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Appendix B

GSM850&1900



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1 Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP[dBm]	Limit[dBm]	Verdict
		LCH	32.31	26.66	38.45	PASS
	GSM/TM1	MCH	32.44	26.79	38.45	PASS
GSM850		HCH	32.24	26.59	38.45	PASS
GSIVIOSU	GSM/TM2	LCH	26.87	21.22	38.45	PASS
		MCH	26.73	21.08	38.45	PASS
		HCH	26.91	21.26	38.45	PASS

Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP[dBm]	Limit[dBm]	Verdict
		LCH	29.66	28.66	33	PASS
	GSM/TM1	MCH	29.70	28.70	33	PASS
CSM1000		HCH	29.64	28.64	33	PASS
GSM1900	GSM/TM2	LCH	26.01	25.01	33	PASS
		MCH	25.87	24.87	33	PASS
		HCH	25.90	24.90	33	PASS

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level



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2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
		LCH	6.49	13	PASS
	GSM/TM1	MCH	6.43	13	PASS
GSM850		HCH	6.52	13	PASS
GSIVIOSU		LCH	8.17	13	PASS
	GSM/TM2	MCH	8.23	13	PASS
		HCH	8.38	13	PASS
		LCH	6.41	13	PASS
	GSM/TM1	MCH	6.41	13	PASS
GSM1900		HCH	6.67	13	PASS
G3W1900	GSM/TM2	LCH	8.49	13	PASS
		MCH	8.46	13	PASS
		HCH	8.12	13	PASS



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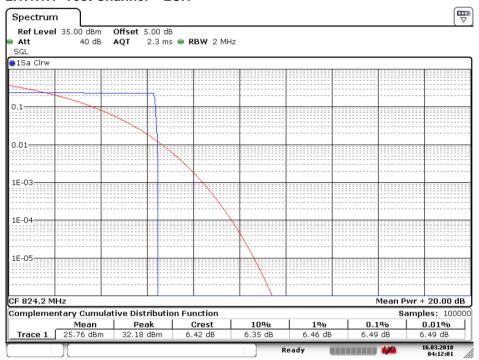
Part II - Test Plots

2.1 For GSM

2.1.1 Test Band = GSM850

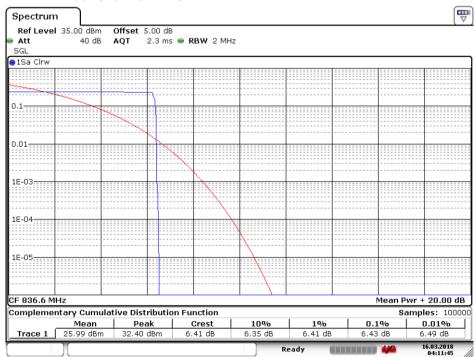
2.1.1.1 Test Mode = GSM/TM1

2.1.1.1.1 Test Channel = LCH



Date: 16.MAR.2018 04:12:02

2.1.1.1.2 Test Channel = MCH



Date: 16.MAR.2018 04:11:45

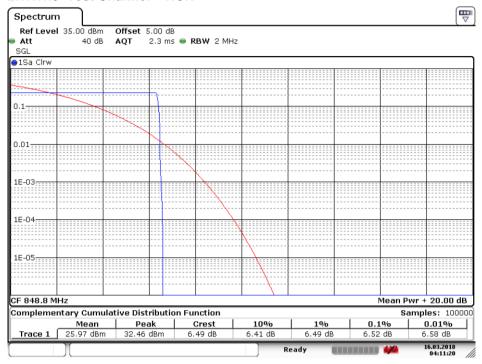
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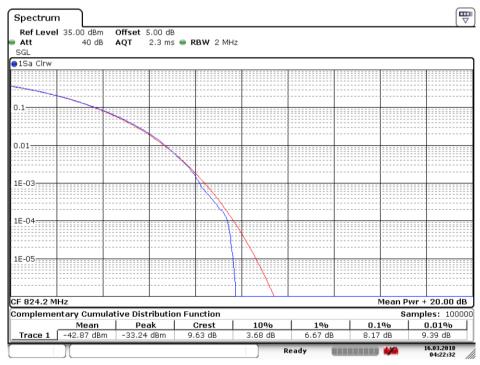
2.1.1.1.3 Test Channel = HCH



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2.1.1.2 Test Mode = GSM/TM2

2.1.1.2.1 Test Channel = LCH



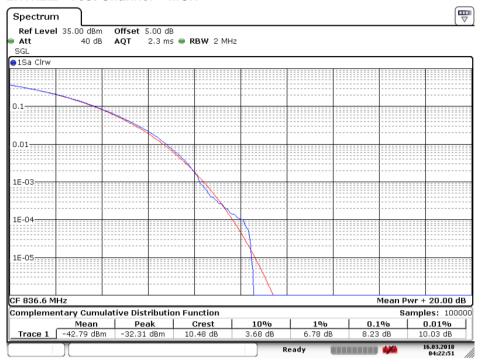
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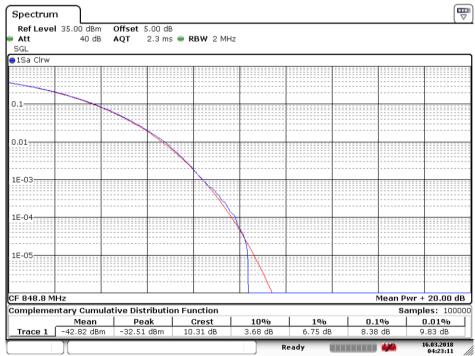
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2.1.1.2.2 Test Channel = MCH



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2.1.1.2.3 Test Channel = HCH



Date: 16.MAR.2018 04:23:11



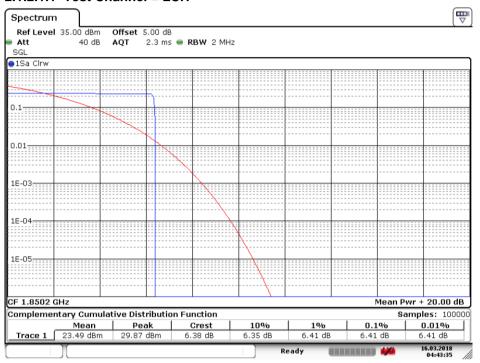
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2.1.2 Test Band = GSM1900

