low



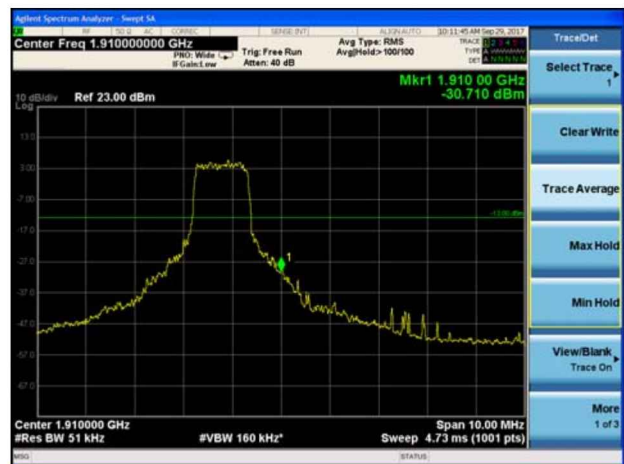
LTE Band 2 10MHz QPSK 1RB CH-High



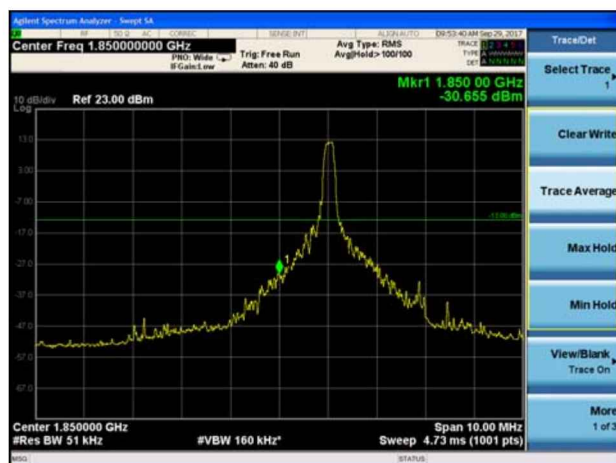
LTE Band 2 10MHz QPSK 100%RB CH-Low



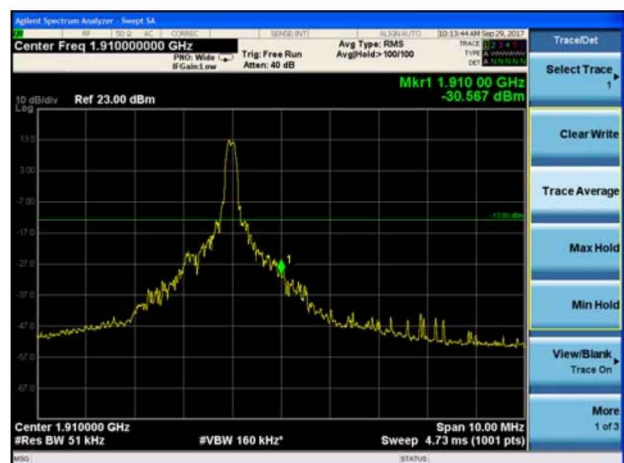
LTE Band 2 10MHz QPSK 100%RB CH-High



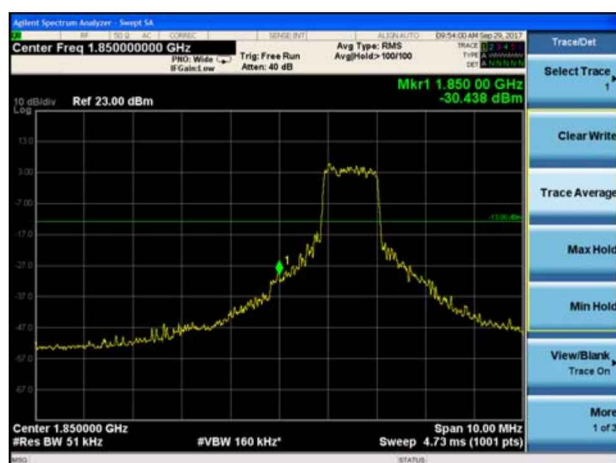
LTE Band 2 15MHz QPSK 1RB CH-Low



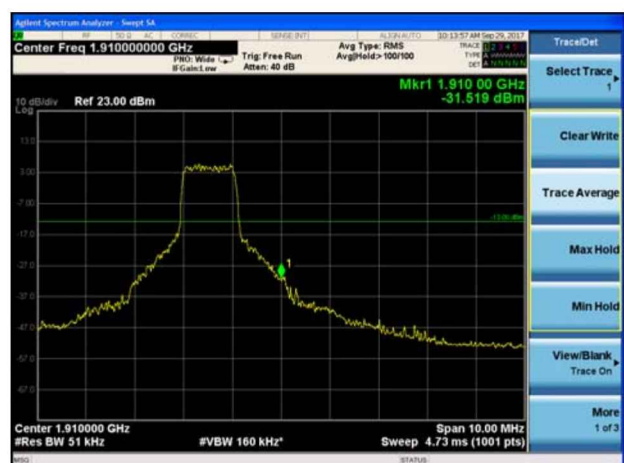
LTE Band 2 15MHz QPSK 1RB CH-High



