

# Appendix -

## Test Data and Result for report

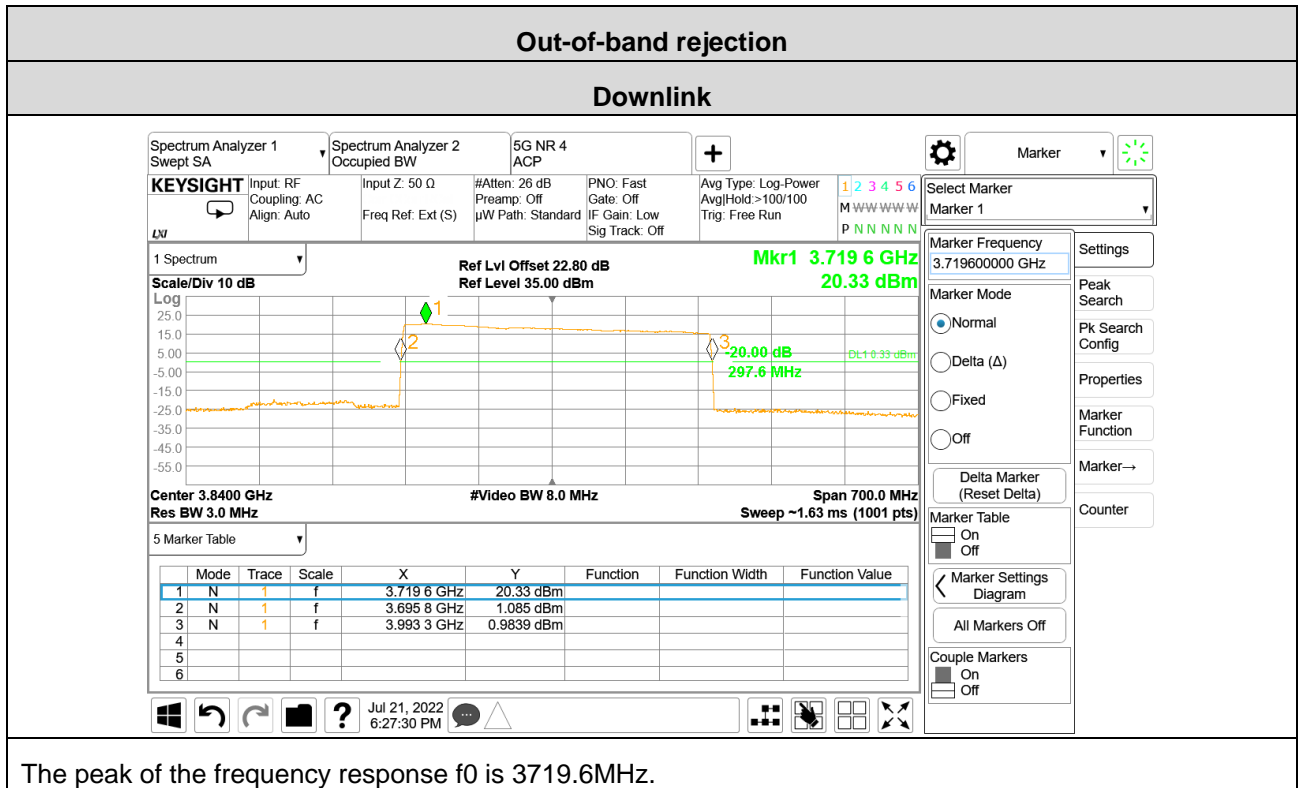
### GZCR220700091603



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### 1 Out-of-band rejection



## 2Input versus Output comparison

Occupied Bandwidth						
Test Path	Test Signal	Test Channel	Signal Level	99% OBW (MHz)		Verdict
				Input	Output	
Downlink	AWGN	MCH	Pre-AGC	4.0858	4.0981	PASS
			3dB above AGC	4.0956	4.0990	PASS
	GSM	MCH	Pre-AGC	0.24559	0.24618	PASS
			3dB above AGC	0.24499	0.24554	PASS

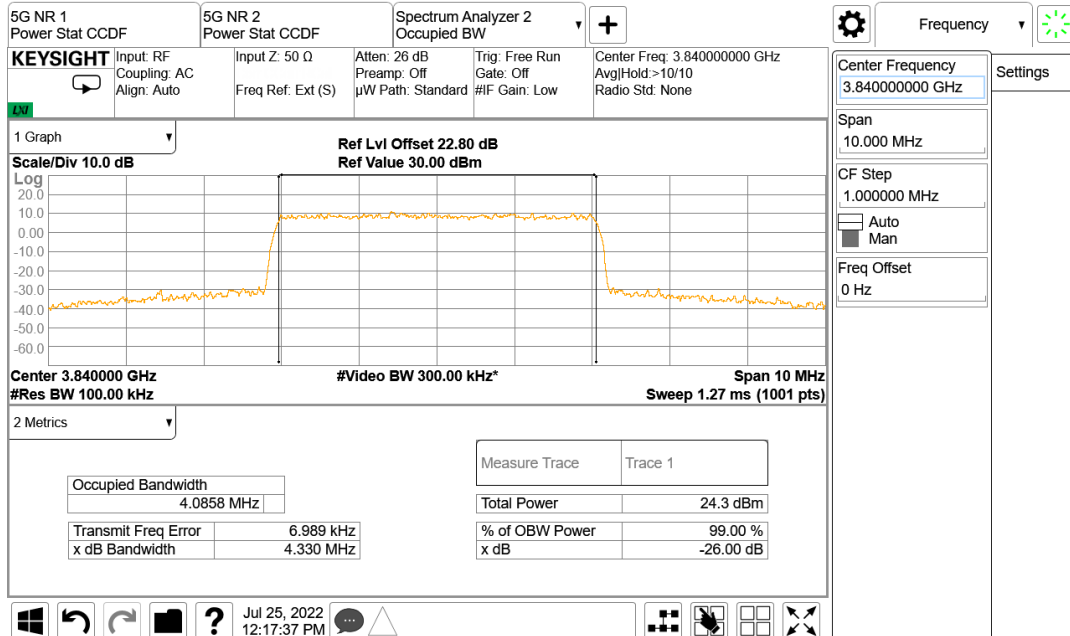


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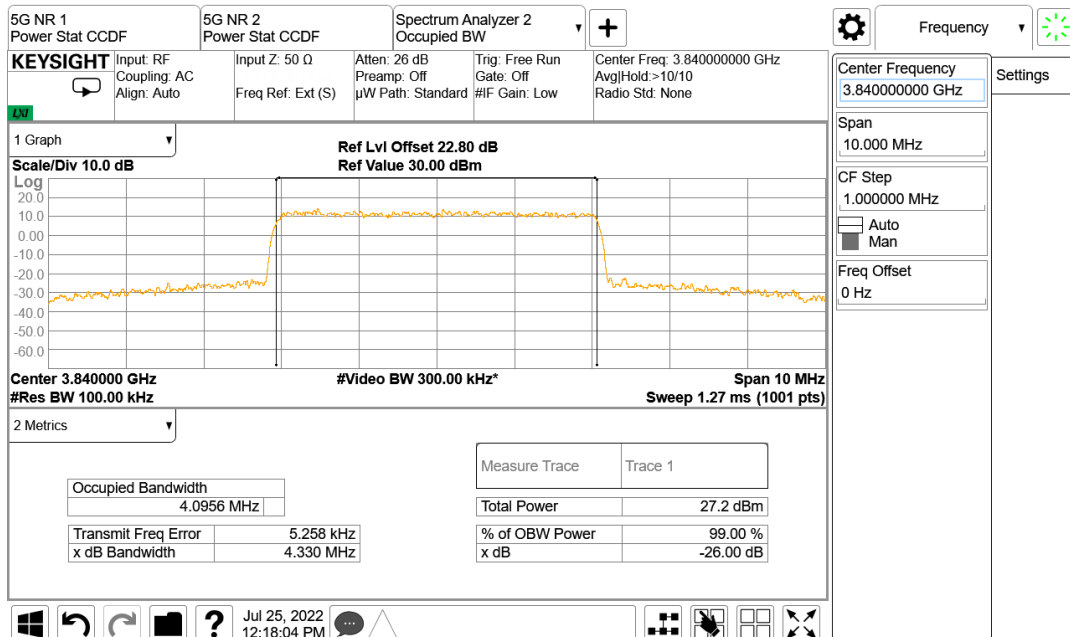
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### 99% OBW

#### Downlink\_AWGN\_MCH\_Input\_Pre-AGC

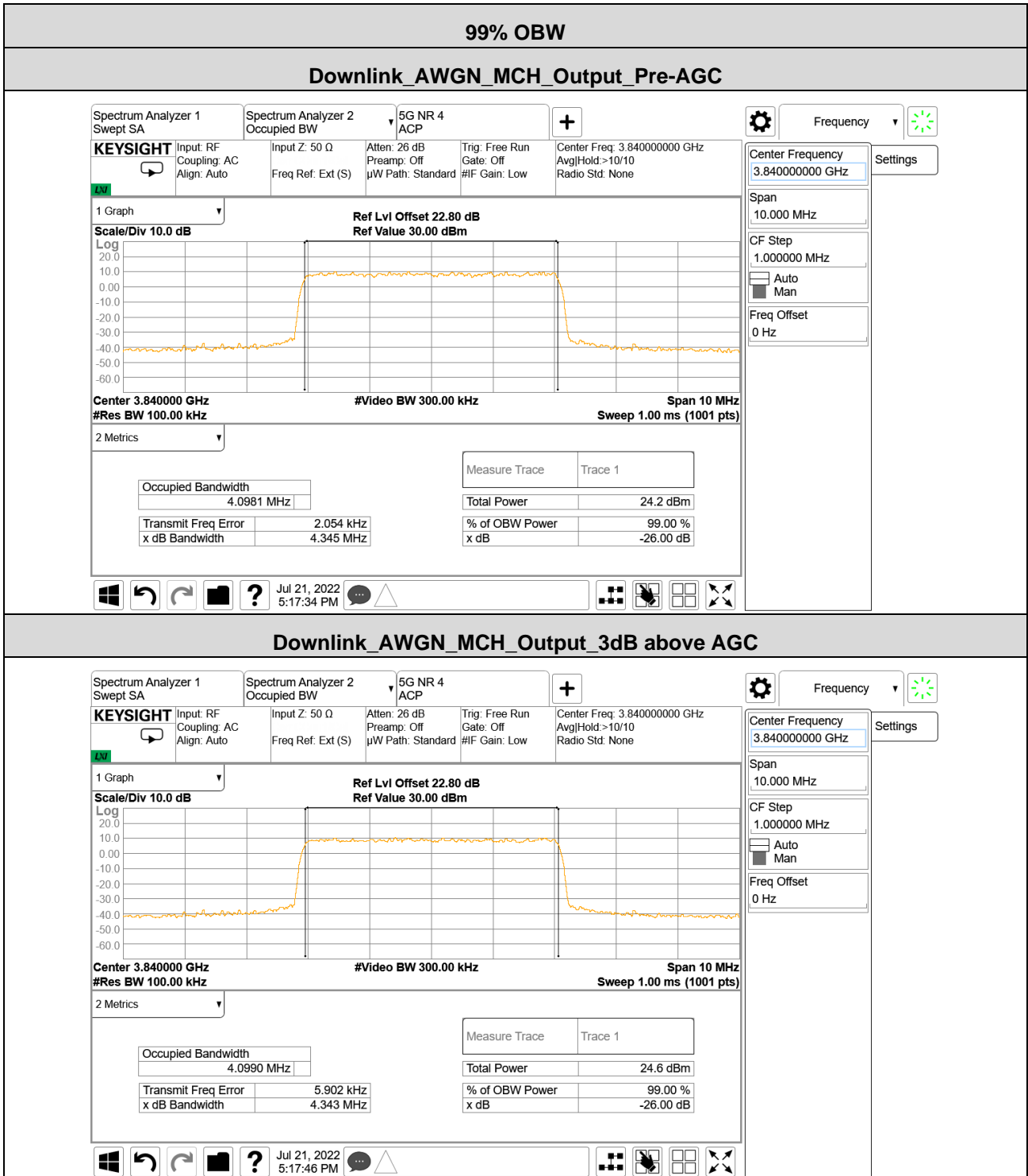


#### Downlink\_AWGN\_MCH\_Input\_3dB above AGC

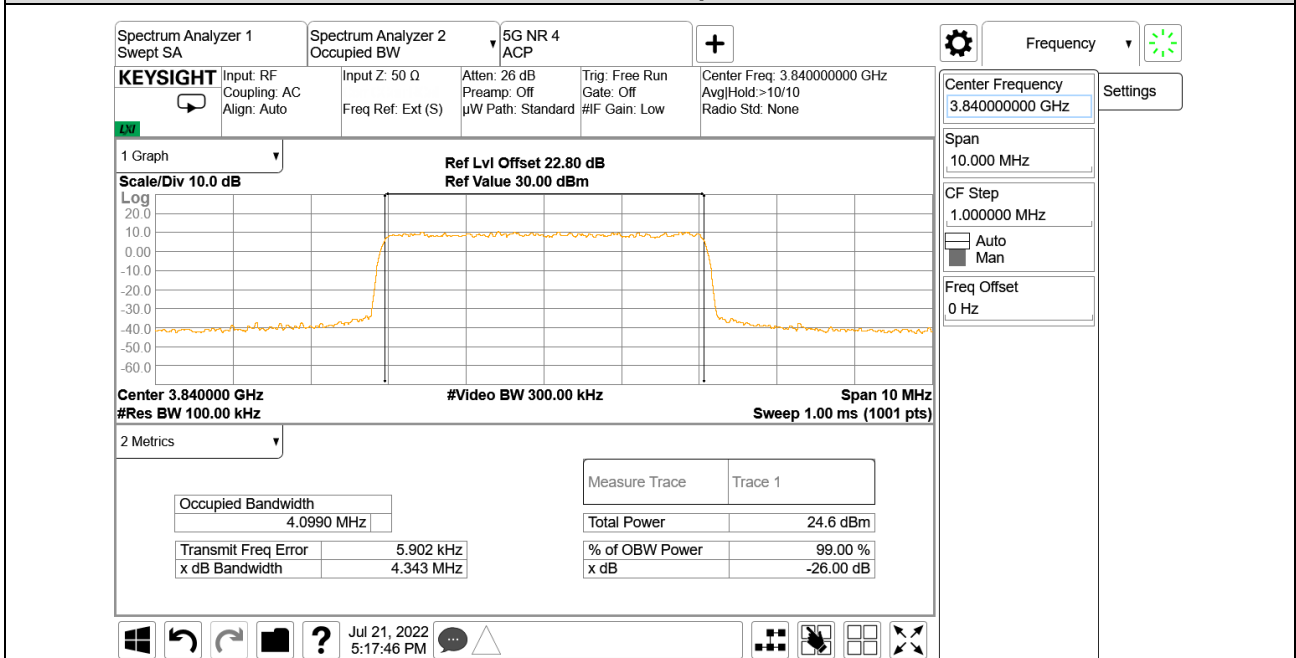


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### Downlink\_AWGN\_MCH\_Output\_3dB above AGC



