

## 10.5. Measurement Result

### 10.5.1. Frequency Stability Measurement Result: GSM Band

#### 10.5.1.1. Frequency Error Vs Voltage

Voltage							
BAND	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VL	TN	-3.65	-0.004426	±2.5	PASS
GSM850	128	VN	TN	-0.26	-0.000313	±2.5	PASS
GSM850	128	VH	TN	-0.26	-0.000313	±2.5	PASS
GSM850	190	VL	TN	-2.78	-0.003319	±2.5	PASS
GSM850	190	VN	TN	0.32	0.000386	±2.5	PASS
GSM850	190	VH	TN	-0.29	-0.000347	±2.5	PASS
GSM850	251	VL	TN	0.42	0.000494	±2.5	PASS
GSM850	251	VN	TN	2.03	0.002396	±2.5	PASS
GSM850	251	VH	TN	2.10	0.002472	±2.5	PASS
EGPRS850	128	VL	TN	12.04	0.014611	±2.5	PASS
EGPRS850	128	VN	TN	11.24	0.013632	±2.5	PASS
EGPRS850	128	VH	TN	7.26	0.008814	±2.5	PASS
EGPRS850	190	VL	TN	9.17	0.010960	±2.5	PASS
EGPRS850	190	VN	TN	4.23	0.005056	±2.5	PASS
EGPRS850	190	VH	TN	13.82	0.016517	±2.5	PASS
EGPRS850	251	VL	TN	10.94	0.012895	±2.5	PASS
EGPRS850	251	VN	TN	10.20	0.012020	±2.5	PASS
EGPRS850	251	VH	TN	10.33	0.012172	±2.5	PASS
GSM1900	512	VL	TN	21.47	0.011604	±2.5	PASS
GSM1900	512	VN	TN	13.08	0.007067	±2.5	PASS
GSM1900	512	VH	TN	14.72	0.007957	±2.5	PASS
GSM1900	661	VL	TN	12.59	0.006698	±2.5	PASS
GSM1900	661	VN	TN	12.66	0.006732	±2.5	PASS
GSM1900	661	VH	TN	10.17	0.005410	±2.5	PASS
GSM1900	810	VL	TN	4.49	0.002350	±2.5	PASS
GSM1900	810	VN	TN	10.33	0.005410	±2.5	PASS
GSM1900	810	VH	TN	4.04	0.002113	±2.5	PASS
EGPRS1900	512	VL	TN	9.33	0.005043	±2.5	PASS
EGPRS1900	512	VN	TN	9.07	0.004903	±2.5	PASS
EGPRS1900	512	VH	TN	7.49	0.004048	±2.5	PASS
EGPRS1900	661	VL	TN	13.92	0.007402	±2.5	PASS
EGPRS1900	661	VN	TN	6.62	0.003521	±2.5	PASS
EGPRS1900	661	VH	TN	12.98	0.006904	±2.5	PASS
EGPRS1900	810	VL	TN	8.85	0.004632	±2.5	PASS
EGPRS1900	810	VN	TN	7.07	0.003702	±2.5	PASS
EGPRS1900	810	VH	TN	11.33	0.005934	±2.5	PASS

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### 10.5.1.2.Frequency Error Vs Temperature