2.1.2.1 Test Mode = GSM/TM1

2.1.2.1.1 Test Channel = LCH



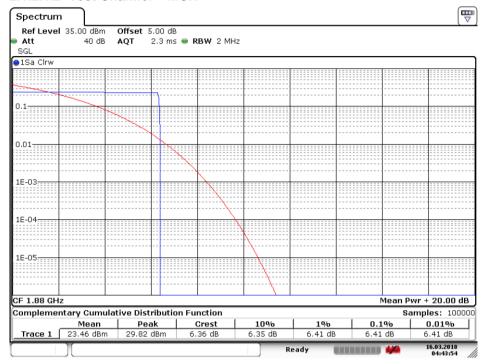
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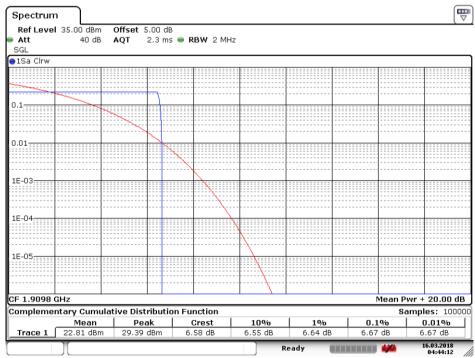
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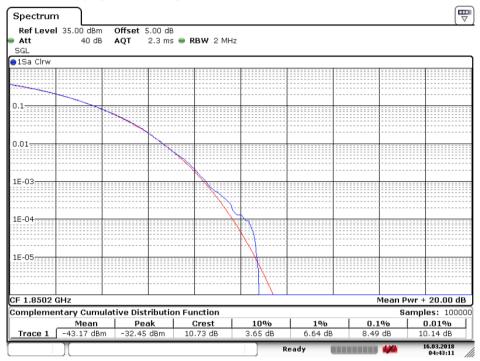


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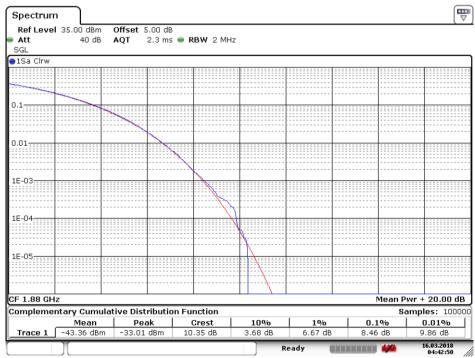
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2.1.2.2.1 Test Channel = LCH



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2.1.2.2.2 Test Channel = MCH



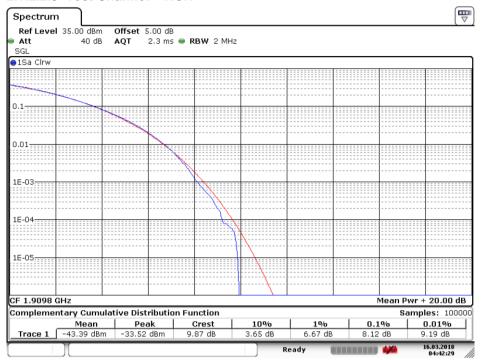
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2.1.2.2.3 Test Channel = HCH



Date: 16.MAR.2018 04:42:30



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3 Modulation Characteristics

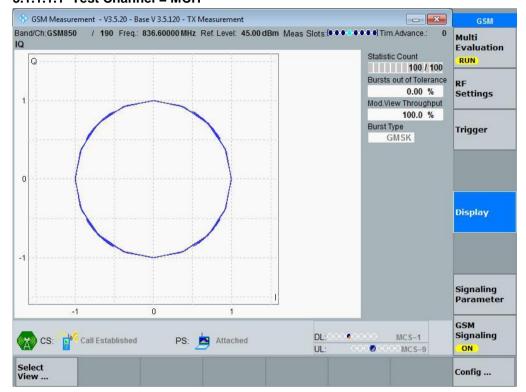
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



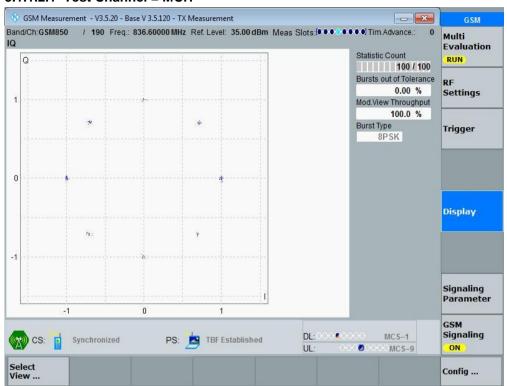


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3.1.1.2 Test Mode = GSM/TM2

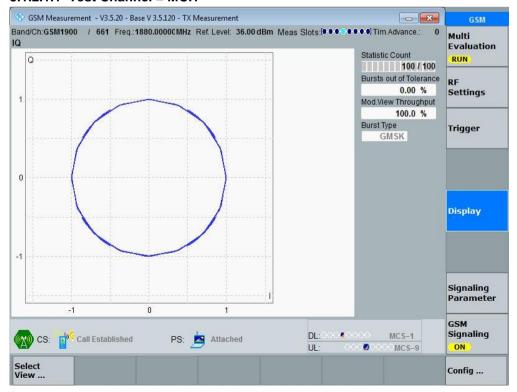
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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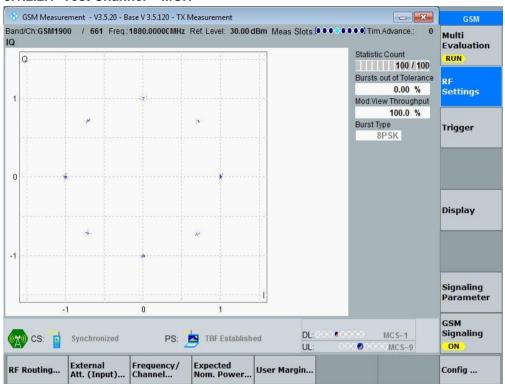