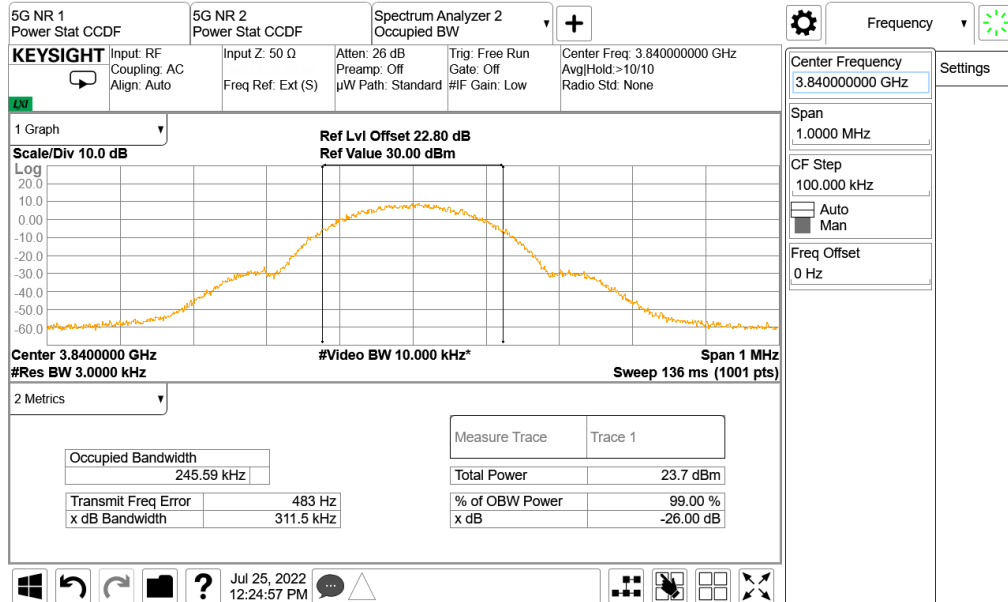
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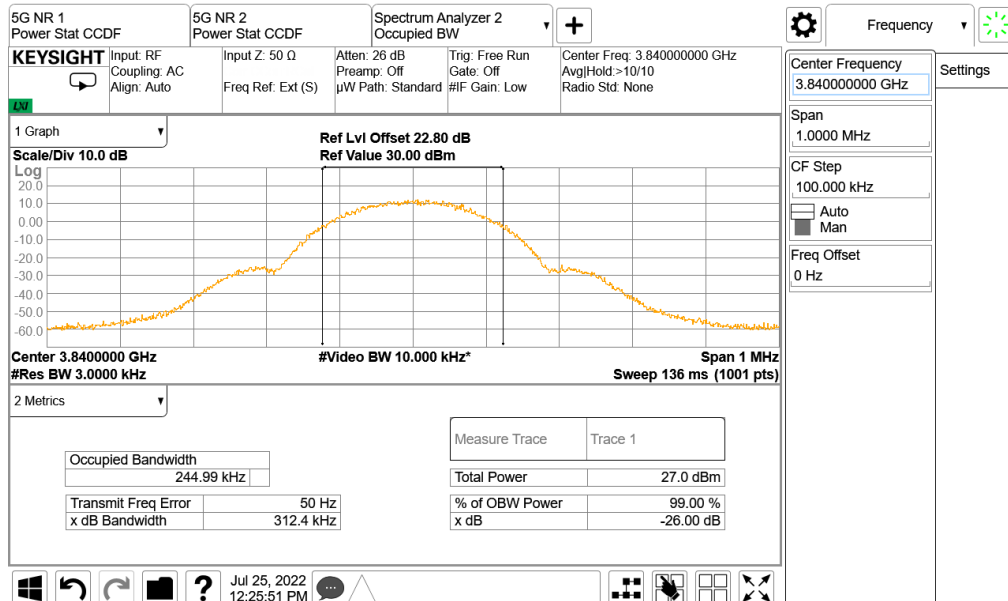


### 99% OBW

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



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





## 3 Mean 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 (W)	Total EIRP (W)	Gain (dB)
Downlink	3719.6	AWGN	Pre-AGC	25.00	24.22	0.265	1.058	-0.78
			3dB above AGC	28.00	24.40	0.276	1.102	/
		GSM	Pre-AGC	25.00	24.16	0.261	1.042	-0.84
			3dB above AGC	28.00	24.09	0.257	1.026	/
Remark: 1. f0 is from Out-of-band Rejection test in the report. 2. EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 0dBi declared by the manufacturer, the directional gain = G <sub>ANT</sub> + 10 log (N <sub>ANT</sub> ) dBi = 3dBi								

Mean output power								
Test Path	Test Freq. f0 (MHz)	Test Signal	Signal Level	Input power (dBm/MHz)	Output Power (dBm/MHz)	EIRP (W/MHz)	Total EIRP (W/MHz)	Verdict
Downlink	3719.6	AWGN	Pre-AGC	19.00	18.88	0.077	0.308	PASS
			3dB above AGC	22.00	19.12	0.082	0.328	PASS
		GSM	Pre-AGC	25.00	24.16	0.261	1.042	PASS
			3dB above AGC	28.00	24.09	0.257	1.026	PASS
Remark: 1. f0 is from Out-of-band Rejection test in the report. 2. EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 0dBi declared by the manufacturer, the directional gain = G <sub>ANT</sub> + 10 log (N <sub>ANT</sub> ) dBi = 3dBi. 3. The output power is limited to an EIRP of 1640W/MHz.								





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Peak-to-average ratio (PAR)							
Test path	Test freq. f0 (MHz)	Test Signal	Signal level	Input power (dBm)	PAR (dB)	Limit (dB)	Verdict
Downlink	3719.6	AWGN	Pre-AGC	25.00	8.50	≤ 13	PASS
			3dB above AGC	28.00	8.30		PASS
		GSM	Pre-AGC	25.00	1.78		PASS
			3dB above AGC	28.00	1.57		PASS



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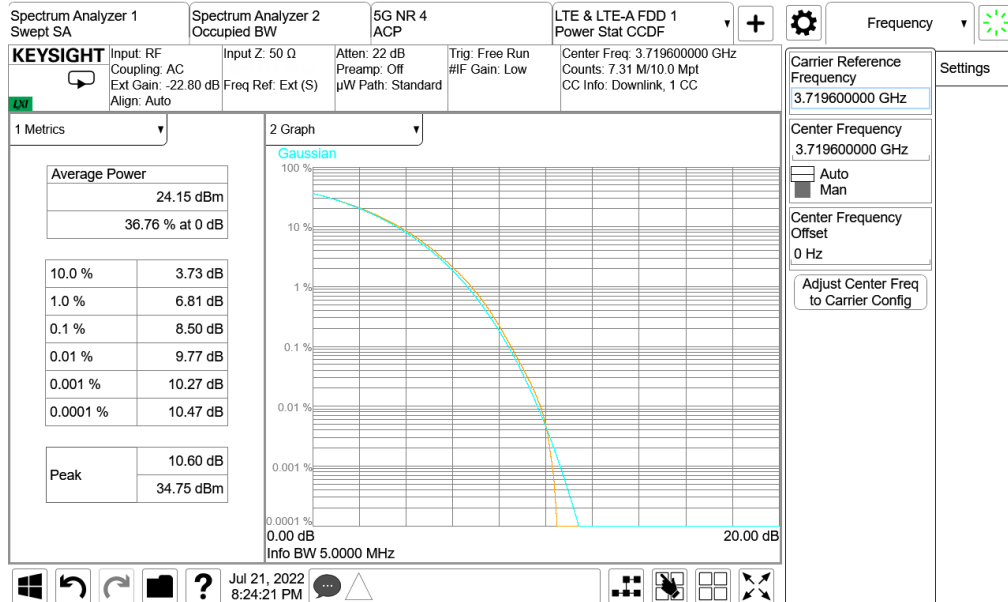
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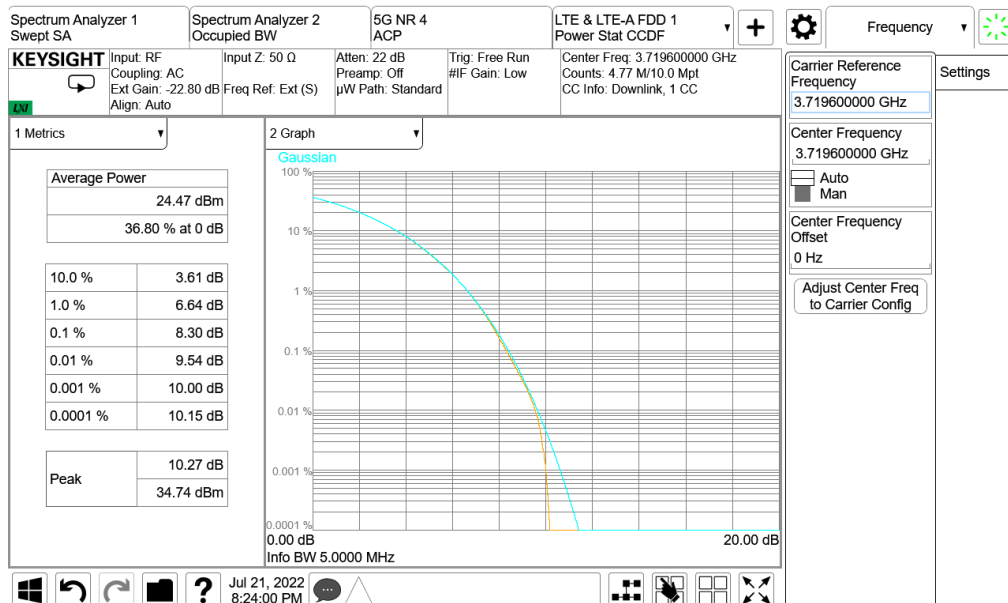
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### Peak-to-average ratio (PAR)

#### Downlink\_AWGN\_Pre-AGC



#### Downlink\_AWGN\_3dB above AGC

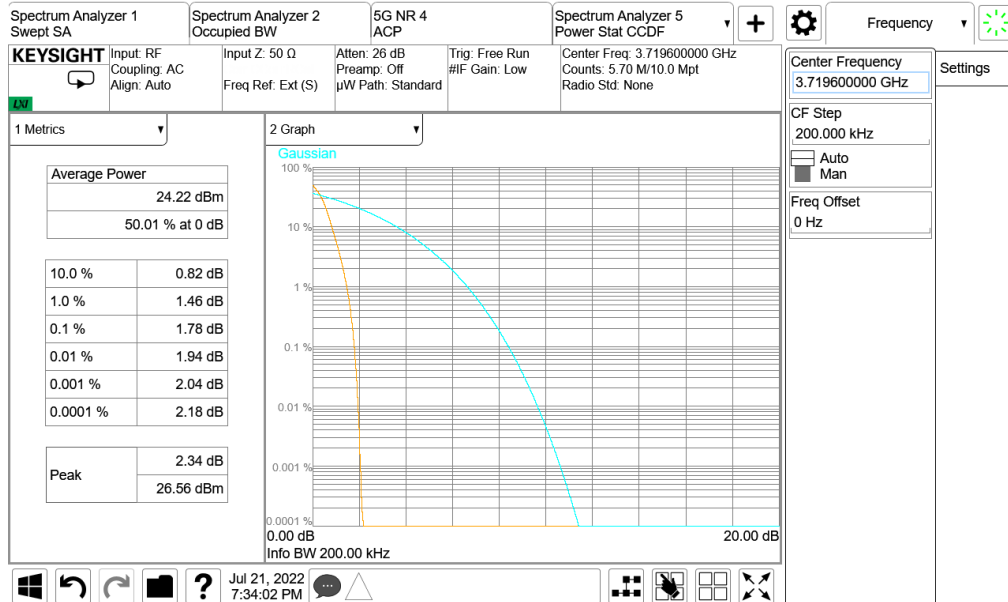


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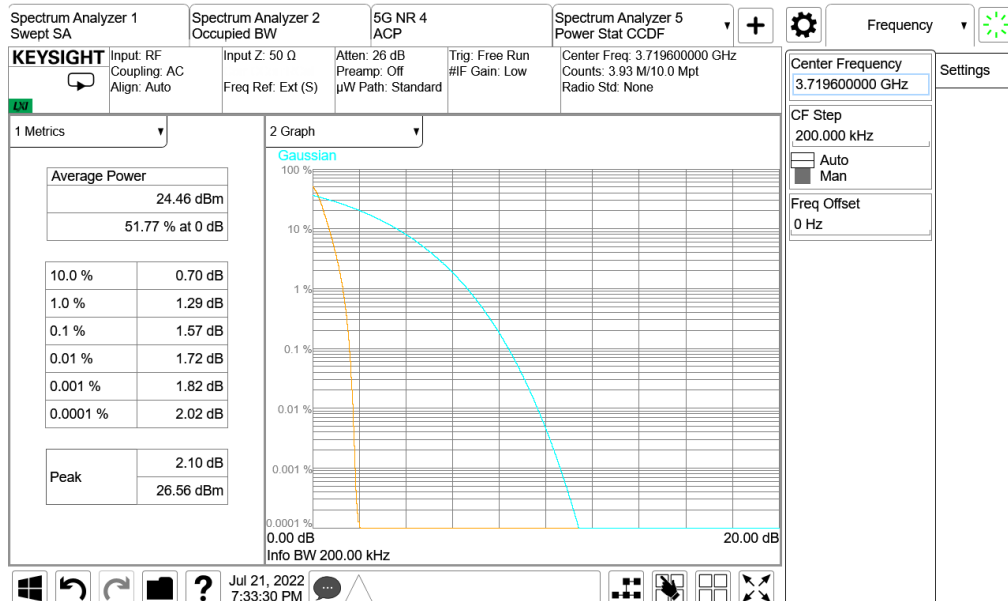
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### Peak-to-average ratio (PAR)

#### Downlink\_GSM\_Pre-AGC



#### Downlink\_GSM\_3dB above AGC



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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		Limit (dBm/MHz)	Verdict
					(dBm/200kHz)	(dBm/MHz)		
Downlink	LCH	AWGN	a single test signal	Pre-AGC	-36.82	-29.83	≤-16	PASS
				3dB above AGC	-37.24	-30.25		PASS
			two adjacent test signals	Pre-AGC	-38.56	-31.57		PASS
				3dB above AGC	-37.22	-30.23		PASS
	HCH		a single test signal	Pre-AGC	-38.29	-31.30		PASS
				3dB above AGC	-38.82	-31.83		PASS
			two adjacent test signals	Pre-AGC	-40.01	-33.02		PASS
				3dB above AGC	-38.61	-31.62		PASS
Remark: 1. The level in 1MHz RBW= the level in 200kHz RBW+ 10lg(1000/200). 2. For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2), so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.								