Temperature							
BAND	Chan- nel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VN	-30	-3.16	-0.003839	±2.5	PASS
GSM850	128	VN	-20	-4.78	-0.005798	±2.5	PASS
GSM850	128	VN	-10	1.03	0.001254	±2.5	PASS
GSM850	128	VN	0	-2.23	-0.002703	±2.5	PASS
GSM850	128	VN	10	-4.68	-0.005680	±2.5	PASS
GSM850	128	VN	20	-6.52	-0.007913	±2.5	PASS
GSM850	128	VN	30	-6.91	-0.008383	±2.5	PASS
GSM850	128	VN	40	-8.27	-0.010028	±2.5	PASS
GSM850	128	VN	50	-6.55	-0.007952	±2.5	PASS
GSM850	190	VN	-30	-1.61	-0.001930	±2.5	PASS
GSM850	190	VN	-20	-3.81	-0.004554	±2.5	PASS
GSM850	190	VN	-10	-1.84	-0.002200	±2.5	PASS
GSM850	190	VN	0	-1.32	-0.001582	±2.5	PASS
GSM850	190	VN	10	0.32	0.000386	±2.5	PASS
GSM850	190	VN	20	-12.56	-0.015012	±2.5	PASS
GSM850	190	VN	30	-9.69	-0.011578	±2.5	PASS
GSM850	190	VN	40	-5.75	-0.006869	±2.5	PASS
GSM850	190	VN	50	-4.26	-0.005094	±2.5	PASS
GSM850	251	VN	-30	2.45	0.002891	±2.5	PASS
GSM850	251	VN	-20	0.16	0.000190	±2.5	PASS
GSM850	251	VN	-10	1.55	0.001826	±2.5	PASS
GSM850	251	VN	0	0.84	0.000989	±2.5	PASS
GSM850	251	VN	10	1.90	0.002244	±2.5	PASS
GSM850	251	VN	20	0.06	0.000076	±2.5	PASS
GSM850	251	VN	30	-3.26	-0.003842	±2.5	PASS
GSM850	251	VN	40	-1.97	-0.002320	±2.5	PASS
GSM850	251	VN	50	-3.26	-0.003842	±2.5	PASS
EGPRS850	128	VN	-30	10.40	0.012613	±2.5	PASS
EGPRS850	128	VN	-20	13.11	0.015904	±2.5	PASS
EGPRS850	128	VN	-10	5.46	0.006620	±2.5	PASS
EGPRS850	128	VN	0	6.17	0.007482	±2.5	PASS
EGPRS850	128	VN	10	10.36	0.012574	±2.5	PASS
EGPRS850	128	VN	20	8.68	0.010537	±2.5	PASS
EGPRS850	128	VN	30	7.65	0.009284	±2.5	PASS
EGPRS850	128	VN	40	3.87	0.004701	±2.5	PASS
EGPRS850	128	VN	50	3.58	0.004348	±2.5	PASS
EGPRS850	190	VN	-30	9.88	0.011809	±2.5	PASS
EGPRS850	190	VN	-20	14.33	0.017135	±2.5	PASS
EGPRS850	190	VN	-10	10.88	0.013005	±2.5	PASS
EGPRS850	190	VN	0	12.14	0.014510	±2.5	PASS
EGPRS850	190	VN	10	9.59	0.011462	±2.5	PASS
EGPRS850	190	VN	20	8.04	0.009609	±2.5	PASS
EGPRS850	190	VN	30	4.97	0.005943	±2.5	PASS
EGPRS850	190	VN	40	10.72	0.012812	±2.5	PASS

