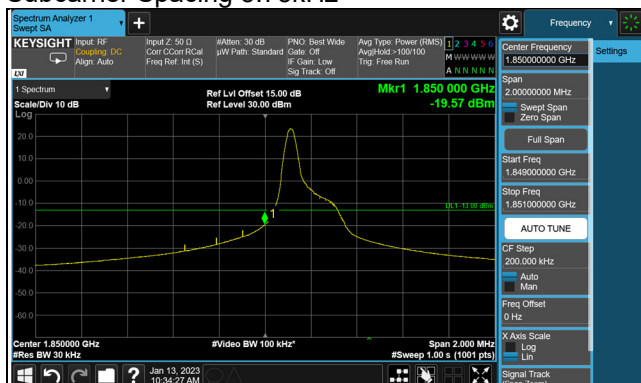
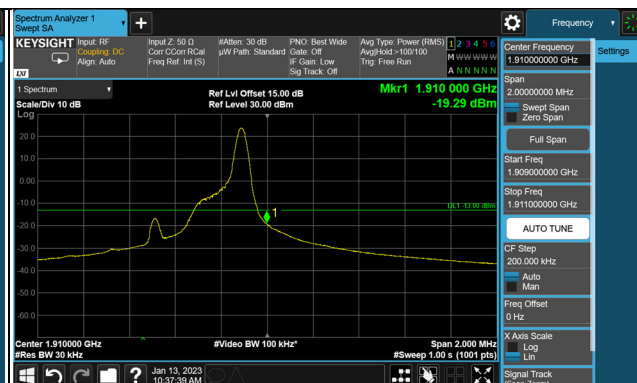


NB-IoT Band 2 Subcarrier Spacing 3.75kHz

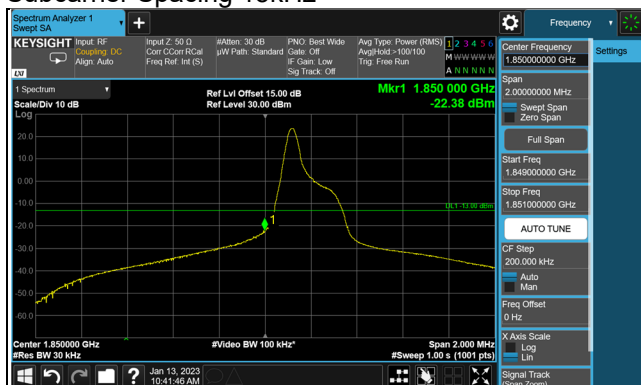


1RB (1850.2MHz)

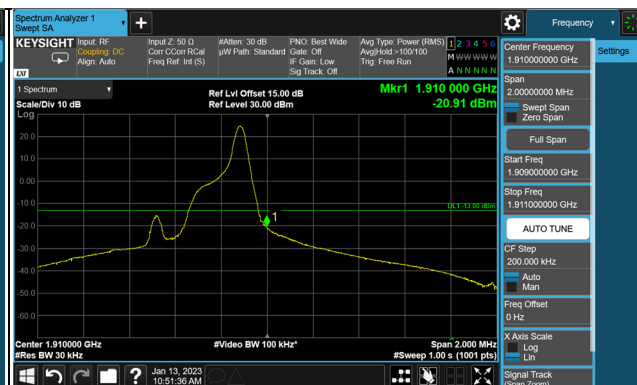


1RB (1909.8MHz)