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3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH





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4 Bandwidth

Part I - Test Results

Test Band	Test Band Test Mode		Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
		LCH	244.8	319.7	PASS
	GSM/TM1	MCH	244.8	320.7	PASS
CCMOEO		HCH	244.8	317.7	PASS
GSM850		LCH	242.8	311.7	PASS
	GSM/TM2	MCH	237.8	313.7	PASS
		HCH	240.8	317.7	PASS
	GSM/TM1	LCH	242.8	317.7	PASS
		MCH	241.8	312.7	PASS
GSM1900		HCH	245.8	315.7	PASS
G3W1900		LCH	234.8	305.7	PASS
	GSM/TM2	MCH	239.8	317.7	PASS
		HCH	238.8	305.7	PASS

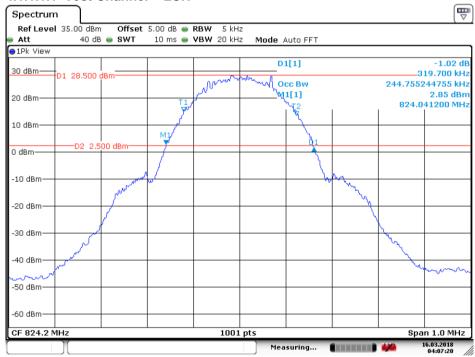
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



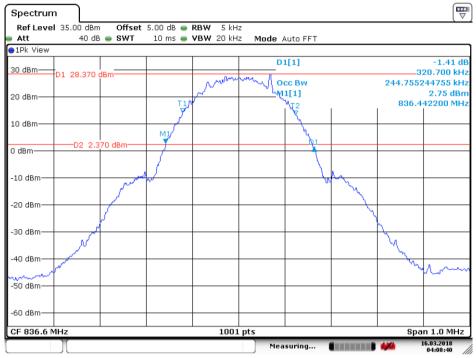
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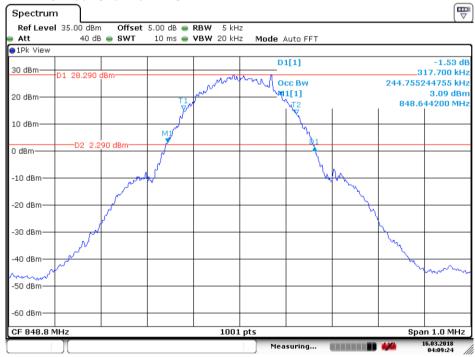
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4.1.1.1.2 Test Channel = MCH



Date: 16.MAR.2018 04:08:41

4.1.1.1.3 Test Channel = HCH



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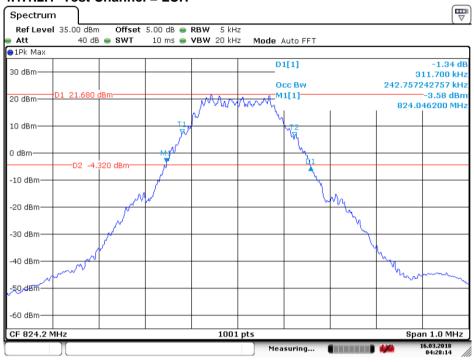


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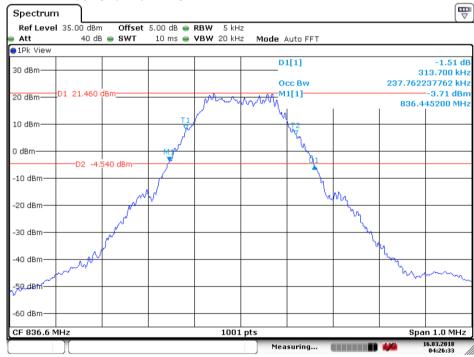
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4.1.1.2.1 Test Channel = LCH



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4.1.1.2.2 Test Channel = MCH



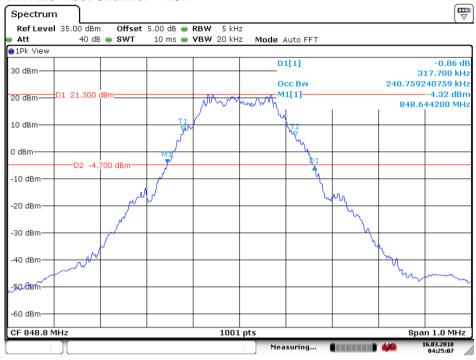
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4.1.1.2.3 Test Channel = HCH

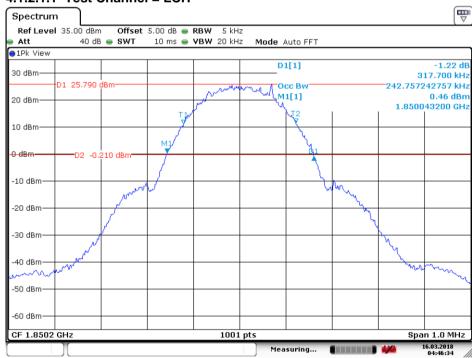


Date: 16.MAR.2018 04:25:07

4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



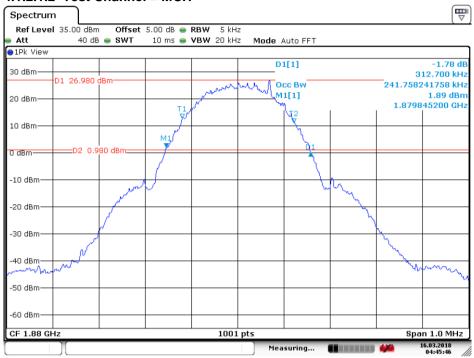
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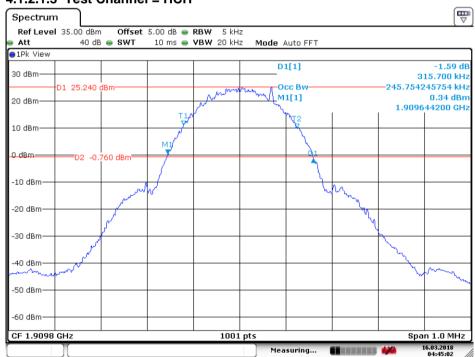
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4.1.2.1.2 Test Channel = MCH



