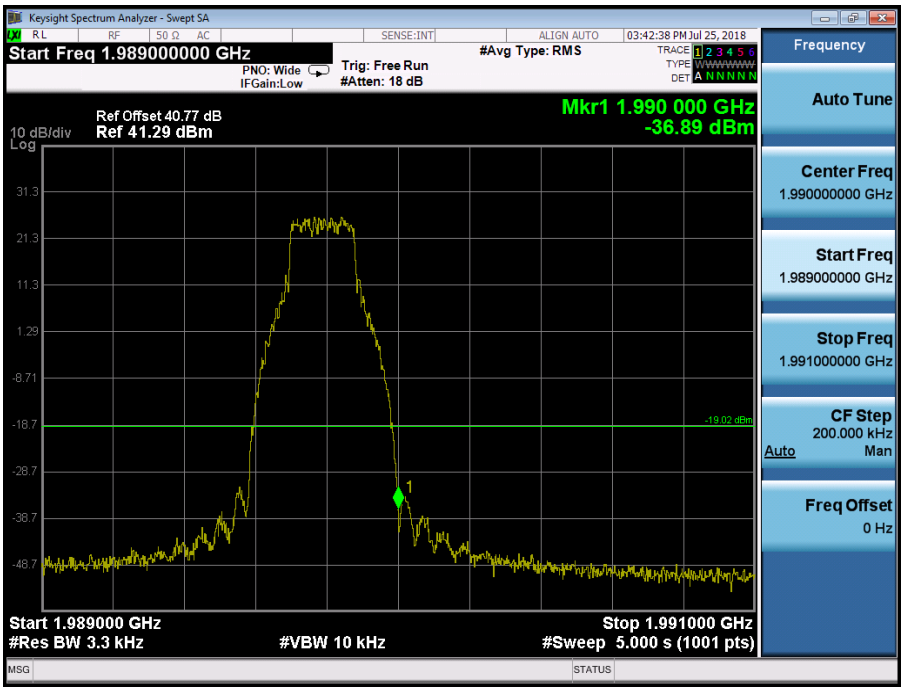
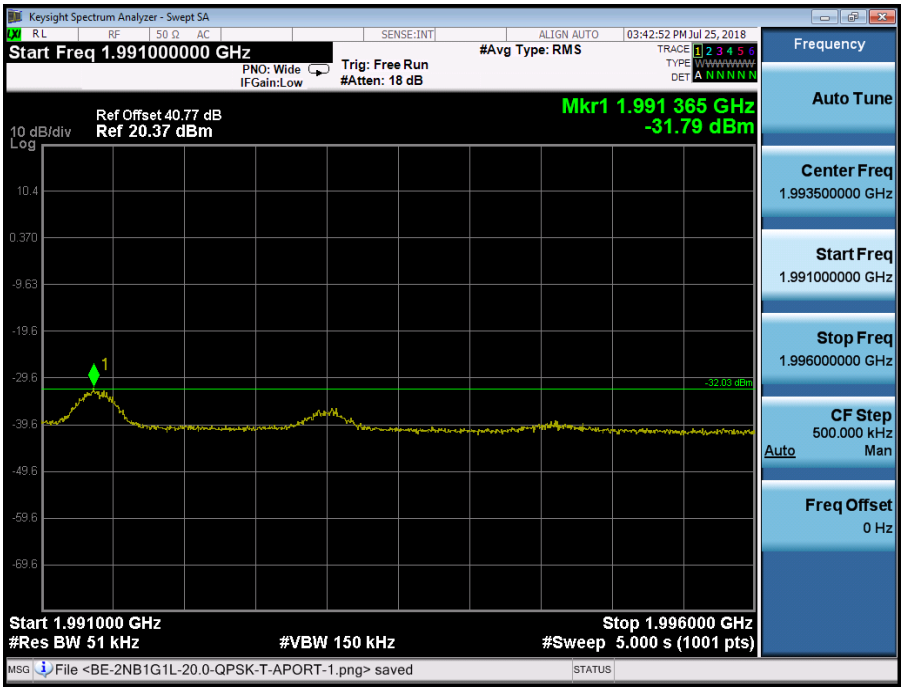
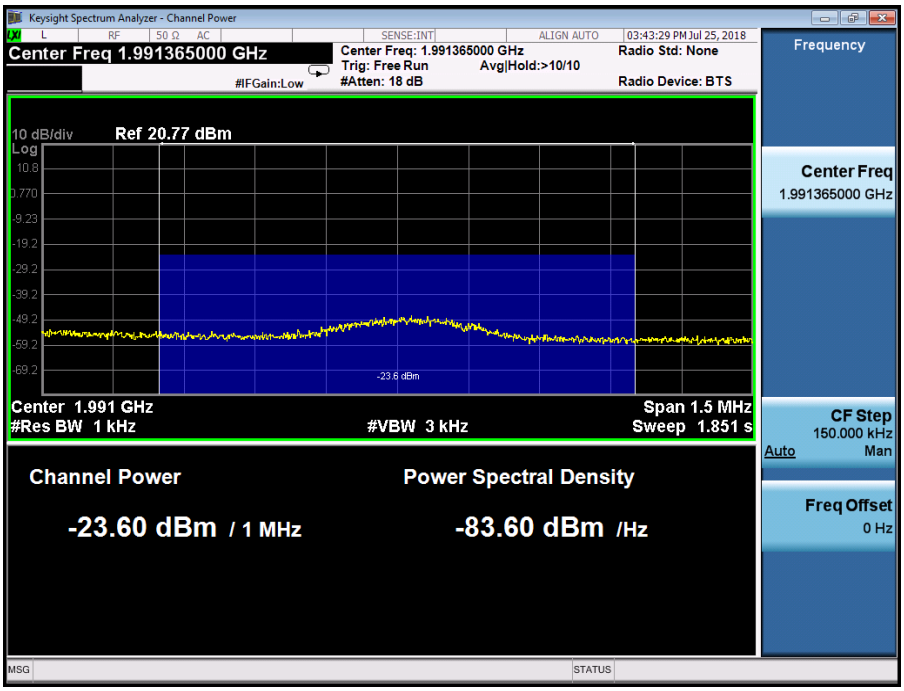
Port A, Channel Position T, LTE 20.0MHz





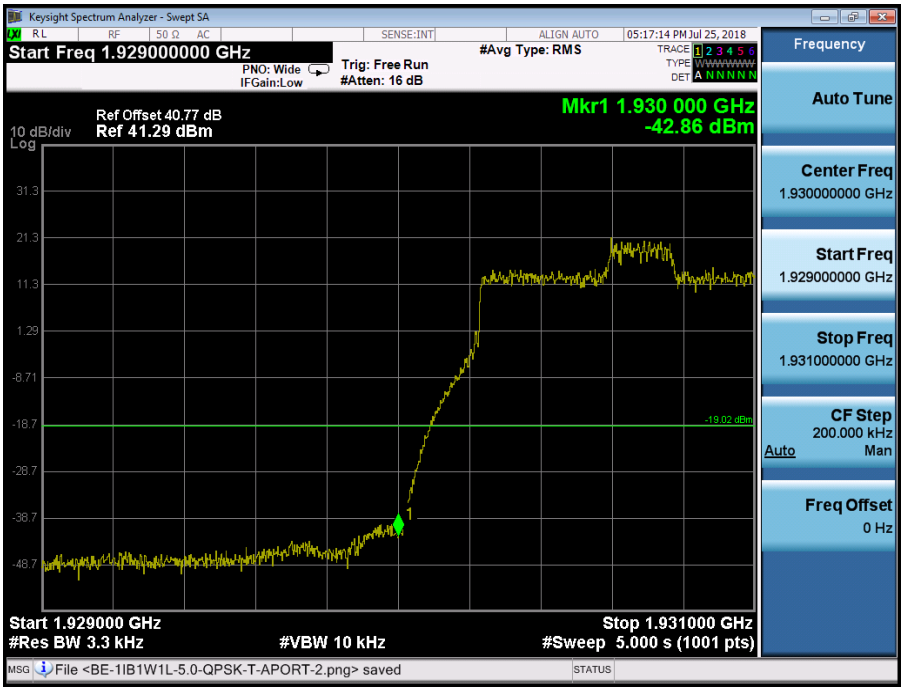
The channel power of 1MHz for 1991.365MHz is -23.60dBm, which is within the limit of-19.02dBm

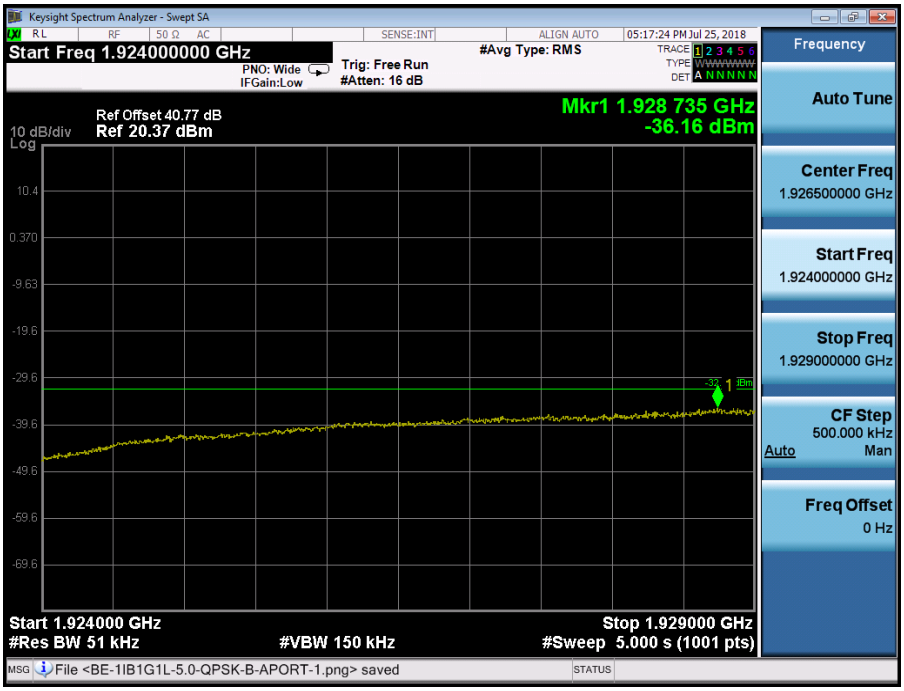


Configuration NB-IoT-IB+GSM+LTE-MIMO-MC-1-BE, (1IB QPSK+1GSM QPSK+1LTE QPSK)

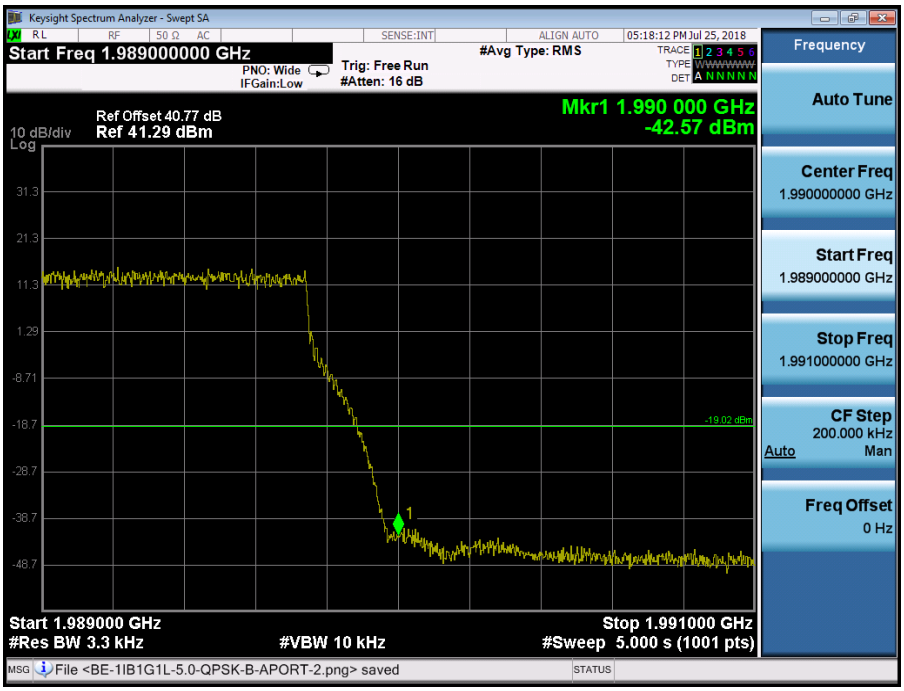
Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B 1930.0MHz	(IB) 5.0MHz, (G) 250KHz (L) 5.0MHz	3.3	-19.02
Channel Position T 1990.0MHz	(IB) 5.0MHz, (G) 250KHz (L) 5.0MHz	3.3	-19.02

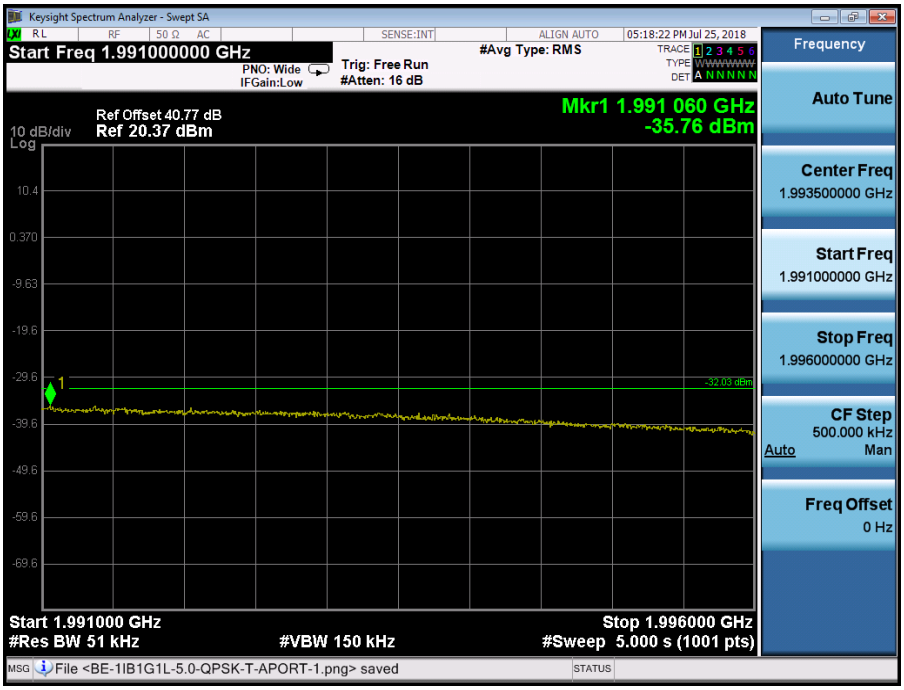
Port A, Channel Position B, LTE 5.0MHz





Port A, Channel Position T, LTE 5.0MHz

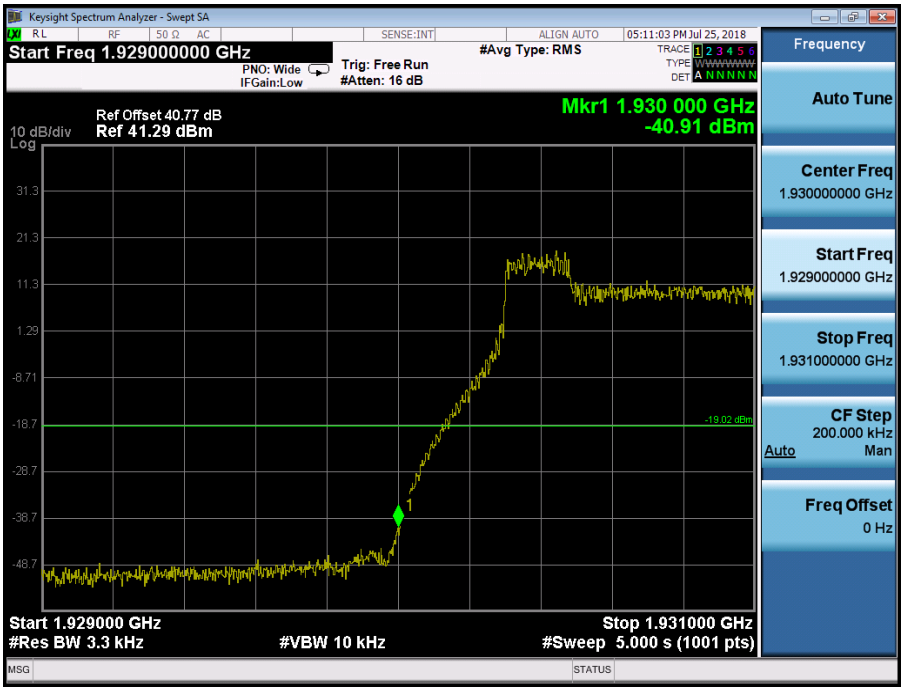


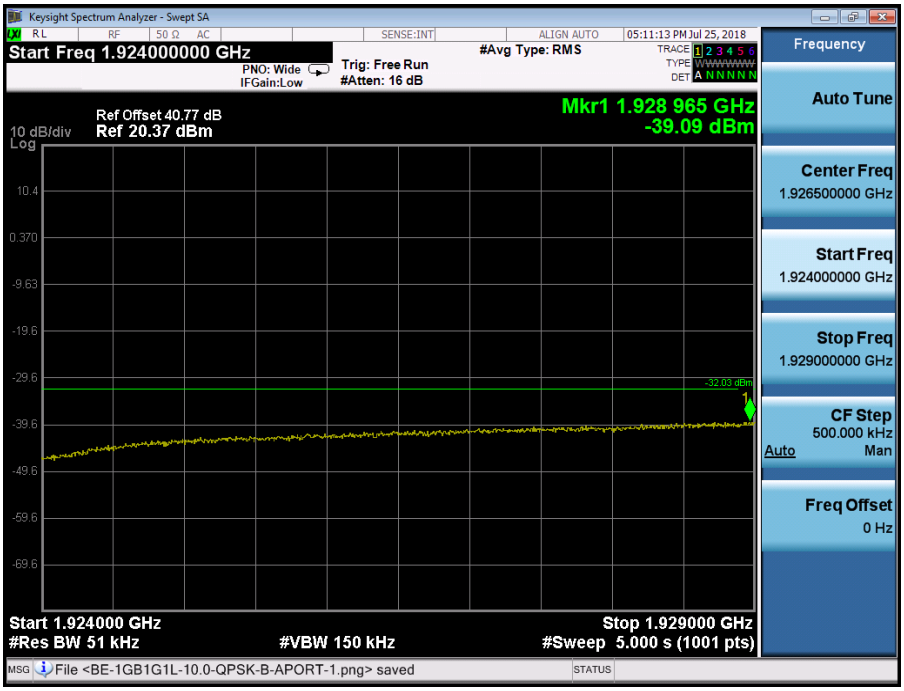


Configuration NB-IoT-GB+GSM+LTE-MIMO-MC-1-BE, (1GB QPSK+1GSM QPSK+1LTE QPSK)

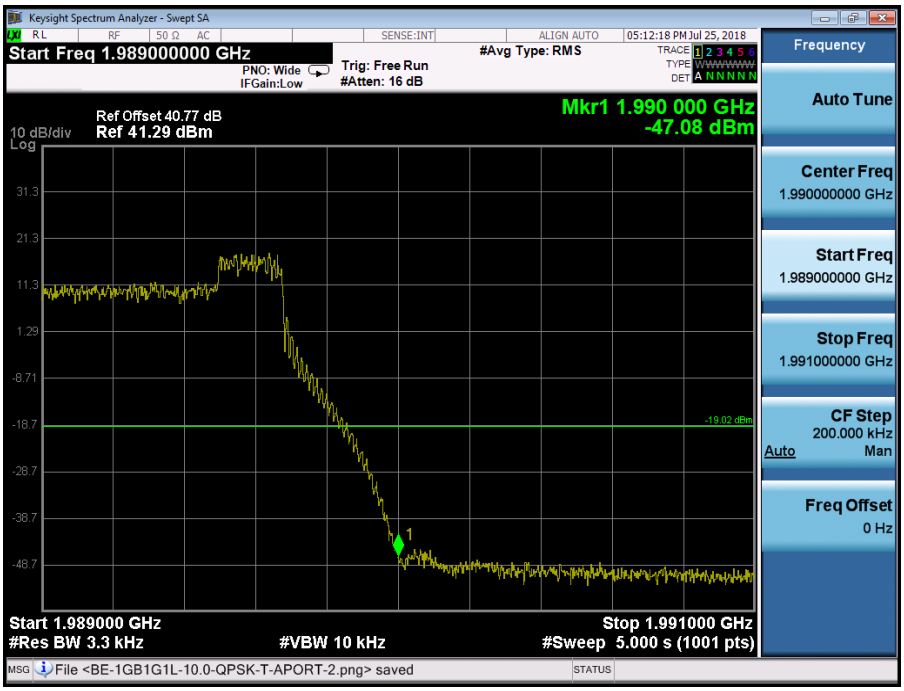
Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B 1930.0MHz	(GB) 10.0MHz, (G) 250KHz (L) 10.0MHz	3.3	-19.02
Channel Position T 1990.0MHz	(GB)10.0MHz, (G) 250KHz (L) 10.0MHz	3.3	-19.02

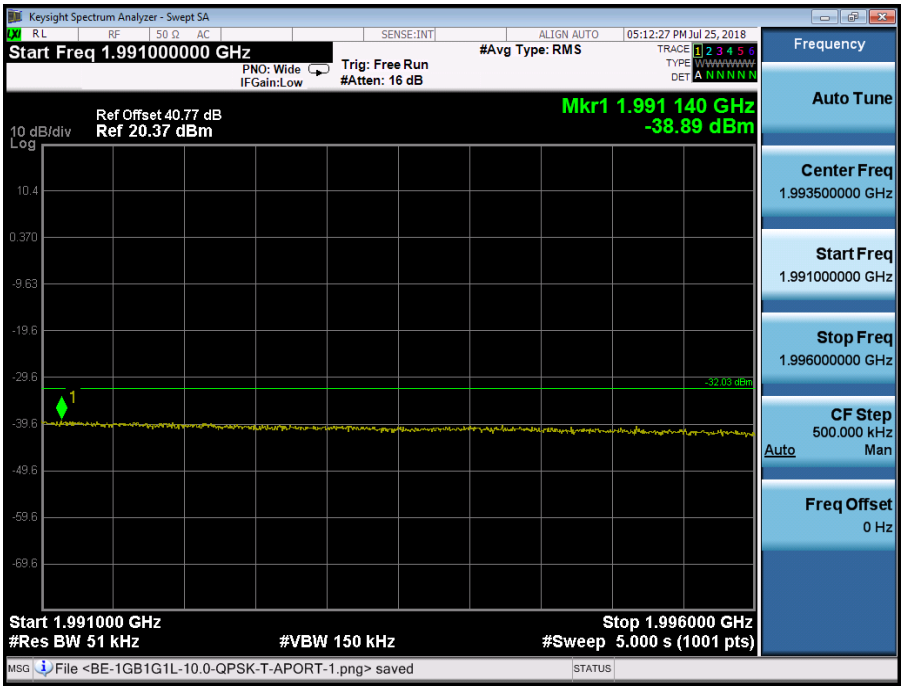
Port A, Channel Position B, LTE 10.0MHz





Port A, Channel Position T, LTE 10.0MHz

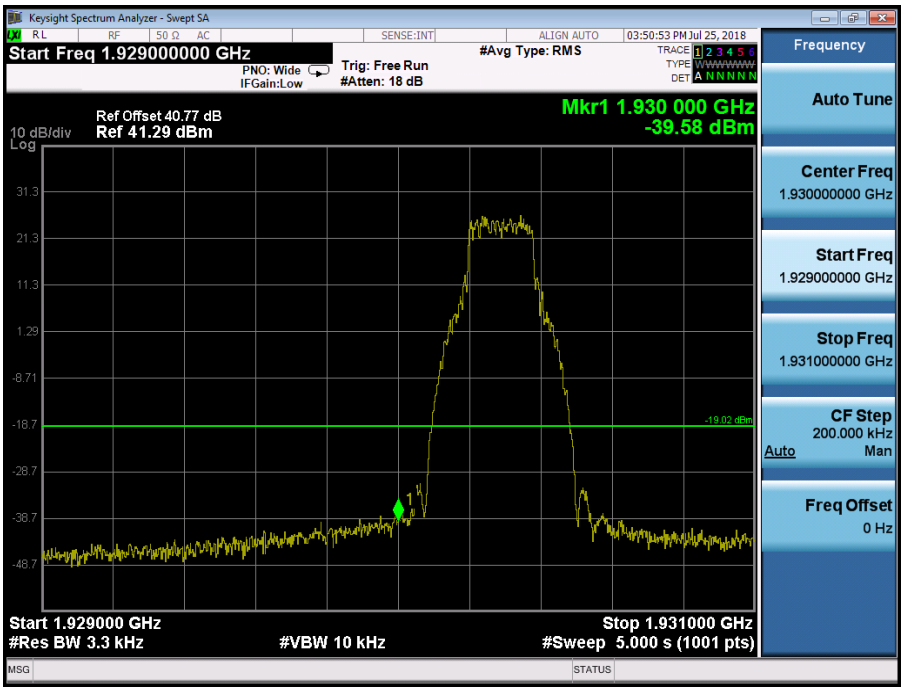


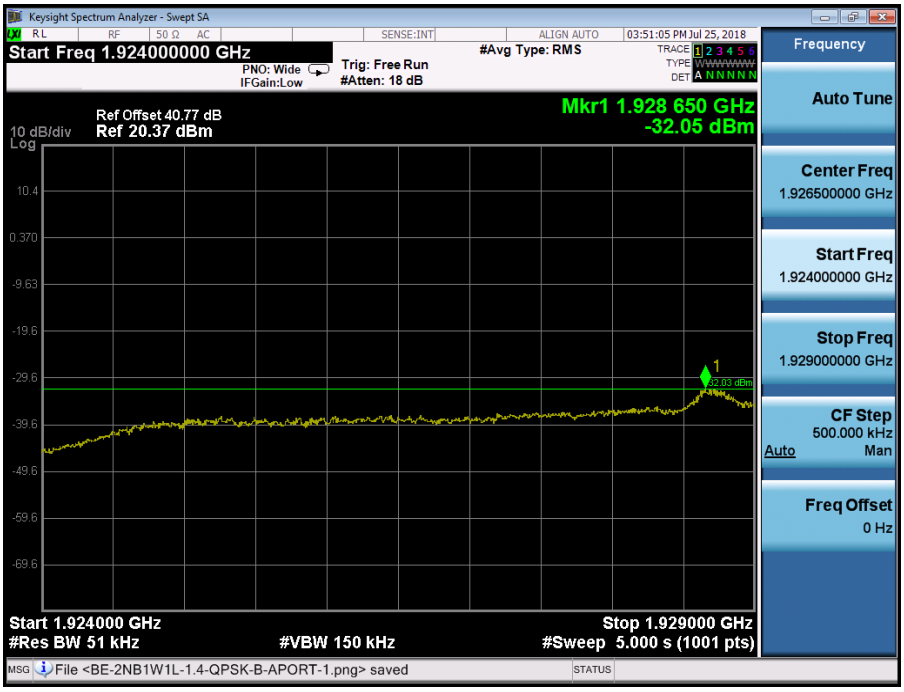


Configuration NB-IoT+WCDMA+LTE-MIMO-MC-2-BE, (2SA QPSK+1WCDMA QPSK+1LTE QPSK)

