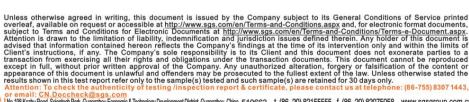


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FCC ID: OJFDLRUG225

Appendix

Test Data and Result for report GZCR220800101302

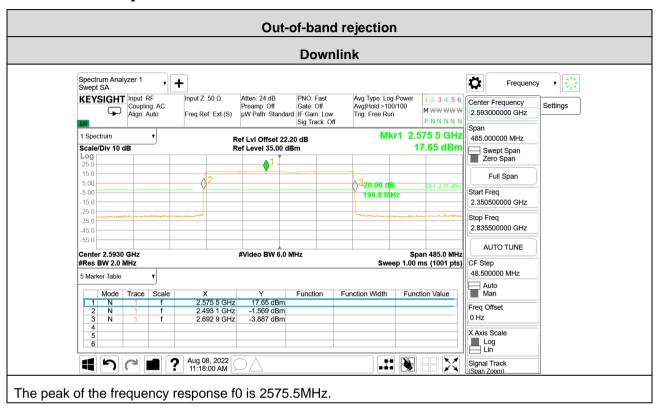


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1 Out-of-band rejection







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2 Input versus Output comparison

Occupied Bandwidth									
	- . 6:		a	99% OBW (MHz)		Verdict			
Test Path	Test Path Test Signal Test Channel		Signal Level	Input	Output				
Downlink			Pre-AGC	4.0985	4.1018	PASS			
	AWGN	MCH	3dB above AGC	4.0998	PASS				
			Pre-AGC	0.24413	0.24613	PASS			
	GSM	MCH	3dB above AGC	0.24363	0.24645	PASS			

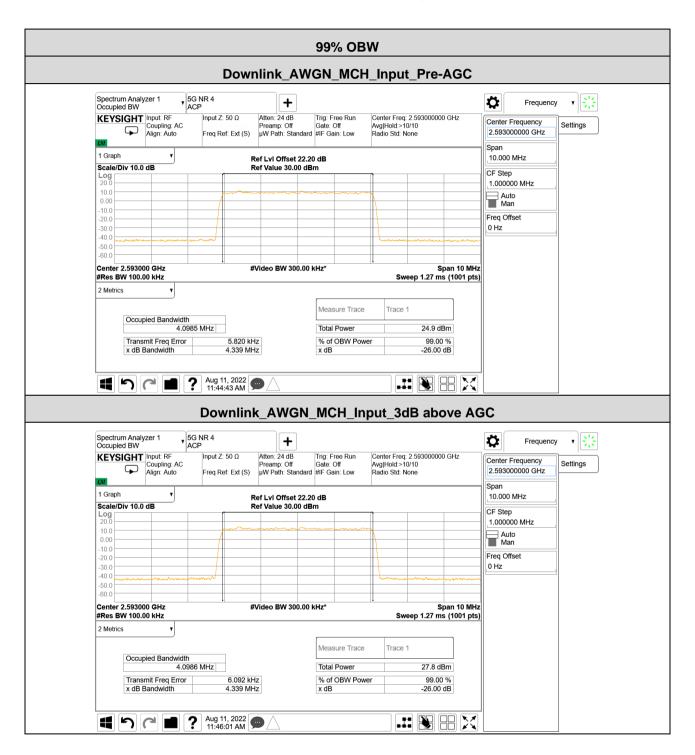
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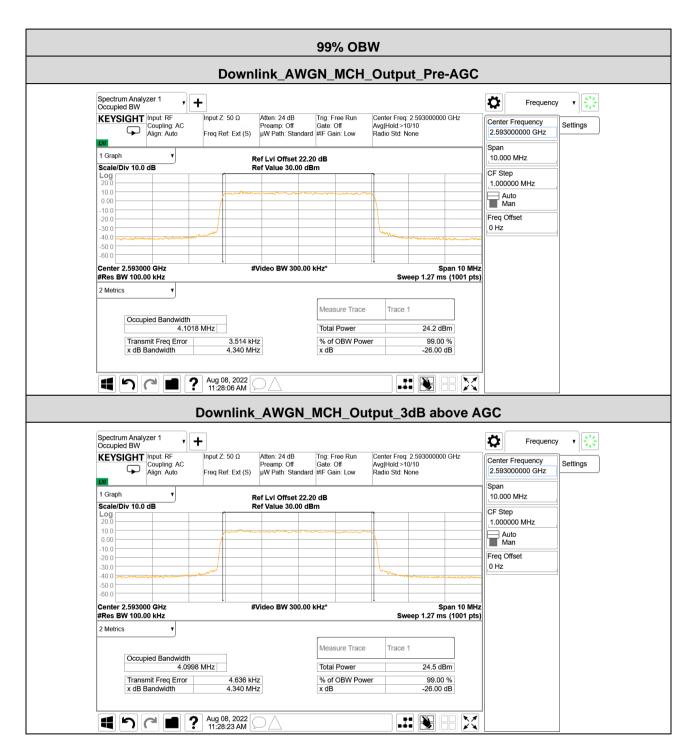
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3 Mean output power and amplifier/booster gain

