

# Appendix -

## Test Data and Result for report

### GZCR250300027208

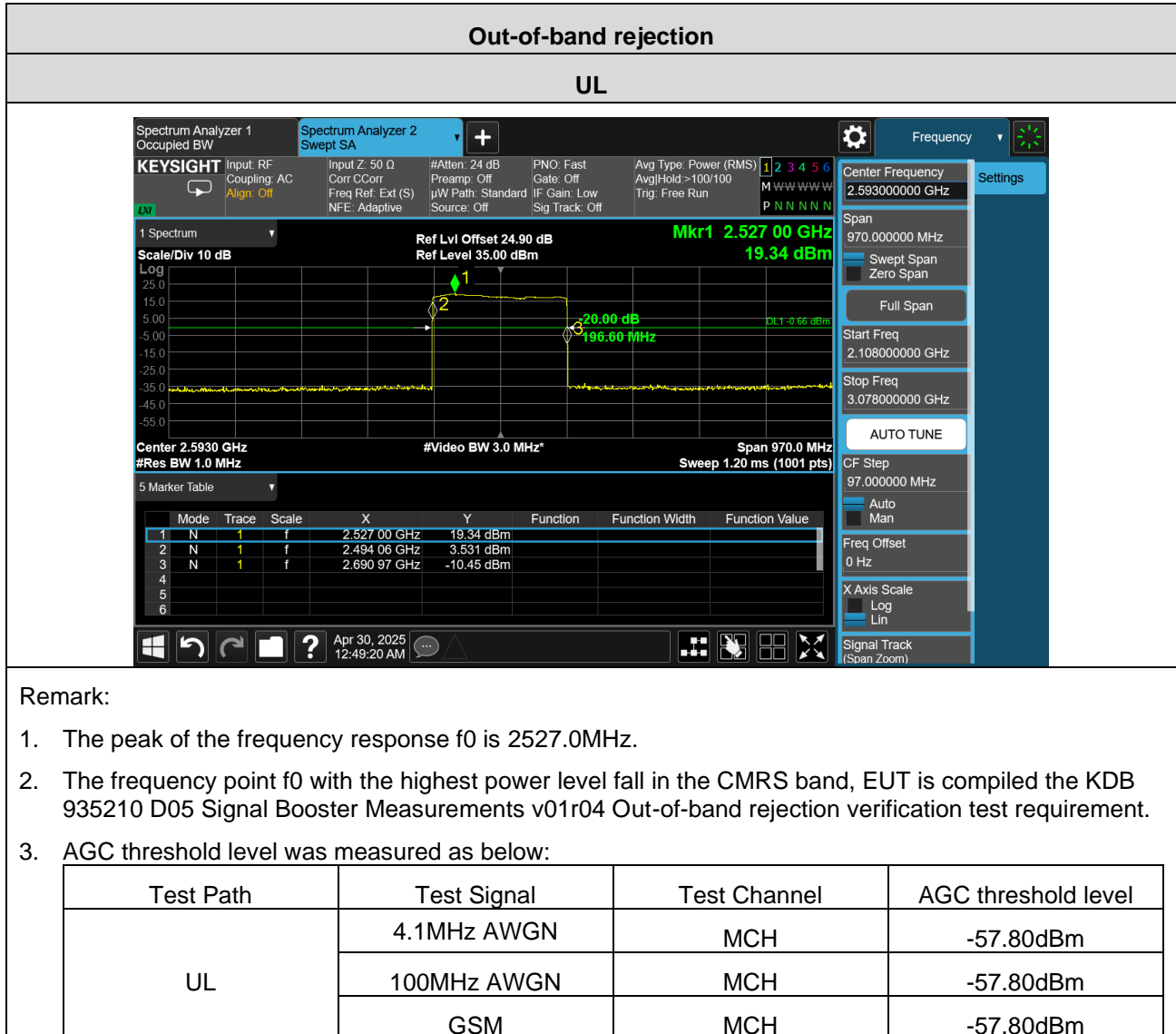
(For BRS/EBS Band UL)



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### 1 Out-of-band rejection



## 2 Input versus Output comparison

Occupied Bandwidth				
Test Path	Test Signal	Test Channel	Signal Level	Verdict
UL	4.1MHz AWGN	MCH	Pre-AGC	PASS
			3dB above AGC	PASS
	100MHz AWGN	MCH	Pre-AGC	PASS
			3dB above AGC	PASS
	GSM	MCH	Pre-AGC	PASS
			3dB above AGC	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.				

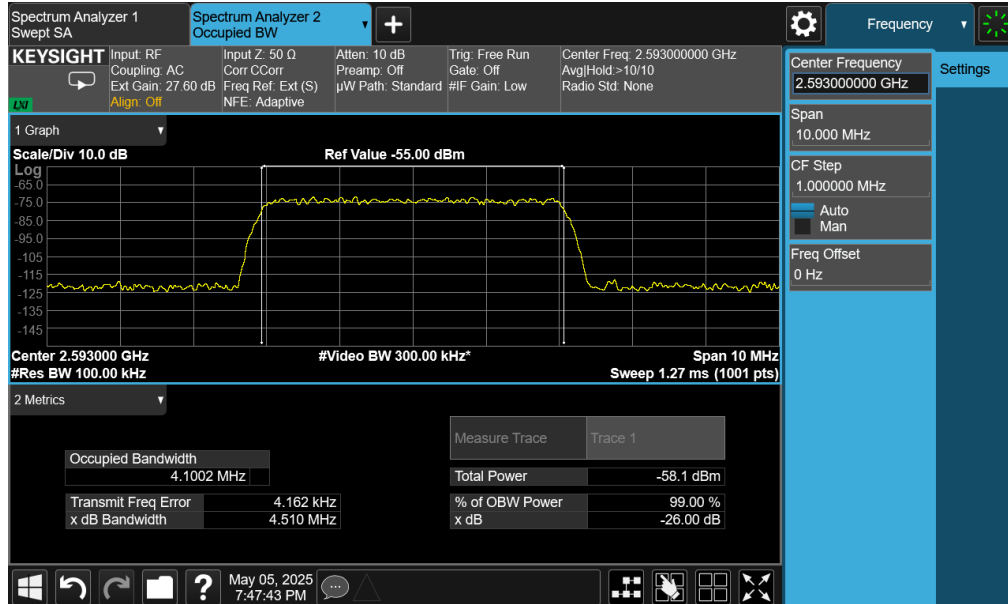


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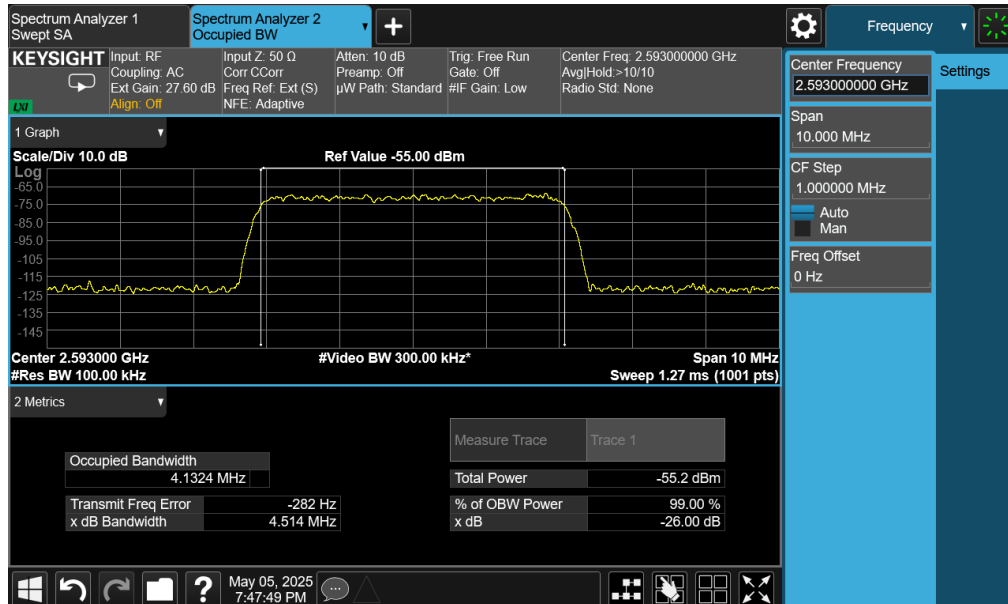
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### 99% OBW

#### UL\_4.1MHz AWGN\_MCH\_Input\_Pre-AGC



#### UL\_4.1MHz AWGN\_MCH\_Input\_3dB above AGC

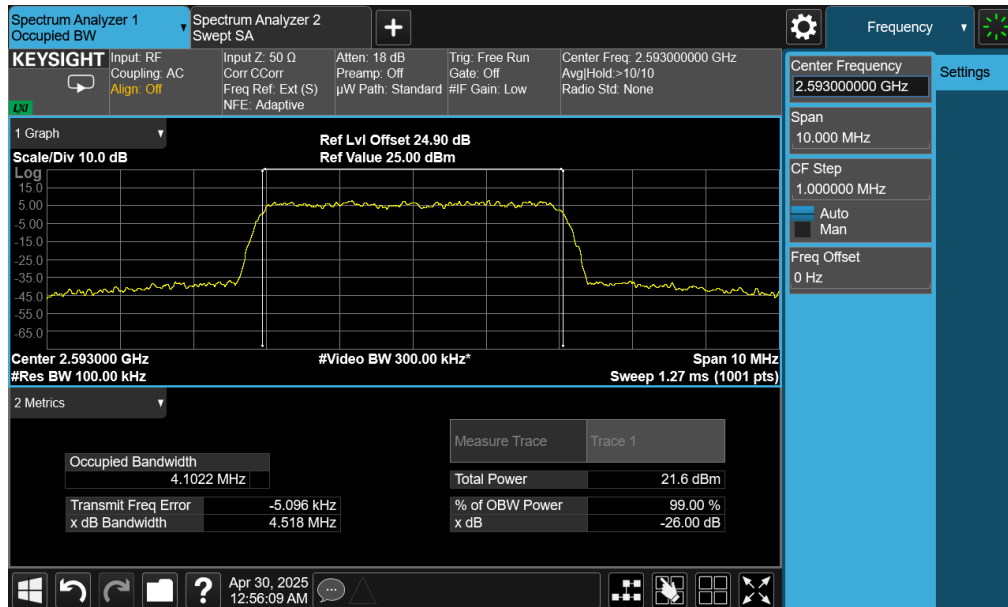


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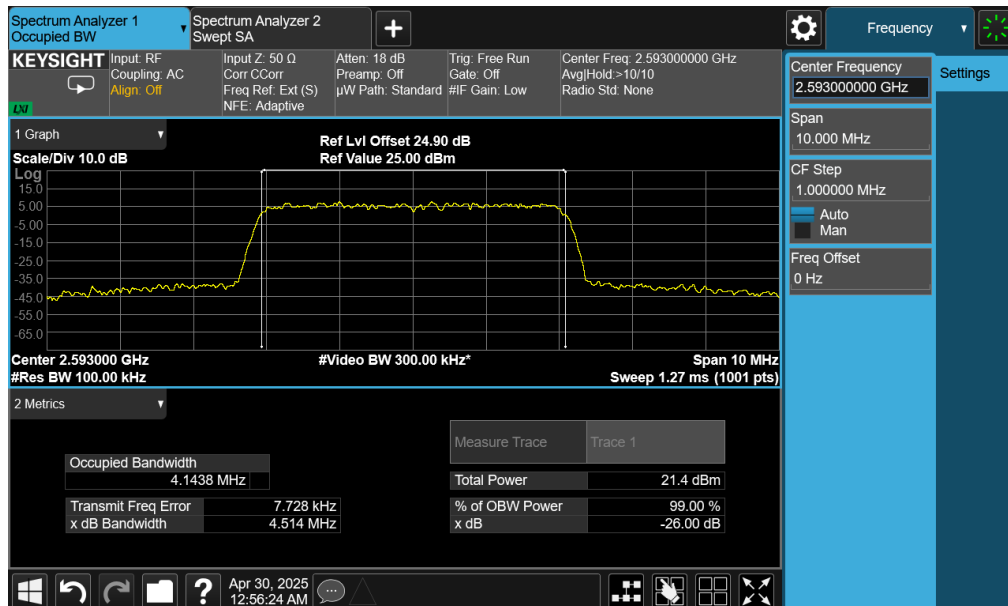
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### 99% OBW

### UL\_4.1MHz AWGN\_MCH\_Output\_Pre-AGC



### UL\_4.1MHz AWGN\_MCH\_Output\_3dB above AGC



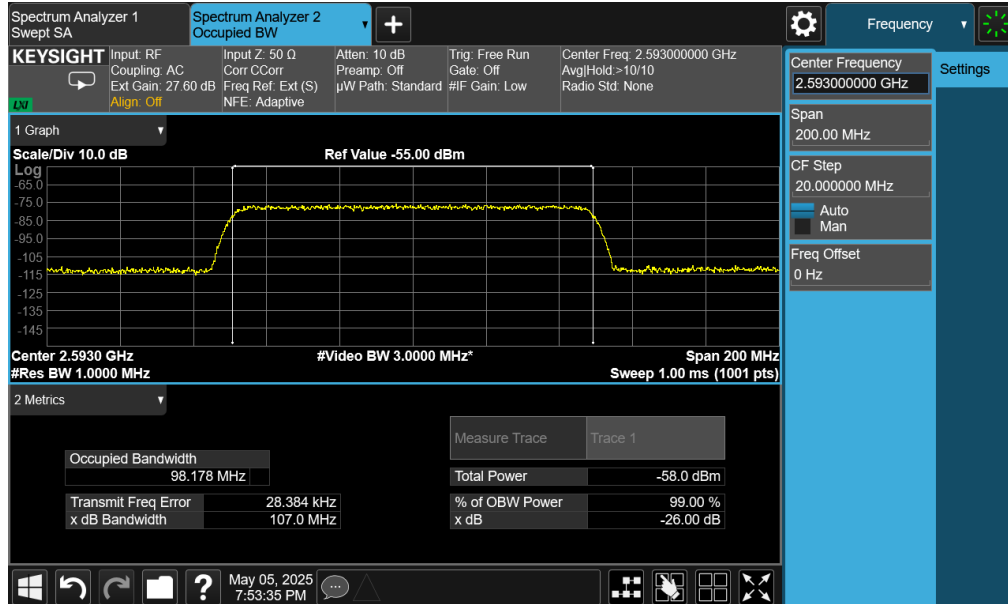
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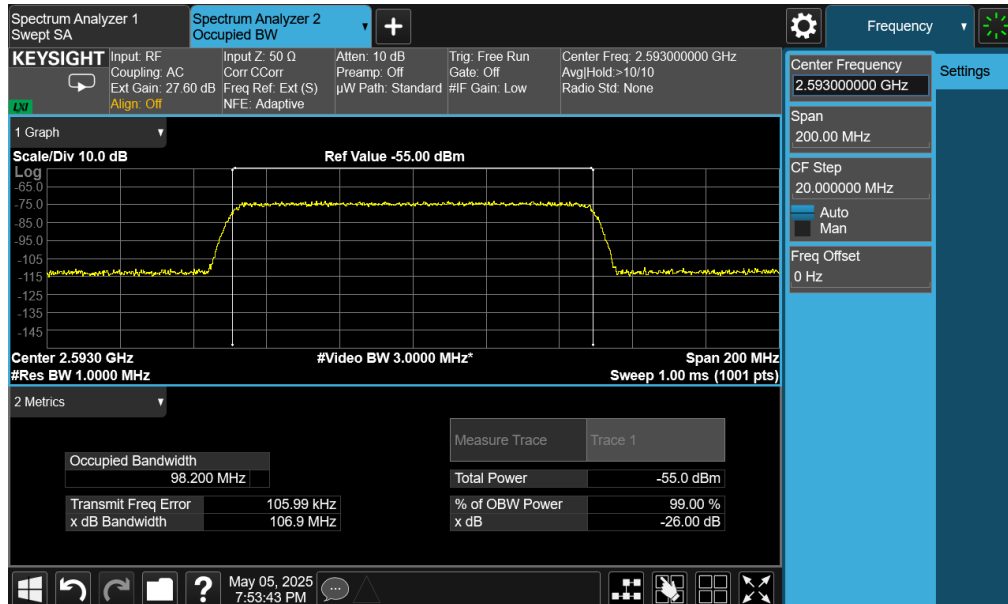


