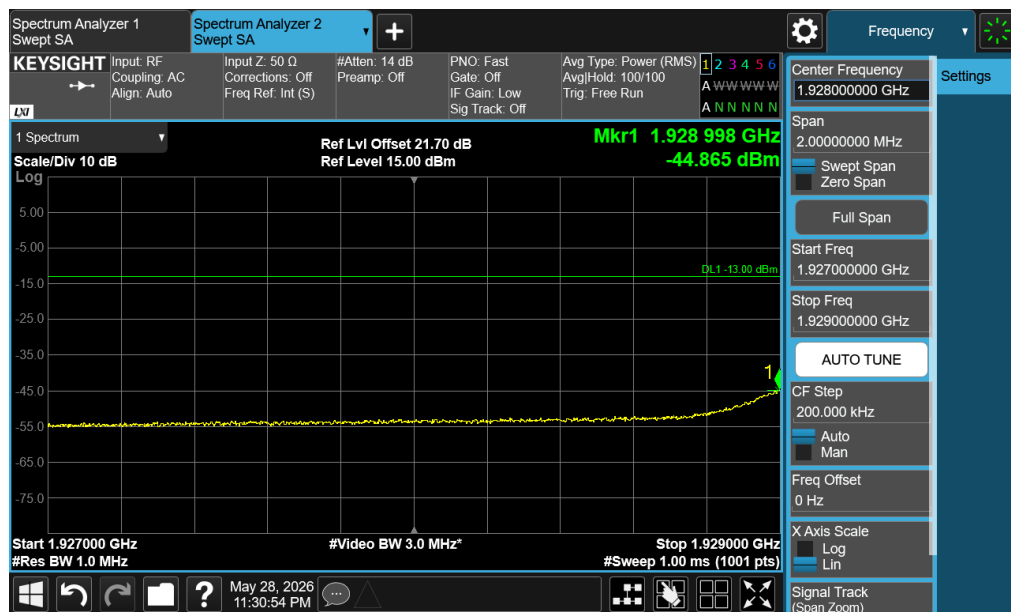
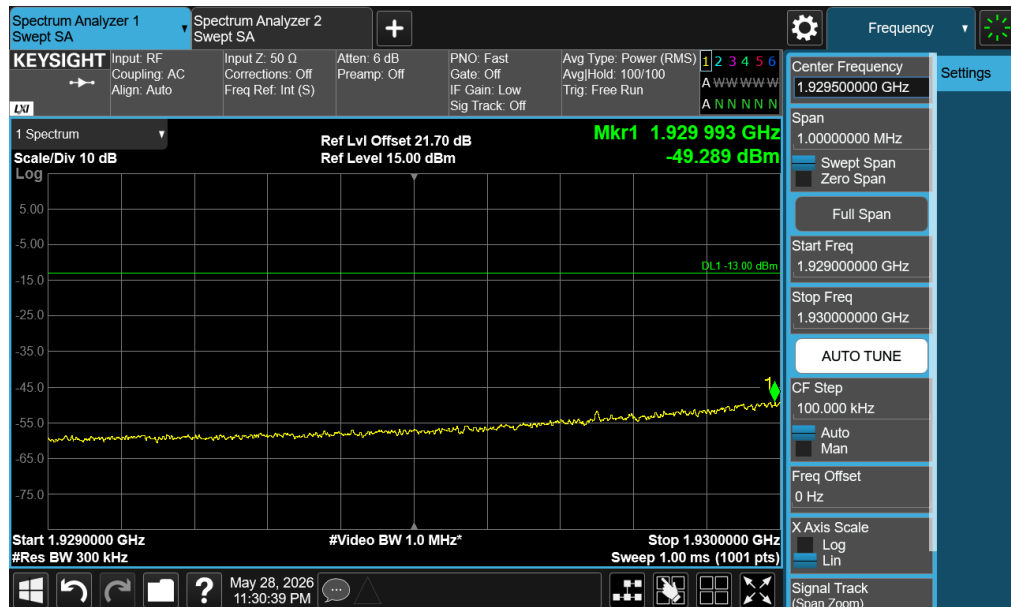


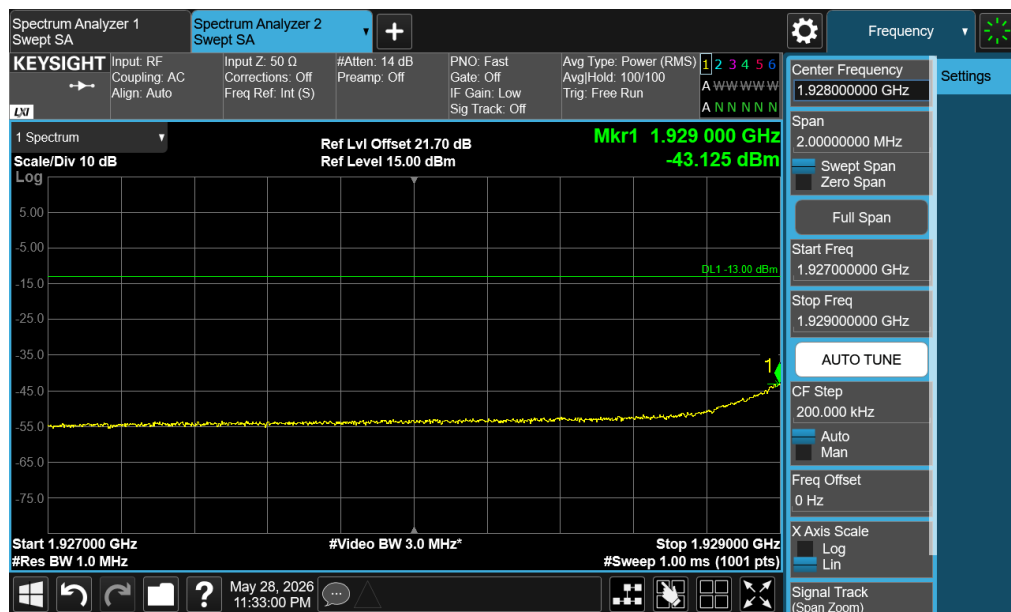
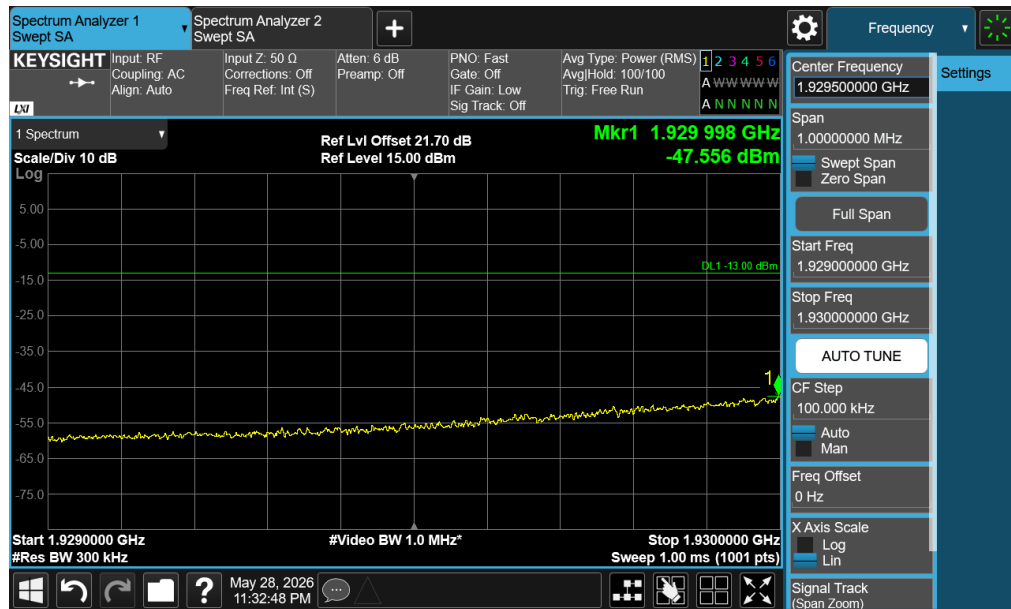
Out-of-band emissions

DL_1.25MHz AWGN input_Lower band edge_pre-AGC



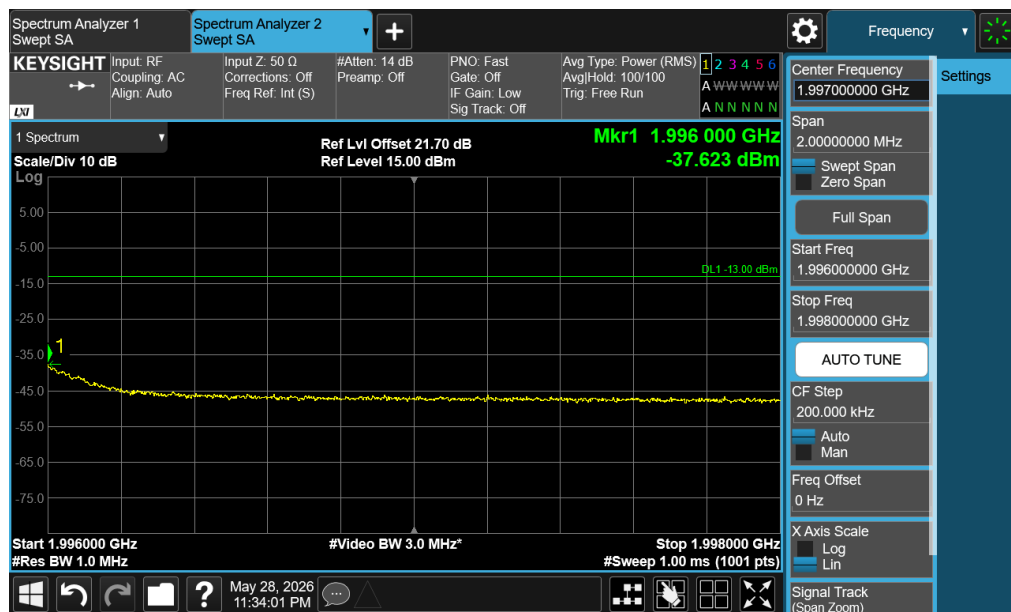
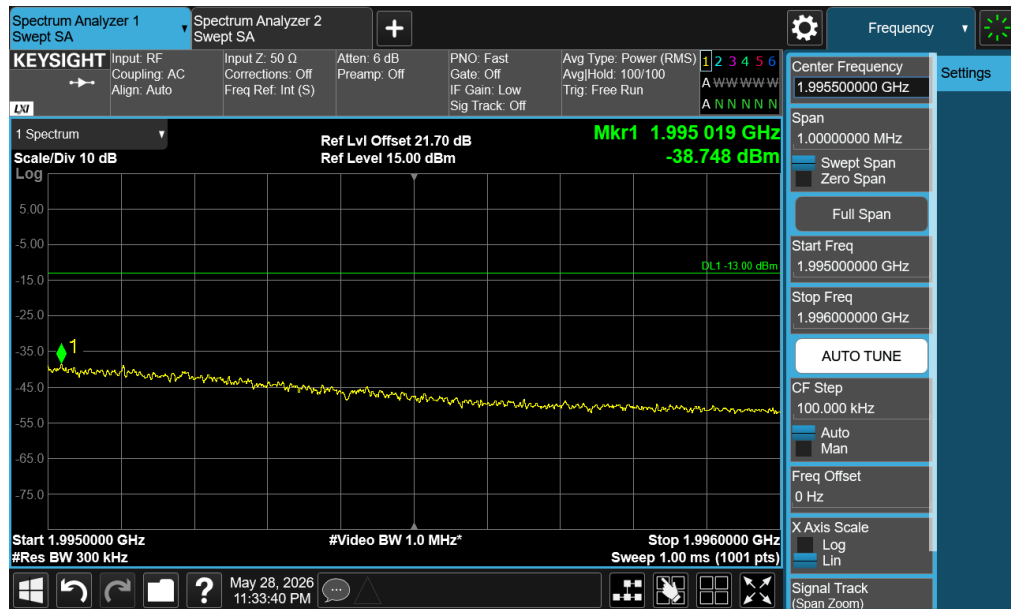
Out-of-band emissions

