



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

EMC-ARF-05 Rev 1.1

Page: 1 of 30

FCC ID: PX8CFNG-MRU

Appendix -

Test Data and Result for report

GZCR241100135108

(For BRS/EBS Band DL)



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Guangzhou Branch Testing Center EMC Laboratory

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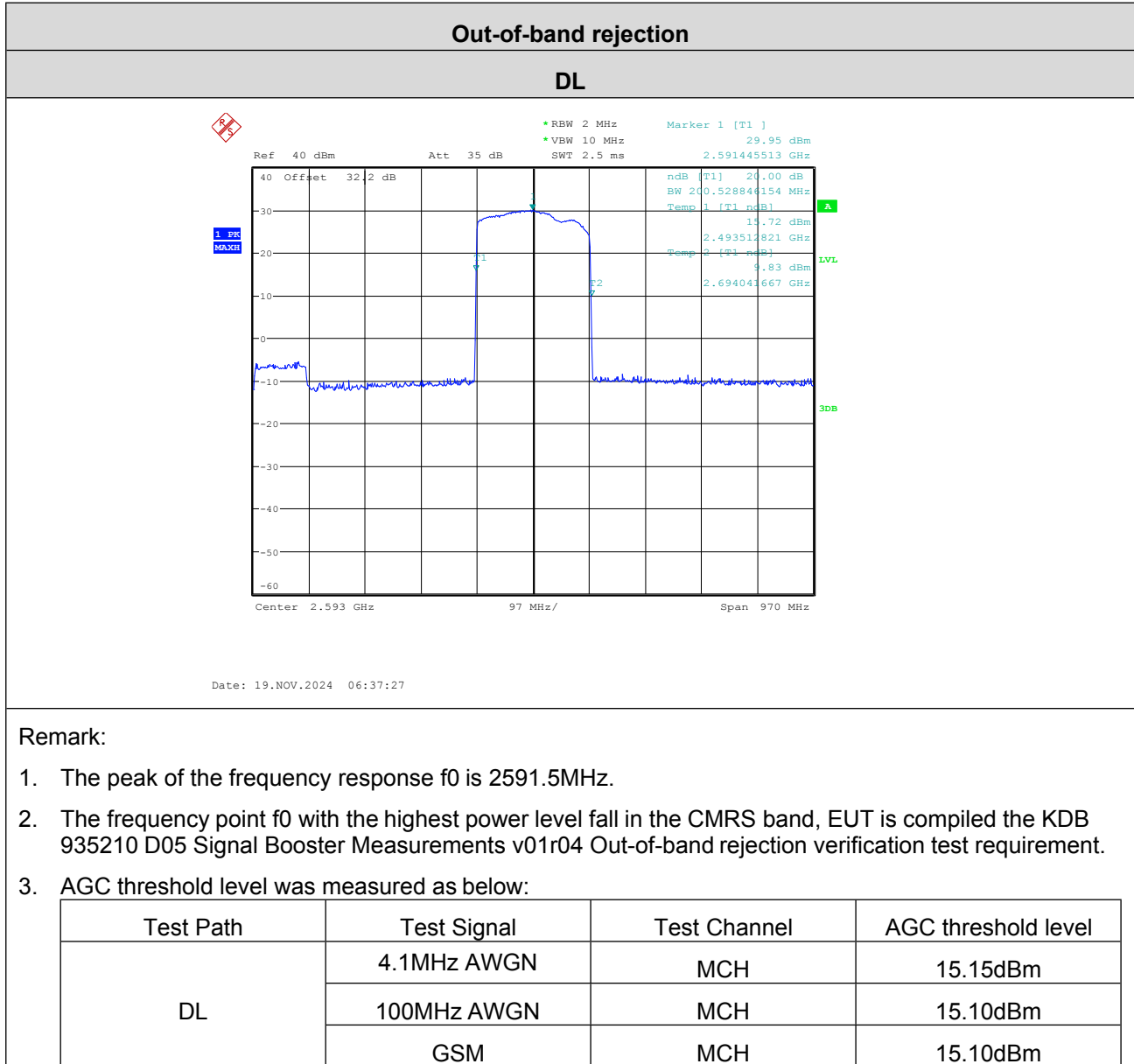
SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center EMC Laboratory

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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
DL	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.				

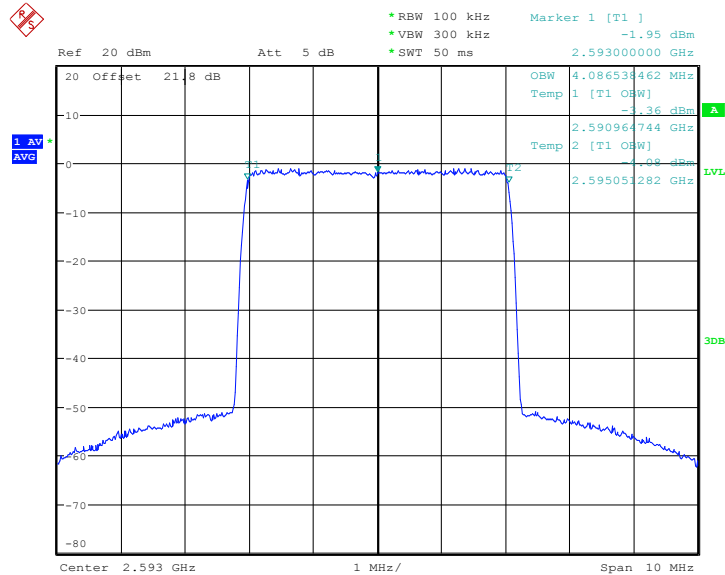


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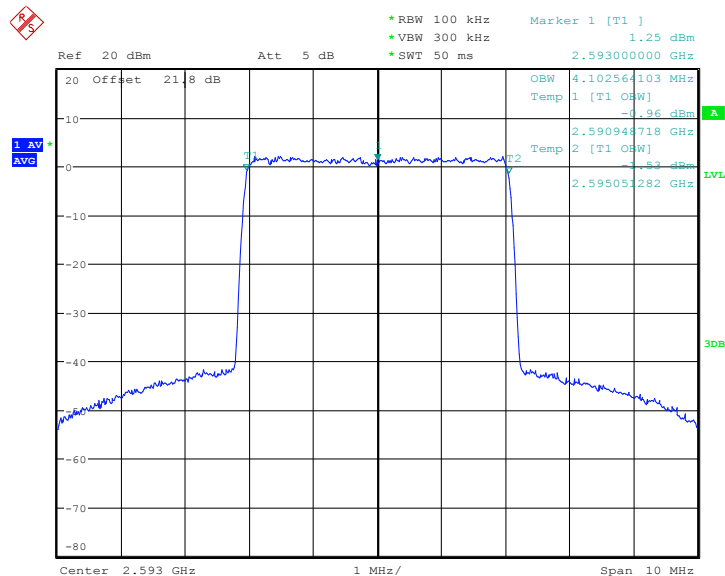
99% OBW

DL_4.1MHz AWGN_MCH_Input_Pre-AGC



Date: 19.NOV.2024 12:02:12

DL_4.1MHz AWGN_MCH_Input_3dB above AGC



Date: 19.NOV.2024 12:02:23



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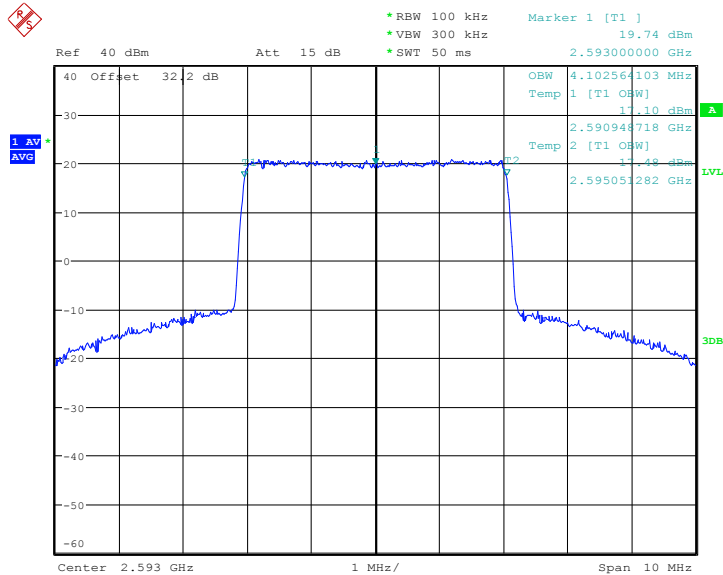
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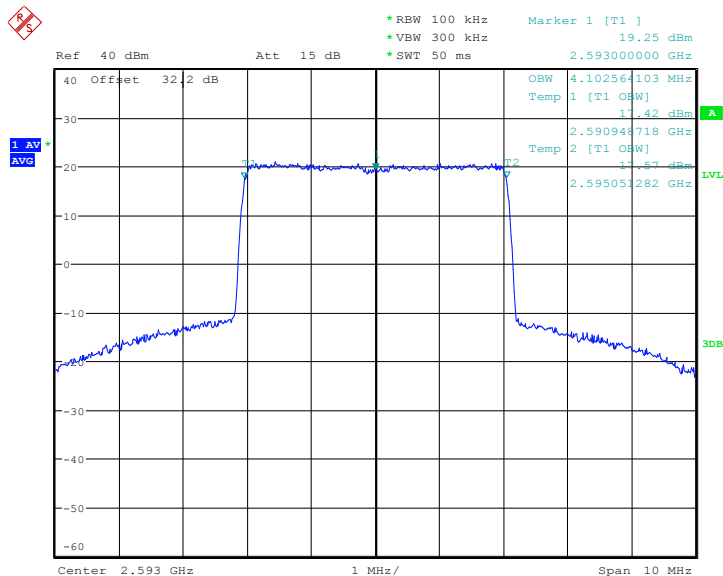
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DL_4.1MHz AWGN_MCH_Output_Pre-AGC