### 99% OBW

#### UL\_100MHz AWGN\_MCH\_Input\_Pre-AGC



#### UL\_100MHz AWGN\_MCH\_Input\_3dB above AGC

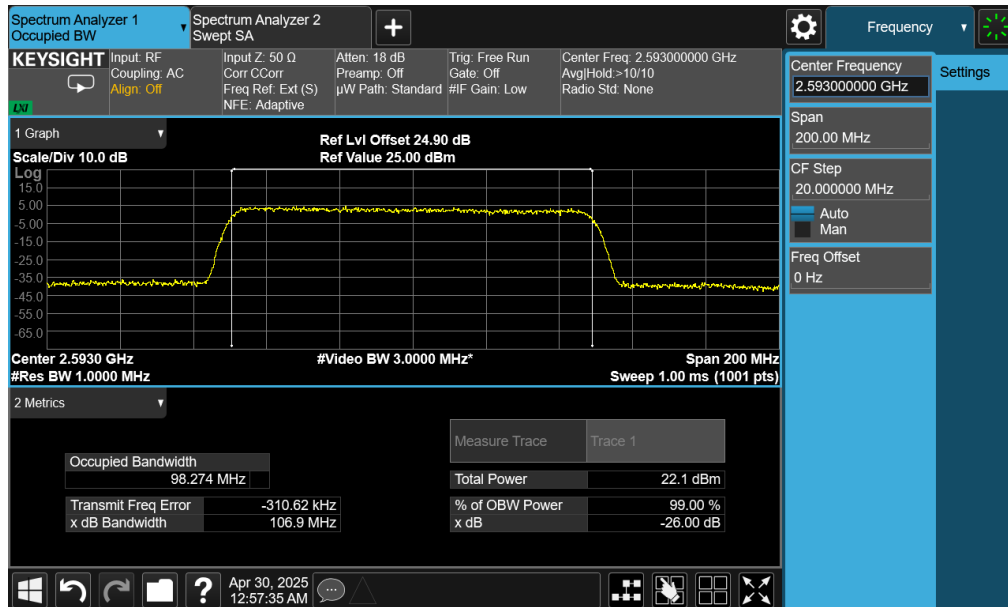


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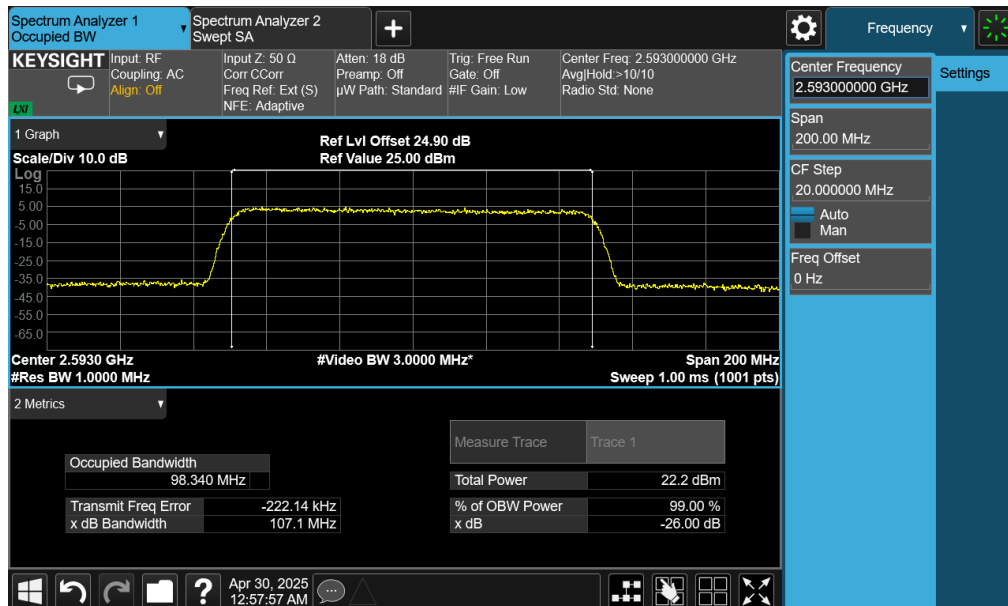
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### 99% OBW

### UL\_100MHz AWGN\_MCH\_Output\_Pre-AGC



### UL\_100MHz AWGN\_MCH\_Output\_3dB above AGC

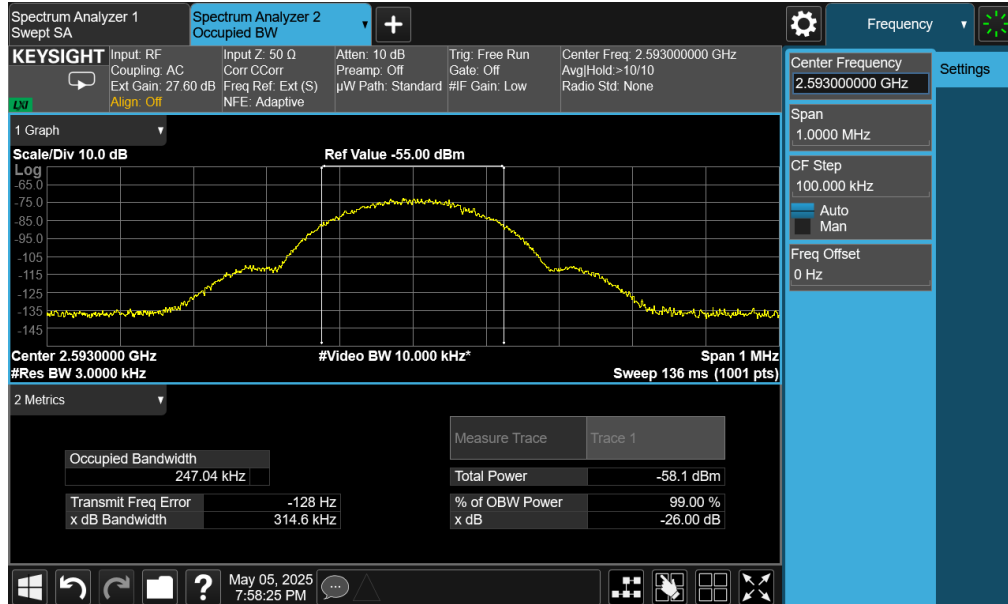


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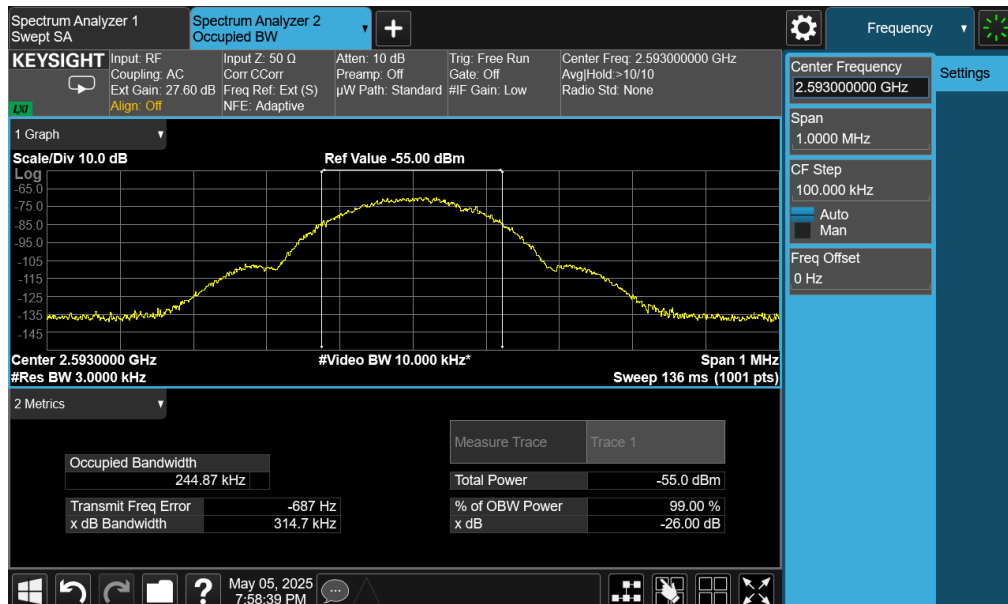
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### 99% OBW

#### UL\_GSM\_MCH\_Input\_Pre-AGC



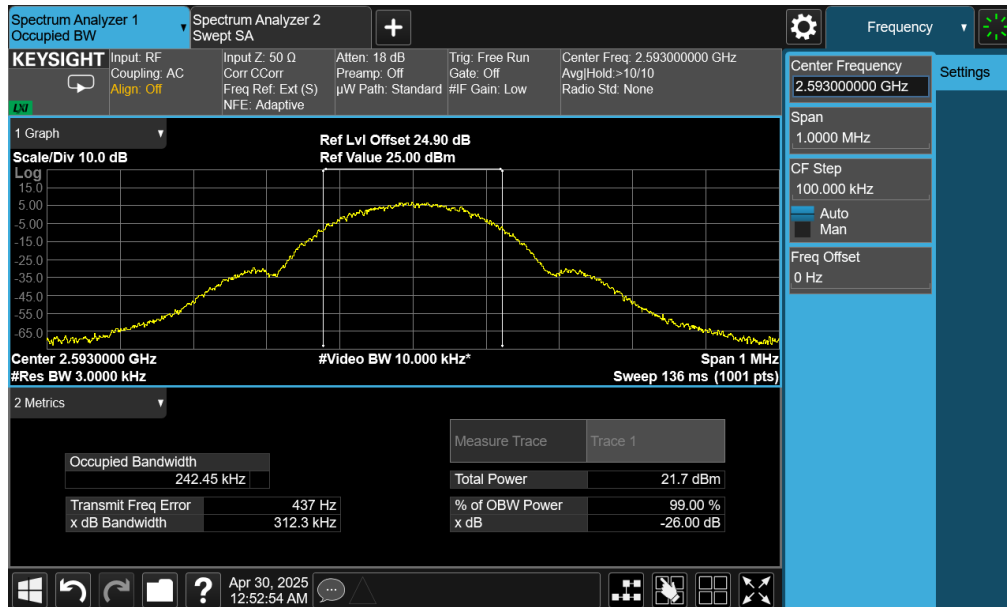
#### UL\_GSM\_MCH\_Input\_3dB above AGC



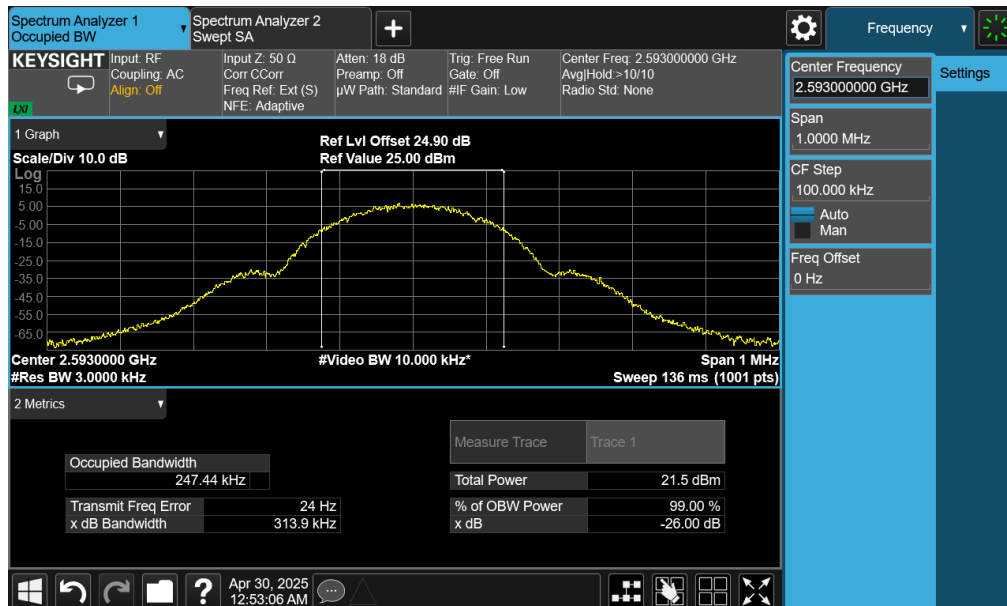


### 99% OBW

#### UL\_GSM\_MCH\_Output\_Pre-AGC



#### UL\_GSM\_MCH\_Output\_3dB above AGC



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## 3 Output power and amplifier/booster gain

Mean output power and gain									
Test Path	Test Freq. f0 (MHz)	Test Signal	Signal Level	Input power (dBm)	Output Power (dBm)	EIRP (dBm)	EIRP (W)	Gain (dB)	Verdict
UL	2527.0	4.1MHz AWGN	Pre-AGC	-58	21.77	35.77	3.78	79.77	PASS
			3dB above AGC	-55	21.60	35.60	3.64	/	PASS
		100MHz AWGN	Pre-AGC	-58	22.19	36.19	4.16	80.19	PASS
			3dB above AGC	-55	22.33	36.33	4.30	/	PASS
		GSM	Pre-AGC	-58	21.86	35.86	3.86	79.86	PASS
			3dB above AGC	-55	21.63	35.63	3.66	/	PASS

### Remark:

- f0 is from Out-of-band Rejection test in the report.
- EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 14dBi declared by the manufacturer.
- For main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern:  

$$EIRP \leq 33dBW + 10\lg(X/Y) \text{ dBW} + 10\lg(360/\text{beamwidth}) \text{ dBW} = 1995W + 10\lg(X/Y) \text{ dBW} + 10\lg(360/\text{beamwidth})$$
For other main or booster:  

$$EIRP \leq 33dBW + 10\lg(X/Y) \text{ dBW} = 1995W + 10\lg(X/Y) \text{ dBW}$$
where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.