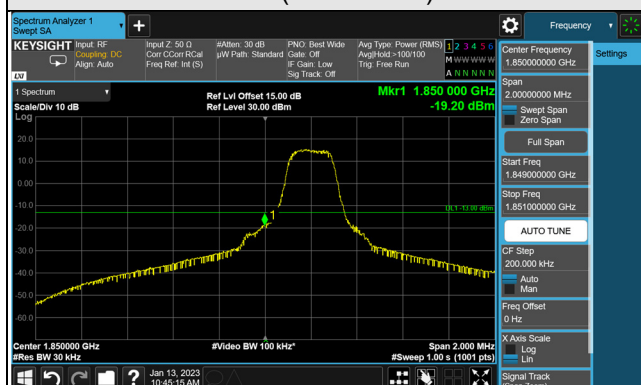
Subcarrier Spacing 15kHz



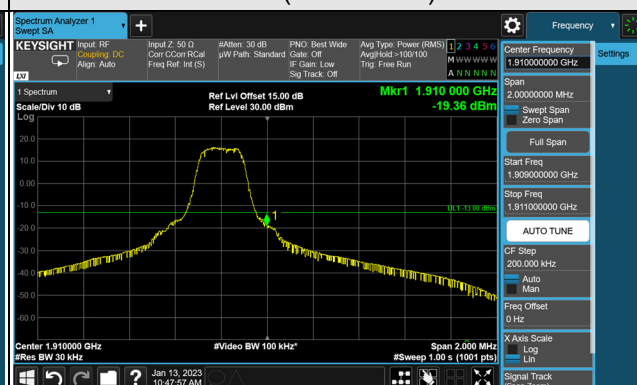
1RB (1850.2MHz)



1RB (1909.8MHz)

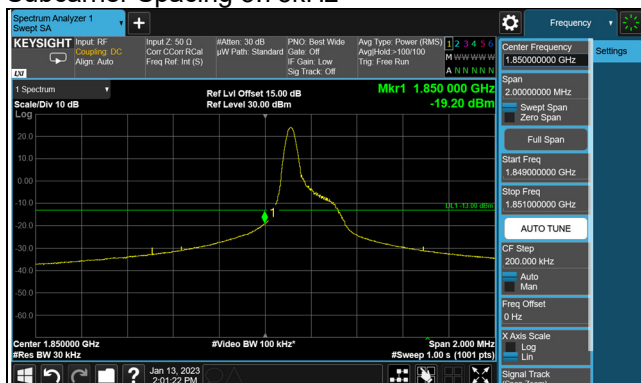


FULL (1850.2MHz)



FULL (1909.8MHz)

NB-IoT Band 25 Subcarrier Spacing 3.75kHz

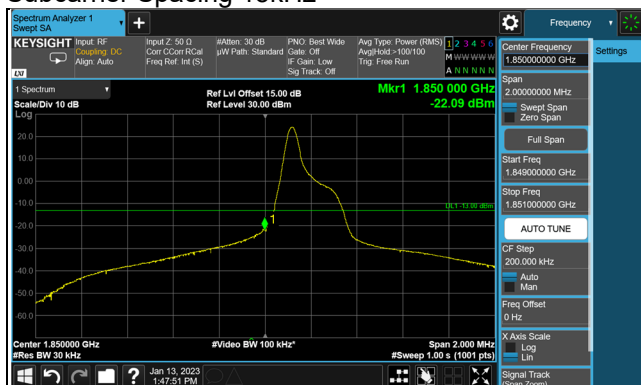


1RB (1850.2MHz)



1RB (1914.8MHz)

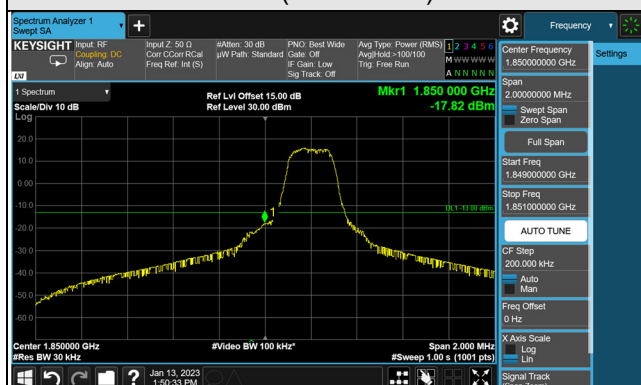
Subcarrier Spacing 15kHz



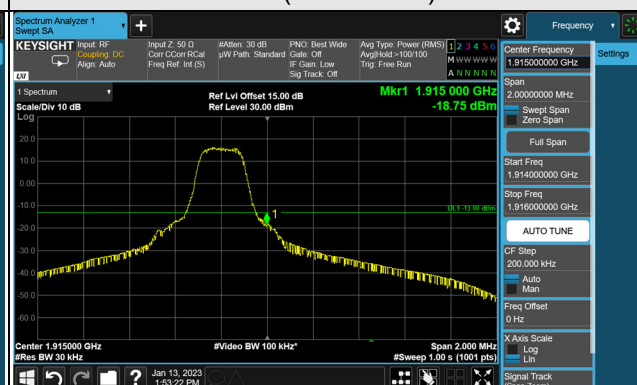
1RB (1850.2MHz)