DL_1.25MHz AWGN input_Lower band edge_10dB above AGC



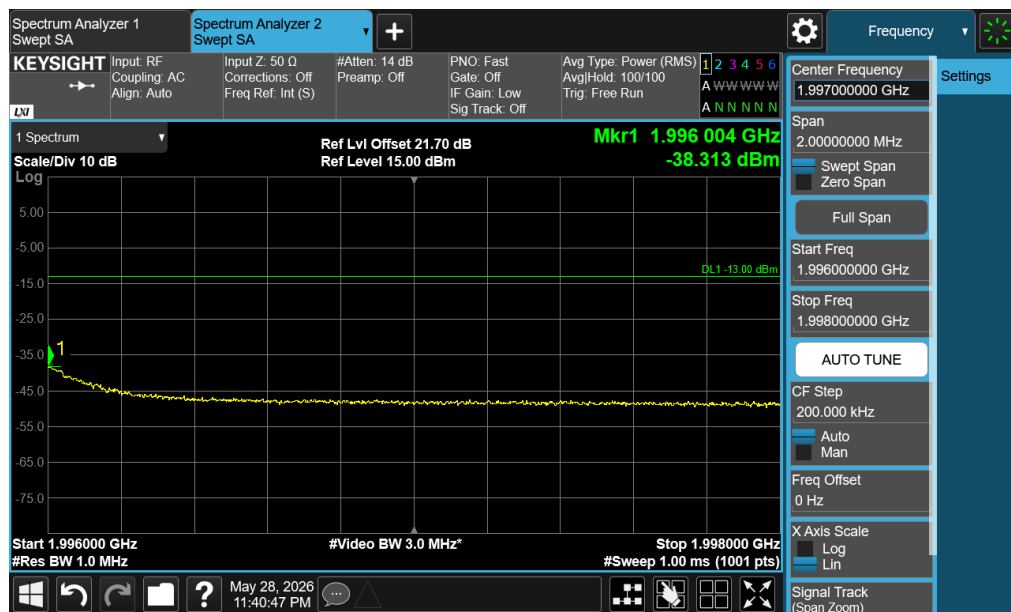
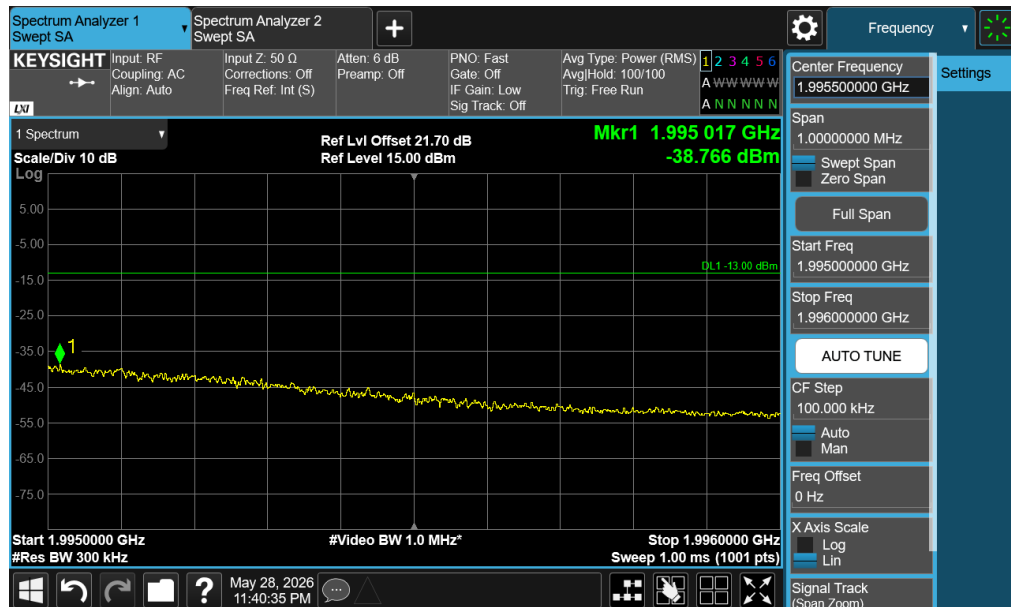
Out-of-band emissions

DL_1.25MHz AWGN input_Upper band edge_pre-AGC



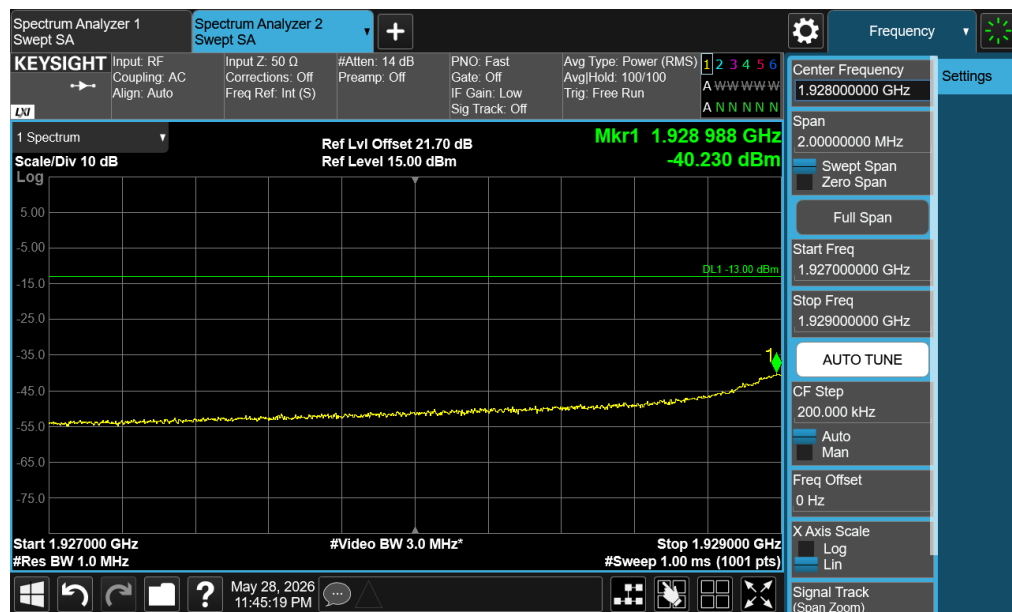
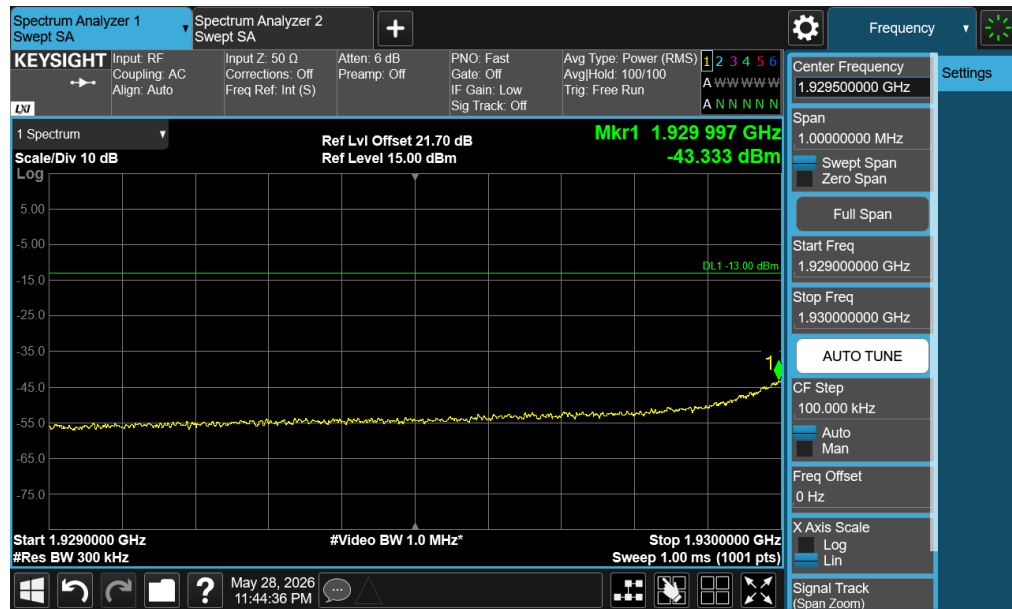
Out-of-band emissions

DL_1.25MHz AWGN input_Upper band edge_10dB above AGC



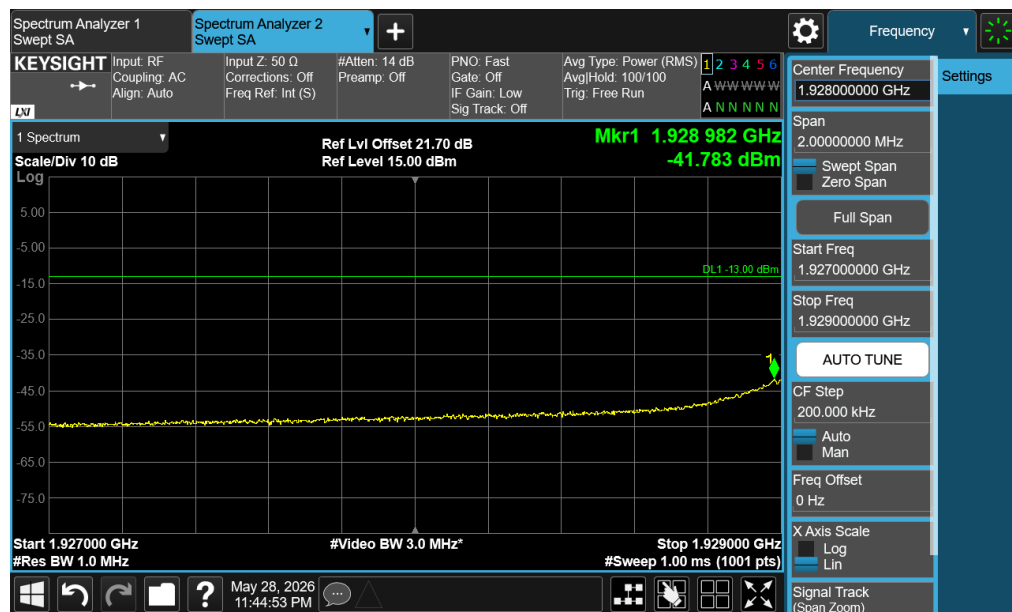
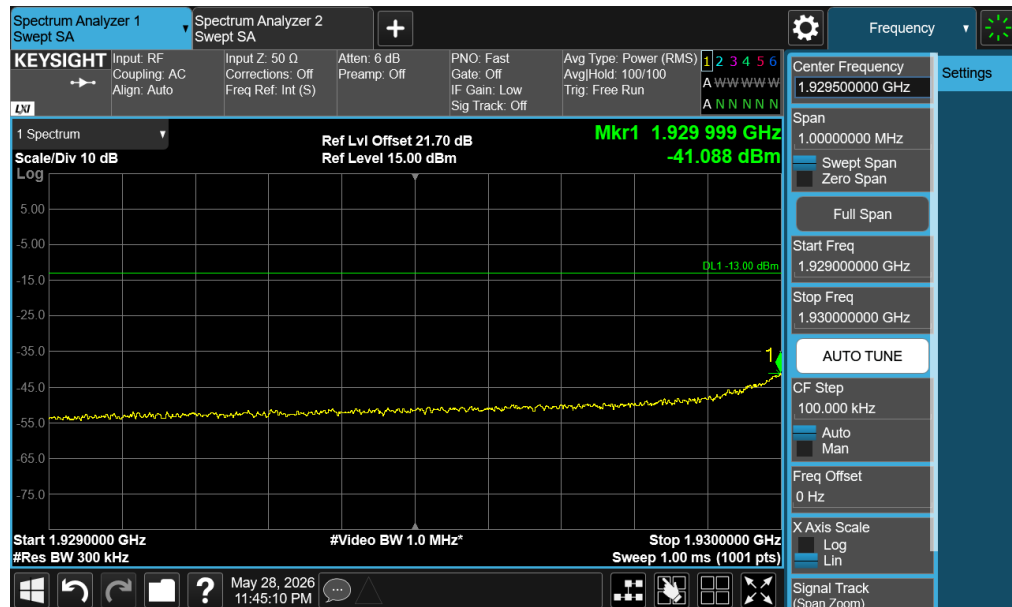
Out-of-band emissions

DL_4.1MHz AWGN input_Lower band edge_pre-AGC



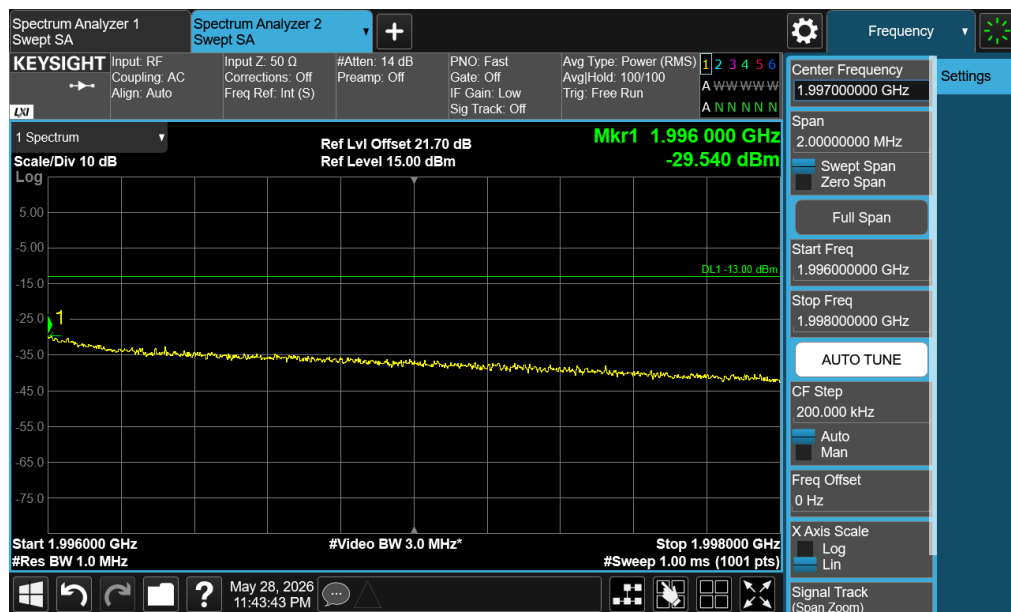
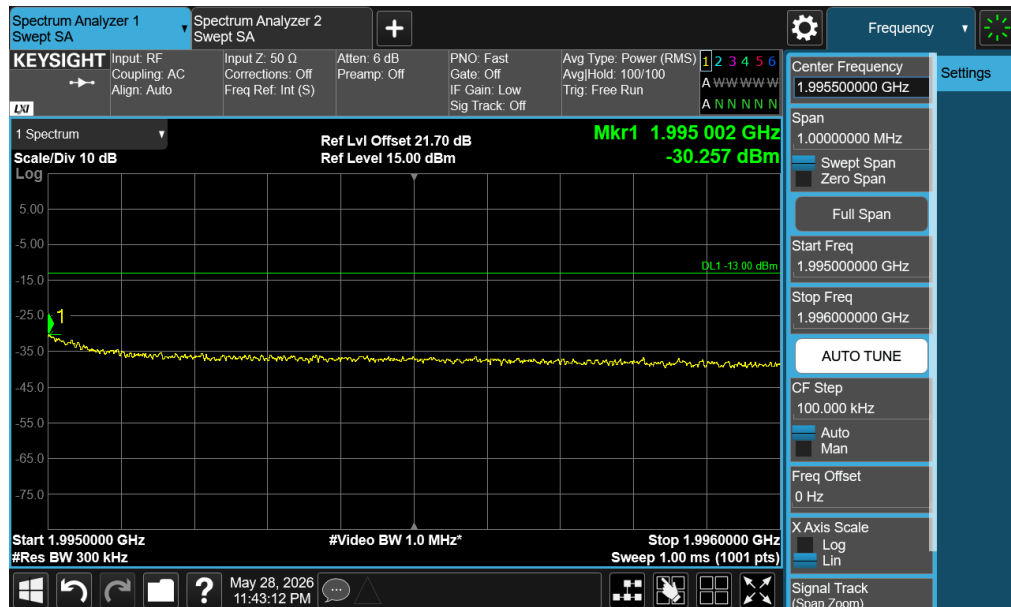
Out-of-band emissions