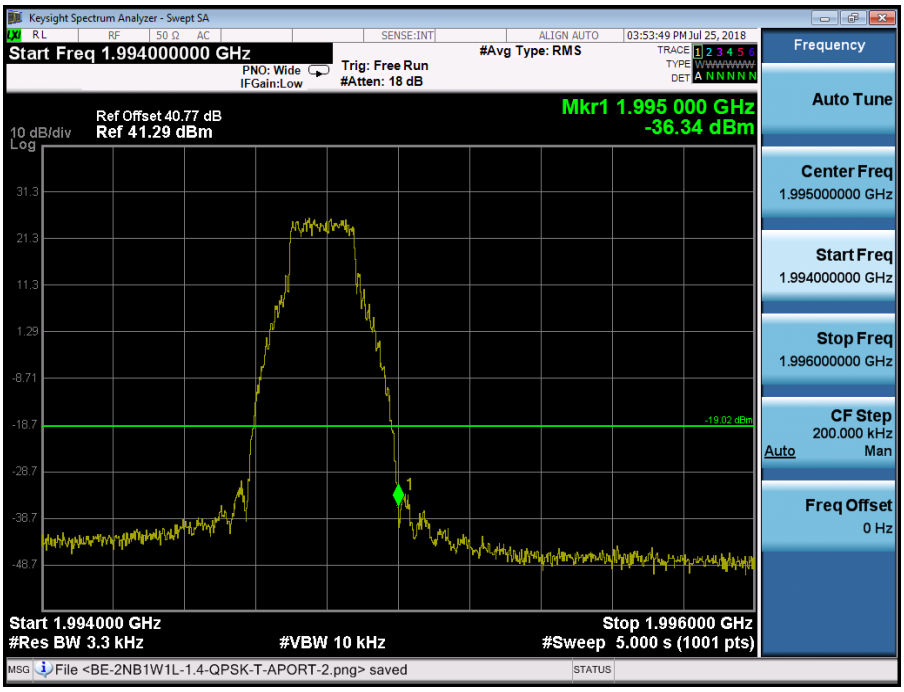
Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B 1930.0MHz	(SA) 250KHz, (W) 5.0MHz (L) 1.4MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 3.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 5.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 10.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 15.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 20.0MHz	3.3	-19.02
Channel Position T 1995.0MHz	(SA) 250KHz, (W) 5.0MHz (L) 1.4MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 3.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 5.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 10.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 15.0MHz	3.3	-19.02
	(SA) 250KHz, (W) 5.0MHz (L) 20.0MHz	3.3	-19.02

Port A, Channel Position B, LTE 1.4MHz

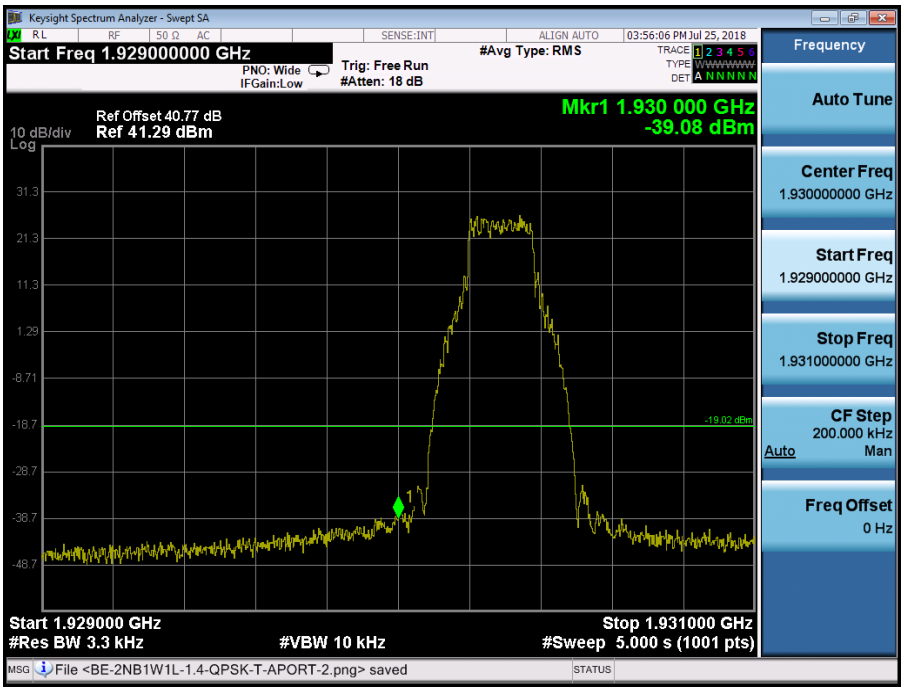


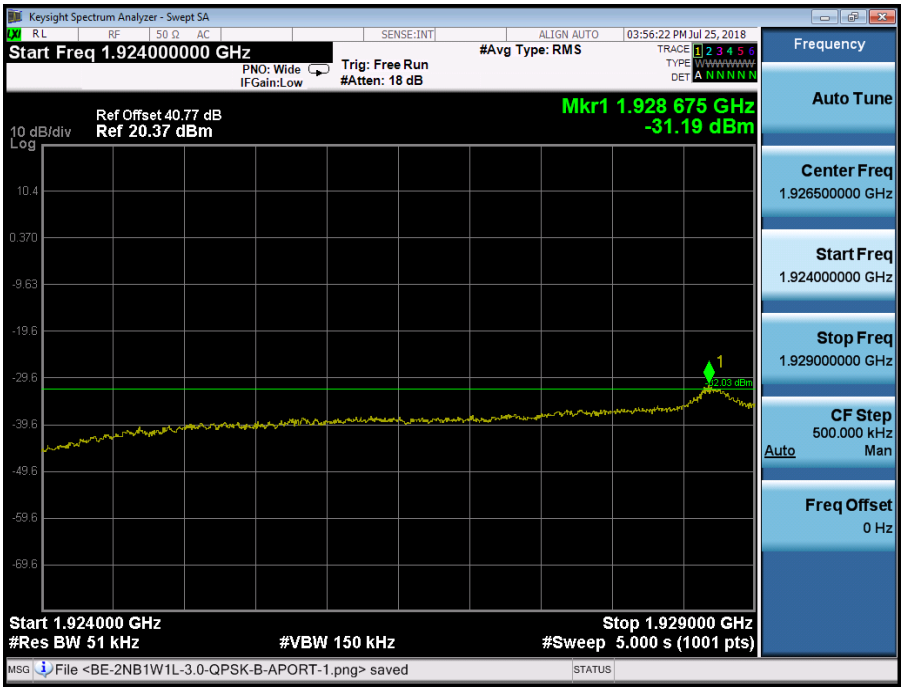


Port A, Channel Position T, LTE 1.4MHz

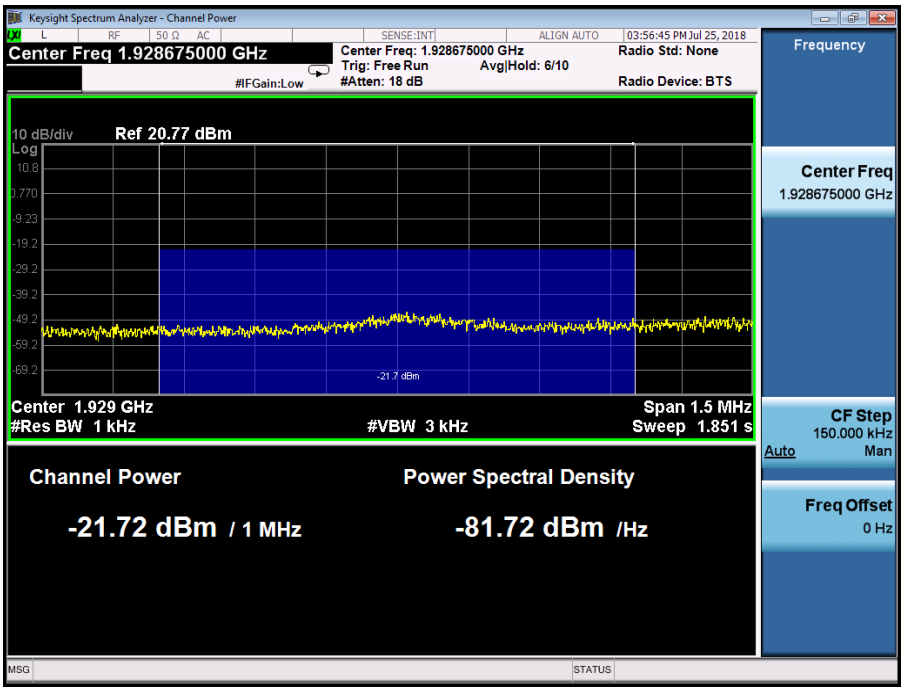


Port A, Channel Position B, LTE 3.0MHz

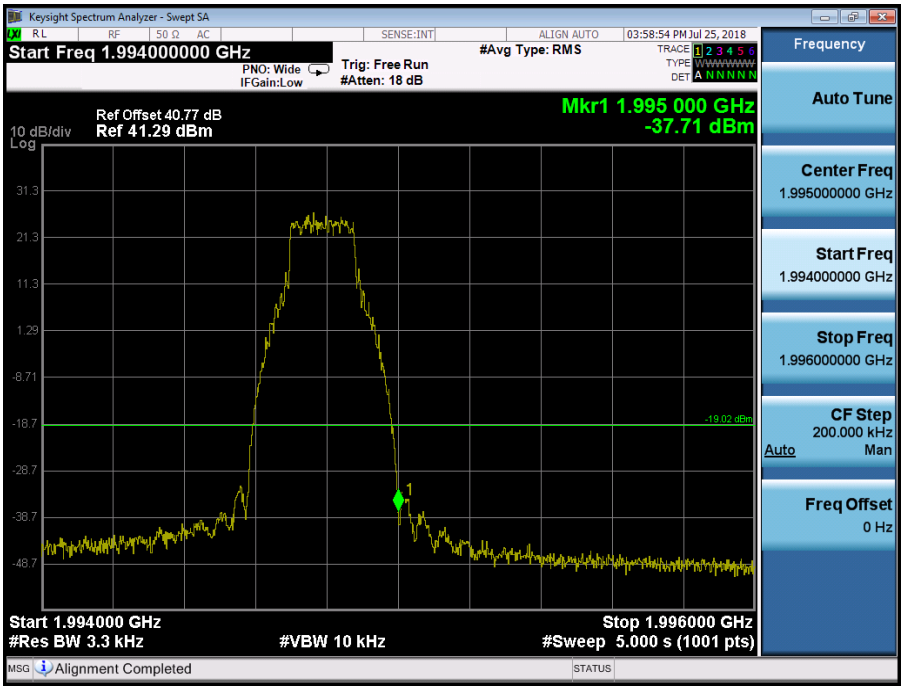




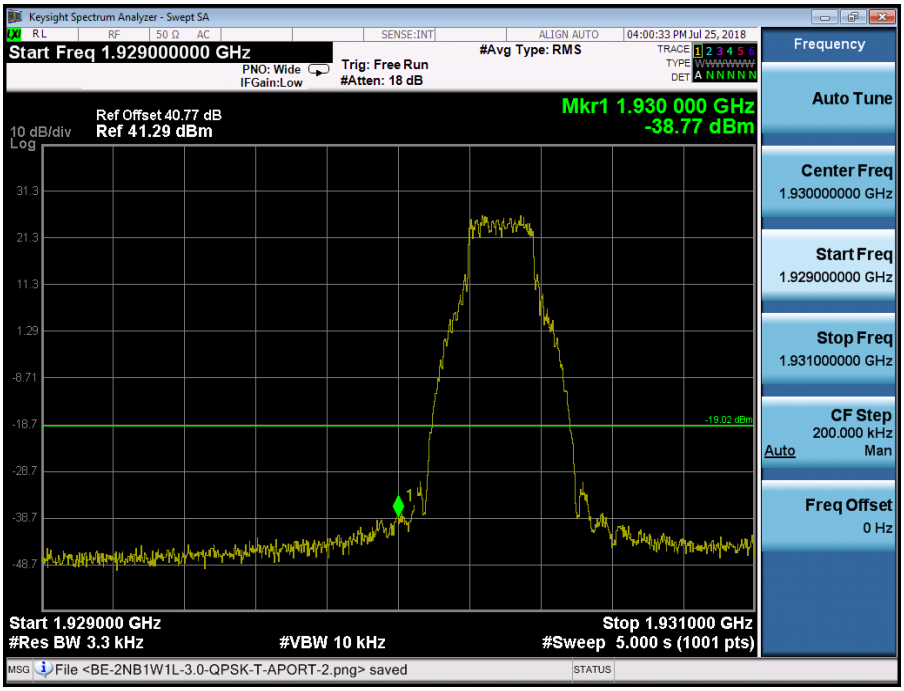
The channel power of 1MHz for 1928.675MHz is -21.72dBm, which is within the limit of-19.02dBm

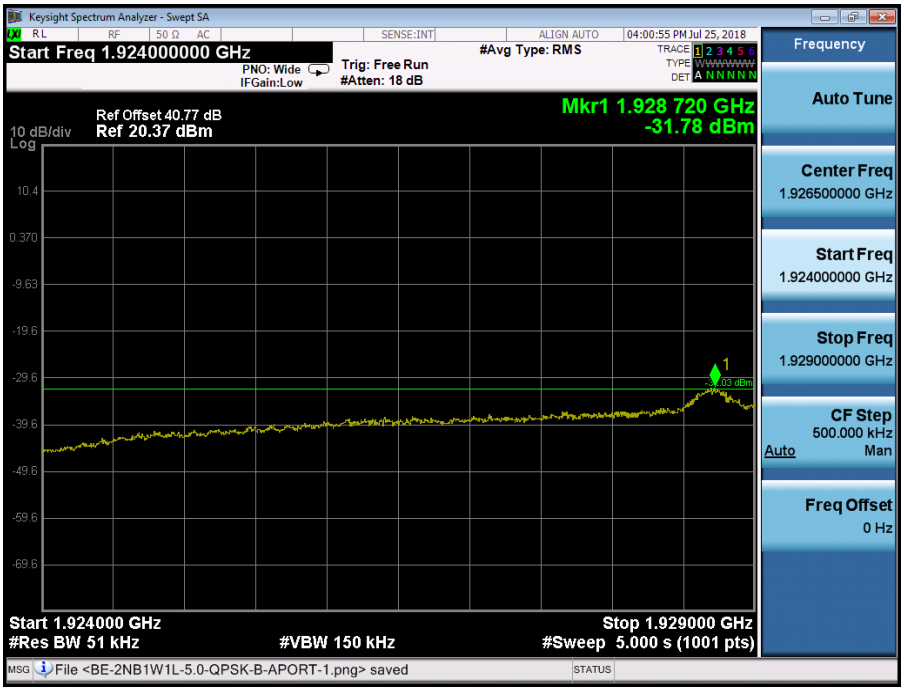


Port A, Channel Position T, LTE 3.0MHz

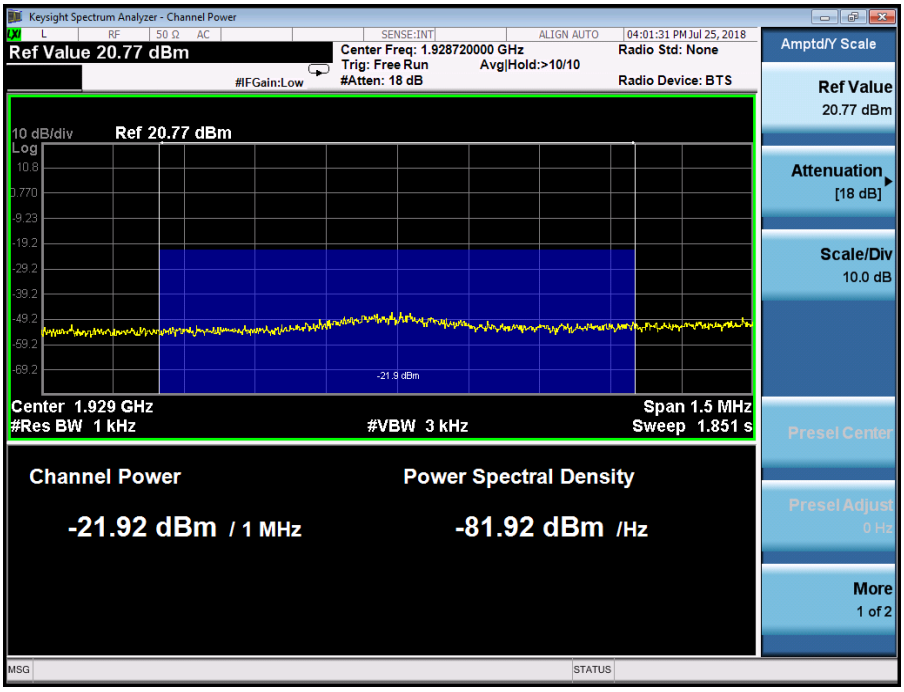


Port A, Channel Position B, LTE 5.0MHz

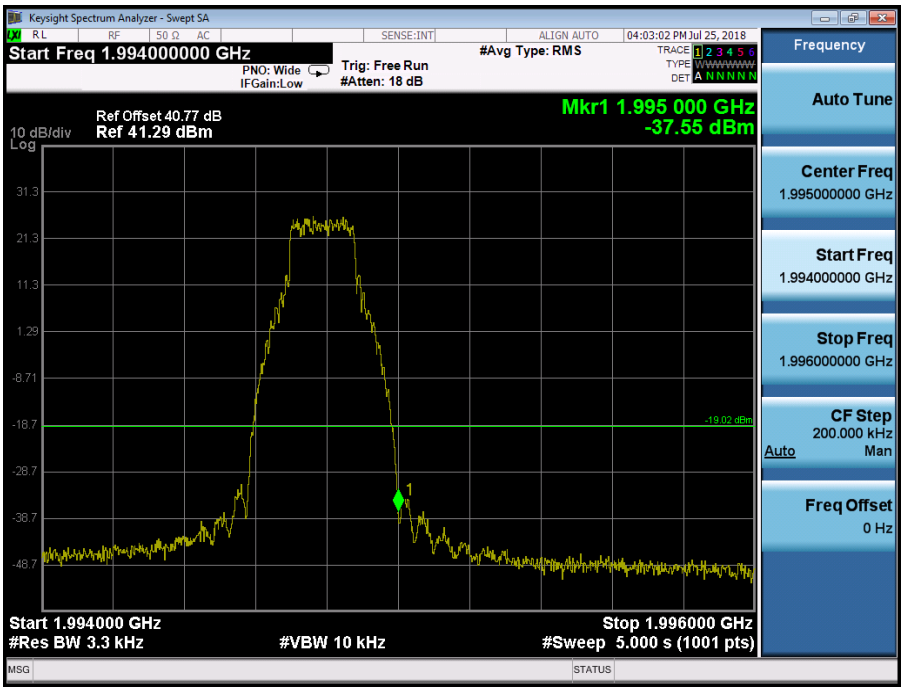




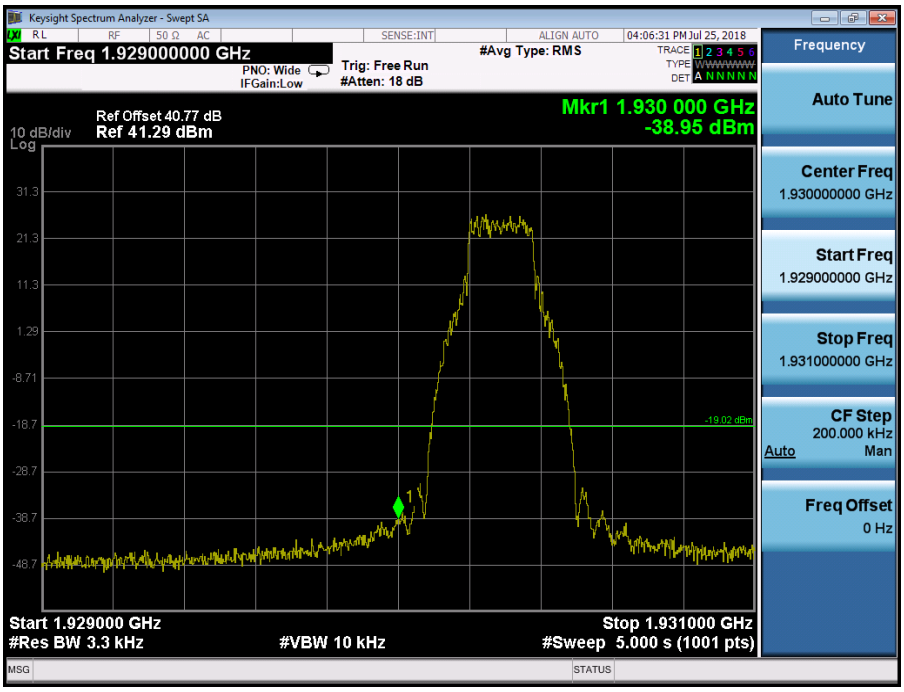
The channel power of 1MHz for 1928.720MHz is -21.92dBm, which is within the limit of-19.02dBm

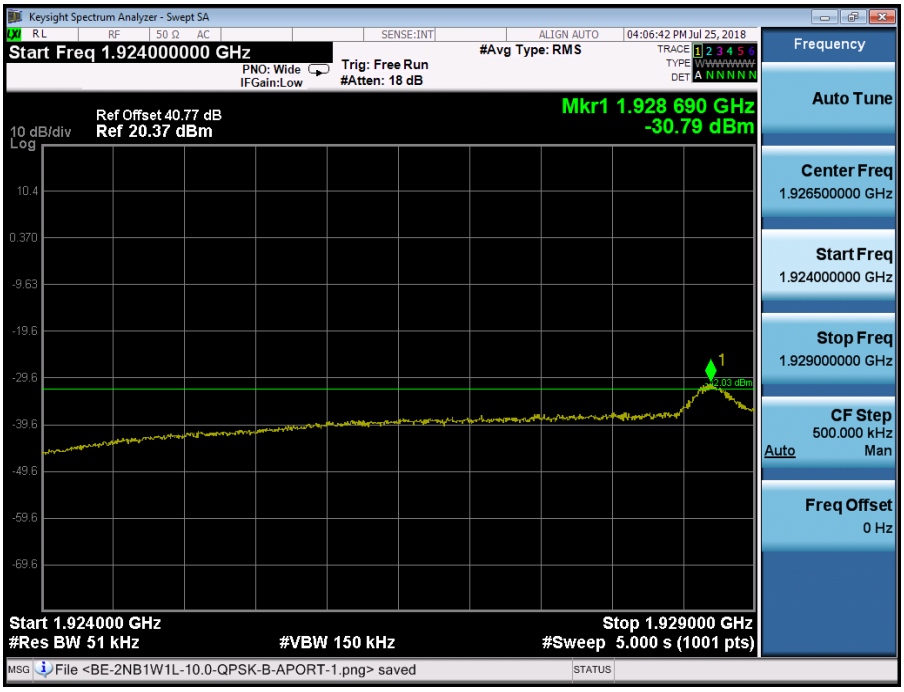


Port A, Channel Position T, LTE 5.0MHz

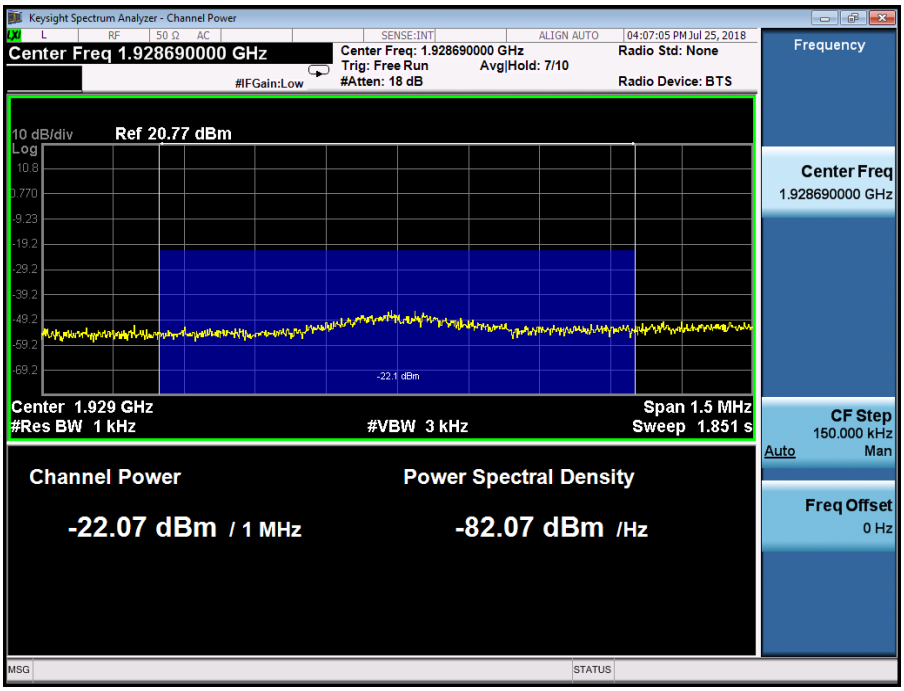


Port A, Channel Position B, LTE 10.0MHz

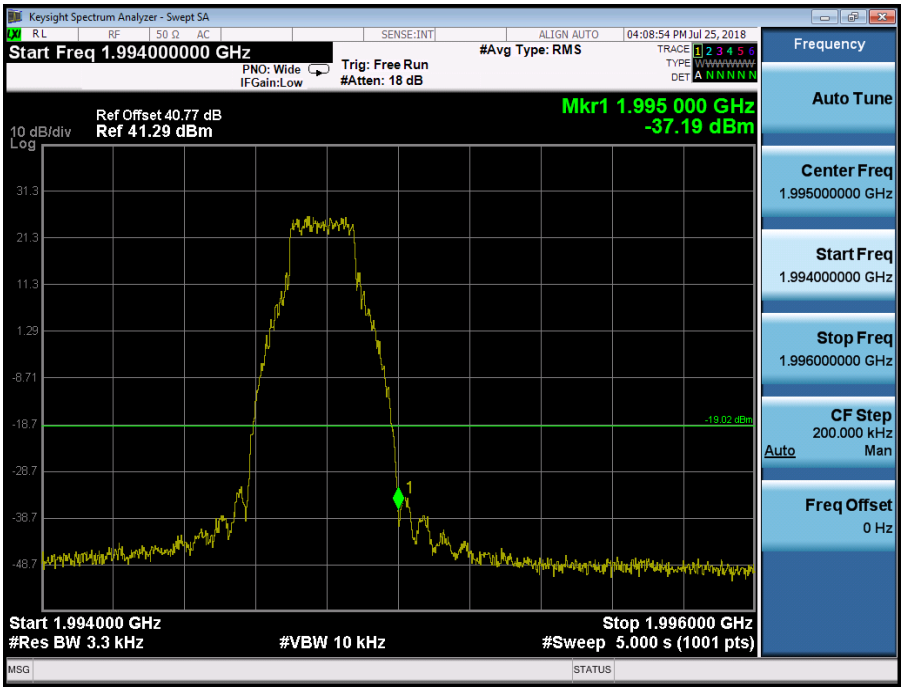




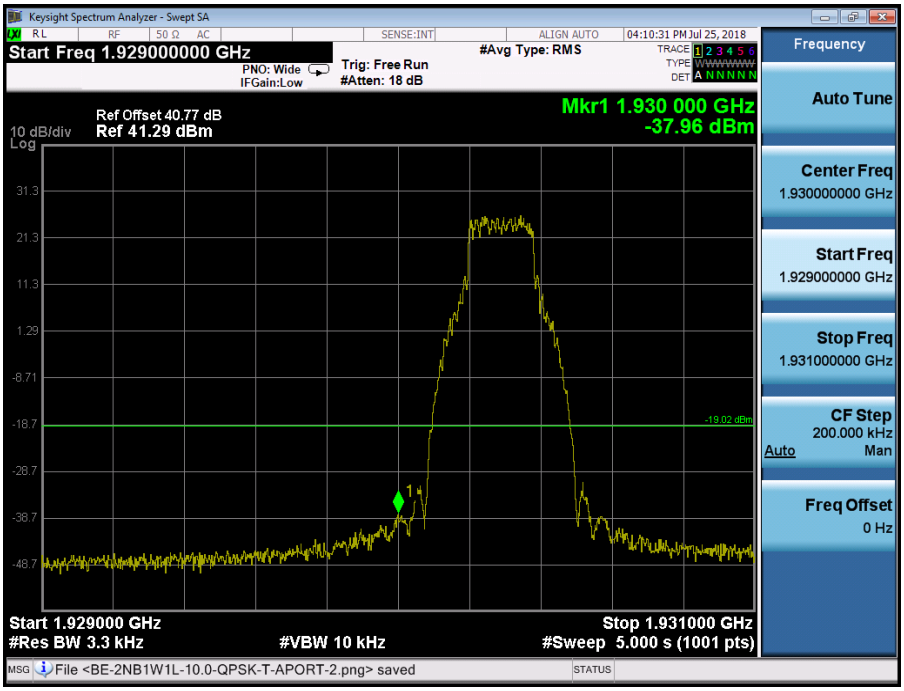
The channel power of 1MHz for 1928.690MHz is -22.07dBm, which is within the limit of-19.02dBm