1RB (1914.8MHz)



FULL (1850.2MHz)



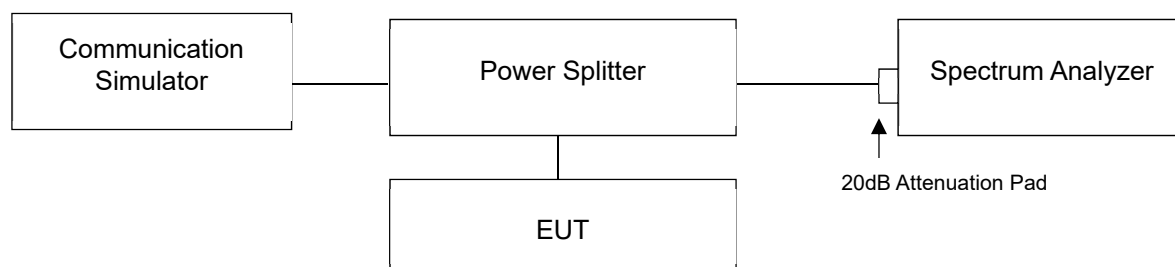
FULL (1914.8MHz)

4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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

4.6.2 Test Setup

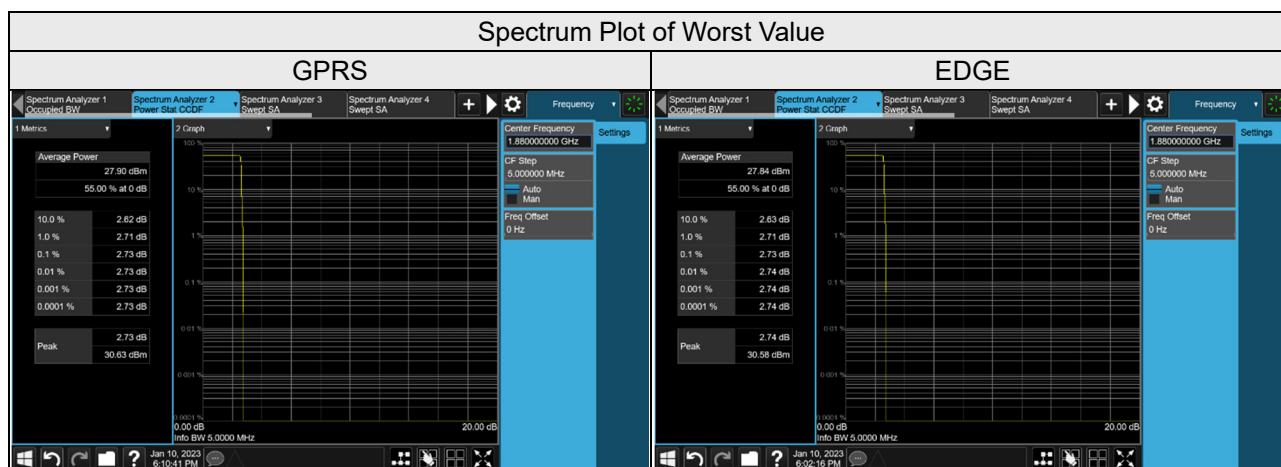


4.6.3 Test Procedures

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

4.6.4 Test Results

Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		GPRS	EDGE
512	1850.2	2.68	2.63
661	1880	2.73	2.73
810	1909.8	2.73	2.73