DL_4.1MHz AWGN input_Lower band edge_10dB above AGC



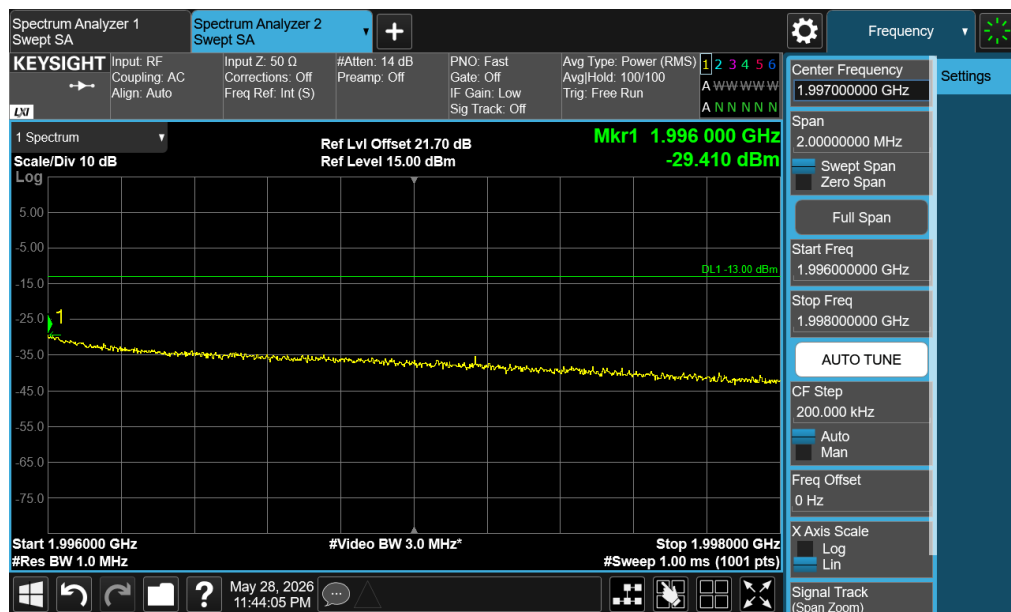
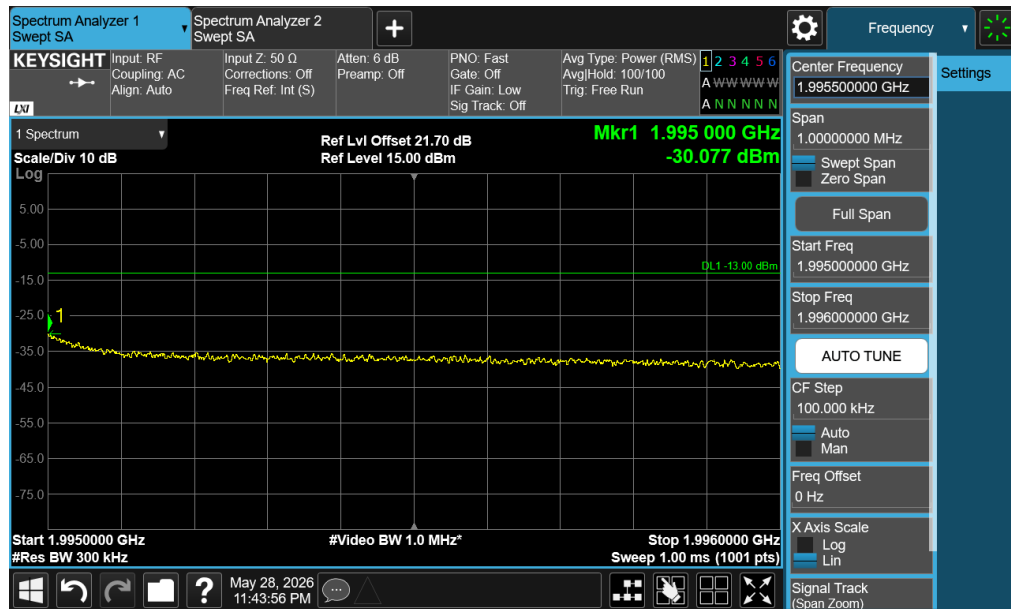
Out-of-band emissions

DL_4.1MHz AWGN input_Upper band edge_pre-AGC



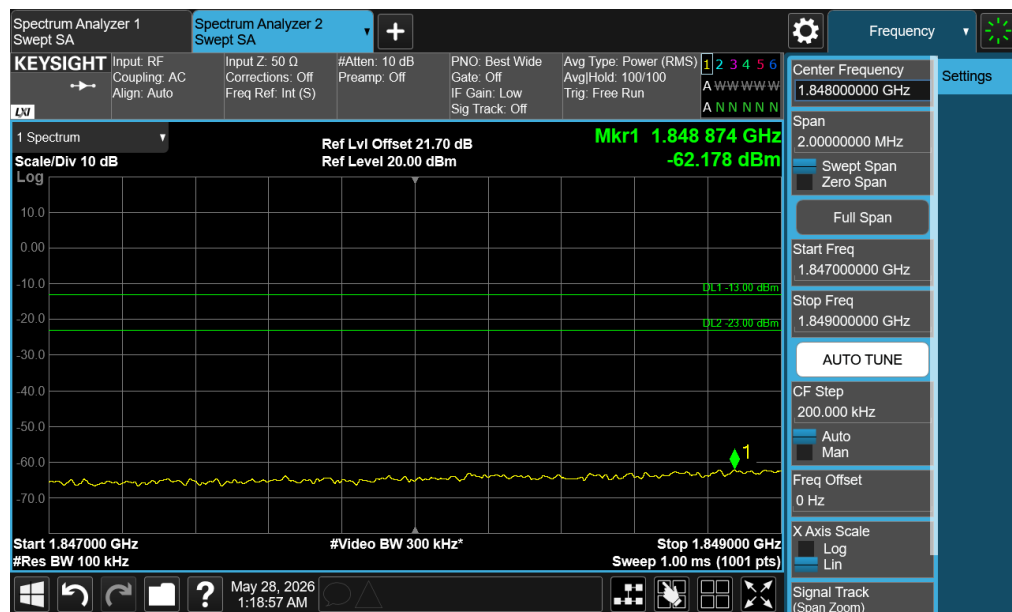
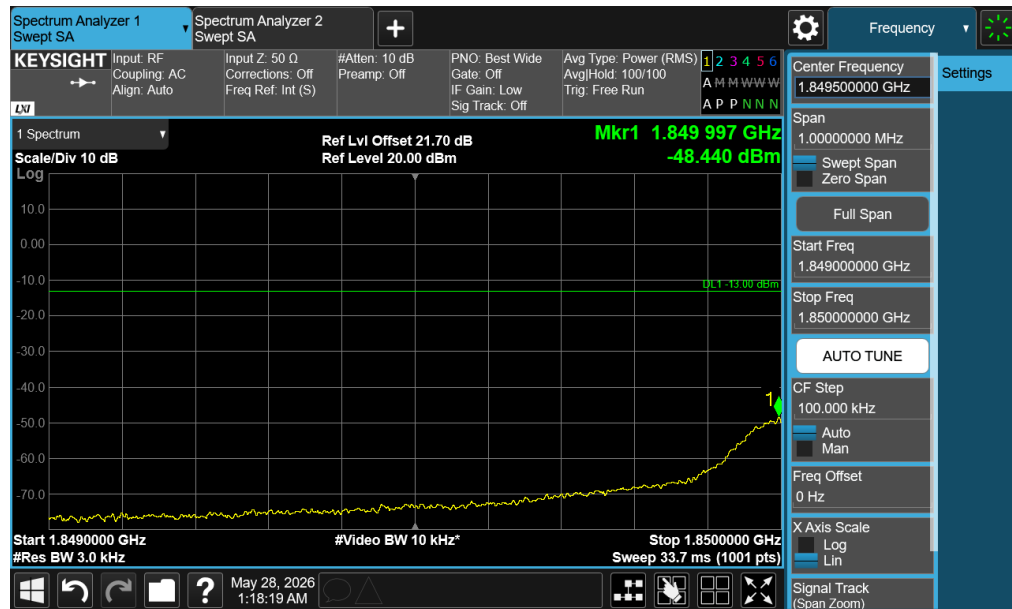
Out-of-band emissions

DL_4.1MHz AWGN input_Upper band edge_10dB above AGC



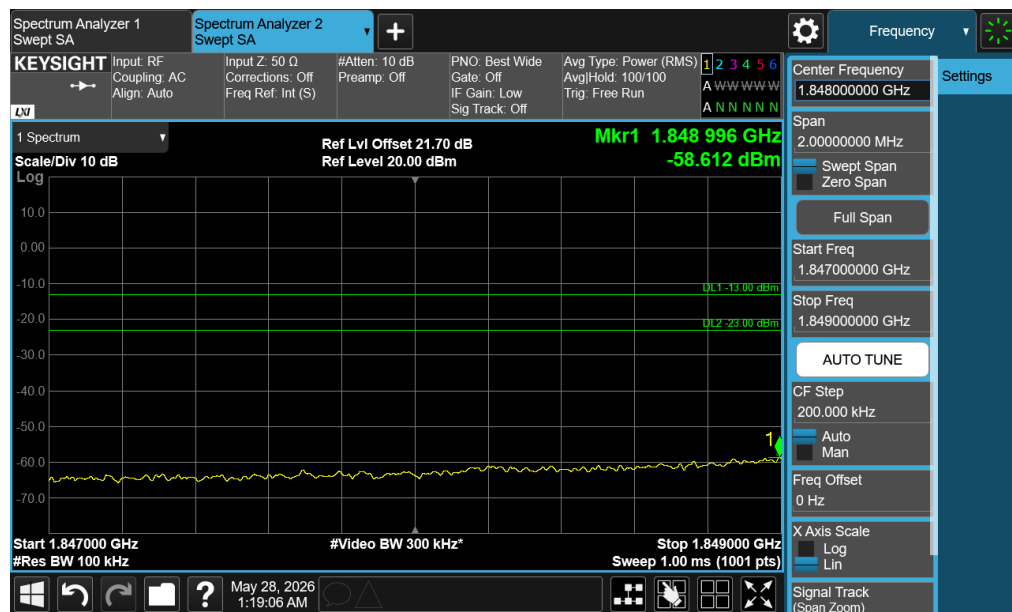
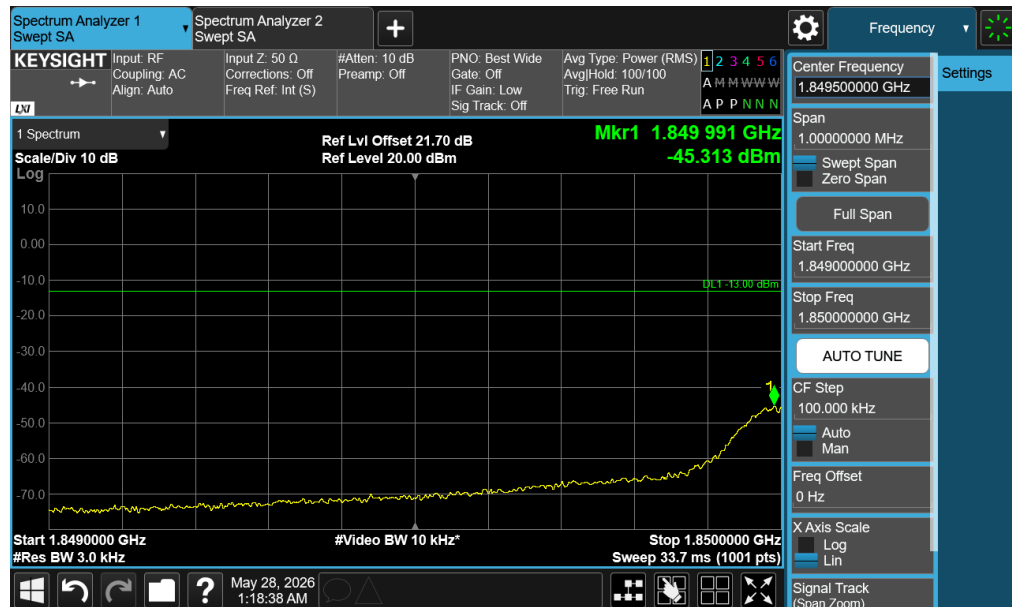
Out-of-band emissions