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/MHz)	Verdict
					(dBm/10kHz)	(dBm/MHz)		
Downlink	LCH	GSM	a single test signal	Pre-AGC	-42.17	-22.17	≤-16	PASS
				3dB above AGC	-41.77	-21.77		PASS
			two adjacent test signals	Pre-AGC	-39.78	-19.78		PASS
				3dB above AGC	-40.02	-20.02		PASS
	HCH		a single test signal	Pre-AGC	-43.91	-23.91		PASS
				3dB above AGC	-44.44	-24.44		PASS
			two adjacent test signals	Pre-AGC	-42.30	-22.30		PASS
				3dB above AGC	-42.84	-22.84		PASS
Remark: 1. The level in 1MHz RBW= the level in 10kHz RBW+ 10lg(1000/10). 2. For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2), so the limit was calculated to show -16dBm/MHz in order to determine the test result conveniently.								



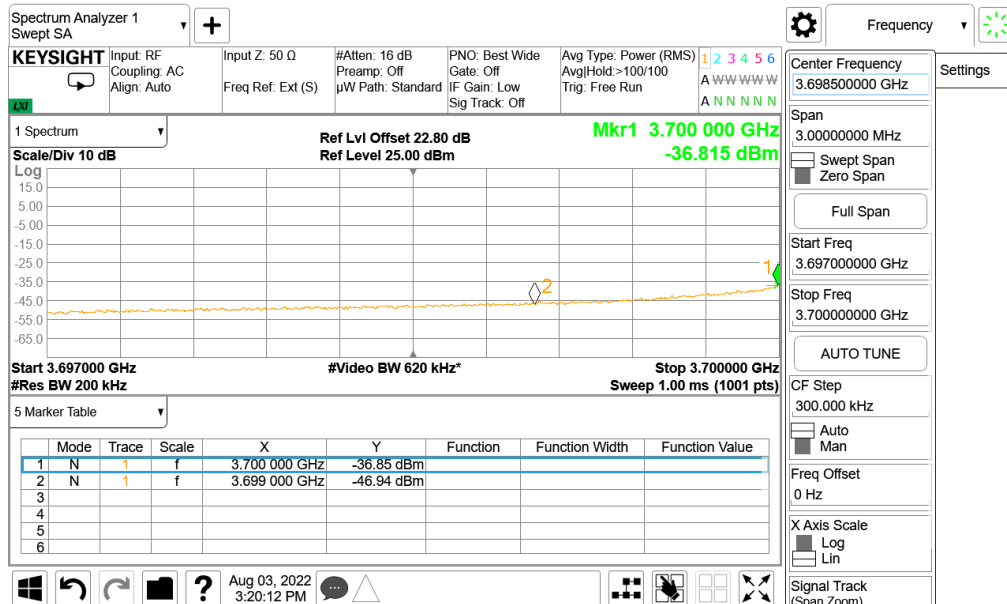
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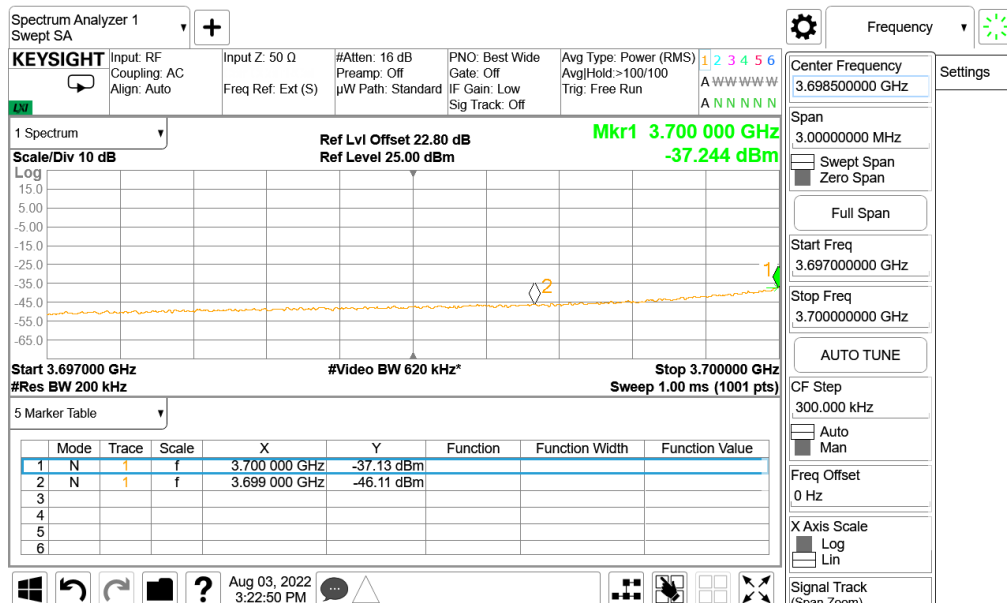


### Out-of-band/out-of-block emissions

#### Downlink\_AWGN\_LCH\_a single test signal\_Pre-AGC

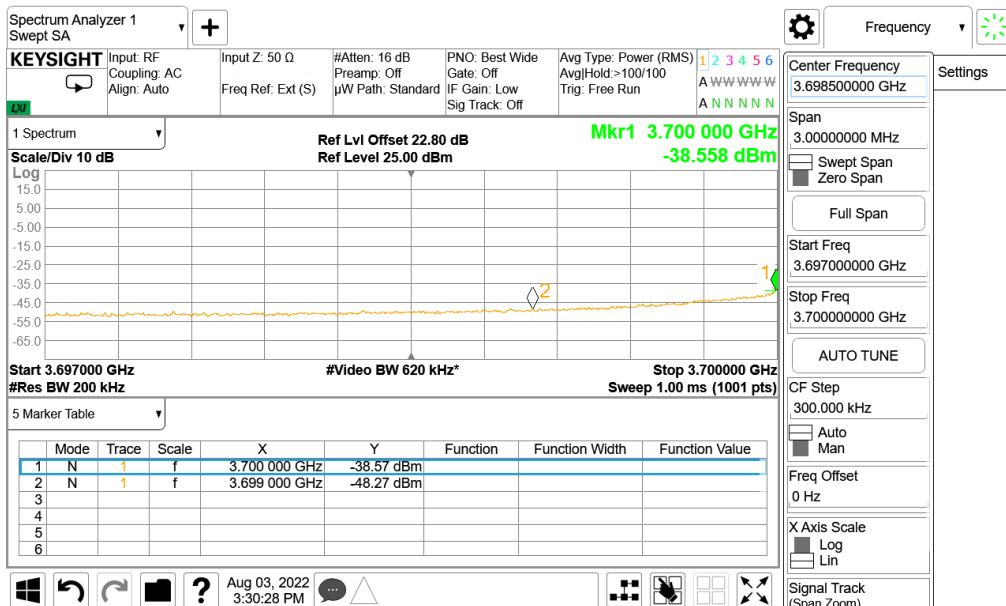


#### Downlink\_AWGN\_LCH\_a single test signal\_3dB above AGC

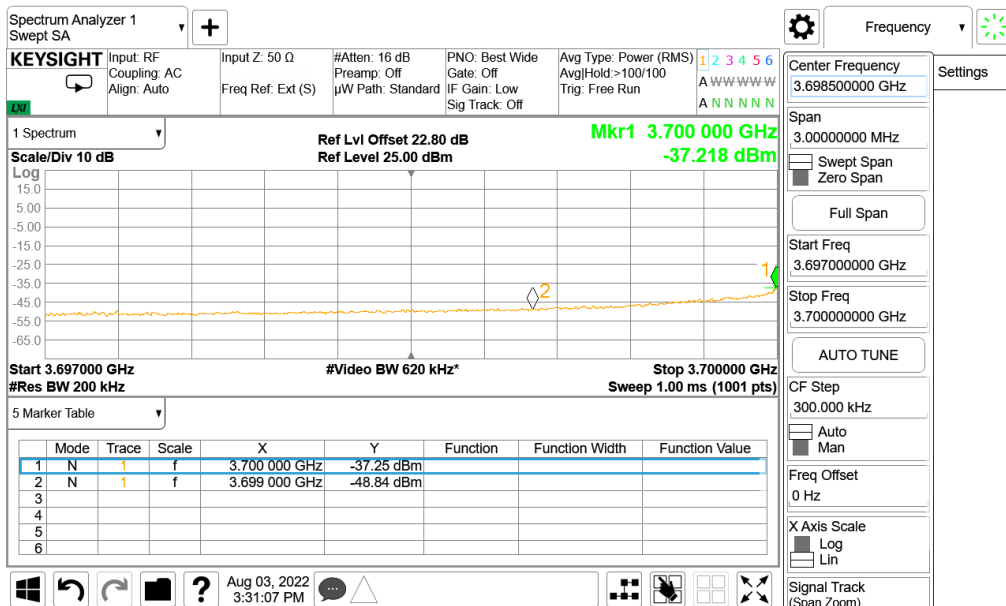


### Out-of-band/out-of-block emissions

#### Downlink\_AWGN\_LCH\_two adjacent test signals\_Pre-AGC



#### Downlink\_AWGN\_LCH\_two adjacent test signals\_3dB above AGC

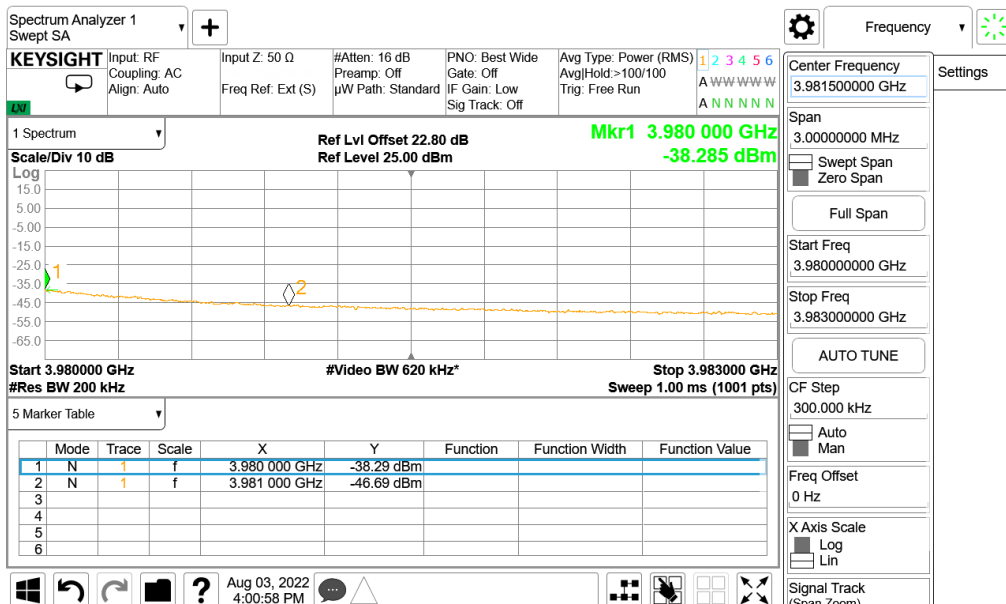


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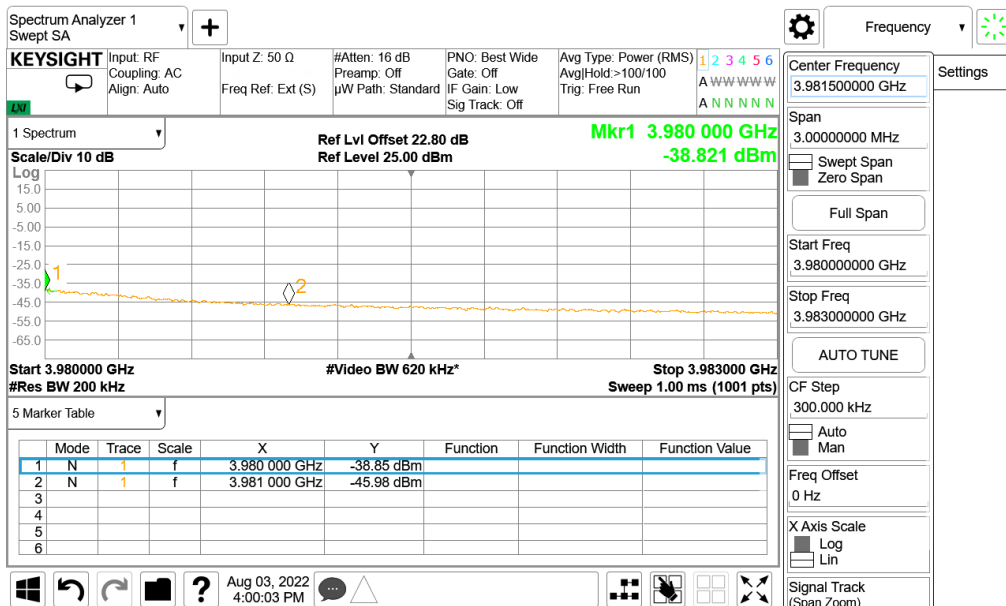
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### Out-of-band/out-of-block emissions