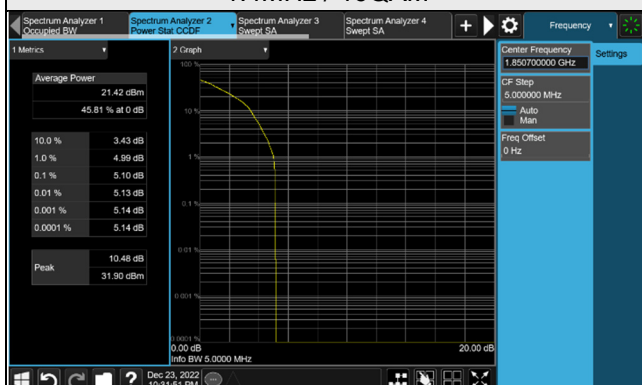
eMTC

LTE Band 2, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18607	1850.7	3.40	5.10
18900	1880.0	3.16	5.08
19193	1909.3	3.17	5.06
LTE Band 2, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18615	1851.5	3.36	5.47
18900	1880.0	3.04	5.44
19185	1908.5	3.21	5.48
LTE Band 2, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18625	1852.5	3.60	3.90
18900	1880.0	3.31	3.57
19175	1907.5	3.29	3.76
LTE Band 2, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18650	1855.0	3.57	3.63
18900	1880.0	3.19	3.56
19150	1905.0	3.69	3.75
LTE Band 2, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18675	1857.5	3.51	3.77
18900	1880.0	3.00	3.63
19125	1902.5	3.47	3.69

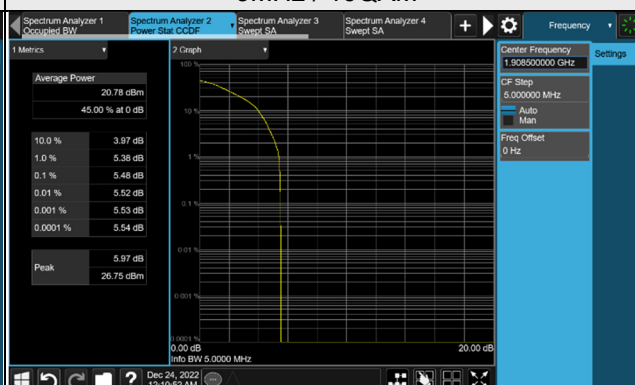
LTE Band 2, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18700	1860.0	3.51	3.80
18900	1880.0	3.11	3.51
19100	1900.0	3.61	3.75