Date: 19.NOV.2024 06:39:26

DL_4.1MHz AWGN_MCH_Output_3dB above AGC



Date: 19.NOV.2024 06:39:33



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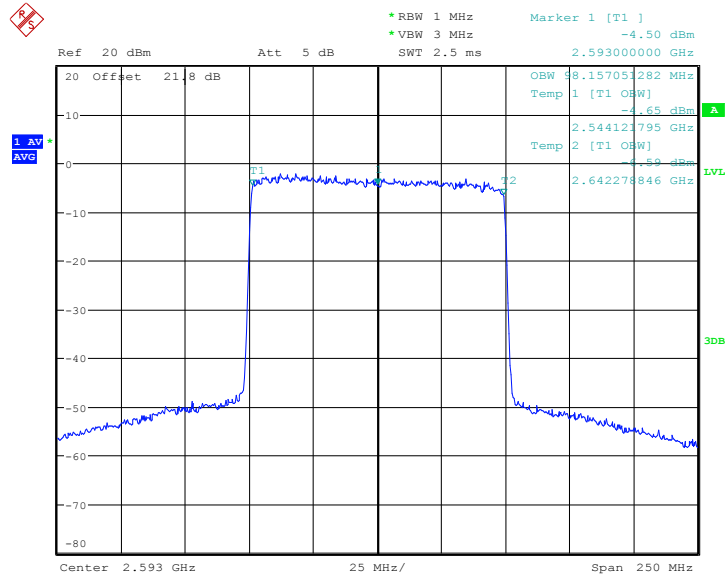
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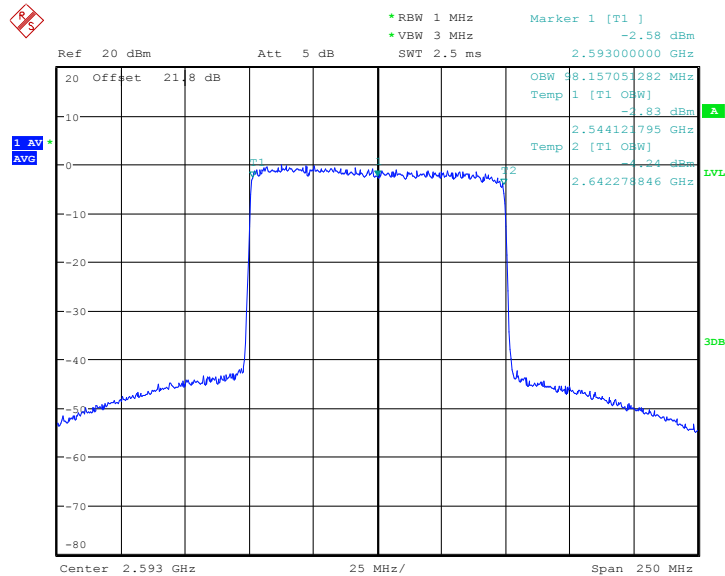
99% OBW

DL_100MHz AWGN_MCH_Input_Pre-AGC



Date: 19.NOV.2024 12:01:11

DL_100MHz AWGN_MCH_Input_3dB above AGC



Date: 19.NOV.2024 12:01:18



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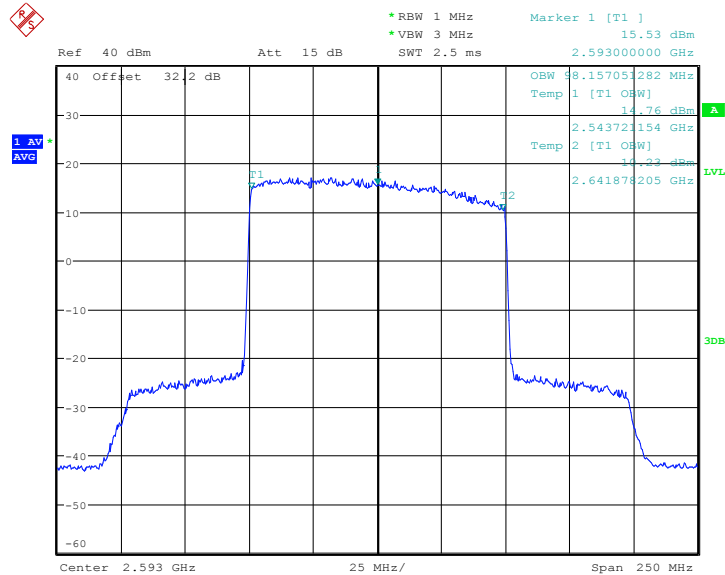
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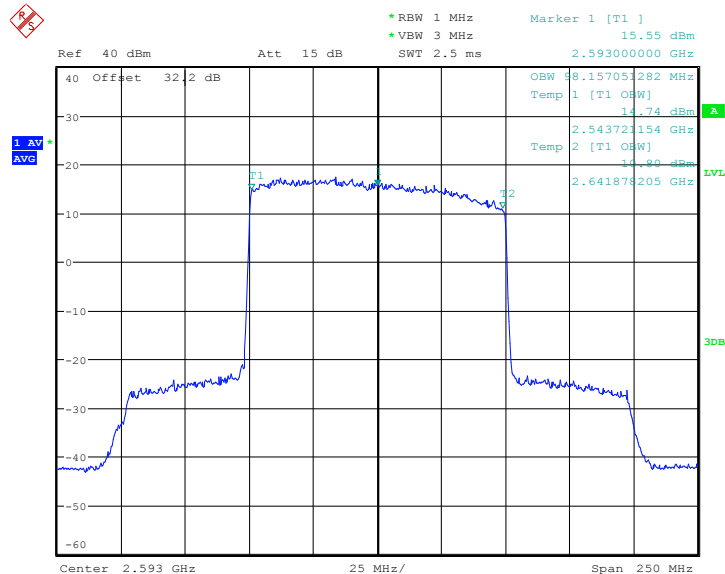
99% OBW

DL_100MHz AWGN_MCH_Output_Pre-AGC



Date: 19.NOV.2024 06:42:15

DL_100MHz AWGN_MCH_Output_3dB above AGC



Date: 19.NOV.2024 06:42:21

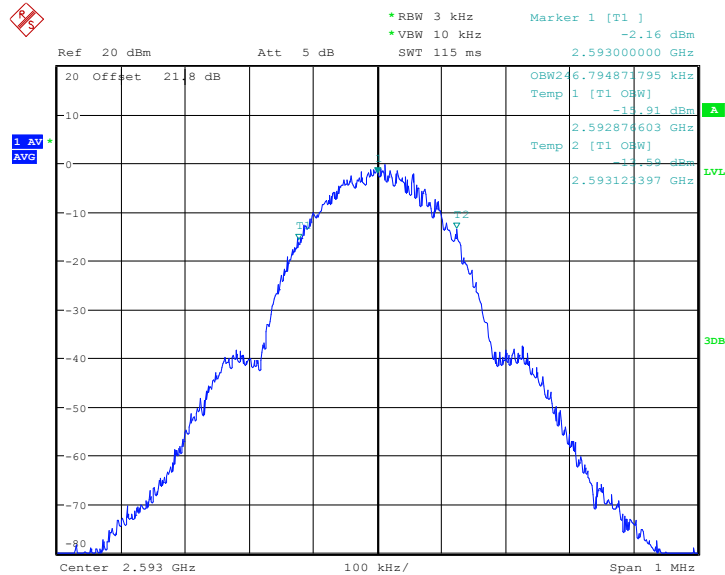


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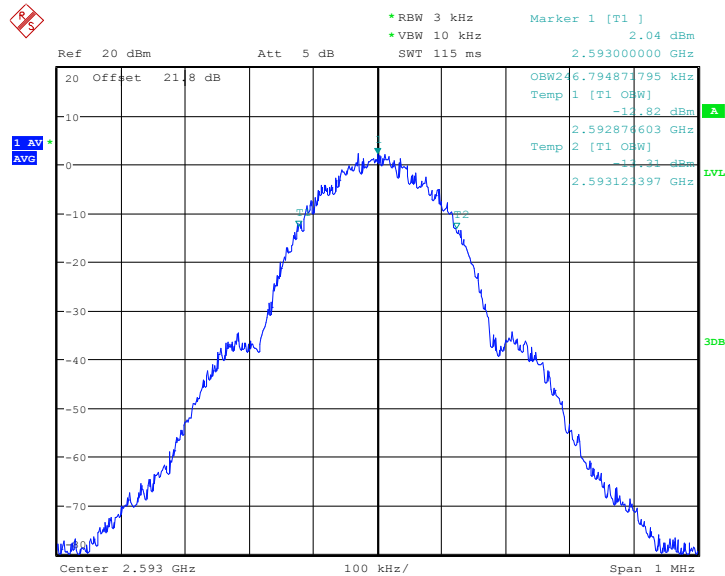
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DL_GSM_MCH_Input_Pre-AGC



