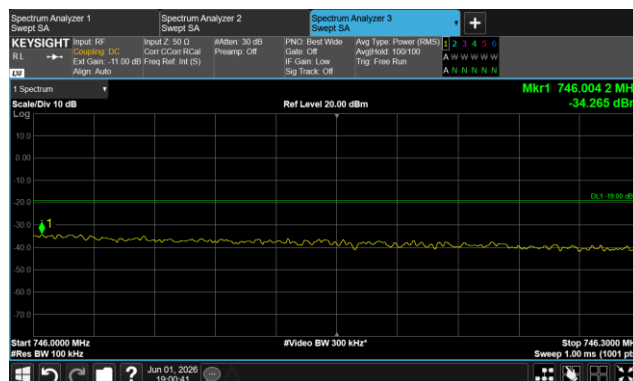
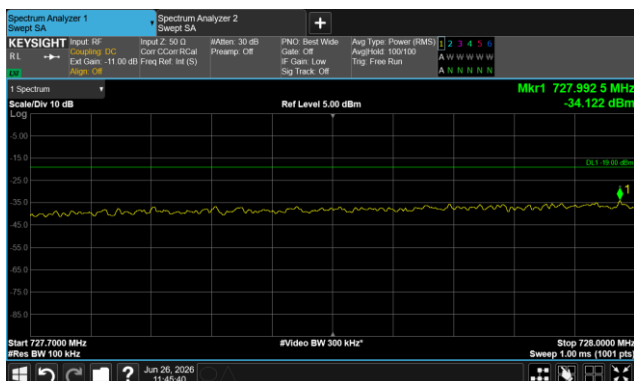


Band 12 Downlink of CDMA Signal Normal

Lower

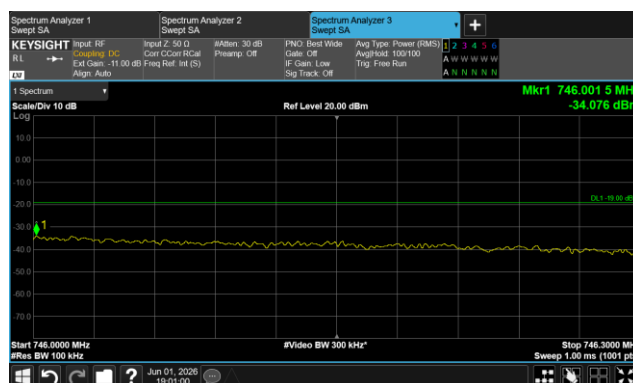
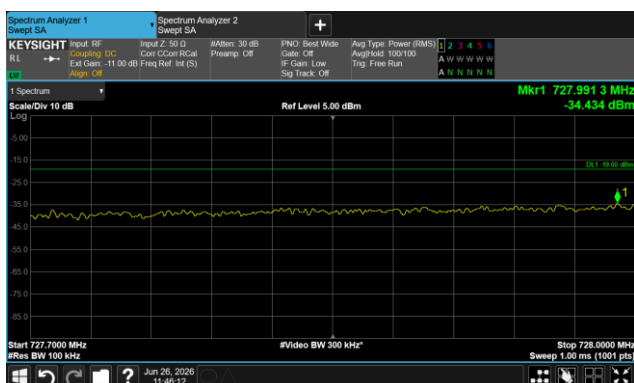
Upper



Increase 10 dB

Lower

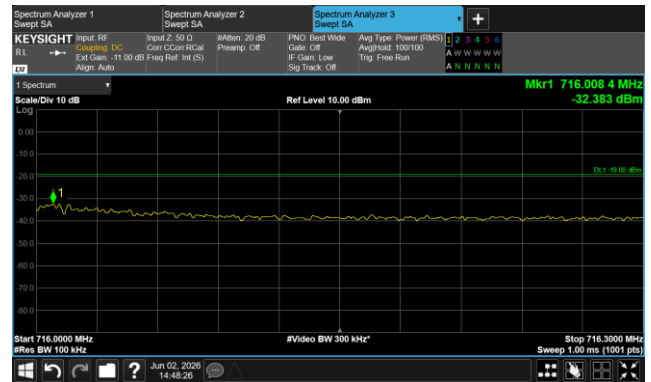
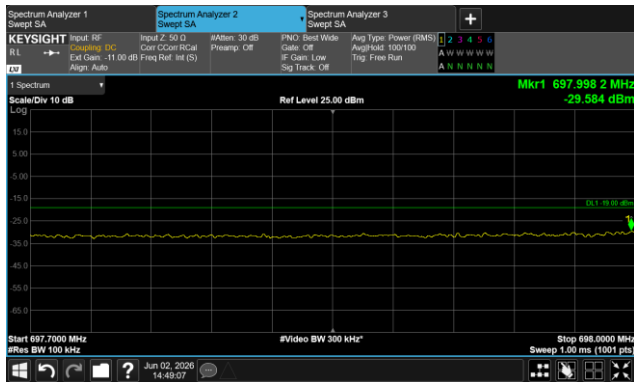
Upper



Band 12 Uplink of LTE Signal Normal

Lower

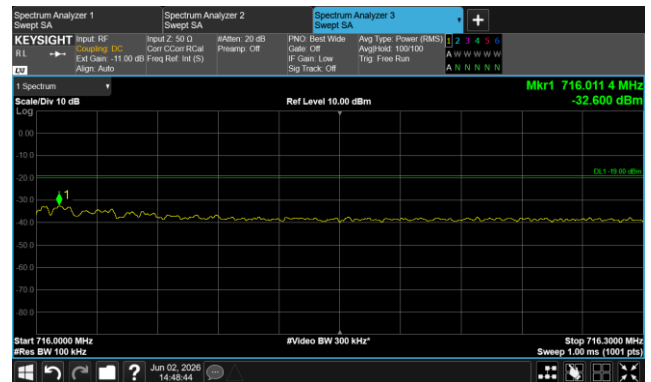
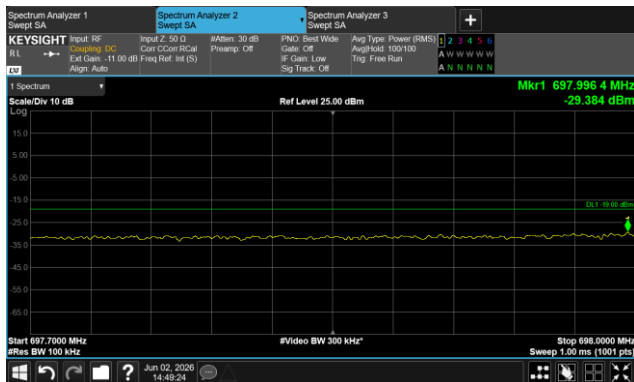
Upper



Increase 10 dB

Lower

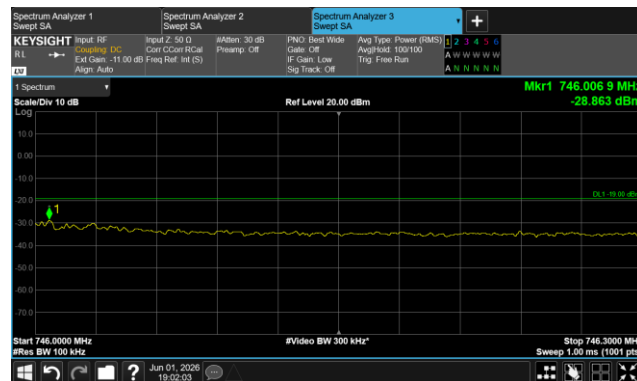
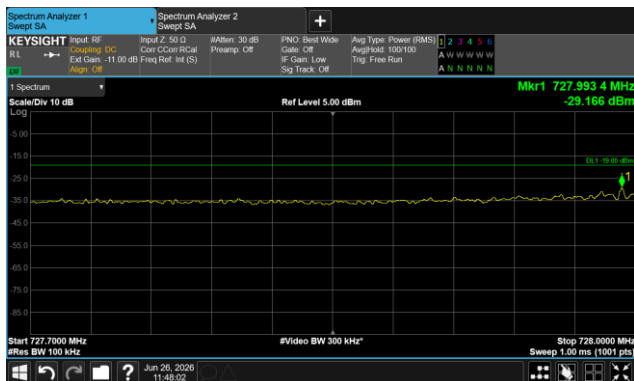
Upper



Band 12 Downlink of LTE Signal Normal

Lower

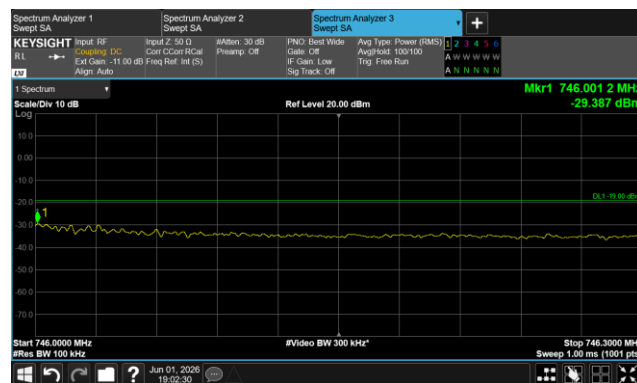
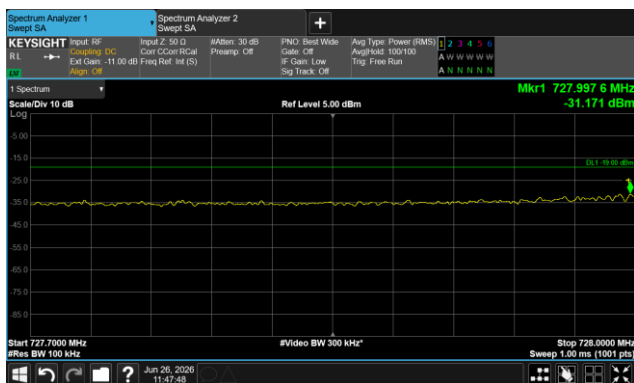
Upper



Increase 10 dB

Lower

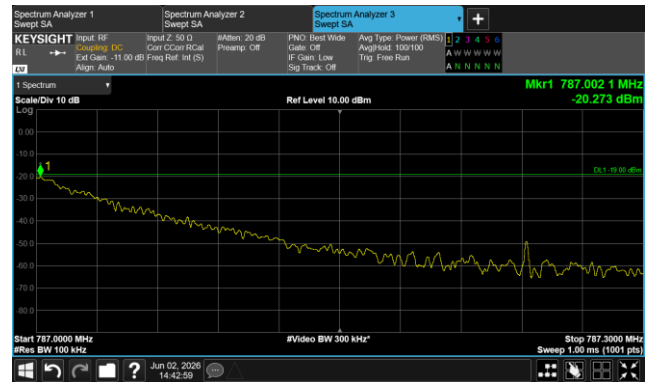
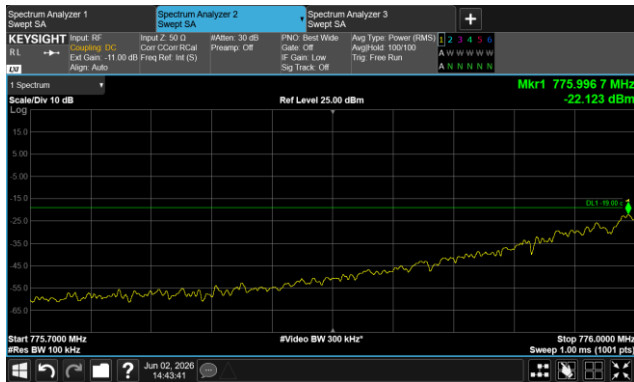
Upper



Band 13 Uplink of GSM Signal Normal

Lower

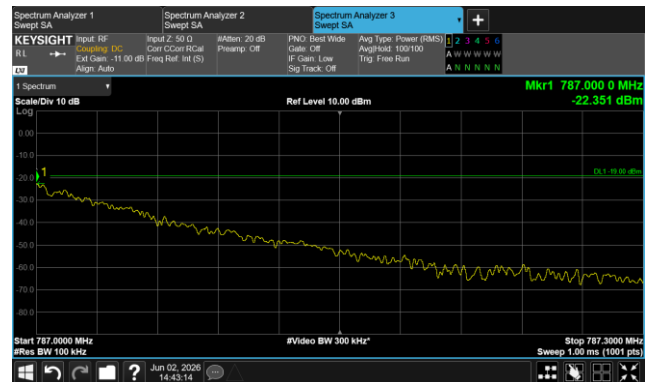
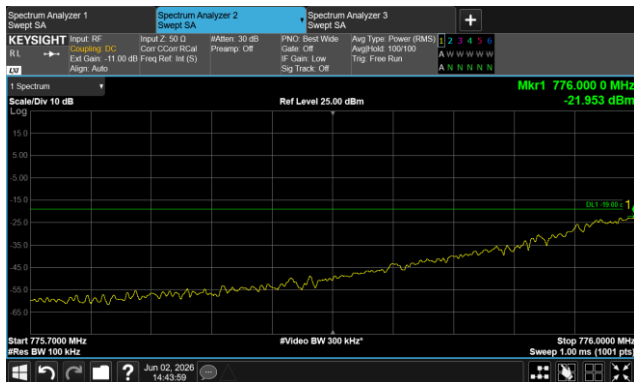
Upper