Spectrum Plot of Worst Value

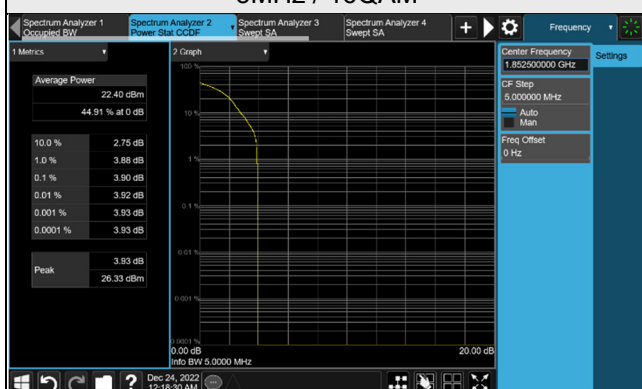
1.4MHz / 16QAM



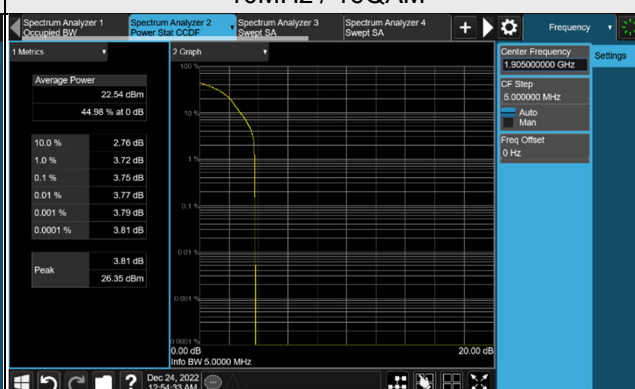
3MHz / 16QAM



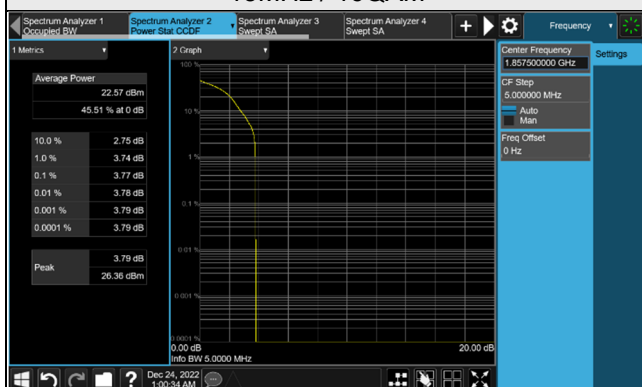
5MHz / 16QAM



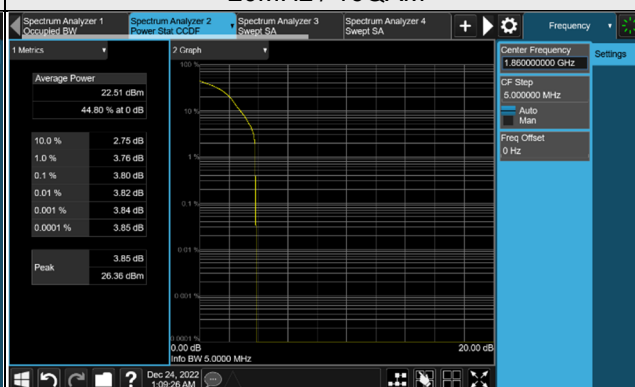
10MHz / 16QAM



15MHz / 16QAM



20MHz / 16QAM

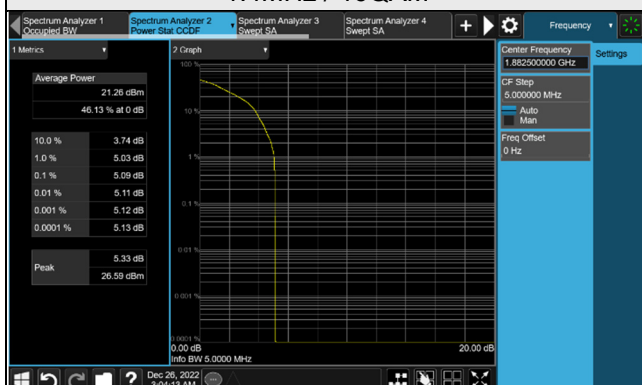


LTE Band 25, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26047	1850.7	3.15	4.91
26365	1882.5	3.08	5.09
26683	1914.3	3.11	4.79
LTE Band 25, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26055	1851.5	3.44	5.30
26365	1882.5	3.14	4.76
26675	1913.5	3.02	4.96
LTE Band 25, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26065	1852.5	3.50	3.68
26365	1882.5	3.16	3.59
26665	1912.5	3.15	3.65
LTE Band 25, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26090	1855.0	3.56	4.01
26365	1882.5	3.26	4.04
26640	1910.0	3.44	4.18
LTE Band 25, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26115	1857.5	3.36	3.96
26365	1882.5	3.14	3.62
26615	1907.5	3.16	3.70

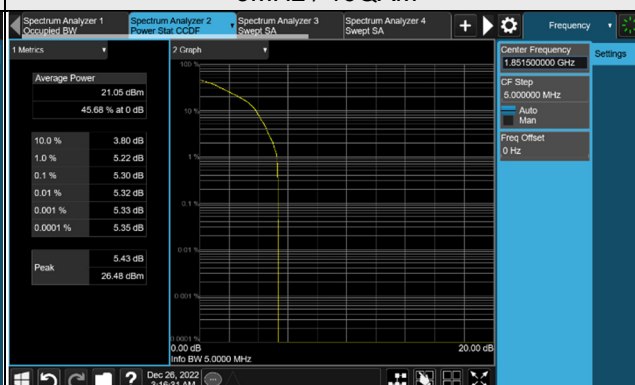
LTE Band 25, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26140	1860.0	3.50	3.73
26365	1882.5	3.32	4.45
26590	1905.0	3.40	3.96