UL_GSM input_Lower band edge_pre-AGC



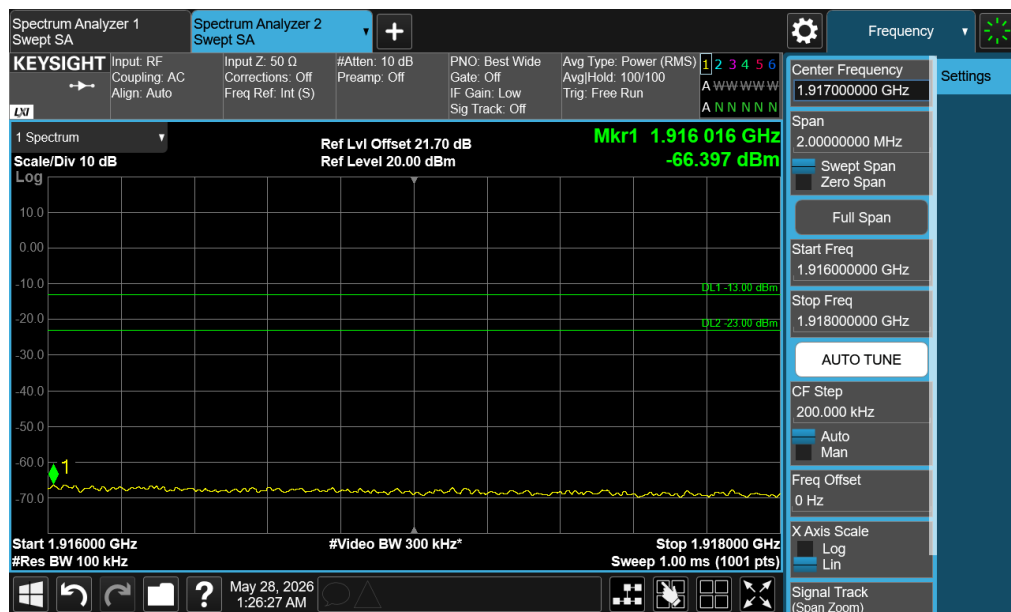
Out-of-band emissions

UL_GSM input_Lower band edge_10dB above AGC



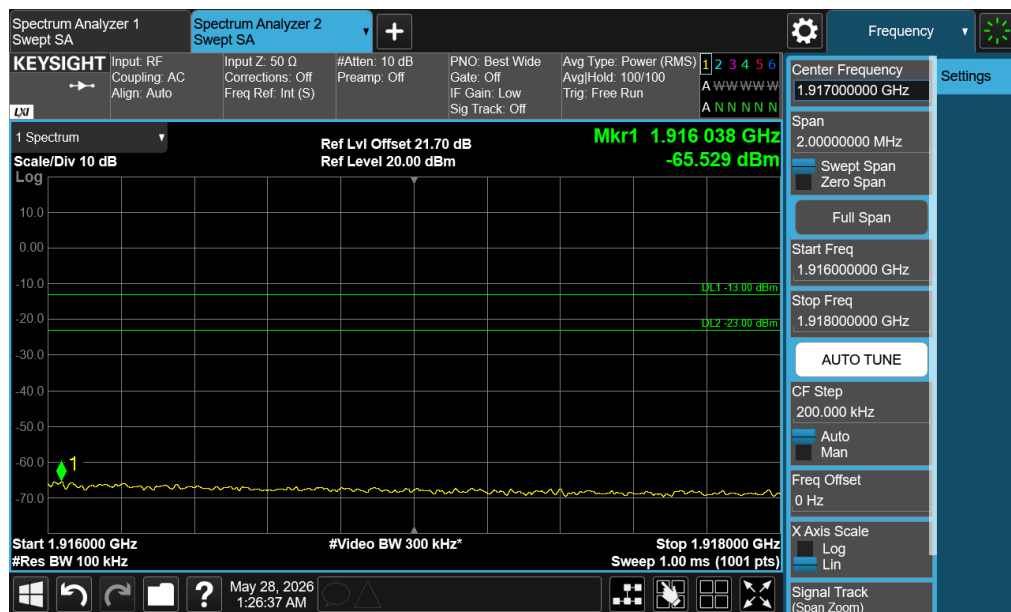
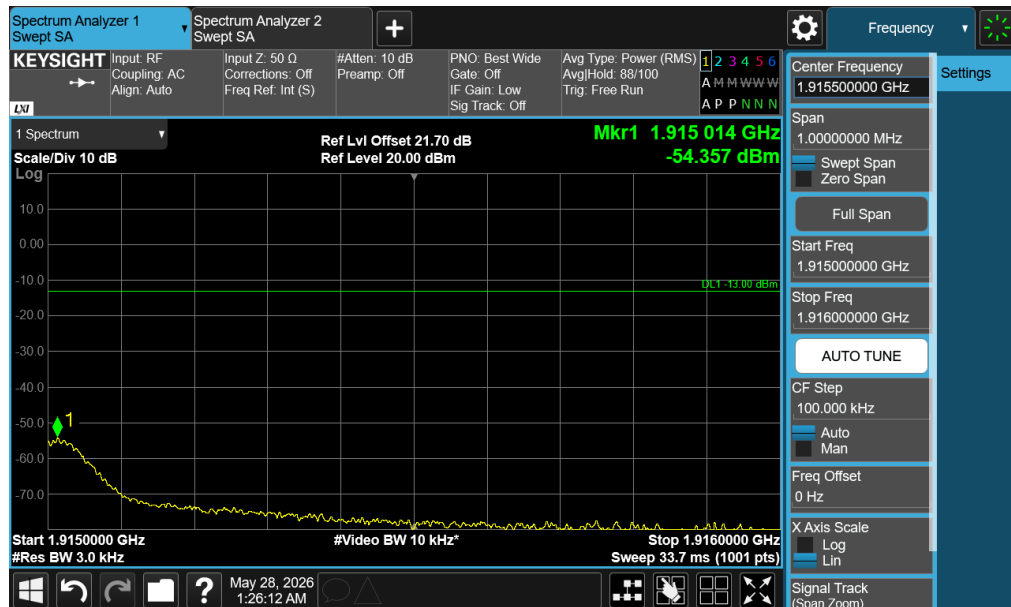
Out-of-band emissions

UL_GSM input_Upper band edge_pre-AGC



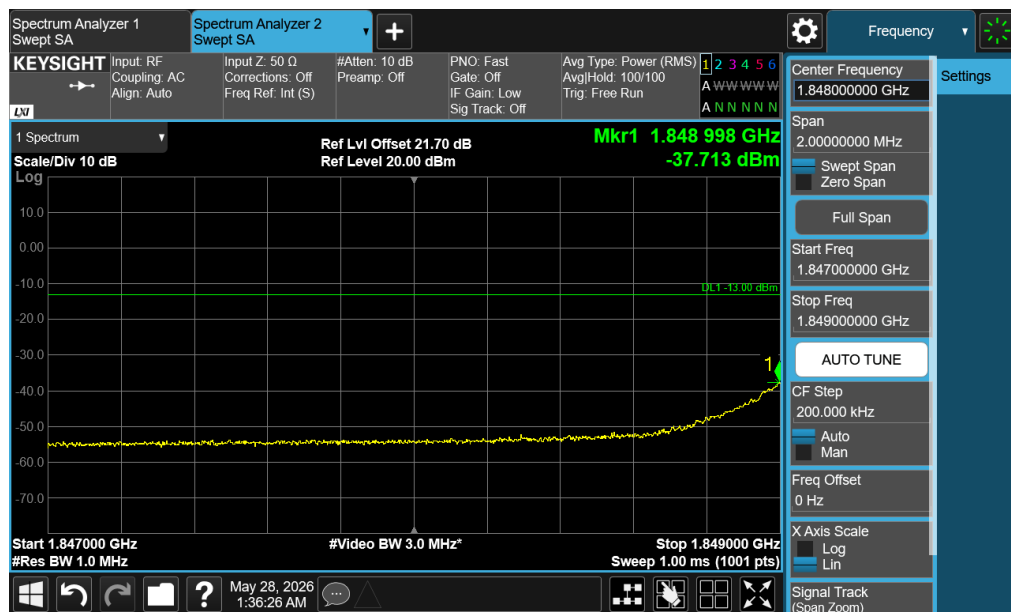
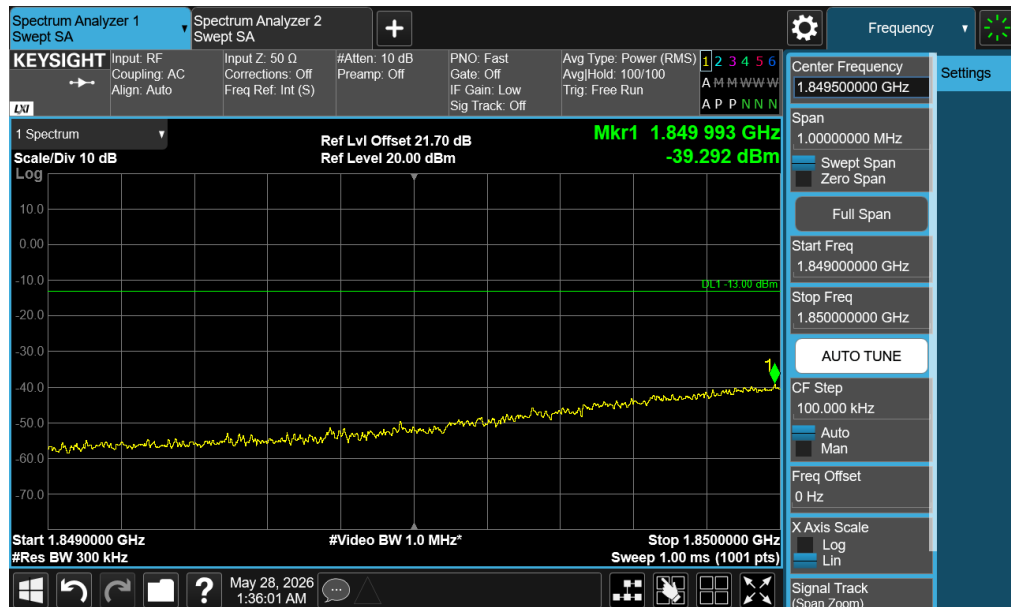
Out-of-band emissions

UL_GSM input_Upper band edge_10dB above AGC



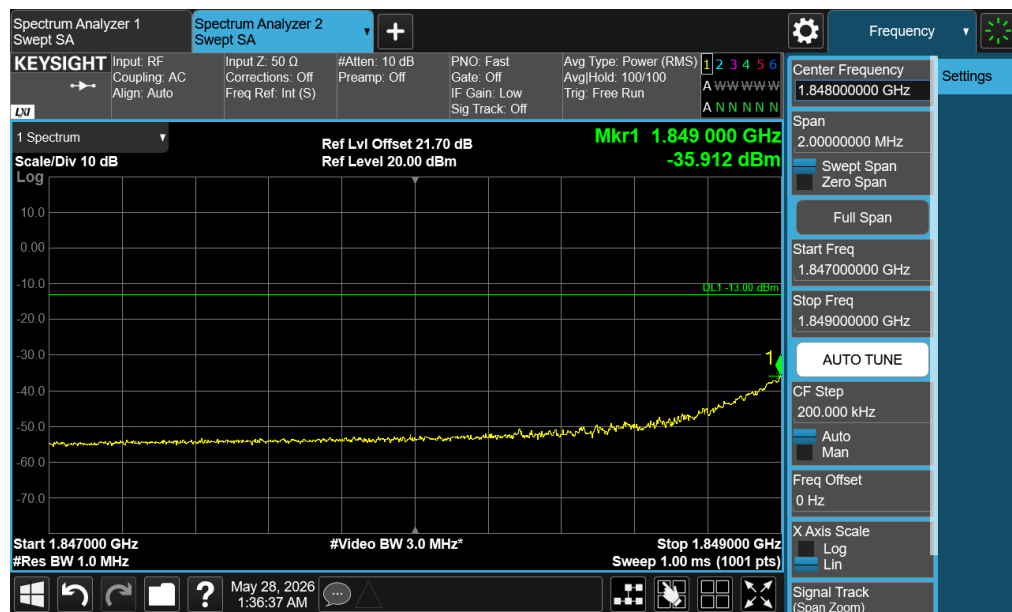
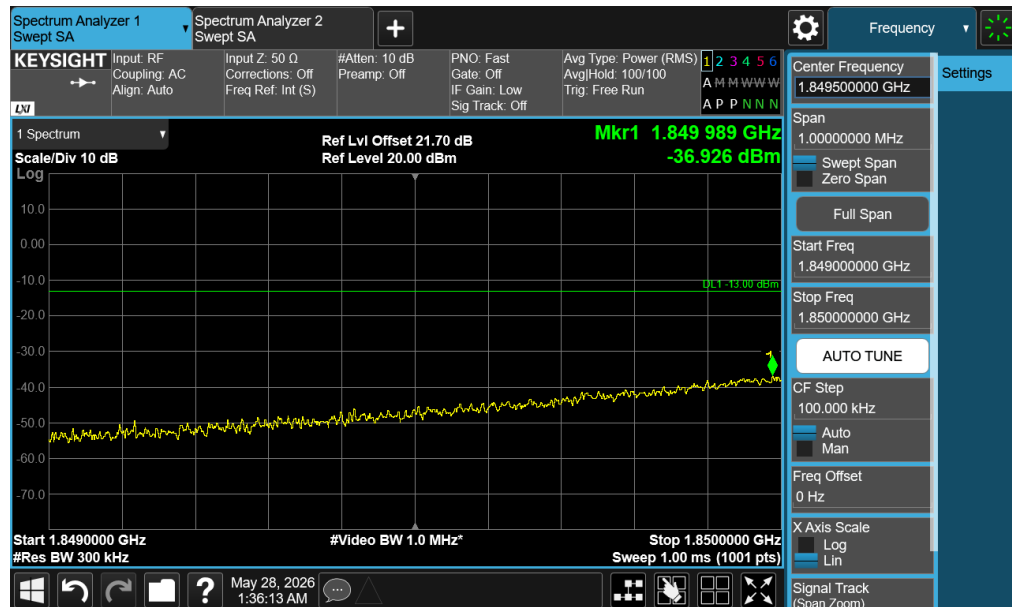
Out-of-band emissions