Increase 10 dB

Lower

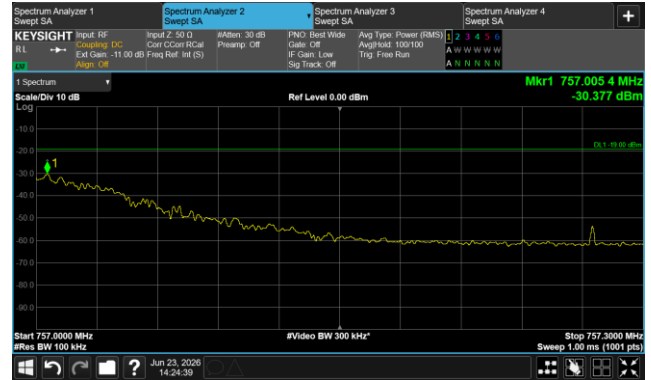
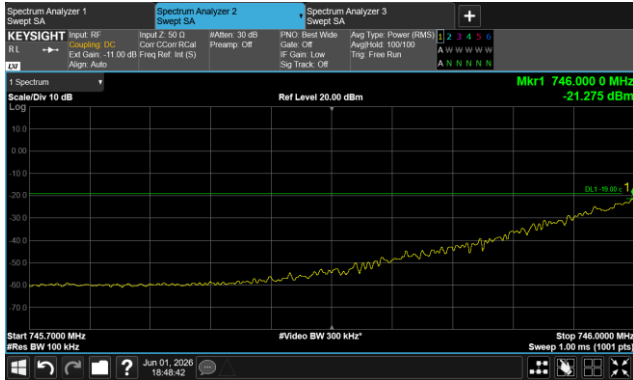
Upper



Band 13 Downlink of GSM Signal Normal

Lower

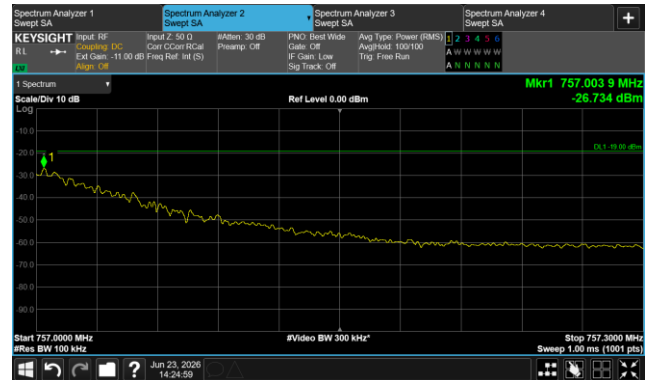
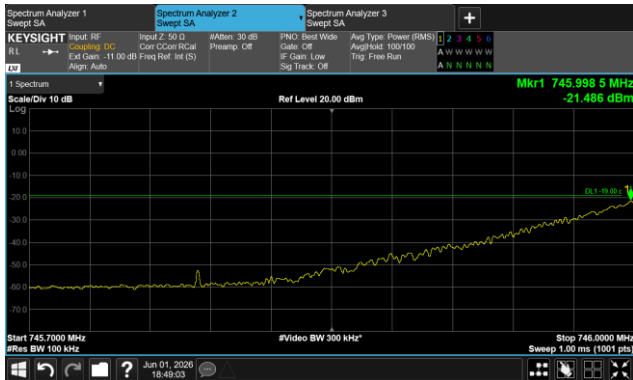
Upper



Increase 10 dB

Lower

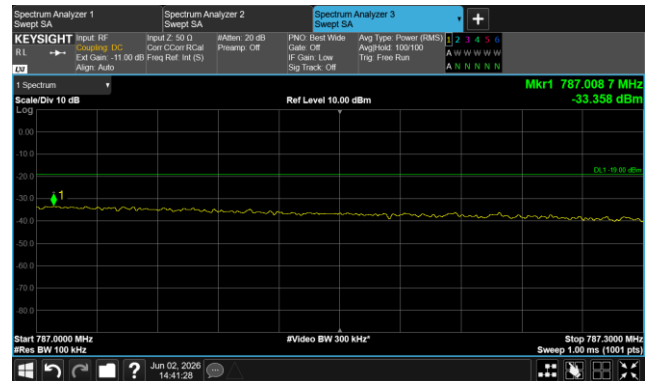
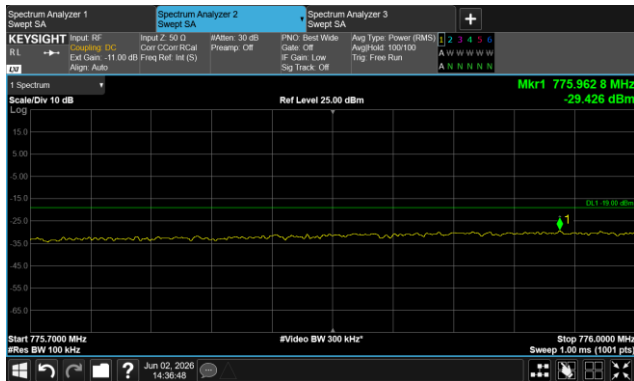
Upper



Band 13 Uplink of CDMA Signal Normal

Lower

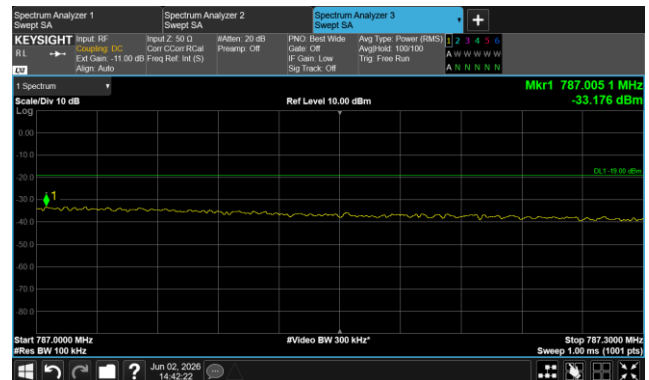
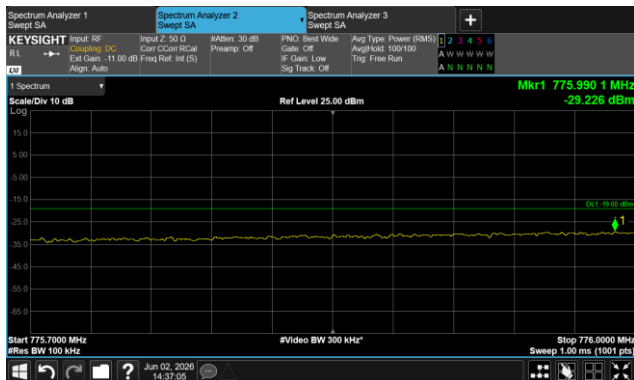
Upper



Increase 10 dB

Lower

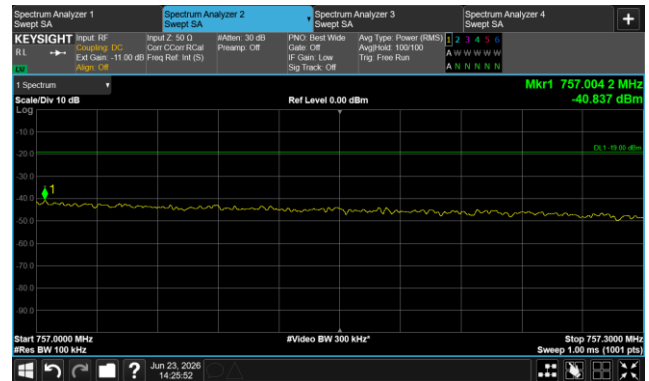
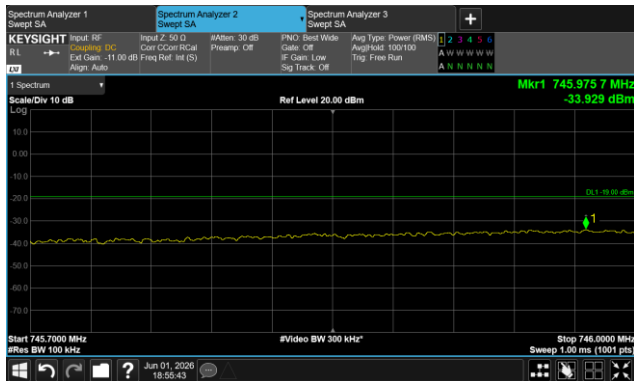
Upper



Band 13 Downlink of CDMA Signal Normal

Lower

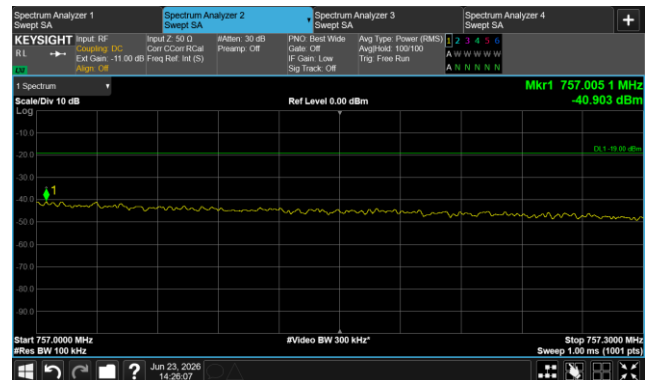
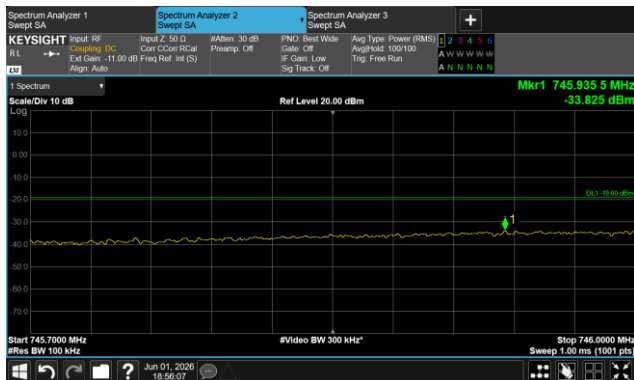
Upper



Increase 10 dB

Lower

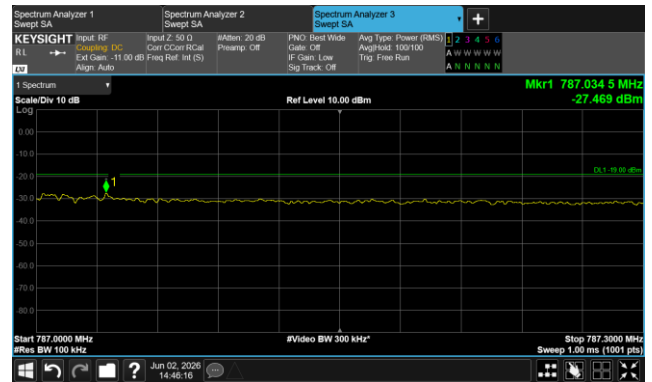
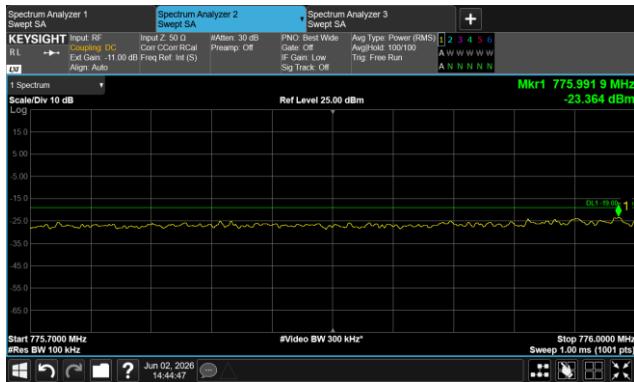
Upper



Band 13 Uplink of LTE Signal Normal

Lower

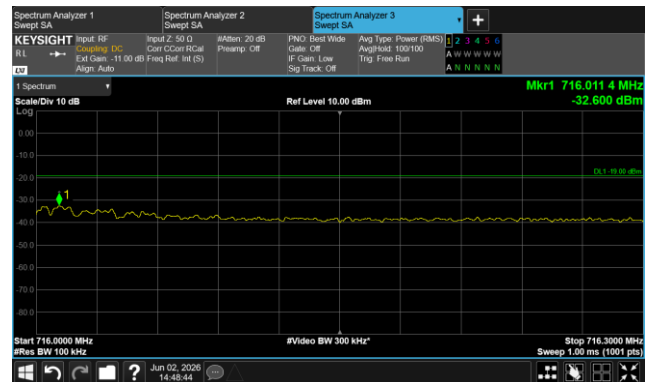
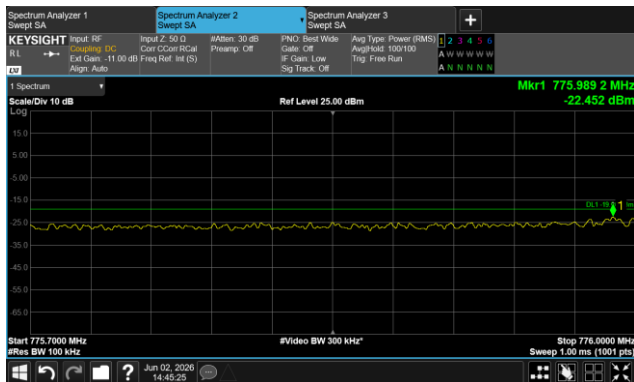
Upper