Spectrum Plot of Worst Value

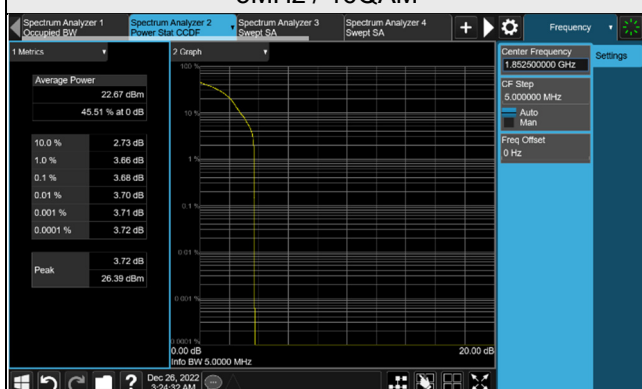
1.4MHz / 16QAM



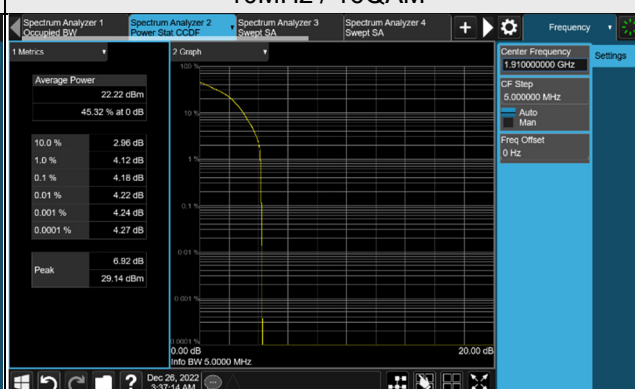
3MHz / 16QAM



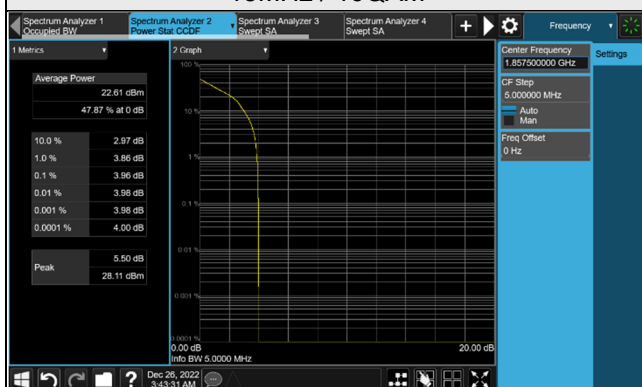
5MHz / 16QAM



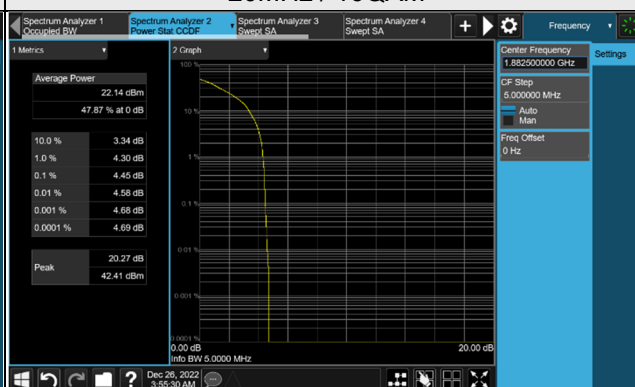
10MHz / 16QAM



15MHz / 16QAM

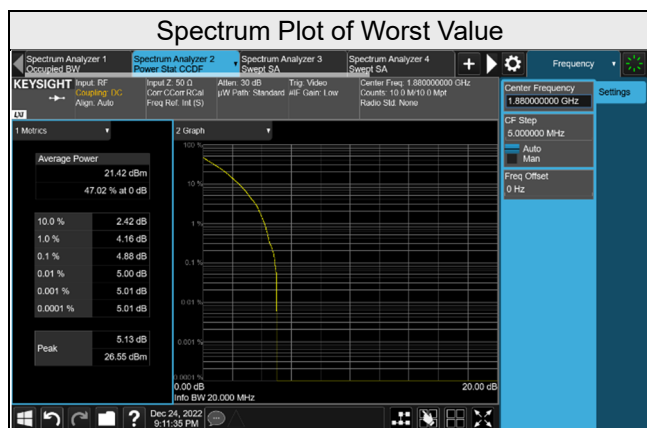


20MHz / 16QAM



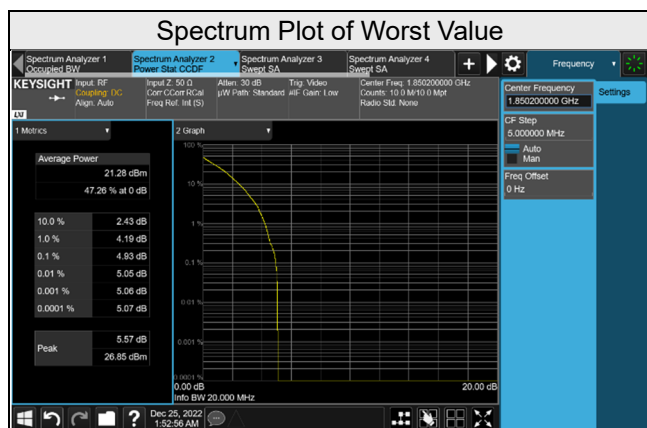
NB-IoT Band 2

NB-IoT Band 2					
Channel	Frequency (MHz)	Subcarrier Spacing (kHz)	Number of Subcarrier / Starting Subcarrier	Modulation	Peak To Average Ratio (dB)
18602	1850.2	3.75	1@0	BPSK	1.18
		15	12@0	QPSK	4.85
18900	1880.0	3.75	1@0	BPSK	1.16
		15	12@0	QPSK	4.88
19198	1909.8	3.75	1@47	BPSK	1.19
		15	12@0	QPSK	4.65



NB-IoT Band 25

NB-IoT Band 25					