Date: 16.MAR.2018 04:45:46

4.1.2.1.3 Test Channel = HCH



Date: 16.MAR.2018 04:45:03

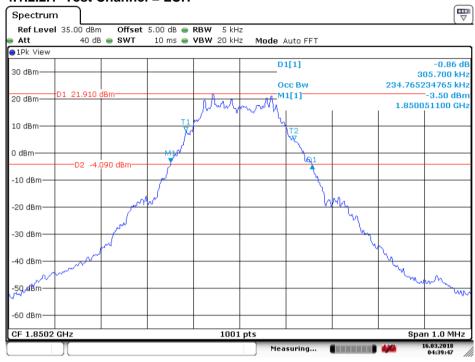


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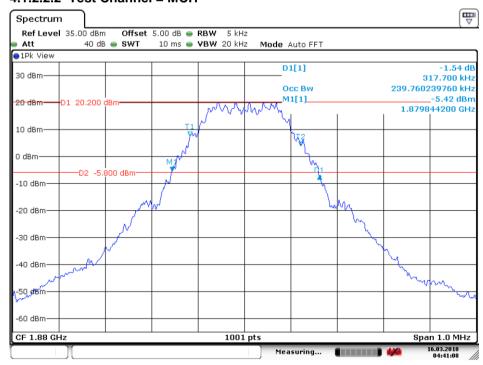
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4.1.2.2.1 Test Channel = LCH



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4.1.2.2.2 Test Channel = MCH



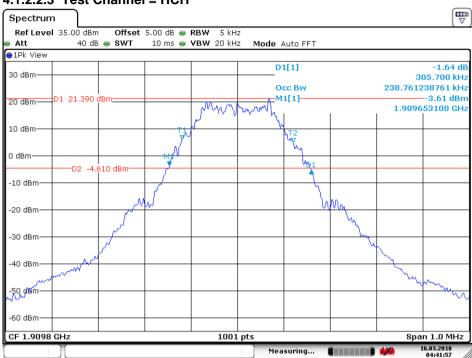
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4.1.2.2.3 Test Channel = HCH



Date: 16.MAR.2018 04:41:58



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5 Band Edges Compliance

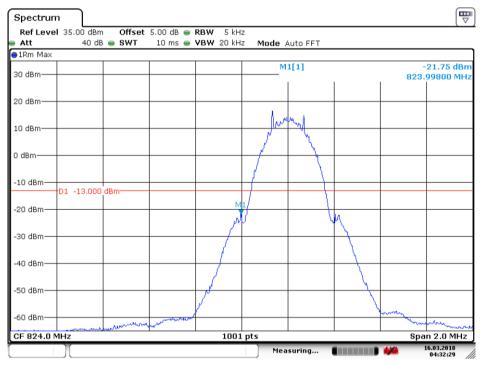
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



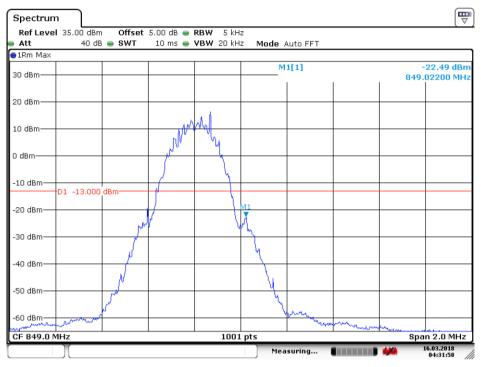
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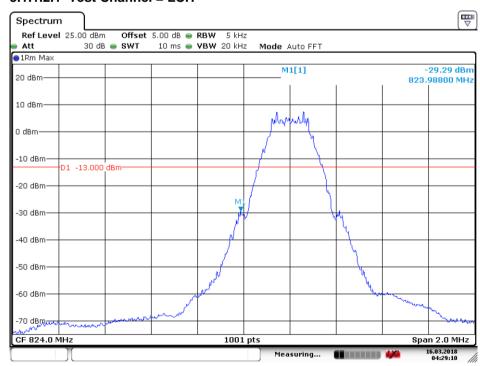
5.1.1.1.2 Test Channel = HCH



Date: 16.MAR.2018 04:31:58

5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



Date: 16.MAR.2018 04:29:10

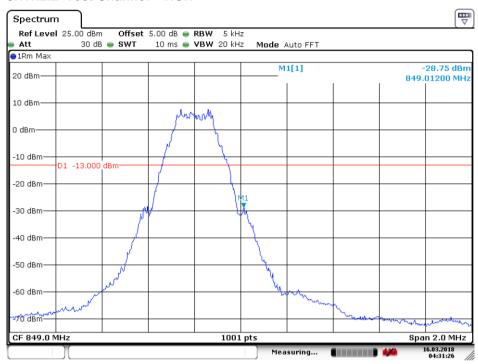
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5.1.1.2.2 Test Channel = HCH