Increase 10 dB

Lower

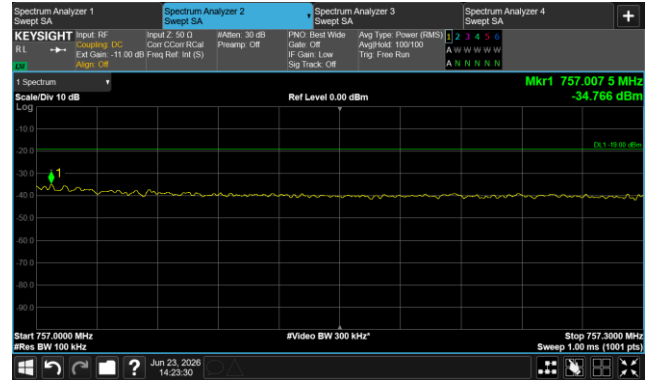
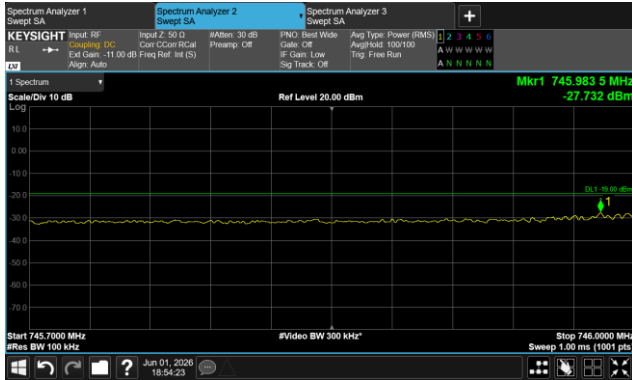
Upper



Band 13 Downlink of LTE Signal Normal

Lower

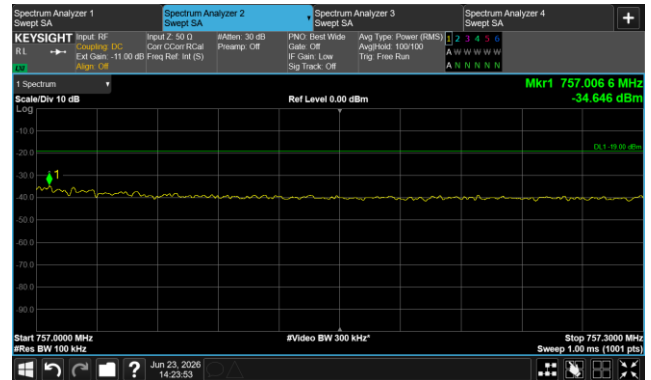
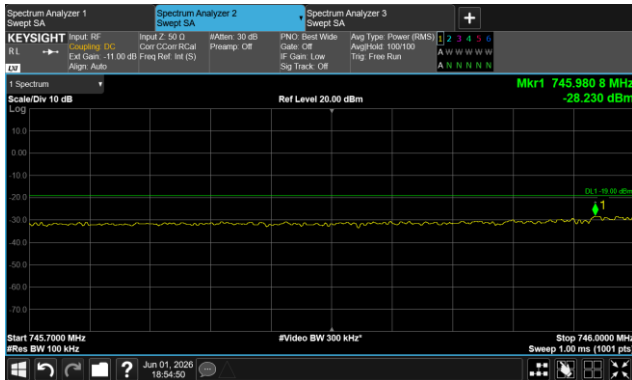
Upper



Increase 10 dB

Lower

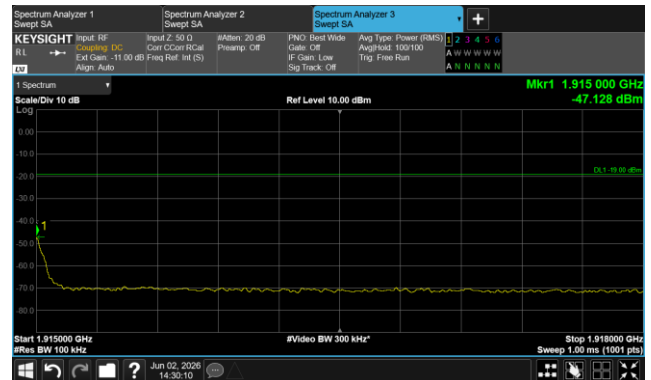
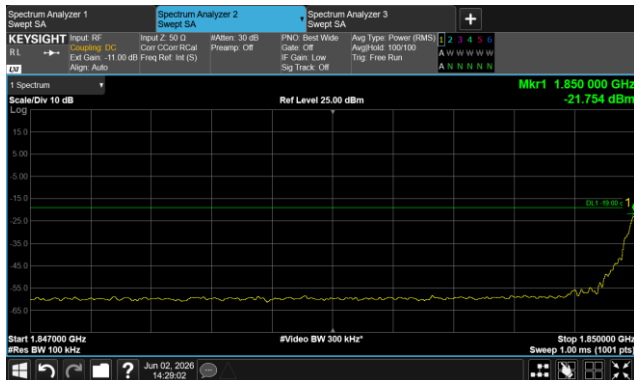
Upper



Band 25 Uplink of GSM Signal Normal

Lower

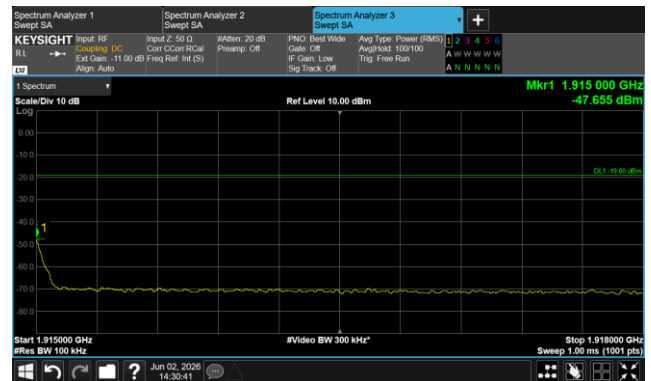
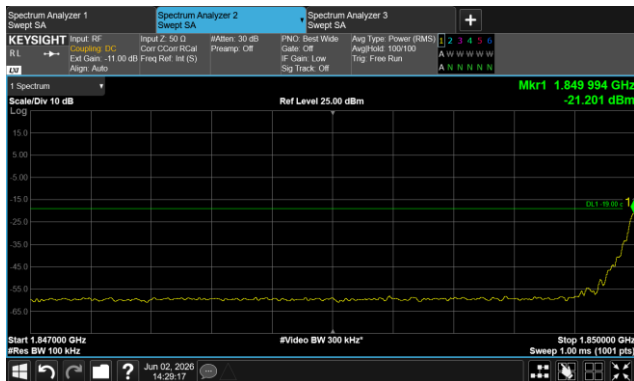
Upper



Increase 10 dB

Lower

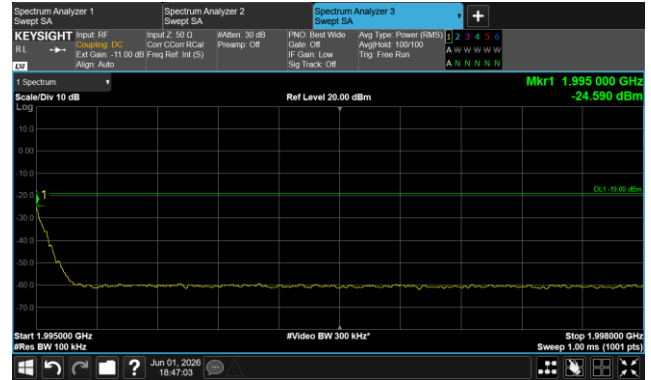
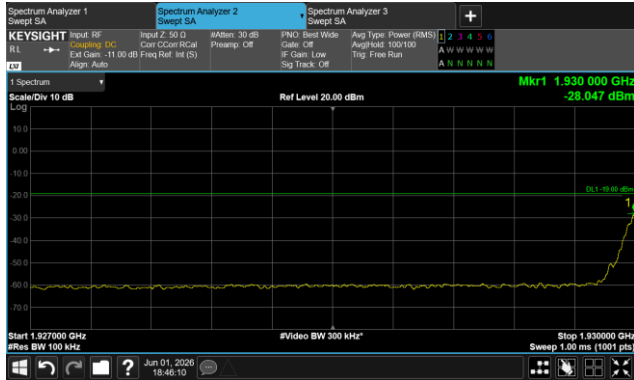
Upper



Band 25 Downlink of GSM Signal Normal

Lower

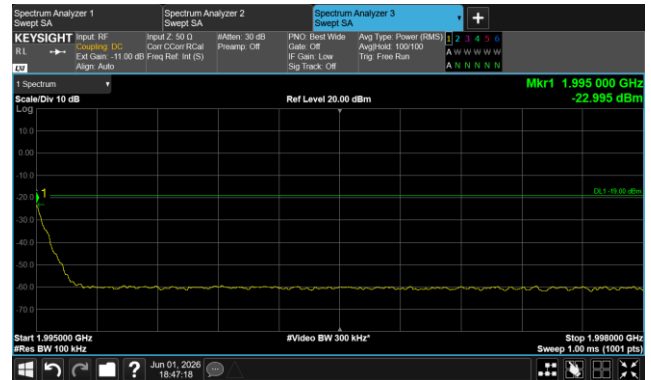
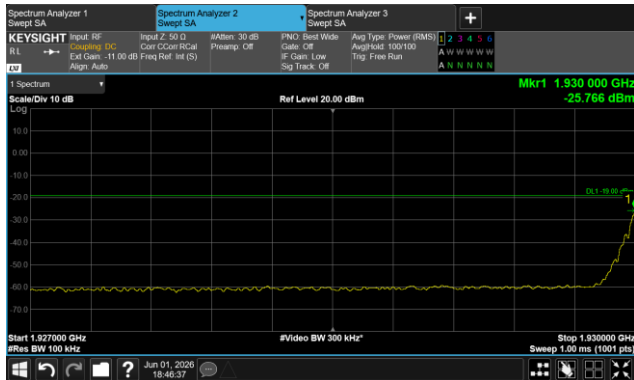
Upper



Increase 10 dB

Lower

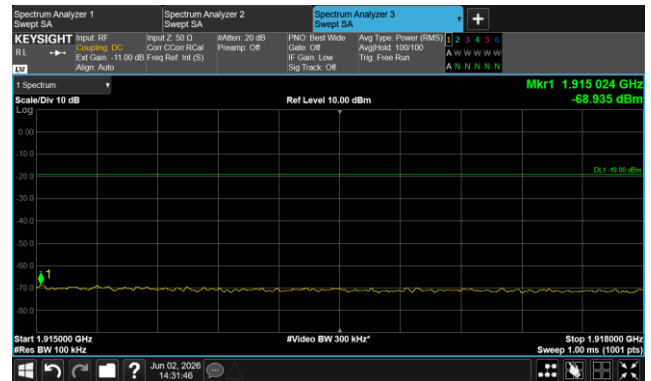
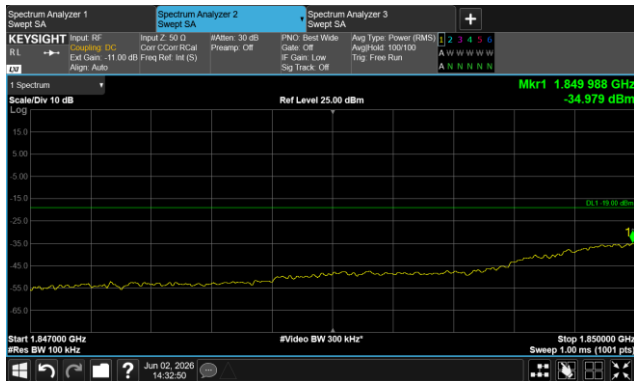
Upper