UL_1.25MHz AWGN input_Lower band edge_pre-AGC



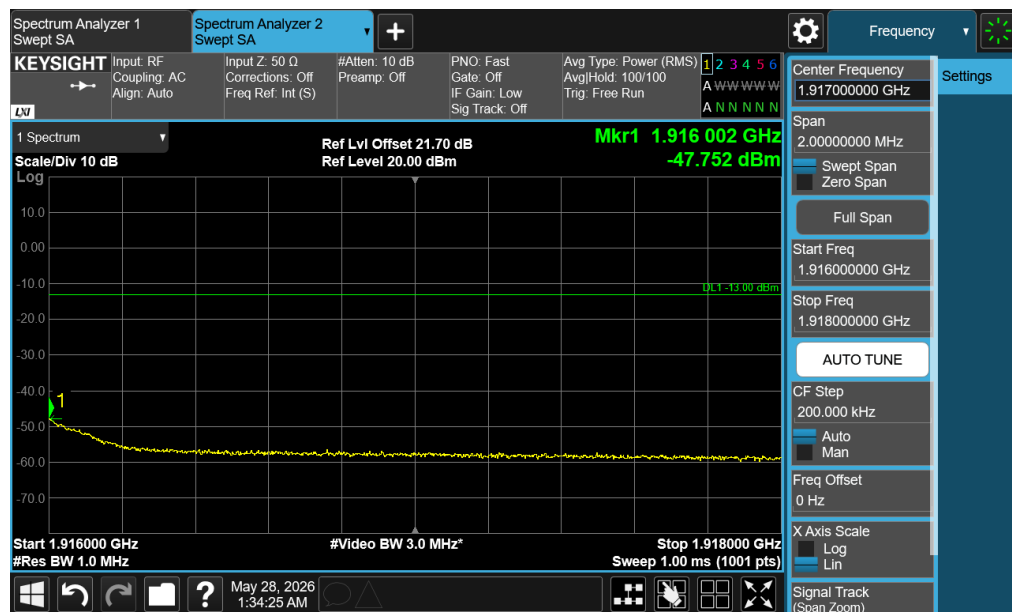
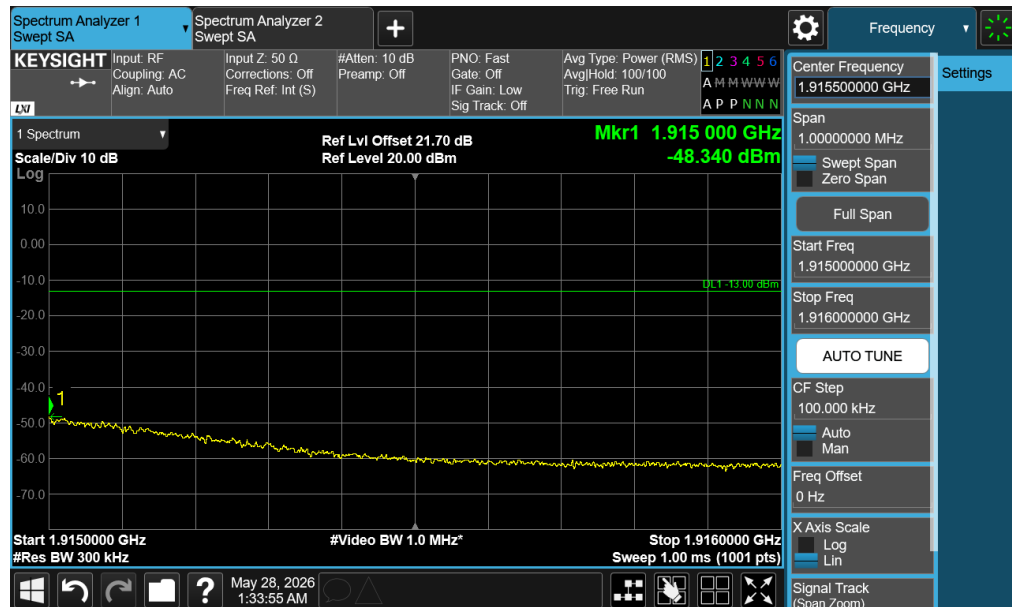
Out-of-band emissions

UL_1.25MHz AWGN input_Lower band edge_10dB above AGC



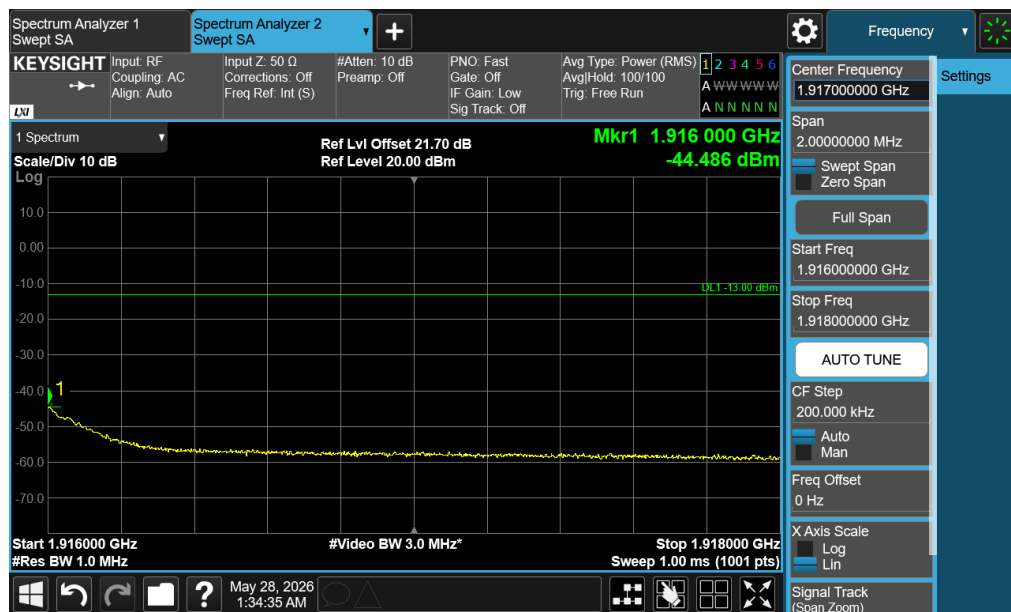
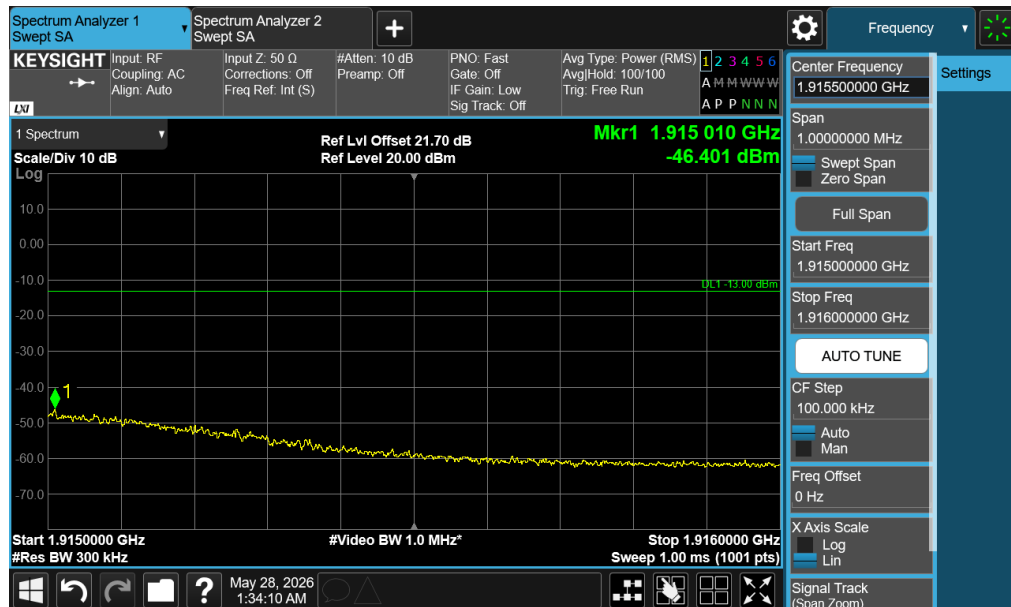
Out-of-band emissions

UL_1.25MHz AWGN input_Upper band edge_pre-AGC



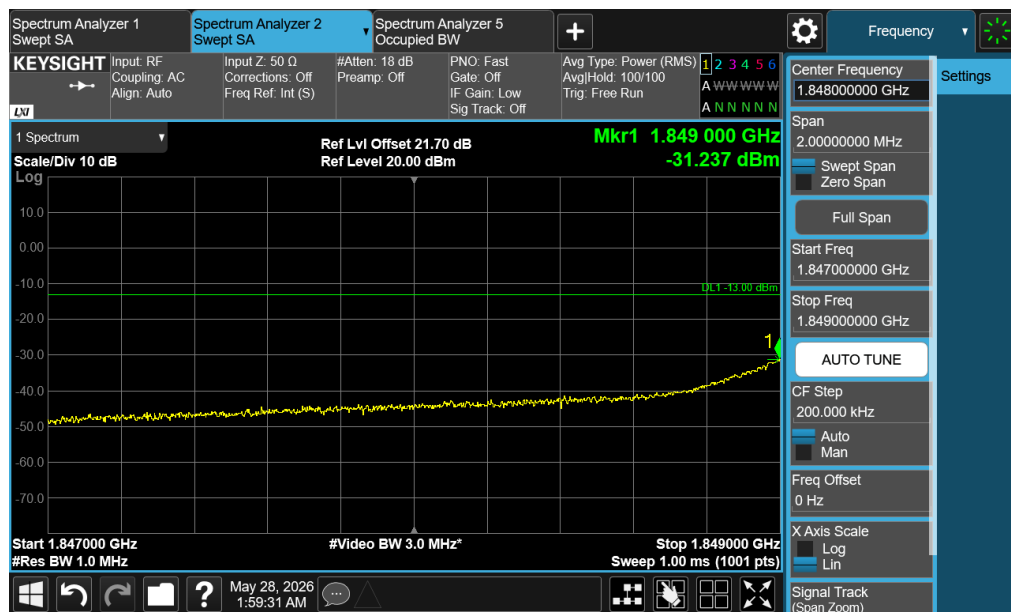
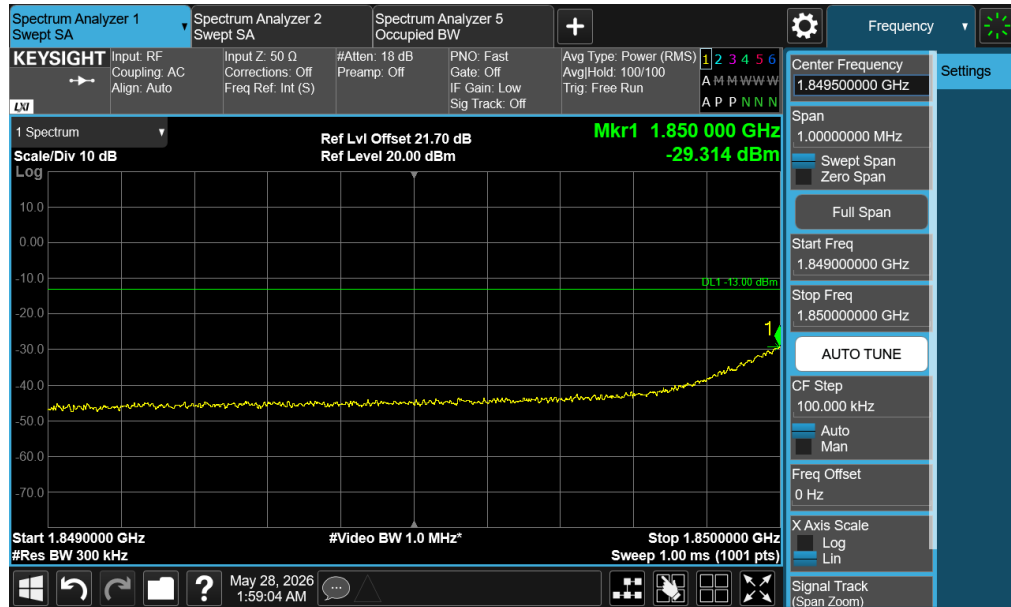
Out-of-band emissions