#### Downlink\_AWGN\_HCH\_a single test signal\_Pre-AGC

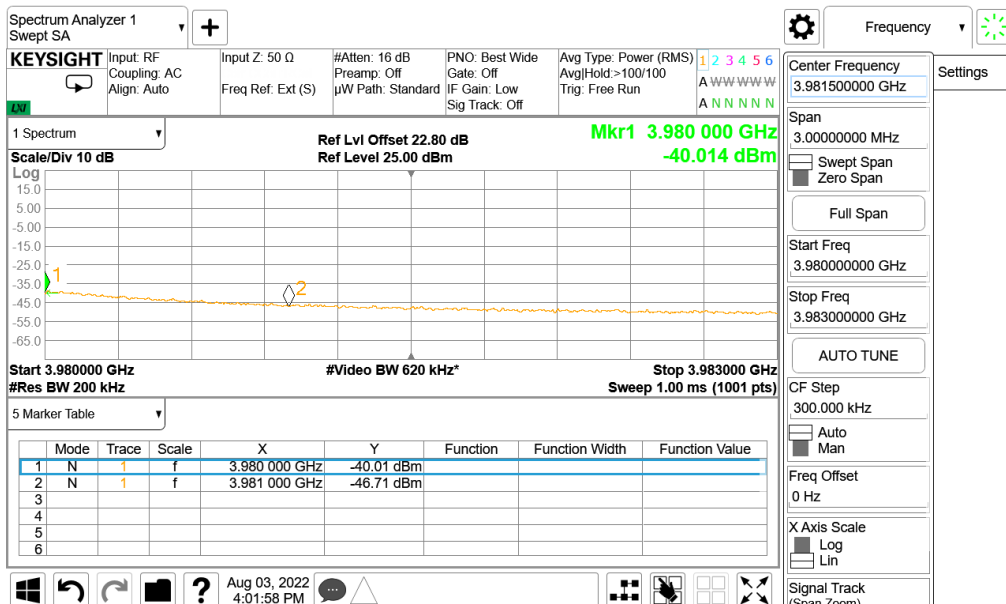


#### Downlink\_AWGN\_HCH\_a single test signal\_3dB above AGC

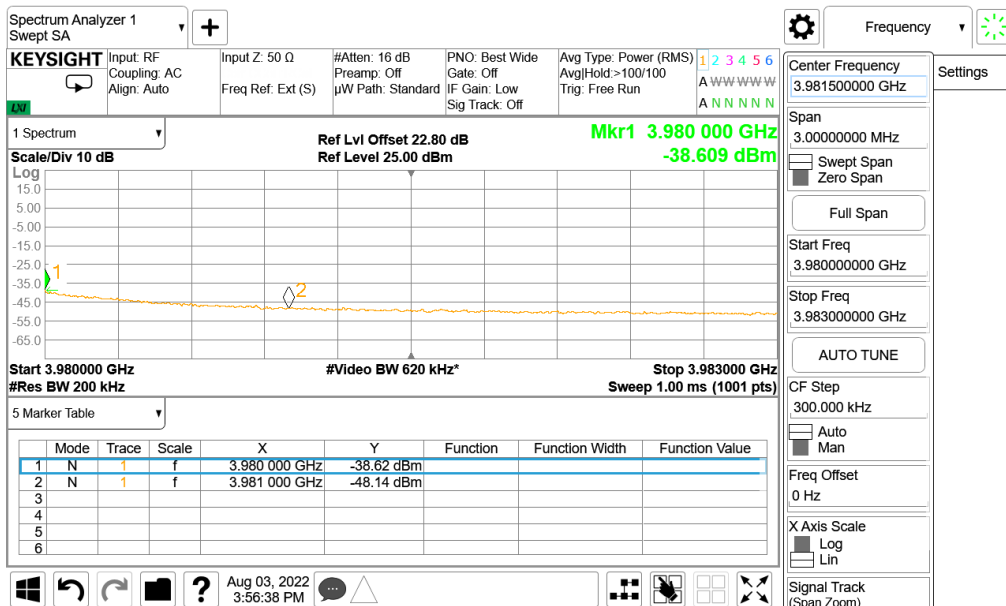


### Out-of-band/out-of-block emissions

#### Downlink\_AWGN\_HCH\_two adjacent test signals\_Pre-AGC



#### Downlink\_AWGN\_HCH\_two adjacent test signals\_3dB above AGC



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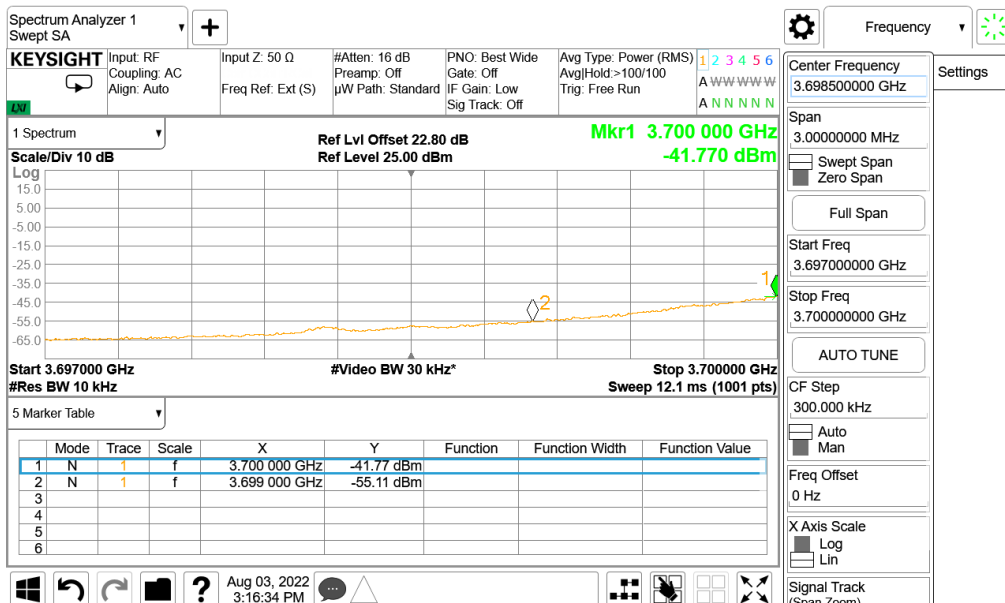


### Out-of-band/out-of-block emissions

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



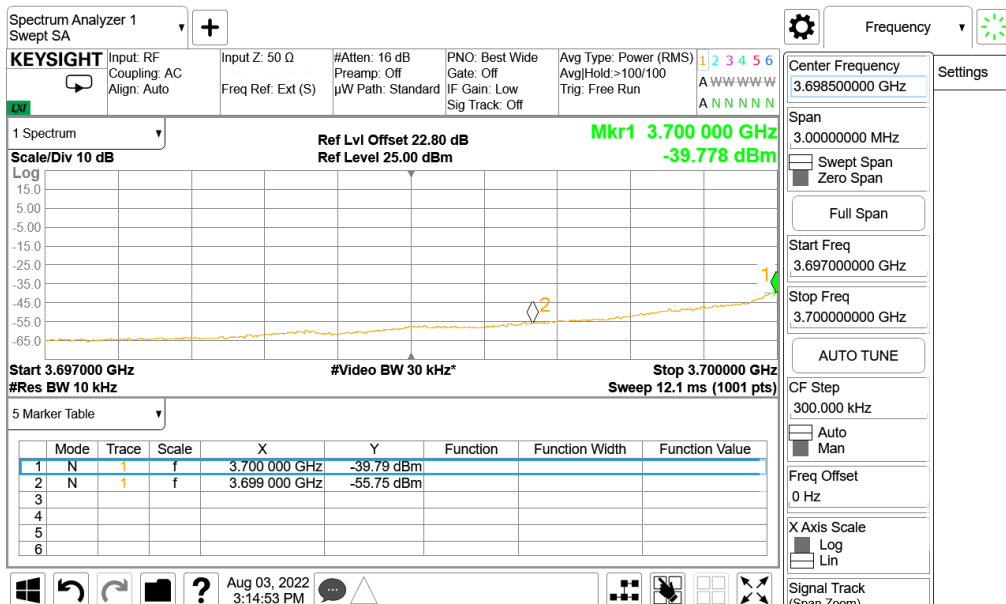
#### Downlink\_GSM\_LCH\_a single test signal\_3dB above AGC



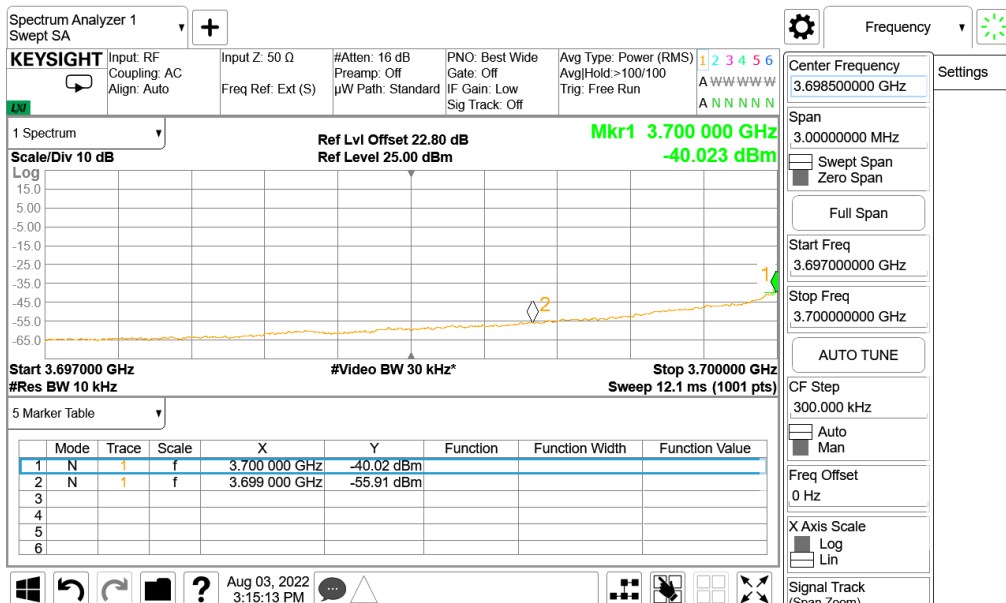


### Out-of-band/out-of-block emissions

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



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

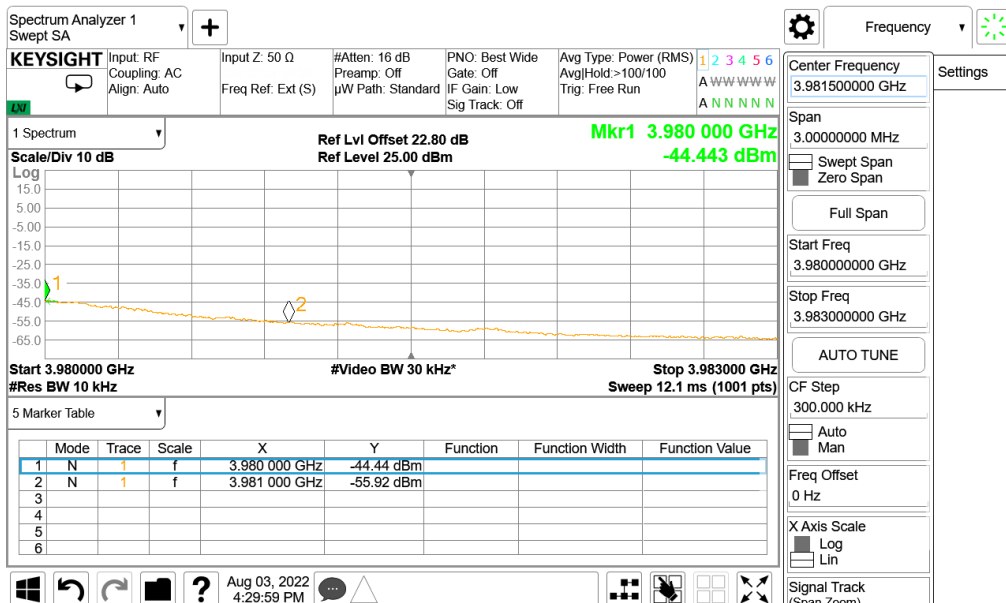


### Out-of-band/out-of-block emissions

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

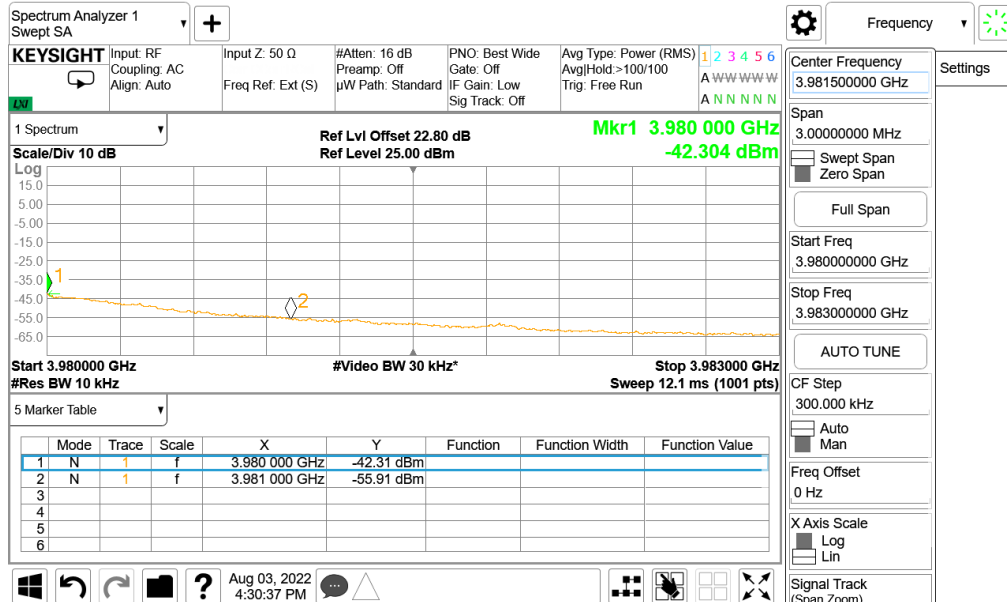


#### Downlink\_GSM\_HCH\_a single test signal\_3dB above AGC



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

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



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



## 5 Conducted Spurious emissions

Conducted spurious emissions							
Test Path	Test Channel	Test Signal	Signal Level	Frequency range (MHz)	Worst test level (dBm/MHz)	Limit (dBm/MHz)	Verdict
Downlink	HCH	AWGN	Pre-AGC	30-1000	-60.06	≤ -16	PASS
				1000-3699	-43.09	≤ -16	PASS
				3981-40000	-21.81	≤ -16	PASS
	MCH			30-1000	-59.44	≤ -16	PASS
				1000-3699	-42.99	≤ -16	PASS
				3981-40000	-42.32	≤ -16	PASS
	LCH			30-1000	-59.35	≤ -16	PASS
				1000-3699	-24.19	≤ -16	PASS
				3981-40000	-42.28	≤ -16	PASS
	HCH	GSM	Pre-AGC	30-1000	-59.64	≤ -16	PASS
				1000-3699	-42.90	≤ -16	PASS
				3981-40000	-22.18	≤ -16	PASS
	MCH			30-1000	-59.44	≤ -16	PASS
				1000-3699	-42.90	≤ -16	PASS
				3981-40000	-42.33	≤ -16	PASS
	LCH			30-1000	-59.59	≤ -16	PASS
				1000-3699	-21.90	≤ -16	PASS
				3981-40000	-42.27	≤ -16	PASS

Remark:  
For 2×2 MIMO, one of ANT ports was measured and the limit shall be reduced by 10lg(2), so the limit was calculated to show -16dBm/MHz individually in order to determine the test result conveniently.