Band 25 Uplink of CDMA Signal Normal

Lower

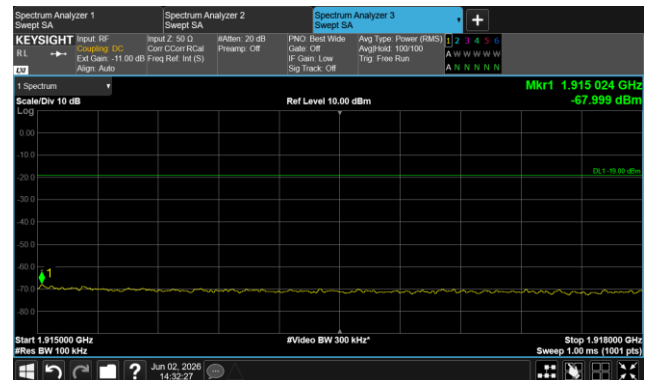
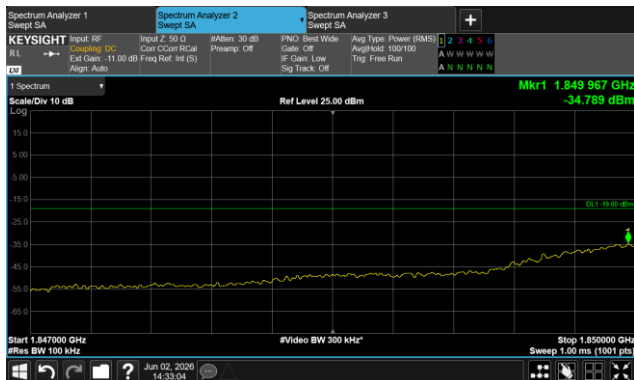
Upper



Increase 10 dB

Lower

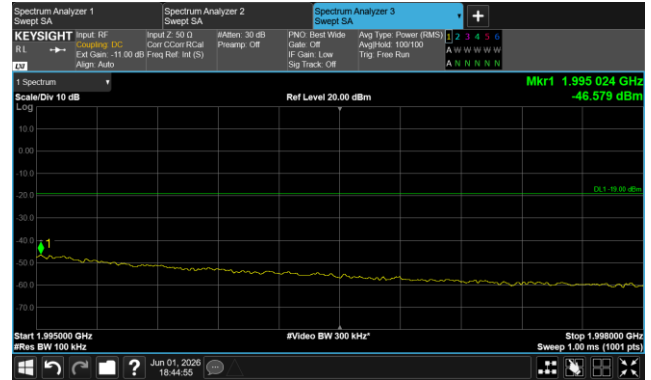
Upper



Band 25 Downlink of CDMA Signal Normal

Lower

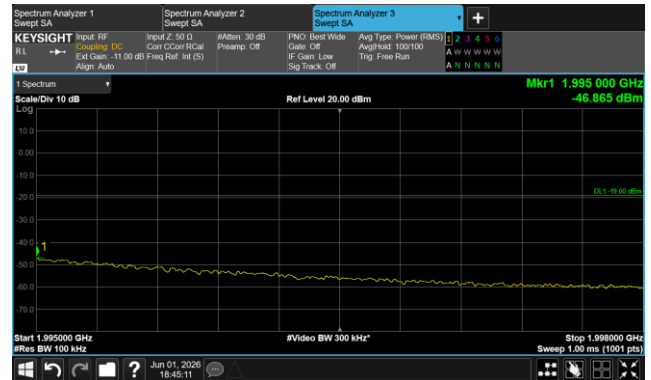
Upper



Increase 10 dB

Lower

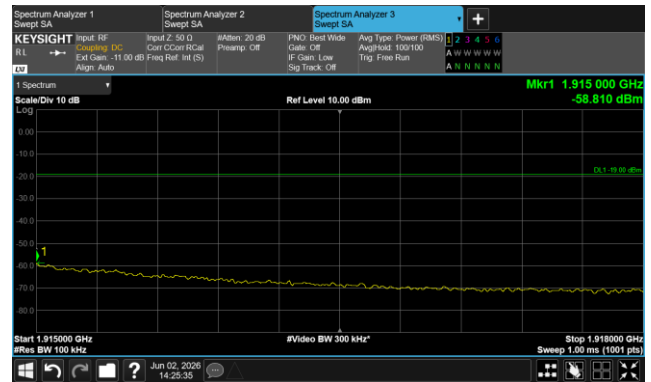
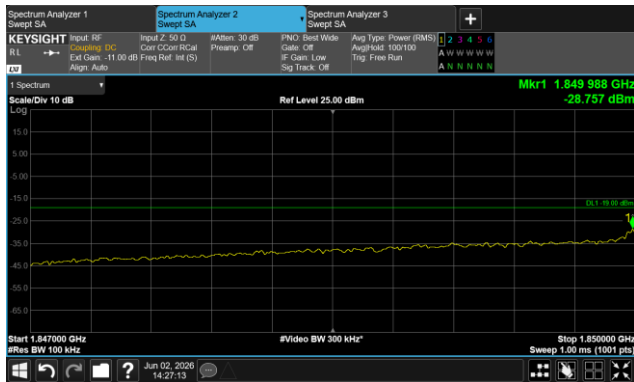
Upper



Band 25 Uplink of LTE Signal Normal

Lower

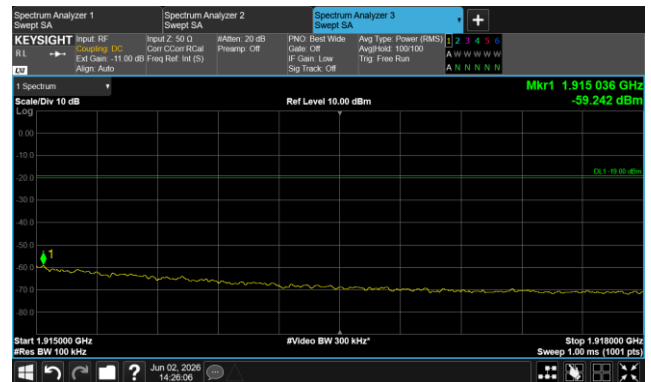
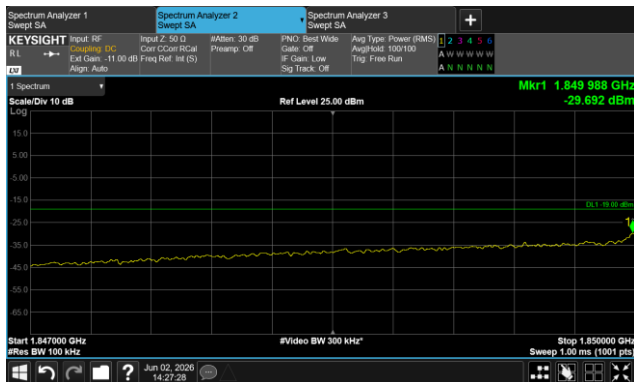
Upper



Increase 10 dB

Lower

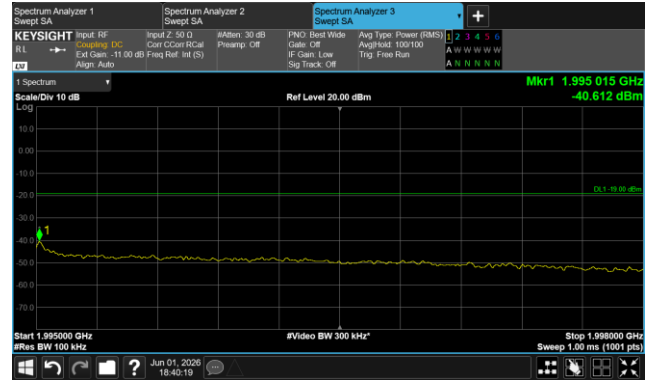
Upper



Band 25 Downlink of LTE Signal Normal

Lower

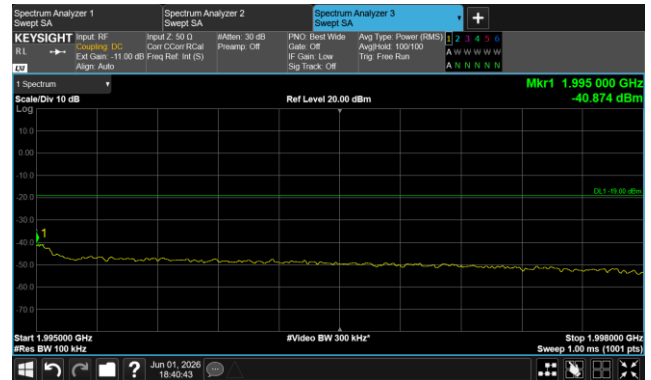
Upper



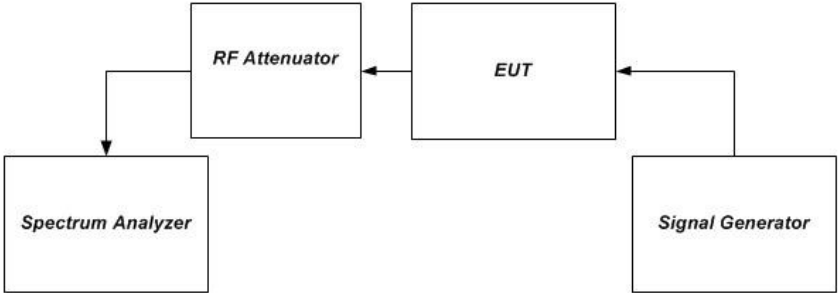
Increase 10 dB

Lower

Upper

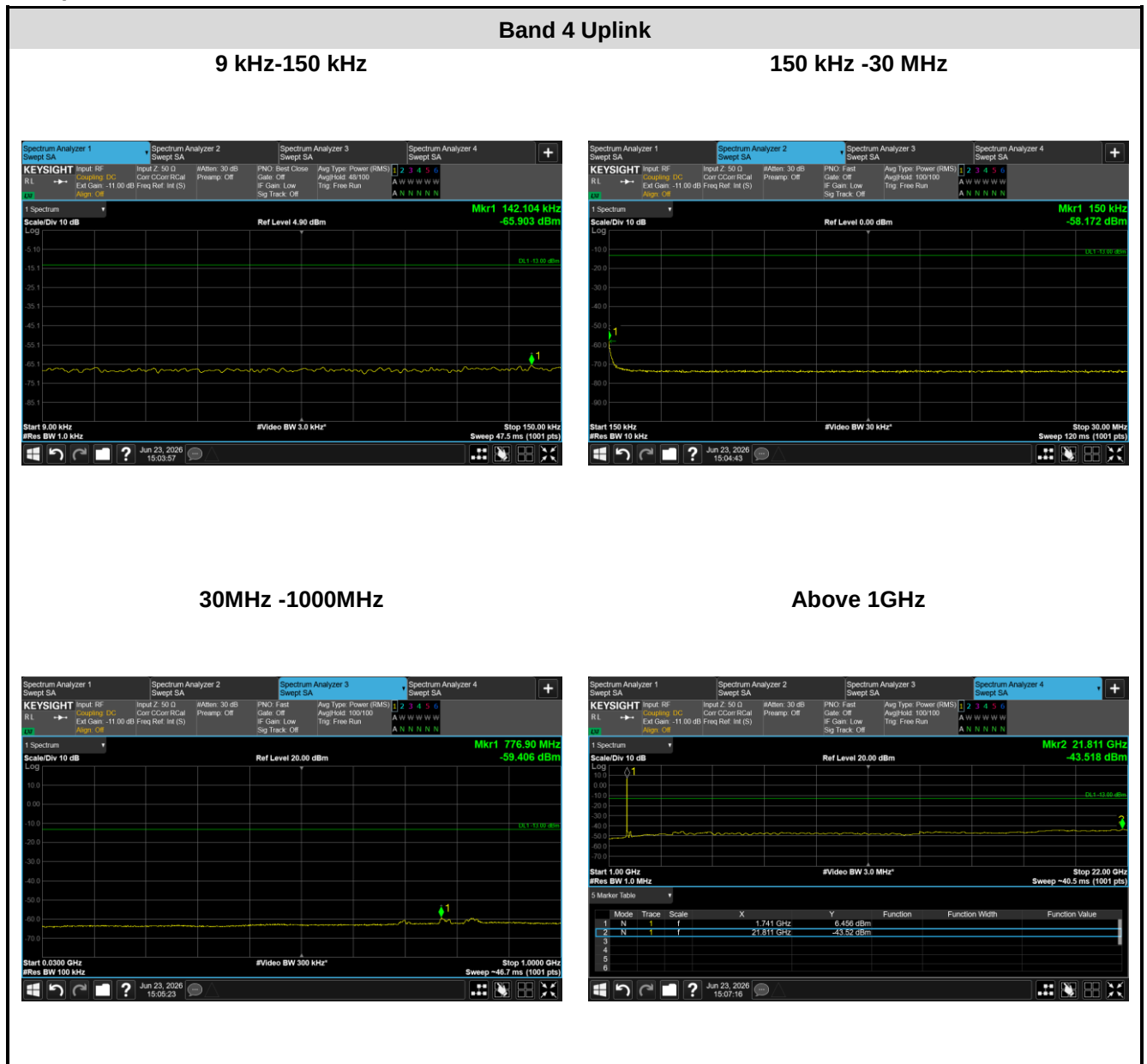


6.6. Conducted Spurious Emissions

Test Requirement:	FCC part 2.1051, FCC part 27.53(g)
Limit:	-13dBm
Test setup:	 <pre> graph LR SG[Signal Generator] --> EUT[EUT] EUT --> RA[RF Attenuator] RA --> SA[Spectrum Analyzer] </pre>
Test Procedure:	a) Connect the EUT to the test equipment as shown in test setup. Begin with the uplink output (donor) port connected to the spectrum analyzer. b) Configure the signal generator for AWGN with a 99% OBW of 4.1 MHz, with a center frequency corresponding to the center of the CMRS band under test. c) Set the signal generator amplitude to the EUT maximum power level. d) Turn on the signal generator RF output and measure the spurious emission power levels with an appropriate measuring instrument as follows. 1) Set RBW =100kHz(below 1GHz) or 1MHz (above 1GHz). 2) Set VBW = 3 x RBW. 3) Select the power averaging (rms) detector. 4) Sweep time = auto-couple. 5) Set the analyzer start frequency to the lowest radio frequency signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. 6) Sweep time = auto-couple. 7) Use the peak marker function to identify the highest amplitude level over each measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report. 8) Reset the analyzer start frequency to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the analyzer stop frequency to 10 times the highest frequency of the fundamental emission. 9) Use the peak marker function to identify the highest amplitude level over each of the measured frequency ranges. Record the frequency and amplitude and capture a plot for inclusion in the test report. e) Repeat b) through d) for each supported frequency band of operation.
Test Instruments:	Refer to section 4.10 for details
Test mode:	Refer to section 4.4 for details
Test results:	Passed