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## 4 Out-of-band/out-of-block(including intermodulation) emissions

Out-of-band/out-of-block(including intermodulation) emissions							
Test Path	Test Channel	Test Signal	Stimulus Condition	Signal Level	Worst conducted test level (dBm)	Limit (dBm)	Verdict
UL	LCH	4.1MHz AWGN	One signal input	Pre-AGC	-23.05	≤-13	PASS
				3dB above AGC	-23.55		PASS
			Two signals input	Pre-AGC	-17.17		PASS
				3dB above AGC	-16.96		PASS
	HCH		One signal input	Pre-AGC	-20.15		PASS
				3dB above AGC	-20.51		PASS
			Two signals input	Pre-AGC	-16.11		PASS
				3dB above AGC	-15.53		PASS
UL	LCH	100MHz AWGN	One signal input	Pre-AGC	-15.78	≤-13	PASS
				3dB above AGC	-15.51		PASS
			Two signals input	Pre-AGC	-17.72		PASS
				3dB above AGC	-17.23		PASS
	HCH		One signal input	Pre-AGC	-15.04		PASS
				3dB above AGC	-14.43		PASS
			Two signals input	Pre-AGC	-18.38		PASS
				3dB above AGC	-17.91		PASS
UL	LCH	GSM	One signal input	Pre-AGC	-34.61	≤-13	PASS
				3dB above AGC	-32.67		PASS
			Two signals input	Pre-AGC	-32.98		PASS
				3dB above AGC	-32.88		PASS
	HCH		One signal input	Pre-AGC	-28.95		PASS
				3dB above AGC	-29.08		PASS
			Two signals input	Pre-AGC	-30.77		PASS
				3dB above AGC	-29.85		PASS

### Remark:

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10\log_{10}(P)$  dB, here,  
 $P = 22\text{dBm} = 0.16\text{W}$   
the limit=  $22\text{dBm} - [43 + 10\log_{10}(0.16\text{W})]\text{dB} = -13\text{dBm}$



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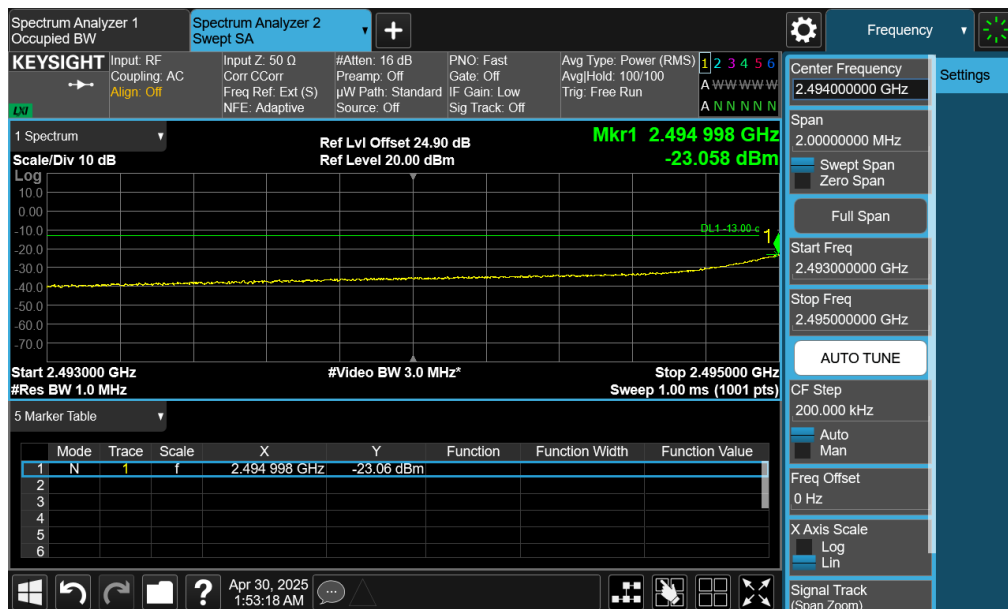
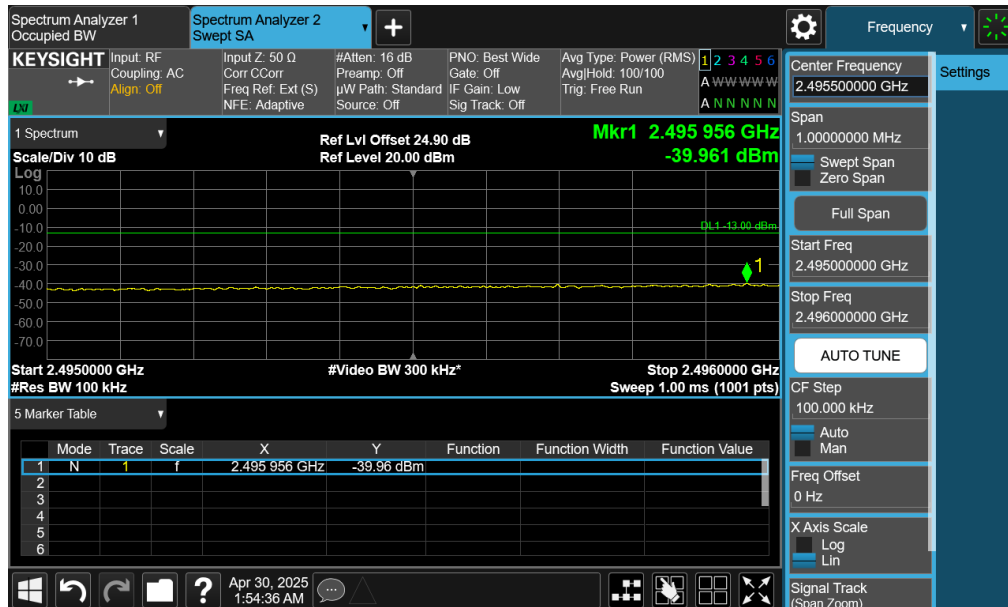
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### Out-of-band/out-of-block emissions

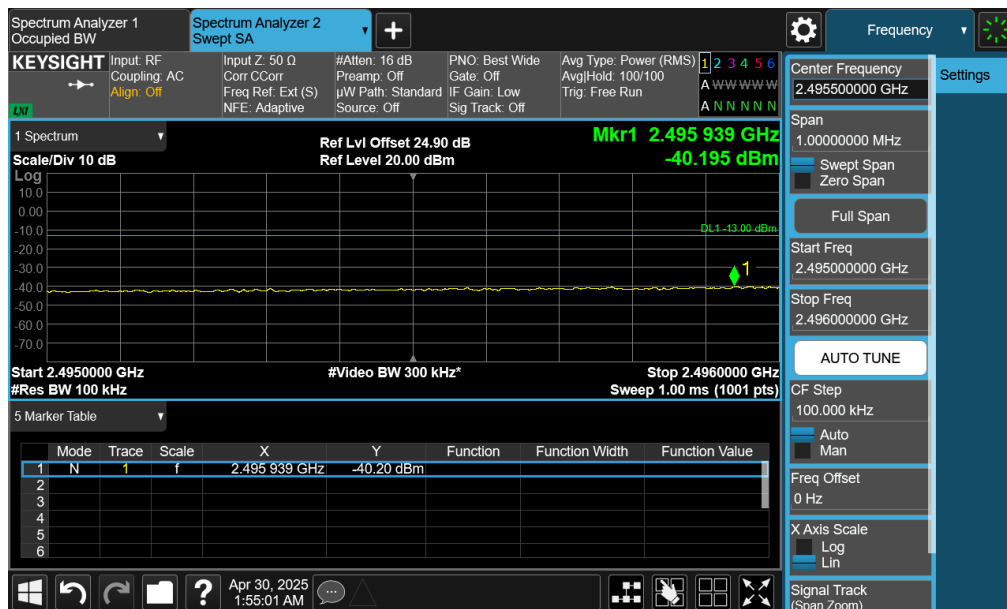
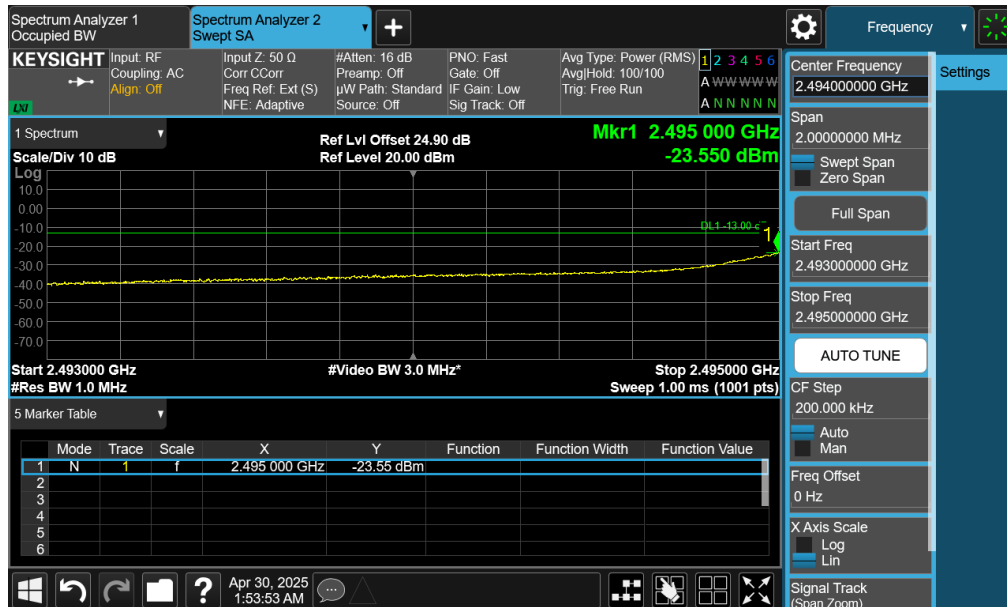
### UL\_4.1MHz AWGN\_LCH\_a single test signal\_Pre-AGC





### Out-of-band/out-of-block emissions

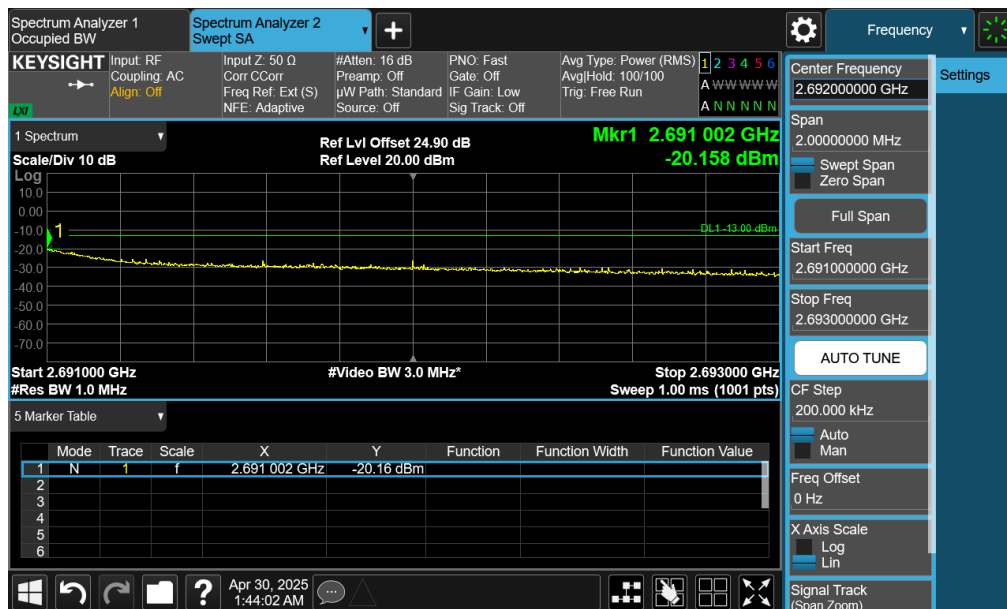
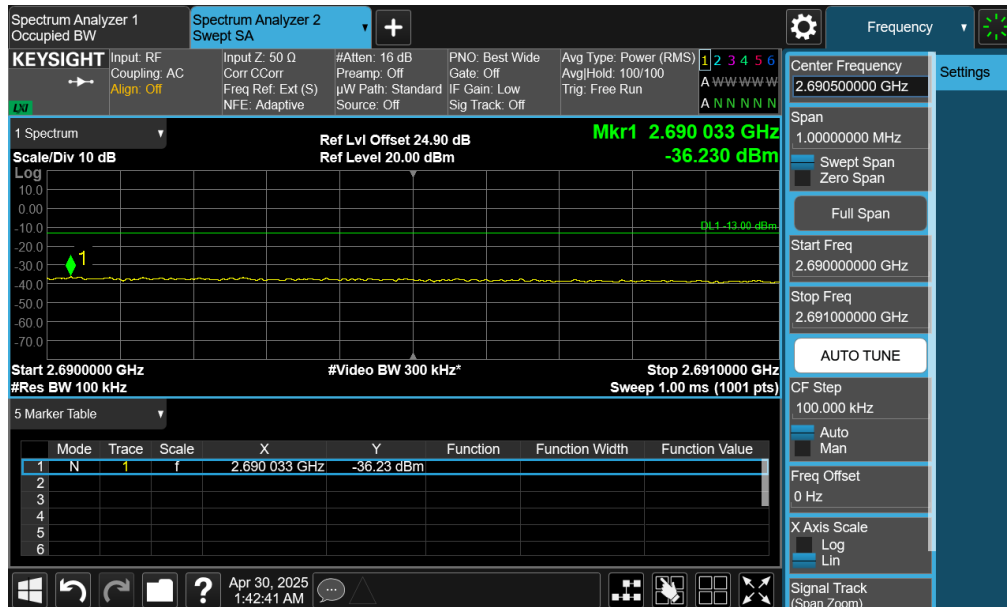
#### UL\_4.1MHz AWGN\_LCH\_a single test signal\_3dB above AGC





### Out-of-band/out-of-block emissions

#### UL\_4.1MHz AWGN\_HCH\_a single test signal\_Pre-AGC

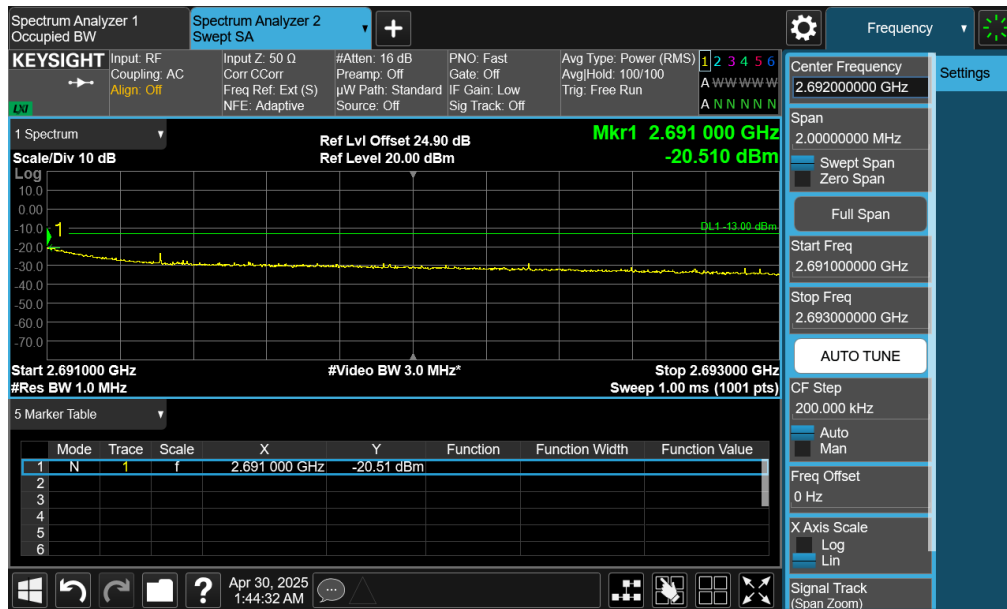
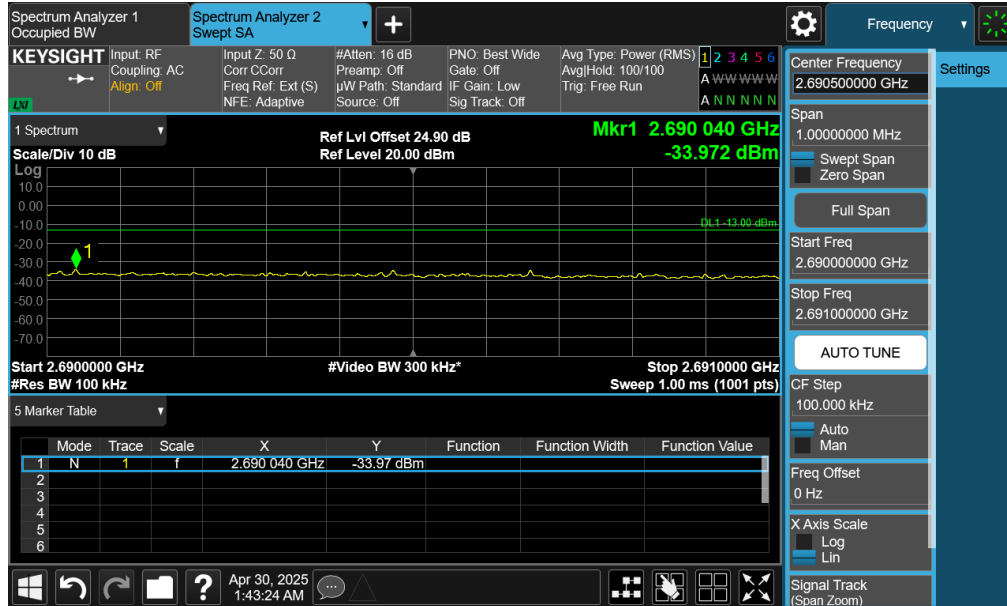