UL_1.25MHz AWGN input_Upper band edge_10dB above AGC



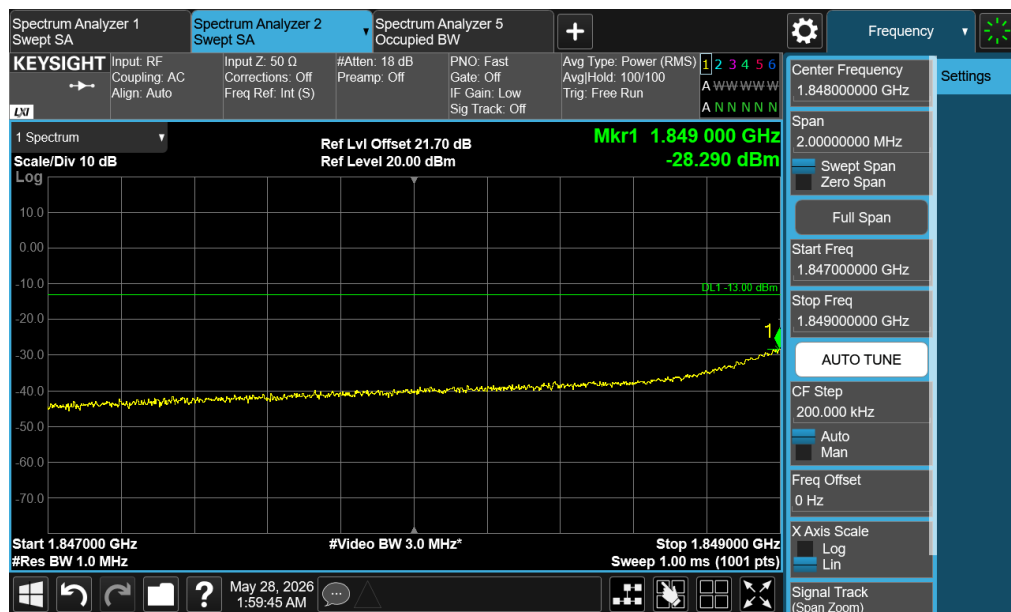
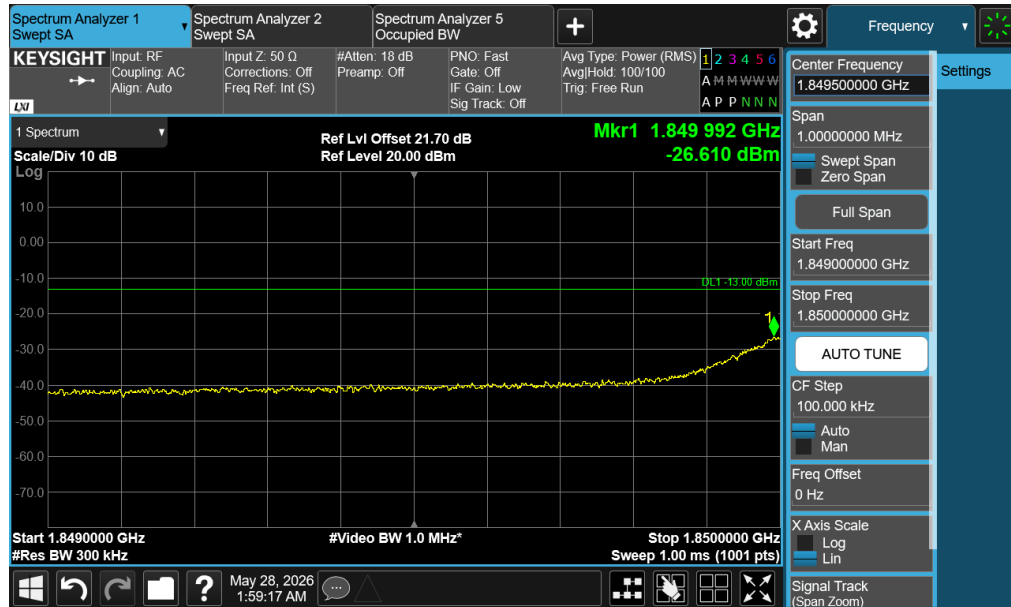
Out-of-band emissions

UL_4.1MHz AWGN input_Lower band edge_pre-AGC



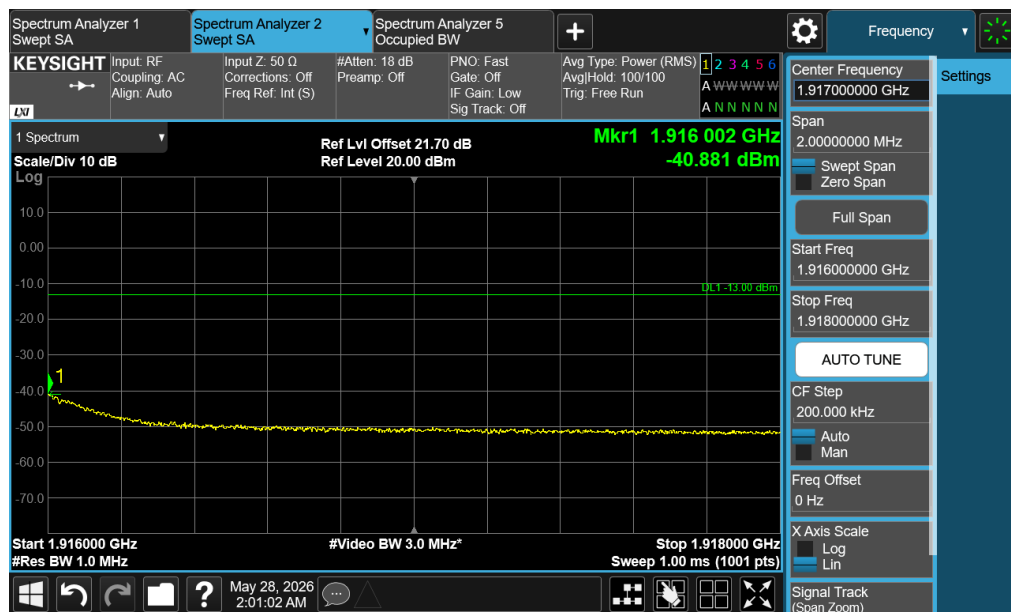
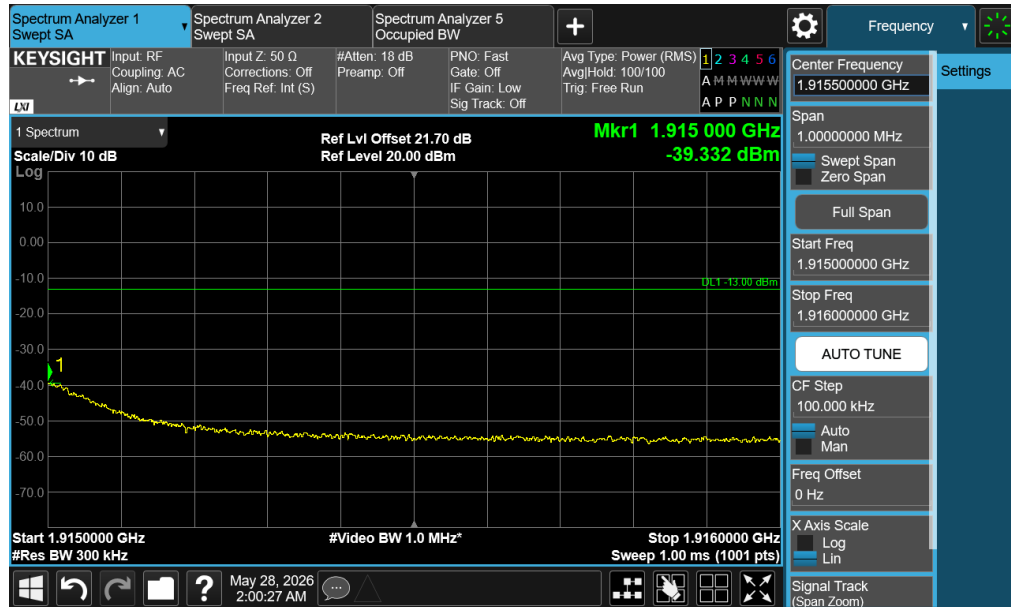
Out-of-band emissions

UL_4.1MHz AWGN input_Lower band edge_10dB above AGC



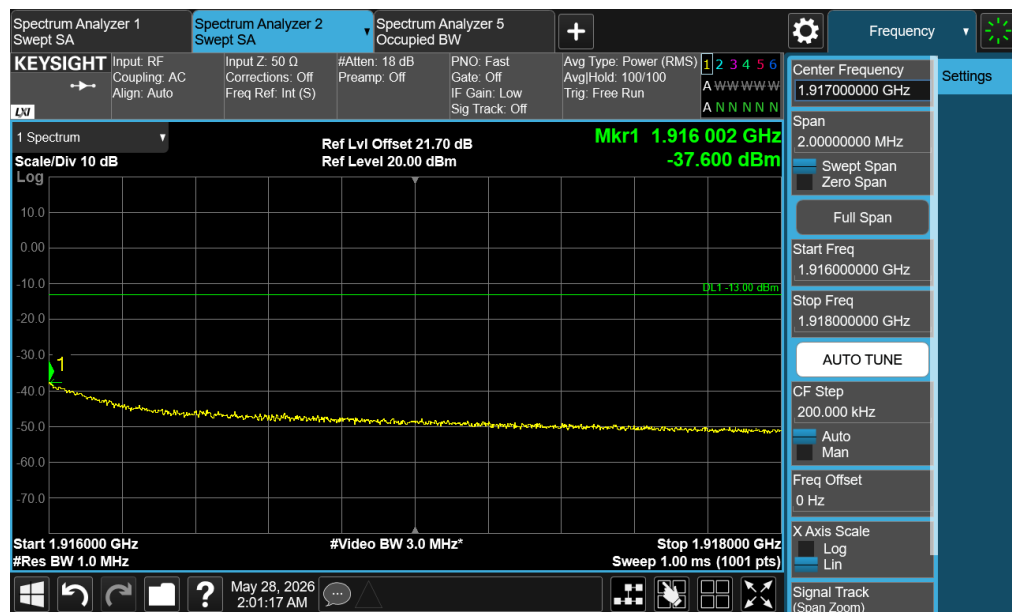
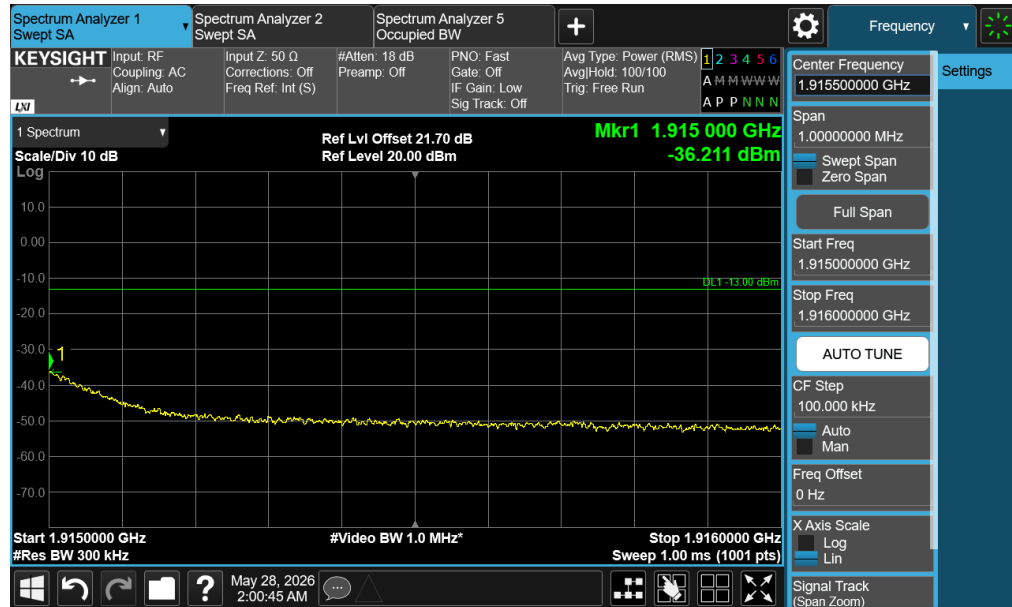
Out-of-band emissions

UL_4.1MHz AWGN input_Upper band edge_pre-AGC



Out-of-band emissions

UL_4.1MHz AWGN input_Upper band edge_10dB above AGC



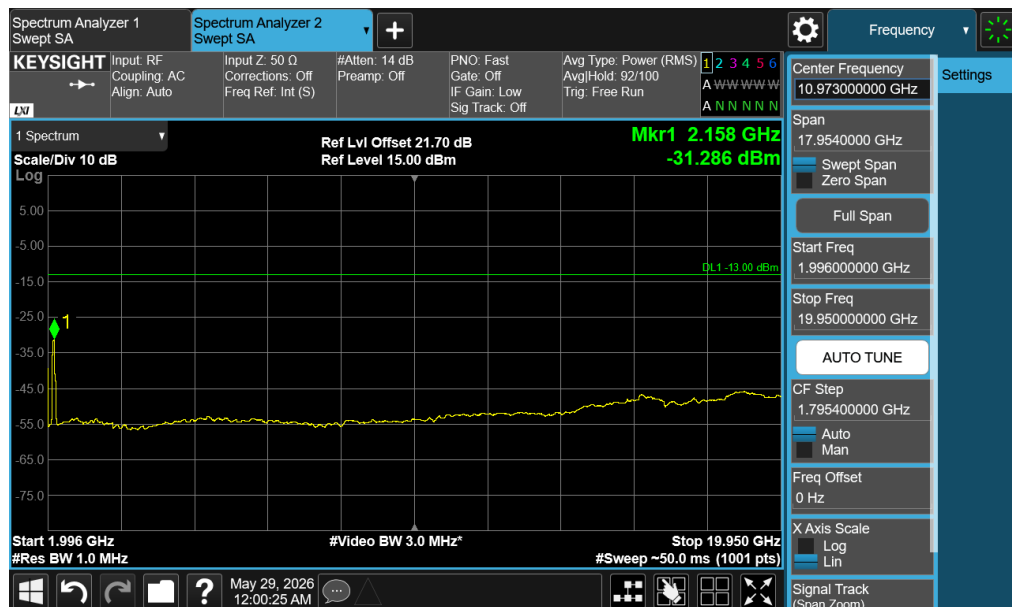
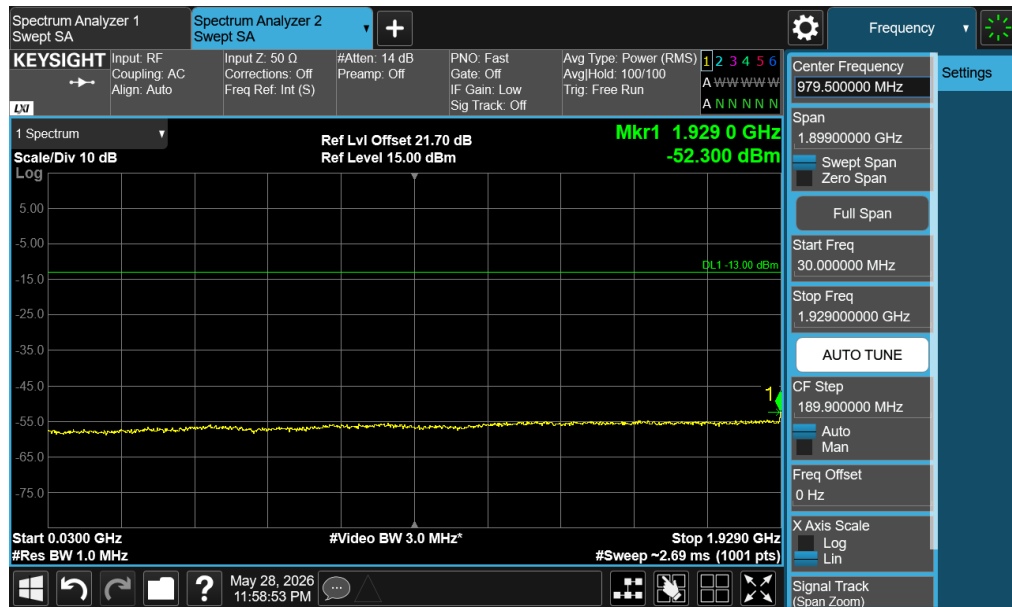
7 Conducted spurious emissions

Conducted spurious emissions							
Test Path	Test Port	Test Signal	Test Channel	Frequency Range (MHz)	Worst conducted test level (dBm)	Limit (dBm)	Verdict
DL	ANT	4.1MHz AWGN	MCH	30-1929	-52.30	≤-13	PASS
				1996-19950	-31.28	≤-13	PASS
UL	ANT1	4.1MHz AWGN	MCH	30-1849	-24.38	≤-13	PASS
				1916-19150	-41.37	≤-13	PASS
Remark: The conducted spurious emissions 9kHz to 30MHz were very low and not displayed test plots in this report.							