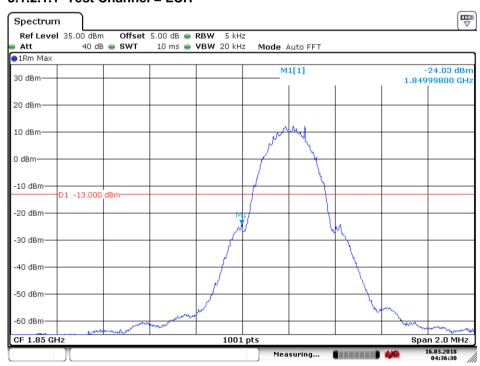


Date: 16.MAR.2018 04:31:26

5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



Date: 16.MAR.2018 04:36:30

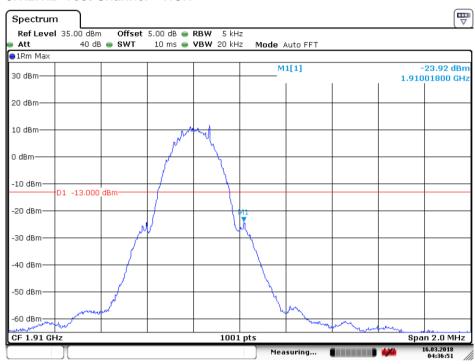
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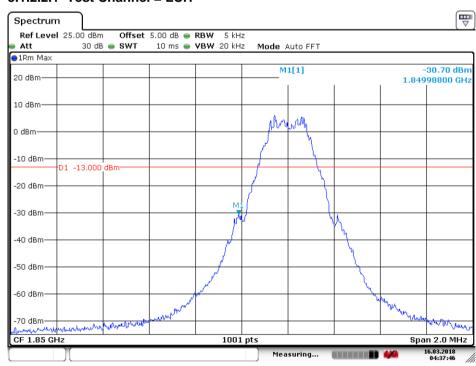
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5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



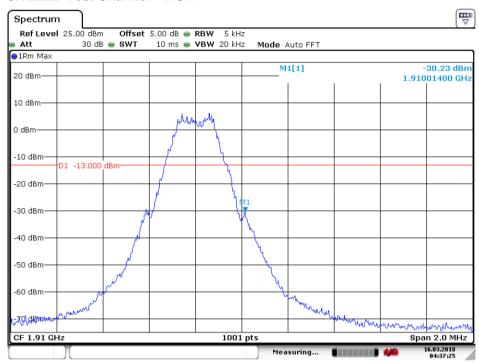
Date: 16.MAR.2018 04:37:47



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5.1.2.2.2 Test Channel = HCH



Date: 16.MAR.2018 04:37:26



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6 Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k = 4 * (Span / RBW) with k = 4 * (Span / RBW).

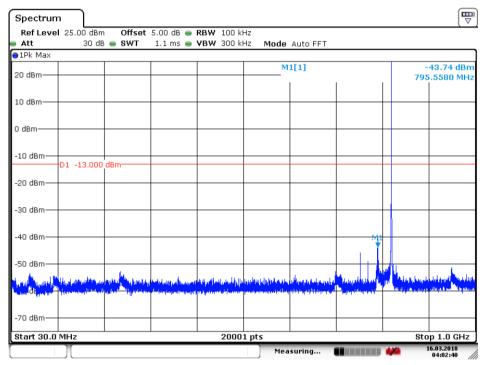
Part I - Test Plots

6.1 For GSM

6.1.1 Test Band = **GSM850**

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

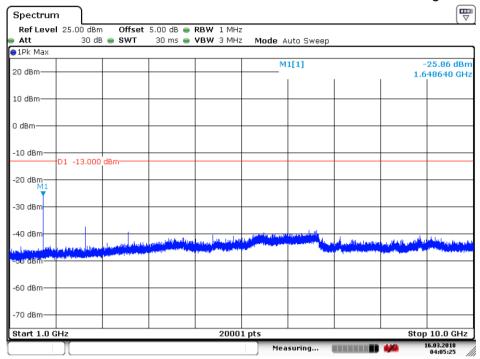


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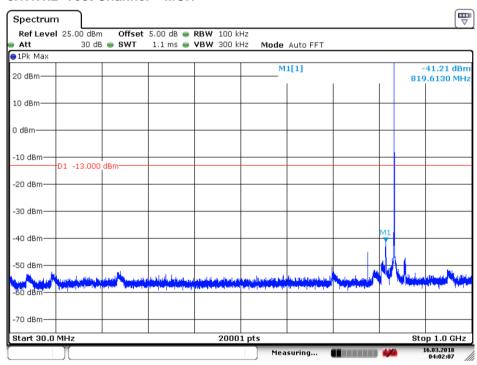
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Date: 16.MAR.2018 04:05:25

6.1.1.1.2 Test Channel = MCH

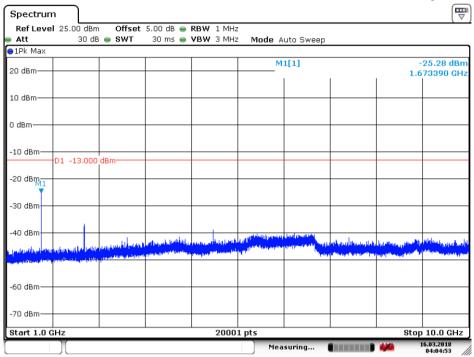


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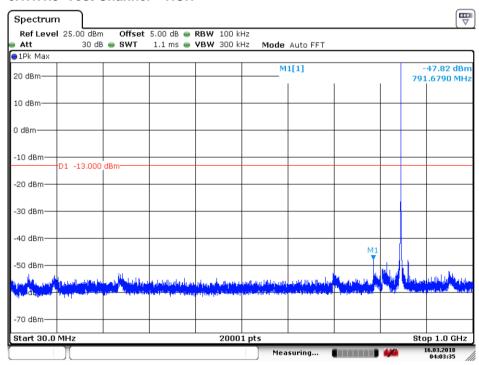
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Date: 16.MAR.2018 04:04:54

6.1.1.1.3 Test Channel = HCH

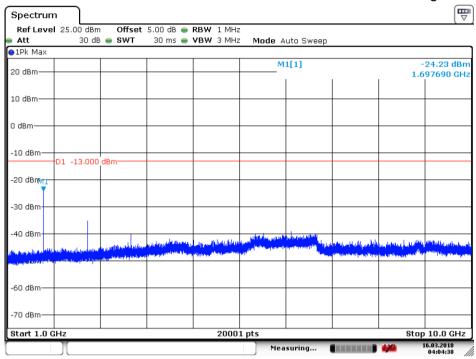


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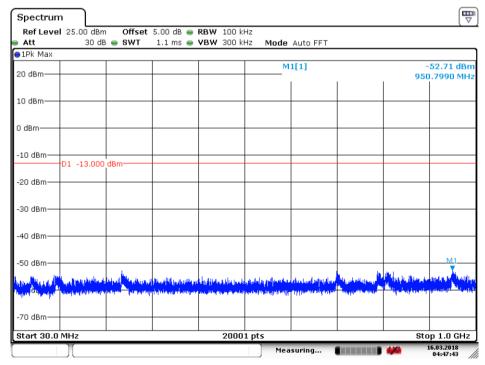