Date: 19.NOV.2024 12:03:26

DL_GSM_MCH_Input_3dB above AGC



Date: 19.NOV.2024 12:03:34



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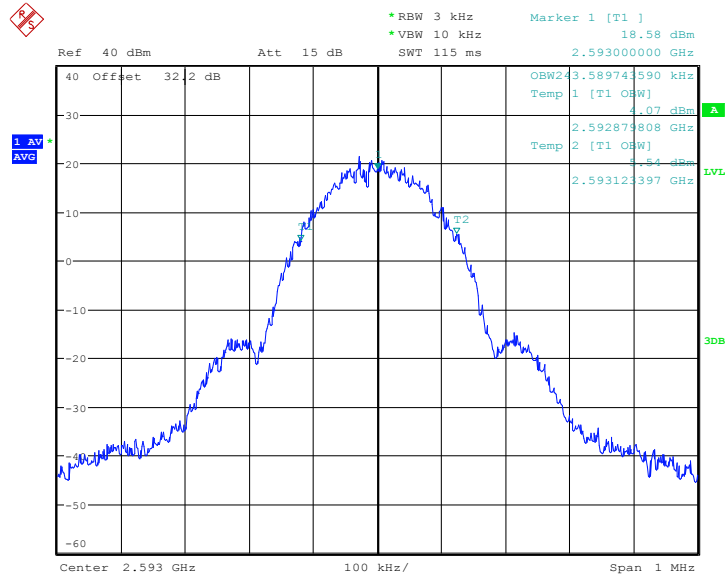
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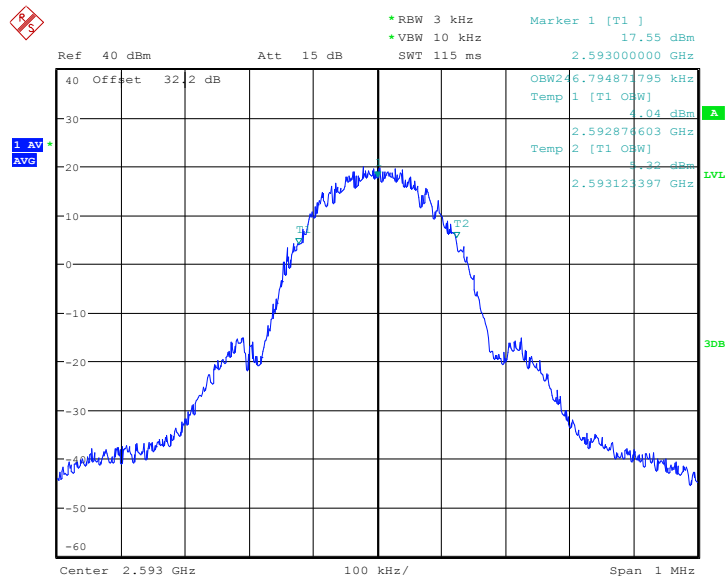
99% OBW

DL_GSM_MCH_Output_Pre-AGC



Date: 19.NOV.2024 06:40:21

DL_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
DL	2591.5	4.1MHz AWGN	Pre-AGC	15	36.65	41.65	14.63	21.65	PASS
			3dB above AGC	18	36.89	41.89	15.46	/	PASS
		100MHz AWGN	Pre-AGC	15	35.89	40.89	12.28	21.89	PASS
			3dB above AGC	18	36.11	41.11	12.92	/	PASS
		GSM	Pre-AGC	15	37.23	42.23	16.72	22.23	PASS
			3dB above AGC	18	37.44	42.44	17.54	/	PASS

Remark:

- f0 is from Out-of-band Rejection test in the report.
- EIRP= output power (dBm)+ antenna gain (dBi), the antenna gain is 5dBi 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.

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

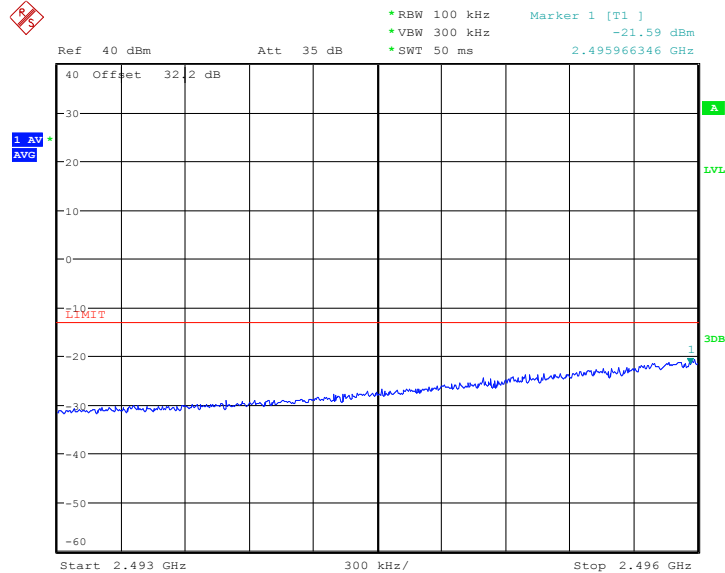
Out-of-band/out-of-block(including intermodulation) emissions							
Test Path	Test Channel	Test Signal	Stimulus Condition	Signal Level	Worst conducted test level (dBm)	Limit (dBm)	Verdict
DL	LCH	4.1MHz AWGN	One signal input	Pre-AGC	-21.59	≤-13	PASS
				3dB above AGC	-22.09		PASS
			Two signals input	Pre-AGC	-24.75		PASS
				3dB above AGC	-24.93		PASS
	HCH		One signal input	Pre-AGC	-25.95		PASS
				3dB above AGC	-26.54		PASS
			Two signals input	Pre-AGC	-27.83		PASS
				3dB above AGC	-28.04		PASS
DL	LCH	100MHz AWGN	One signal input	Pre-AGC	-16.18	≤-13	PASS
				3dB above AGC	-16.12		PASS
			Two signals input	Pre-AGC	-16.69		PASS
				3dB above AGC	-16.90		PASS
	HCH		One signal input	Pre-AGC	-18.26		PASS
				3dB above AGC	-17.73		PASS
			Two signals input	Pre-AGC	-18.77		PASS
				3dB above AGC	-19.44		PASS
DL	LCH	GSM	One signal input	Pre-AGC	-19.93	≤-13	PASS
				3dB above AGC	-20.18		PASS
			Two signals input	Pre-AGC	-20.25		PASS
				3dB above AGC	-20.61		PASS
	HCH		One signal input	Pre-AGC	-23.29		PASS
				3dB above AGC	-22.98		PASS
			Two signals input	Pre-AGC	-23.78		PASS
				3dB above AGC	-23.96		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,
 $P = 37\text{dBm} = 5\text{W}$
the limit= $37\text{dBm} - [43 + 10\log_{10}(5\text{W})]\text{dB} = -13\text{dBm}$