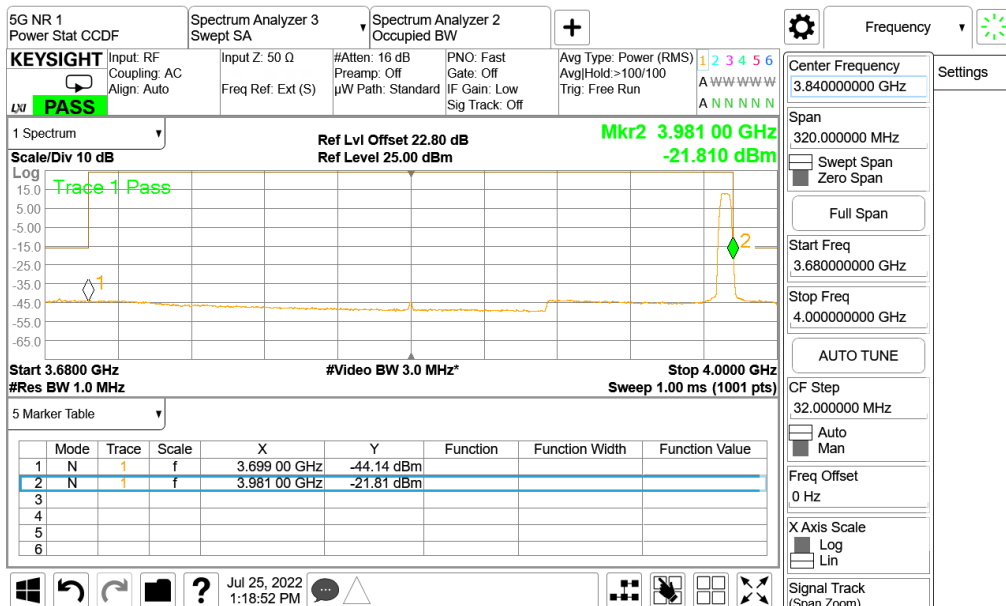




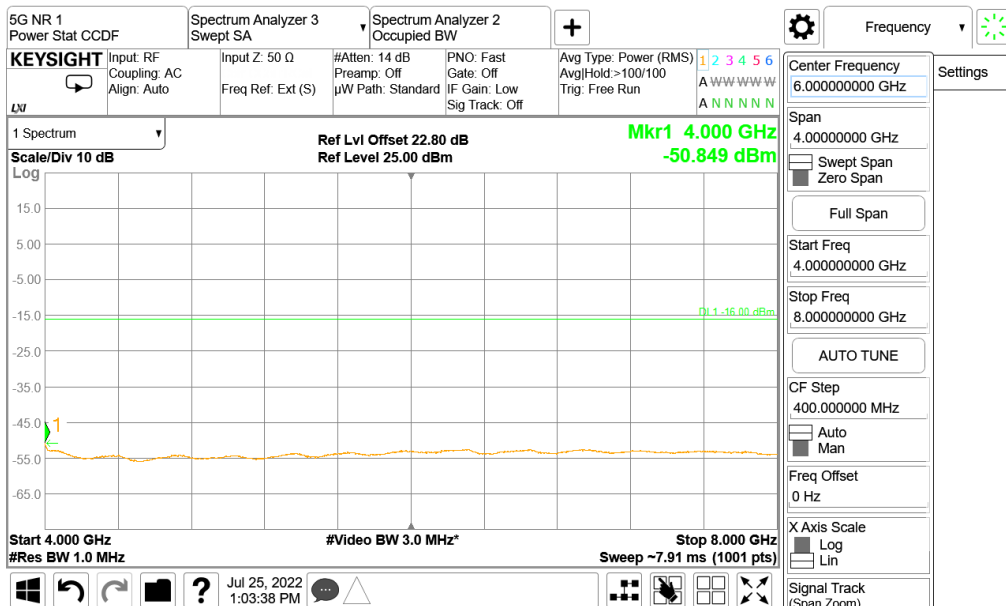


### Conducted spurious emissions

#### Downlink\_AWGN\_HCH

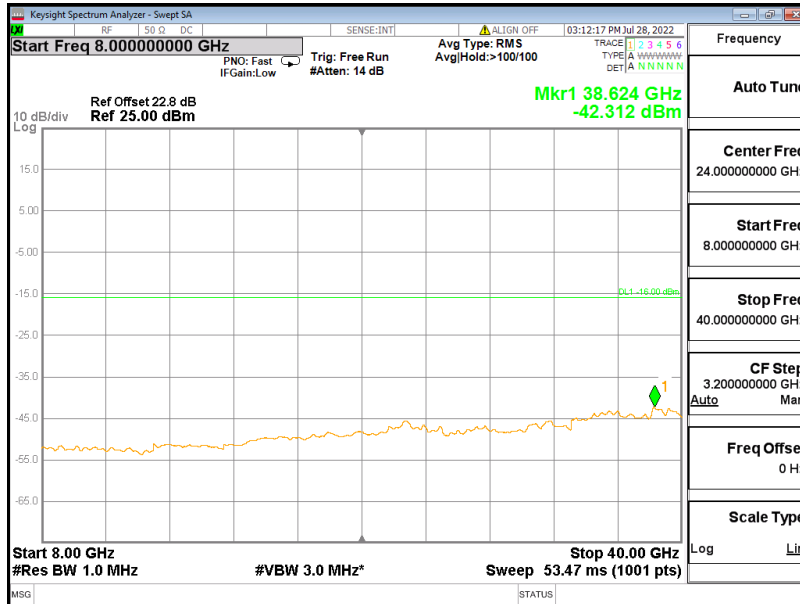


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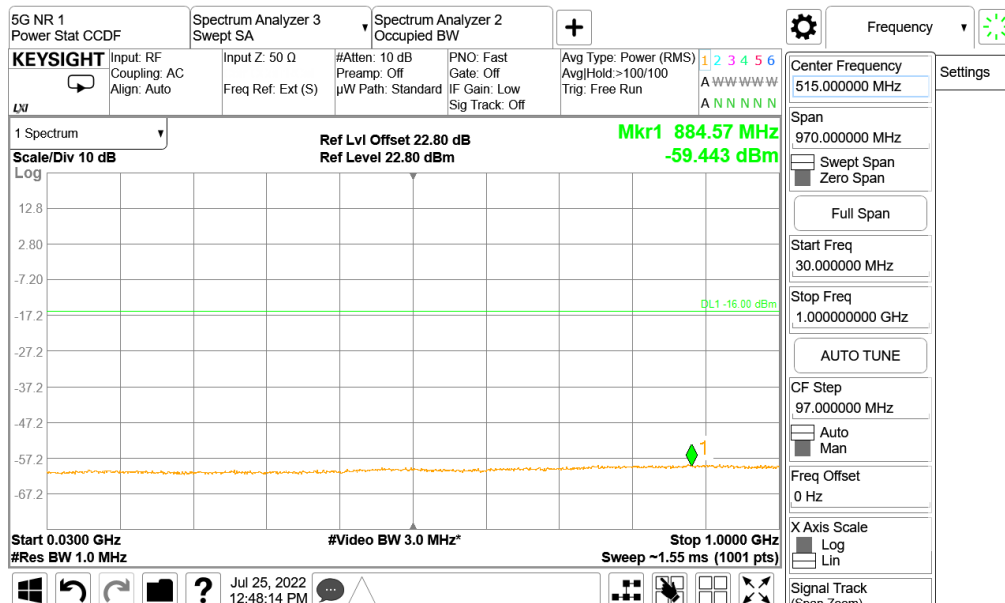


### Conducted spurious emissions

#### Downlink\_AWGN\_HCH



#### Downlink\_AWGN\_MCH

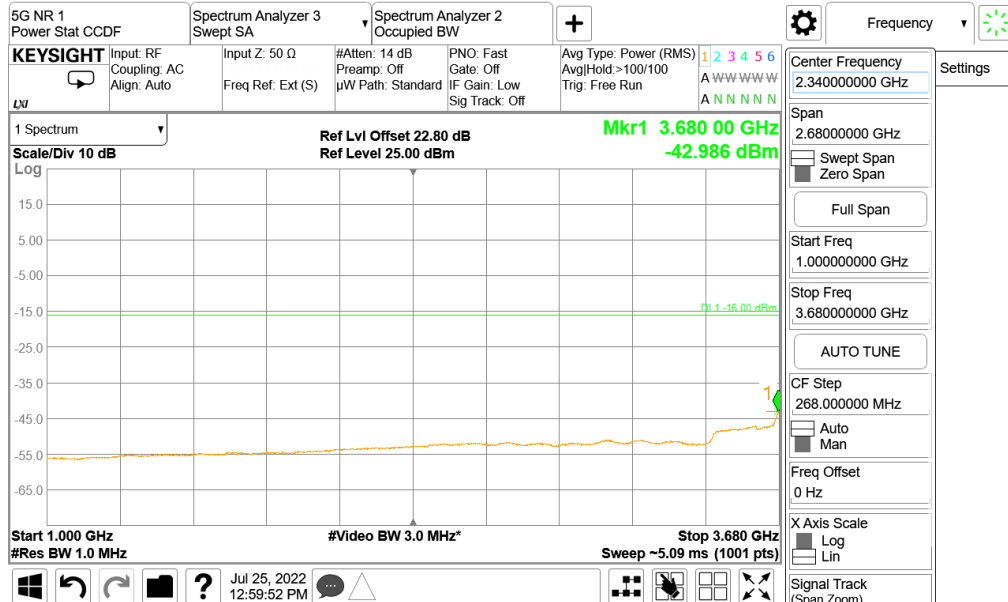


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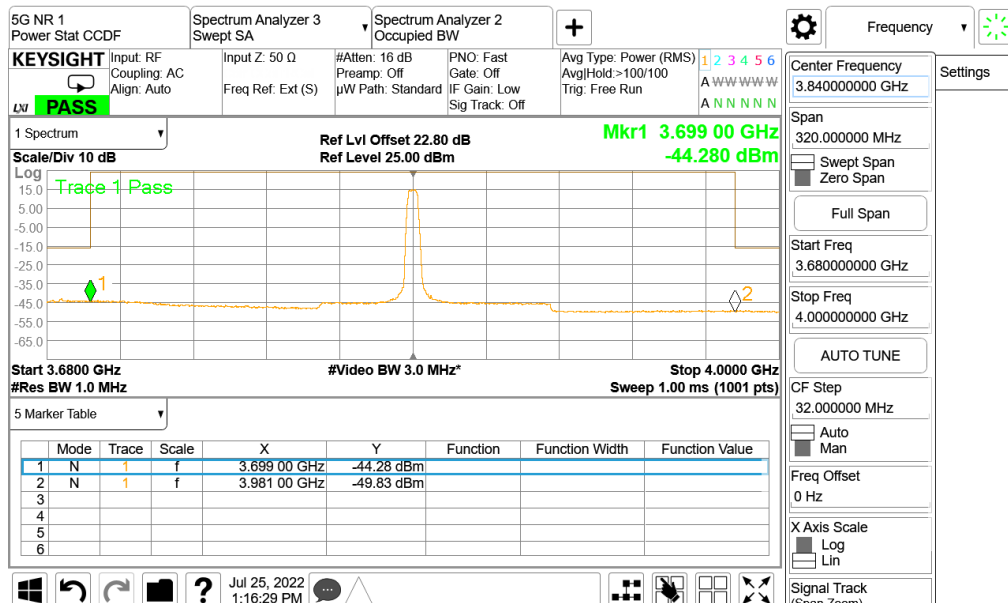
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### Conducted spurious emissions

#### Downlink\_AWGN\_MCH

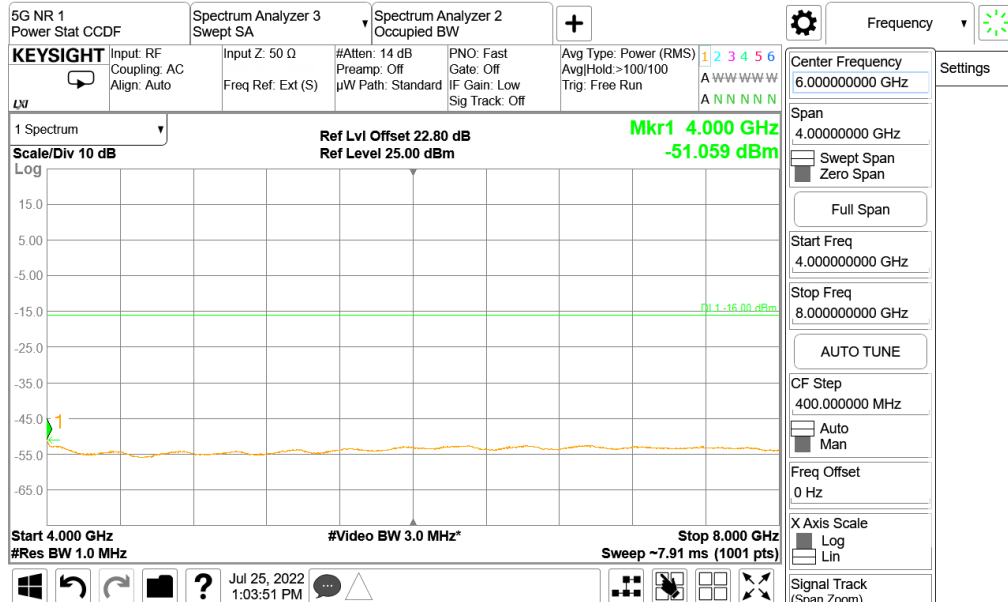


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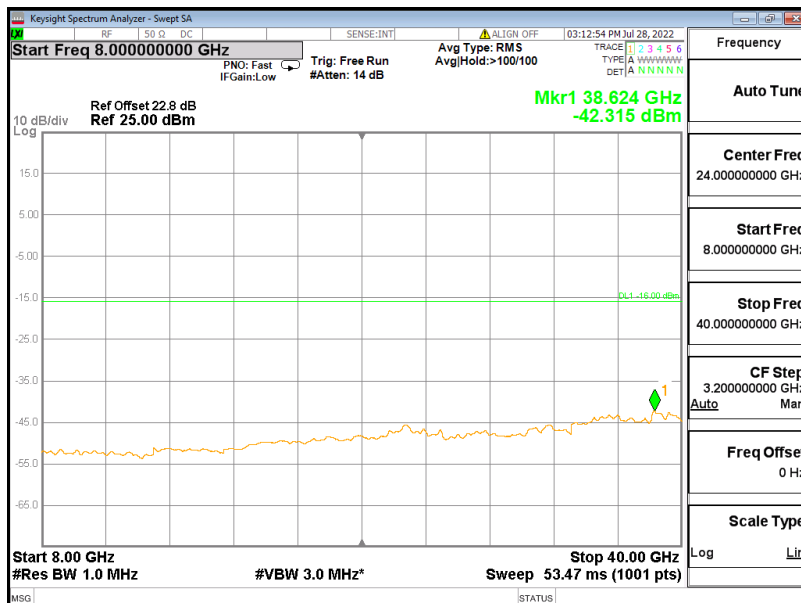