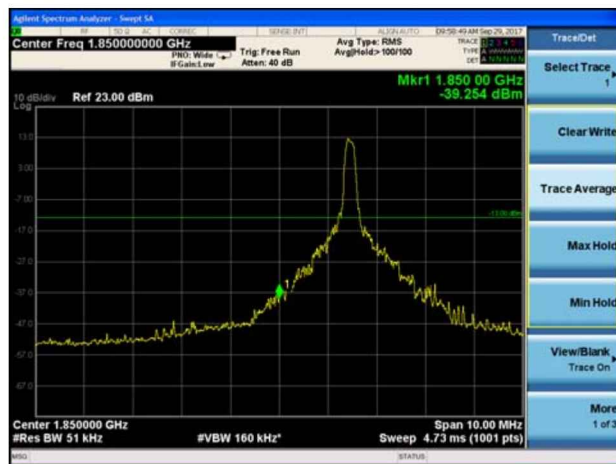
LTE Band 2 15MHz QPSK 100%RB CH-Low



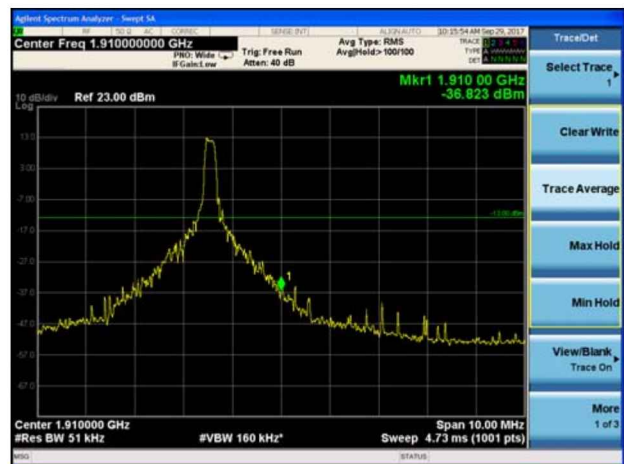
LTE Band 2 15MHz QPSK 100%RB CH-High



LTE Band 2 20MHz QPSK 1RB CH-Low



LTE Band 2 20MHz QPSK 1RB CH-High



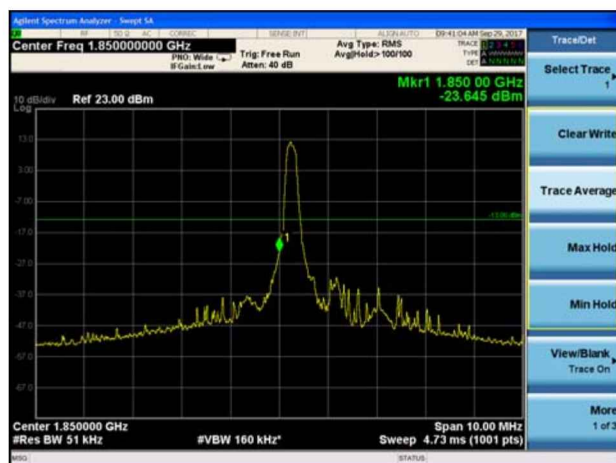
LTE Band 2 20MHz QPSK 100%RB CH-Low



LTE Band 2 20MHz QPSK 100%RB CH-High



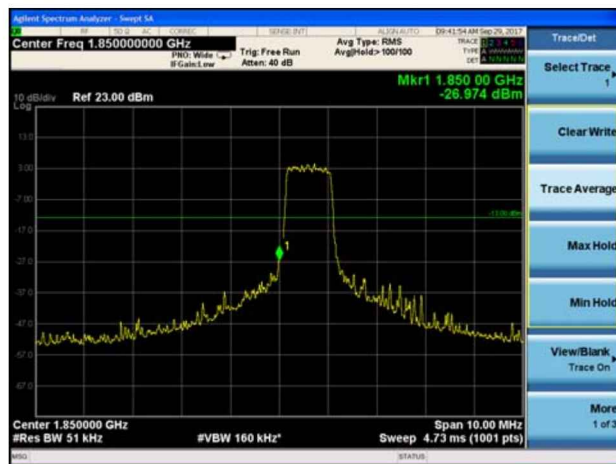