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EGPRS850	190	VN	50	13.75	0.016440	±2.5	PASS
EGPRS850	251	VN	-30	11.07	0.013047	±2.5	PASS
EGPRS850	251	VN	-20	13.11	0.015443	±2.5	PASS
EGPRS850	251	VN	-10	11.33	0.013351	±2.5	PASS
EGPRS850	251	VN	0	13.69	0.016128	±2.5	PASS
EGPRS850	251	VN	10	7.91	0.009319	±2.5	PASS
EGPRS850	251	VN	20	6.36	0.007493	±2.5	PASS
EGPRS850	251	VN	30	8.49	0.010004	±2.5	PASS
EGPRS850	251	VN	40	10.91	0.012857	±2.5	PASS
EGPRS850	251	VN	50	9.98	0.011753	±2.5	PASS
GSM1900	512	VN	-30	12.62	0.006823	±2.5	PASS
GSM1900	512	VN	-20	9.40	0.005078	±2.5	PASS
GSM1900	512	VN	-10	8.46	0.004572	±2.5	PASS
GSM1900	512	VN	0	9.59	0.005183	±2.5	PASS
GSM1900	512	VN	10	15.53	0.008393	±2.5	PASS
GSM1900	512	VN	20	14.40	0.007783	±2.5	PASS
GSM1900	512	VN	30	22.18	0.011988	±2.5	PASS
GSM1900	512	VN	40	8.68	0.004694	±2.5	PASS
GSM1900	512	VN	50	13.37	0.007224	±2.5	PASS
GSM1900	661	VN	-30	7.62	0.004053	±2.5	PASS
GSM1900	661	VN	-20	8.30	0.004414	±2.5	PASS
GSM1900	661	VN	-10	9.36	0.004980	±2.5	PASS
GSM1900	661	VN	0	12.27	0.006526	±2.5	PASS
GSM1900	661	VN	10	7.49	0.003984	±2.5	PASS
GSM1900	661	VN	20	5.33	0.002834	±2.5	PASS
GSM1900	661	VN	30	-7.88	-0.004190	±2.5	PASS
GSM1900	661	VN	40	-8.68	-0.004620	±2.5	PASS
GSM1900	661	VN	50	-11.91	-0.006337	±2.5	PASS
GSM1900	810	VN	-30	4.10	0.002147	±2.5	PASS
GSM1900	810	VN	-20	6.59	0.003449	±2.5	PASS
GSM1900	810	VN	-10	3.42	0.001792	±2.5	PASS
GSM1900	810	VN	0	4.04	0.002113	±2.5	PASS
GSM1900	810	VN	10	5.49	0.002874	±2.5	PASS
GSM1900	810	VN	20	1.90	0.000997	±2.5	PASS
GSM1900	810	VN	30	-2.81	-0.001471	±2.5	PASS
GSM1900	810	VN	40	1.03	0.000541	±2.5	PASS
GSM1900	810	VN	50	2.58	0.001352	±2.5	PASS
EGPRS1900	512	VN	-30	14.33	0.007748	±2.5	PASS
EGPRS1900	512	VN	-20	9.10	0.004921	±2.5	PASS
EGPRS1900	512	VN	-10	8.65	0.004677	±2.5	PASS
EGPRS1900	512	VN	0	7.36	0.003979	±2.5	PASS
EGPRS1900	512	VN	10	8.78	0.004746	±2.5	PASS
EGPRS1900	512	VN	20	7.81	0.004223	±2.5	PASS
EGPRS1900	512	VN	30	25.18	0.013611	±2.5	PASS
EGPRS1900	512	VN	40	38.32	0.020713	±2.5	PASS
EGPRS1900	512	VN	50	38.84	0.020992	±2.5	PASS
EGPRS1900	661	VN	-30	7.59	0.004036	±2.5	PASS
EGPRS1900	661	VN	-20	12.37	0.006577	±2.5	PASS

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EGPRS1900	661	VN	-10	12.72	0.006766	±2.5	PASS
EGPRS1900	661	VN	0	15.01	0.007986	±2.5	PASS
EGPRS1900	661	VN	10	6.10	0.003246	±2.5	PASS
EGPRS1900	661	VN	20	4.00	0.002129	±2.5	PASS
EGPRS1900	661	VN	30	6.52	0.003469	±2.5	PASS
EGPRS1900	661	VN	40	18.31	0.009737	±2.5	PASS
EGPRS1900	661	VN	50	14.30	0.007608	±2.5	PASS
EGPRS1900	810	VN	-30	7.75	0.004057	±2.5	PASS
EGPRS1900	810	VN	-20	3.81	0.001995	±2.5	PASS
EGPRS1900	810	VN	-10	5.52	0.002891	±2.5	PASS
EGPRS1900	810	VN	0	7.39	0.003871	±2.5	PASS
EGPRS1900	810	VN	10	6.17	0.003229	±2.5	PASS
EGPRS1900	810	VN	20	4.65	0.002434	±2.5	PASS
EGPRS1900	810	VN	30	15.08	0.007895	±2.5	PASS
EGPRS1900	810	VN	40	11.72	0.006137	±2.5	PASS
EGPRS1900	810	VN	50	10.36	0.005427	±2.5	PASS