### Conducted spurious emissions

#### Downlink\_AWGN\_MCH



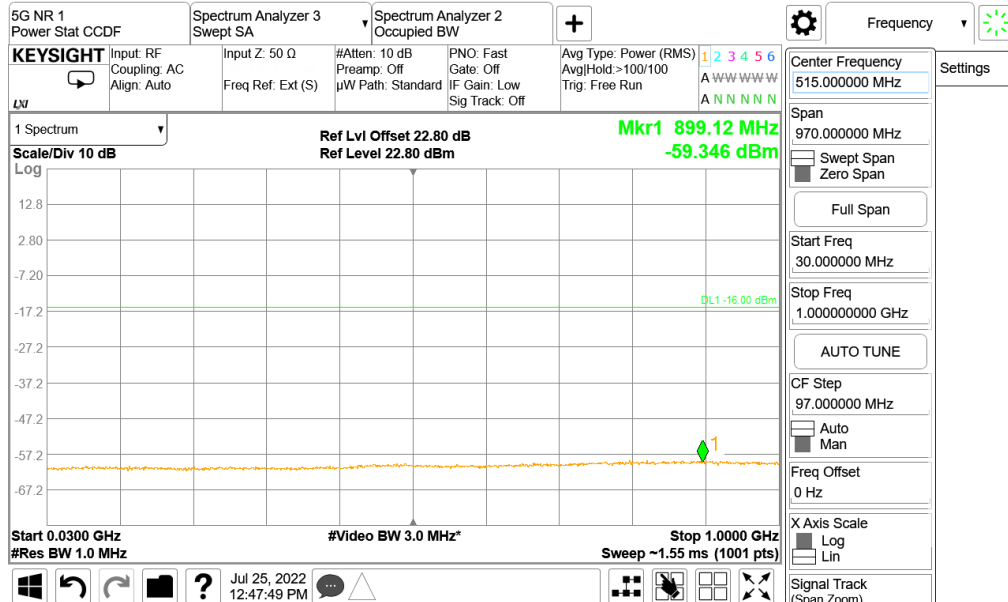
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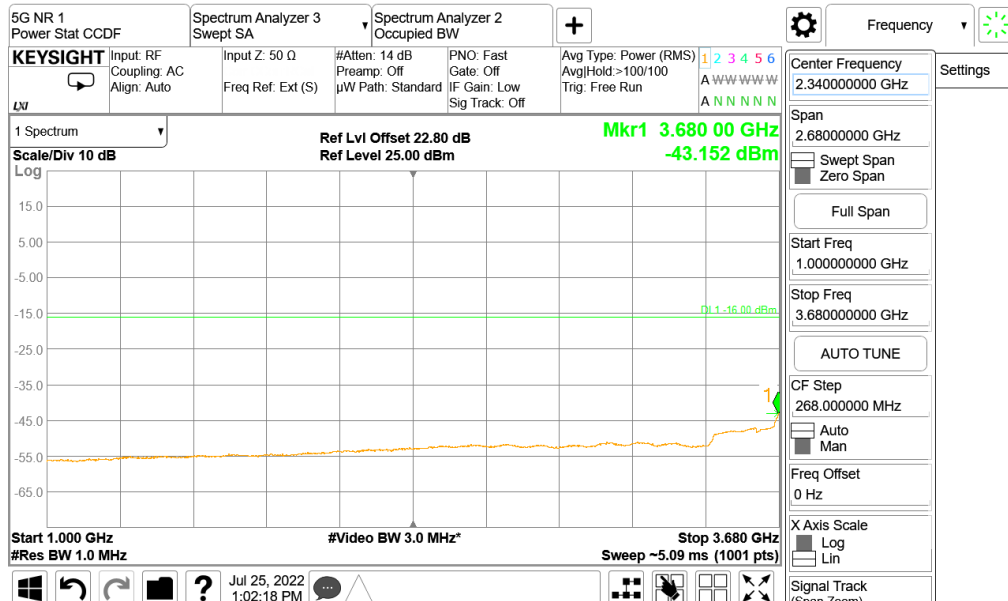


### Conducted spurious emissions

#### Downlink\_AWGN\_LCH



#### Downlink\_AWGN\_LCH



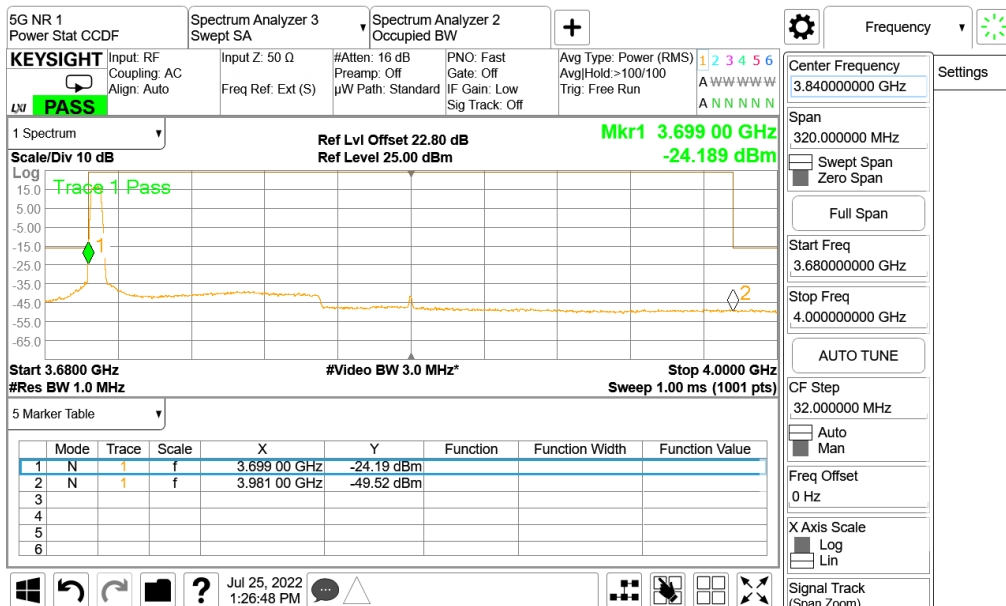
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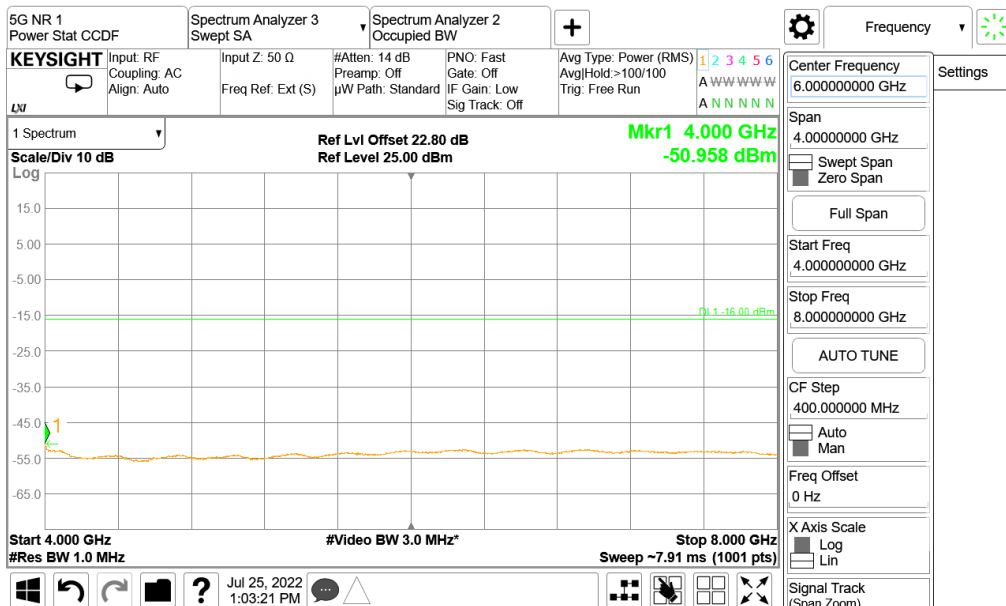


### Conducted spurious emissions

#### Downlink\_AWGN\_LCH



#### Downlink\_AWGN\_LCH

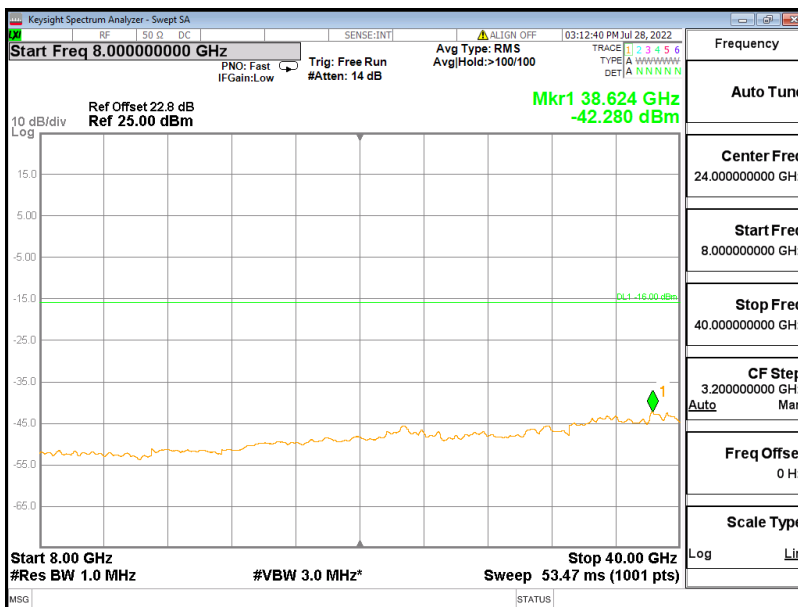


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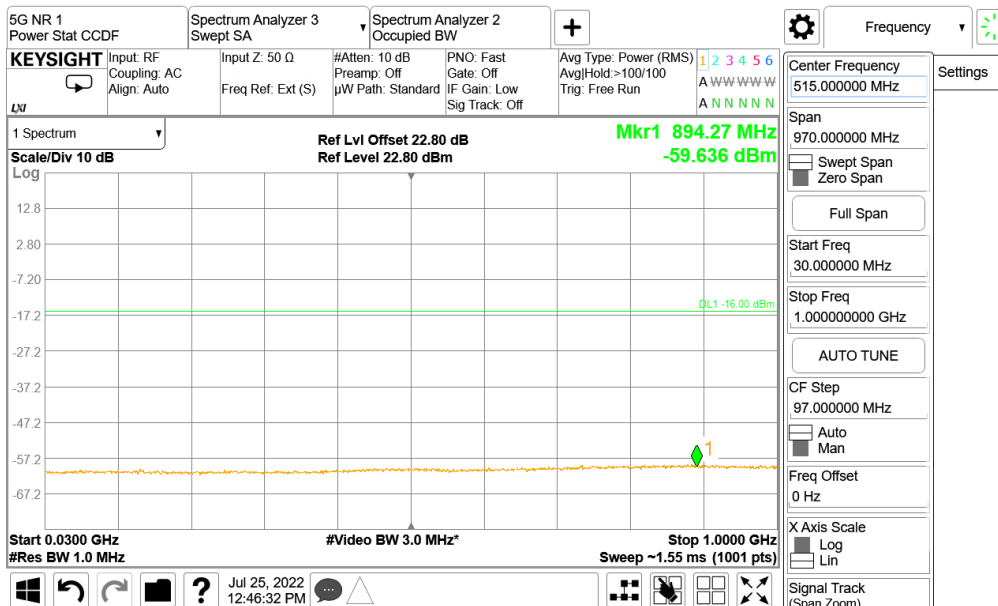
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### Conducted spurious emissions