Measurement Data:

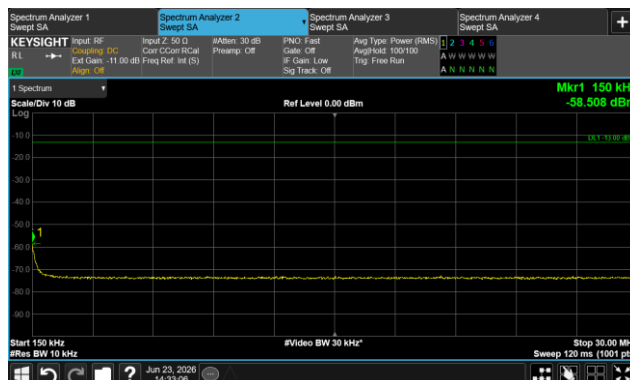
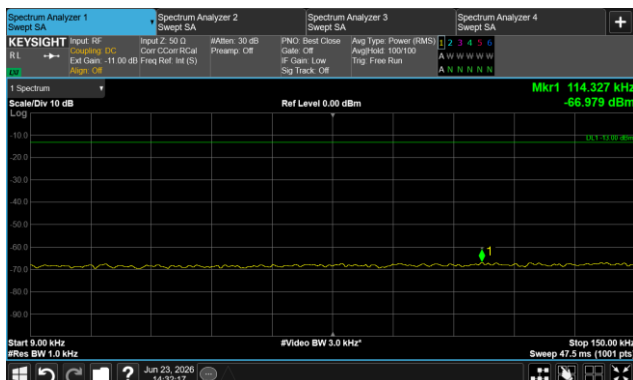
Test plots as follows:



Band 4 Downlink

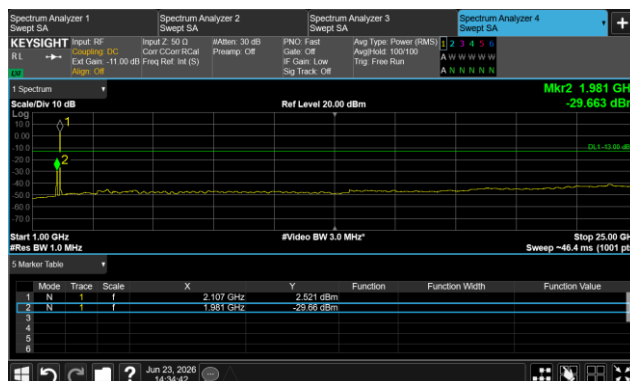
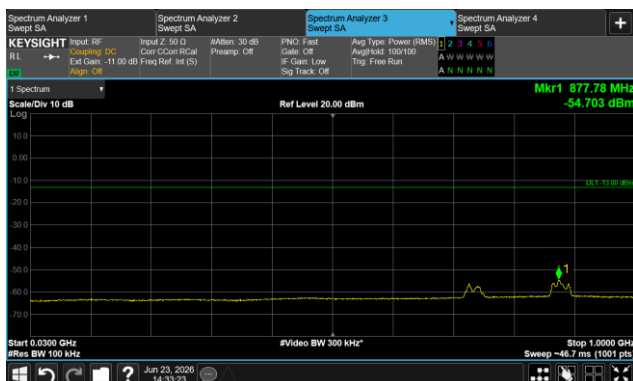
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

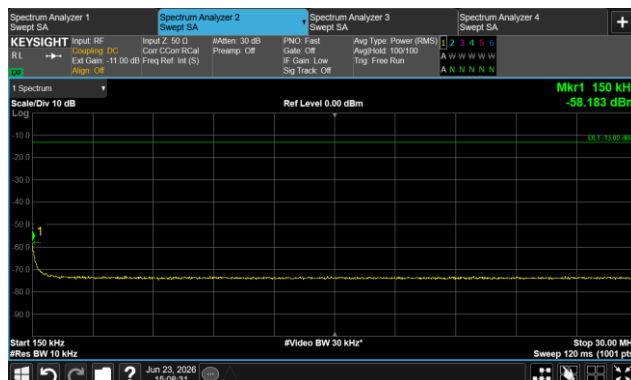
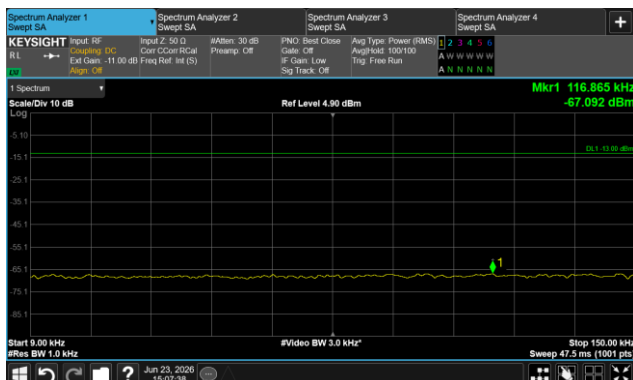
Above 1GHz



Band 5 Uplink

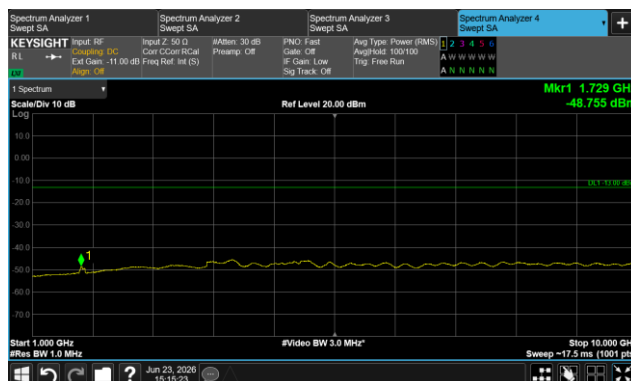
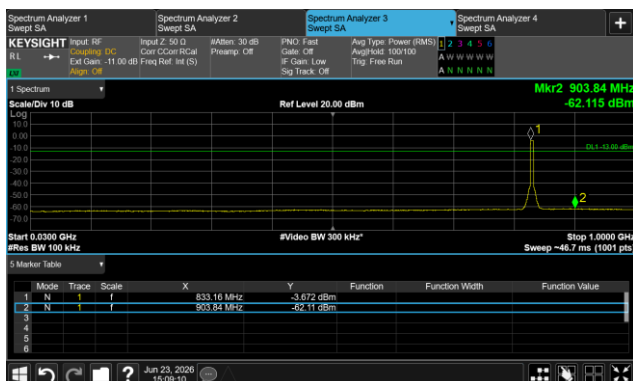
9 kHz-150 kHz

150 kHz -30 MHz



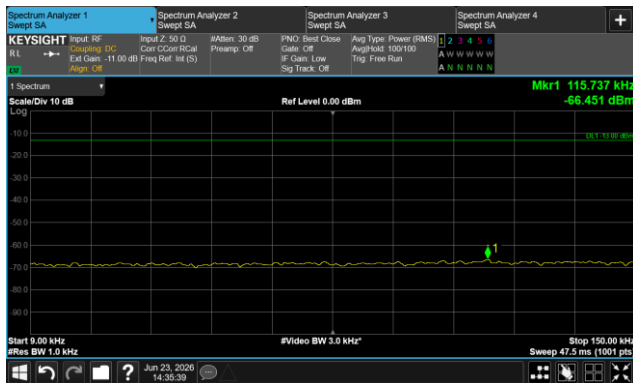
30MHz -1000MHz

Above 1GHz

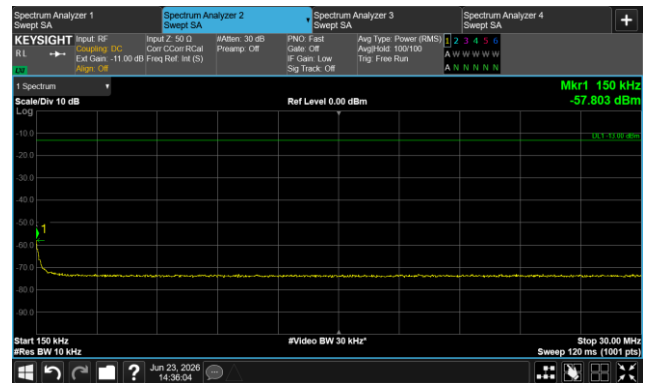


Band 5 Downlink

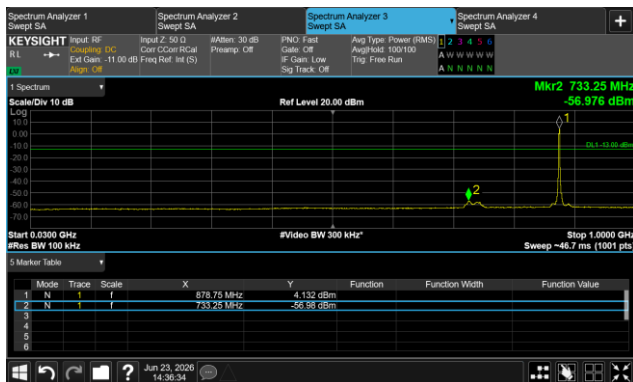
9 kHz-150 kHz



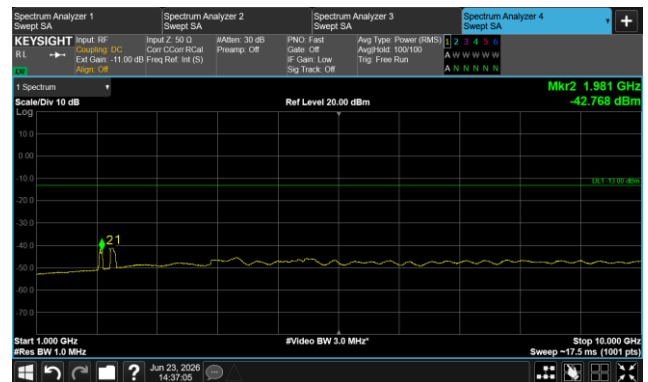
150 kHz -30 MHz



30MHz -1000MHz



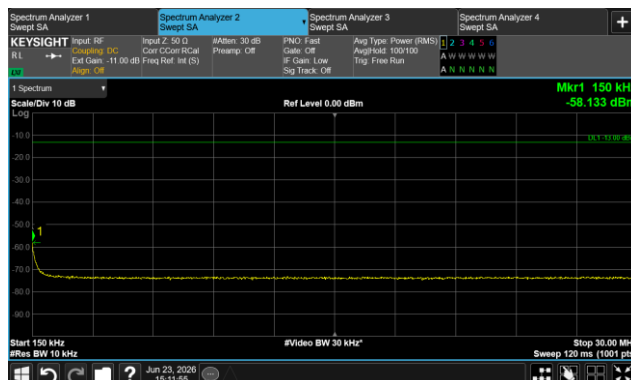
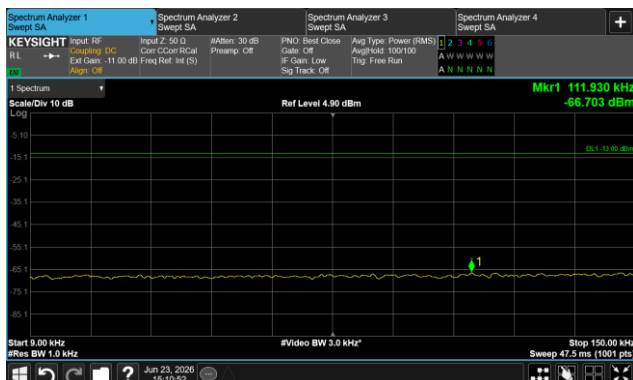
Above 1GHz