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### Out-of-band/out-of-block emissions

#### UL\_4.1MHz AWGN\_HCH\_a single test signal\_3dB above AGC

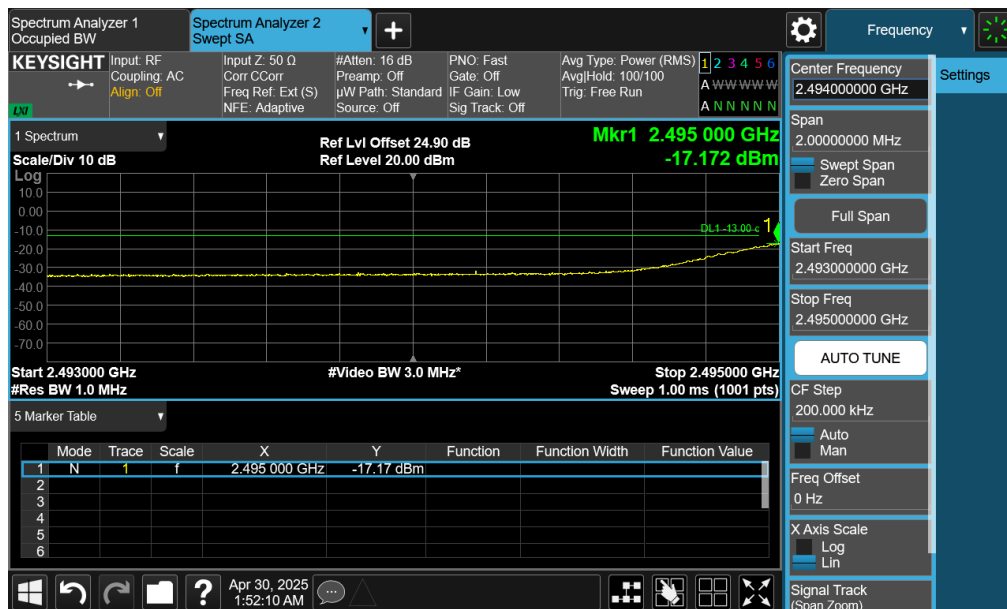
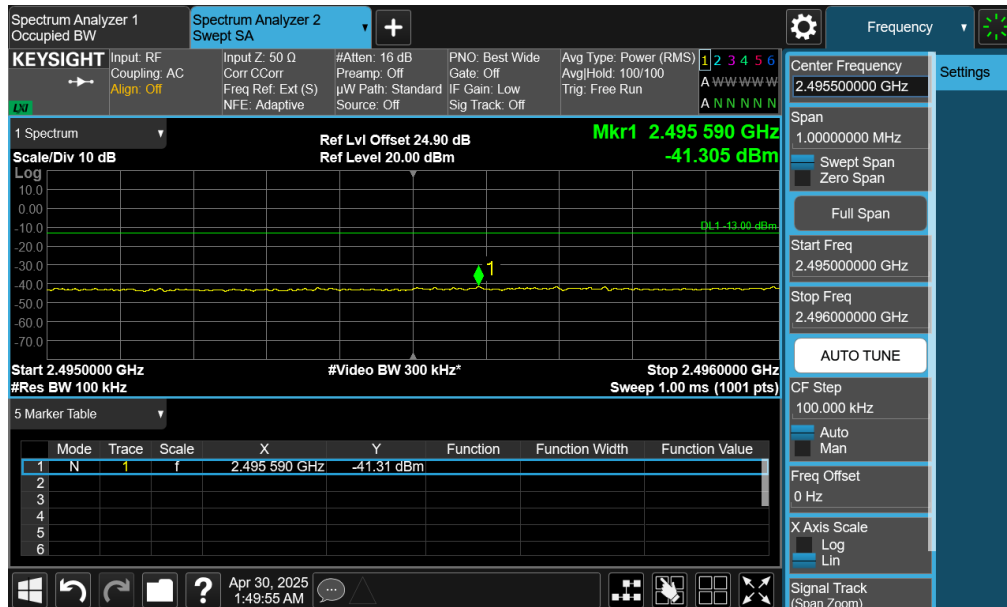


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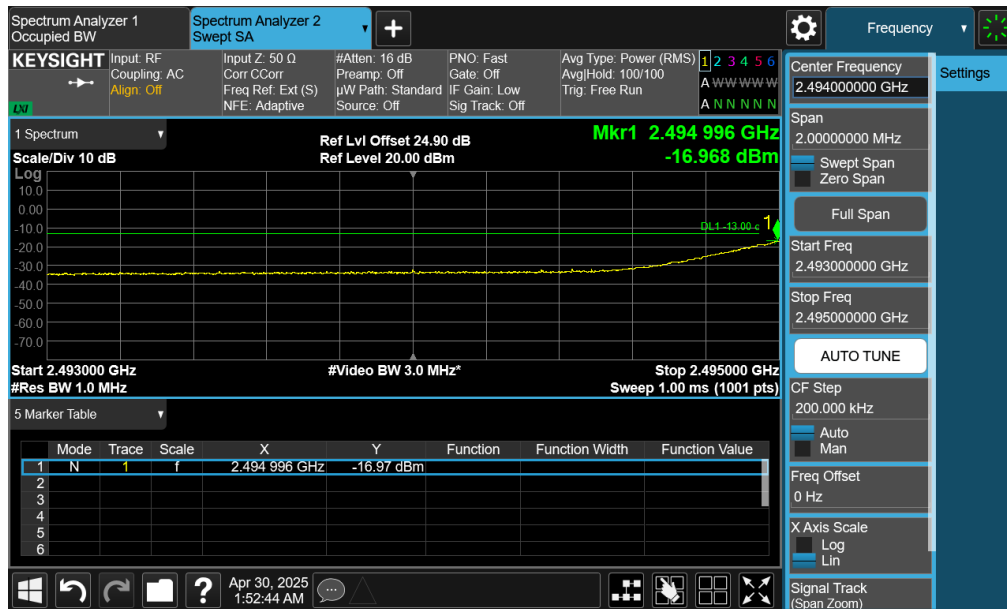
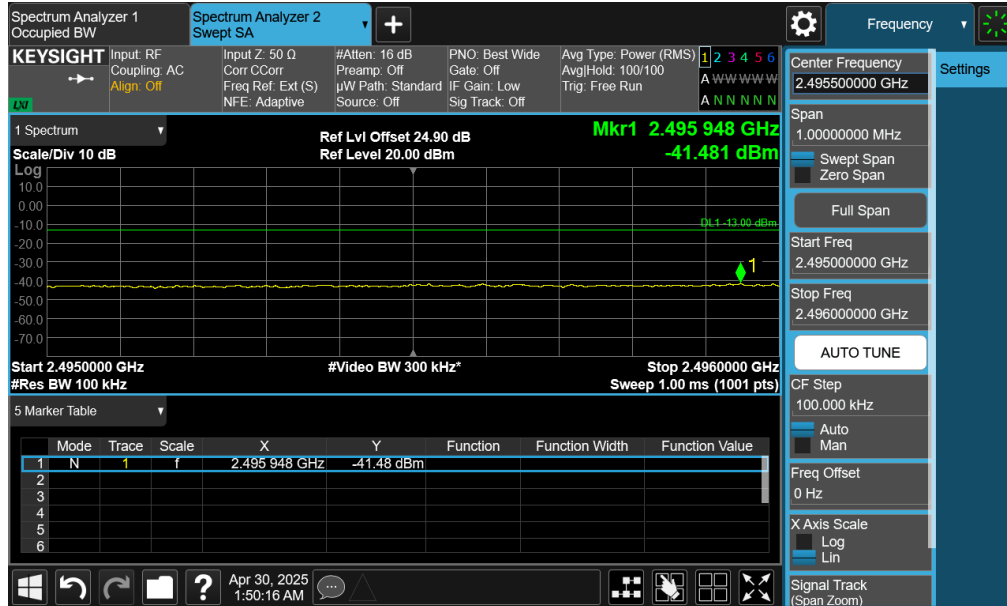
### Out-of-band/out-of-block emissions

#### UL\_4.1MHz AWGN\_LCH\_two adjacent test signals\_Pre-AGC



### Out-of-band/out-of-block emissions

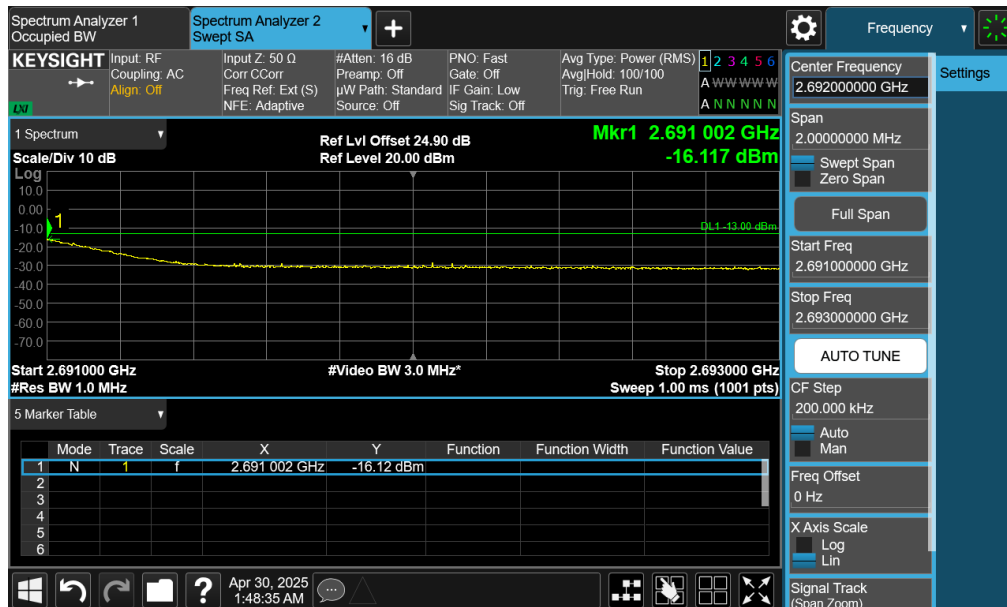
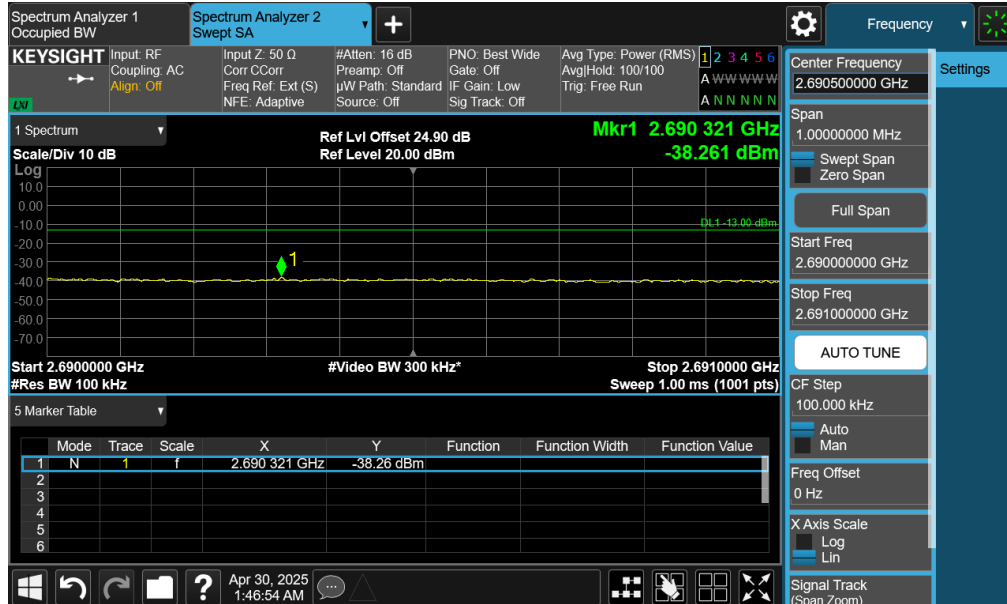
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### Out-of-band/out-of-block emissions

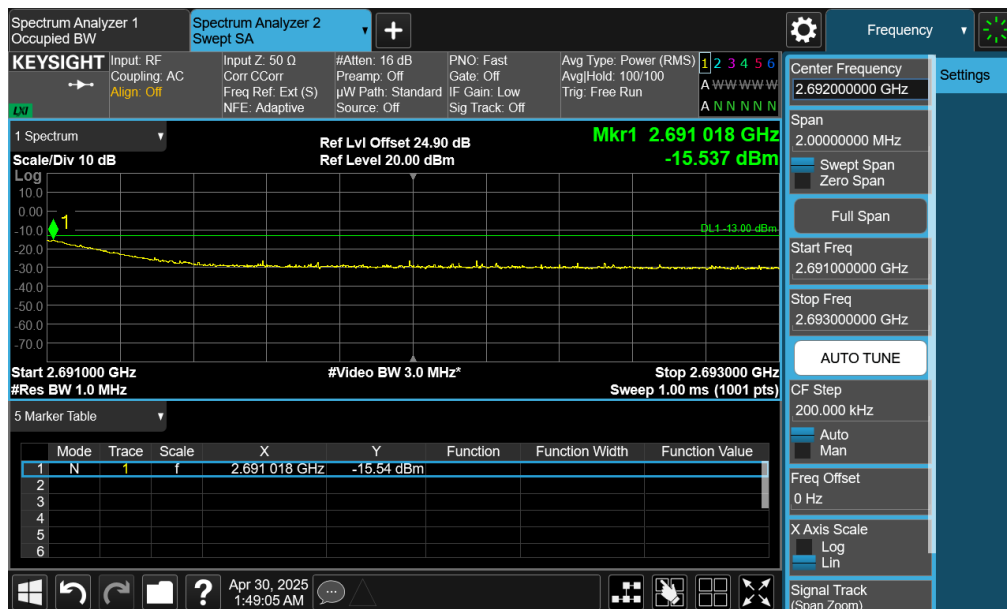
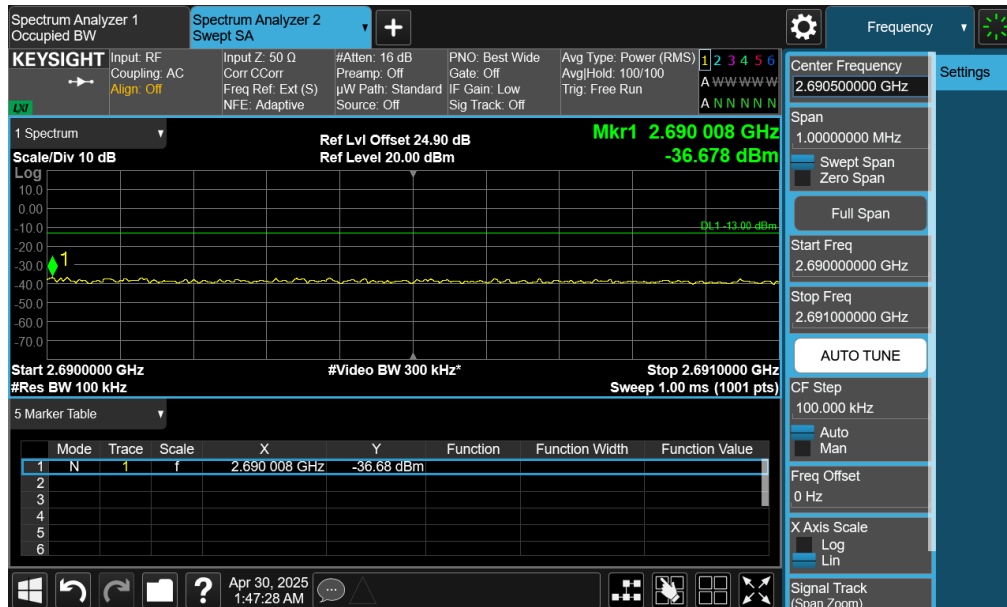
### UL\_4.1MHz AWGN\_HCH\_two adjacent test signals\_Pre-AGC