Date: 16.MAR.2018 04:04:38

6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

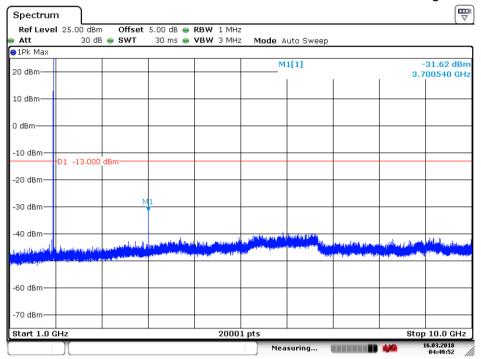


Date: 16.MAR.2018 04:47:43

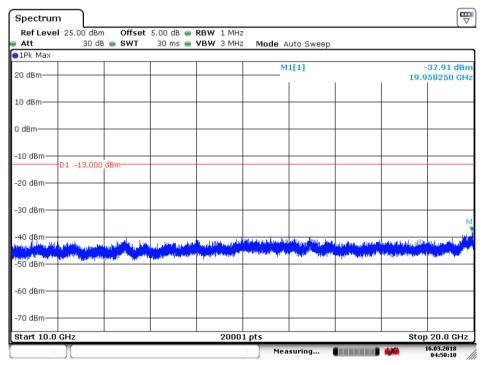


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Date: 16.MAR.2018 04:49:53



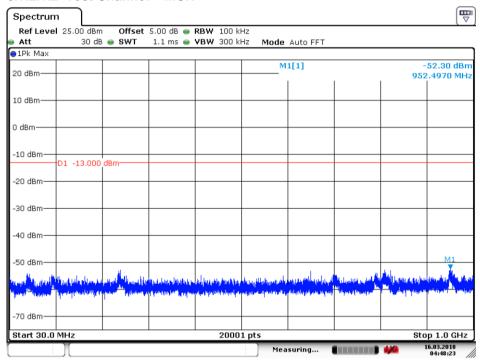
Date: 16.MAR.2018 04:50:10



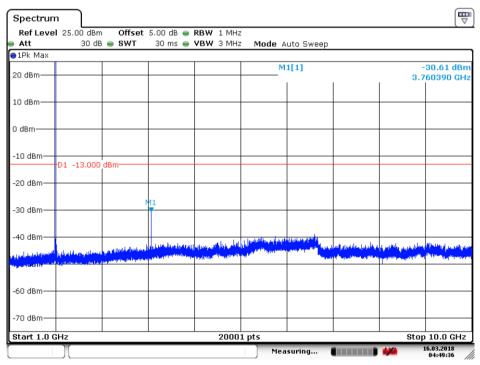
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6.1.2.1.2 Test Channel = MCH



Date: 16.MAR.2018 04:48:23

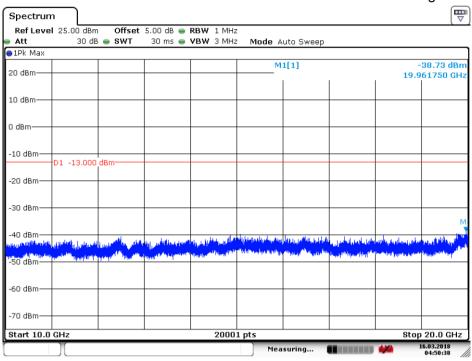


Date: 16.MAR.2018 04:49:36



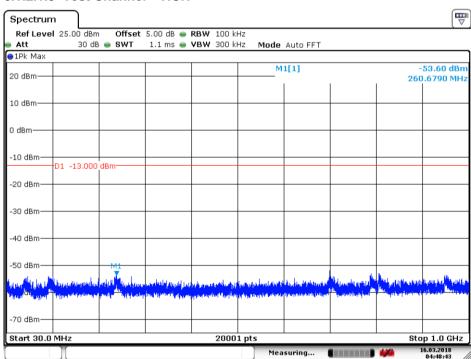
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Date: 16.MAR.2018 04:50:38

6.1.2.1.3 Test Channel = HCH

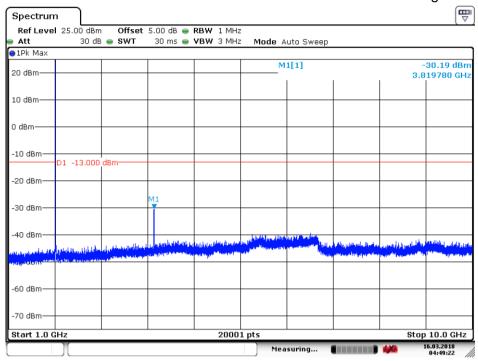


Date: 16.MAR.2018 04:48:44

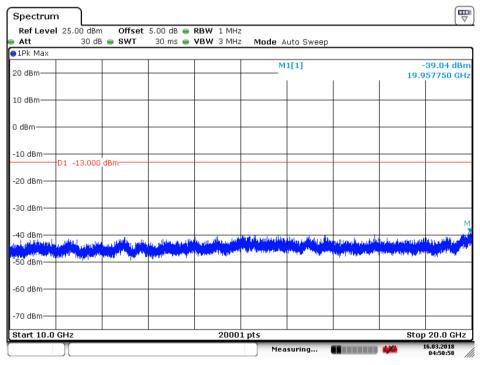


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7 Field Strength of Spurious Radiation