Mean output power and gain									
Test Path	Test Freq.	Test Signal	Signal Level	Input power (dBm)	Output Power (dBm)	Gain (dB)	Verdict		
Downlink	2575.5		Pre-AGC	25.00	24.94	-0.06	PASS		
		AWGN	3dB above AGC	28.00	24.68	/	PASS		
			Pre-AGC	25.00	24.39	-0.61	PASS		
		GSM	GSM	3dB above AGC	28.00	24.50	/	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 5dBi declared by the manufacturer, the directional gain = G_{ANT} + 10 log (N_{ANT}) dBi = 8dBi.
- 3. The maximum total EIRP for the EUT is (24.94dBm + 24.94dBm) + 8dBi = 35.96dBm = 3.95W, which doesn't exceed the required EIRP limit.



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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				
			a single test	Pre-AGC	-43.00		PASS				
	1.011		signal	3dB above AGC	-42.51	<u> </u>	PASS				
	LCH		two adjacent	Pre-AGC	-45.19		PASS				
		AWGN	test signals	3dB above AGC	-44.75		PASS				
	НСН		a single test	Pre-AGC	-42.22		PASS				
			signal	3dB above AGC	-41.36		PASS				
			two adjacent	Pre-AGC	-45.49		PASS				
			test signals	3dB above AGC	-44.53		PASS				
Downlink		LCH GSM	a single test	Pre-AGC	-29.07	≤-16	PASS				
	1.011				signal	3dB above AGC	-28.57		PASS		
	LCH			two adjacent	Pre-AGC	-25.43		PASS			
			test signals	3dB above AGC	-27.40		PASS				
			a single test	Pre-AGC	-30.06		PASS				
	11011		signal	3dB above AGC	-29.22		PASS				
	HCH		two adjacent	Pre-AGC	-22.14		PASS				
			test signals	3dB above AGC	-23.33		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 = 24dBm = 0.252W, so

the limit = 24dBm - [43 + 10 log10 (0.252W)] dB = -13dBm

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 in order to determine the test result conveniently.