### Out-of-band/out-of-block emissions

#### UL\_4.1MHz AWGN\_HCH\_two adjacent test signals\_3dB above AGC



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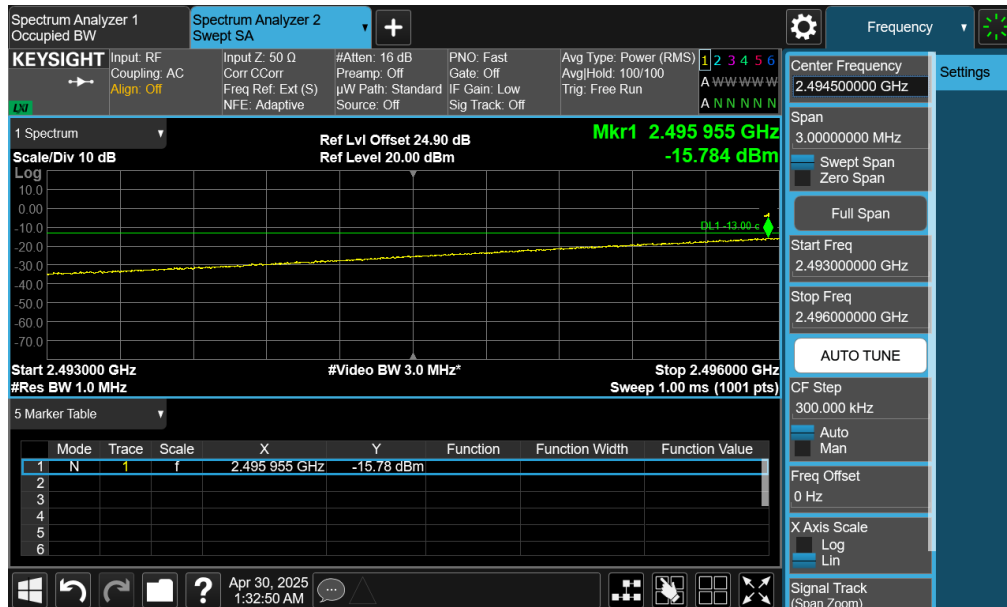
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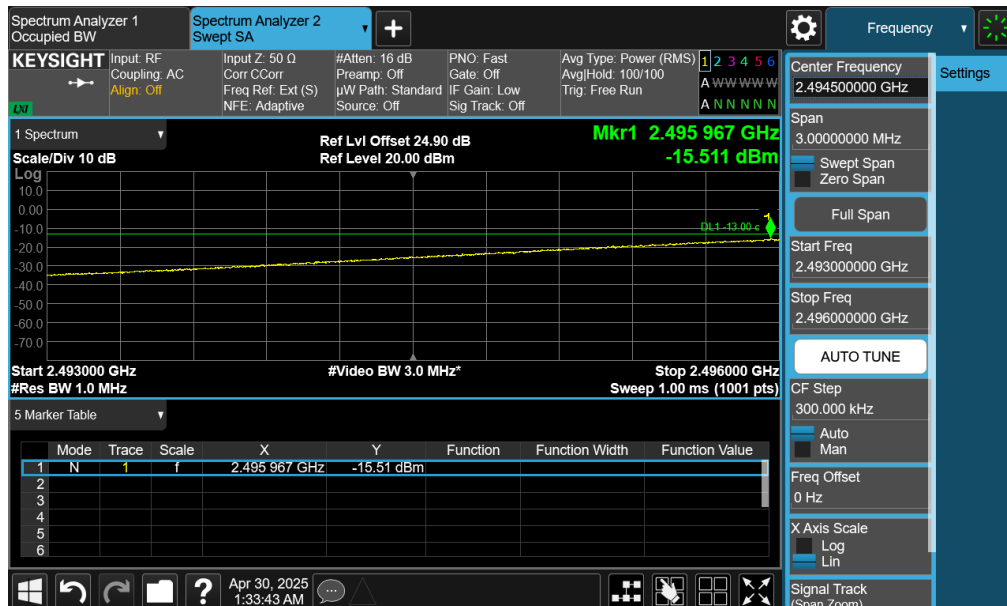
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### Out-of-band/out-of-block emissions

#### UL\_100MHz AWGN\_LCH\_a single test signal\_Pre-AGC



#### UL\_100MHz AWGN\_LCH\_a single test signal\_3dB above AGC

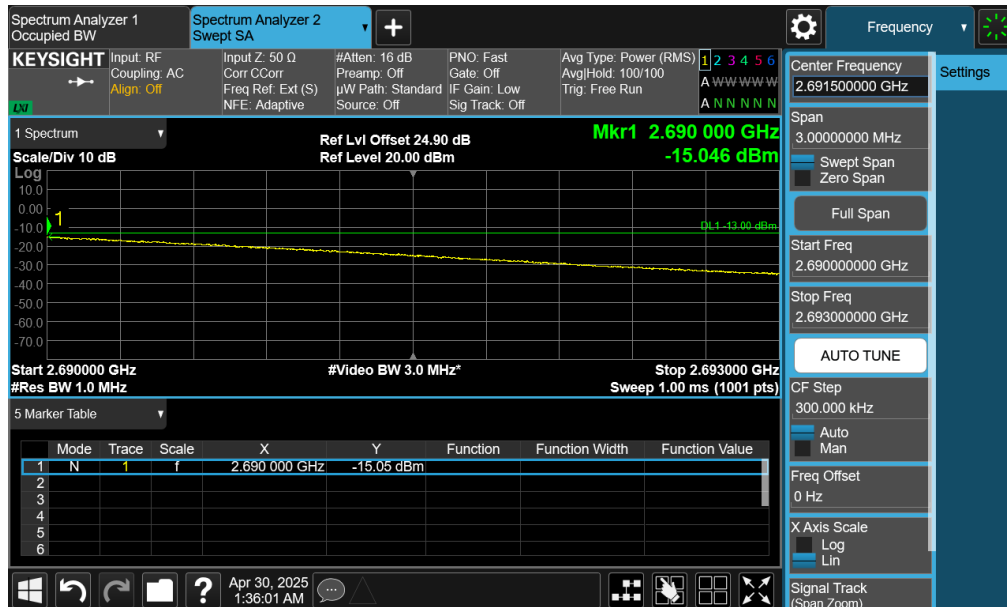


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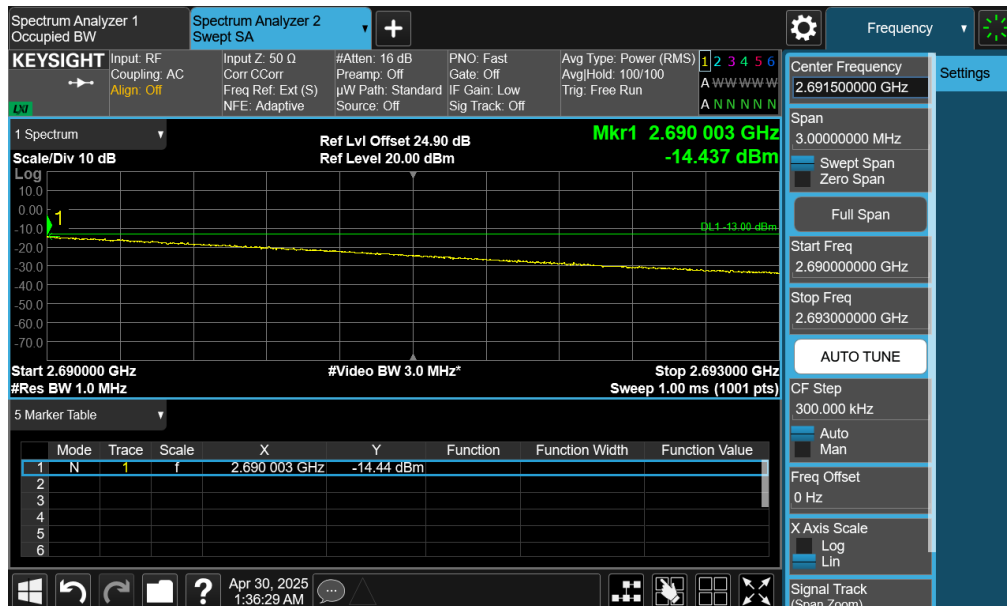
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### Out-of-band/out-of-block emissions

#### UL\_100MHz AWGN\_HCH\_a single test signal\_Pre-AGC



#### UL\_100MHz AWGN\_HCH\_a single test signal\_3dB above AGC

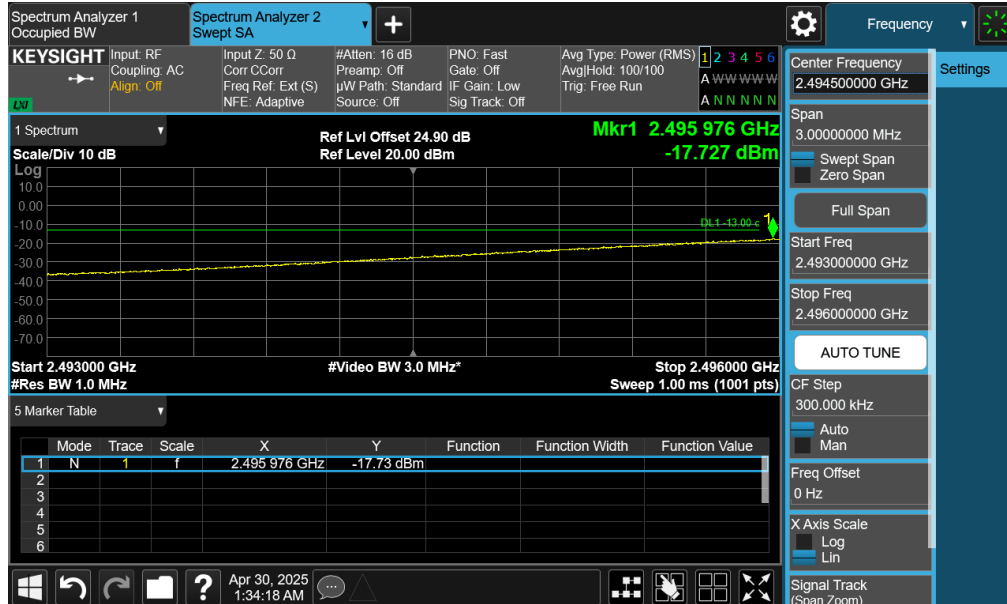


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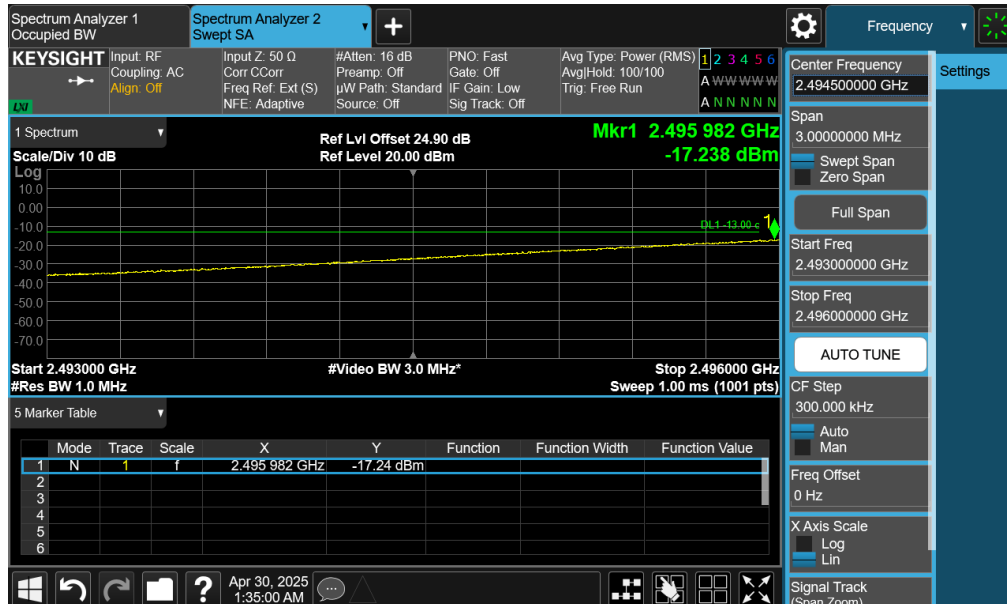
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### Out-of-band/out-of-block emissions

#### UL\_100MHz AWGN\_LCH\_two adjacent test signals\_Pre-AGC



#### UL\_100MHz AWGN\_LCH\_two adjacent test signals\_3dB above AGC



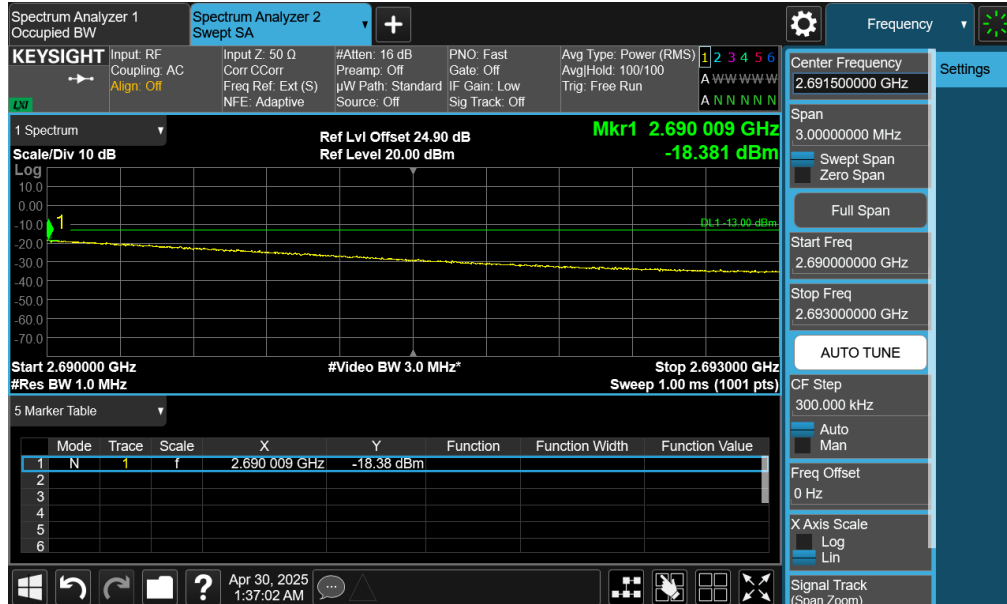
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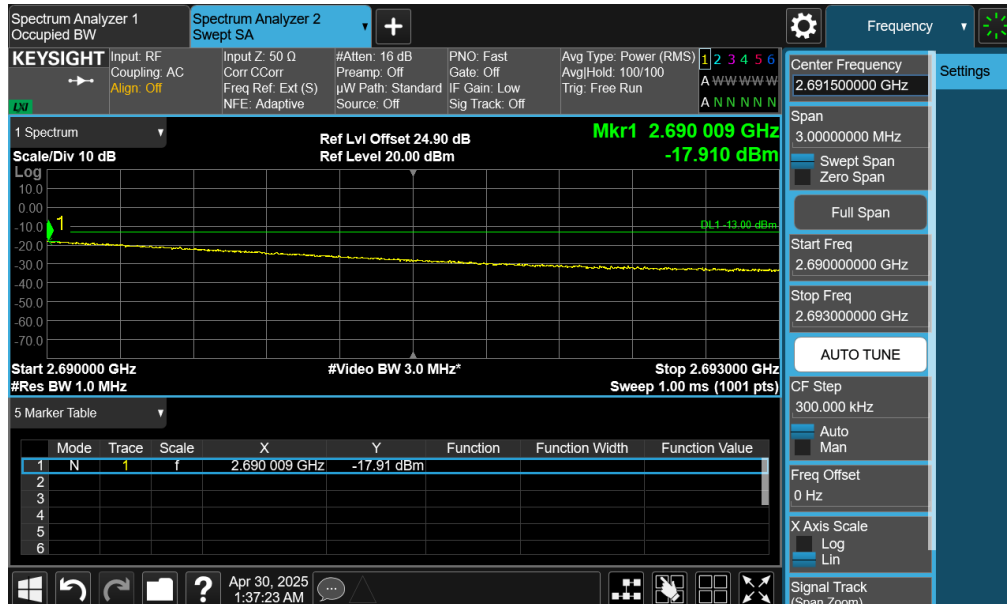