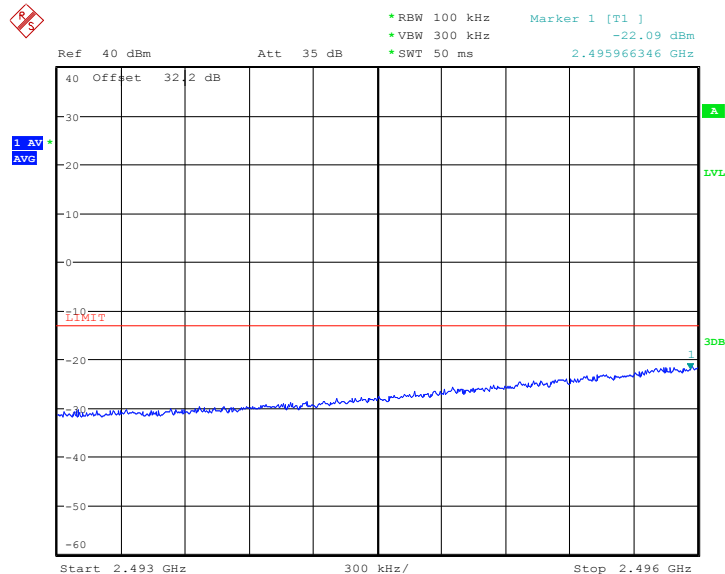
Out-of-band/out-of-block emissions

DL_4.1MHz AWGN_LCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 06:55:44

DL_4.1MHz AWGN_LCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 06:55:51



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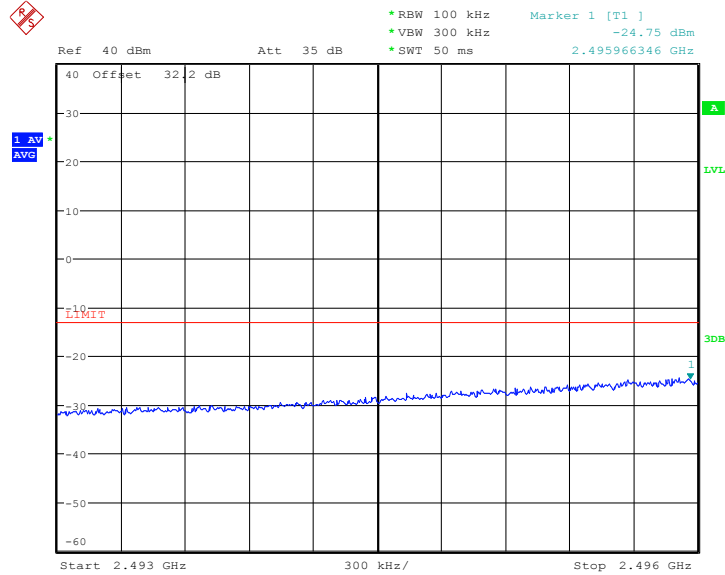
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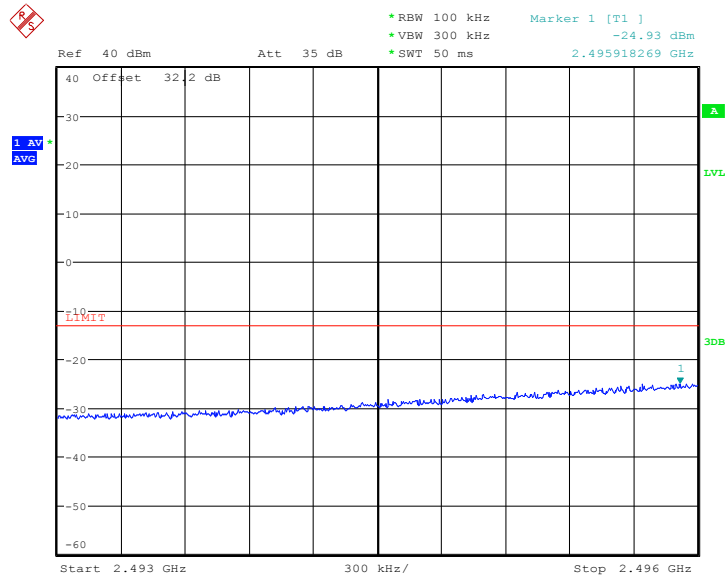
Out-of-band/out-of-block emissions

DL_4.1MHz AWGN_LCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 06:56:22

DL_4.1MHz AWGN_LCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 06:56:28



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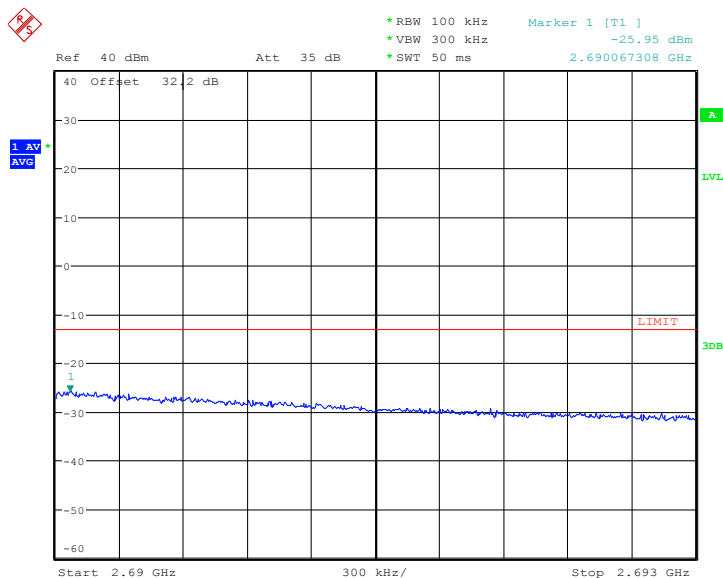
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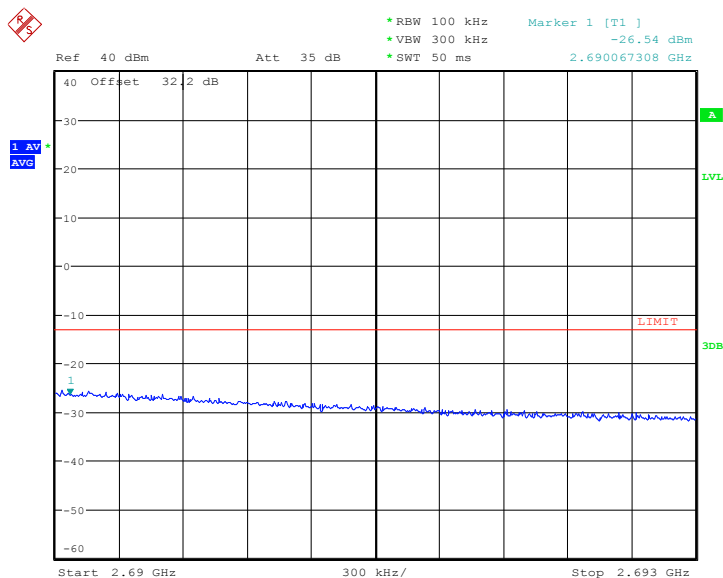
Out-of-band/out-of-block emissions

DL_4.1MHz AWGN_HCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 06:57:59

DL_4.1MHz AWGN_HCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 06:58:04



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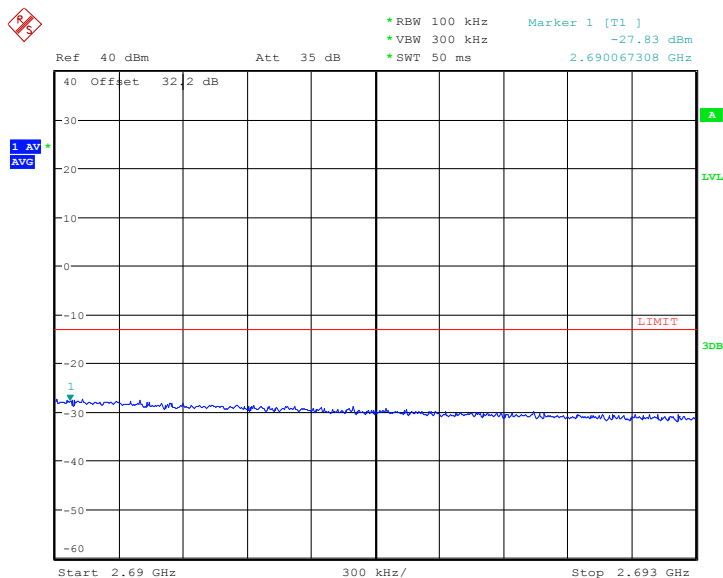
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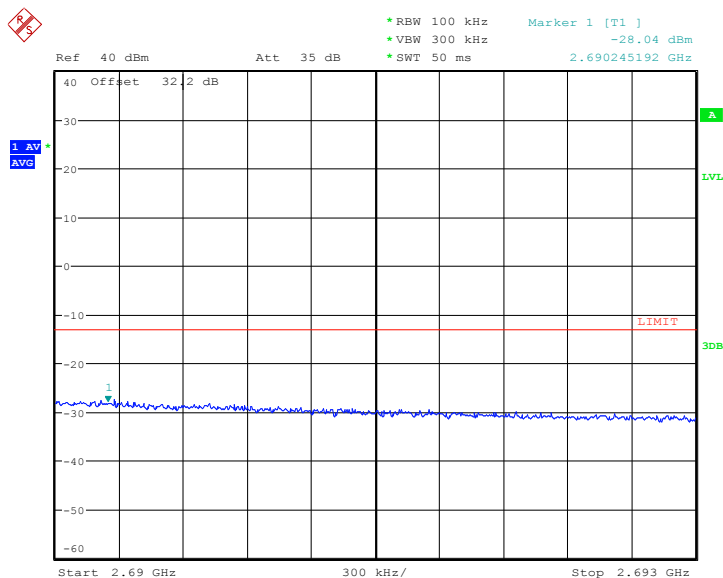
Out-of-band/out-of-block emissions