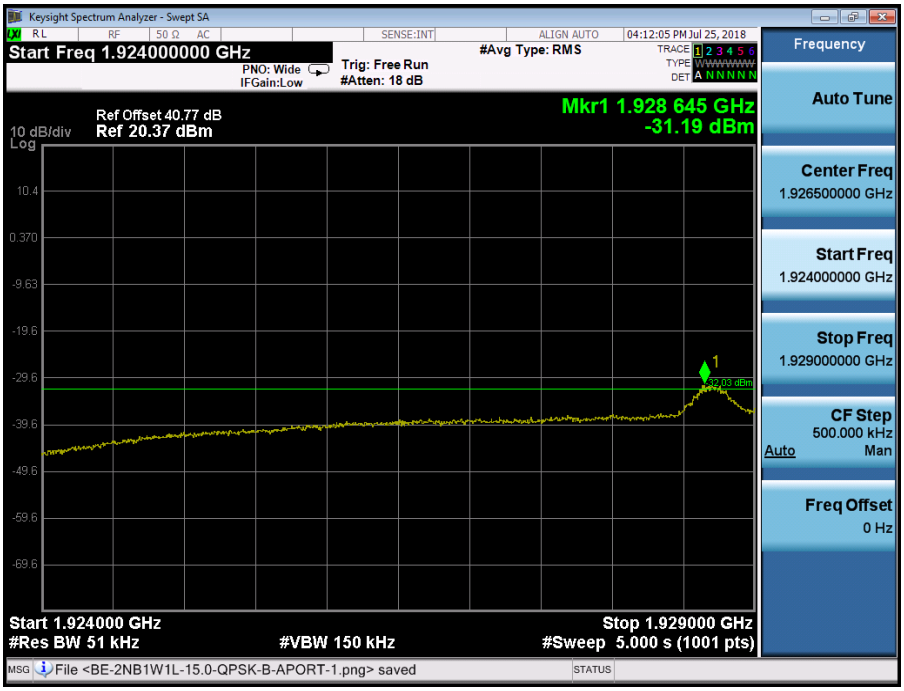


Port A, Channel Position T, LTE 10.0MHz

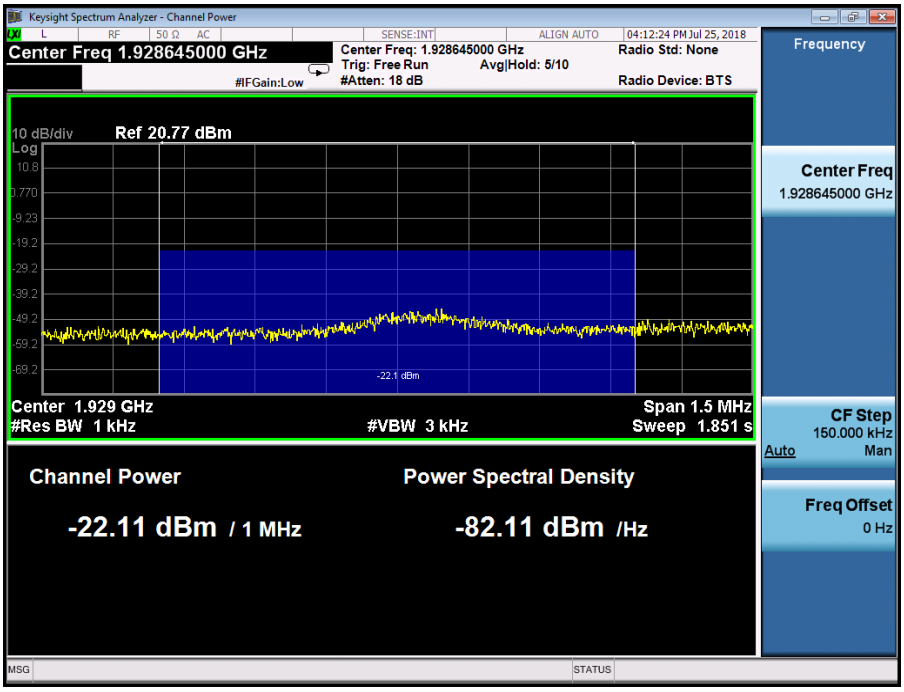


Port A, Channel Position B, LTE 15.0MHz

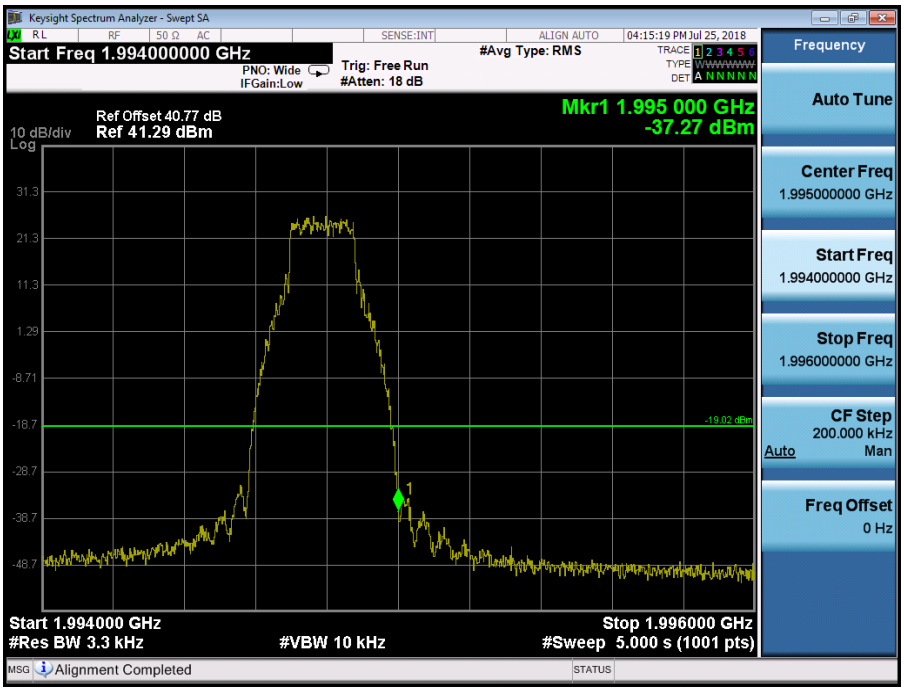




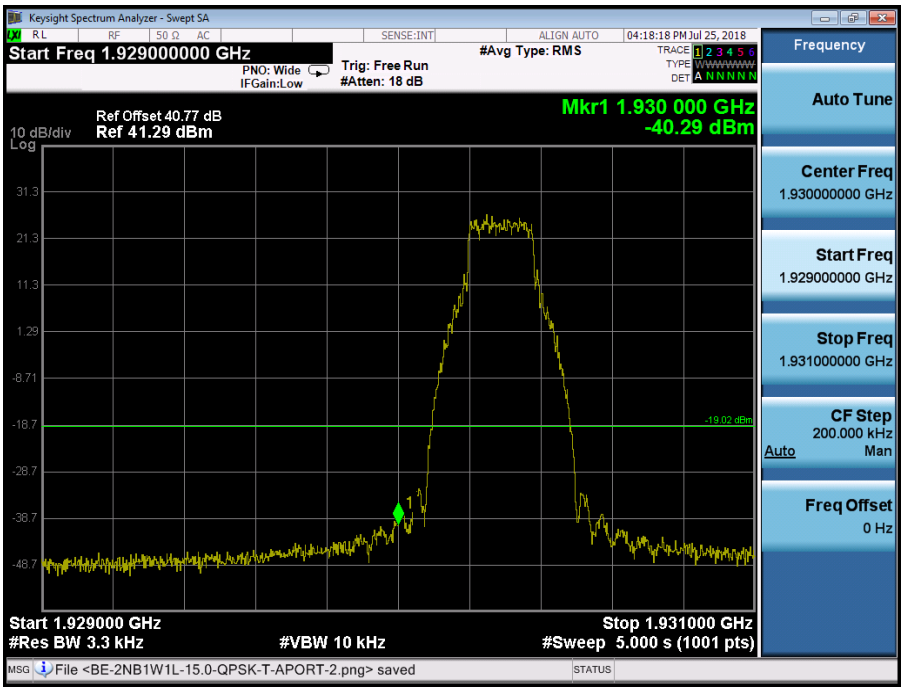
The channel power of 1MHz for 1928.645MHz is -22.11dBm, which is within the limit of-19.02dBm

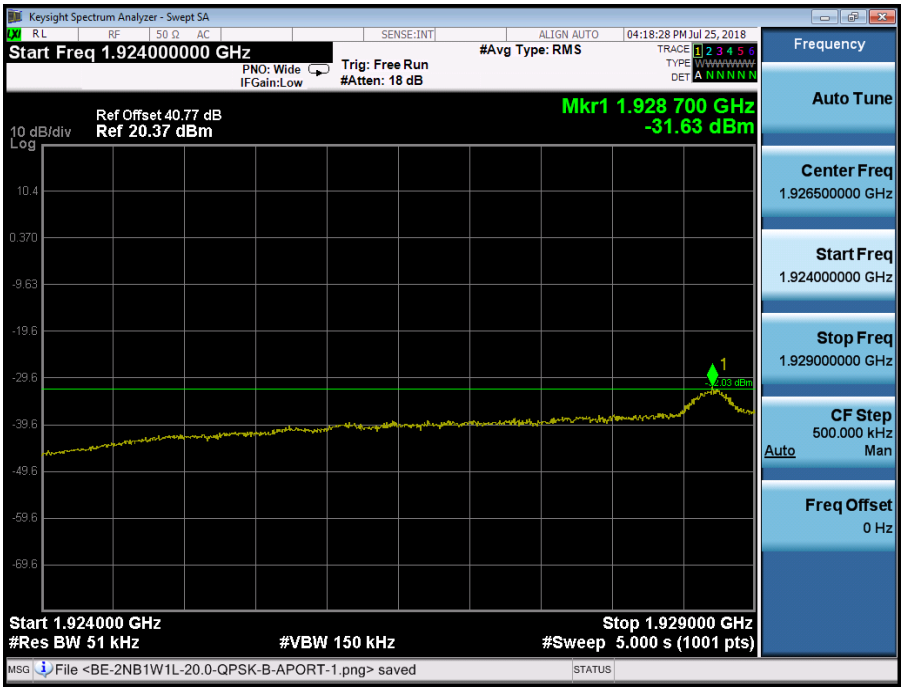


Port A, Channel Position T, LTE 15.0MHz

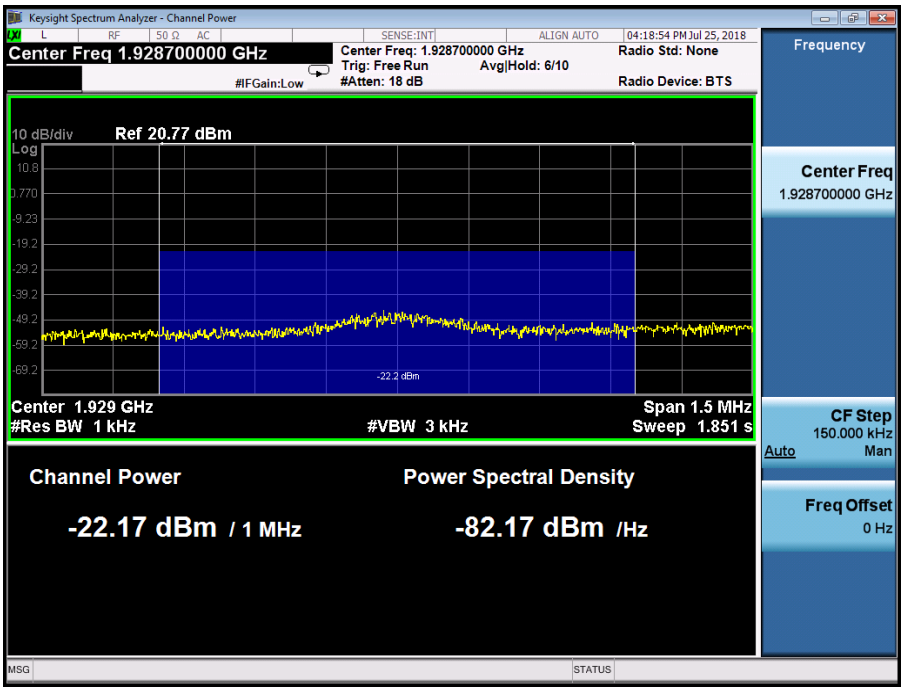


Port A, Channel Position B, LTE 20.0MHz

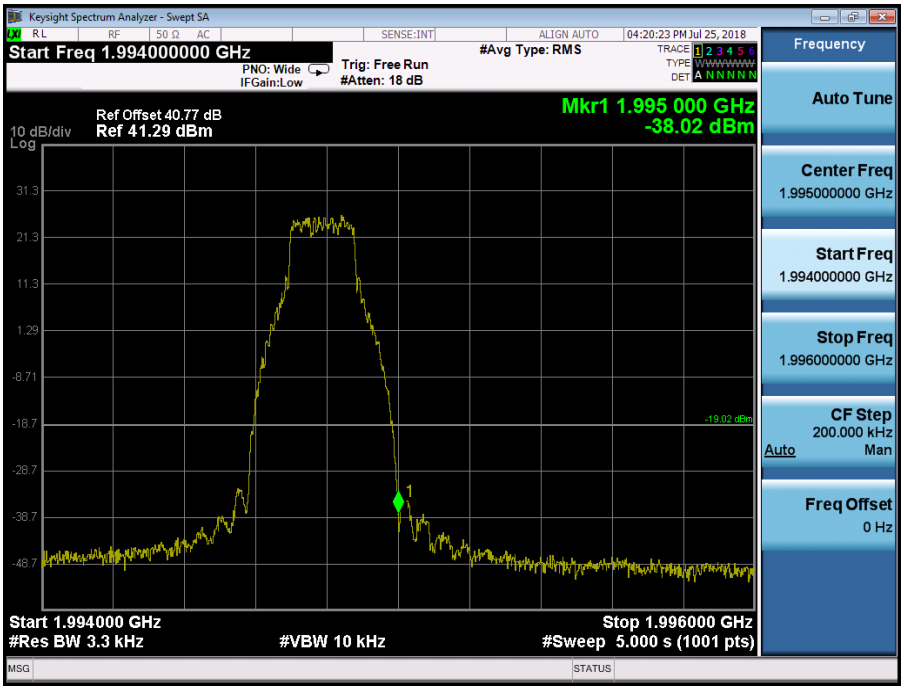




The channel power of 1MHz for 1928.700MHz is -22.17dBm, which is within the limit of-19.02dBm



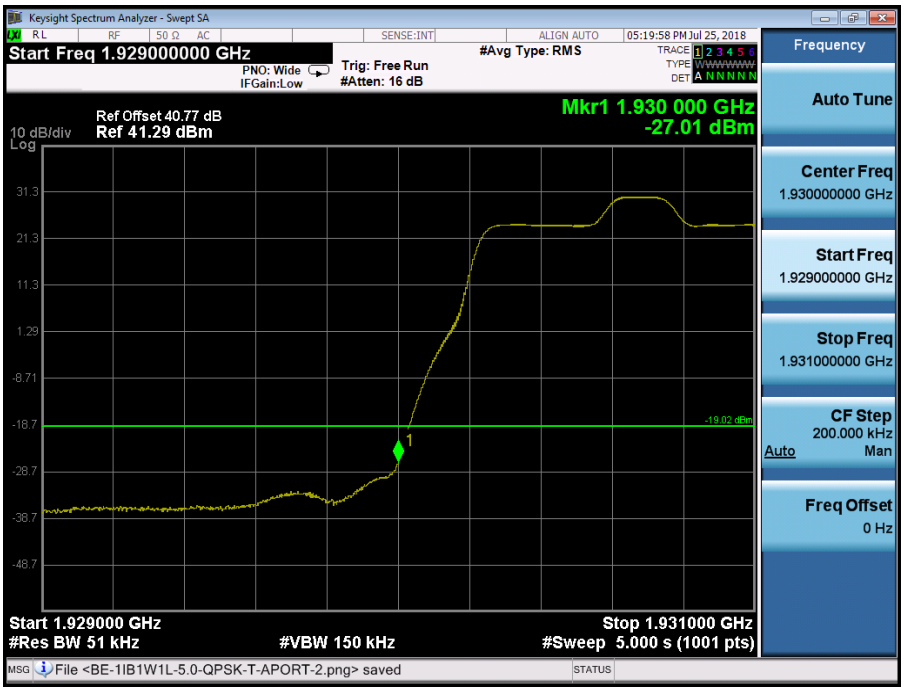
Port A, Channel Position T, LTE 20.0MHz

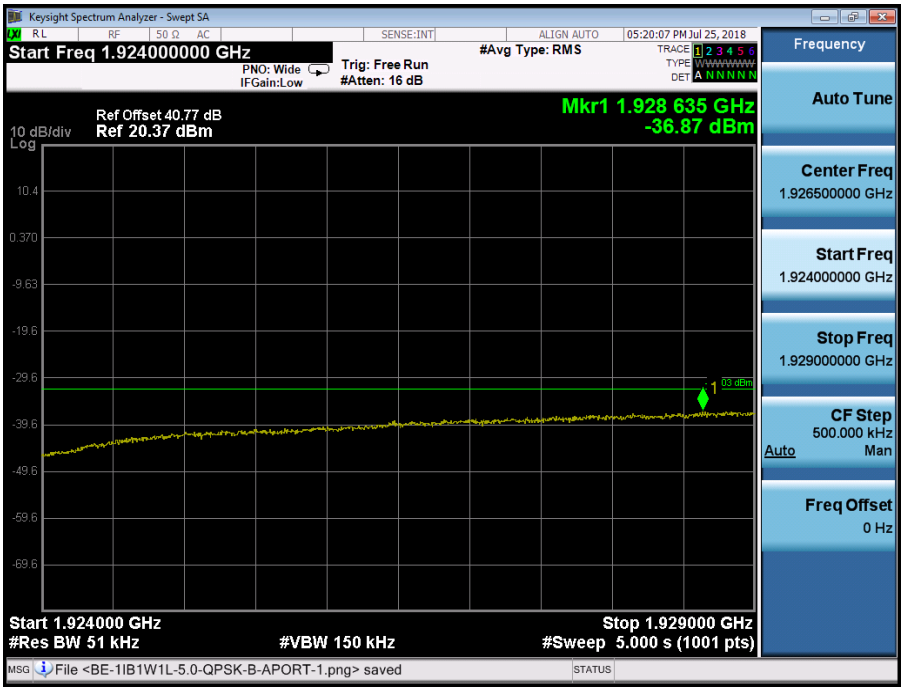


Configuration NB-IoT-IB+WCDMA+LTE-MIMO-MC-1-BE, (1IB QPSK+1WCDMA QPSK+1LTE QPSK)

Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B 1930.0MHz	(IB) 5.0MHz, (W) 5.0MHz (L) 5.0MHz	51	-19.02
Channel Position T 1995.0MHz	(IB) 5.0MHz, (W) 5.0MHz (L) 5.0MHz	51	-19.02

Port A, Channel Position B, LTE 5.0MHz





Port A, Channel Position T, LTE 5.0MHz

A.4 Conducted Spurious Emission

A.4.1 Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238 (a)
RSS-133, Clause 6.5

A.4.2 Method of measurement

In accordance with FCC CFR 47 Part 24, Clause 24.238, 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.
The spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 3KHz to 20GHz. The resolution bandwidth of 1MHz was employed for frequency band 3KHz to 20GHz. The spectrum analyzer detector was set to RMS.
For MIMO mode configurations, the limit was adjusted with a correction of -6.02dB [10Log4] by using the Measure and Add 10Log(N) dB technique according to FCC KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports RF A,B,C and D. Then the limit was adjust to -19.02dBm.
For NB-IoT-Standalone configurations, EUT can transmit in Tx diversity mode(TM2). The limit was adjusted with a correction of -3.01dB [10Log2]

A.4.3 Measurement limit

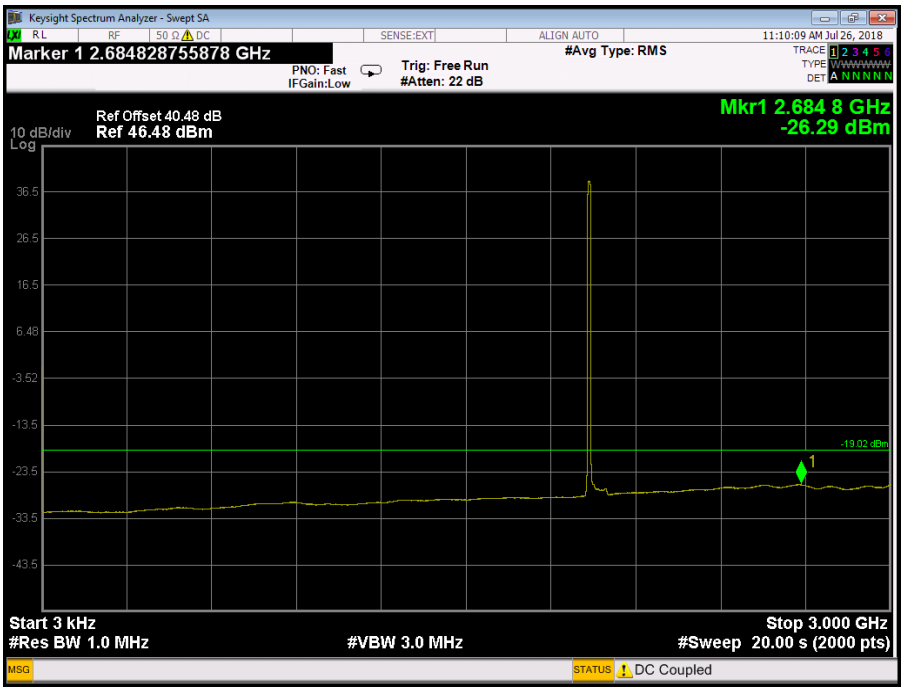
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