#### Downlink\_AWGN\_LCH

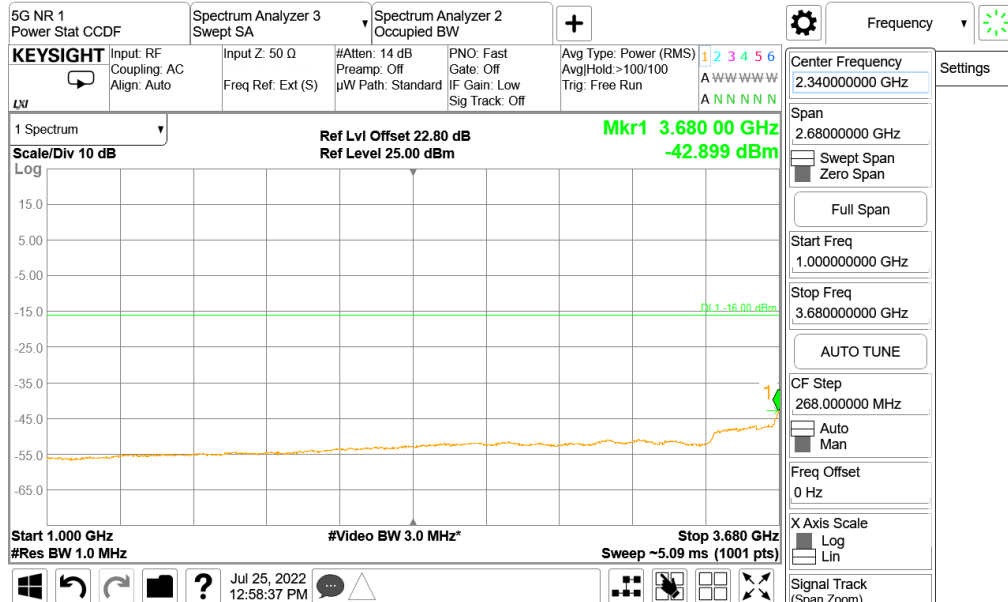


#### Downlink\_GSM\_HCH

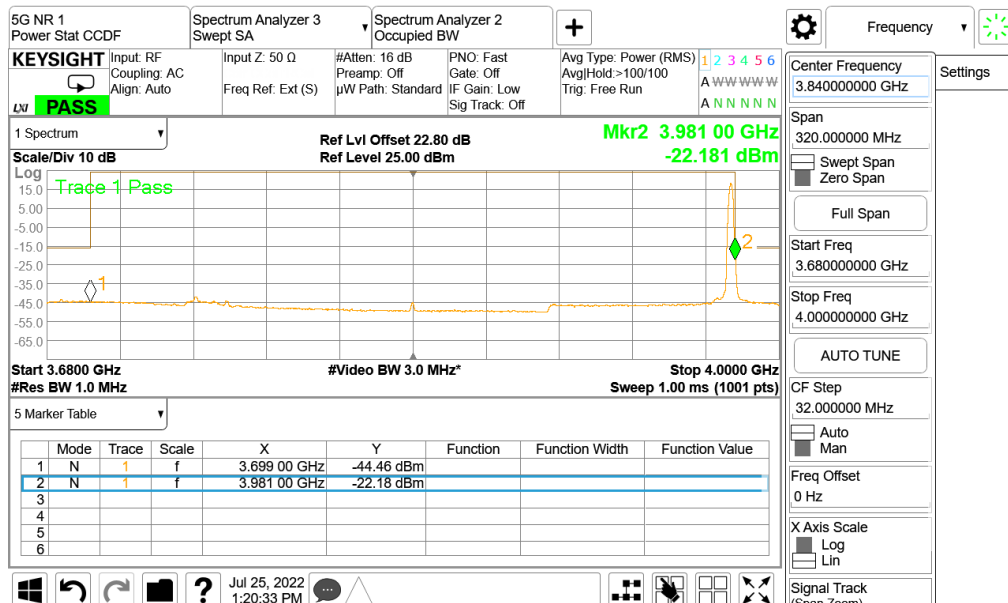


### Conducted spurious emissions

#### Downlink\_GSM\_HCH

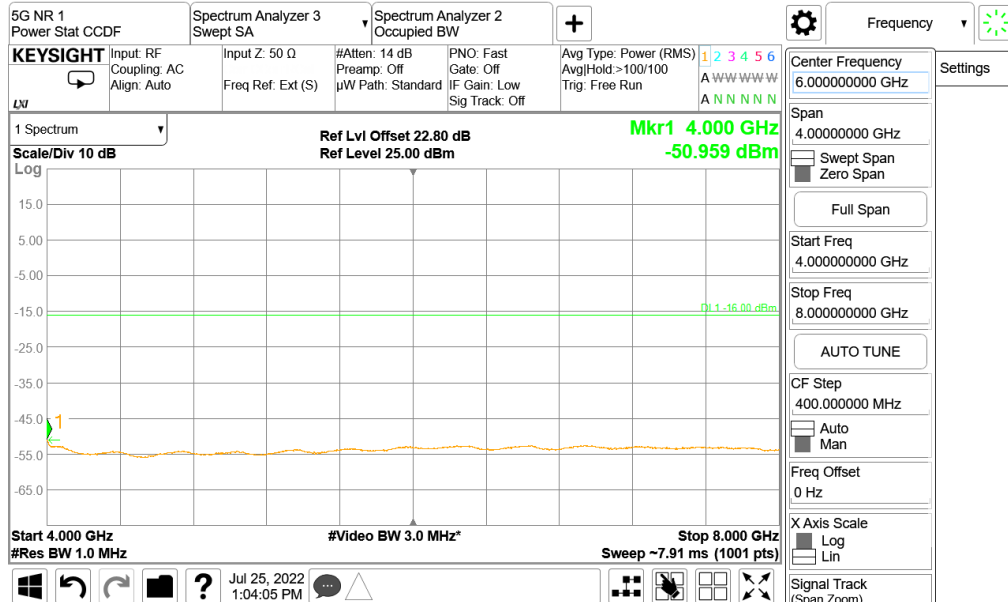


#### Downlink\_GSM\_HCH

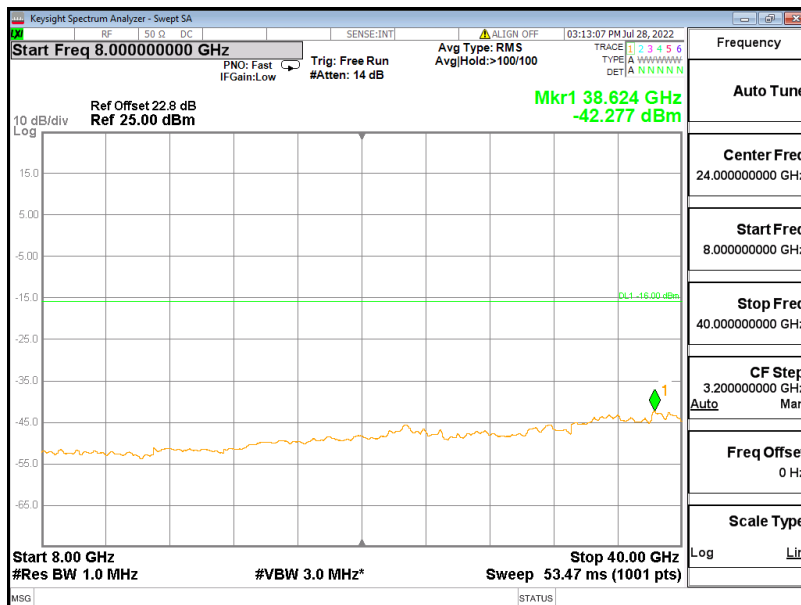


### Conducted spurious emissions

#### Downlink\_GSM\_HCH



#### Downlink\_GSM\_HCH



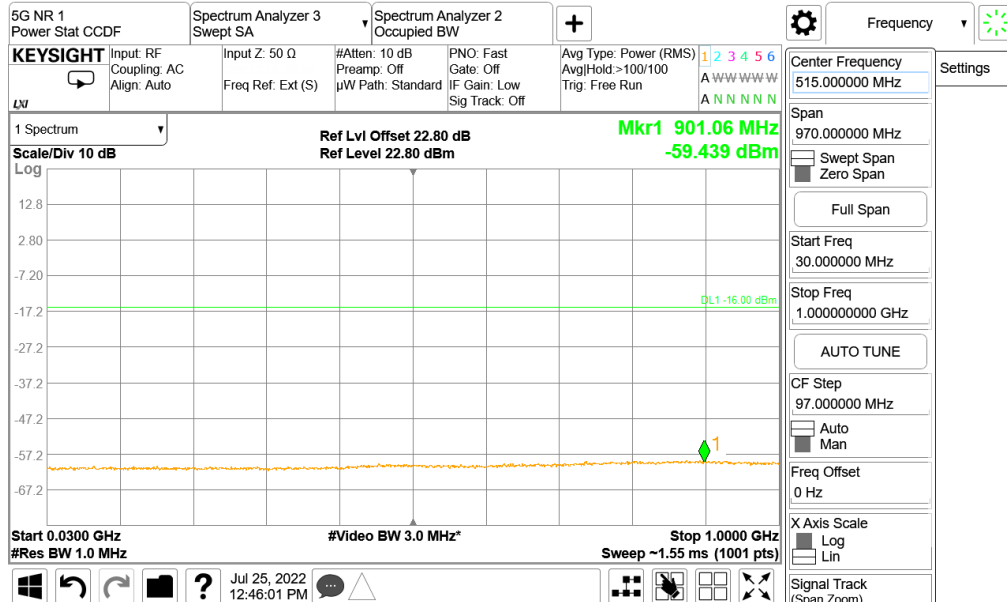
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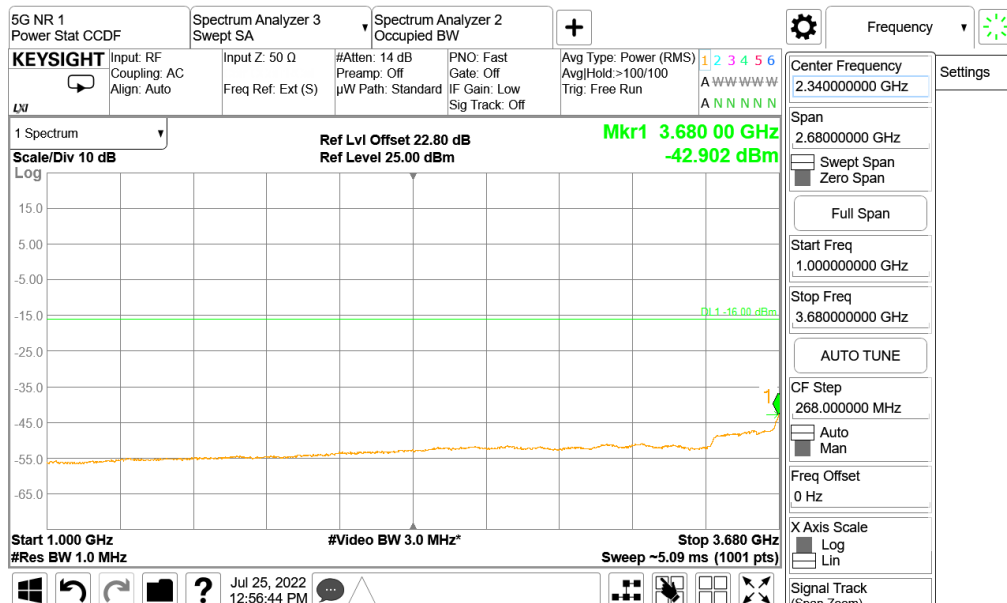


### Conducted spurious emissions

#### Downlink\_GSM\_MCH



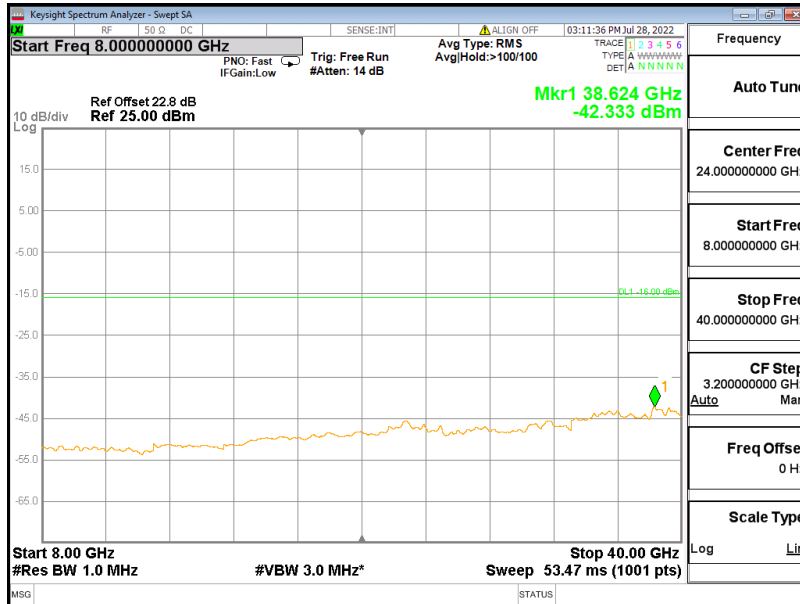
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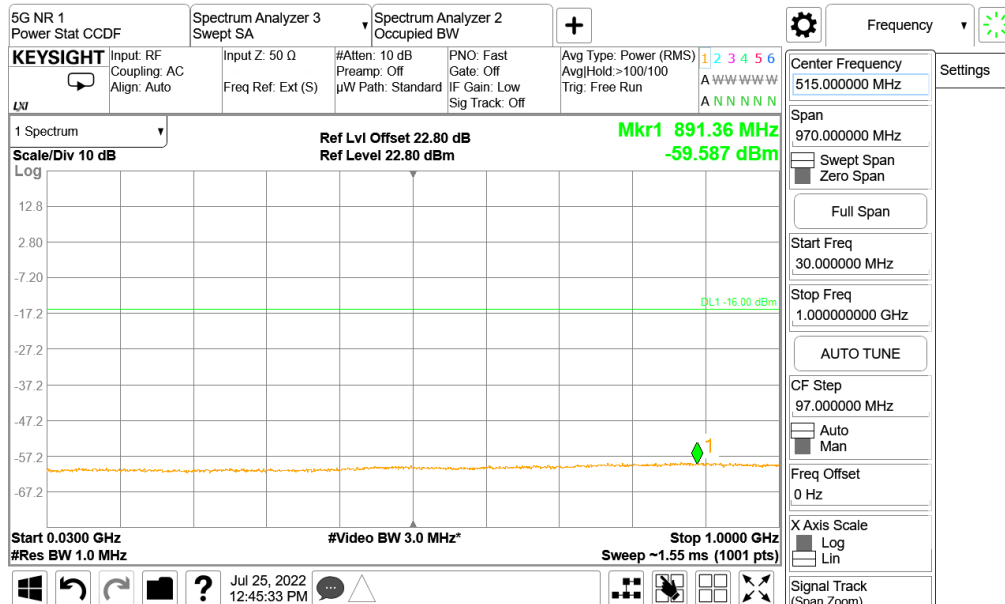