## 10.5.2. Frequency Stability Measurement Result: WCDMA Band

### 10.5.2.1. Frequency Vs Voltage

Voltage								
BAND	Modulation	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band II	QPSK	9262	VL	TN	-13.65	-0.007371	±2.5	PASS
Band II	QPSK	9262	VN	TN	-12.71	-0.006861	±2.5	PASS
Band II	QPSK	9262	VH	TN	-14.11	-0.007618	±2.5	PASS
Band II	QPSK	9400	VL	TN	-10.71	-0.005695	±2.5	PASS
Band II	QPSK	9400	VN	TN	-14.71	-0.007826	±2.5	PASS
Band II	QPSK	9400	VH	TN	-13.87	-0.007377	±2.5	PASS
Band II	QPSK	9538	VL	TN	-13.11	-0.006873	±2.5	PASS
Band II	QPSK	9538	VN	TN	-7.93	-0.004154	±2.5	PASS
Band II	QPSK	9538	VH	TN	-13.07	-0.006854	±2.5	PASS
Band II	16QAM	9262	VL	TN	-7.85	-0.004236	±2.5	PASS
Band II	16QAM	9262	VN	TN	-11.90	-0.006425	±2.5	PASS
Band II	16QAM	9262	VH	TN	-8.21	-0.004433	±2.5	PASS
Band II	16QAM	9400	VL	TN	-15.08	-0.008020	±2.5	PASS
Band II	16QAM	9400	VN	TN	-14.63	-0.007780	±2.5	PASS
Band II	16QAM	9400	VH	TN	-10.72	-0.005703	±2.5	PASS
Band II	16QAM	9538	VL	TN	-14.23	-0.007458	±2.5	PASS
Band II	16QAM	9538	VN	TN	-8.40	-0.004406	±2.5	PASS
Band II	16QAM	9538	VH	TN	-7.00	-0.003667	±2.5	PASS
Band V	QPSK	4132	VL	TN	-13.24	-0.016021	±2.5	PASS
Band V	QPSK	4132	VN	TN	-13.58	-0.016427	±2.5	PASS
Band V	QPSK	4132	VH	TN	-9.07	-0.010975	±2.5	PASS
Band V	QPSK	4182	VL	TN	-10.14	-0.012126	±2.5	PASS
Band V	QPSK	4182	VN	TN	-7.76	-0.009278	±2.5	PASS

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Band V	QPSK	4182	VH	TN	-11.69	-0.013982	±2.5	PASS
Band V	QPSK	4233	VL	TN	-5.21	-0.006151	±2.5	PASS
Band V	QPSK	4233	VN	TN	-10.51	-0.012419	±2.5	PASS
Band V	QPSK	4233	VH	TN	-11.38	-0.013442	±2.5	PASS
Band V	16QAM	4132	VL	TN	-16.89	-0.020435	±2.5	PASS
Band V	16QAM	4132	VN	TN	-11.92	-0.014419	±2.5	PASS
Band V	16QAM	4132	VH	TN	-7.13	-0.008629	±2.5	PASS
Band V	16QAM	4182	VL	TN	-5.94	-0.007106	±2.5	PASS
Band V	16QAM	4182	VN	TN	-6.62	-0.007910	±2.5	PASS
Band V	16QAM	4182	VH	TN	-12.79	-0.015290	±2.5	PASS
Band V	16QAM	4233	VL	TN	-5.72	-0.006759	±2.5	PASS
Band V	16QAM	4233	VN	TN	-3.18	-0.003760	±2.5	PASS
Band V	16QAM	4233	VH	TN	-7.95	-0.009386	±2.5	PASS