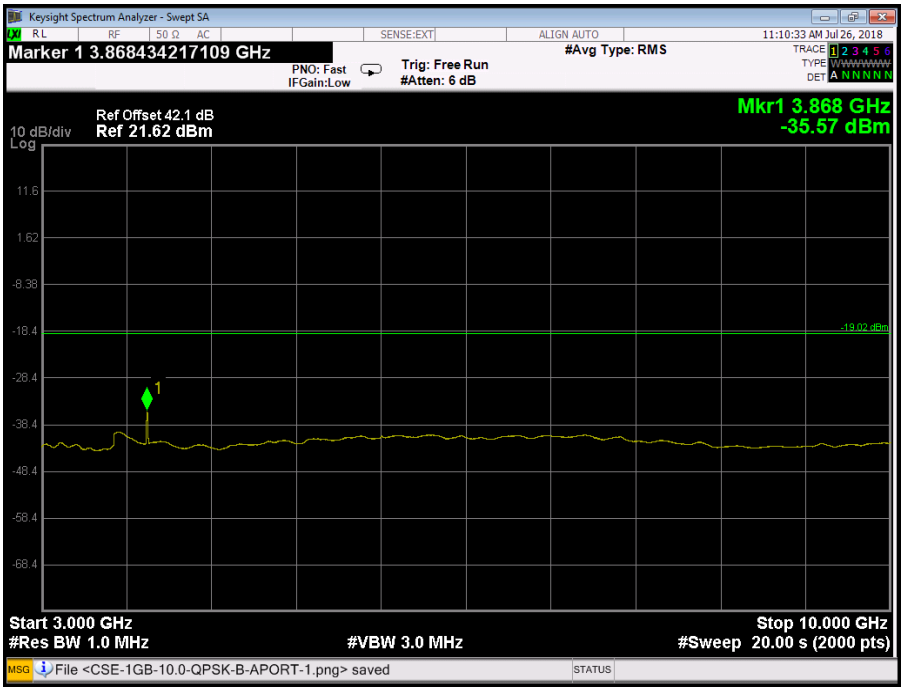
A.4.4 Measurement results

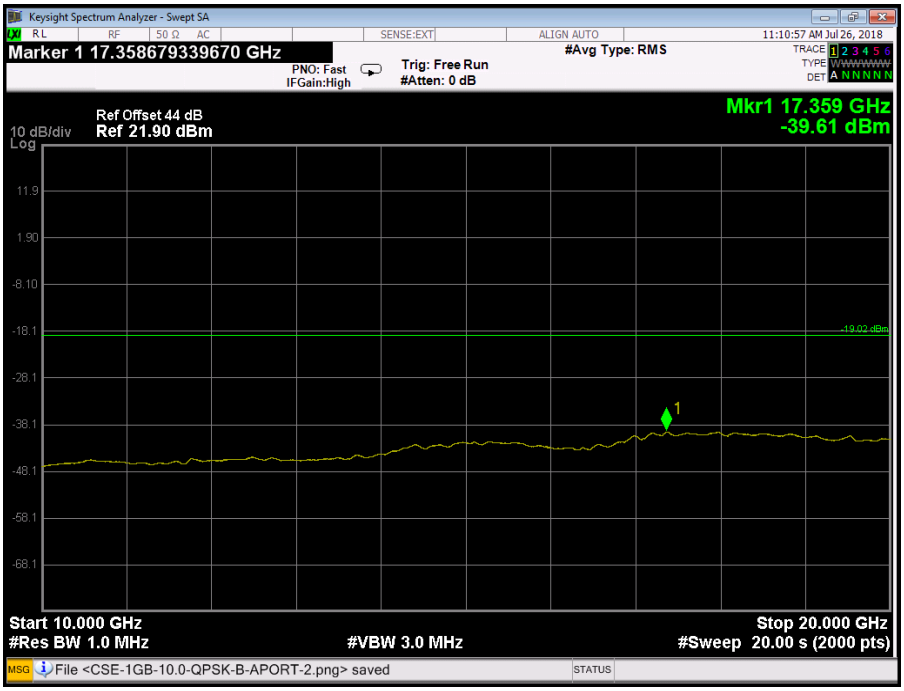
Configuration NB-IoT-GuardBand-1C, QPSK

Channel Bandwidth	RBW (MHz)	Limit (dBm)
10.0 MHz	1.0	-19.02
15.0 MHz	1.0	-19.02
20.0 MHz	1.0	-19.02