### Conducted spurious emissions

#### Downlink\_GSM\_MCH

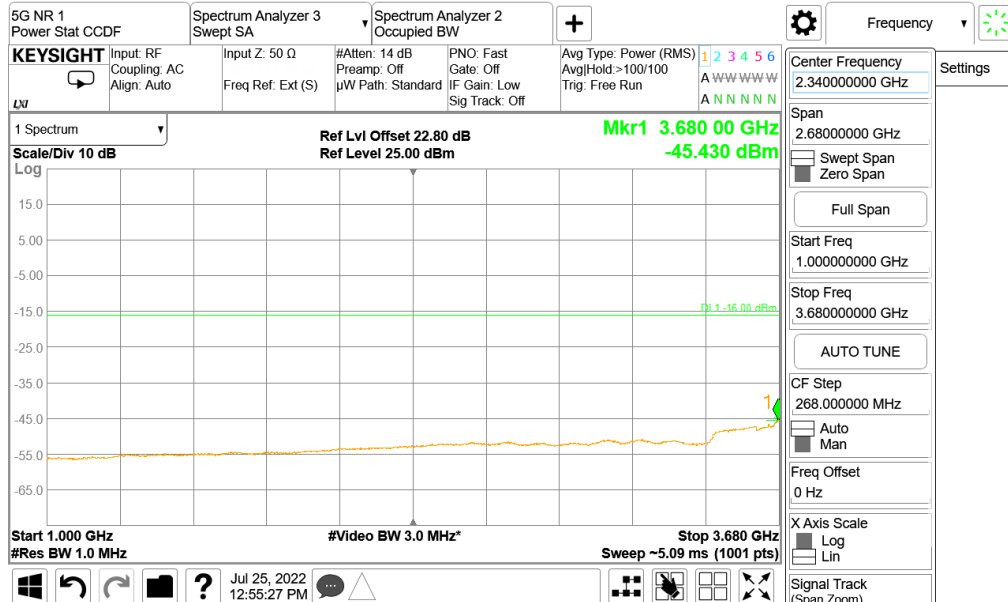


#### Downlink\_GSM\_LCH

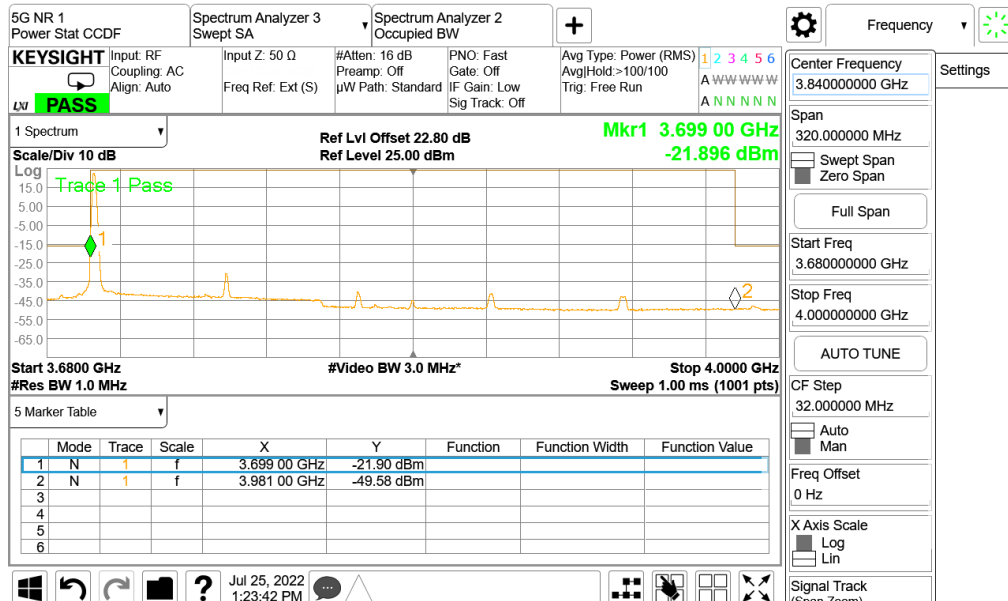


### Conducted spurious emissions

#### Downlink\_GSM\_LCH



#### Downlink\_GSM\_LCH



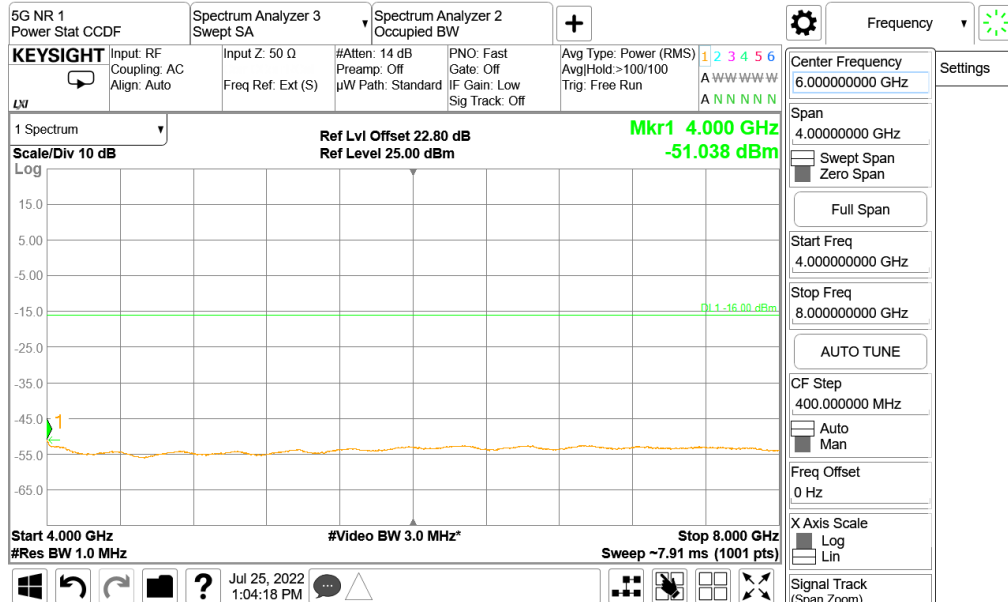
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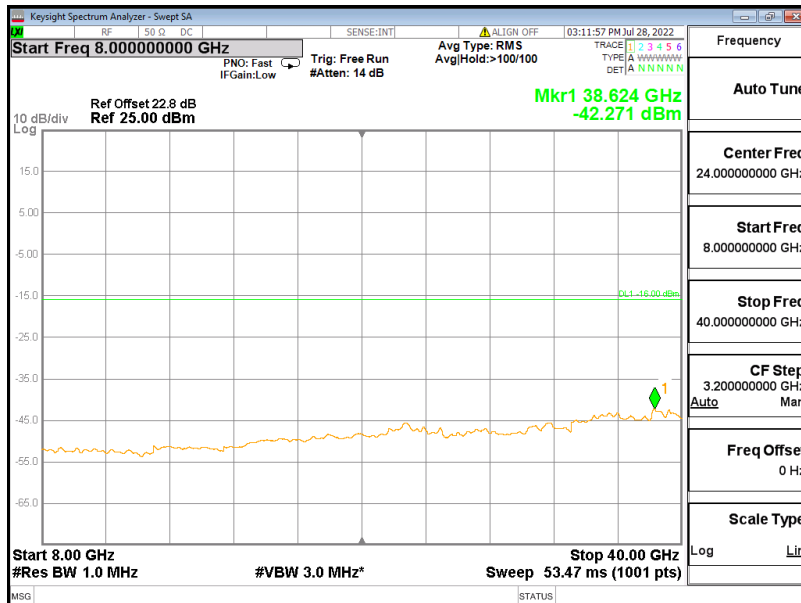


### Conducted spurious emissions

#### Downlink\_GSM\_LCH



#### Downlink\_GSM\_LCH



## 6 Frequency Stability

Frequency stability vs temperature							
Test Path	Test Channel	Test Signal	Temperature (°C)	Voltage (V DC)	Frequency error (Hz)	Tolerance (ppm)	Verdict
Downlink	AWGN	MCH	+50	48	76	0.020	PASS
			+40	48	68	0.018	PASS
			+30	48	65	0.017	PASS
			+20	48	70	0.018	PASS
			+10	48	56	0.015	PASS
			0	48	59	0.015	PASS
			-10	48	46	0.012	PASS
			-20	48	38	0.010	PASS
			-30	48	55	0.014	PASS
	GSM	MCH	+50	48	67	0.017	PASS
			+40	48	46	0.012	PASS
			+30	48	53	0.014	PASS
			+20	48	72	0.019	PASS
			+10	48	45	0.012	PASS
			0	48	58	0.015	PASS
			-10	48	66	0.017	PASS
			-20	48	38	0.010	PASS
			-30	48	45	0.012	PASS



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Frequency stability vs voltage							
Test path	Test Channel	Test Signal	Voltage (V DC)	Temperature (°C)	Frequency error (Hz)	Tolerance (ppm)	Verdict
Downlink	MCH	AWGN	40.8	20	77	0.020	PASS
			48	20	59	0.015	PASS
			55.2	20	63	0.016	PASS
	MCH	GSM	40.8	20	64	0.017	PASS
			48	20	58	0.015	PASS
			55.2	20	73	0.019	PASS



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### 7 Radiated Spurious emissions

All modes have been tested and only the worst test result was recorded in this report.

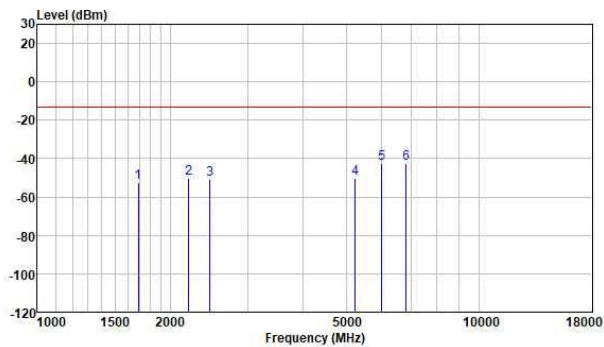
Radiated Spurious emissions					
AWGN_MCH_30MHz-1GHz_Horizontal			AWGN_MCH_30MHz-1GHz_Vertical		
Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
49.707	-61.22	-13	-48.22	Horizontal	PASS
84.999	-78.79	-13	-65.79	Horizontal	PASS
176.269	-83.41	-13	-70.41	Horizontal	PASS
443.294	-75.63	-13	-62.63	Horizontal	PASS
760.704	-70.73	-13	-57.73	Horizontal	PASS
851.035	-69.79	-13	-56.79	Horizontal	PASS

Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
49.707	-60.61	-13	-47.61	Vertical	PASS
58.407	-65.63	-13	-52.63	Vertical	PASS
64.433	-66.04	-13	-53.04	Vertical	PASS
89.276	-72.55	-13	-59.55	Vertical	PASS
162.041	-79.84	-13	-66.84	Vertical	PASS
283.979	-76.5	-13	-63.5	Vertical	PASS



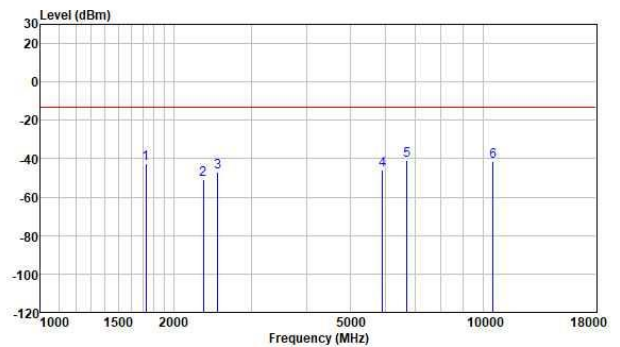
### Radiated Spurious emissions

AWGN\_MCH\_1GHz-18GHz\_Horizontal



Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
1692.231	-52.63	-13	-39.63	Horizontal	PASS
2201.352	-50.53	-13	-37.53	Horizontal	PASS
2456.913	-50.88	-13	-37.88	Horizontal	PASS
5239.274	-50.36	-13	-37.36	Horizontal	PASS
6018.999	-42.54	-13	-29.54	Horizontal	PASS
6835.278	-42.49	-13	-29.49	Horizontal	PASS

AWGN\_MCH\_1GHz-18GHz\_Vertical



Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
1731.816	-42.51	-13	-29.51	Vertical	PASS
2332.356	-50.69	-13	-37.69	Vertical	PASS
2514.386	-47.18	-13	-34.18	Vertical	PASS
5915.516	-45.67	-13	-32.67	Vertical	PASS
6717.762	-40.68	-13	-27.68	Vertical	PASS
10514.58	-41.21	-13	-28.21	Vertical	PASS

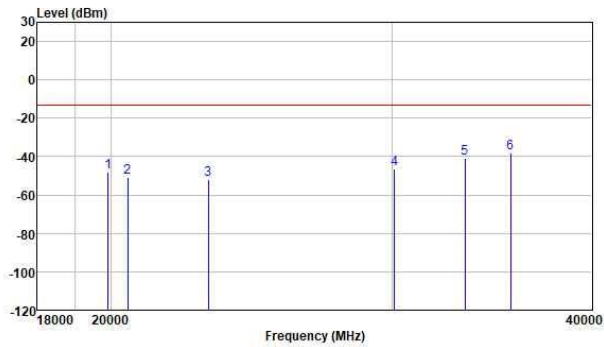


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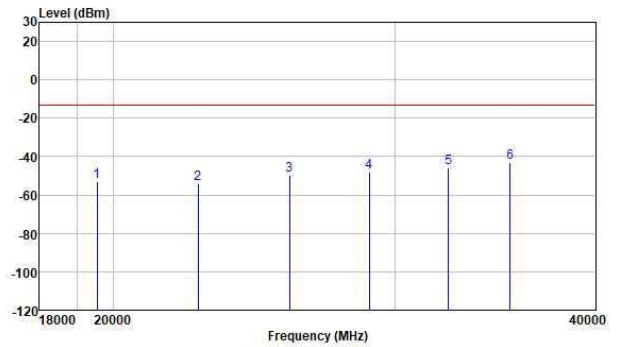
### Radiated Spurious emissions

AWGN\_MCH\_18GHz-40GHz\_Horizontal



Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
19558.63	-53.3	-13	-40.3	Horizontal	PASS
22599.92	-54.35	-13	-41.35	Horizontal	PASS
25782.61	-49.76	-13	-36.76	Horizontal	PASS
28901.31	-48.31	-13	-35.31	Horizontal	PASS
32397.25	-45.68	-13	-32.68	Horizontal	PASS
35399.86	-43.25	-13	-30.25	Horizontal	PASS

AWGN\_MCH\_18GHz-40GHz\_Vertical



Freq. (MHz)	Level (dBm)	Limit (dBm)	Over limit (dBm)	Pol	Verdict
19937.07	-48.21	-13	-35.21	Vertical	PASS
20502.13	-50.89	-13	-37.89	Vertical	PASS
23018.82	-52.09	-13	-39.09	Vertical	PASS
30102.57	-46.13	-13	-33.13	Vertical	PASS
33315.45	-41.05	-13	-28.05	Vertical	PASS
35569.87	-38.26	-13	-25.26	Vertical	PASS

--End of Appendix--