Band 12 Uplink

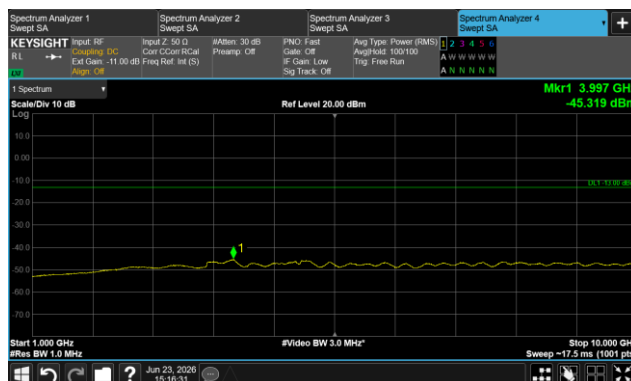
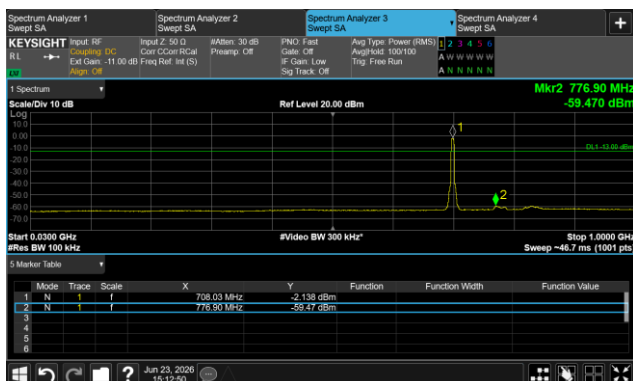
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

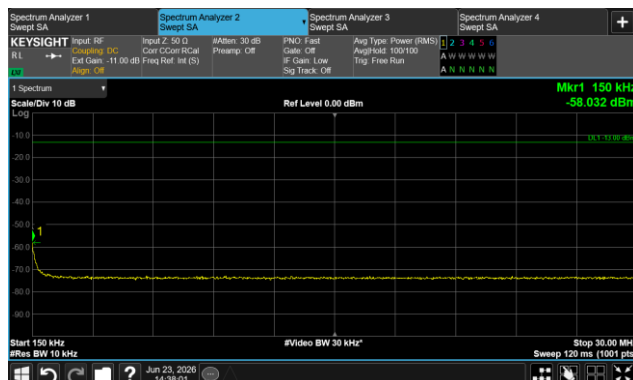
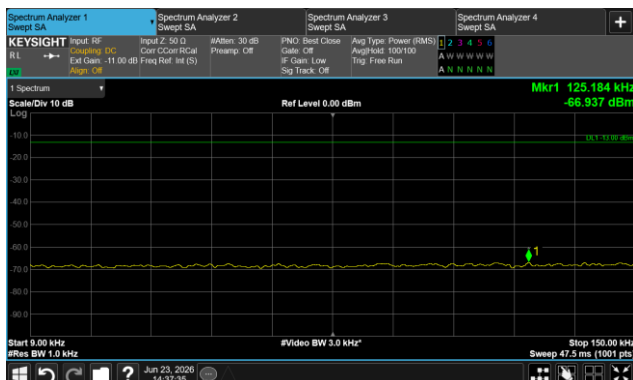
Above 1GHz



Band 12 Downlink

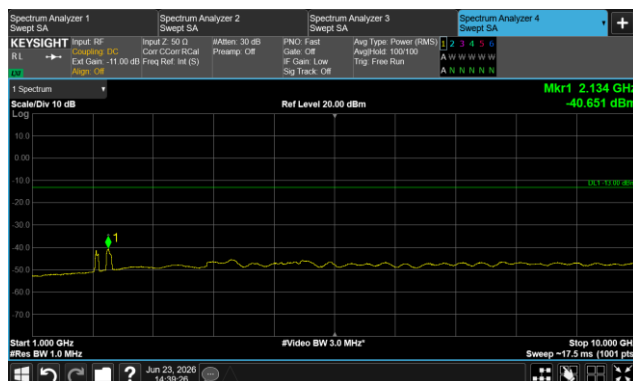
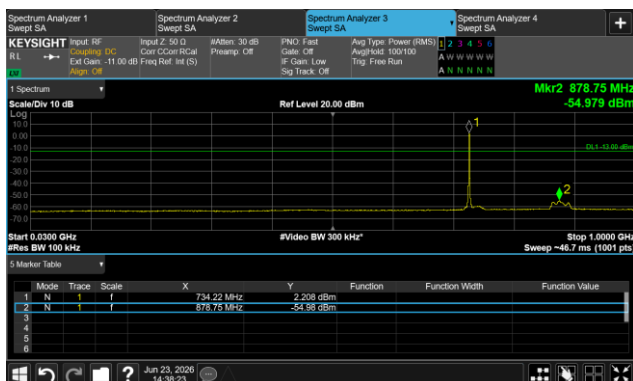
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

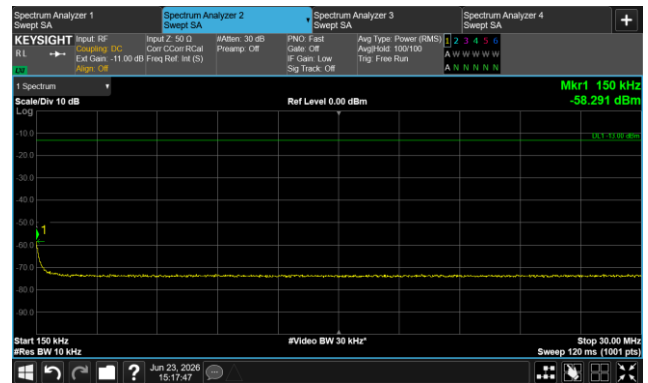
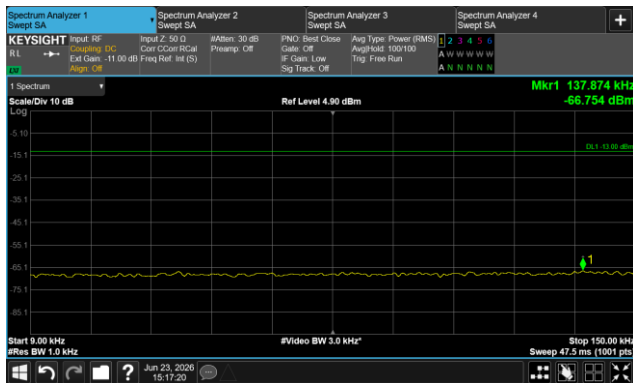
Above 1GHz



Band 13 Uplink

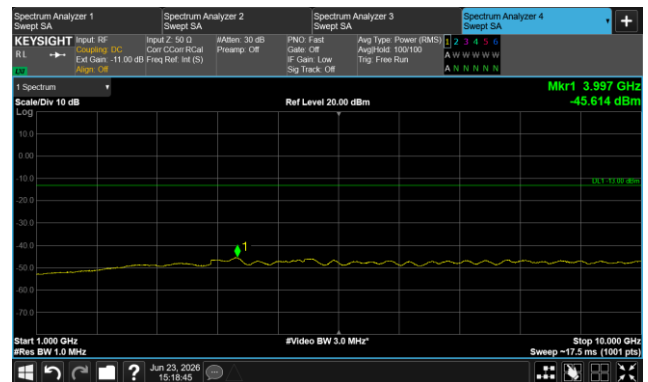
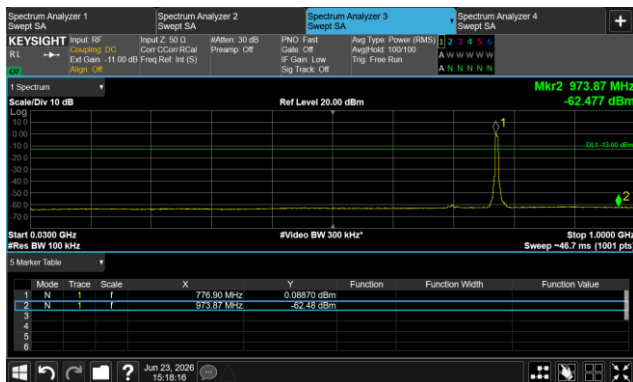
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

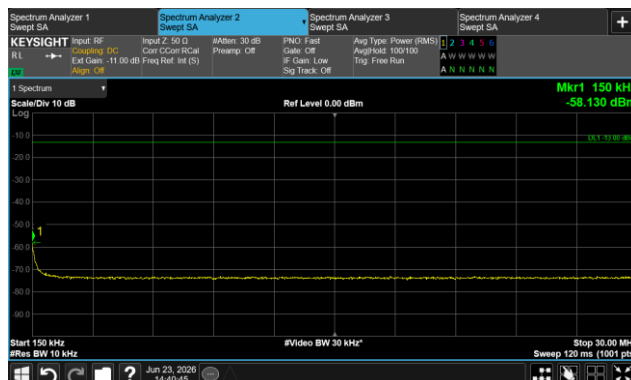
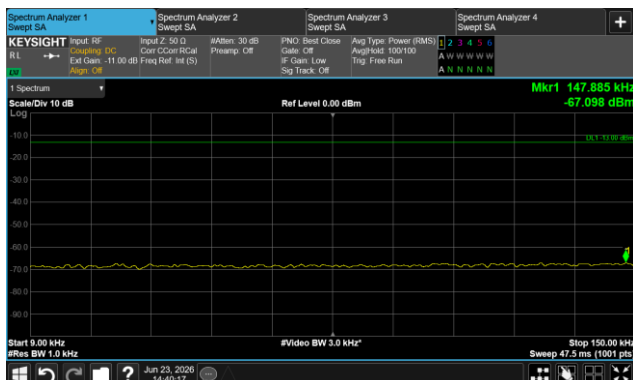
Above 1GHz



Band 13 Downlink

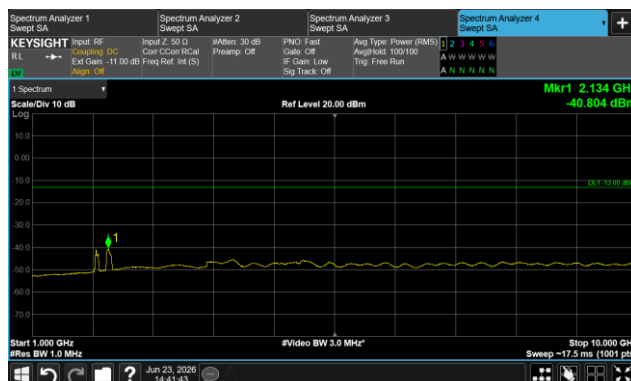
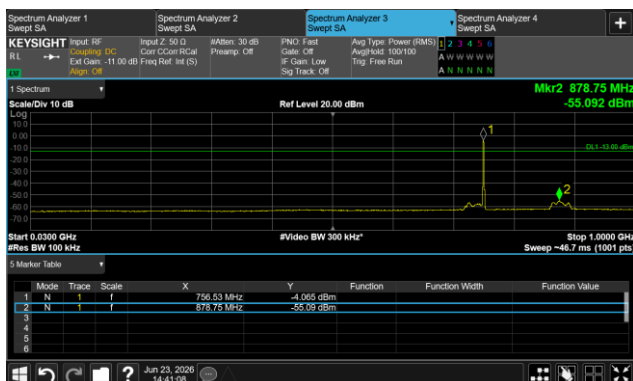
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

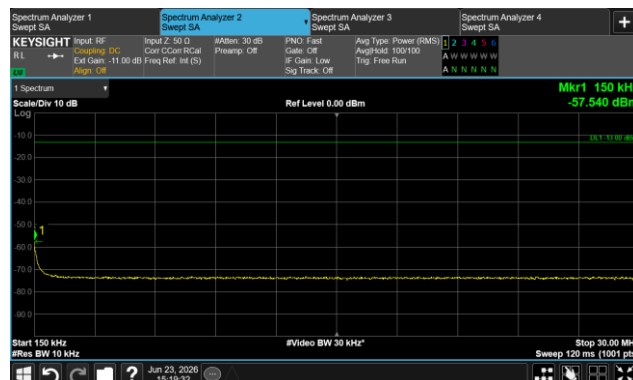
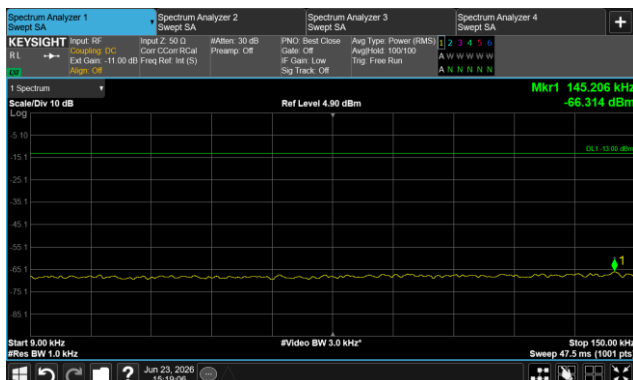
Above 1GHz