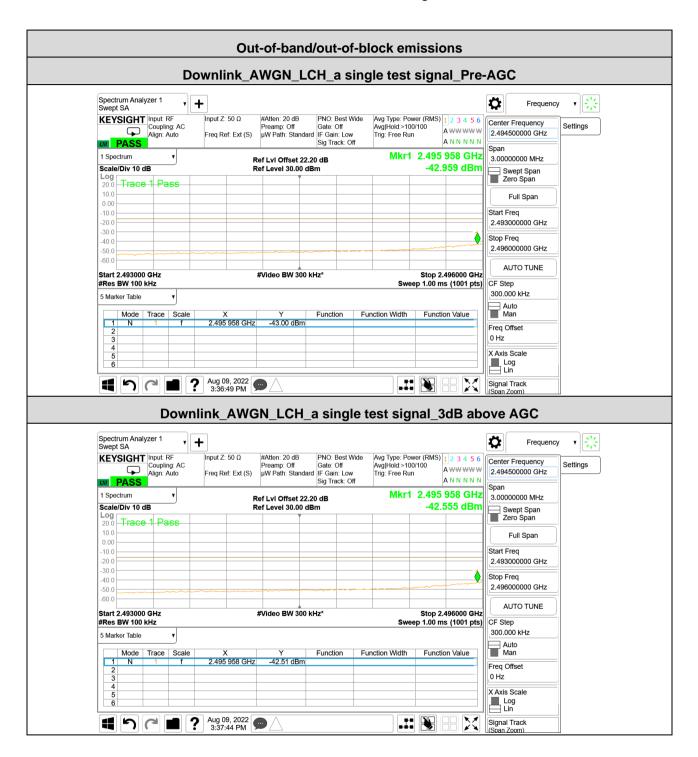
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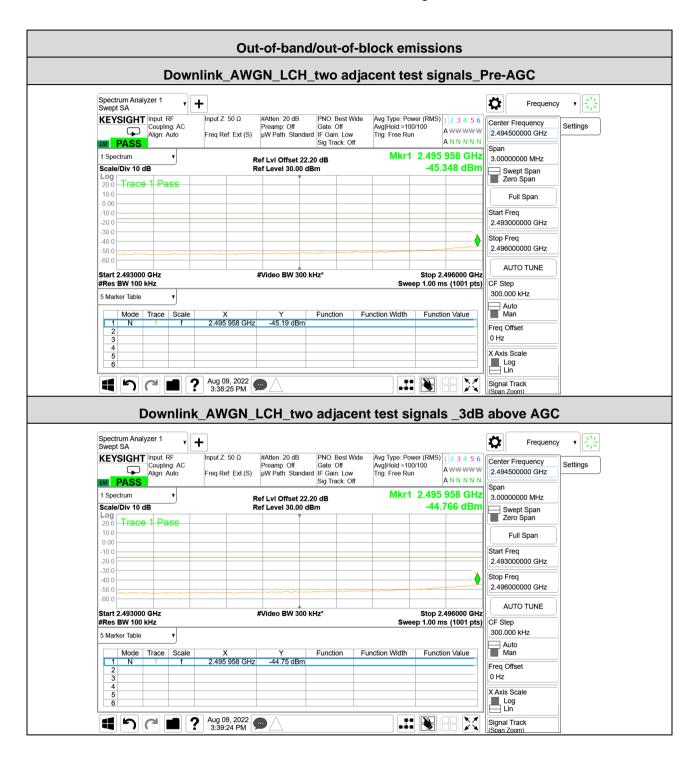
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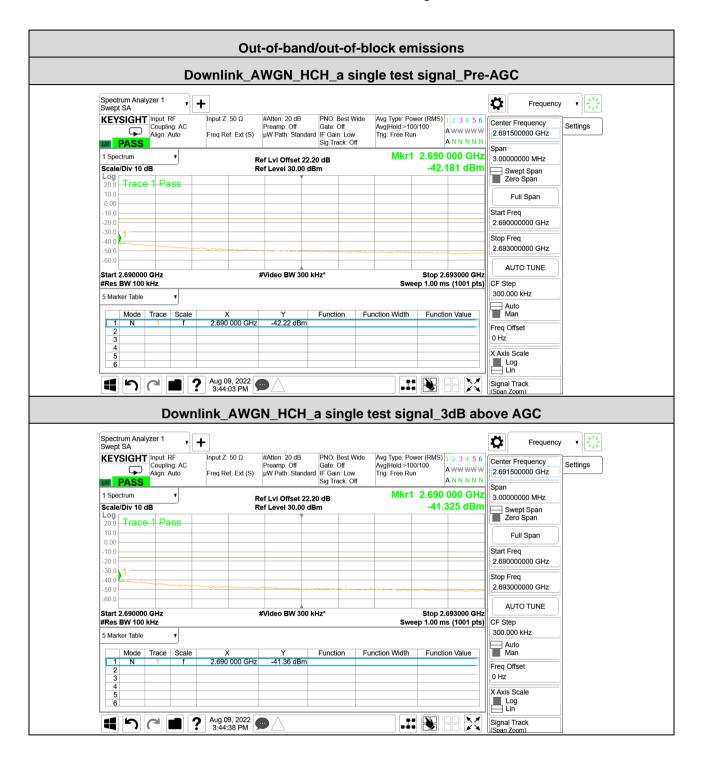