### Out-of-band/out-of-block emissions

#### UL\_100MHz AWGN\_HCH\_two adjacent test signals\_Pre-AGC



#### UL\_100MHz AWGN\_HCH\_two adjacent test signals\_3dB above AGC



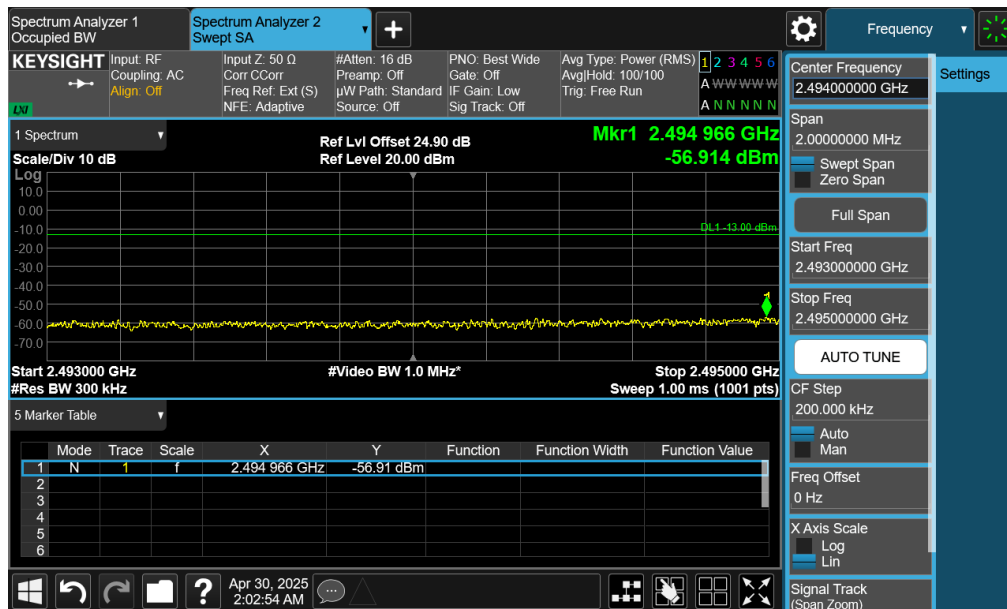
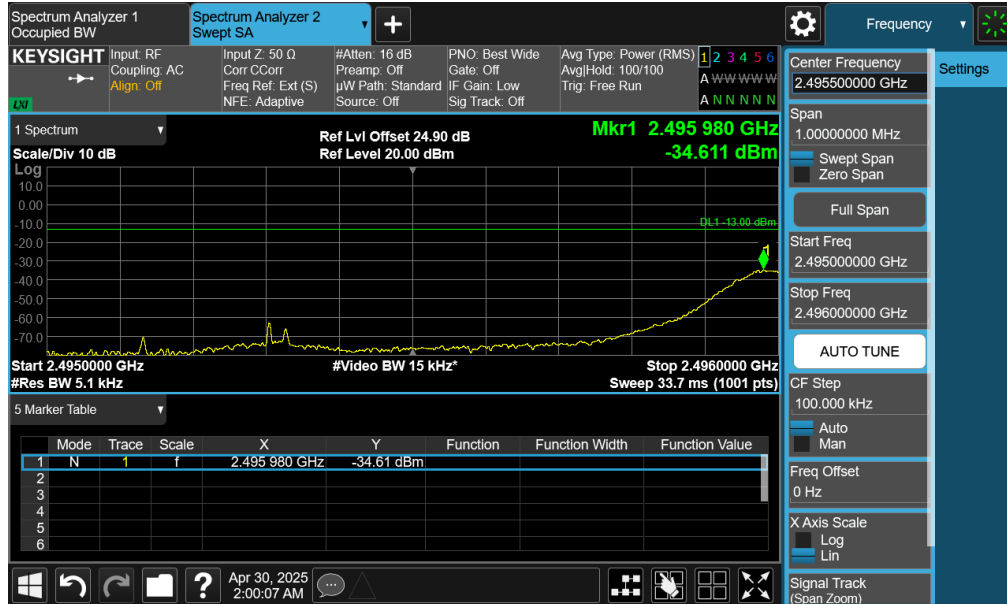
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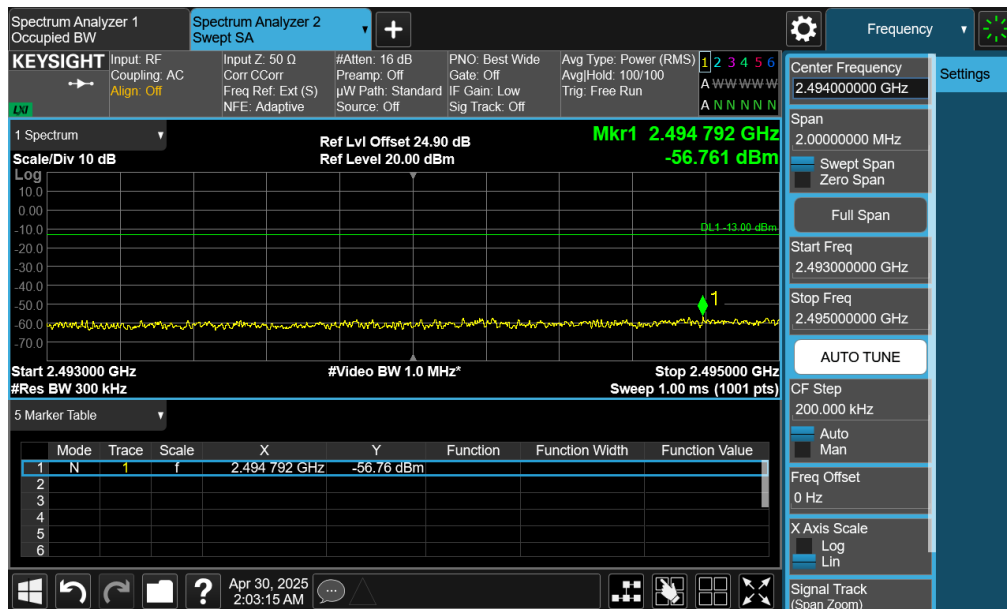
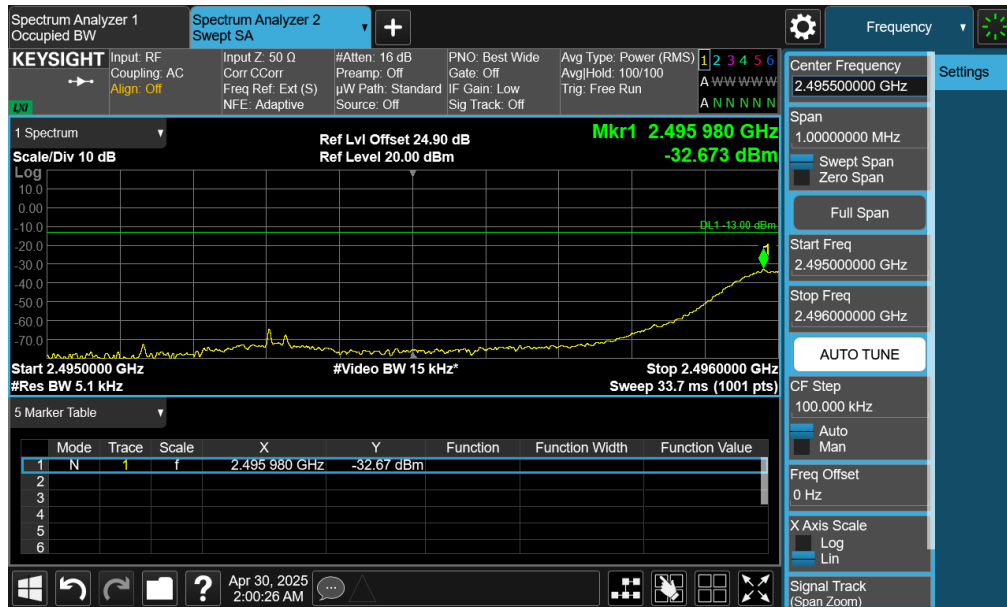
### Out-of-band/out-of-block emissions

### UL\_GSM\_LCH\_a single test signal\_Pre-AGC



### Out-of-band/out-of-block emissions

#### UL\_GSM\_LCH\_a single test signal\_3dB above AGC

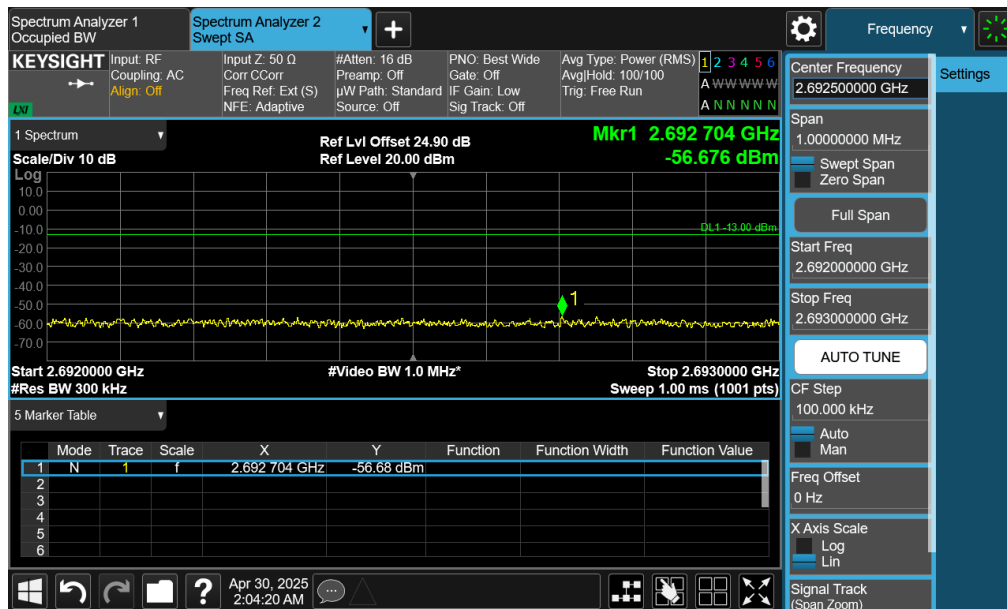
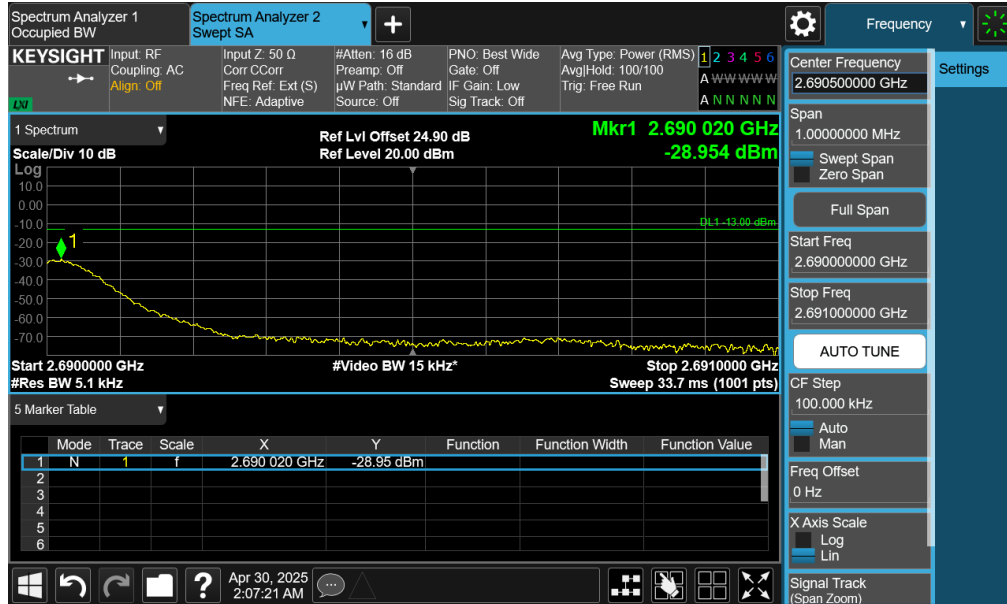


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### Out-of-band/out-of-block emissions

#### UL\_GSM\_HCH\_a single test signal\_Pre-AGC

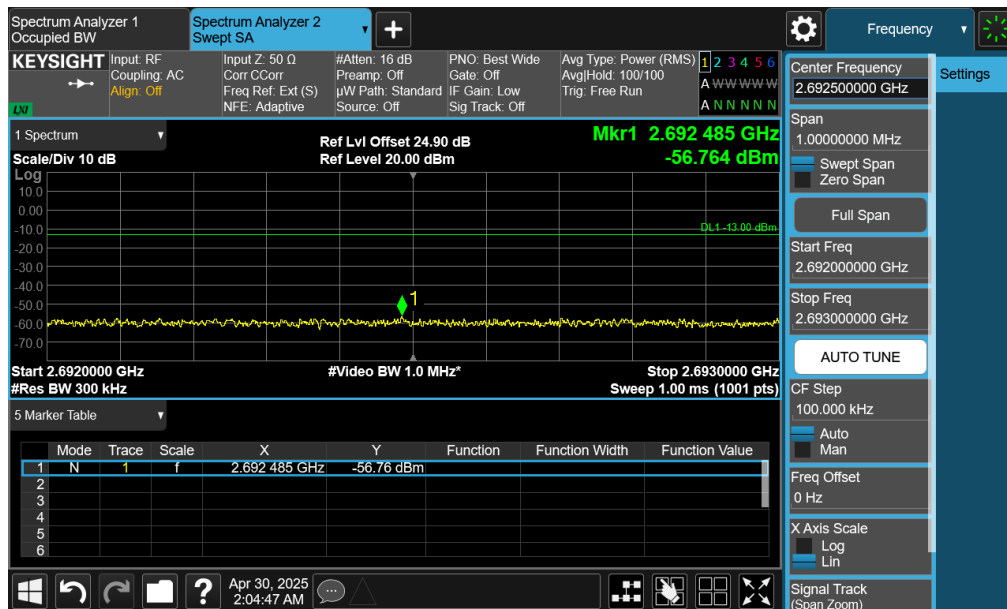
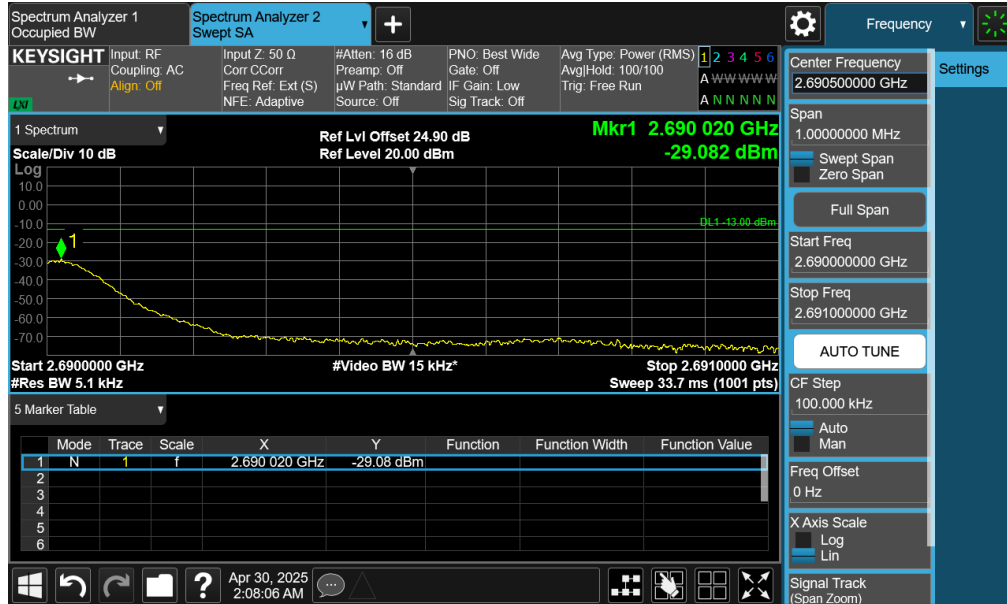