DL_4.1MHz AWGN_HCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 06:57:27

DL_4.1MHz AWGN_HCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 06:57:35

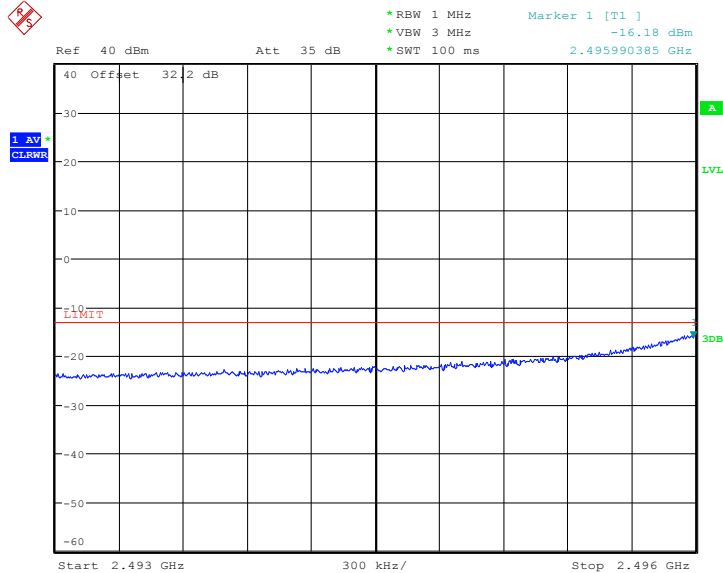


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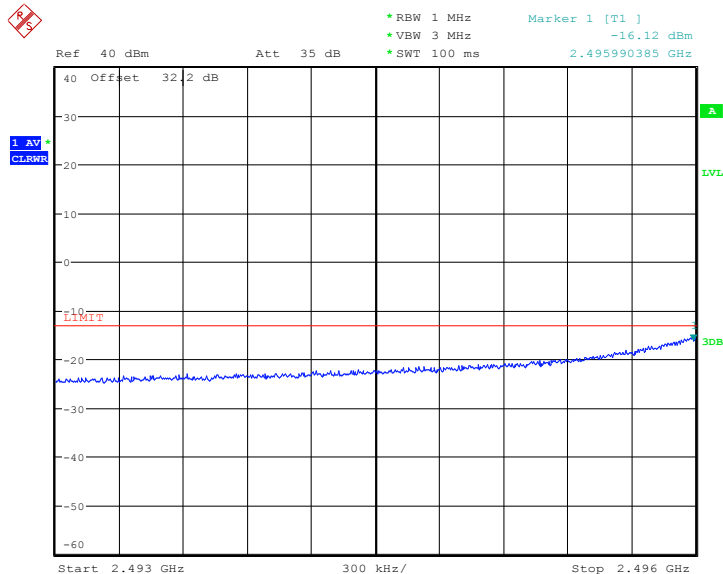
Out-of-band/out-of-block emissions

DL_100MHz AWGN_LCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 07:03:29

DL_100MHz AWGN_LCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 07:03:35

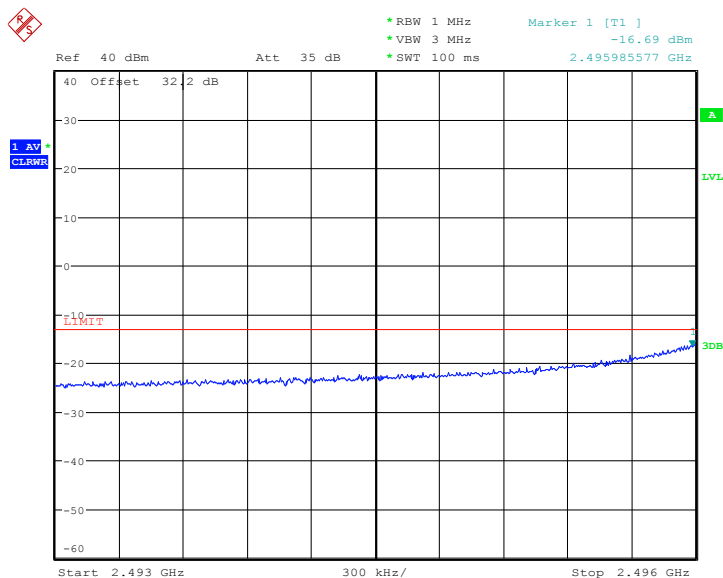


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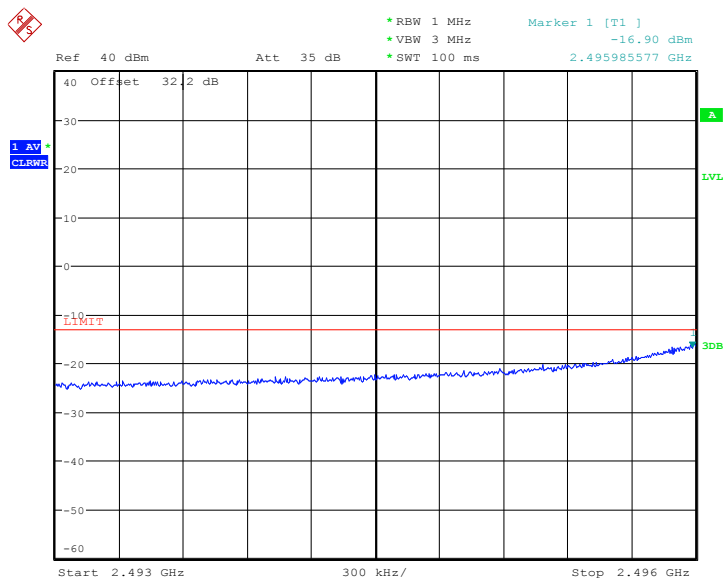
Out-of-band/out-of-block emissions

DL_100MHz AWGN_LCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 07:03:45

DL_100MHz AWGN_LCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 07:03:53

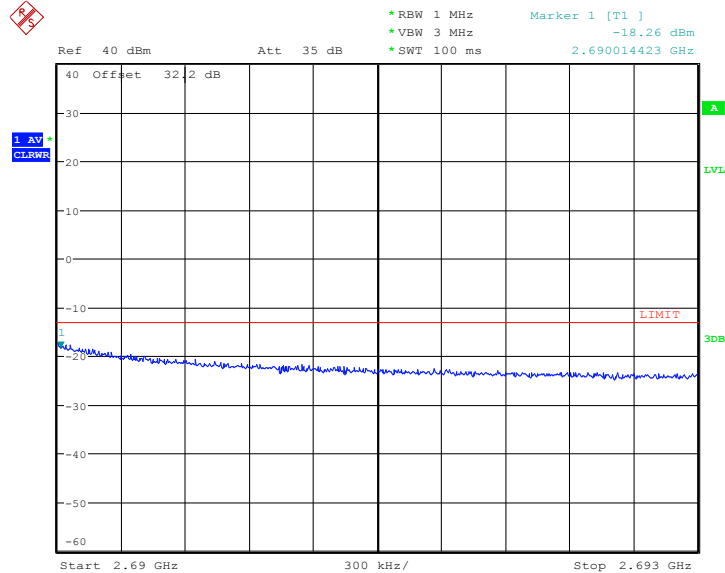


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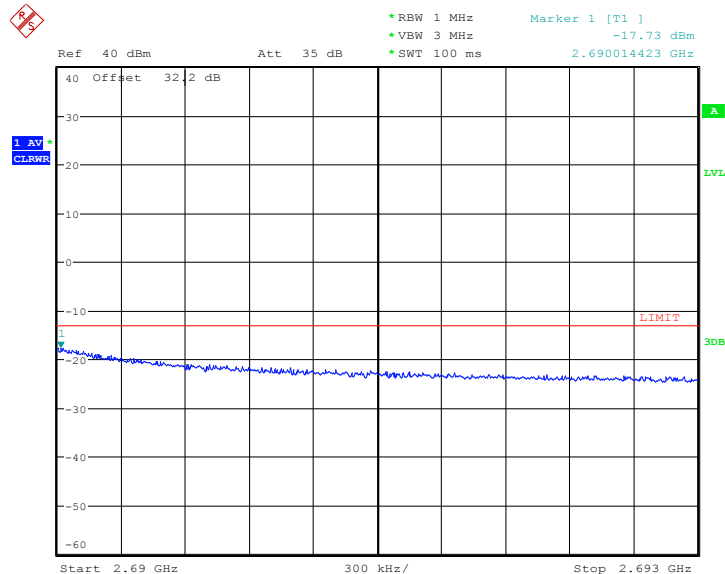
Out-of-band/out-of-block emissions