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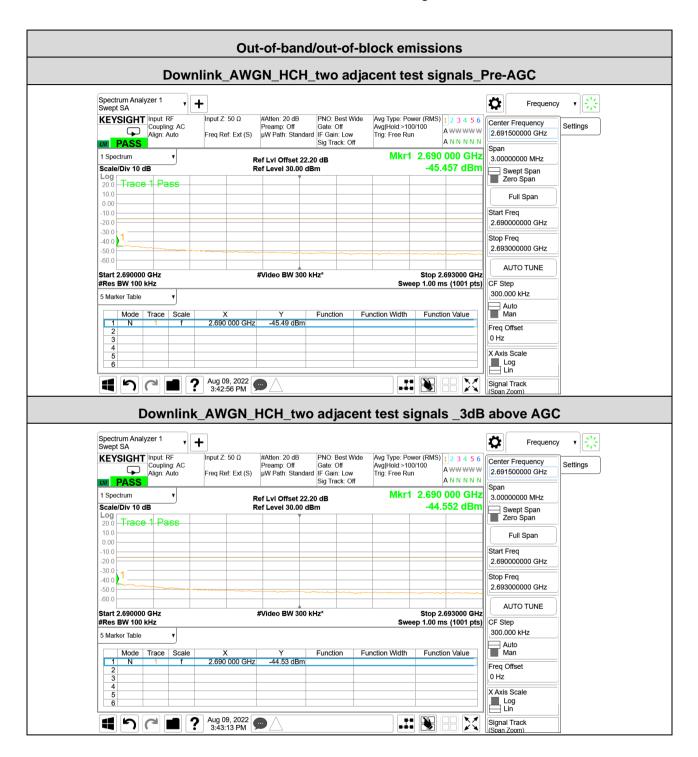
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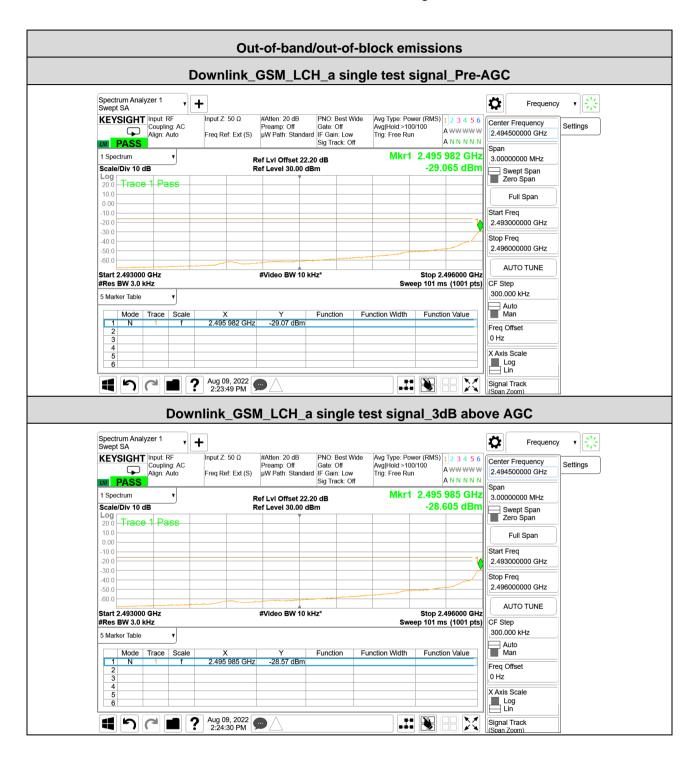
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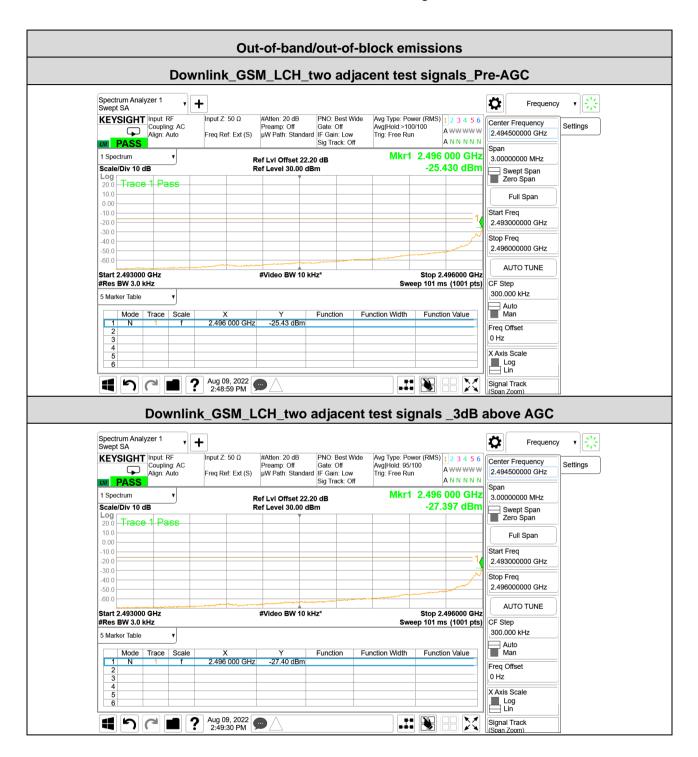
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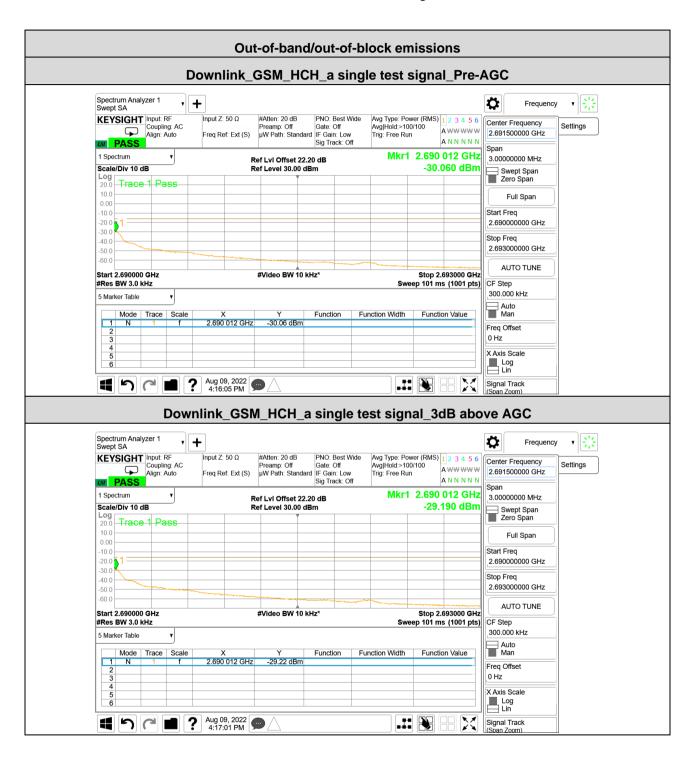
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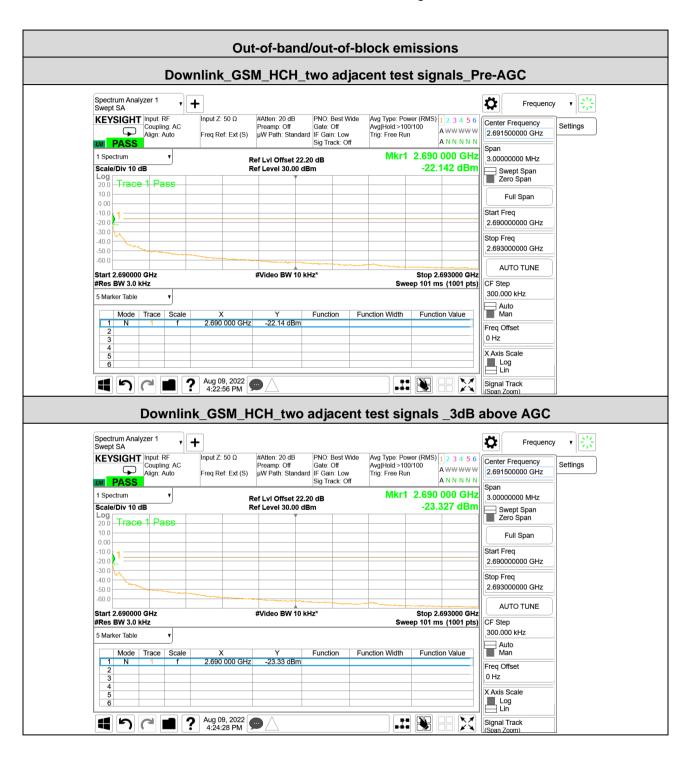
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5 Conducted Spurious emissions