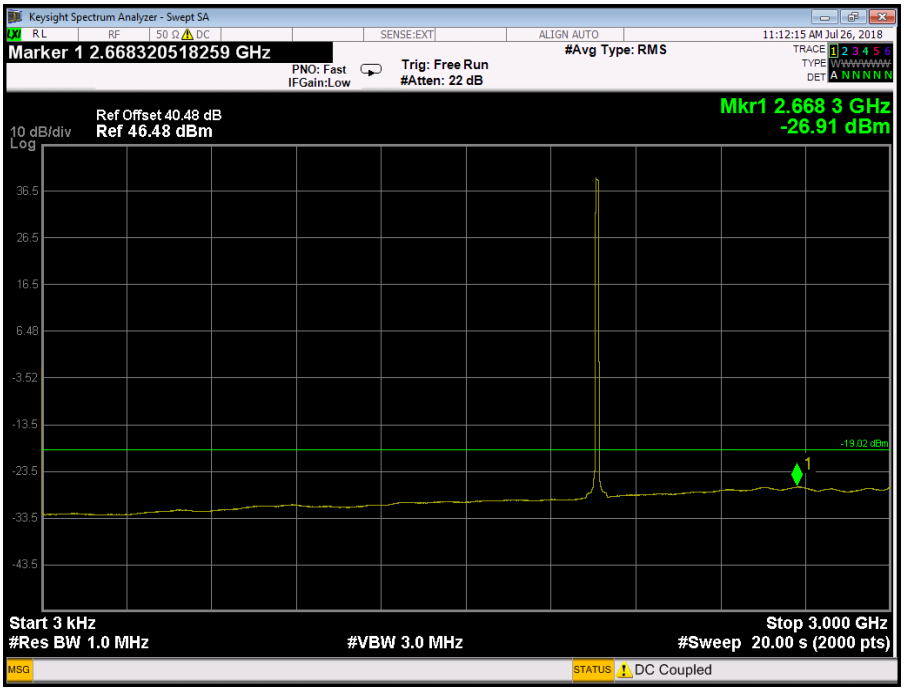
Port A, Channel Position B 10.0 MHz

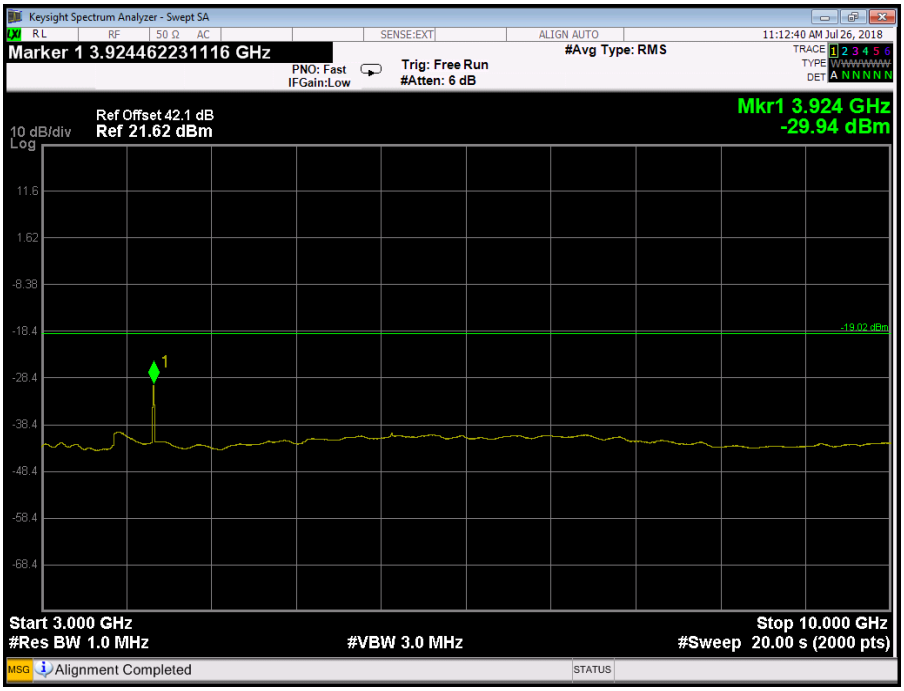


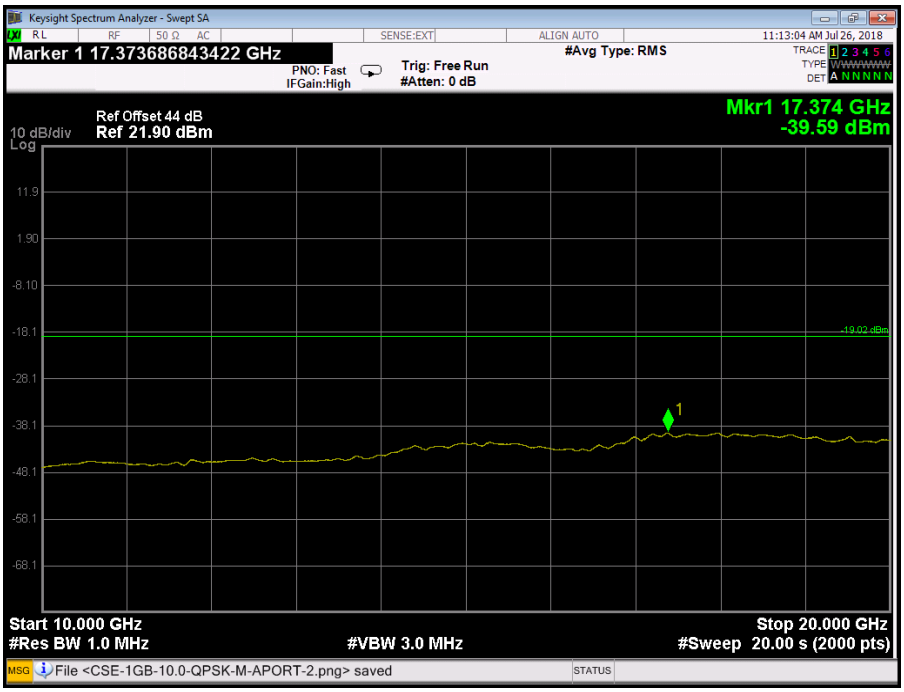




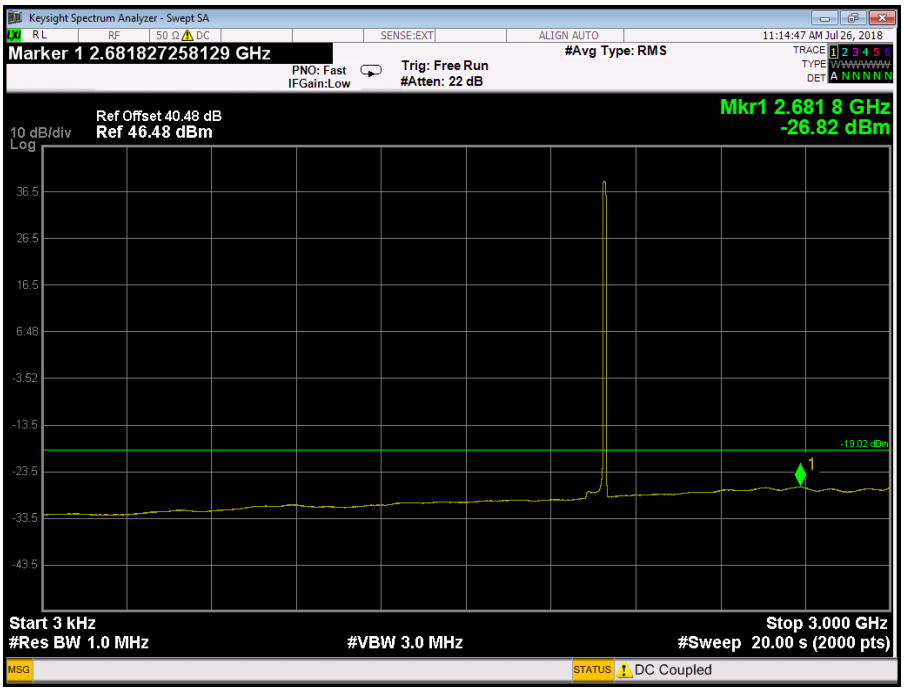
Port A, Channel Position M 10.0 MHz

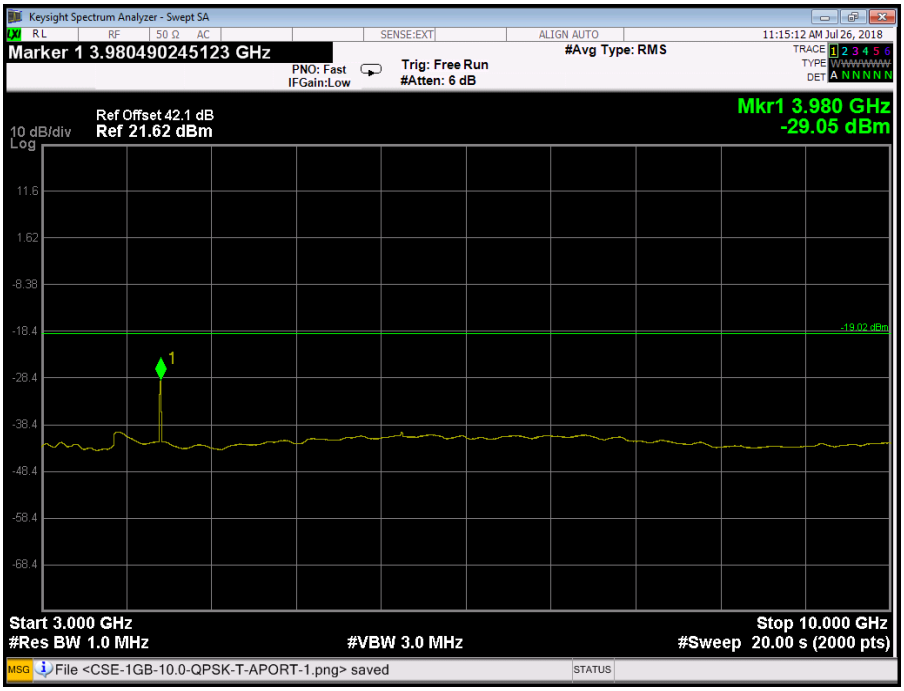


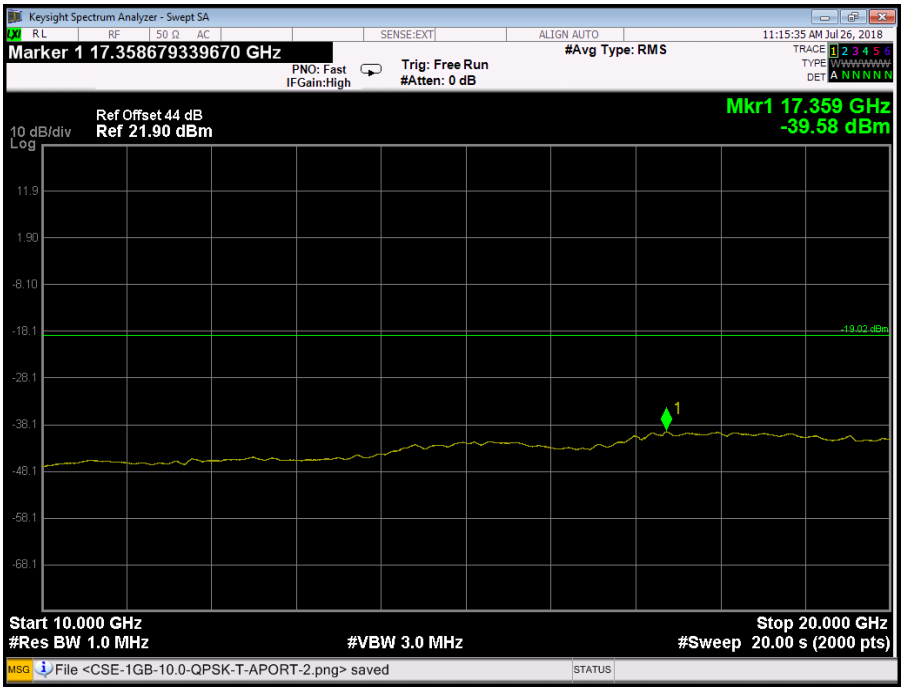




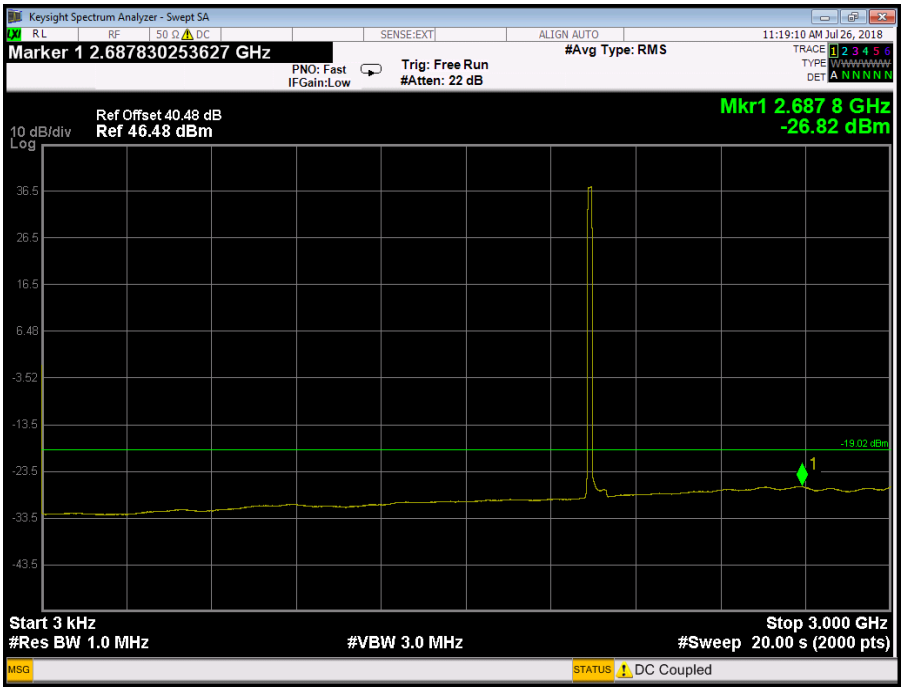
Port A, Channel Position T 10.0 MHz

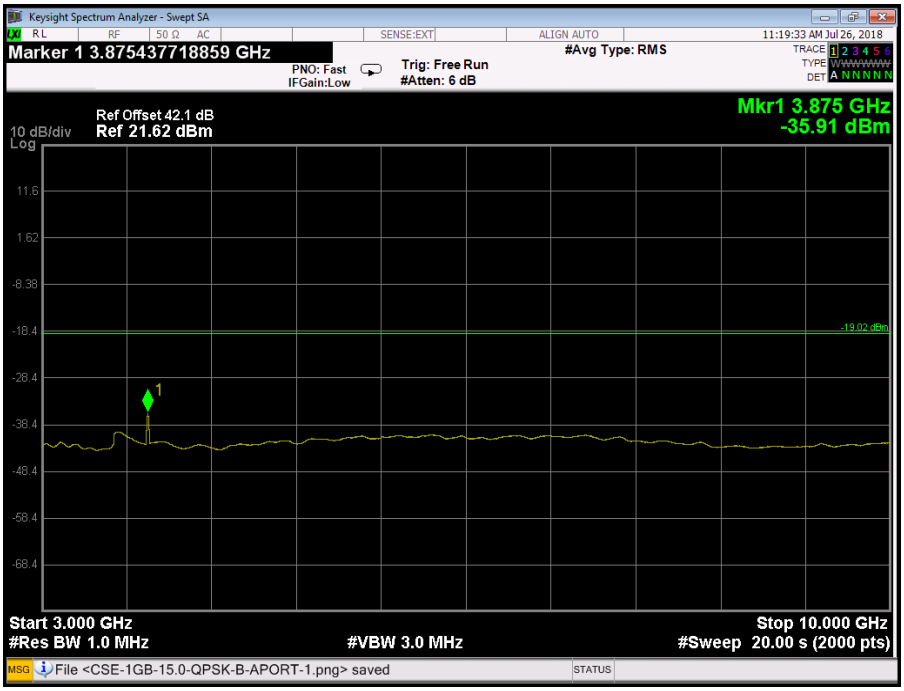


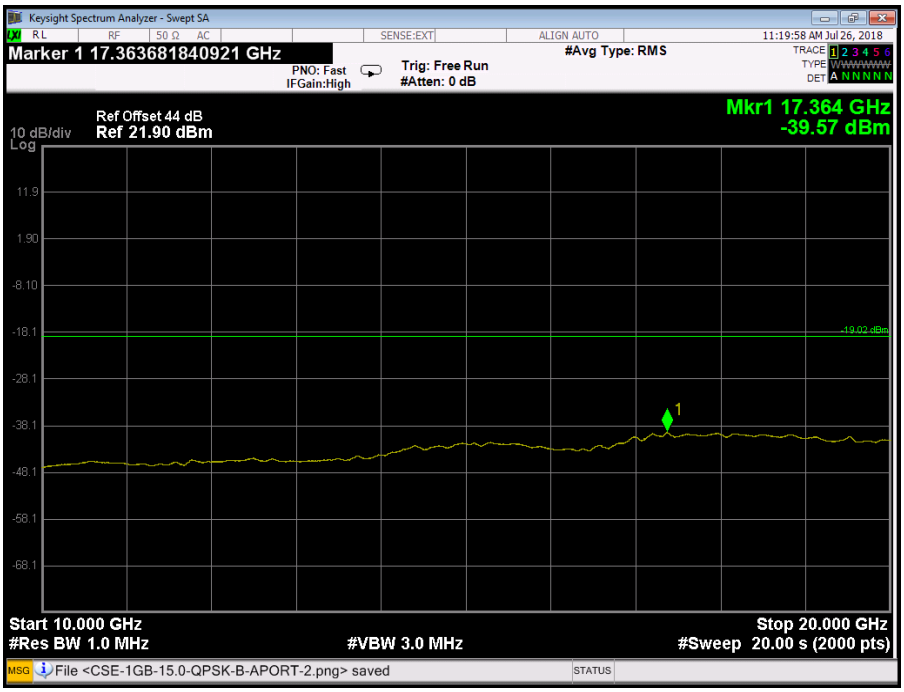




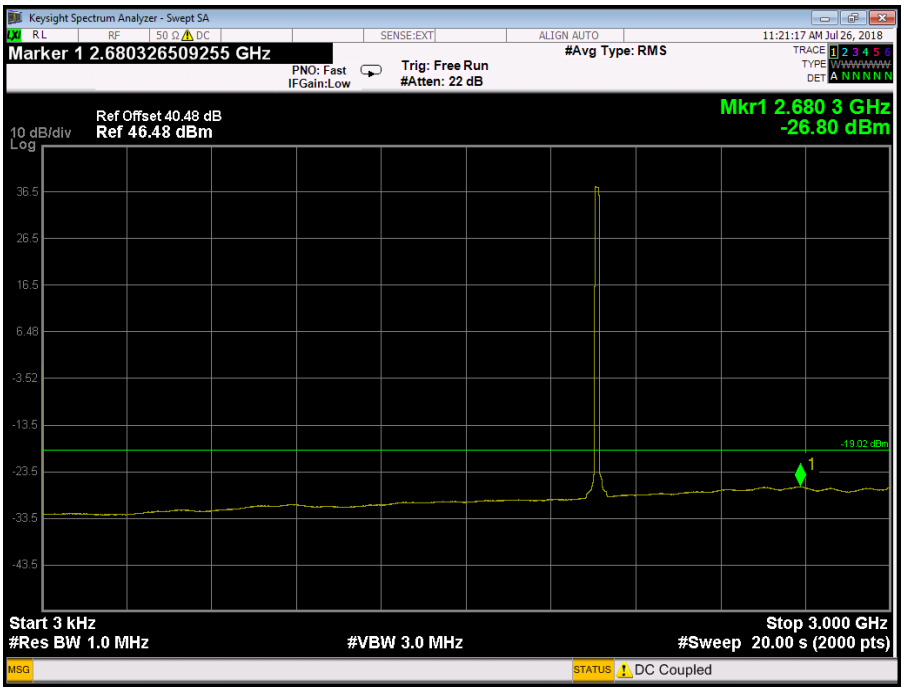
Port A, Channel Position B 15.0 MHz

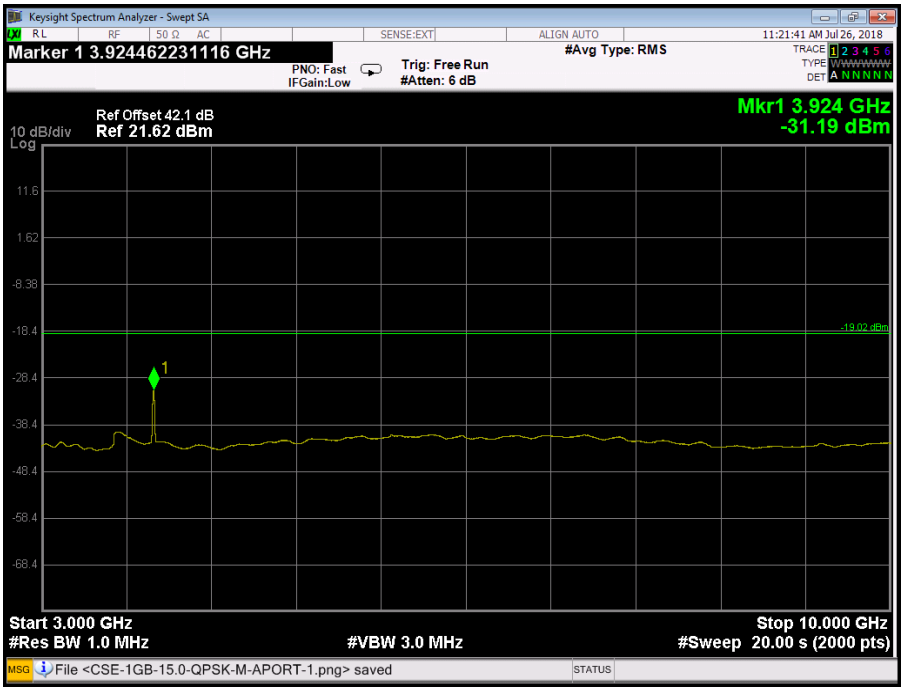


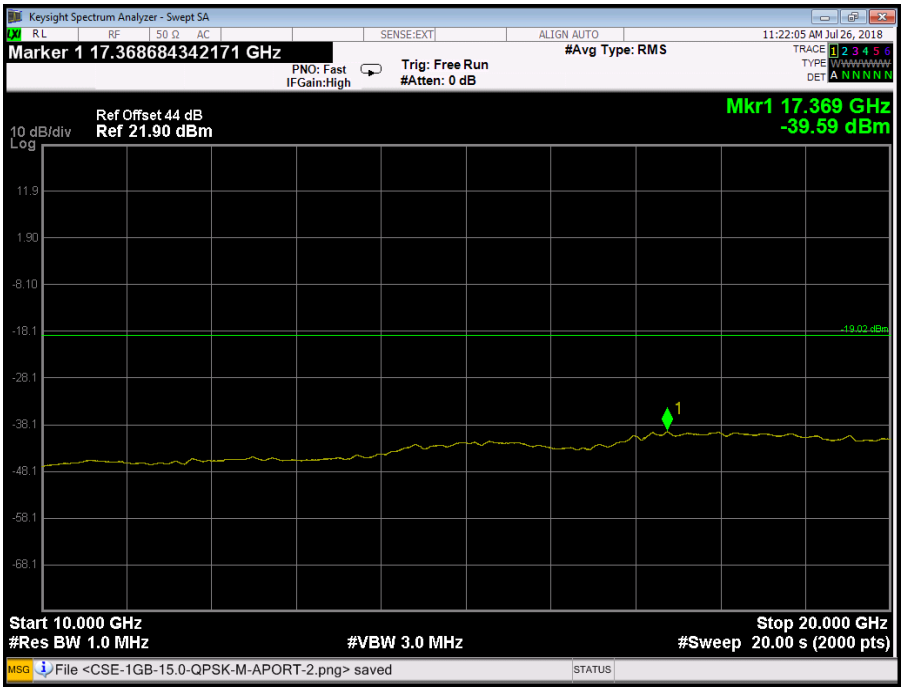




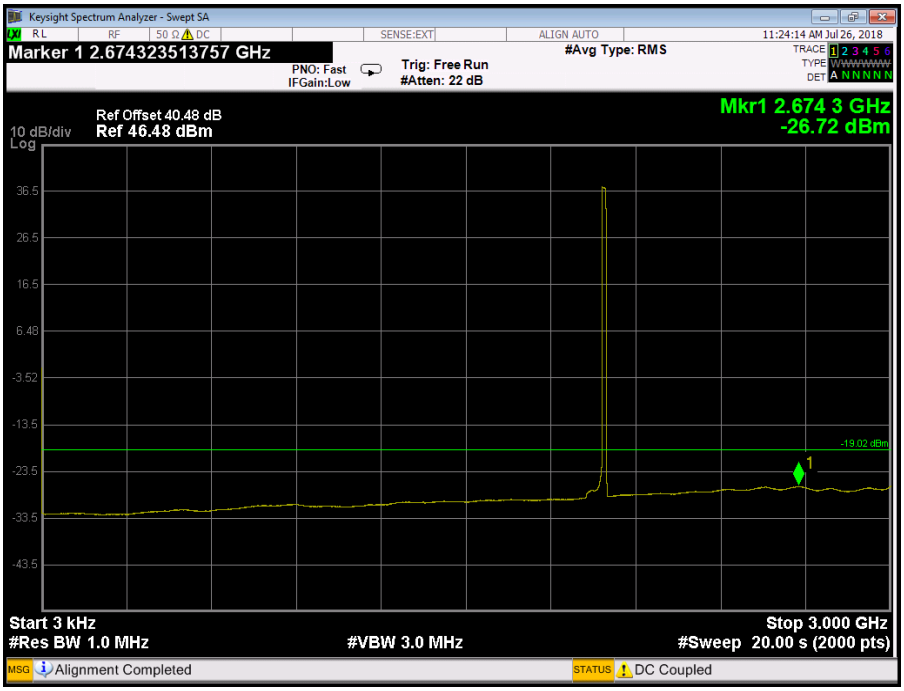
Port A, Channel Position M 15.0 MHz

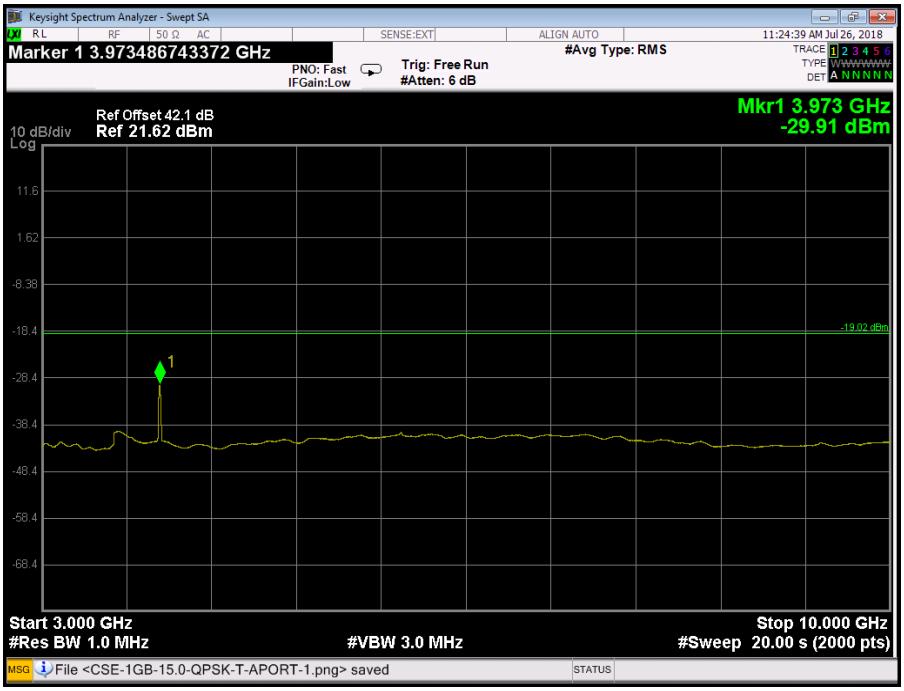


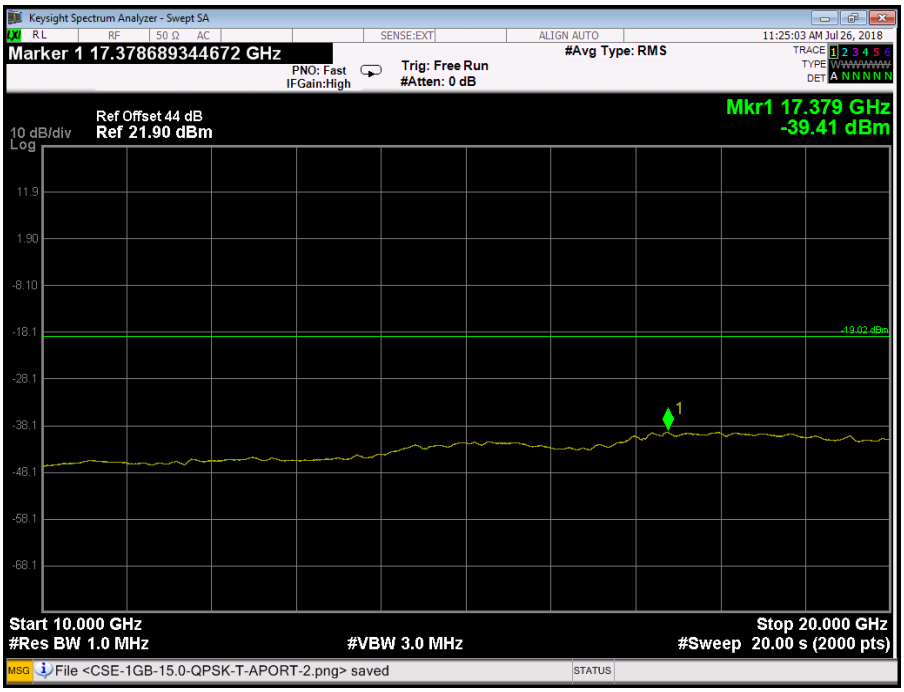




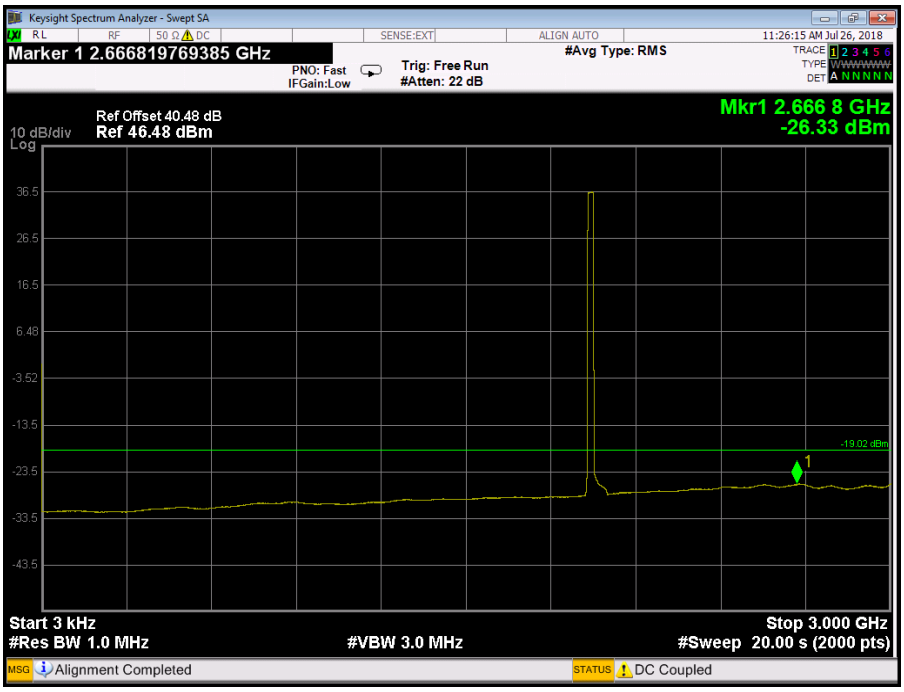
Port A, Channel Position T 15.0 MHz

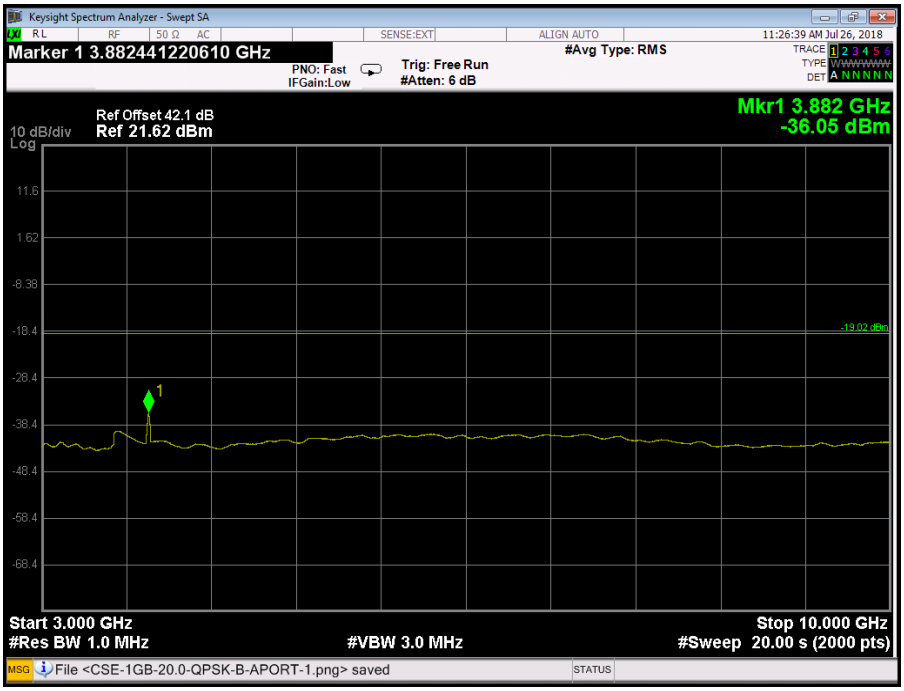


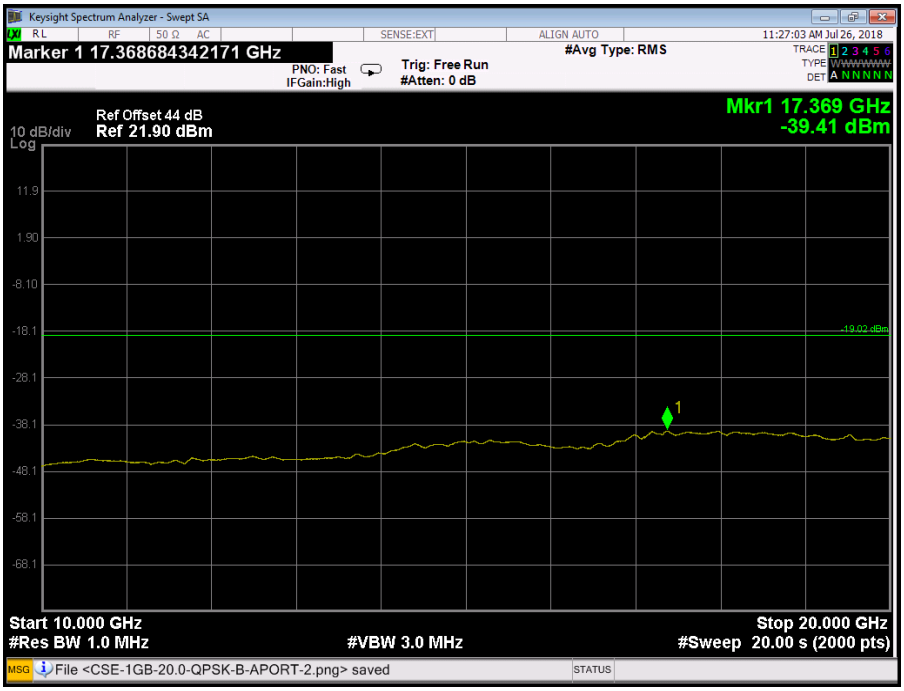




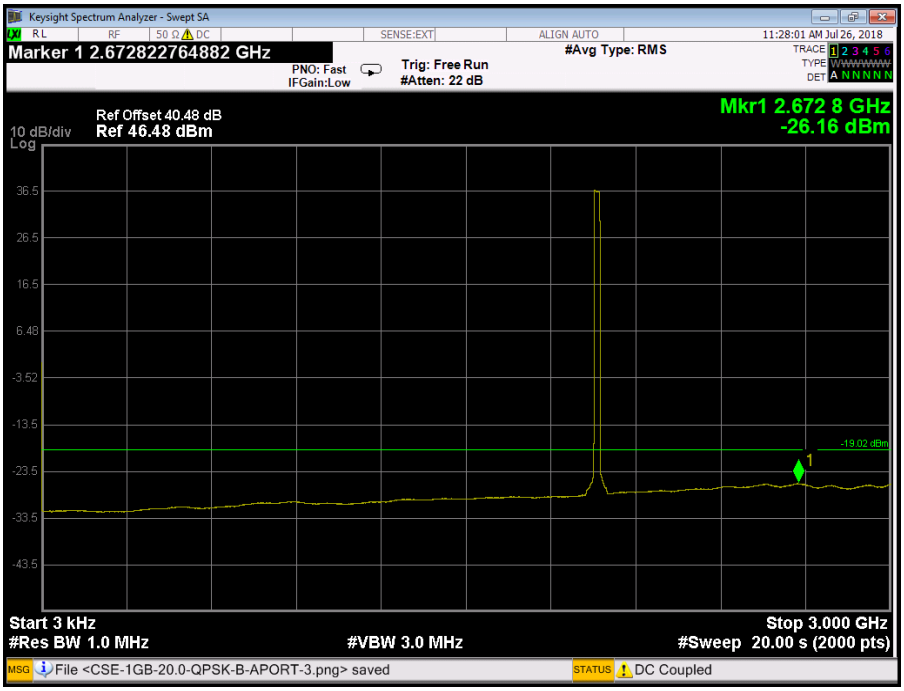
Port A, Channel Position B 20.0 MHz

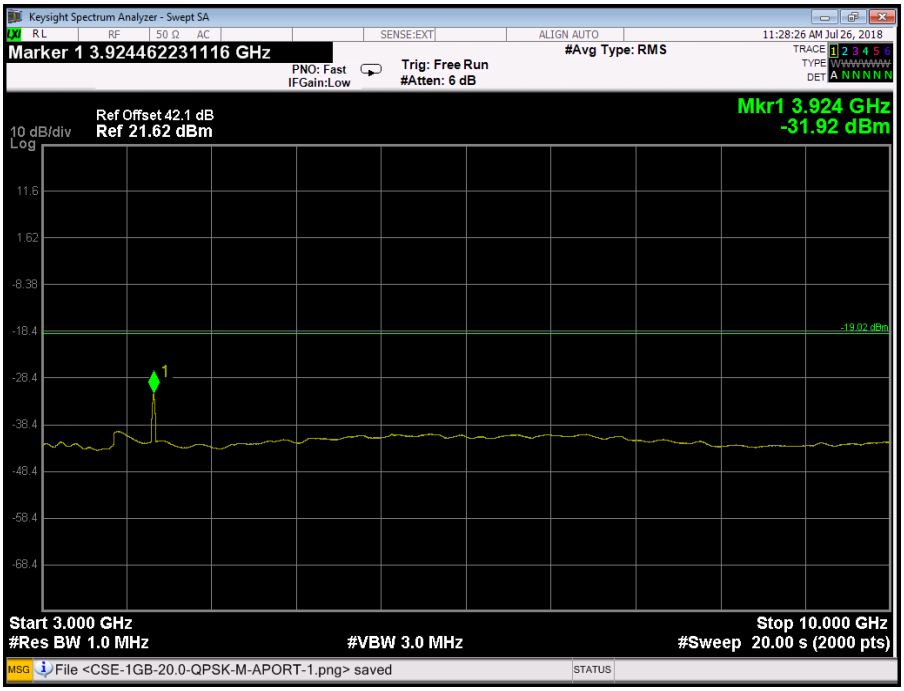