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### Out-of-band/out-of-block emissions

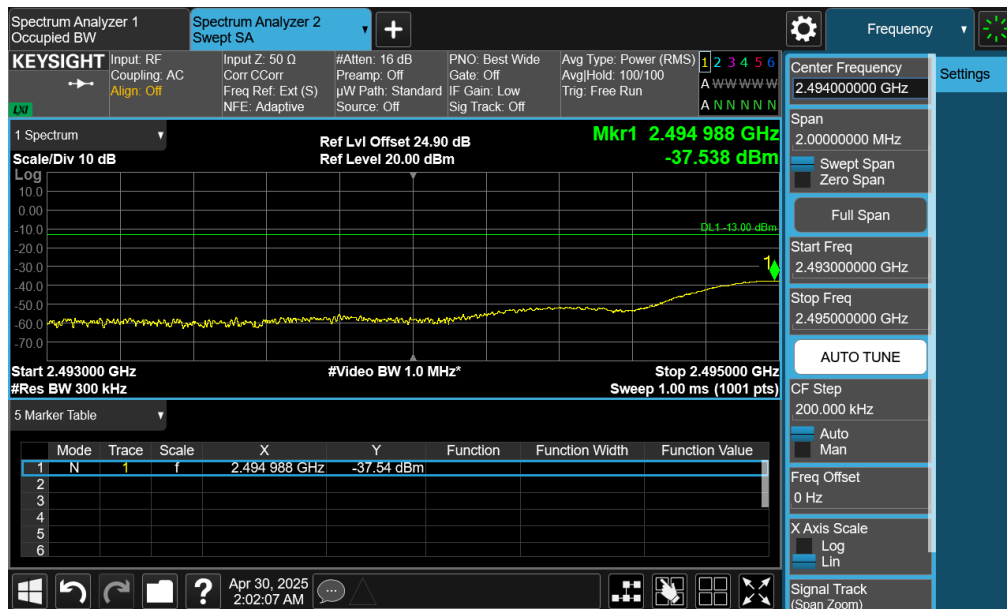
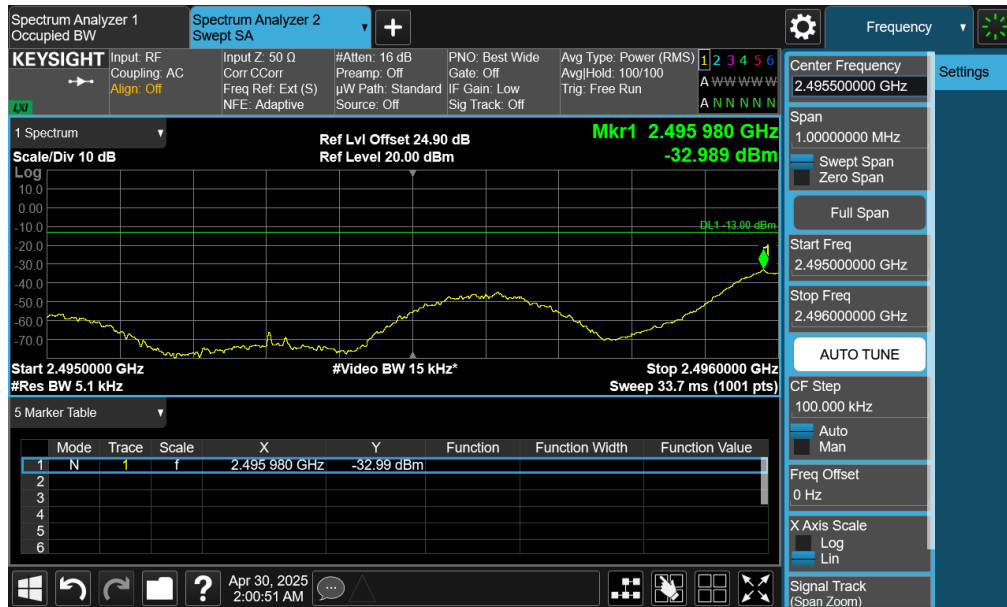
#### UL\_GSM\_HCH\_a single test signal\_3dB above AGC





### Out-of-band/out-of-block emissions

### UL\_GSM\_LCH\_two adjacent test signals\_Pre-AGC



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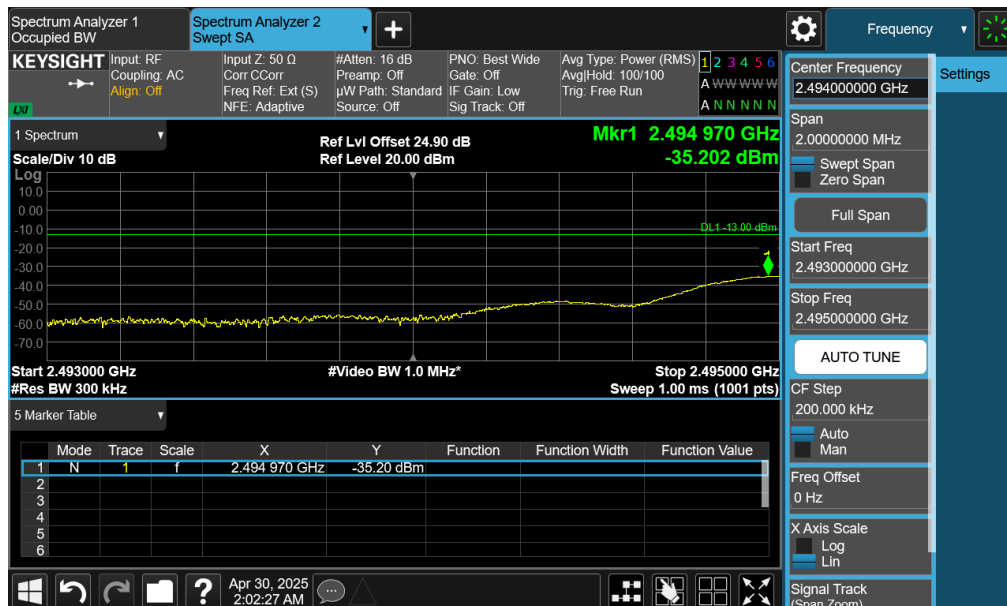
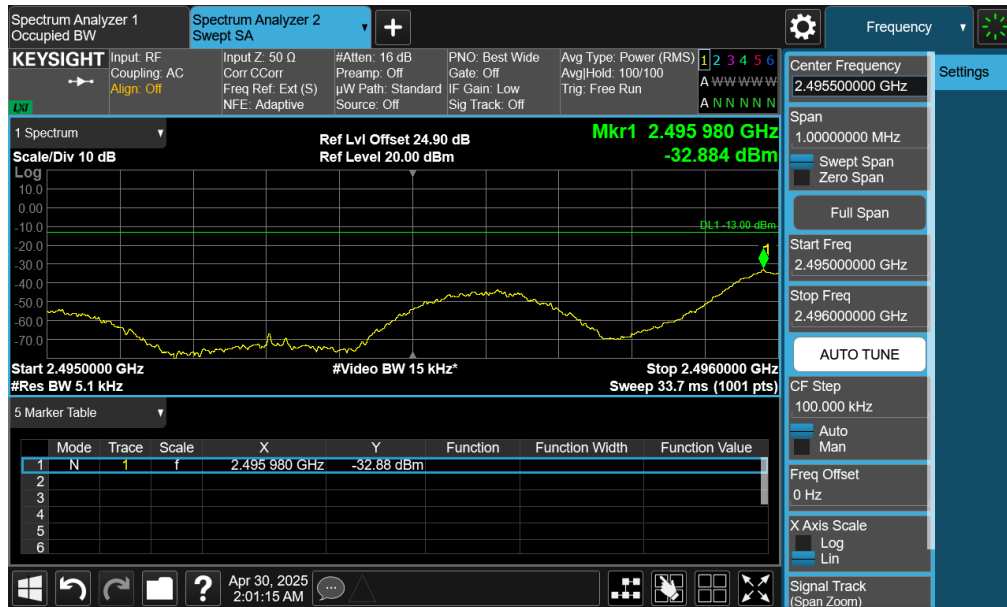
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### Out-of-band/out-of-block emissions

### UL\_GSM\_LCH\_two adjacent test signals\_3dB above AGC

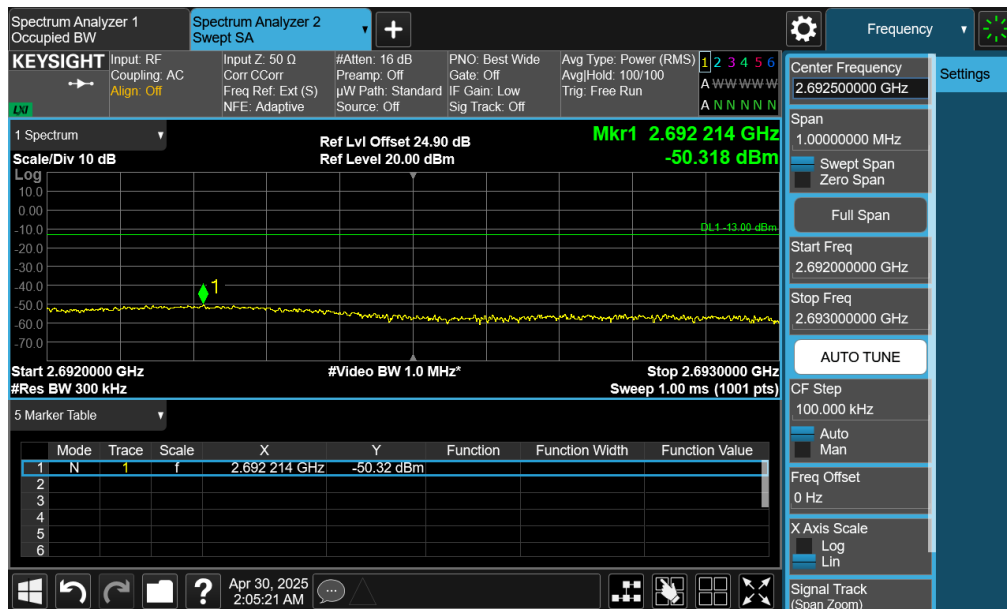
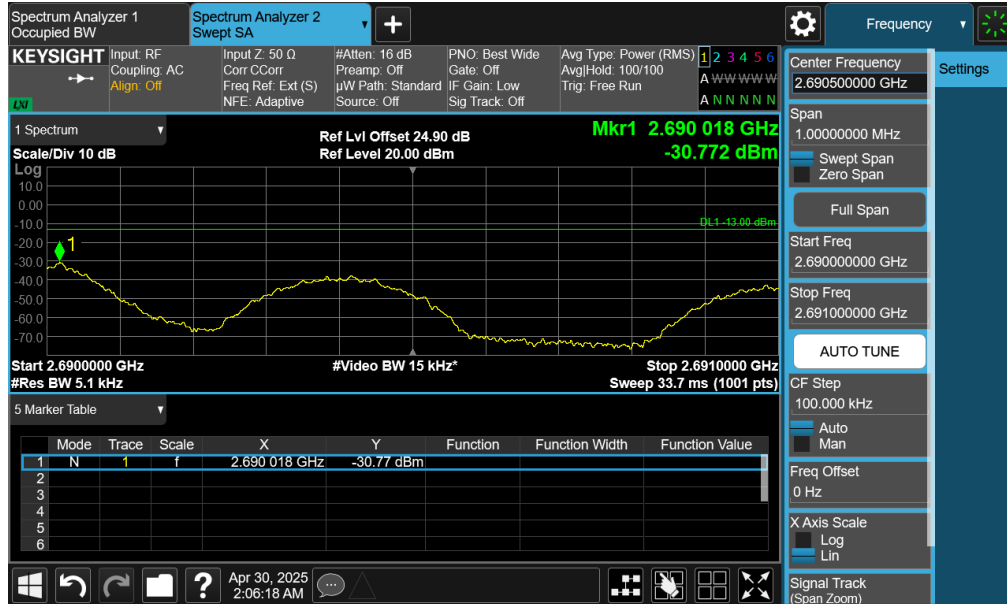


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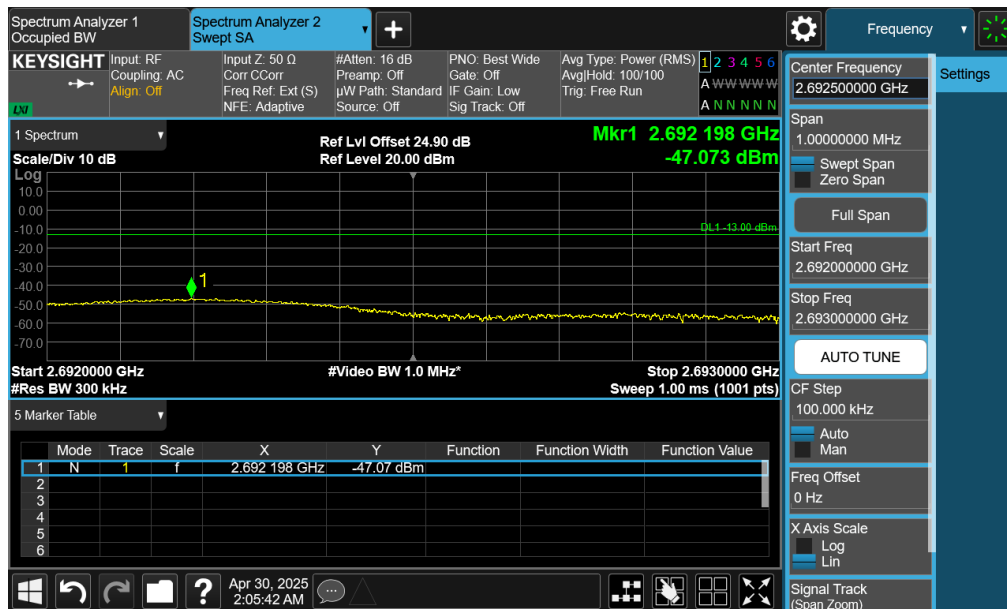
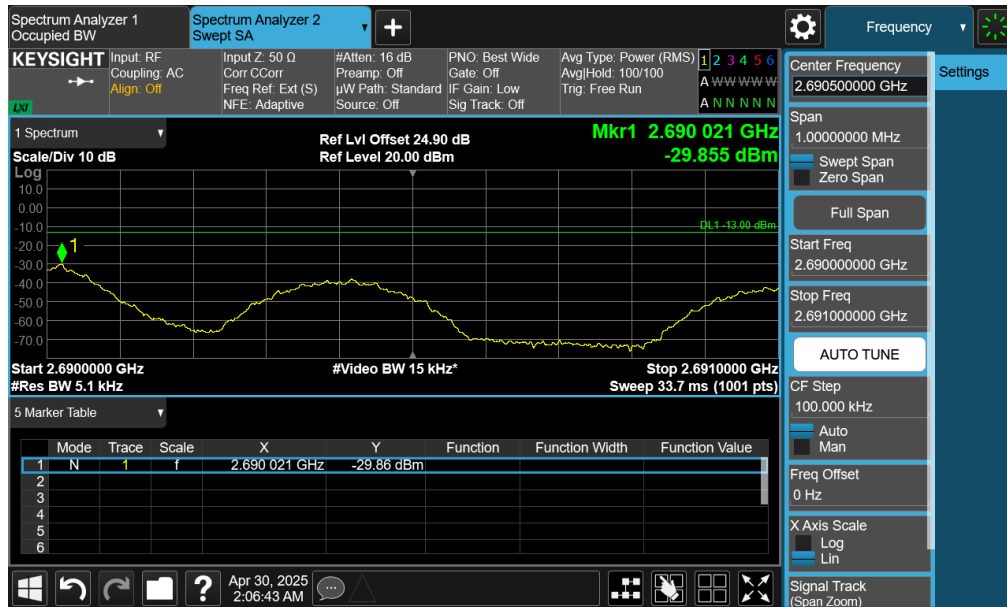
### Out-of-band/out-of-block emissions

### UL\_GSM\_HCH\_two adjacent test signals\_Pre-AGC



### Out-of-band/out-of-block emissions

#### UL\_GSM\_HCH\_two adjacent test signals\_3dB above AGC





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

EMC-ARF-05 Rev 1.1

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### 5 Conducted Spurious emissions

Conducted Spurious emissions						
Test path	Test signal	Test channel	Frequency range (MHz)	Worst test level (dBm)	Limit (dBm)	Verdict
UL	4.1MHz AWGN	LCH	0.09-1000	-73.57	≤-13	PASS
			1000-2495	-19.44	≤-13	PASS
		HCH	2691-26900	-19.44	≤-13	PASS
Remark: 1. The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10log10 (P) dB, here, P= 22dBm= 0.16W limit= 22dBm– [43+ 10log10(0.16W)]dB= -13dBm 2. All modes (LCH/MCH/HCH, with 4.1MHz AWGN signal/ with 100MHz AWGN signal/ with GSM signal) had been tested, only show the worst-case in this report. 3. The spurious emissions 9kHz to 30MHz and above 20GHz were very low and not displayed test plots in this report.						