Band 25 Uplink

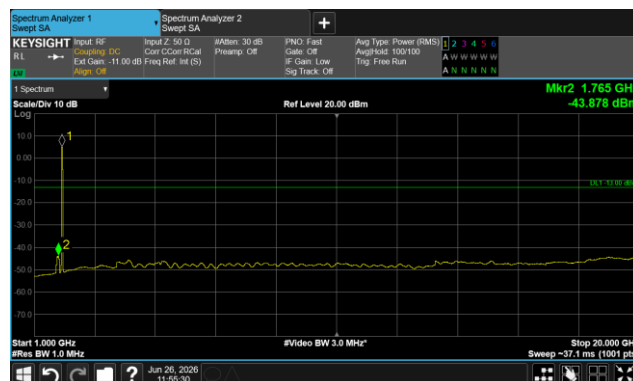
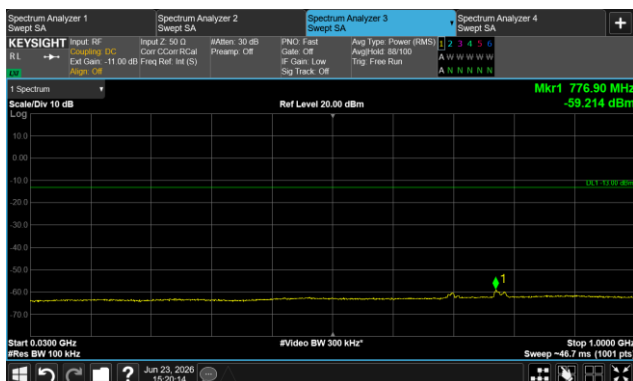
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

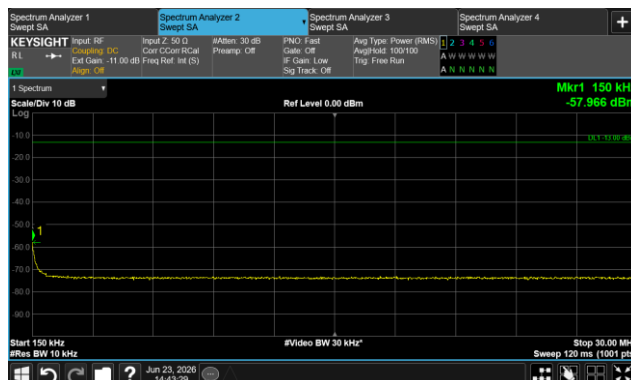
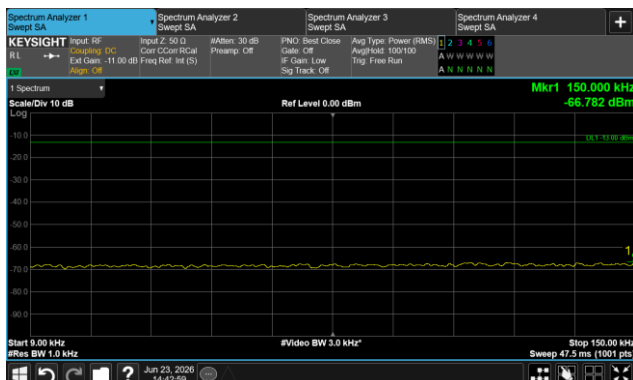
Above 1GHz



Band 25 Downlink

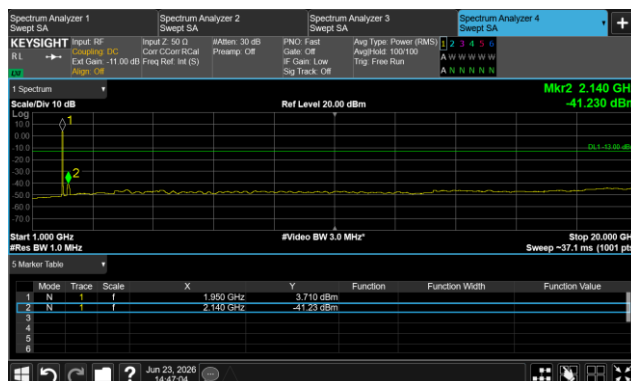
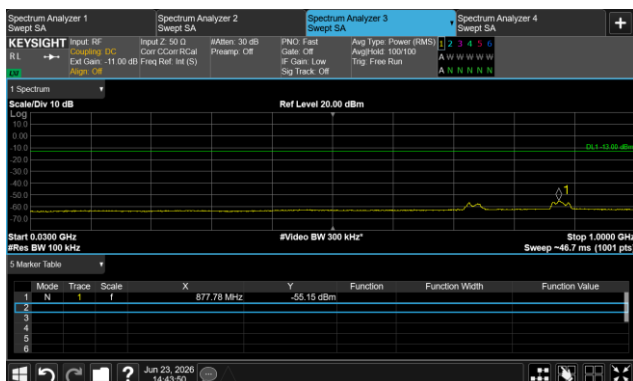
9 kHz-150 kHz

150 kHz -30 MHz



30MHz -1000MHz

Above 1GHz

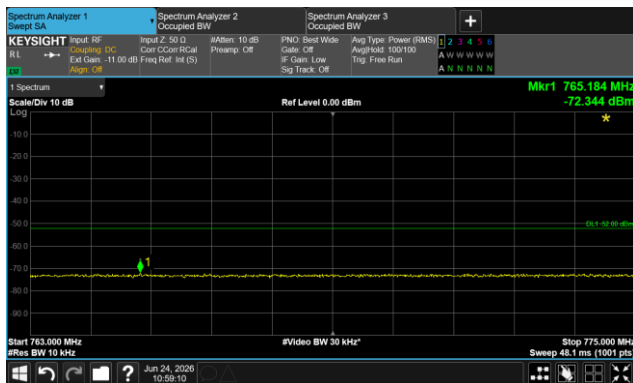


Additional requirement for upper 700MHz band

Uplink

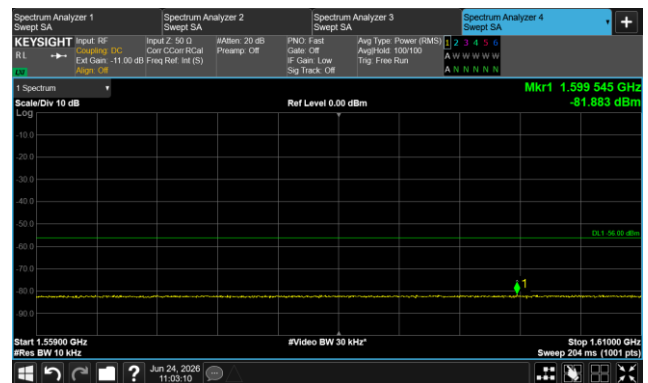
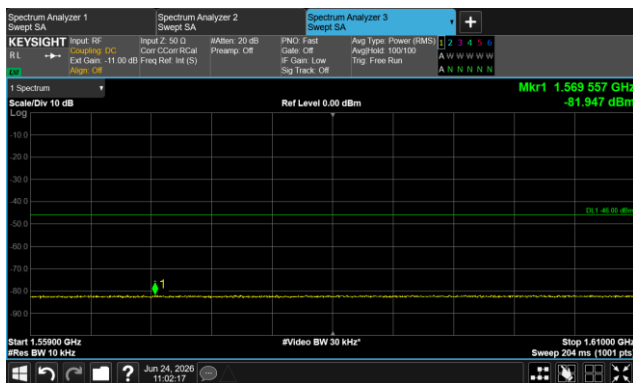
763 MHz - 775 MHz

793 MHz - 805 MHz



1559MHz - 1610MHz(wide band)

1559MHz - 1610MHz(narrow band)

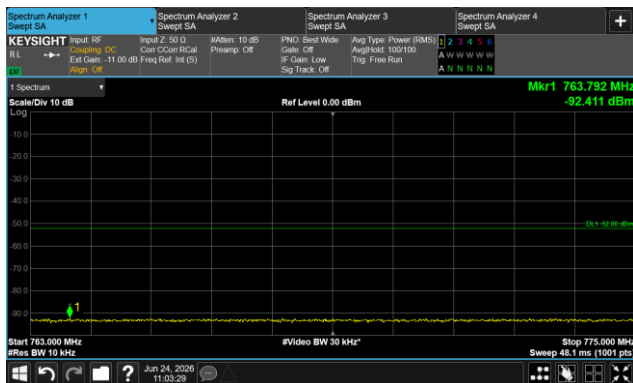


Additional requirement for upper 700MHz band

Downlink

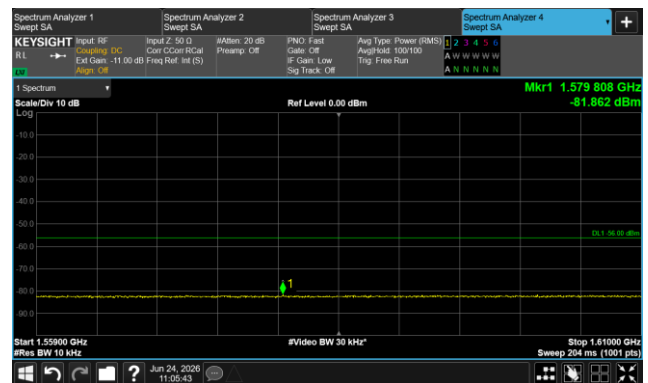
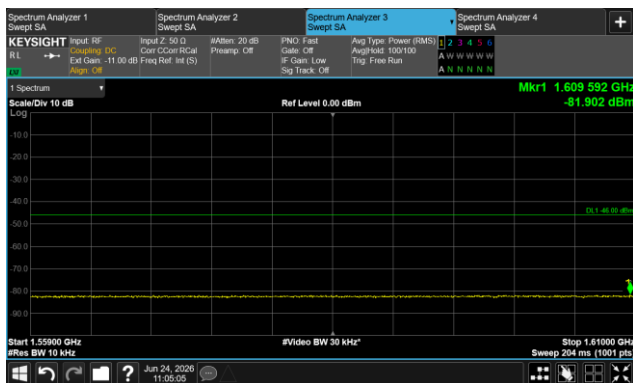
763 MHz - 775 MHz

793 MHz - 805 MHz

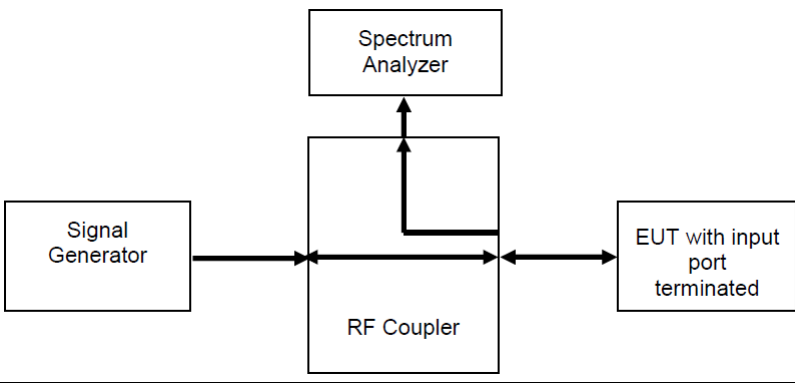


1559 MHz – 1610 MHz(wide band)

1559 MHz – 1610 MHz(narrow band)



6.7. Noise Limits

Test Requirement:	FCC part 20.21(e)(i)(A), FCC Part 20.21(e)(8)(i)(H)
Limit:	Noise Power = $-102.5 + 20 \log_{10}(\text{Band Center Frequency})$ Variable Noise = -103 dBm/MHz-RSSI
Test setup:	Test setup 1(Maximum transmitter noise power):  Test setup 2(Variable uplink noise timing): 
Test Procedure:	- Maximum transmitter noise power: - Connect the EUT to the test equipment as shown in test setup 1. Begin with the uplink output (donor) port connected to the spectrum analyzer. When measuring downlink noise, connect the downlink output (server) port to the spectrum analyzer. - Set the spectrum analyzer RBW to 1 MHz with the VBW ≥ 3 RBW. - Select the power averaging (rms) detector and trace average over at least 100 traces. - Set the center frequency of the spectrum analyzer to the center of the CMRS band under test with the span ≥ 2 the CMRS band. - Measure the maximum transmitter noise power level. - Save the spectrum analyzer plot as necessary for inclusion in the final test report. - Repeat b) to f) for all operational uplink and downlink bands. - Connect the EUT to the test equipment as shown in test setup 2 for uplink noise power measurement in the presence a downlink signal. Affirm the coupled path of the RF coupler is connected to the spectrum analyzer. - Configure the signal generator for AWGN operation with a 99% OBW of 4.1 MHz. - Set the spectrum analyzer RBW for 1 MHz, VBW $\geq 3 \times$ RBW, with a power averaging (rms) detector with at least 100 trace averages. - Set the center frequency of the spectrum analyzer to the center of the CMRS band under test, with the span $\geq 2 \times$ the CMRS band. - For uplink noise measurements, set the spectrum analyzer center frequency for the uplink band under test, and tune the signal generator to the center of the paired downlink band. - Measure the maximum transmitter noise power level while varying the downlink signal generator output level from -90 dBm to -20 dBm. - Repeat h) through m) for all operational uplink bands. - Variable uplink noise timing: - Set the spectrum analyzer to the uplink frequency to be measured. - Set the span to 0 Hz, with a sweep time of 10 seconds. - Set the power level of signal generator to the lowest level of the RSSI-dependent noise.