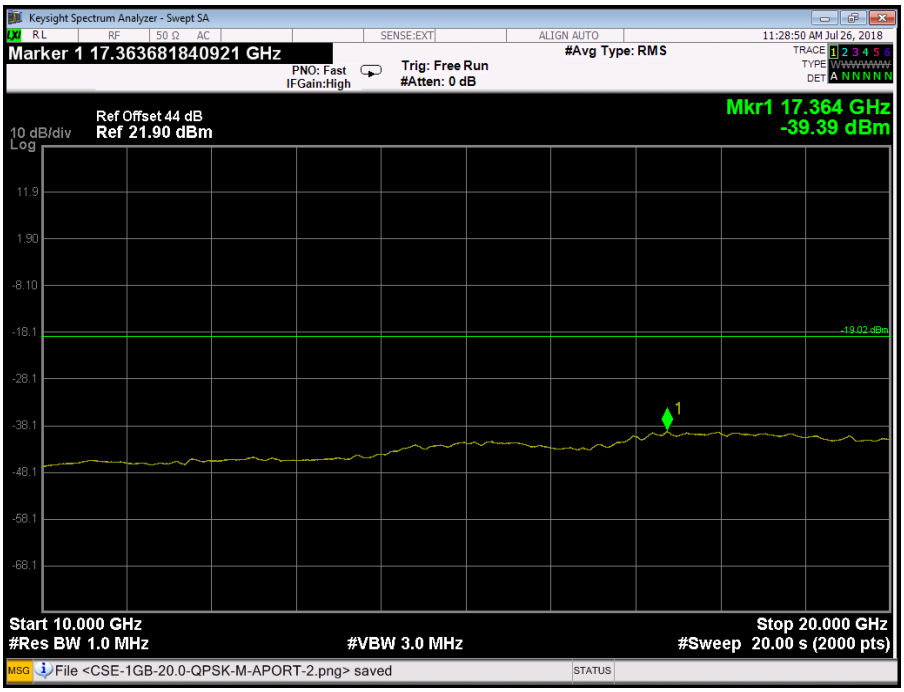




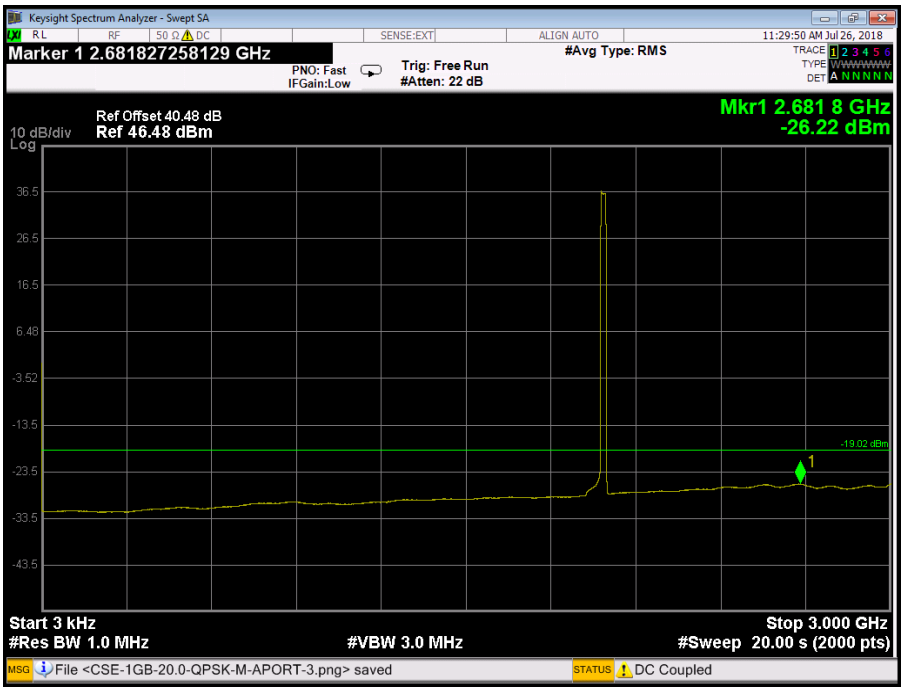
Port A, Channel Position M 20.0 MHz

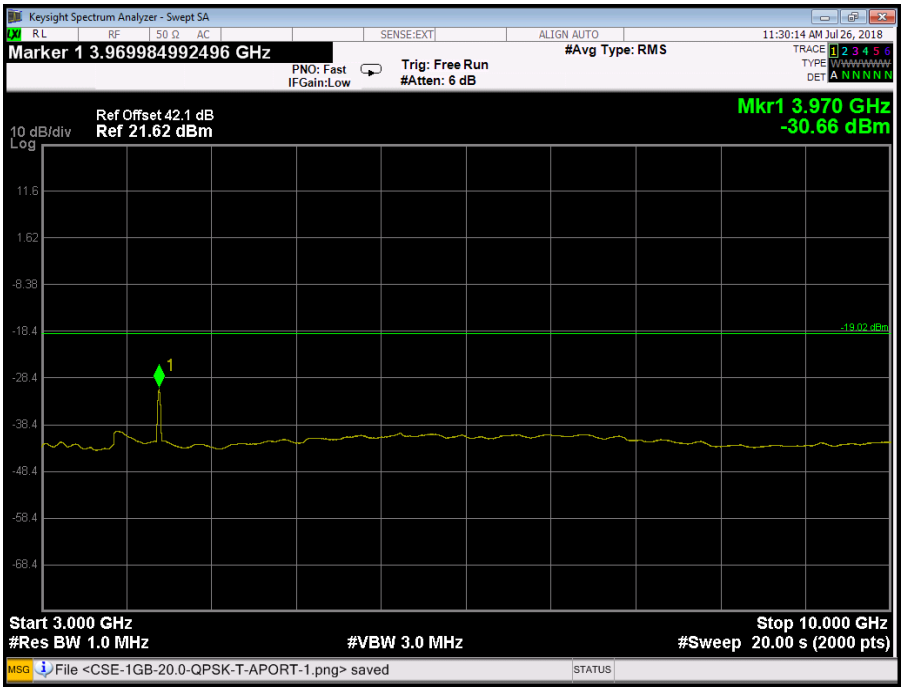


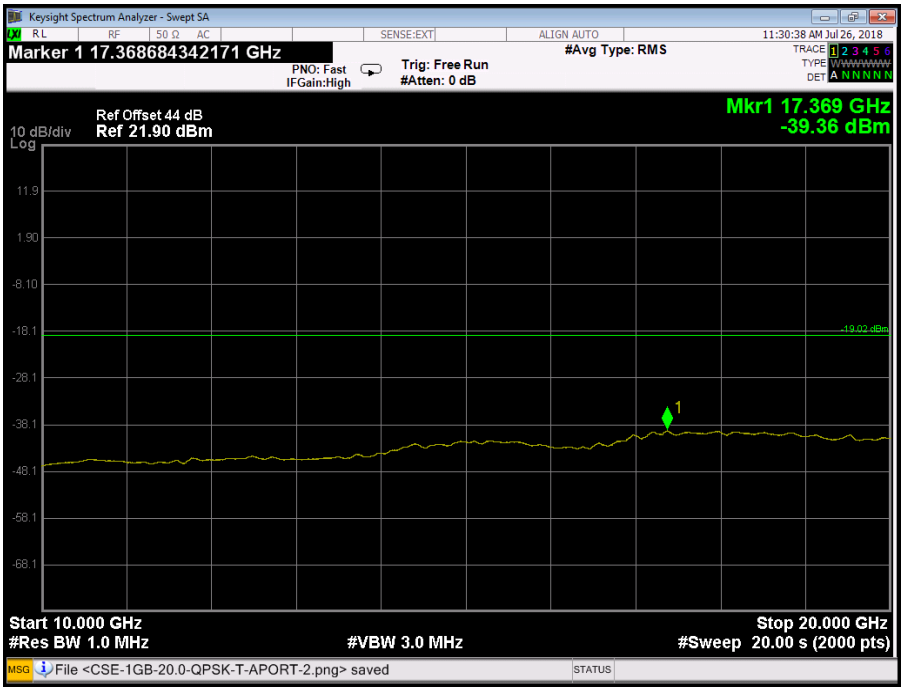




Port A, Channel Position T 20.0 MHz



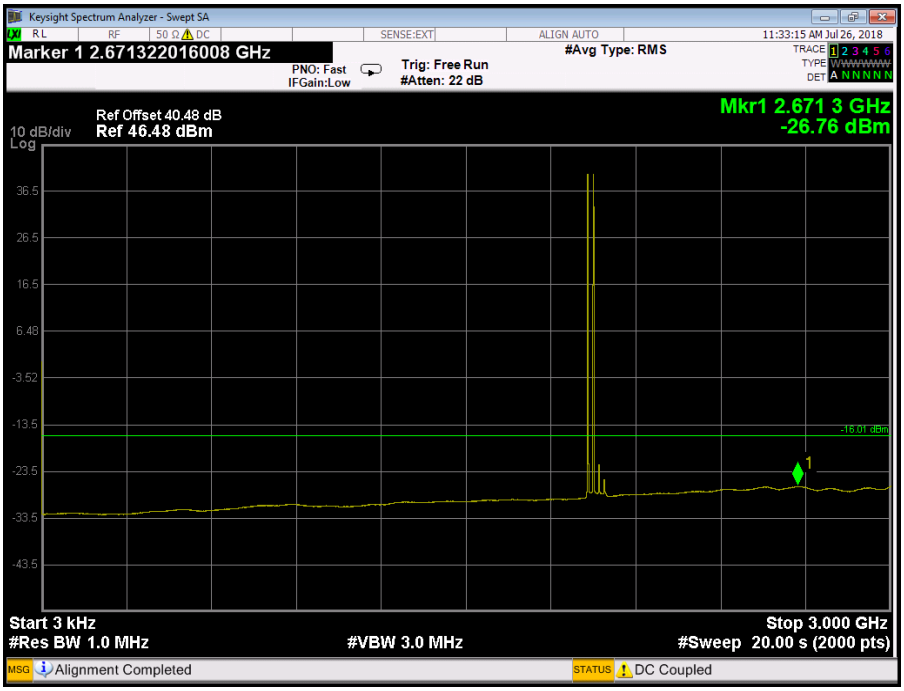


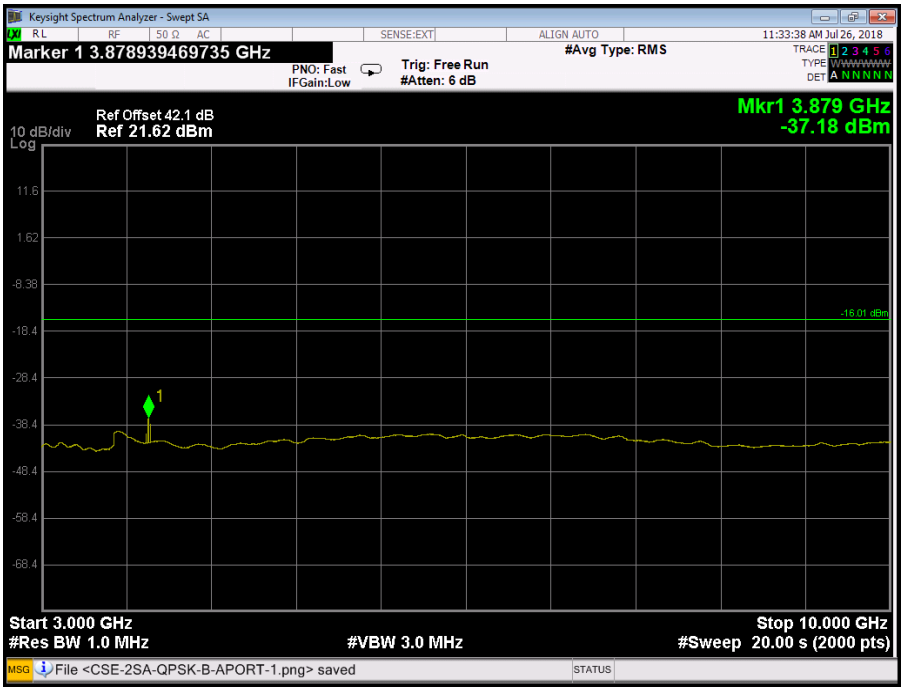


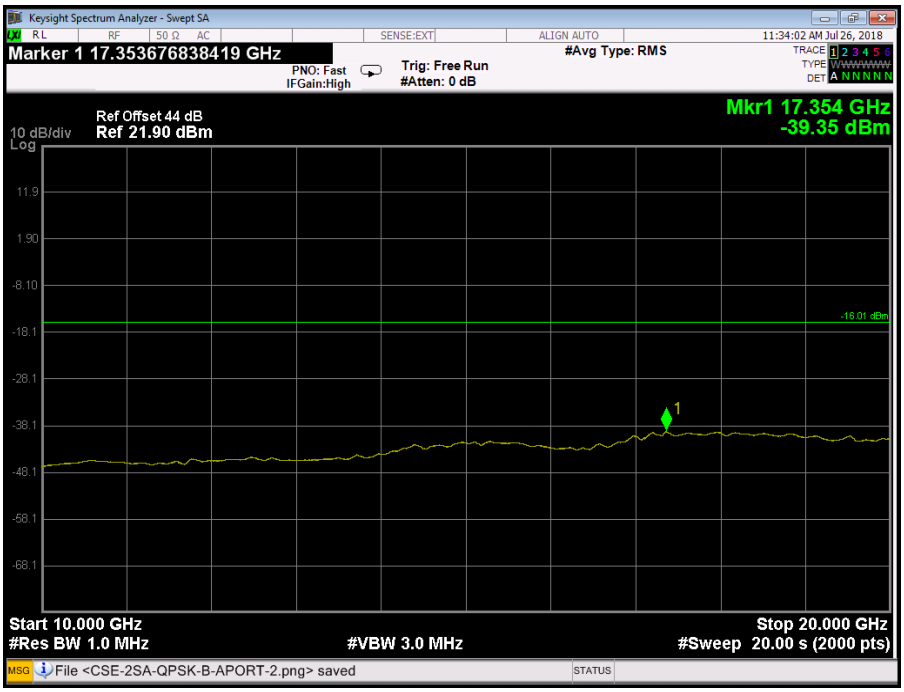
Configuration NB-IoT-StandAlone-2C, QPSK

Channel Bandwidth	RBW (MHz)	Limit (dBm)
250 KHz	1.0	-16.01

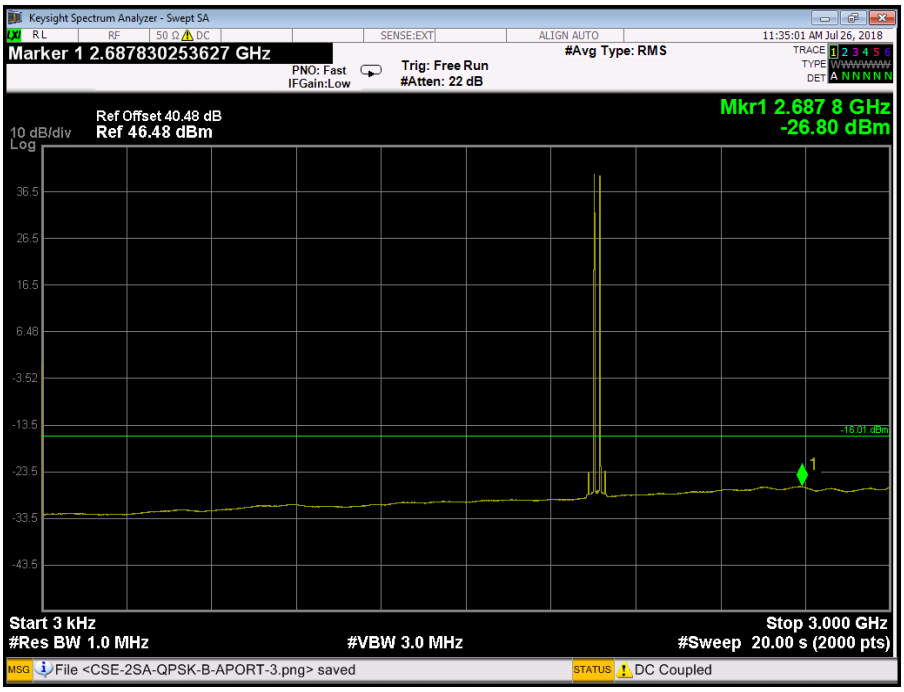
Port A, Channel Position B

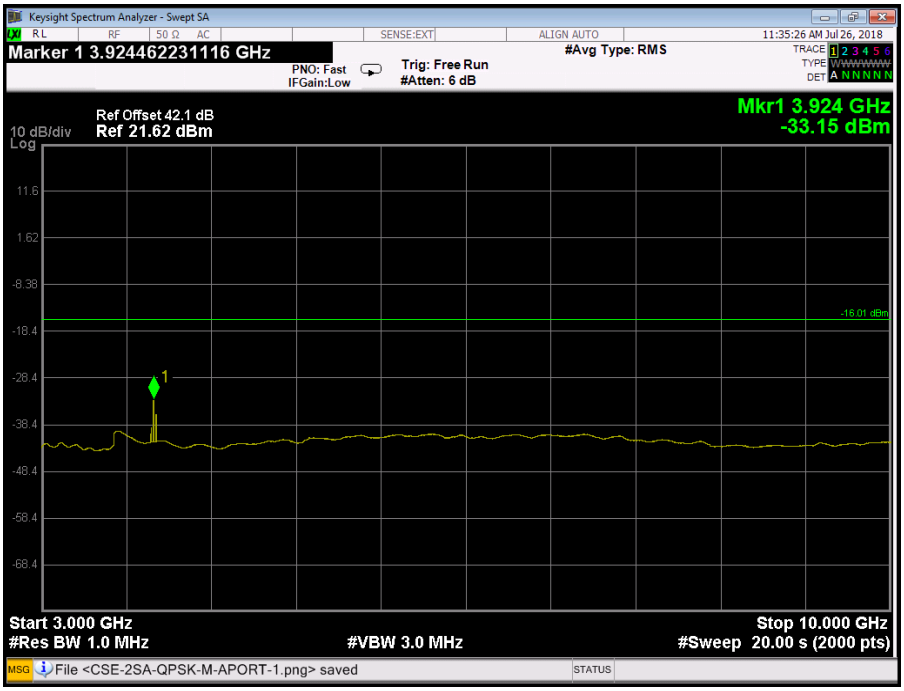


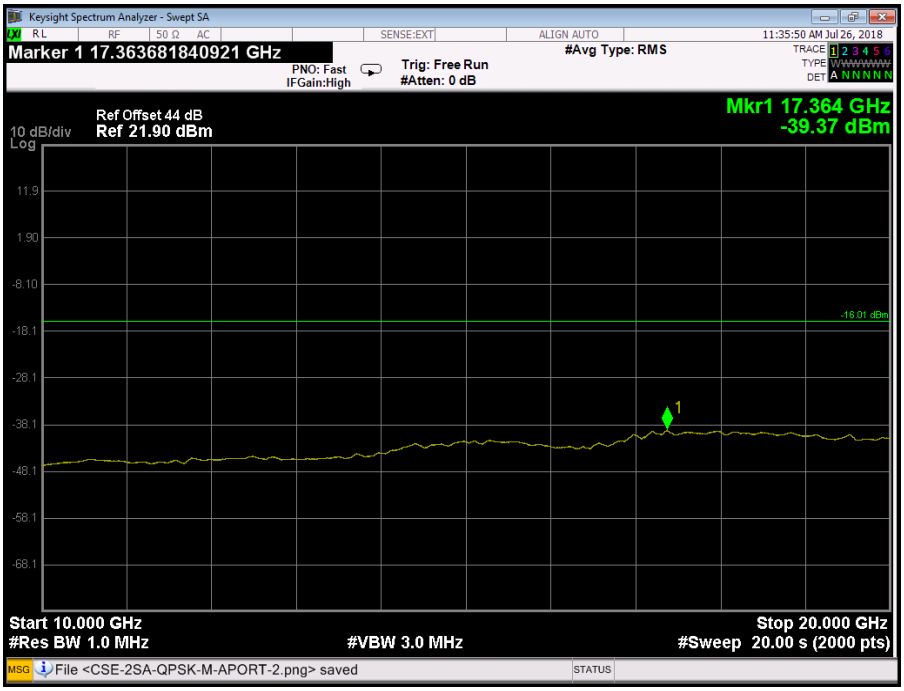




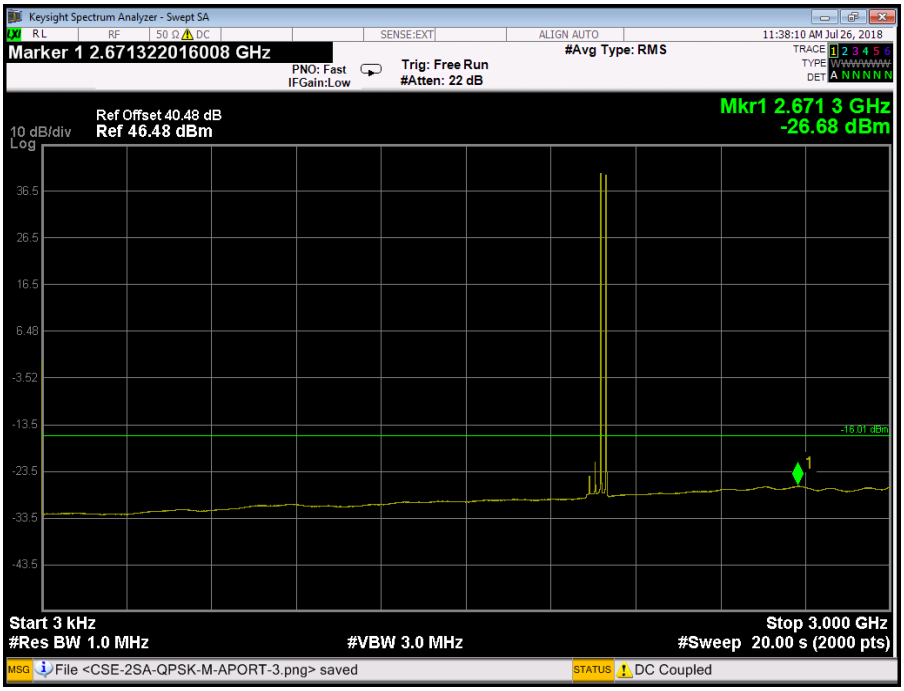
Port A, Channel Position M

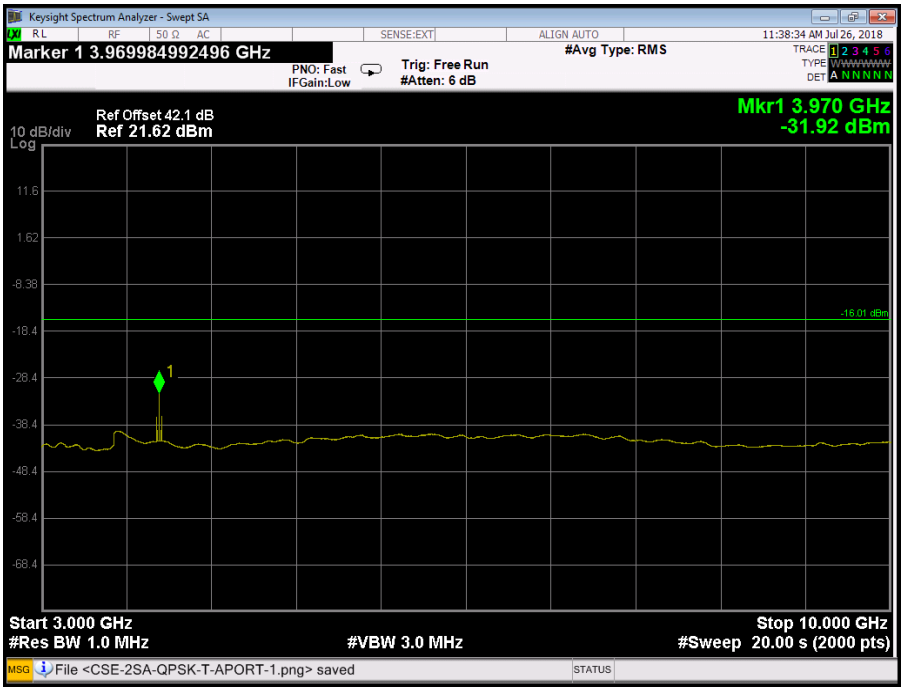


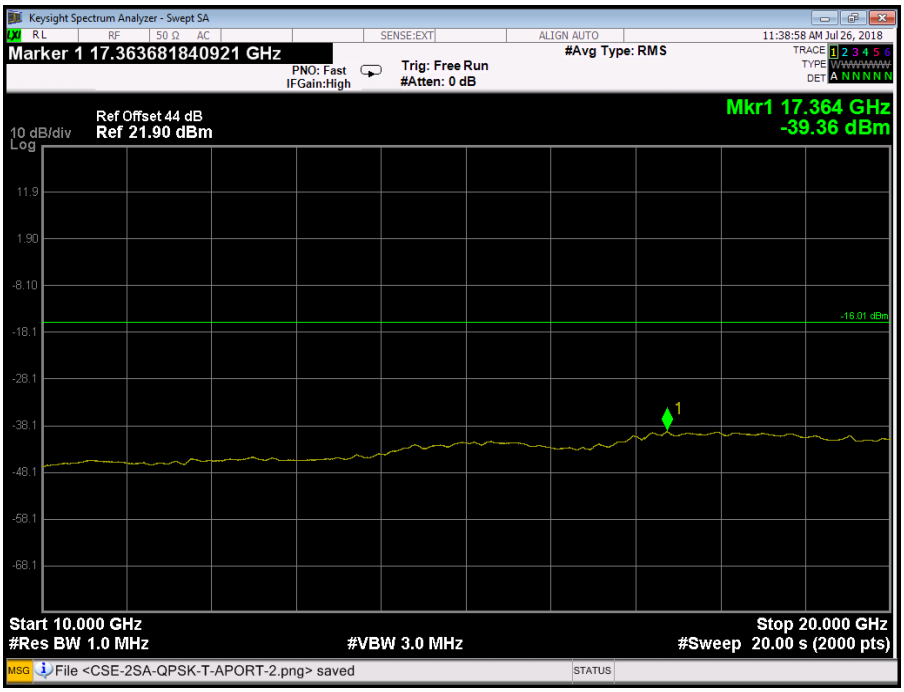




Port A, Channel Position T



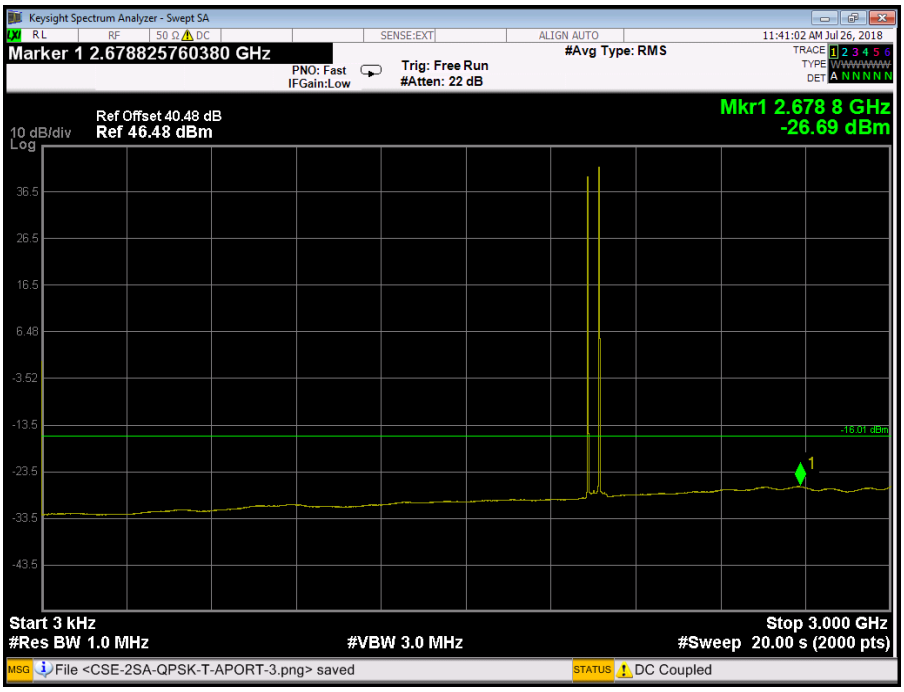


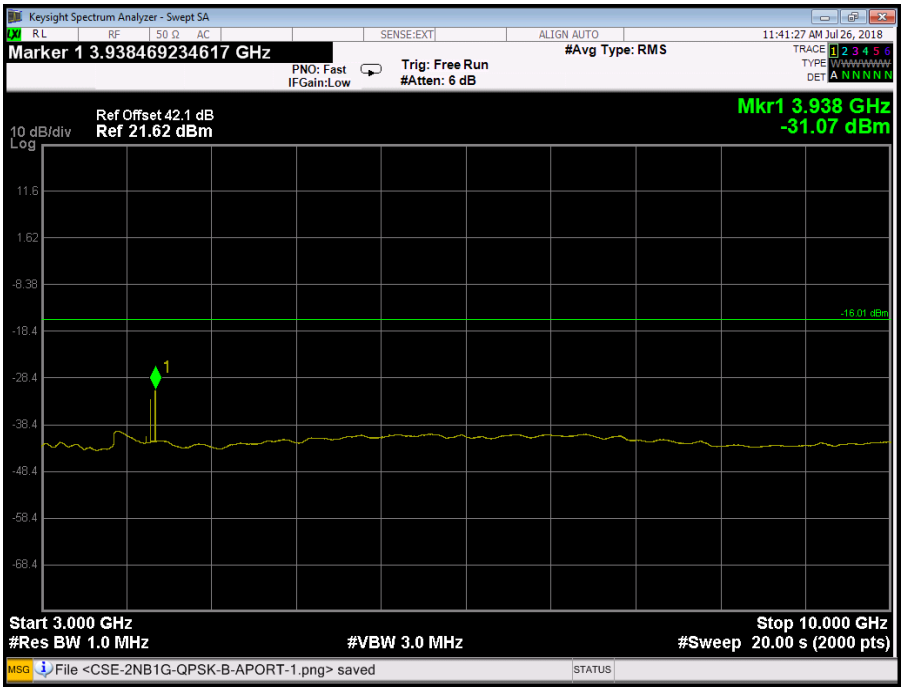


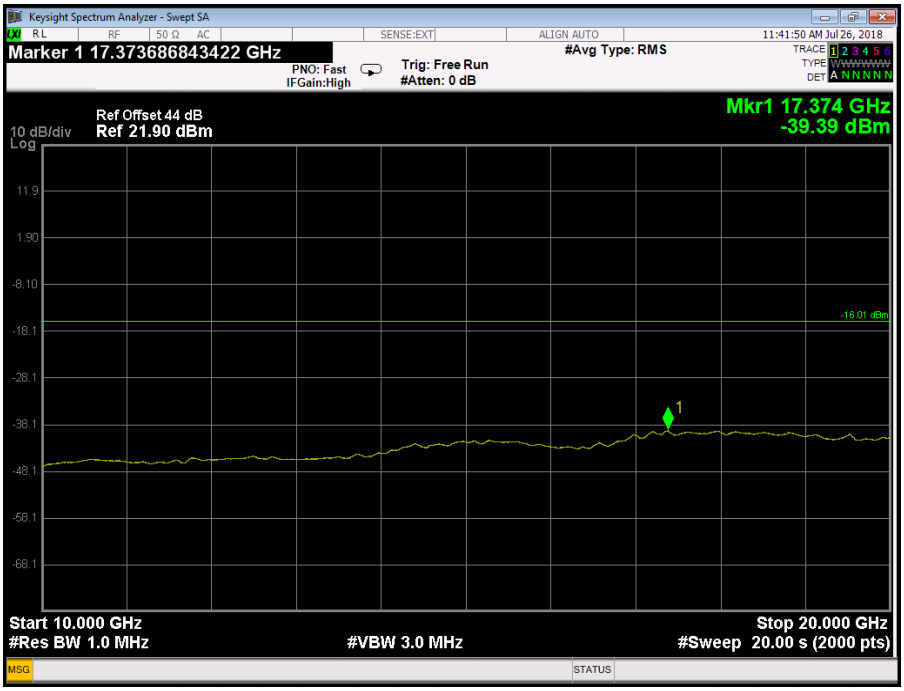
Configuration NB-IoT+GSM-MC-2 (2SA QPSK +1GSM GMSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
SA: 250 KHz G: 250 KHz	1.0	-16.01