Part I - Test Results

7.1 For GSM

7.1.1 Test Band = **GSM850**

7.1.1.1 Test Mode = GSM/TM1

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.050000	-69.32	-13.00	56.32	Vertical
104.250000	-62.98	-13.00	49.98	Vertical
1813.312500	-43.49	-13.00	30.49	Vertical
2472.937500	-41.56	-13.00	28.56	Vertical
3297.000000	-44.57	-13.00	31.57	Vertical
4945.875000	-48.14	-13.00	35.14	Vertical
62.000000	-69.47	-13.00	56.47	Horizontal
402.000000	-73.21	-13.00	60.21	Horizontal
1812.375000	-43.78	-13.00	30.78	Horizontal
2472.375000	-40.95	-13.00	27.95	Horizontal
3296.625000	-47.57	-13.00	34.57	Horizontal
4944.750000	-49.37	-13.00	36.37	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.100000	-68.93	-13.00	55.93	Vertical
588.200000	-54.86	-13.00	41.86	Vertical
1673.062500	-46.84	-13.00	33.84	Vertical
2509.312500	-37.86	-13.00	24.86	Vertical
3345.750000	-48.14	-13.00	35.14	Vertical
5019.750000	-48.44	-13.00	35.44	Vertical
60.750000	-70.52	-13.00	57.52	Horizontal
402.000000	-71.24	-13.00	58.24	Horizontal
1672.312500	-48.48	-13.00	35.48	Horizontal
2509.687500	-40.41	-13.00	27.41	Horizontal
3346.875000	-50.29	-13.00	37.29	Horizontal
5020.125000	-49.33	-13.00	36.33	Horizontal



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7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.250000	-68.07	-13.00	55.07	Vertical
104.250000	-63.50	-13.00	50.50	Vertical
1231.666667	-50.88	-13.00	37.88	Vertical
2546.062500	-37.81	-13.00	24.81	Vertical
4310.625000	-50.72	-13.00	37.72	Vertical
6902.000000	-48.61	-13.00	35.61	Vertical
61.050000	-69.89	-13.00	56.89	Horizontal
390.050000	-72.22	-13.00	59.22	Horizontal
1698.562500	-45.80	-13.00	32.80	Horizontal
2546.437500	-39.12	-13.00	26.12	Horizontal
3571.125000	-52.49	-13.00	39.49	Horizontal
5092.875000	-48.81	-13.00	35.81	Horizontal

7.1.2 Test Band = **GSM1900**

7.1.2.1 Test Mode = GSM/TM1

7.1.2.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
74.800000	-72.92	-13.00	59.92	Vertical
262.500000	-76.94	-13.00	63.94	Vertical
1236.160000	-50.92	-13.00	37.92	Vertical
2817.680000	-41.82	-13.00	28.82	Vertical
5550.750000	-47.37	-13.00	34.37	Vertical
9251.000000	-45.64	-13.00	32.64	Vertical
59.900000	-69.67	-13.00	56.67	Horizontal
250.000000	-74.86	-13.00	61.86	Horizontal
1069.700000	-52.70	-13.00	39.70	Horizontal
2802.840000	-41.23	-13.00	28.23	Horizontal
4318.875000	-50.36	-13.00	37.36	Horizontal
5550.375000	-45.44	-13.00	32.44	Horizontal



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7.1.2.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.050000	-71.24	-13.00	58.24	Vertical
400.000000	-74.08	-13.00	61.08	Vertical
599.166667	-54.24	-13.00	41.24	Vertical
2128.680000	-43.84	-13.00	30.84	Vertical
3643.875000	-51.81	-13.00	38.81	Vertical
5640.000000	-48.10	-13.00	35.10	Vertical
61.550000	-69.50	-13.00	56.50	Horizontal
400.050000	-72.73	-13.00	59.73	Horizontal
1195.160000	-51.33	-13.00	38.33	Horizontal
2482.720000	-43.61	-13.00	30.61	Horizontal
5640.000000	-49.06	-13.00	36.06	Horizontal
6129.000000	-49.90	-13.00	36.90	Horizontal

7.1.2.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.350000	-69.27	-13.00	56.27	Vertical
250.000000	-76.68	-13.00	63.68	Vertical
1216.480000	-51.48	-13.00	38.48	Vertical
3819.375000	-49.98	-13.00	36.98	Vertical
5729.625000	-47.86	-13.00	34.86	Vertical
9549.000000	-46.10	-13.00	33.10	Vertical
59.950000	-69.08	-13.00	56.08	Horizontal
400.000000	-72.60	-13.00	59.60	Horizontal
1089.380000	-52.09	-13.00	39.09	Horizontal
3818.625000	-49.56	-13.00	36.56	Horizontal
5729.250000	-46.57	-13.00	33.57	Horizontal
8641.000000	-47.64	-13.00	34.64	Horizontal

NOTE:

1) All modes are tested, but the data presented above is the worst case. the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



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8 Frequency Stability

8.1 Frequency Error VS. Voltage

Part I - Test Results

Part I - Tes Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VL	2.60	0.00315	PASS
		LCH	TN	VN	1.41	0.00171	PASS
				VH	-3.38	-0.00410	PASS
				VL	-2.73	-0.00326	PASS
	GSM/TM1	MCH	TN	VN	-1.82	-0.00218	PASS
				VH	-4.45	-0.00532	PASS
				VL	3.02	0.00356	PASS
		HCH	TN	VN	-1.92	-0.00226	PASS
GSM850				VH	-2.98	-0.00351	PASS
GSIVIOSU				VL	-3.56	-0.00432	PASS
		LCH	TN	VN	1.57	0.00190	PASS
				VH	-2.18	-0.00264	PASS
				VL	3.03	0.00362	PASS
	GSM/TM2	MCH	TN	VN	2.00	0.00239	PASS
				VH	-4.30	-0.00514	PASS
		НСН	TN	VL	0.40	0.00047	PASS
				VN	-3.39	-0.00399	PASS
				VH	2.73	0.00322	PASS
		LCH	TN	VL	-4.33	-0.00234	PASS
				VN	2.14	0.00116	PASS
				VH	1.42	0.00077	PASS
				VL	1.39	0.00074	PASS
	GSM/TM1	MCH	TN	VN	-2.50	-0.00133	PASS
				VH	5.30	0.00282	PASS
				VL	-2.58	-0.00135	PASS
		HCH	TN	VN	2.47	0.00129	PASS
GSM1900				VH	-4.60	-0.00241	PASS
G3W1300				VL	1.20	0.00065	PASS
		LCH	TN	VN	-3.30	-0.00178	PASS
				VH	2.90	0.00157	PASS
				VL	-4.22	-0.00224	PASS
	GSM/TM2	MCH	TN	VN	1.49	0.00079	PASS
				VH	0.54	0.00029	PASS
				VL	-2.43	-0.00127	PASS
		HCH	TN	VN	3.50	0.00183	PASS
				VH	-4.33	-0.00227	PASS