DL_100MHz AWGN_HCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 07:02:36

DL_100MHz AWGN_HCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 07:02:42



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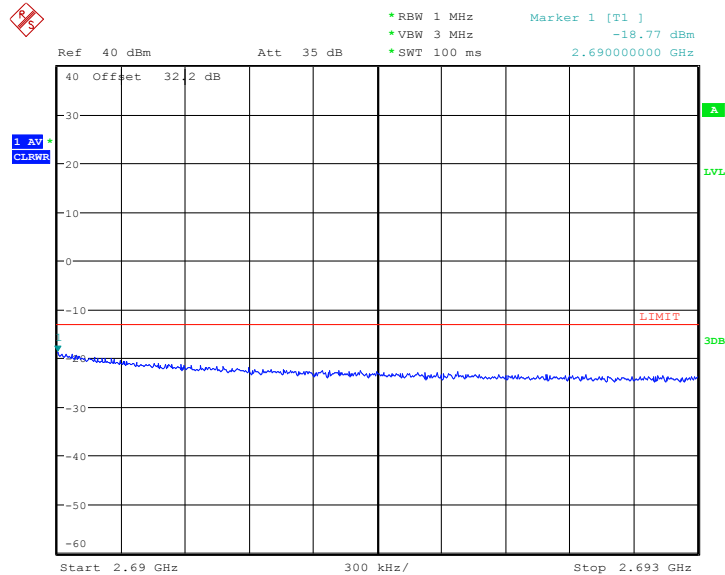
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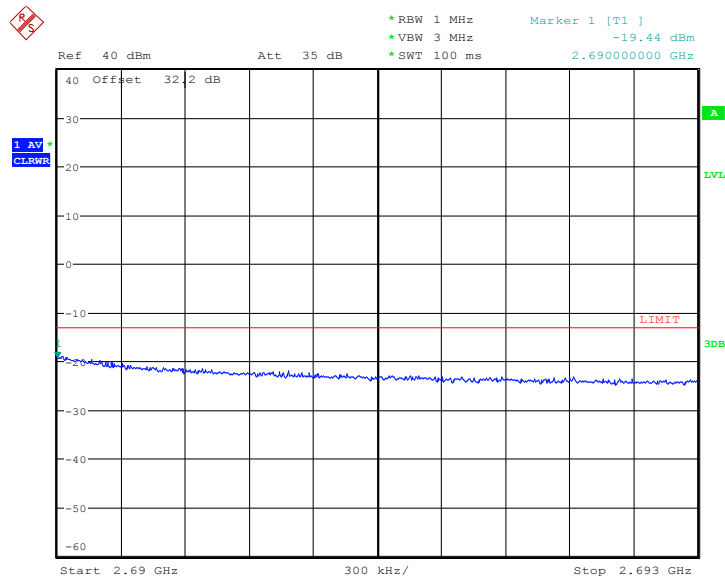
Out-of-band/out-of-block emissions

DL_100MHz AWGN_HCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 07:02:54

DL_100MHz AWGN_HCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 07:02:58



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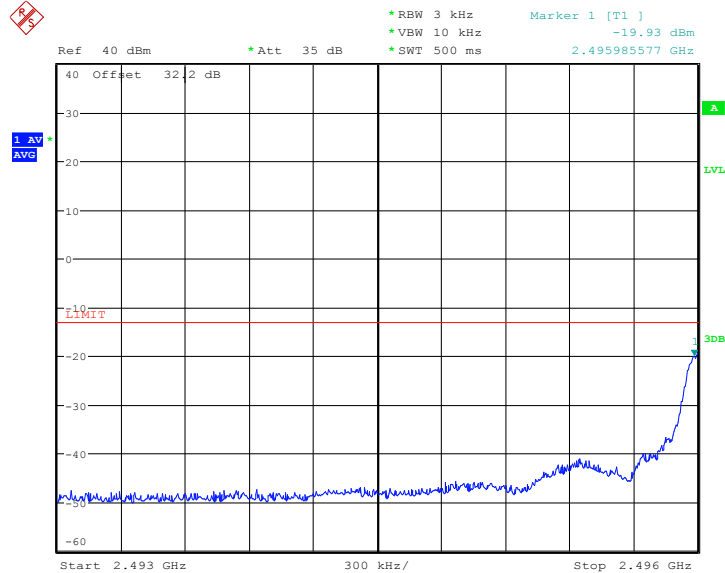
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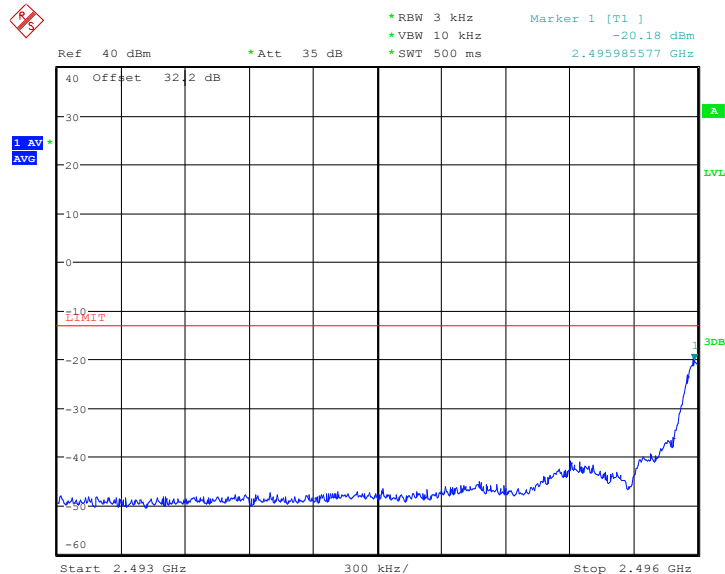
Out-of-band/out-of-block emissions

DL_GSM_LCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 07:09:13

DL_GSM_LCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 07:09:20



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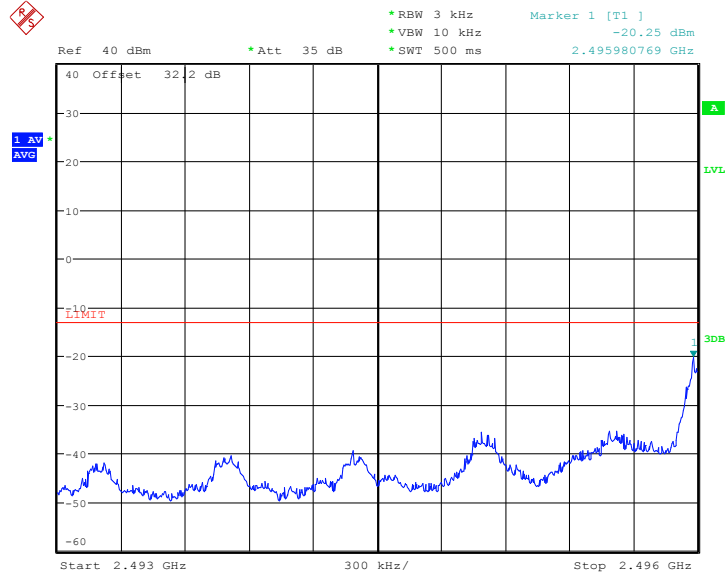
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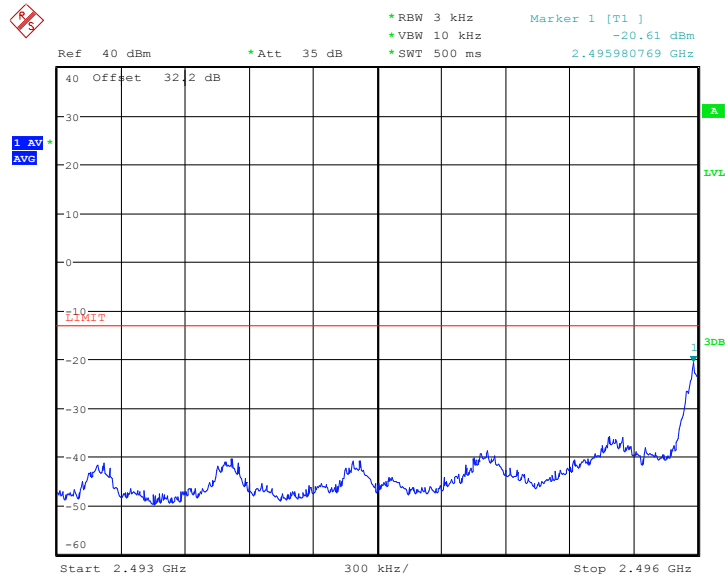
Out-of-band/out-of-block emissions