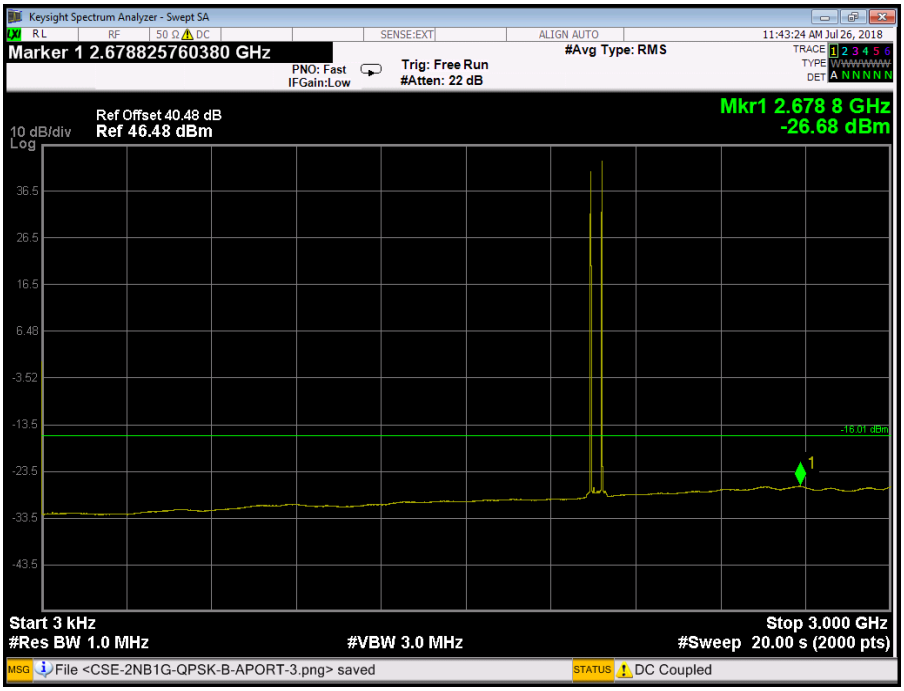
Port A, Channel Position B

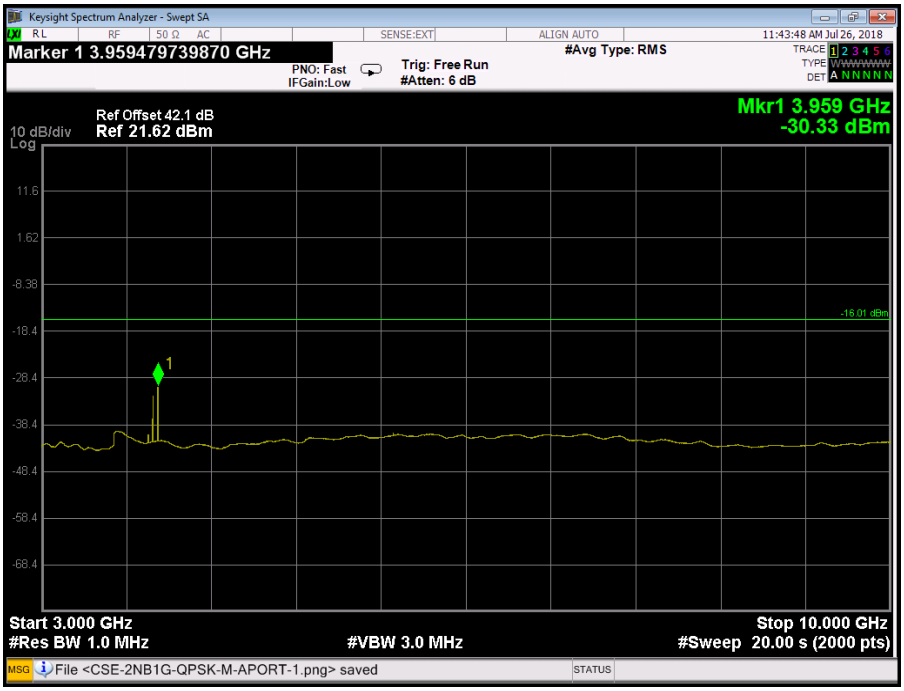


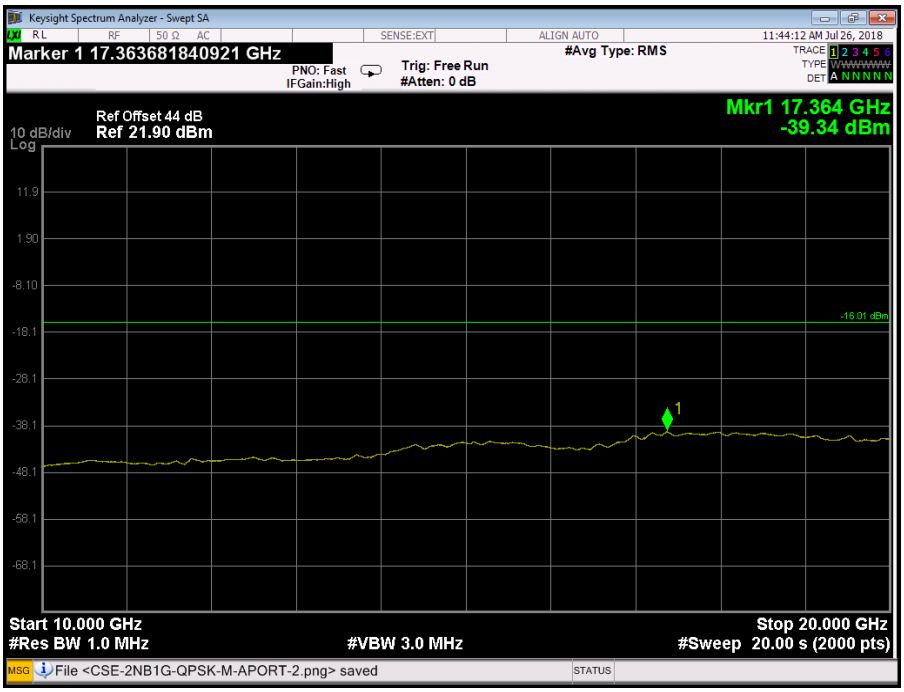




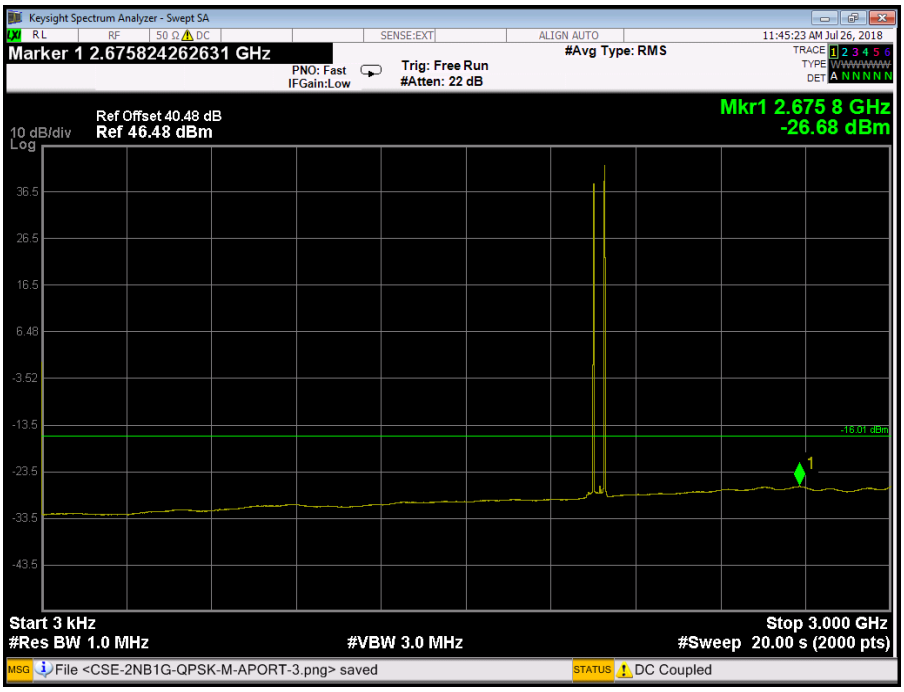
Port A, Channel Position M

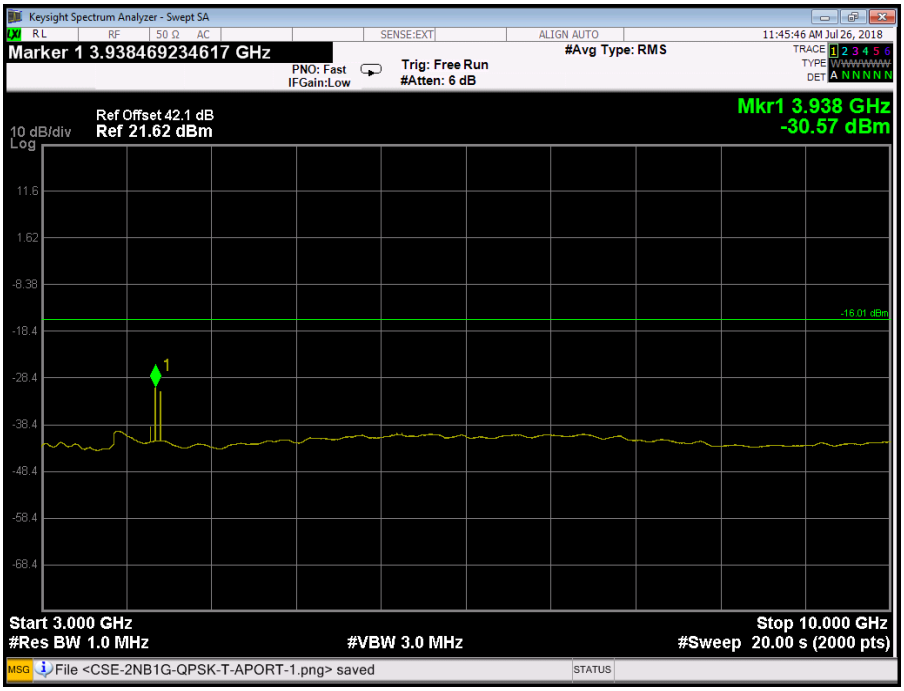


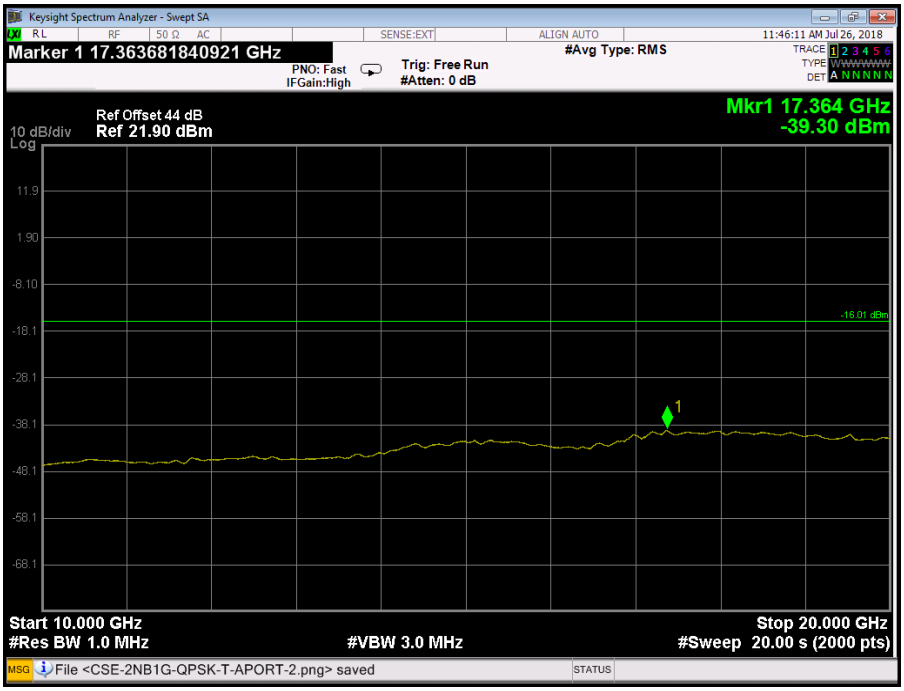




Port A, Channel Position T



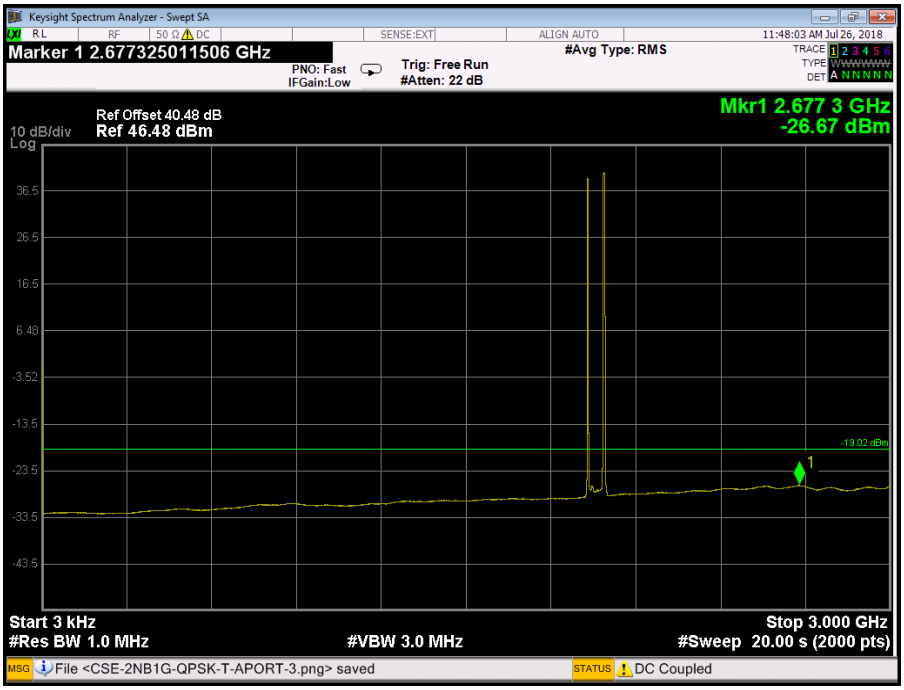


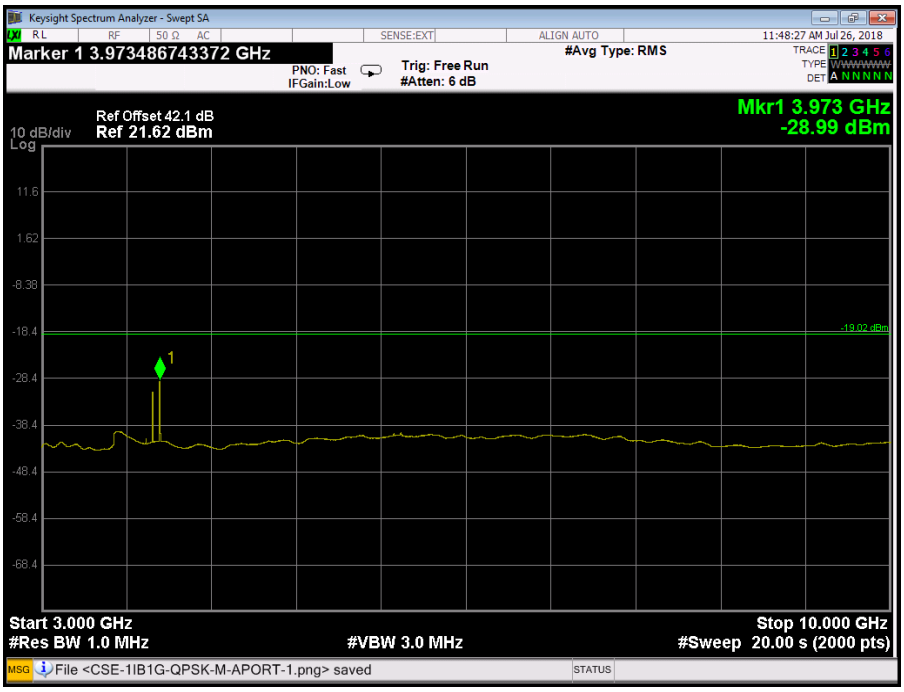


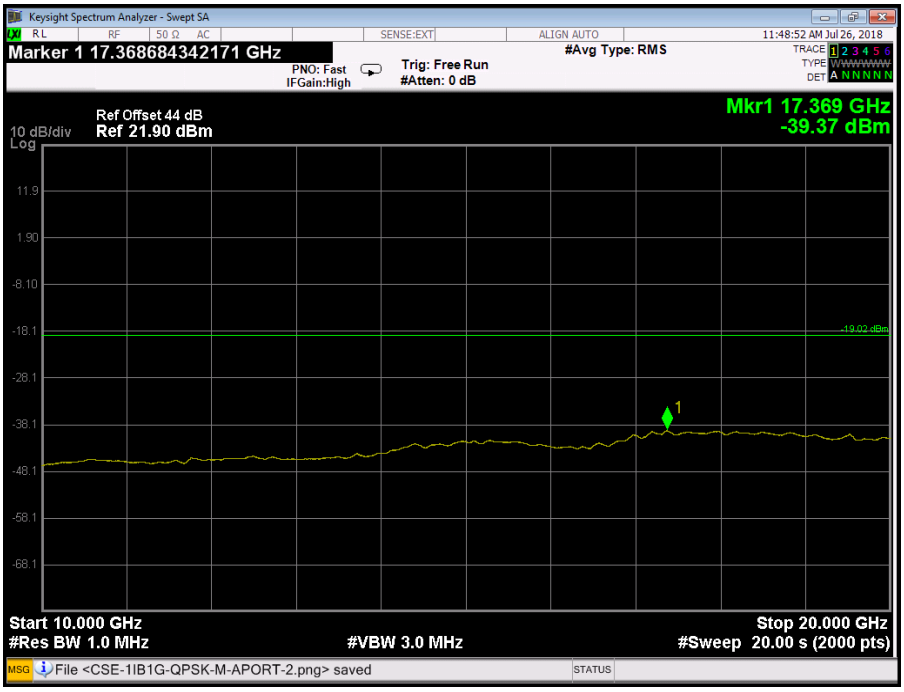
Configuration NB-IoT-IB+GSM-MC-1 (1IB QPSK +1GSM GMSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
IB: 5.0 MHz G: 250 KHz	1.0	-19.02

Port A, Channel Position M



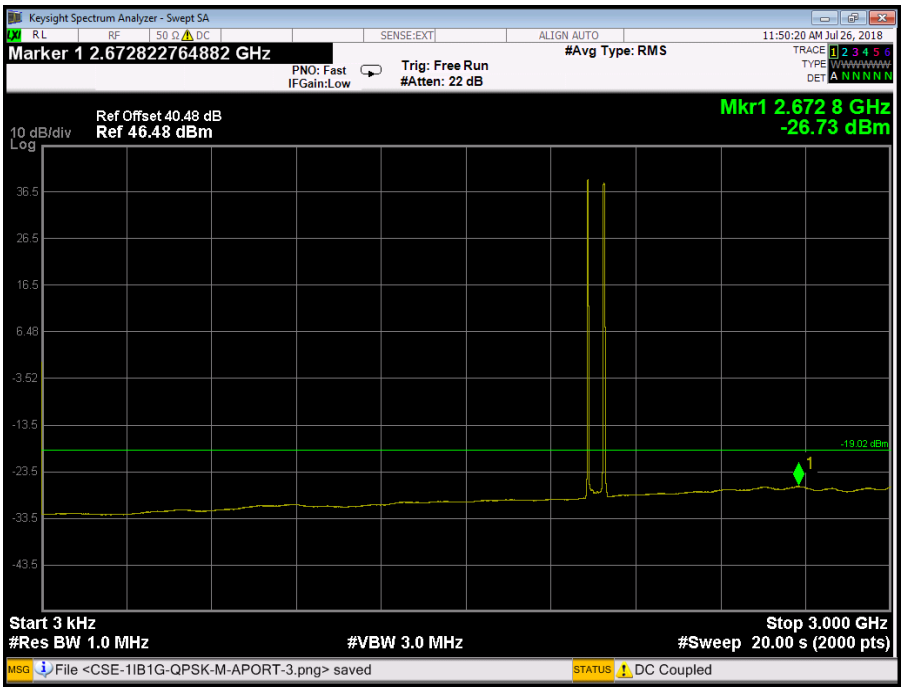


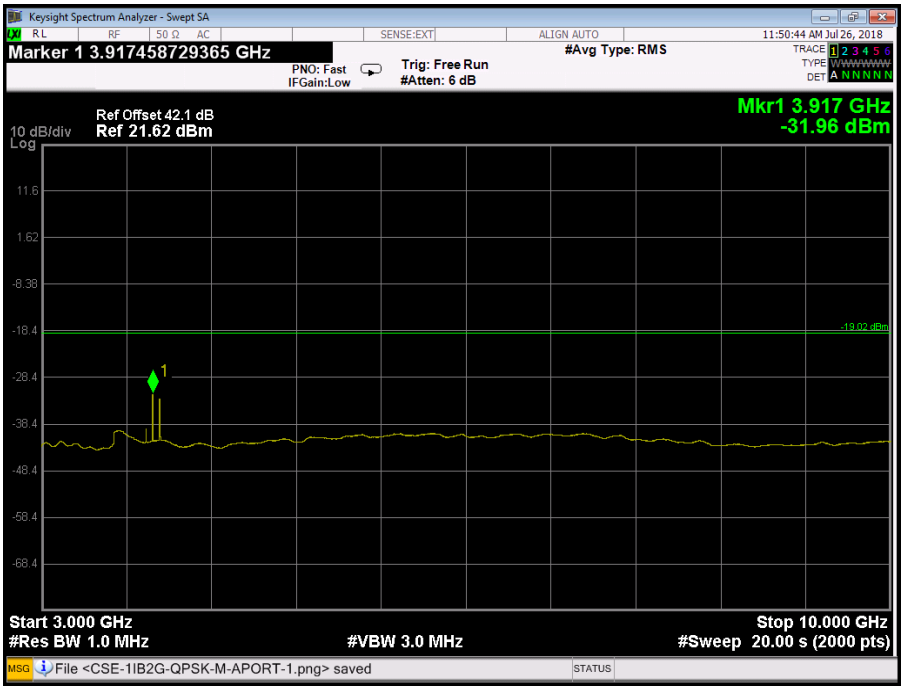


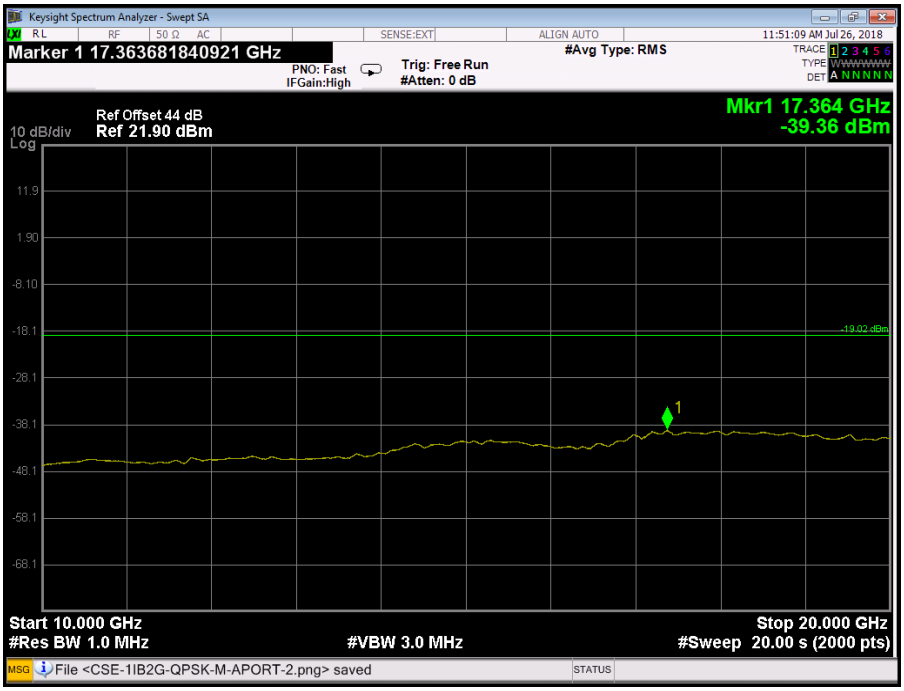
Configuration NB-IoT-IB+GSM-MC-2 (1IB QPSK +2GSM GMSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
IB: 5.0 MHz G: 250 KHz	1.0	-19.02

Port A, Channel Position M



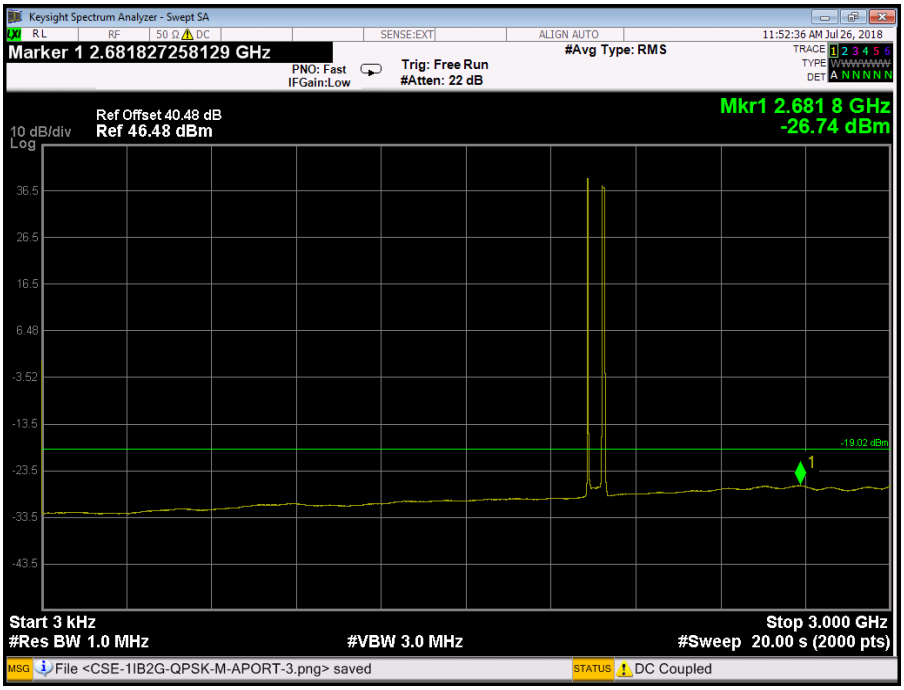


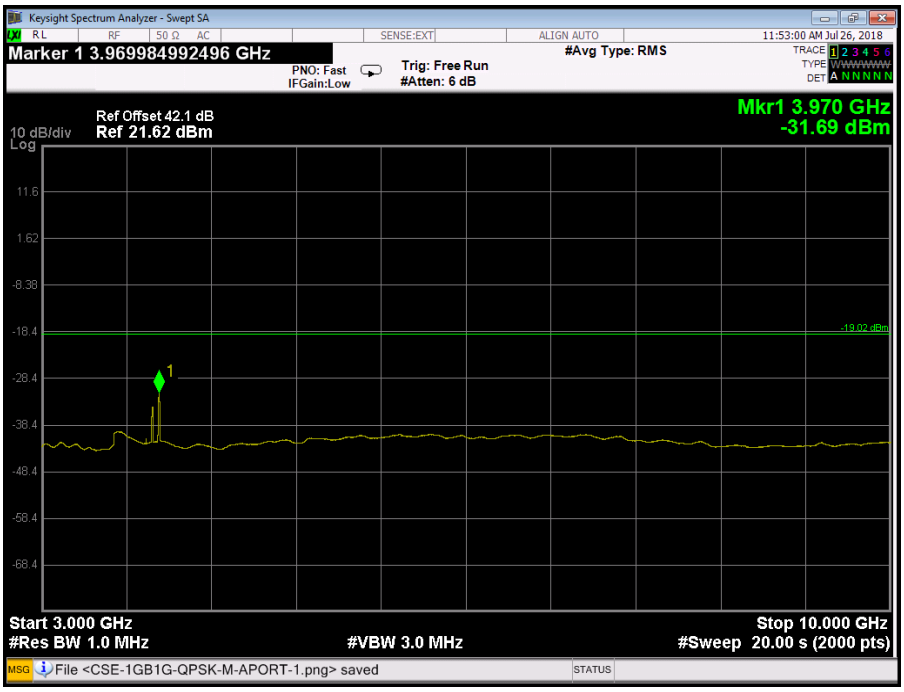


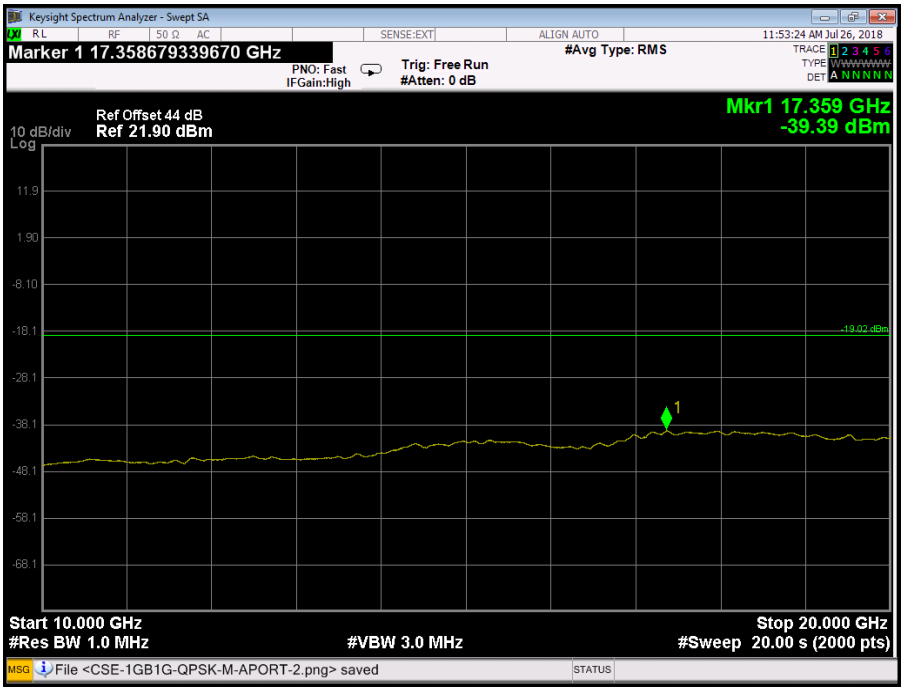
Configuration NB-IoT-GB+GSM-MC-1 (1GB QPSK +1GSM GMSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
GB: 10.0 MHz G: 250 KHz	1.0	-19.02