Channel	Frequency (MHz)	Subcarrier Spacing (kHz)	Number of Subcarrier / Starting Subcarrier	Modulation	Peak To Average Ratio (dB)
26042	1850.2	3.75	1@0	BPSK	1.16
		15	12@0	QPSK	4.93
26365	1882.5	3.75	1@0	BPSK	1.60
		15	12@0	QPSK	4.85
26688	1914.8	3.75	1@47	BPSK	1.17
		15	12@0	QPSK	4.73

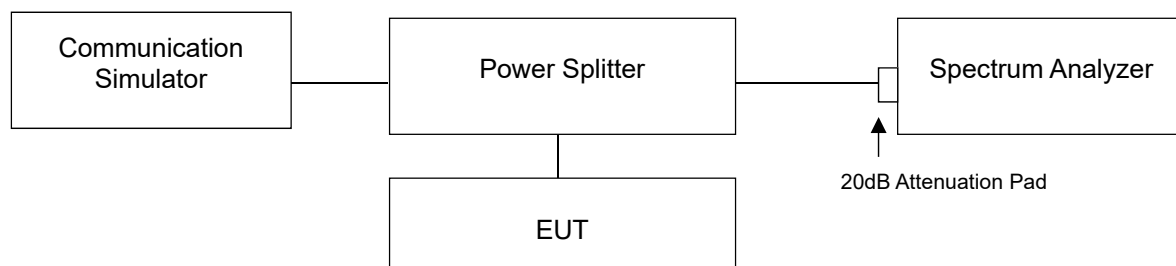


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

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 emission limit equal to -13dBm .

4.7.2 Test Setup



4.7.3 Test Procedure

- All measurements were done at low, middle and high channels operational frequency range.
- Measurement refer to ANSI C63.26 section 5.7.
- Measuring frequency range is from 9kHz to 20GHz. 20dB attenuation pad is connected with spectrum.
Detector = Average, RBW=1MHz and VBW=3MHz is used for conducted emission measurement.