Conducted spurious emissions									
Test Path	Test	Test	Signal	Frequency	Worst test level	Limit	Verdict		
	Channel	Signal	Level	range (MHz)	(dBm)	(dBm)			
				30-1000	-58.43		PASS		
		AWGN	Pre-AGC	1000-2495	-32.25		PASS		
	LCH			2691-27000	-42.28		PASS		
	LCH			30-1000	-58.82		PASS		
		GSM	Pre-AGC	1000-2495	-22.87	≤-16	PASS		
				2691-27000	-42.42		PASS		
	мсн	AWGN	Pre-AGC	30-1000	-58.03		PASS		
				1000-2495	-42.21		PASS		
Danneliale				2691-27000	-42.42		PASS		
Downlink			Pre-AGC	30-1000	-58.43		PASS		
				1000-2495	-42.93		PASS		
				2691-27000	-42.41		PASS		
				30-1000	-59.37		PASS		
		AWGN HCH GSM	Pre-AGC	1000-2495	-44.51		PASS		
	11011			2691-27000	-30.16		PASS		
	HCH		Pre-AGC	30-1000	-58.50		PASS		
				1000-2495	-42.72		PASS		
							2691-27000	-24.68	

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 = 24dBm = 0.252W, so

the limit = 24dBm - [43 + 10 log10 (0.252W)] dB = -13dBm

- 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 in order to determine the test result conveniently.
- 3. The lowest RF signal generated in the equipment is higher than 30M, Therefore the test performed from 30MHz as start frequency.