### 10.5.2.2.Frequency Vs Temperature

BAND	Modulation	Channel	Voltage (Vdc)	Temperature		Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
				Temperature (°C)					
Band II	QPSK	9262	VN	-30		-14.31	-0.007726	±2.5	PASS
Band II	QPSK	9262	VN	-20		-19.13	-0.010325	±2.5	PASS
Band II	QPSK	9262	VN	-10		-12.75	-0.006885	±2.5	PASS
Band II	QPSK	9262	VN	0		-13.04	-0.007039	±2.5	PASS
Band II	QPSK	9262	VN	10		-14.13	-0.007630	±2.5	PASS
Band II	QPSK	9262	VN	20		-10.42	-0.005626	±2.5	PASS
Band II	QPSK	9262	VN	30		-9.60	-0.005182	±2.5	PASS
Band II	QPSK	9262	VN	40		-15.71	-0.008479	±2.5	PASS
Band II	QPSK	9262	VN	50		-7.40	-0.003996	±2.5	PASS
Band II	QPSK	9400	VN	-30		-14.68	-0.007811	±2.5	PASS
Band II	QPSK	9400	VN	-20		-10.90	-0.005798	±2.5	PASS
Band II	QPSK	9400	VN	-10		-12.64	-0.006723	±2.5	PASS
Band II	QPSK	9400	VN	0		-9.87	-0.005250	±2.5	PASS
Band II	QPSK	9400	VN	10		-15.13	-0.008050	±2.5	PASS
Band II	QPSK	9400	VN	20		-10.59	-0.005631	±2.5	PASS
Band II	QPSK	9400	VN	30		-12.45	-0.006620	±2.5	PASS
Band II	QPSK	9400	VN	40		-10.85	-0.005772	±2.5	PASS
Band II	QPSK	9400	VN	50		-16.64	-0.008853	±2.5	PASS
Band II	QPSK	9538	VN	-30		-11.11	-0.005823	±2.5	PASS
Band II	QPSK	9538	VN	-20		-14.70	-0.007705	±2.5	PASS
Band II	QPSK	9538	VN	-10		-12.16	-0.006374	±2.5	PASS
Band II	QPSK	9538	VN	0		-14.16	-0.007424	±2.5	PASS
Band II	QPSK	9538	VN	10		-16.14	-0.008463	±2.5	PASS
Band II	QPSK	9538	VN	20		-18.10	-0.009490	±2.5	PASS
Band II	QPSK	9538	VN	30		-8.53	-0.004473	±2.5	PASS
Band II	QPSK	9538	VN	40		-17.22	-0.009025	±2.5	PASS
Band II	QPSK	9538	VN	50		-18.50	-0.009700	±2.5	PASS
Band II	16QAM	9262	VN	-30		-13.45	-0.007259	±2.5	PASS
Band II	16QAM	9262	VN	-20		-10.44	-0.005634	±2.5	PASS