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8.2 Frequency Error VS. Temperature

Part I - Test Results

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		LCH	VN	-30	-4.72	-0.00573	PASS
				-20	1.80	0.00218	PASS
				-10	1.02	0.00124	PASS
				0	-2.60	-0.00315	PASS
				10	0.49	0.00059	PASS
				20	-4.33	-0.00525	PASS
GSM850				30	1.79	0.00217	PASS
				40	-0.05	-0.00006	PASS
				50	-6.20	-0.00752	PASS
				-30	-2.98	-0.00356	PASS
	GSM/TM1	МСН	VN	-20	-5.00	-0.00598	PASS
				-10	-0.40	-0.00048	PASS
				0	-3.53	-0.00422	PASS
				10	1.32	0.00158	PASS
				20	2.80	0.00335	PASS
				30	1.58	0.00189	PASS
				40	0.67	0.00080	PASS
				50	-4.32	-0.00516	PASS
				-30	-0.54	-0.00064	PASS
				-20	3.77	0.00444	PASS
				-10	3.19	0.00376	PASS
		НСН	VN	0	-5.52	-0.00650	PASS
				10	1.57	0.00185	PASS
				20	-2.87	-0.00338	PASS
				30	3.78	0.00445	PASS
				40	-0.66	-0.00078	PASS
				50	-4.50	-0.00530	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict	
GSM850		LCH	VN	-30	-2.62	-0.00318	PASS	
				-20	2.01	0.00244	PASS	
				-10	-5.10	-0.00619	PASS	
				0	1.52	0.00184	PASS	
				10	-5.34	-0.00648	PASS	
				20	-4.10	-0.00497	PASS	
				30	-4.22	-0.00512	PASS	
				40	-5.63	-0.00683	PASS	
				50	-2.75	-0.00334	PASS	
			VN	-30	-2.99	-0.00357	PASS	
	GSM/TM2	МСН		-20	3.07	0.00367	PASS	
				-10	-4.23	-0.00506	PASS	
				0	1.90	0.00227	PASS	
				10	-5.11	-0.00611	PASS	
				20	-3.56	-0.00426	PASS	
				30	-2.09	-0.00250	PASS	
				40	-3.12	-0.00373	PASS	
				50	-5.59	-0.00668	PASS	
				-30	-3.07	-0.00362	PASS PASS PASS PASS PASS PASS PASS PASS	
		НСН	VN	-20	-5.72	-0.00674	PASS	
				-10	-2.71	-0.00319	PASS	
				0	-5.32	-0.00627	PASS	
				10	1.05	0.00124	PASS	
				20	-4.33	-0.00510	PASS	
				30	-3.55	-0.00418	PASS	
				40	-2.85	-0.00336	PASS	
				50	-5.08	-0.00598	PASS	



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		LCH	VN	-30	-3.42	-0.00185	PASS
				-20	-4.89	-0.00264	PASS
				-10	2.00	0.00108	PASS
				0	-3.55	-0.00192	PASS
				10	-0.59	-0.00032	PASS
				20	1.35	0.00073	PASS
				30	-3.90	-0.00211	PASS
				40	-5.01	-0.00271	PASS
				50	-3.44	-0.00186	PASS
				-30	-4.90	-0.00261	PASS
	GSM/TM1	МСН	VN	-20	1.29	0.00069	PASS
				-10	-2.42	-0.00129	PASS
				0	4.55	0.00242	PASS
GSM1900				10	-3.27	-0.00174	PASS
				20	-6.30	-0.00335	PASS
				30	-3.33	-0.00177	PASS
				40	-8.10	-0.00431	PASS
				50	-5.20	-0.00277	PASS
				-30	-3.99	-0.00209	PASS
		НСН	VN	-20	3.66	0.00192	PASS
				-10	1.89	0.00099	PASS
				0	-0.30	-0.00016	PASS
				10	-3.28	-0.00172	PASS
				20	-4.19	-0.00219	PASS
				30	1.30	0.00068	PASS
				40	-3.09	-0.00162	PASS
				50	-4.24	-0.00222	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict	
			VN	-30	-2.23	-0.00121	PASS	
		LCH		-20	-4.30	-0.00232	PASS	
				-10	1.50	0.00081	PASS	
				0	-2.49	-0.00135	PASS	
				10	-2.99	-0.00162	PASS	
				20	-4.56	-0.00246	PASS	
				30	1.20	0.00065	PASS	
				40	-3.33	-0.00180	PASS	
				50	-6.11	-0.00330	PASS	
		НСН	VN	-30	-5.56	-0.00296	PASS	
	GSM/TM2			-20	-2.46	-0.00131	PASS	
				-10	-4.50	-0.00239	PASS	
				0	1.70	0.00090	PASS	
GSM1900				10	-5.37	-0.00286	PASS	
				20	-2.74	-0.00146	PASS	
				30	-3.58	-0.00190	PASS	
				40	0.57	0.00030	PASS	
				50	-5.30	-0.00282	PASS	
			VN	-30	-3.08	-0.00161	PASS	
				-20	2.77	0.00145	PASS	
				-10	1.34	0.00070	PASS	
				0	-5.29	-0.00277	PASS	
				10	-6.23	-0.00326	PASS	
				20	-3.99	-0.00209	PASS	
				30	-2.40	-0.00126	PASS	
				40	-2.29	-0.00120	PASS	
				50	-5.88	-0.00308	PASS	

The End