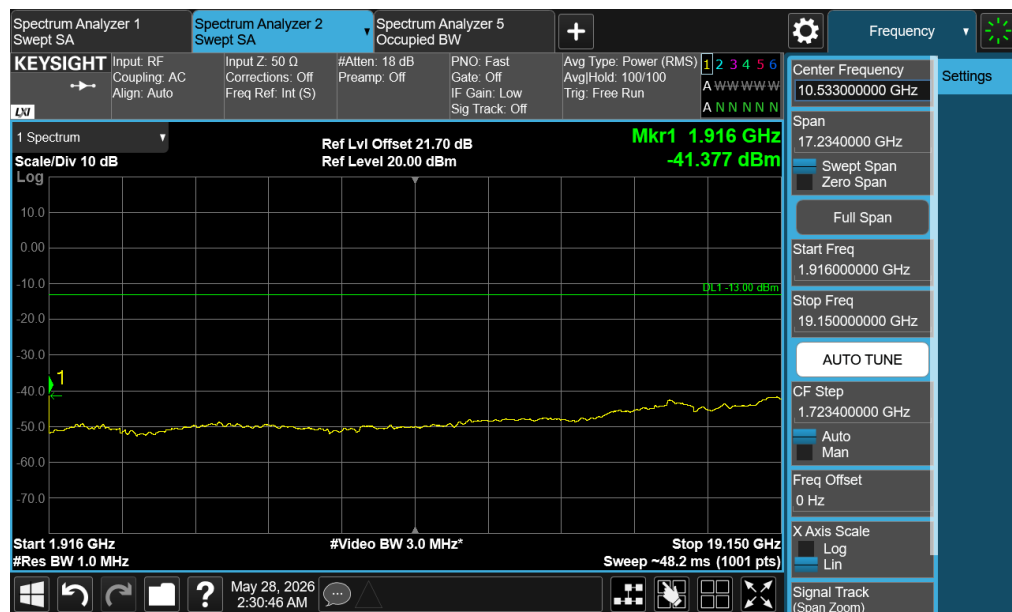
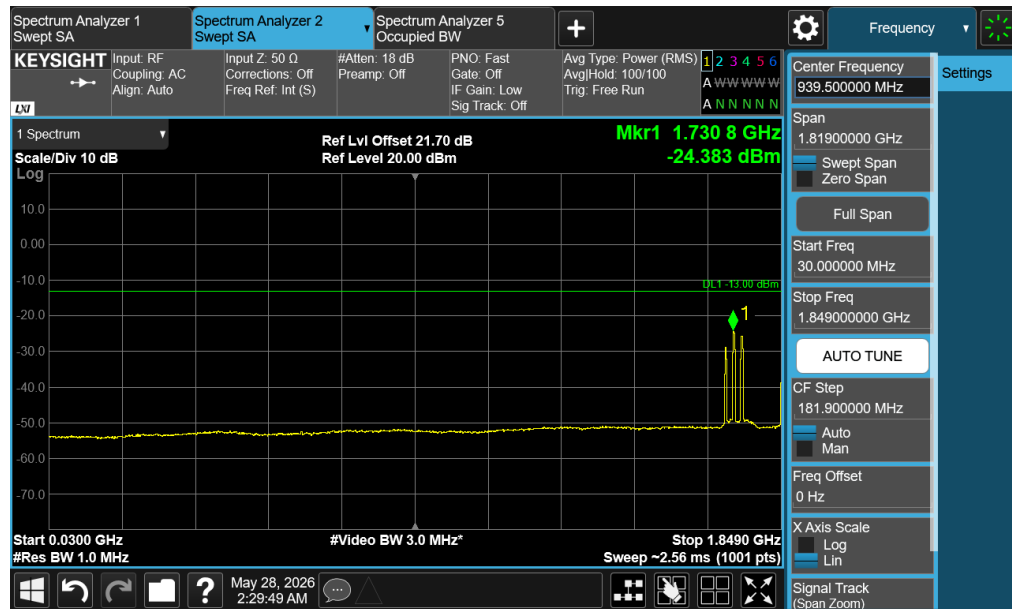
Conducted spurious emissions

DL



Conducted spurious emissions

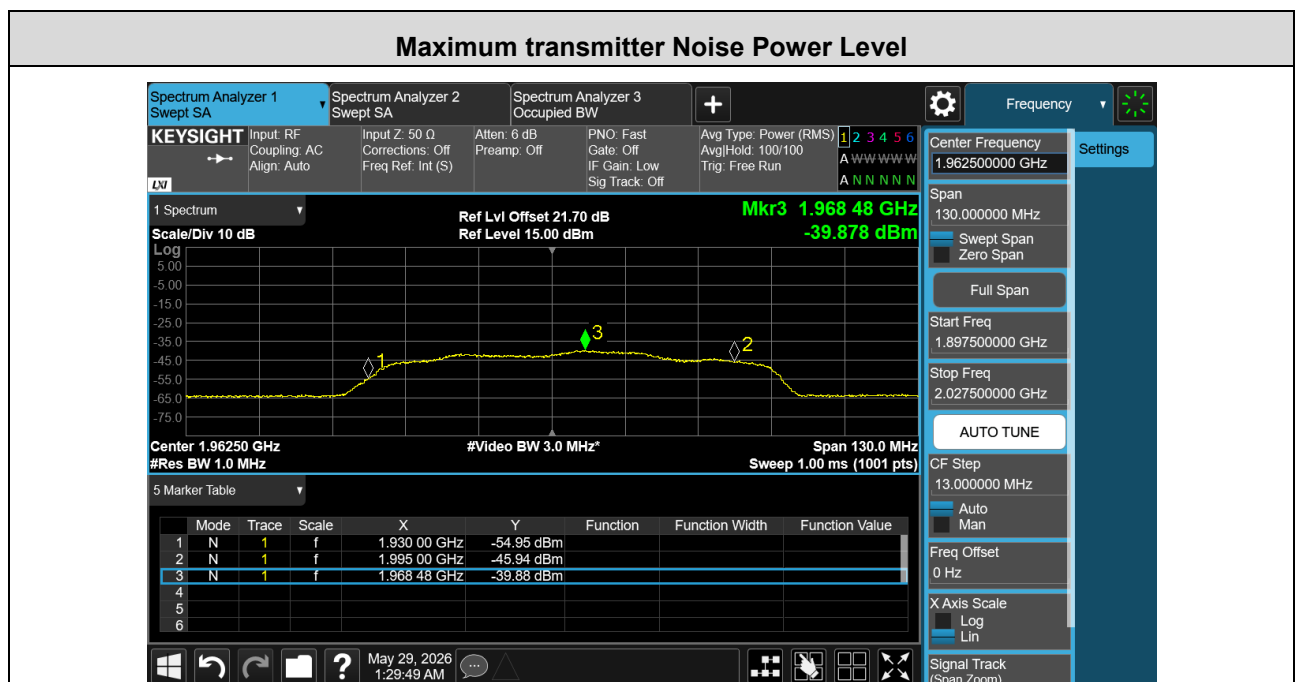
UL



8 Noise

8.1 Maximum transmitter noise power level

Maximum transmitter noise power level				
Test Path	Test Port	Noise Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
DL	ANT	-39.87	≤-37.0	PASS
Remark: The uplink mid-band frequency is 1882.5MHz for Broadband, the maximum downlink noise limit is -102.5dBm/MHz+ 20 Log (1882.5)= -37.0dBm/MHz.				



Remark:

Between Mkr 2 and Mkr 3 represents the authorized licensee spectrum block set for the EUT, the noise power within that does not need to be measured.



8.2 RSSI-dependent noise power level

20.21(e)(9)(i)(A) Noise Limits:

The transmitted noise power shall not exceed -103dBm/MHz- RSSI. Boosters with MSCL less than 40dB, shall reduce the Noise output in (A) by 40dB- MSCL, where MSCL is the minimum coupling loss in dB between the wireless device and booster's server port.

According to appendix B and the declaration from the manufacturer, the Lowest MSCL value can be calculated:

Band	f (MHz)	d (m)	Service ANT Gain (dBi)	Cable Loss (dB)	Min. MSCL (dB)
Broadband PCS	1850	1.5	9	-9	41.3

Therefore, the transmitted noise power shall not exceed -103dBm/MHz- RSSI- (40- MSCL)

20.21(e)(9)(i)(I) Transmit Power Off Mode:

The uplink and downlink noise power shall not exceed -70 dBm/MHz in "Transmit Power OFF Mode".

KDB 935210 D04 appendix D figure D1 provider-specific consumer signal booster variable noise limits:

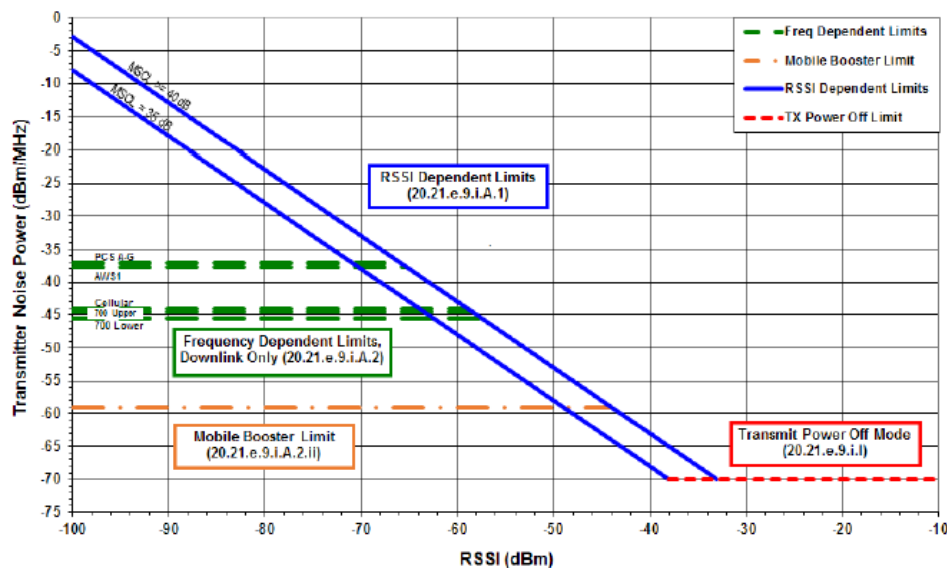


Figure D1 – Provider-specific consumer signal booster variable noise limits

Therefore, the RSSI-dependent region can be calculated as: -64.7dBm to -31.7dBm



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SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Competency Laboratory

No.198, Kazhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
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RSSI-dependent noise power level					
Test Path	Test Port	RSSI (dBm)	Noise Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
DL	ANT	-90	-39.81	≤-37.0	PASS
		-80	-40.12	≤-37.0	PASS
		-70	-41.56	≤-37.0	PASS
		-53	-49.20	≤-48.7	PASS
		-50	-54.83	≤-51.7	PASS
		-37	-66.37	≤-64.7	PASS
UL	ANT1	-90	-40.03	≤-37.0	PASS
		-80	-41.00	≤-37.0	PASS
		-70	-41.98	≤-37.0	PASS
		-57	-46.73	≤-44.7	PASS
		-51	-52.23	≤-50.7	PASS
		-44	-60.05	≤-57.7	PASS



8.3 Variable noise response time

Variable noise response time				
Test Path	Test Port	Time (s)	Limit (s)	Verdict
DL	ANT	0.09	≤3	PASS
UL	ANT1	0.08	≤3	PASS



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Variable noise response time

DL



UL



9 Uplink inactivity

Uplink Inactivity						
Test Path	Test Port	Time (s)	limit (s)	Noise Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
UL	ANT1	0.12	≤5	-75.67	≤-70	PASS