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Band II	16QAM	9262	VN	-10	-11.32	-0.006108	±2.5	PASS
Band II	16QAM	9262	VN	0	-5.82	-0.003139	±2.5	PASS
Band II	16QAM	9262	VN	10	-7.54	-0.004070	±2.5	PASS
Band II	16QAM	9262	VN	20	-12.92	-0.006977	±2.5	PASS
Band II	16QAM	9262	VN	30	-16.31	-0.008804	±2.5	PASS
Band II	16QAM	9262	VN	40	-14.91	-0.008051	±2.5	PASS
Band II	16QAM	9262	VN	50	-11.22	-0.006058	±2.5	PASS
Band II	16QAM	9400	VN	-30	-13.15	-0.006993	±2.5	PASS
Band II	16QAM	9400	VN	-20	-15.86	-0.008438	±2.5	PASS
Band II	16QAM	9400	VN	-10	-13.62	-0.007244	±2.5	PASS
Band II	16QAM	9400	VN	0	-12.10	-0.006437	±2.5	PASS
Band II	16QAM	9400	VN	10	-13.90	-0.007396	±2.5	PASS
Band II	16QAM	9400	VN	20	-11.92	-0.006338	±2.5	PASS
Band II	16QAM	9400	VN	30	-11.47	-0.006099	±2.5	PASS
Band II	16QAM	9400	VN	40	-11.10	-0.005905	±2.5	PASS
Band II	16QAM	9400	VN	50	-6.27	-0.003337	±2.5	PASS
Band II	16QAM	9538	VN	-30	-6.96	-0.003648	±2.5	PASS
Band II	16QAM	9538	VN	-20	-13.20	-0.006918	±2.5	PASS
Band II	16QAM	9538	VN	-10	-13.95	-0.007315	±2.5	PASS
Band II	16QAM	9538	VN	0	-12.03	-0.006307	±2.5	PASS
Band II	16QAM	9538	VN	10	-15.37	-0.008058	±2.5	PASS
Band II	16QAM	9538	VN	20	-11.97	-0.006277	±2.5	PASS
Band II	16QAM	9538	VN	30	-10.36	-0.005429	±2.5	PASS
Band II	16QAM	9538	VN	40	-4.53	-0.002377	±2.5	PASS
Band II	16QAM	9538	VN	50	-10.62	-0.005568	±2.5	PASS
Band V	QPSK	4132	VN	-30	-9.37	-0.011338	±2.5	PASS
Band V	QPSK	4132	VN	-20	-15.20	-0.018392	±2.5	PASS
Band V	QPSK	4132	VN	-10	-13.09	-0.015839	±2.5	PASS
Band V	QPSK	4132	VN	0	-11.82	-0.014298	±2.5	PASS
Band V	QPSK	4132	VN	10	-9.29	-0.011243	±2.5	PASS
Band V	QPSK	4132	VN	20	-13.10	-0.015856	±2.5	PASS
Band V	QPSK	4132	VN	30	-10.97	-0.013277	±2.5	PASS
Band V	QPSK	4132	VN	40	-7.85	-0.009503	±2.5	PASS
Band V	QPSK	4132	VN	50	-11.07	-0.013398	±2.5	PASS
Band V	QPSK	4182	VN	-30	-11.52	-0.013768	±2.5	PASS
Band V	QPSK	4182	VN	-20	-15.02	-0.017958	±2.5	PASS
Band V	QPSK	4182	VN	-10	-5.77	-0.006901	±2.5	PASS
Band V	QPSK	4182	VN	0	-8.98	-0.010732	±2.5	PASS
Band V	QPSK	4182	VN	10	-9.74	-0.011647	±2.5	PASS
Band V	QPSK	4182	VN	20	-6.88	-0.008227	±2.5	PASS
Band V	QPSK	4182	VN	30	-12.42	-0.014846	±2.5	PASS
Band V	QPSK	4182	VN	40	-10.51	-0.012571	±2.5	PASS
Band V	QPSK	4182	VN	50	-11.07	-0.013238	±2.5	PASS
Band V	QPSK	4233	VN	-30	-9.58	-0.011313	±2.5	PASS
Band V	QPSK	4233	VN	-20	-5.41	-0.006396	±2.5	PASS
Band V	QPSK	4233	VN	-10	-9.37	-0.011068	±2.5	PASS
Band V	QPSK	4233	VN	0	-5.92	-0.006995	±2.5	PASS
Band V	QPSK	4233	VN	10	-12.90	-0.015233	±2.5	PASS