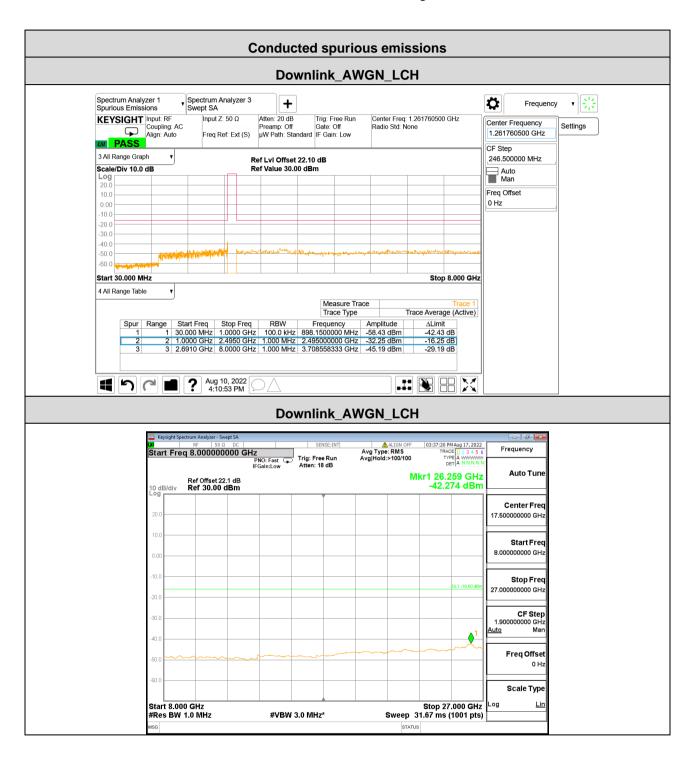
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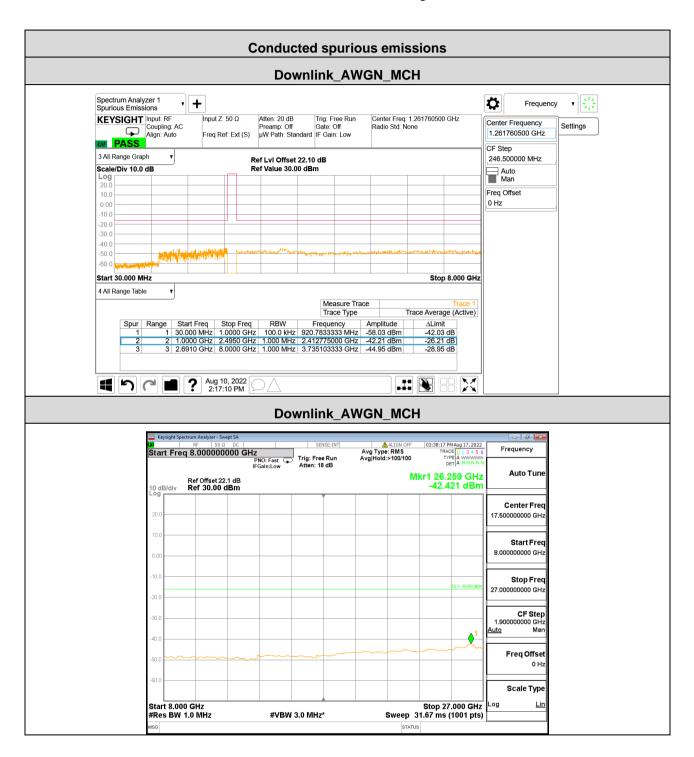
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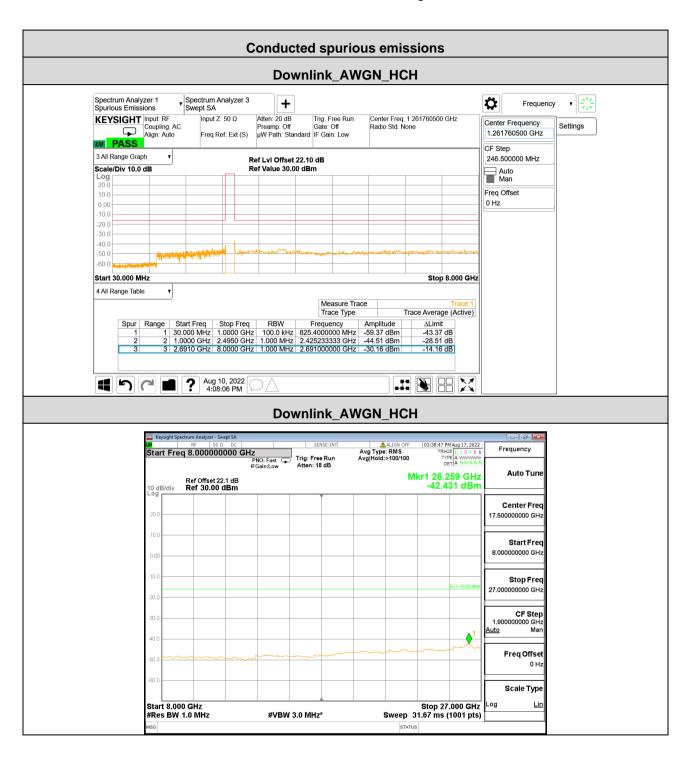


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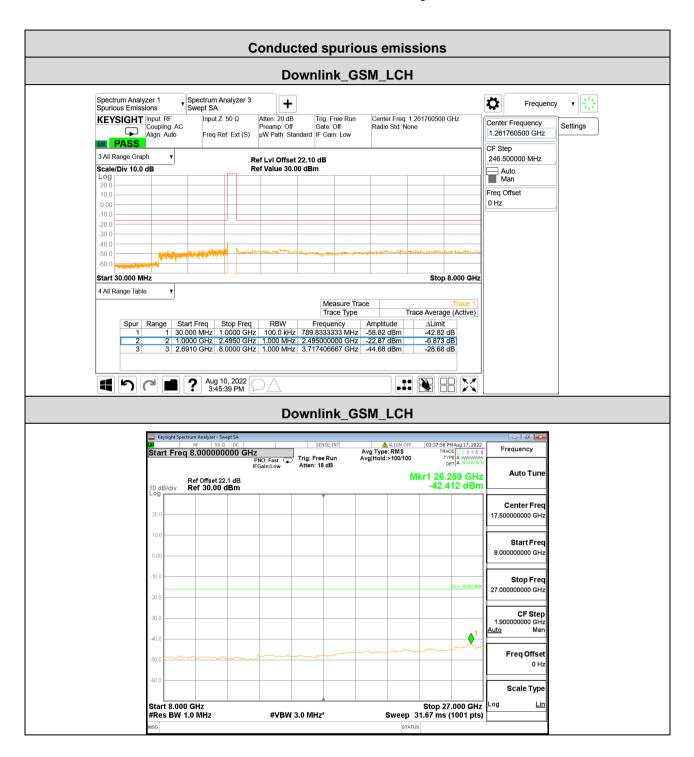