Port A, Channel Position M



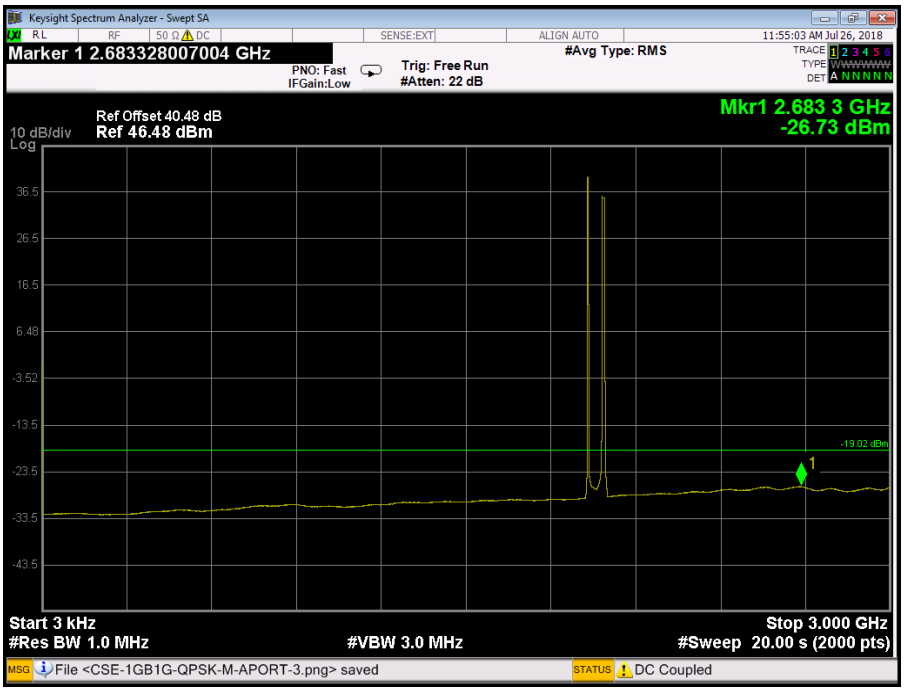


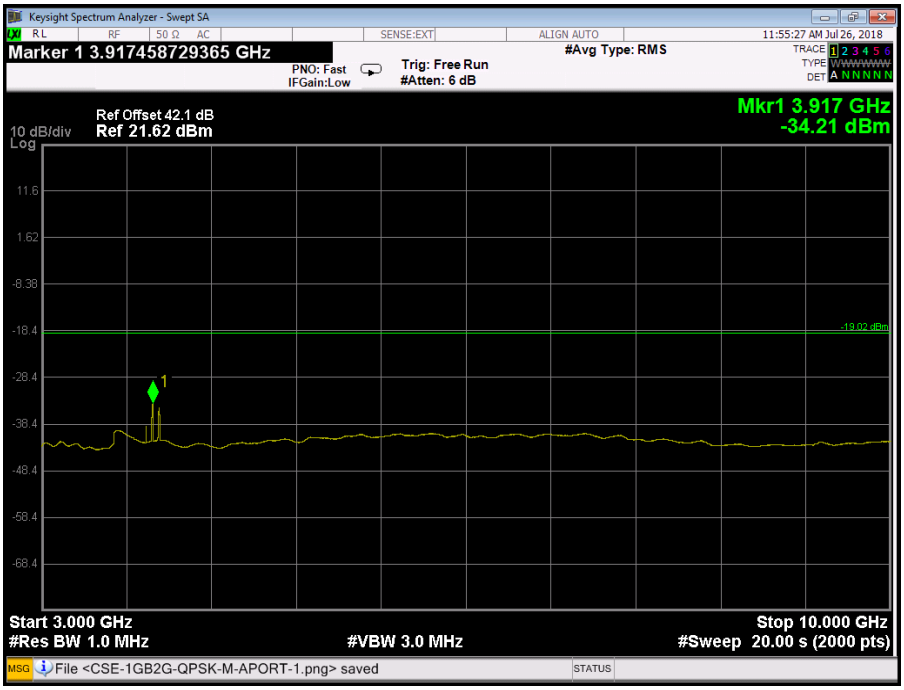


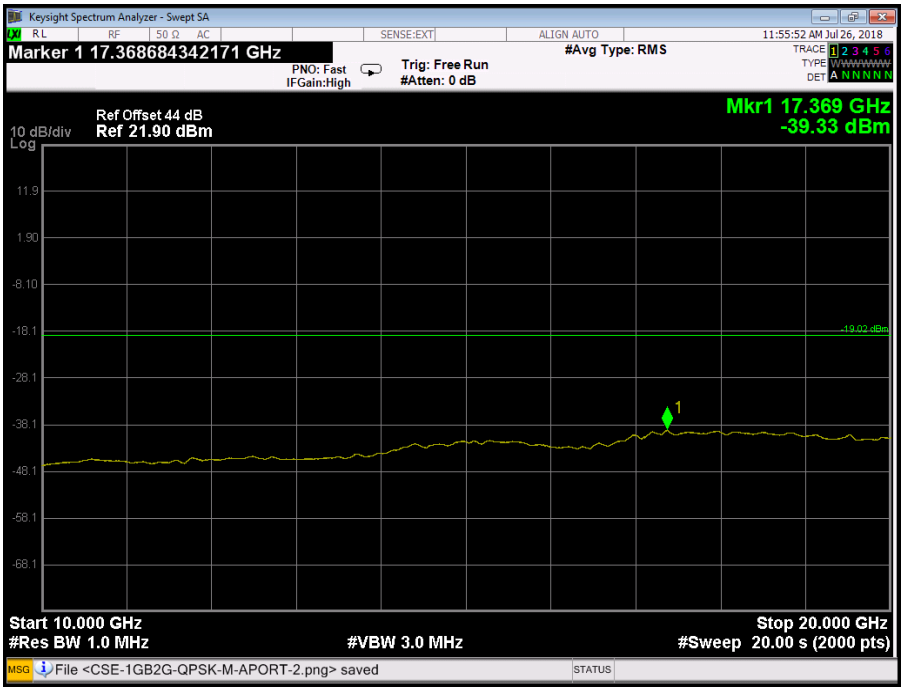
Configuration NB-IoT-GB+GSM-MC-2 (1GB QPSK +2GSM GMSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
GB: 10.0 MHz G: 250 KHz	1.0	-19.02

Port A, Channel Position M



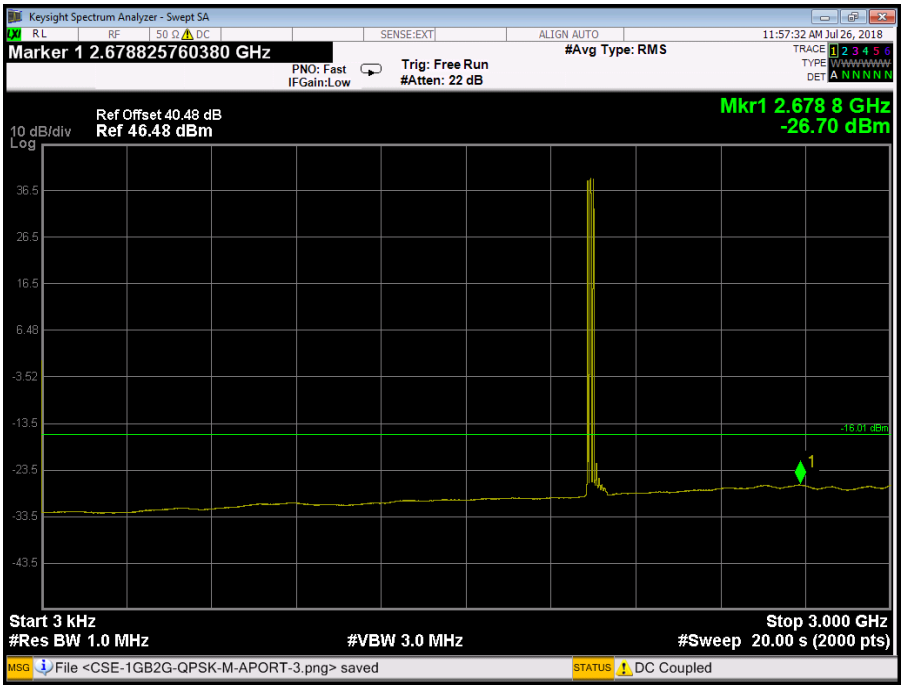


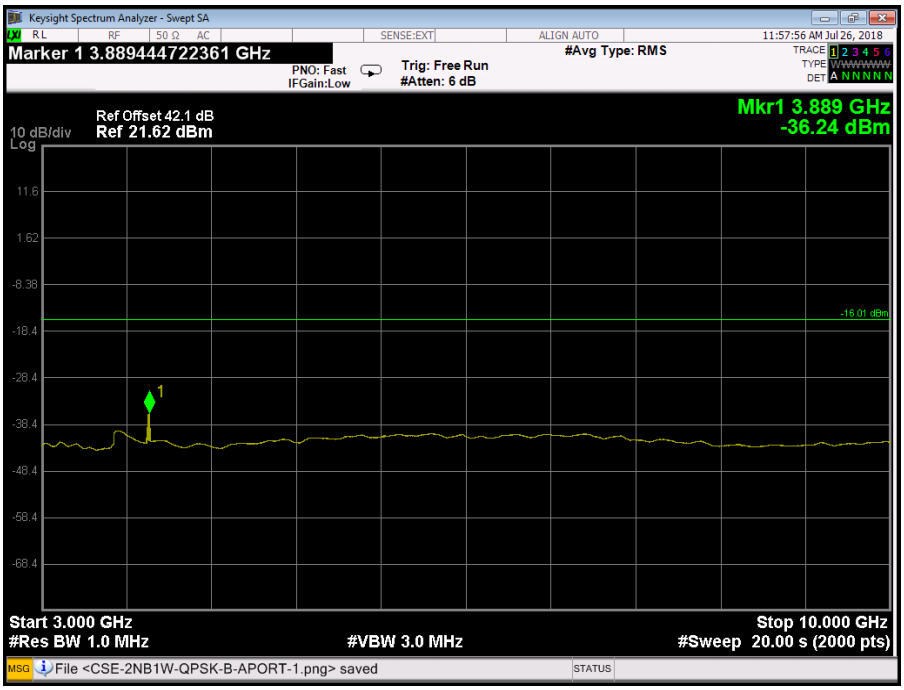


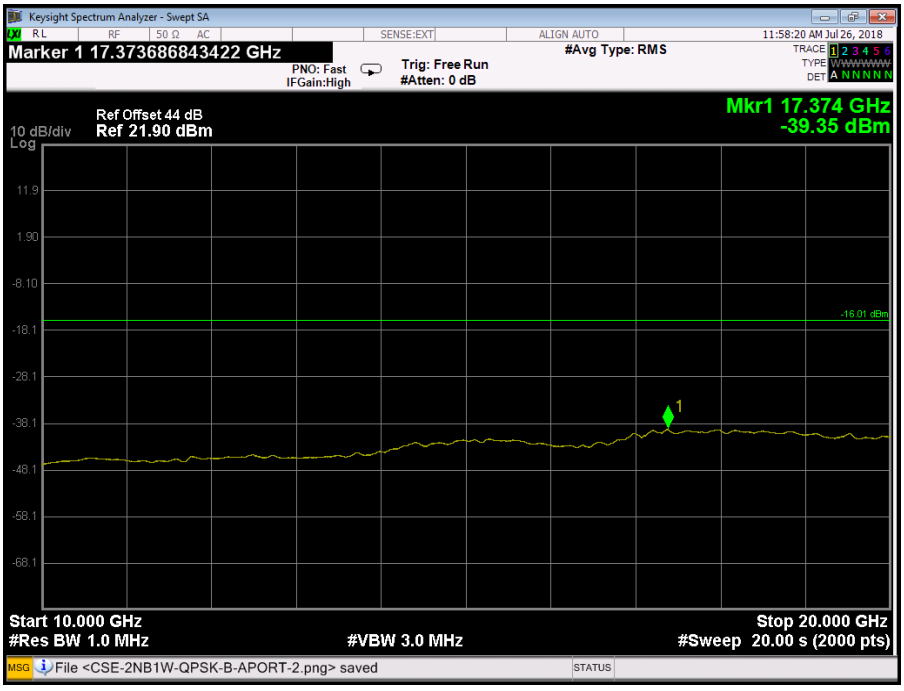
Configuration NB-IoT+WCDMA-MC-2 (2SA QPSK +1WCDMA QPSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
SA: 250 KHz W: 5.0 MHz	1.0	-16.01

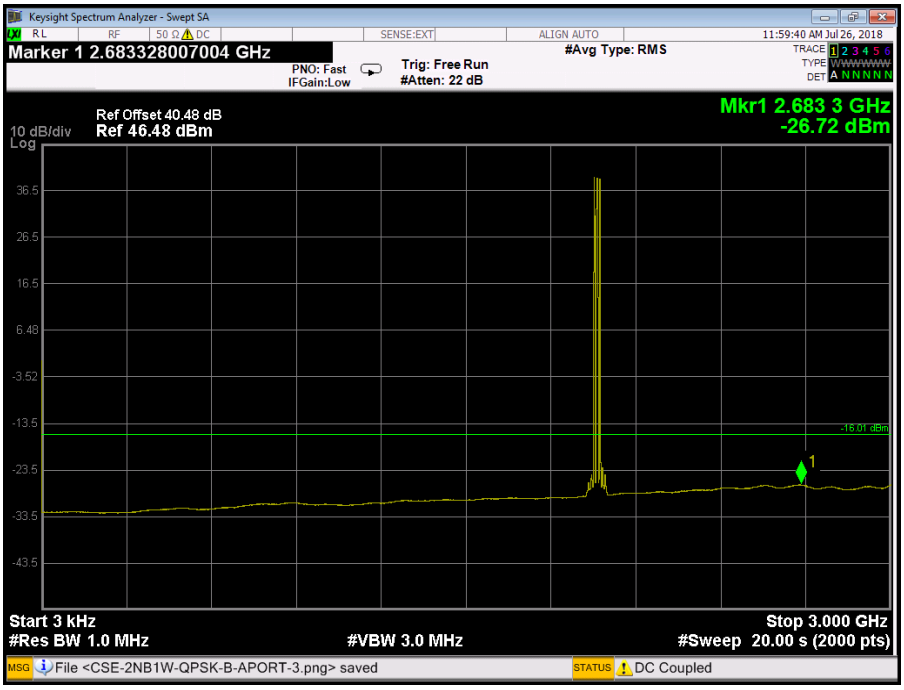
Port A, Channel Position B

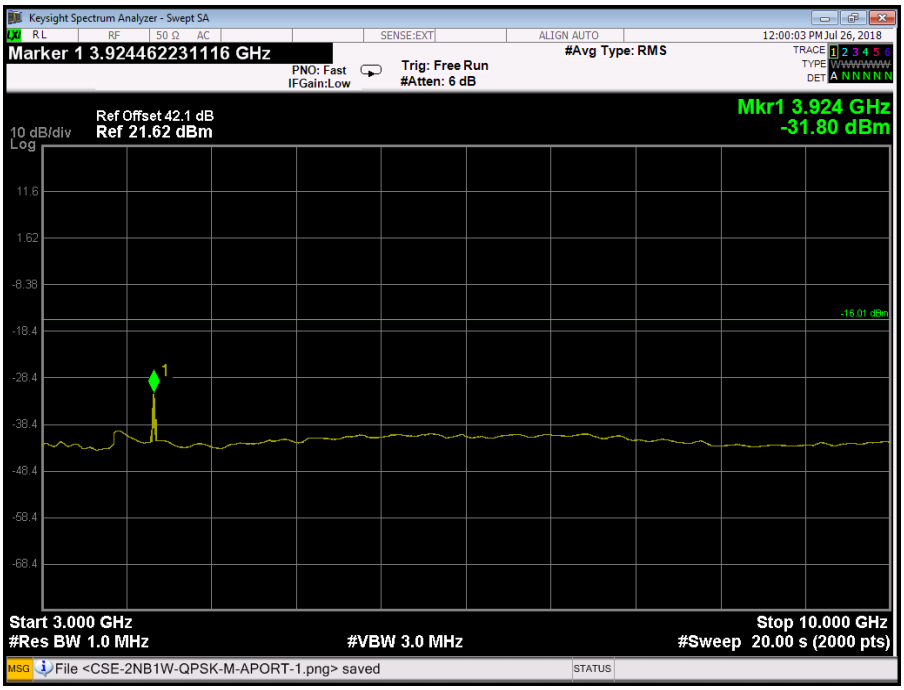


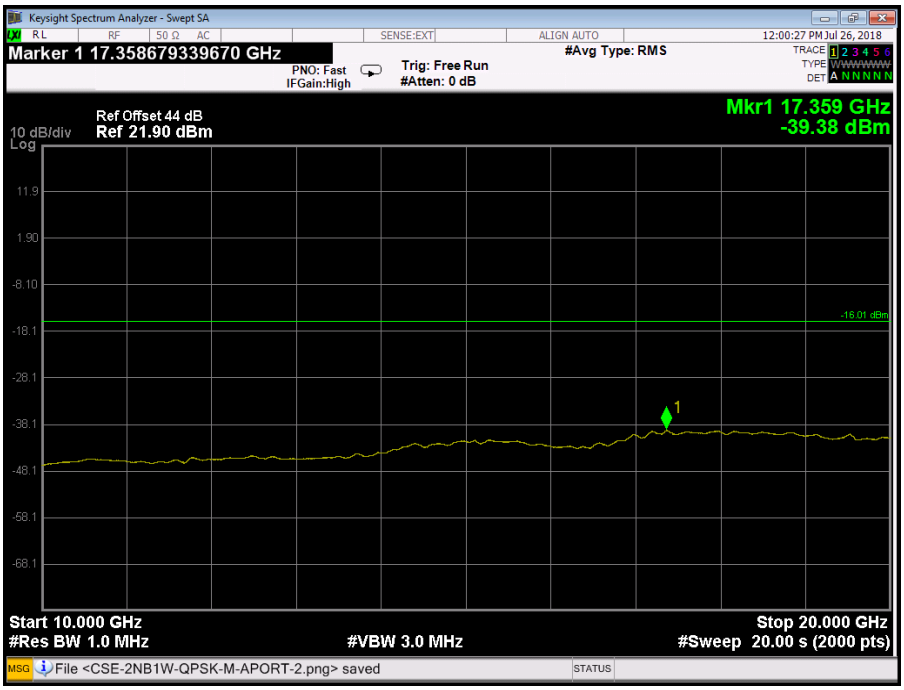




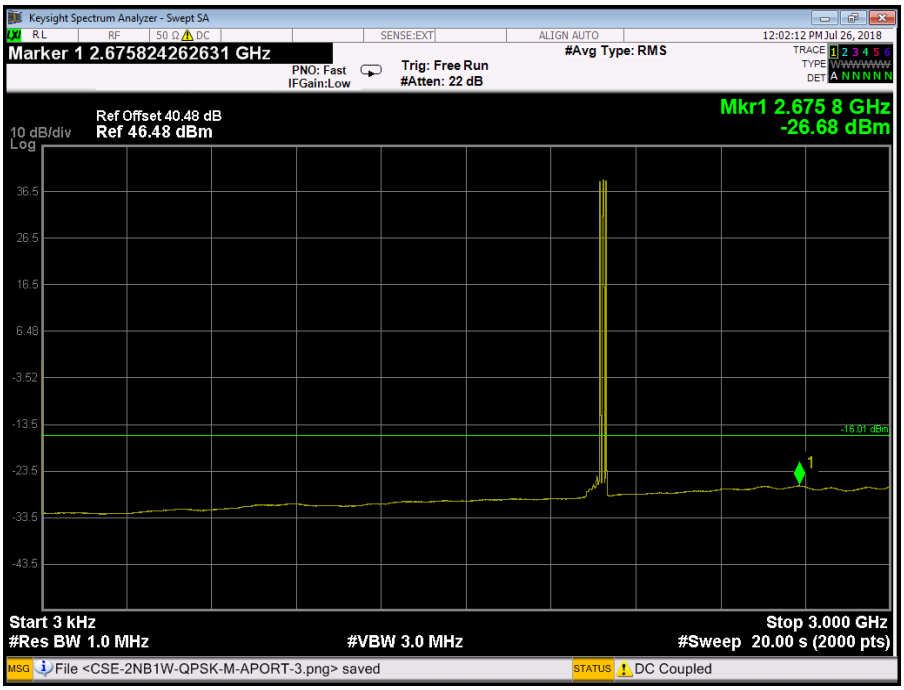
Port A, Channel Position M

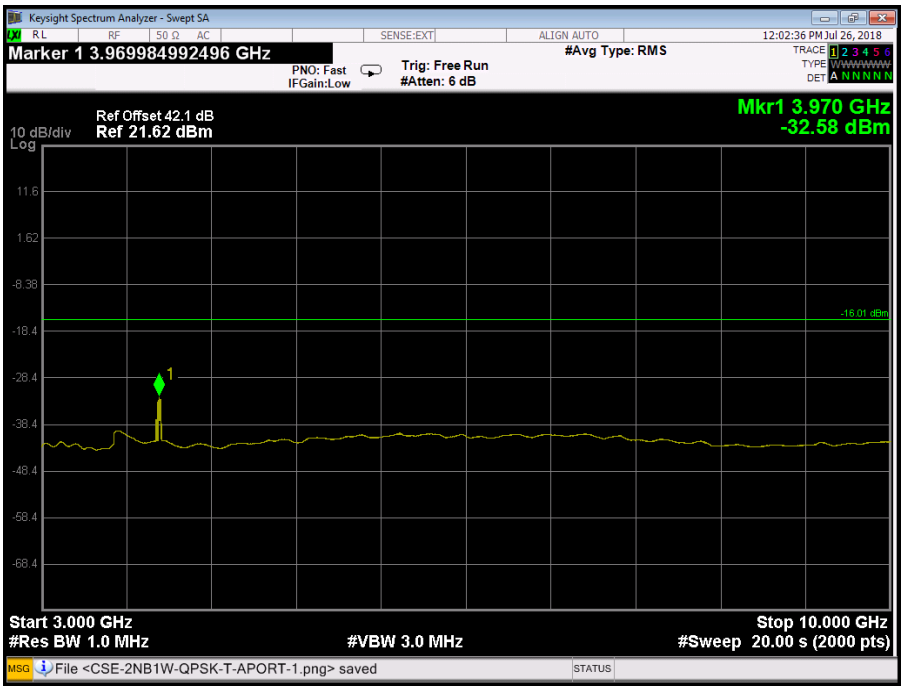


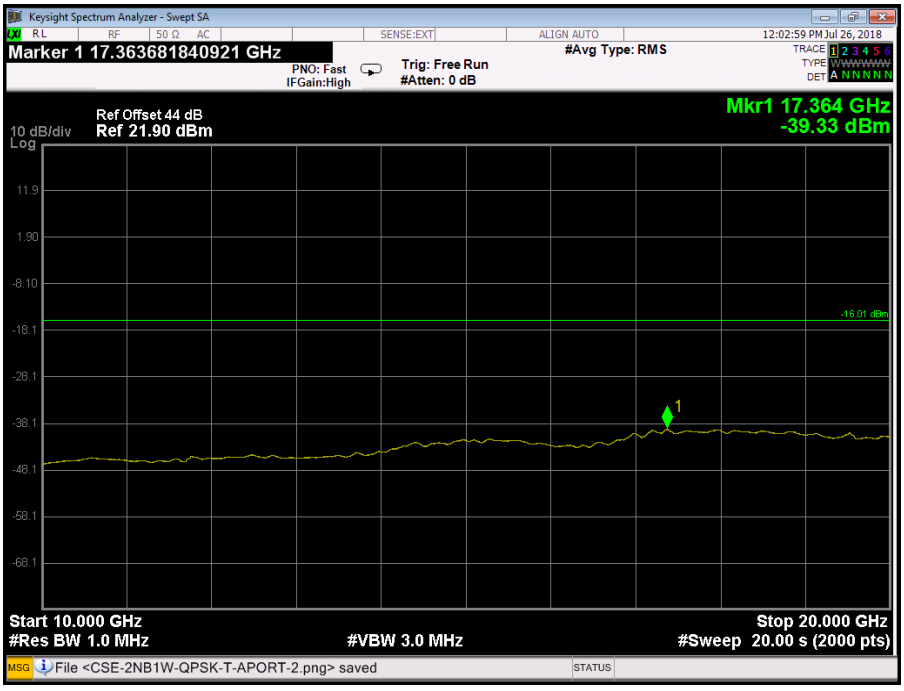




Port A, Channel Position T







Configuration NB-IoT-IB+WCDMA-MC-1 (1IB QPSK +1WCDMA QPSK)

Channel Bandwidth	RBW (MHz)	Limit (dBm)
IB: 5.0 MHz W: 5.0 MHz	1.0	-19.02