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Guangzhou Branch, EMC Laboratory

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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

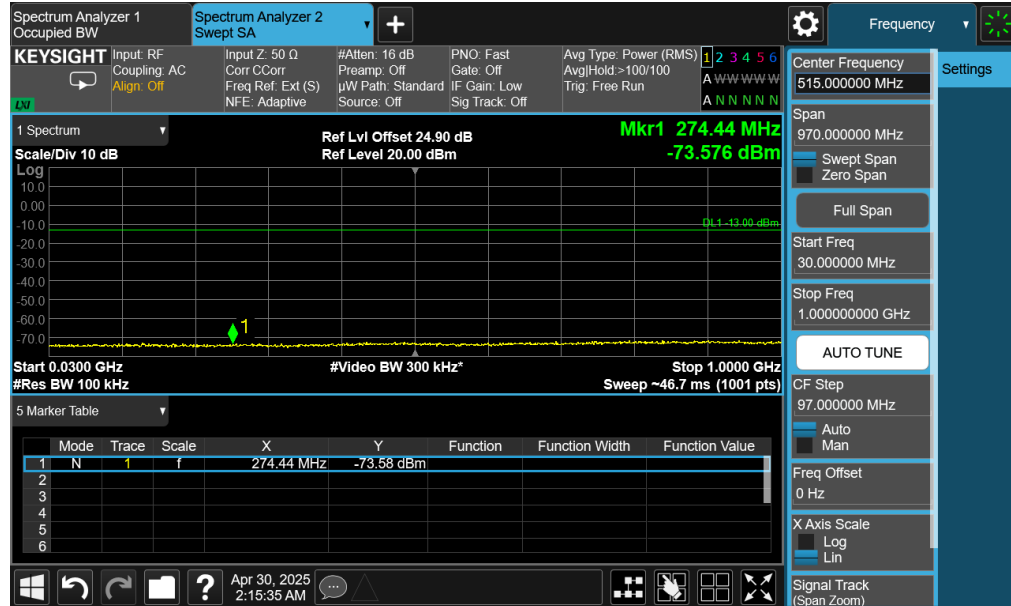
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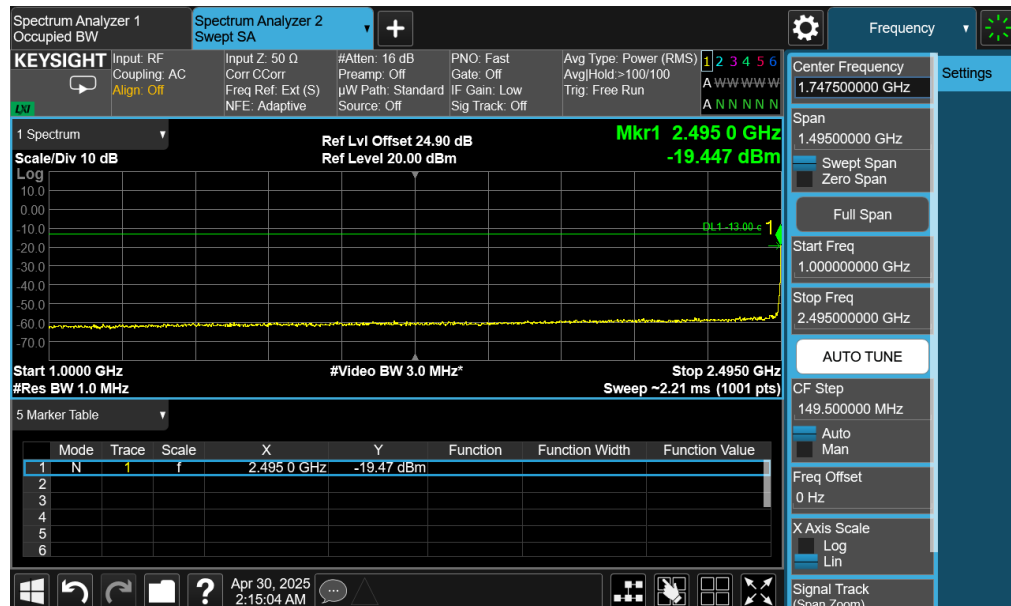


### Conducted spurious emissions

#### UL\_4.1MHz AWGN\_LCH\_Pre-AGC



#### UL\_4.1MHz AWGN\_LCH\_Pre-AGC

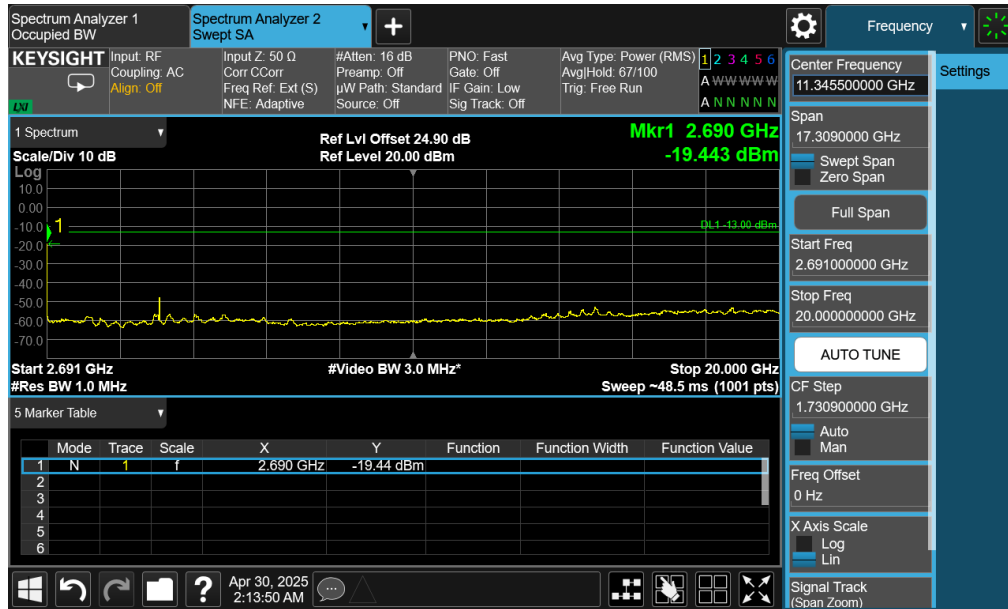


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### Conducted spurious emissions

#### UL\_4.1MHz AWGN\_HCH\_Pre-AGC



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## 6 Frequency Stability

Frequency stability vs voltage							
Test path	Test Channel	Test Signal	Temperature	Voltage	Freq. error (Hz)	Tolerance (ppm)	Verdict
UL	MCH	4.1MHz AWGN	TN	VL	7.9	0.00305	PASS
			TN	VH	7.9	0.00305	PASS
		100MHz AWGN	TN	VL	7.2	0.00278	PASS
			TN	VH	7.2	0.00278	PASS
		GSM	TN	VL	8.4	0.00324	PASS
			TN	VH	8.4	0.00324	PASS



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Frequency stability vs temperature							
Test Path	Test Channel	Test Signal	Voltage	Temperature (°C)	Freq. error (Hz)	Tolerance (ppm)	Verdict
UL	MCH	4.1MHz AWGN	VN	+50	6.4	0.00247	PASS
			VN	+40	8.1	0.00312	PASS
			VN	+30	6.9	0.00266	PASS
			VN	+20	7.1	0.00274	PASS
			VN	+10	8.0	0.00309	PASS
			VN	0	7.9	0.00305	PASS
			VN	-10	4.4	0.00170	PASS
			VN	-20	6.6	0.00255	PASS
			VN	-30	6.4	0.00247	PASS
	MCH	100MHz AWGN	VN	+50	4.3	0.00166	PASS
			VN	+40	8.2	0.00316	PASS
			VN	+30	5.5	0.00212	PASS
			VN	+20	5.0	0.00193	PASS
			VN	+10	5.7	0.00220	PASS
			VN	0	6.5	0.00251	PASS
			VN	-10	7.8	0.00301	PASS
			VN	-20	7.2	0.00278	PASS
			VN	-30	7.5	0.00289	PASS
	MCH	GSM	VN	+50	6.3	0.00243	PASS
			VN	+40	5.7	0.00220	PASS
			VN	+30	7.6	0.00293	PASS
			VN	+20	7.9	0.00305	PASS
			VN	+10	4.6	0.00177	PASS
			VN	0	6.7	0.00258	PASS
			VN	-10	4.7	0.00181	PASS
			VN	-20	5.5	0.00212	PASS
			VN	-30	5.9	0.00228	PASS



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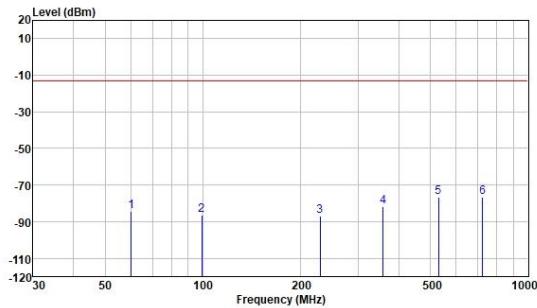
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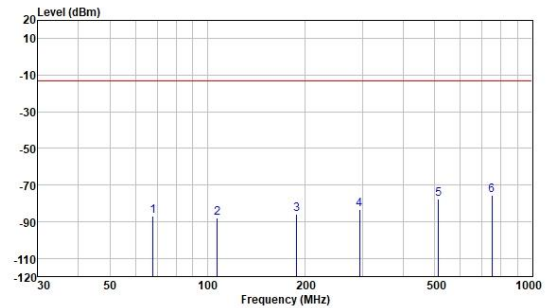
### 7 Radiated Spurious emissions

#### Radiated Spurious emissions

##### UL\_4.1MHz AWGN\_MCH\_30MHz-1GHz

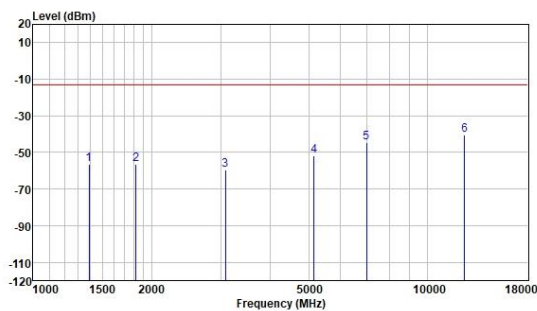


	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	60.07	-82.13	-2.10	-84.23	-13.00	-71.23	VERTICAL
2	99.18	-81.40	-5.23	-86.63	-13.00	-73.63	VERTICAL
3	229.29	-80.71	-6.31	-87.02	-13.00	-74.02	VERTICAL
4	357.93	-79.98	-1.94	-81.92	-13.00	-68.92	VERTICAL
5	530.10	-77.88	1.34	-76.54	-13.00	-63.54	VERTICAL
6	724.26	-80.70	4.18	-76.52	-13.00	-63.52	VERTICAL

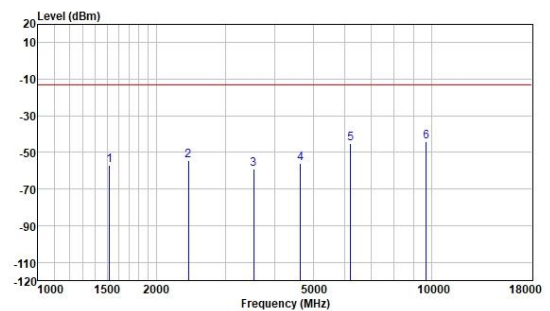


	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	67.91	-81.23	-5.90	-87.13	-13.00	-74.13	HORIZONTAL
2	107.13	-78.46	-9.27	-87.73	-13.00	-74.73	HORIZONTAL
3	187.75	-79.89	-6.21	-86.10	-13.00	-73.10	HORIZONTAL
4	294.11	-80.27	-2.90	-83.17	-13.00	-70.17	HORIZONTAL
5	513.63	-77.91	0.43	-77.48	-13.00	-64.48	HORIZONTAL
6	750.11	-80.62	5.15	-75.47	-13.00	-62.47	HORIZONTAL

##### UL\_4.1MHz AWGN\_MCH\_above 1GHz



	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	1386.26	-60.63	4.06	-56.57	-13.00	-43.57	VERTICAL
2	1824.30	-62.37	6.03	-56.34	-13.00	-43.34	VERTICAL
3	3078.23	-62.62	2.81	-59.81	-13.00	-46.81	VERTICAL
4	5149.20	-63.65	12.00	-51.65	-13.00	-38.65	VERTICAL
5	7015.42	-64.48	20.03	-44.45	-13.00	-31.45	VERTICAL
6	12397.74	-63.30	22.79	-40.51	-13.00	-27.51	VERTICAL



	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	1520.60	-62.02	4.81	-57.21	-13.00	-44.21	HORIZONTAL
2	2407.70	-63.62	9.40	-54.22	-13.00	-41.22	HORIZONTAL
3	3526.13	-62.58	3.72	-58.86	-13.00	-45.86	HORIZONTAL
4	4640.34	-63.30	7.47	-55.83	-13.00	-42.83	HORIZONTAL
5	6213.44	-64.05	19.08	-44.97	-13.00	-31.97	HORIZONTAL
6	9669.16	-62.30	18.03	-44.27	-13.00	-31.27	HORIZONTAL



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### Remark:

Pre-test was performed for all modes (LCH/MCH/HCH, with GSM signal/ with 4.1MHz AWGN signals/ with 100MHz AWGN signals). The spurious emissions 9kHz to 30MHz and above 18GHz were very low and not displayed in this report. Therefore, only show the worst-case data in this report.

--End of Appendix--



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