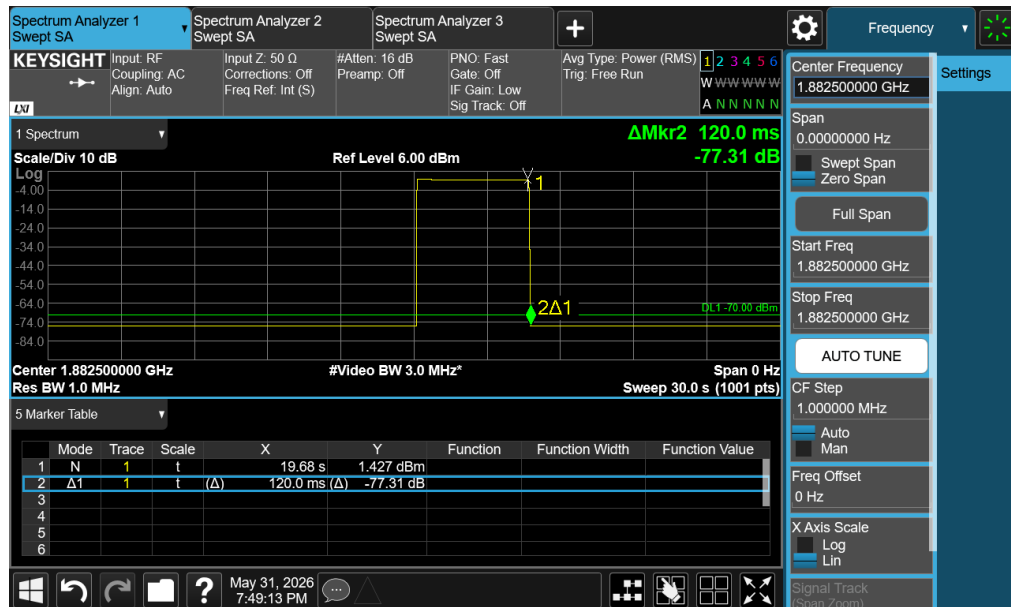


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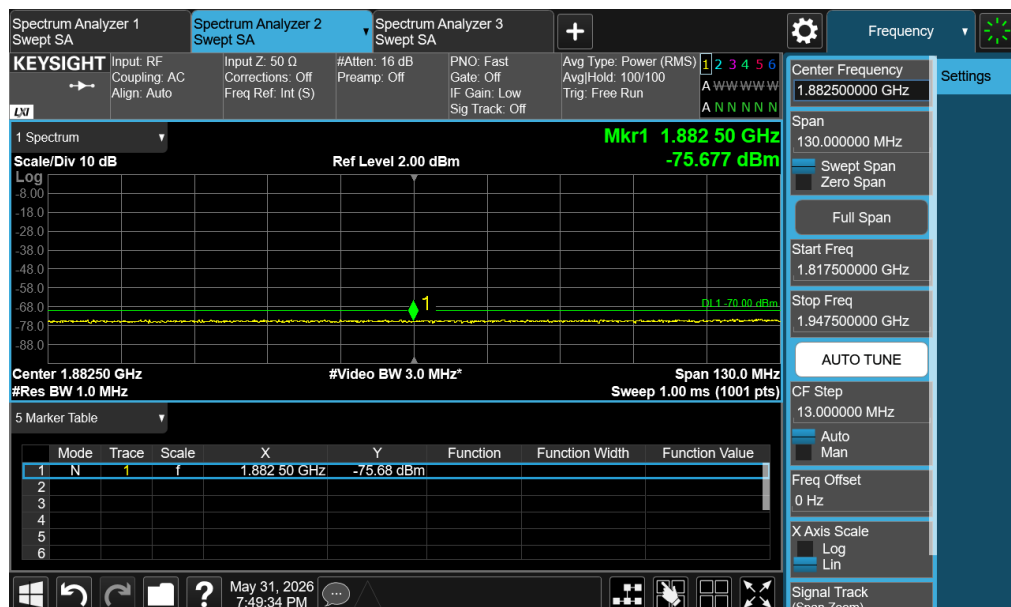
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Uplink inactivity

UL_Time



UL_Noise power



10 Variable booster gain

10.1 Variable gain

20.21(e)(9)(i)(C)(1) *Booster Gain Limits:*

The uplink and downlink gain in dB of a frequency selective consumer booster referenced to its input and output ports shall not exceed BSCL- 28dB- (40dB- MSCL).

20.21(e)(9)(i)(I) *Transmit Power Off Mode:*

The uplink gain shall not exceed the lesser of 23 dB or MSCL in “Transmit Power OFF Mode”.

KDB 935210 D04 appendix D figure D2 provider-specific consumer signal booster variable gain limits:

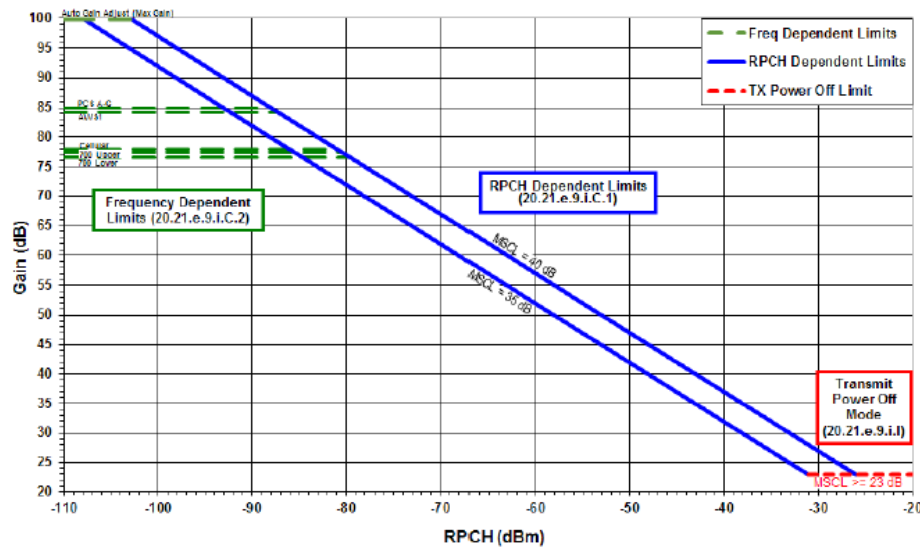


Figure D2 – Provider-specific consumer signal booster variable gain limits

According to appendix B and the declaration from the manufacturer, the Lowest MSCL value can be calculated:

Band	f (MHz)	d (m)	Service ANT Gain (dBi)	Cable Loss (dB)	Min. MSCL (dB)
Broadband PCS	1850	1.5	9	-9	41.3

Therefore, the RSSI-dependent region can be calculated as (RPCH): -101.7dBm to -24.7dBm



Variable Gain							
Test Path	Test Port	RPCH (dBm)	BSCL (dBm)	Pout (dBm)	Gain (dB)	Limit (dB)	Verdict
DL	ANT	-90	115	-10.6	79.4	≤88.3	PASS
		-81	108	-2.0	79.0	≤81.3	PASS
		-76	86	-19.5	56.5	≤59.3	PASS
		-66	67	-32.3	33.7	≤40.3	PASS
		-43	55	-21.7	21.3	≤28.3	PASS
		-22	47	/	/	≤23	PASS
UL	ANT5	-90	115	-9.9	80.1	≤88.3	PASS
		-80	102	-6.3	73.7	≤75.3	PASS
		-61	89	-0.3	60.7	≤62.3	PASS
		-51	78	-2.1	48.9	≤51.3	PASS
		-56	68	-18.4	37.6	≤41.3	PASS
		-22	47	/	/	≤23	PASS
Remark: 1. “/” presents the EUT shut down. It can demonstrate compliance to the gain limit because the EUT lost amplification ability when it was in shutdown mode. 2. For UL, the input signal levels were set to -66.0dBm.							

10.2 Variable gain timing

Variable Uplink Gain Timing				
Test Path	Test Port	Time (s)	Limit (s)	Verdict
UL	ANT1	0.045	≤3	PASS



11 Occupied bandwidth

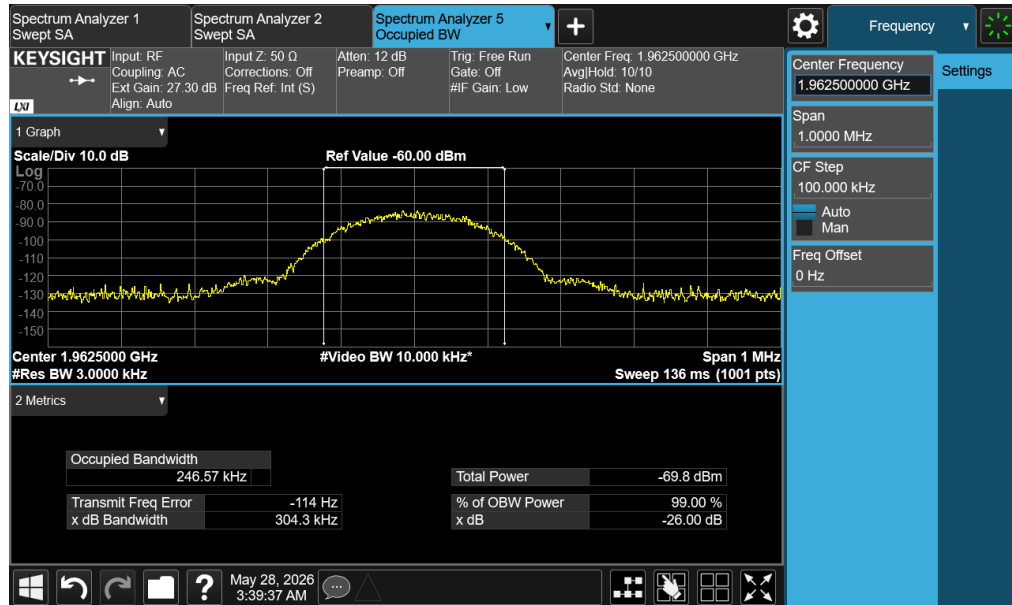
Occupied Bandwidth				
Path	Test Port	Test Channel	Input Signal	Verdict
DL	ANT	Middle	GSM	PASS
			1.25MHz AWGN	PASS
			4.1MHz AWGN	PASS
UL	ANT1	Middle	GSM	PASS
			1.25MHz AWGN	PASS
			4.1MHz AWGN	PASS
Remark: Compare the spectral plot of the input signal to the output signal affirm that they are similar (in passband and roll off characteristic features and relative spectral locations). The test result complies with the requirement.				



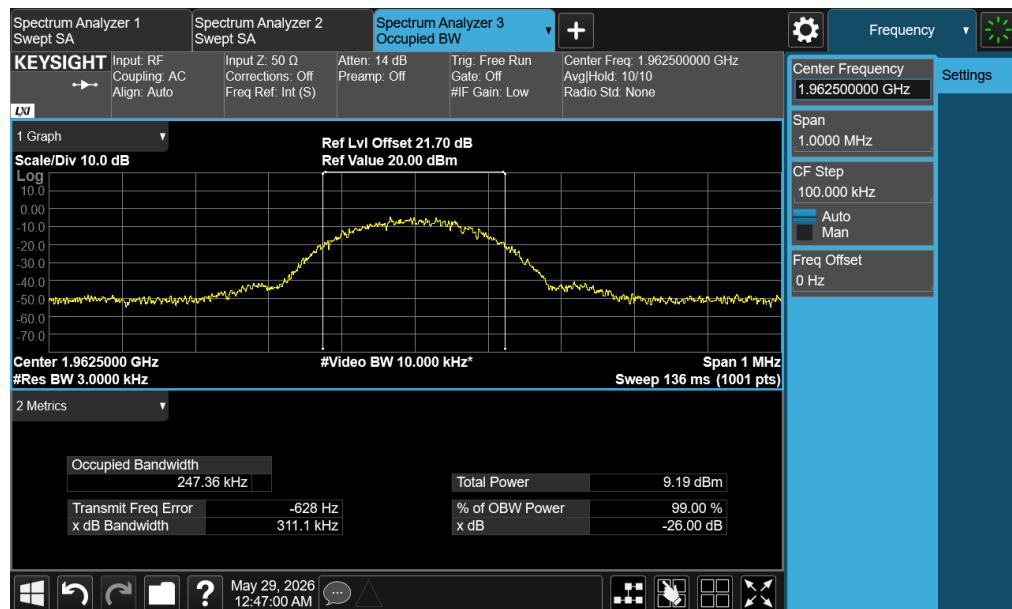
Occupied bandwidth

DL_Middle channel_GSM signal type

Input



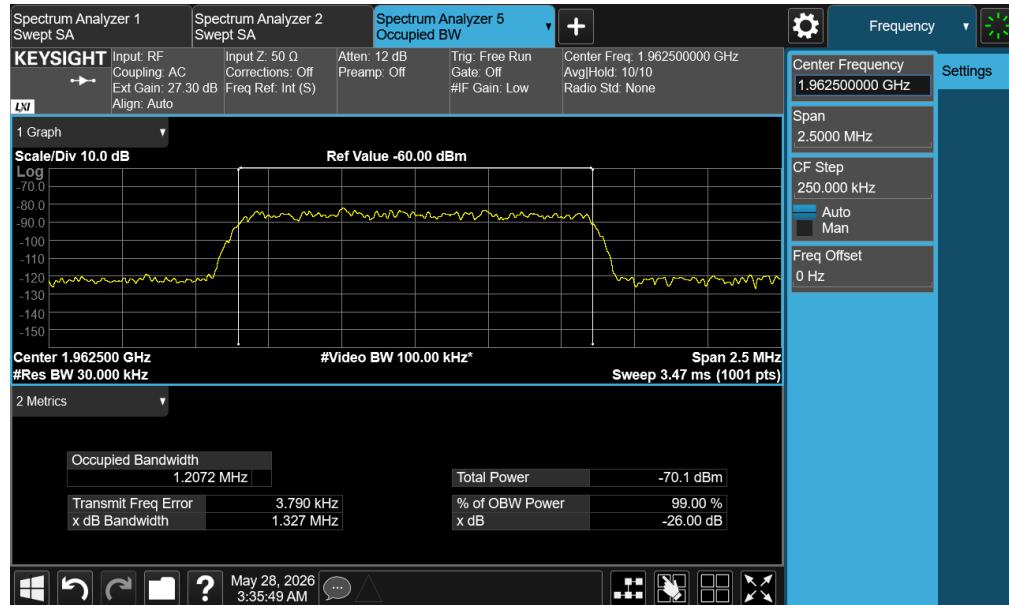
Output



Occupied bandwidth

DL_Middle channel_1.25MHz AWGN signal type

Input



Output