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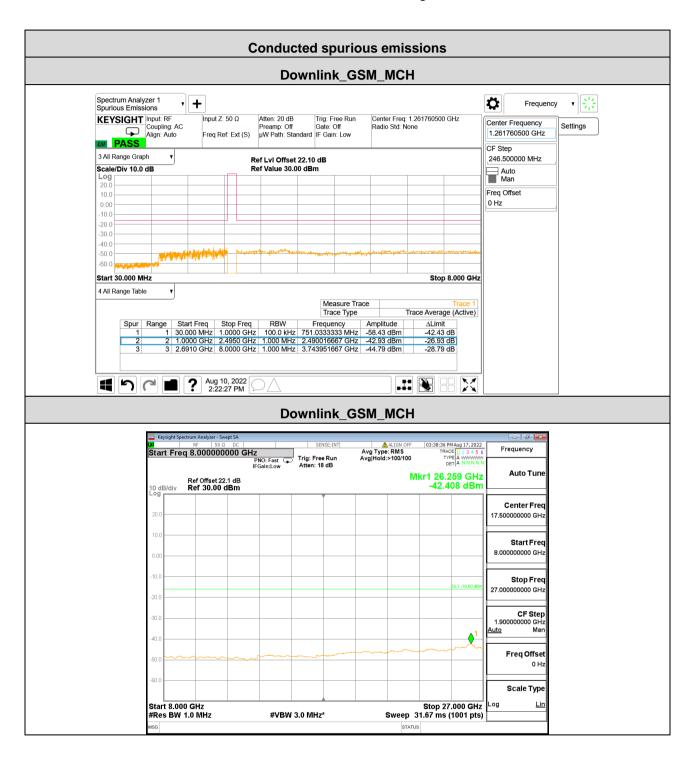
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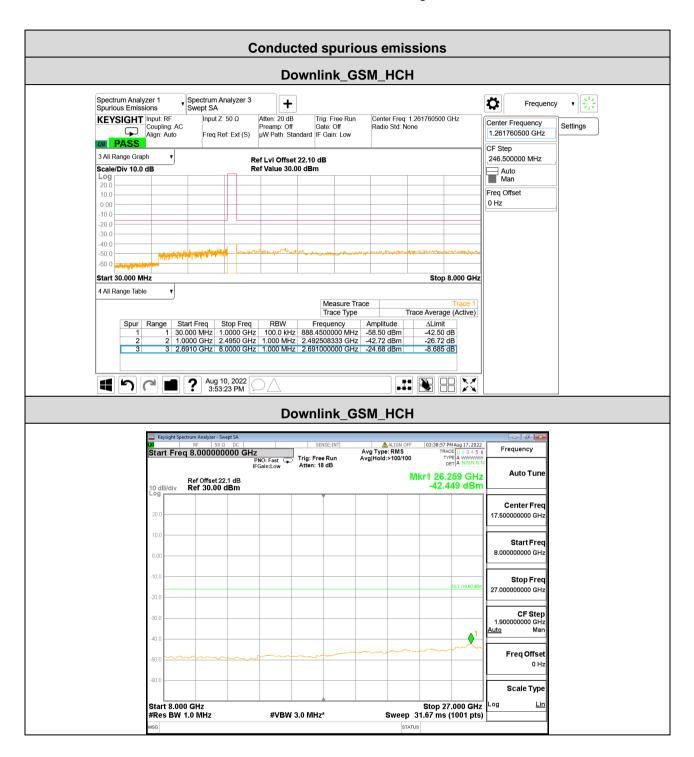
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6 Frequency Stability

	Frequency stability vs temperature									
Test Path	Test Channel	Test Signal	Temperature (°C)	Voltage (V DC)	Frequency error (Hz)	Tolerance (ppm)	Verdict			
			+50	48	34	0.013	PASS			
			+40	48	25	0.010	PASS			
			+30	48	36	0.014	PASS			
		MCH	+20	48	42	0.016	PASS			
	AWGN		+10	48	15	0.006	PASS			
			0	48	20	0.008	PASS			
			-10	48	26	0.010	PASS			
			-20	48	14	0.005	PASS			
Dannelliale			-30	48	18	0.007	PASS			
Downlink		GSM MCH	+50	48	33	0.013	PASS			
			+40	48	26	0.010	PASS			
			+30	48	45	0.017	PASS			
			+20	48	53	0.020	PASS			
	GSM		+10	48	39	0.015	PASS			
			0	48	42	0.016	PASS			
			-10	48	16	0.006	PASS			
			-20	48	28	0.011	PASS			
			-30	48	36	0.014	PASS			