	d) Select MAX HOLD and increase the power level of signal generator by 10 dB for mobile boosters, and 20 dB for fixed boosters. e) Confirm that the uplink noise decreases to the specified level within 1 second for mobile devices, and within 3 seconds for fixed devices. f) Repeat a) to e) for all operational uplink bands. g) Include plots and summary table in test report.
Test Instruments:	Refer to section 4.10 for details
Test mode:	Refer to section 4.4 for details
Test results:	Passed

Measurement Data (worst case):

Band 4:

Maximum Noise			
Frequency Band	Measured Noise (dBm)	Limit (dBm)	Result
Maximum Uplink Noise			
1710 ~ 1755 MHz	-41.95	-37.72	Pass
Maximum Downlink Noise			
2110 ~ 2155 MHz	-39.19	-37.72	Pass

Uplink Noise Timing			
Frequency Band	Measured Timing (ms)	Limit (ms)	Result
1710 ~ 1755 MHz	245	3000	Pass

Variable Noise Limit						
Frequency Band	RSSI (dBm)	Measured Noise (dBm/MHz)	Limit (dBm/MHz)			Result
			RSSI dependent	Frequency dependent	TX off	
1710 ~ 1755 MHz	-90	-42.72	/	-37.7	/	Pass
	-75	-42.81	/	-37.7	/	Pass
	-65	-46.65	-38	/	/	Pass
	-55	-55.79	-48	/	/	Pass
	-45	-64.37	-58	/	/	Pass
	-30	-83.63	/	/	-70	Pass
	-20	-83.63	/	/	-70	Pass

Band 5:

Maximum Noise			
Frequency Band	Measured Noise (dBm)	Limit (dBm)	Result
Maximum Uplink Noise			
824~849 MHz	-53.05	-44.05	Pass
Maximum Downlink Noise			
869~894 MHz	-45.89	-44.05	Pass

Uplink Noise Timing			
Frequency Band	Measured Timing (ms)	Limit (ms)	Result
824~849 MHz	261	3000	Pass

Variable Noise Limit						
Frequency Band	RSSI (dBm)	Measured Noise (dBm/MHz)	Limit (dBm/MHz)			Result
			RSSI dependent	Frequency dependent	TX off	
824 ~ 849 MHz	-90	-53.05	/	-44.05	/	Pass
	-75	-53.02	/	-44.05	/	Pass
	-65	-52.89	/	-44.05	/	Pass
	-55	-55.21	-48	/	/	Pass
	-45	-64.83	-58	/	/	Pass
	-30	-82.77	/	/	-70	Pass
	-20	-82.84	/	/	-70	Pass

Band 12:

Maximum Noise			
Frequency Band	Measured Noise (dBm)	Limit (dBm)	Result
Maximum Uplink Noise			
698~716 MHz	-54.26	-45.51	Pass
Maximum Downlink Noise			
728~746 MHz	-45.64	-45.51	Pass

Uplink Noise Timing			
Frequency Band	Measured Timing (ms)	Limit (ms)	Result
698 ~ 716 MHz	237	3000	Pass

Variable Noise Limit						
Frequency Band	RSSI (dBm)	Measured Noise (dBm/MHz)	Limit (dBm/MHz)			Result
			RSSI dependent	Frequency dependent	TX off	
698 ~ 716 MHz	-90	-54.26	/	-45.51	/	Pass
	-75	-54.31	/	-45.51	/	Pass
	-65	-54.28	/	-45.51	/	Pass
	-55	-56.14	-48	/	/	Pass
	-45	-64.35	-58	/	/	Pass
	-30	-84.04	/	/	-70	Pass
	-20	-84.06	/	/	-70	Pass

Band 13:

Maximum Noise			
Frequency Band	Measured Noise (dBm)	Limit (dBm)	Result
Maximum Uplink Noise			
776~787 MHz	-51.41	-44.64	Pass
Maximum Downlink Noise			
746~757 MHz	-48.52	-44.64	Pass

Uplink Noise Timing			
Frequency Band	Measured Timing (ms)	Limit (ms)	Result
776~787 MHz	231	3000	Pass

Variable Noise Limit						
Frequency Band	RSSI (dBm)	Measured Noise (dBm/MHz)	Limit (dBm/MHz)			Result
			RSSI dependent	Frequency dependent	TX off	
776~787 MHz	-90	-51.43	/	-44.64	/	Pass
	-75	-51.38	/	-44.64	/	Pass
	-65	-51.41	/	-44.64	/	Pass
	-55	-58.25	-48	/	/	Pass
	-45	-66.74	-58	/	/	Pass
	-30	-83.94	/	/	-70	Pass
	-20	-83.87	/	/	-70	Pass

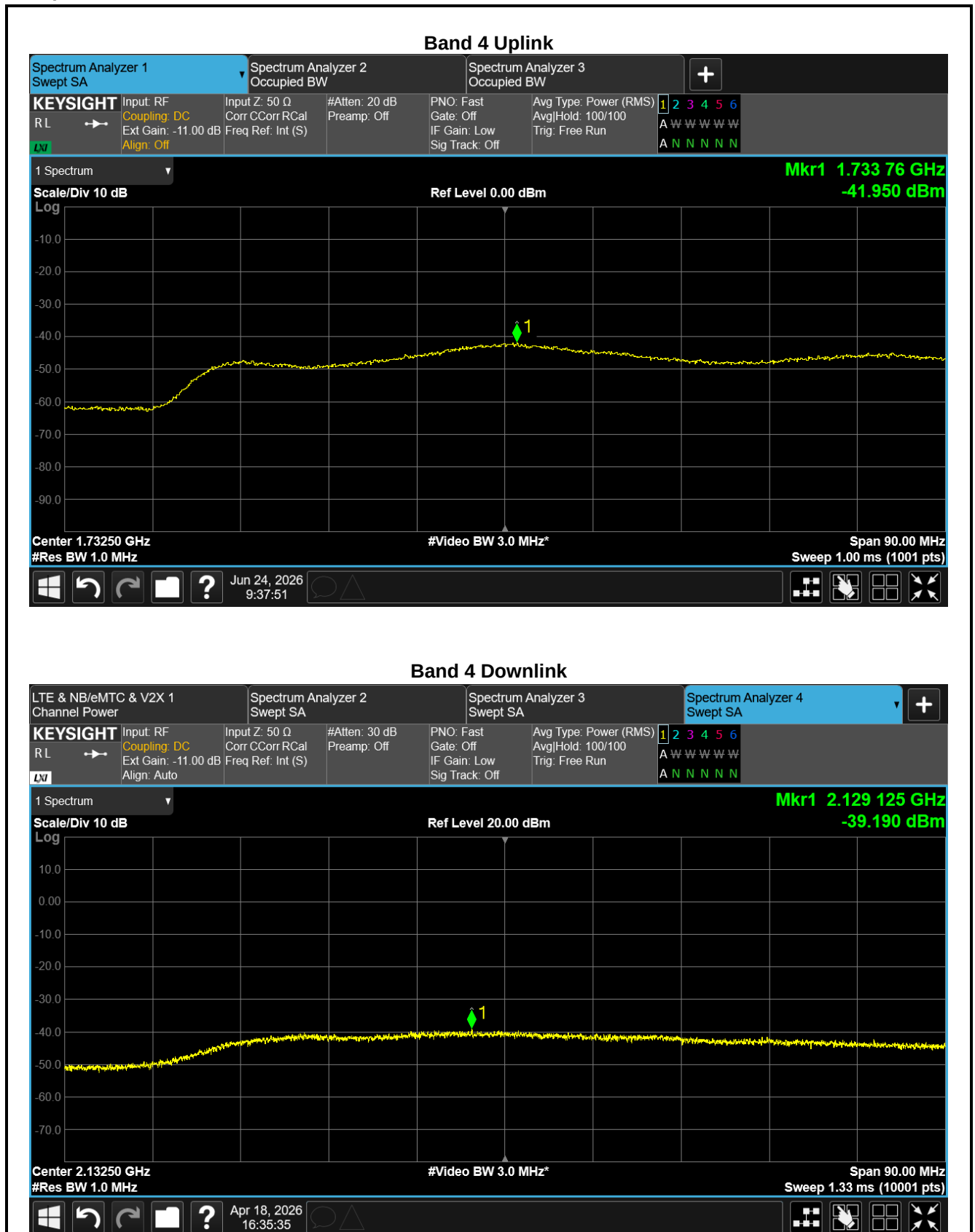
Band 25:

Maximum Noise			
Frequency Band	Measured Noise (dBm)	Limit (dBm)	Result
Maximum Uplink Noise			
1850~1915 MHz	-46.34	-37.0	Pass
Maximum Downlink Noise			
1930~1995 MHz	-40.55	-37.0	Pass

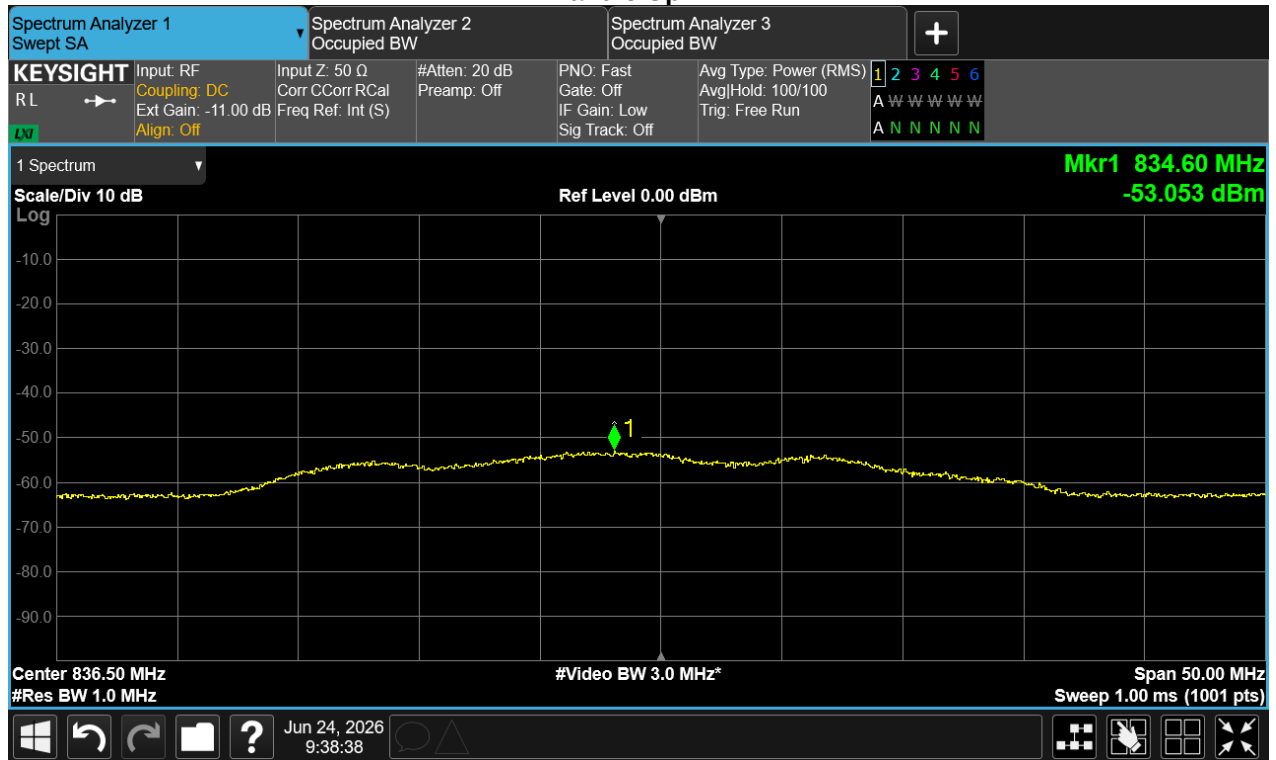
Uplink Noise Timing			
Frequency Band	Measured Timing (ms)	Limit (ms)	Result
1850~1915 MHz	227	3000	Pass

Variable Noise Limit						
Frequency Band	RSSI (dBm)	Measured Noise (dBm/MHz)	Limit (dBm/MHz)			Result
			RSSI dependent	Frequency dependent	TX off	
1850~1915 MHz	-90	-45.6	/	-37	/	Pass
	-75	-45.72	/	-37	/	Pass
	-65	-45.66	-38	/	/	Pass
	-55	-54.13	-48	/	/	Pass
	-45	-52.94	-58	/	/	Pass
	-30	-83.35	/	/	-70	Pass
	-20	-83.39	/	/	-70	Pass

Test plots as follows:



Band 5 Uplink



Band 5 Downlink