DL_GSM_LCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 07:10:00

DL_GSM_LCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 07:10:09



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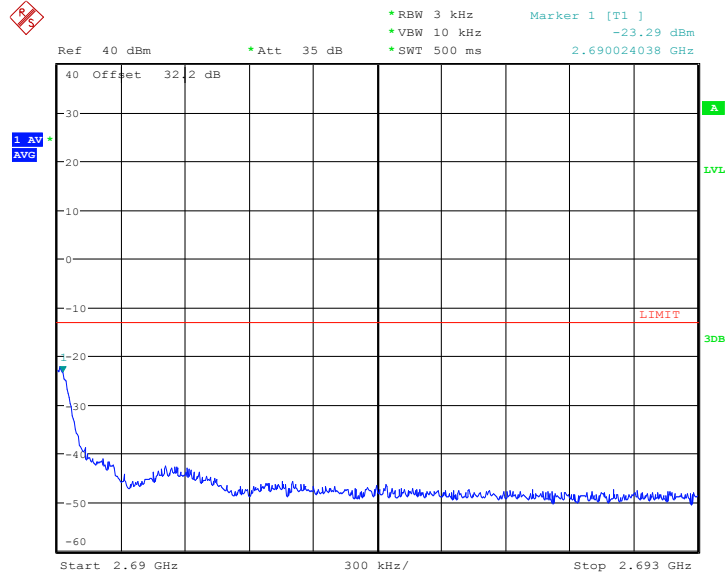
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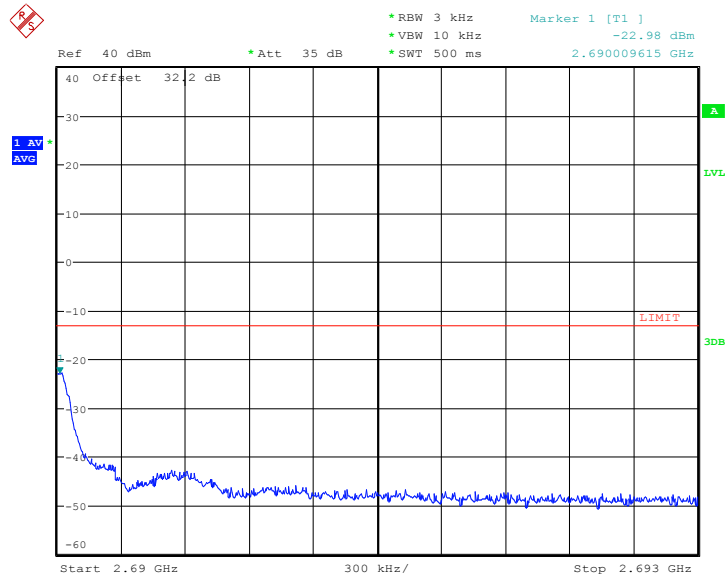
Out-of-band/out-of-block emissions

DL_GSM_HCH_a single test signal_Pre-AGC



Date: 19.NOV.2024 07:11:18

DL_GSM_HCH_a single test signal_3dB above AGC



Date: 19.NOV.2024 07:11:24



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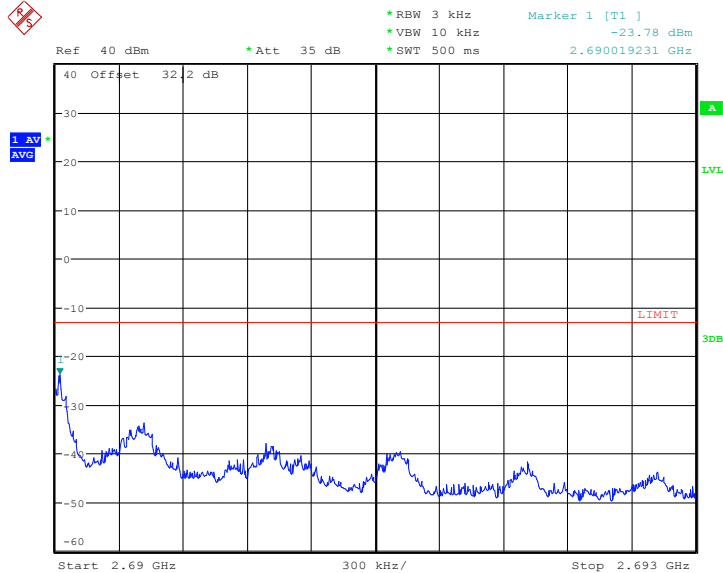
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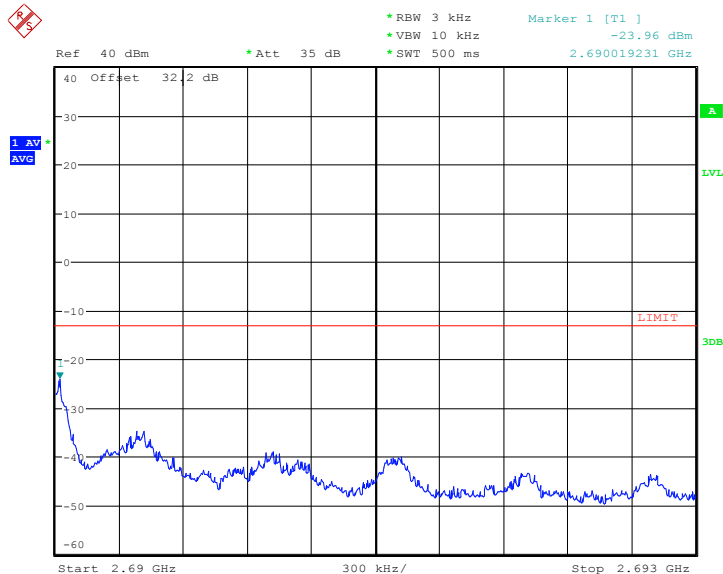
Out-of-band/out-of-block emissions

DL_GSM_HCH_two adjacent test signals_Pre-AGC



Date: 19.NOV.2024 07:10:40

DL_GSM_HCH_two adjacent test signals_3dB above AGC



Date: 19.NOV.2024 07:10:46



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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
DL	4.1MHz AWGN	LCH	0.09-1000	-34.45	≤-13	PASS
			1000-2495	-17.22	≤-13	PASS
		HCH	2691-26900	-15.07	≤-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= 37dBm= 5W limit= 37dBm– [43+ 10log10(5W)]dB= -13dBm 2. All modes (LCH/MCH/HCH, with 4.1MHz AWGN signal/ with 100MHz AWGN signal) had been tested, only show the worst-case in this report.						

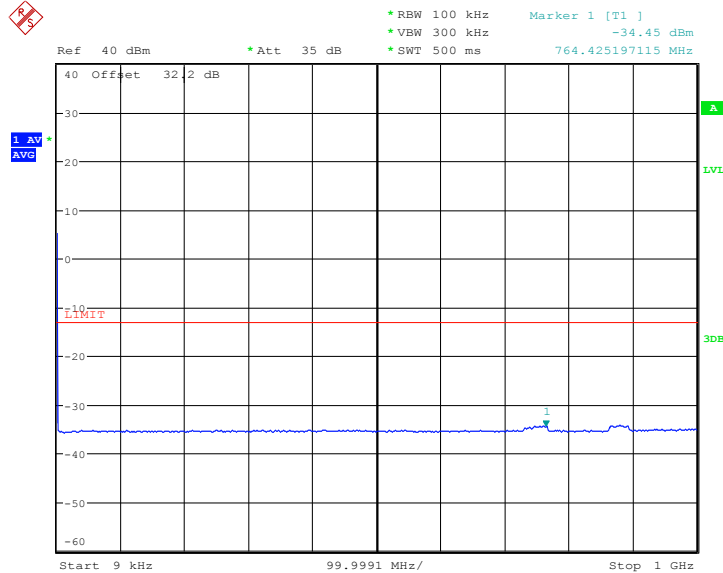


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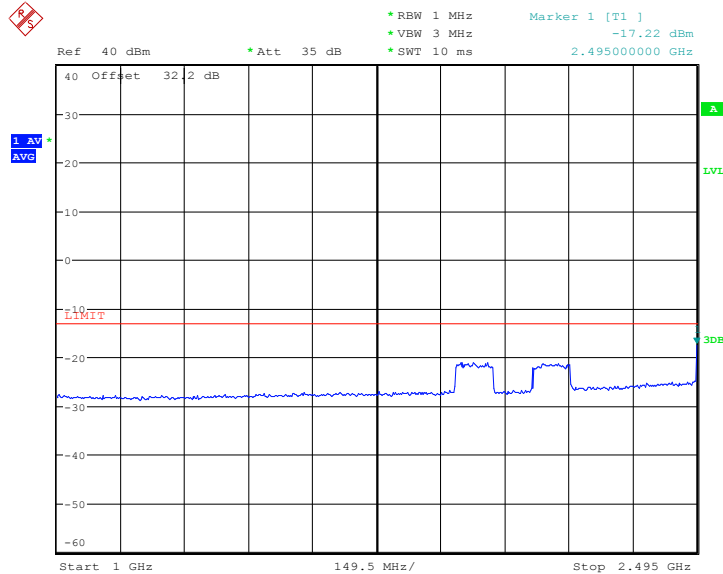
Conducted spurious emissions