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Frequency stability vs voltage									
	Test	Test	Voltage	Temperature	Frequency	Tolerance	Manuffat		
Test path	Channel	Signal	(V DC)	(℃)	error (Hz)	(ppm)	Verdict		
Downlink	MCH		40.8	20	27	0.010	PASS		
		AWGN	48	20	20	0.008	PASS		
			55.2	20	35	0.013	PASS		
	МСН		40.8	20	29	0.011	PASS		
		MCH GSM	48	20	38	0.015	PASS		
			55.2	20	43	0.017	PASS		

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7 Radiated Spurious emissions

Radiated Spurious emissions MCH_30MHz-1GHz_Horizontal MCH_30MHz-1GHz_Vertical -120₃₀ Over Over Freq. Level Limit Level Limit Freq. limit limit Pol Verdict Pol Verdict (MHz) (dBm) (dBm) (MHz) (dBm) (dBm) (dBm) (dBm) 51.481 -83.7 -70.7 Horizontal PASS 58.407 -84.38 -71.38 **PASS** -13 -13 Vertical 101.289 -87.17 Horizontal PASS 99.18 -85.52 -72.52 **PASS** -13 -74.17 -13 Vertical 160.909 -85.52 Horizontal PASS **PASS** -13 -72.52 150.011 -83.24 -13 -70.24 Vertical -79.66 Horizontal PASS **PASS** 357.929 -13 -66.66 324.456 -80.1 -13 -67.1Vertical -74.3 Horizontal PASS **PASS** 590.974 -13 -61.3 462.346 -73.94 -13 -60.94 Vertical 776.878 -71.88 -58.88 | Horizontal | PASS **PASS** -13 729.358 -72.24 -13 -59.24 Vertical



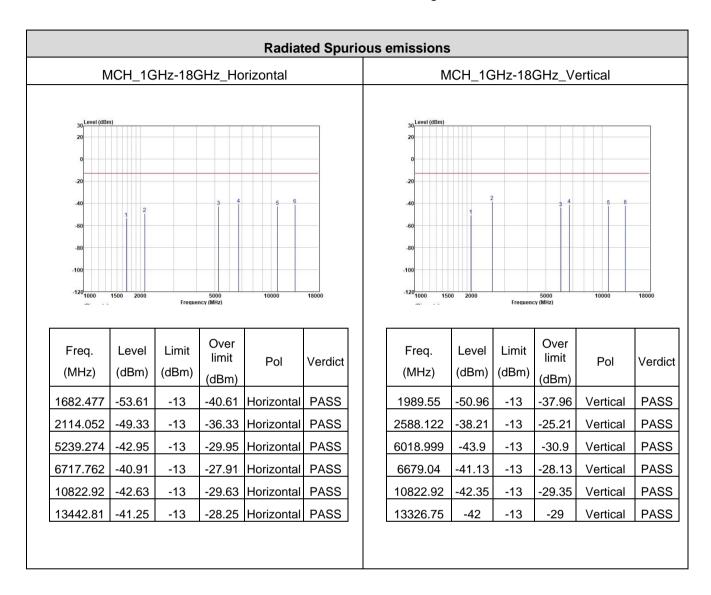
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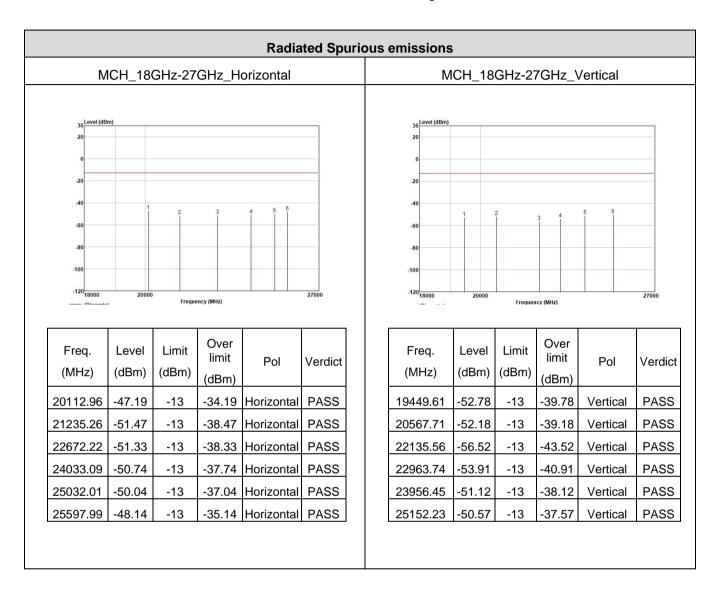
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-- End of Appendix--



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