LTE Band 2 1.4MHz 16QAM 1RB CH-Low



LTE Band 2 1.4MHz 16QAM 1RB CH-High



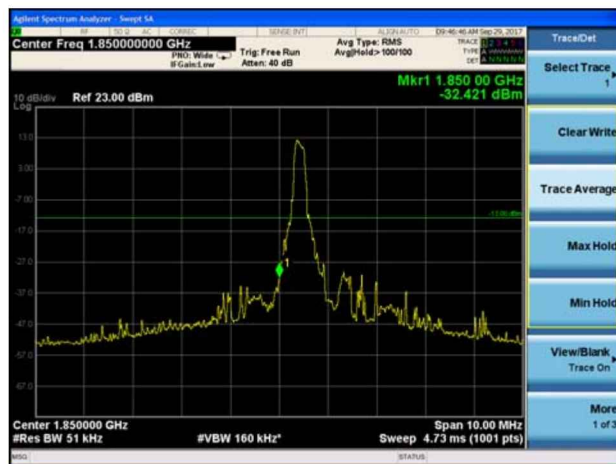
LTE Band 2 1.4MHz 16QAM 100%RB CH-Low



LTE Band 2 1.4MHz 16QAM 100%RB CH-High



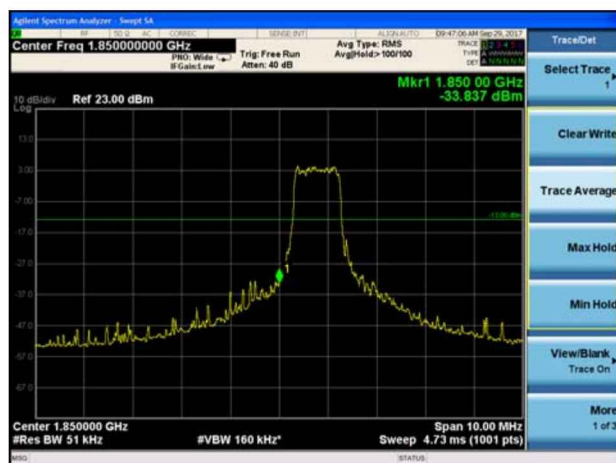
LTE Band 2 3MHz 16QAM 1RB CH-Low



LTE Band 2 3MHz 16QAM 1RB CH-High



LTE Band 2 3MHz 16QAM 100%RB CH-Low



LTE Band 2 3MHz 16QAM 100%RB CH-High