DL_4.1MHz AWGN_LCH_Pre-AGC



Date: 19.NOV.2024 07:18:01

DL_4.1MHz AWGN_LCH_Pre-AGC



Date: 19.NOV.2024 07:19:27



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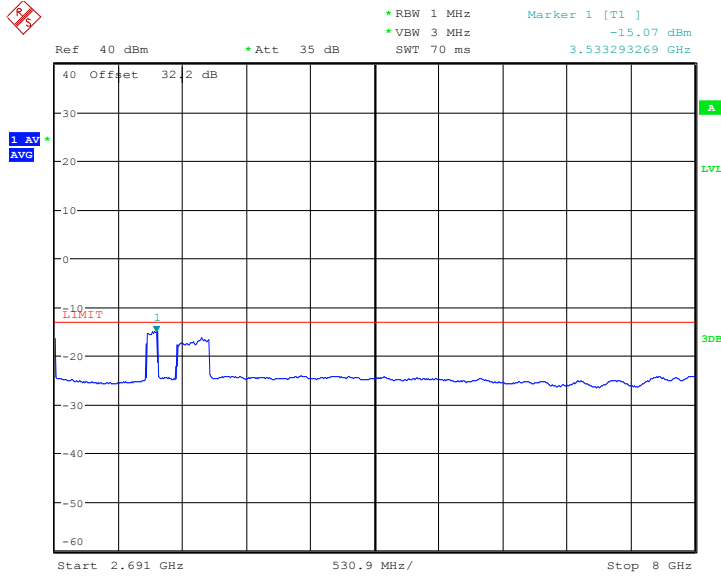
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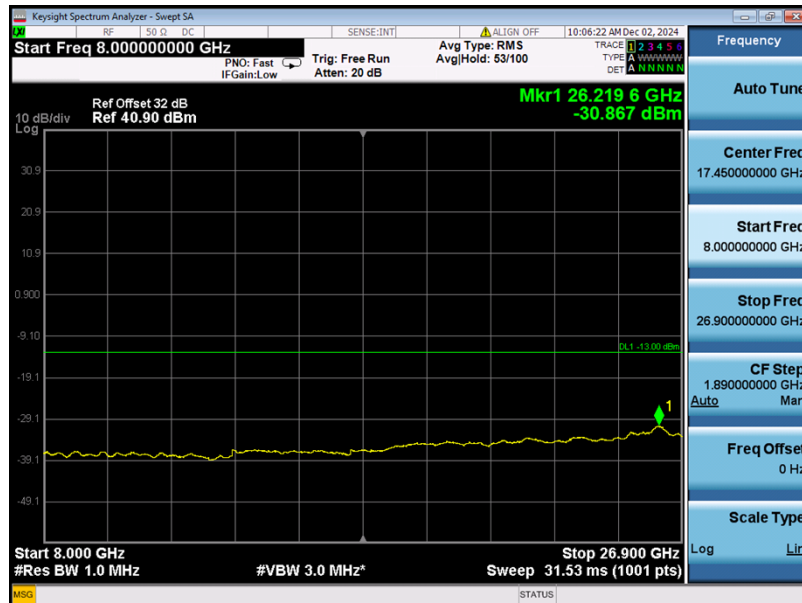
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Conducted spurious emissions

DL_4.1MHz AWGN_HCH_Pre-AGC



Date: 19.NOV.2024 07:20:22



6 Frequency Stability

Frequency stability vs voltage							
Test path	Test Channel	Test Signal	Temperature	Voltage	Freq. error (Hz)	Tolerance (ppm)	Verdict
DL	MCH	4.1MHz AWGN	TN	VL	11.0	0.00424	PASS
			TN	VH	14.3	0.00551	PASS
		100MHz AWGN	TN	VL	11.2	0.00432	PASS
			TN	VH	11.8	0.00455	PASS
		GSM	TN	VL	14.4	0.00555	PASS
			TN	VH	12.3	0.00474	PASS



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Frequency stability vs temperature							
Test Path	Test Channel	Test Signal	Voltage	Temperature (°C)	Freq. error (Hz)	Tolerance (ppm)	Verdict
DL	MCH	4.1MHz AWGN	VN	+50	12.7	0.00490	PASS
			VN	+40	12.9	0.00497	PASS
			VN	+30	10.1	0.00390	PASS
			VN	+20	13.6	0.00524	PASS
			VN	+10	9.7	0.00374	PASS
			VN	0	15.4	0.00594	PASS
			VN	-10	12.0	0.00463	PASS
			VN	-20	10.1	0.00390	PASS
			VN	-30	11.2	0.00432	PASS
	MCH	100MHz AWGN	VN	+50	10.6	0.00409	PASS
			VN	+40	11.5	0.00444	PASS
			VN	+30	15.5	0.00598	PASS
			VN	+20	14.2	0.00548	PASS
			VN	+10	12.0	0.00463	PASS
			VN	0	13.1	0.00505	PASS
			VN	-10	10.8	0.00417	PASS
			VN	-20	12.2	0.00470	PASS
			VN	-30	9.3	0.00359	PASS
	MCH	GSM	VN	+50	10.1	0.00390	PASS
			VN	+40	14.7	0.00567	PASS
			VN	+30	11.5	0.00444	PASS
			VN	+20	13.7	0.00528	PASS
			VN	+10	10.3	0.00397	PASS
			VN	0	13.8	0.00532	PASS
			VN	-10	11.3	0.00436	PASS
			VN	-20	15.3	0.00590	PASS
			VN	-30	10.4	0.00401	PASS



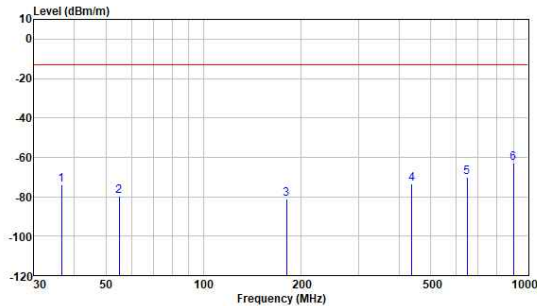
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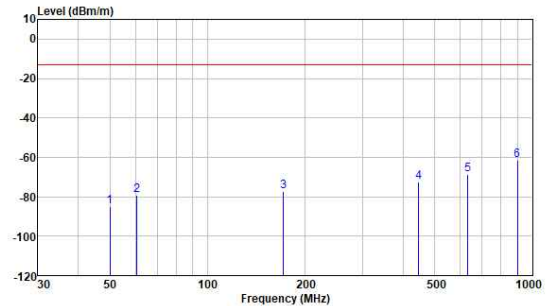
7 Radiated Spurious emissions

Radiated Spurious emissions

DL_4.1MHz AWGN_MCH_30MHz-1GHz

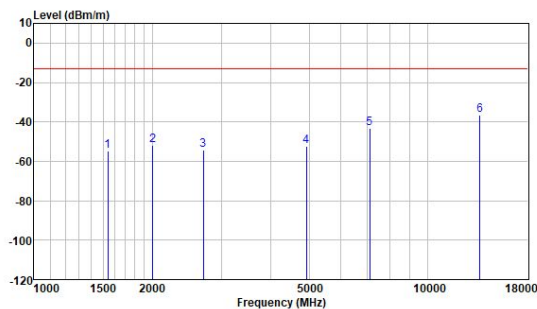


	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	36.51	-76.70	2.62	-74.08	-13.00	-61.08	HORIZONTAL
2	55.03	-77.84	-1.94	-79.78	-13.00	-66.78	HORIZONTAL
3	180.02	-74.91	-6.01	-80.92	-13.00	-67.92	HORIZONTAL
4	437.12	-73.90	0.22	-73.68	-13.00	-60.68	HORIZONTAL
5	647.39	-73.73	3.77	-69.96	-13.00	-56.96	HORIZONTAL
6	900.15	-72.32	9.45	-62.87	-13.00	-49.87	HORIZONTAL

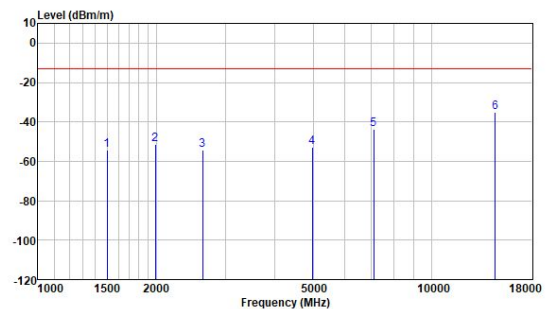


	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	50.06	-78.02	-6.81	-84.83	-13.00	-71.83	VERTICAL
2	60.49	-77.18	-2.28	-79.46	-13.00	-66.46	VERTICAL
3	171.39	-73.23	-3.94	-77.17	-13.00	-64.17	VERTICAL
4	446.41	-74.16	1.44	-72.72	-13.00	-59.72	VERTICAL
5	633.91	-73.29	4.58	-68.71	-13.00	-55.71	VERTICAL
6	900.15	-72.17	10.65	-61.52	-13.00	-48.52	VERTICAL

DL_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	1542.73	-59.73	4.92	-54.81	-13.00	-41.81	HORIZONTAL
2	2001.08	-61.68	9.88	-51.80	-13.00	-38.80	HORIZONTAL
3	2695.00	-50.80	4.53	-54.27	-13.00	-41.27	HORIZONTAL
4	4916.49	-62.46	10.02	-52.44	-13.00	-39.44	HORIZONTAL
5	7117.54	-62.22	18.97	-43.25	-13.00	-30.25	HORIZONTAL
6	13559.88	-64.07	27.47	-36.60	-13.00	-23.60	HORIZONTAL



	Freq	Read Level	Correction Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB	
1	1498.78	-61.04	6.97	-54.07	-13.00	-41.07	VERTICAL
2	1909.55	-59.94	8.46	-51.48	-13.00	-38.48	VERTICAL
3	2618.22	-60.00	5.61	-54.47	-13.00	-41.47	VERTICAL
4	4973.66	-62.95	9.92	-53.03	-13.00	-40.03	VERTICAL
5	7117.54	-63.13	19.63	-43.50	-13.00	-30.50	VERTICAL
6	14491.96	-62.85	27.72	-35.13	-13.00	-22.13	VERTICAL



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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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