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Band V	QPSK	4233	VN	20	-9.46	-0.011169	±2.5	PASS
Band V	QPSK	4233	VN	30	-10.76	-0.012715	±2.5	PASS
Band V	QPSK	4233	VN	40	-8.38	-0.009893	±2.5	PASS
Band V	QPSK	4233	VN	50	-6.99	-0.008254	±2.5	PASS
Band V	16QAM	4132	VN	-30	-12.40	-0.015008	±2.5	PASS
Band V	16QAM	4132	VN	-20	-8.22	-0.009945	±2.5	PASS
Band V	16QAM	4132	VN	-10	-6.30	-0.007625	±2.5	PASS
Band V	16QAM	4132	VN	0	-10.95	-0.013251	±2.5	PASS
Band V	16QAM	4132	VN	10	-11.84	-0.014324	±2.5	PASS
Band V	16QAM	4132	VN	20	-12.70	-0.015363	±2.5	PASS
Band V	16QAM	4132	VN	30	-9.36	-0.011321	±2.5	PASS
Band V	16QAM	4132	VN	40	-14.91	-0.018046	±2.5	PASS
Band V	16QAM	4132	VN	50	-5.29	-0.006396	±2.5	PASS
Band V	16QAM	4182	VN	-30	-11.92	-0.014256	±2.5	PASS
Band V	16QAM	4182	VN	-20	-12.07	-0.014435	±2.5	PASS
Band V	16QAM	4182	VN	-10	-7.28	-0.008706	±2.5	PASS
Band V	16QAM	4182	VN	0	-9.32	-0.011143	±2.5	PASS
Band V	16QAM	4182	VN	10	-12.56	-0.015017	±2.5	PASS
Band V	16QAM	4182	VN	20	-7.13	-0.008526	±2.5	PASS
Band V	16QAM	4182	VN	30	-12.02	-0.014375	±2.5	PASS
Band V	16QAM	4182	VN	40	-10.41	-0.012451	±2.5	PASS
Band V	16QAM	4182	VN	50	-13.12	-0.015684	±2.5	PASS
Band V	16QAM	4233	VN	-30	-13.94	-0.016466	±2.5	PASS
Band V	16QAM	4233	VN	-20	-7.31	-0.008634	±2.5	PASS
Band V	16QAM	4233	VN	-10	-9.71	-0.011465	±2.5	PASS
Band V	16QAM	4233	VN	0	-3.86	-0.004562	±2.5	PASS
Band V	16QAM	4233	VN	10	-5.36	-0.006328	±2.5	PASS
Band V	16QAM	4233	VN	20	-7.90	-0.009327	±2.5	PASS
Band V	16QAM	4233	VN	30	-9.50	-0.011220	±2.5	PASS
Band V	16QAM	4233	VN	40	-6.98	-0.008246	±2.5	PASS
Band V	16QAM	4233	VN	50	-8.75	-0.010341	±2.5	PASS

### 10.5.3. Frequency Stability Measurement Result: LTE-Band 2

#### 10.5.3.1. Frequency Vs Voltage

Voltage										
BAND	Bandwidth	Modulation	Channel	RB Configuration	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	20MHz	QPSK	18700	100RB#0	VL	NT	-20.70	-0.011129	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	VN	NT	9.80	0.005269	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	VH	NT	7.80	0.004194	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	VL	NT	-15.10	-0.008032	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	VN	NT	9.30	0.004947	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	VH	NT	-5.70	-0.003032	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	VL	NT	-2.60	-0.001368	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	VN	NT	7.50	0.003947	±2.5	PASS

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Band2	20MHz	QPSK	19100	100RB#0	VH	NT	-11.00	-0.005789	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	VL	NT	9.90	0.005323	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	VN	NT	3.90	0.002097	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	VH	NT	9.60	0.005161	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	VL	NT	10.60	0.005638	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	VN	NT	-31.80	-0.016915	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	VH	NT	-1.10	-0.000585	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	VL	NT	11.60	0.006105	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	VN	NT	-4.80	-0.002526	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	VH	NT	-20.10	-0.010579	±2.5	PASS

### 10.5.3.2.Frequency Vs Temperature

Temperature										
BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	20MHz	QPSK	18700	100RB#0	NV	-30	4.70	0.002527	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	-20	-22.80	-0.012258	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	0	4.80	0.002581	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	10	-15.40	-0.008280	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	20	-20.70	-0.011129	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	30	-22.30	-0.011989	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	40	-22.90	-0.012312	±2.5	PASS
Band2	20MHz	QPSK	18700	100RB#0	NV	50	-12.50	-0.006720	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	-30	9.20	0.004894	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	-20	9.30	0.004947	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	0	15.10	0.008032	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	10	-20.70	-0.011011	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	20	-16.60	-0.008830	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	30	0.10	0.000053	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	40	-0.50	-0.000266	±2.5	PASS
Band2	20MHz	QPSK	18900	100RB#0	NV	50	8.60	0.004574	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	-30	-11.00	-0.005789	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	-20	-13.60	-0.007158	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	0	-25.70	-0.013526	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	10	-15.50	-0.008158	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	20	9.10	0.004789	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	30	-14.00	-0.007368	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	40	-19.60	-0.010316	±2.5	PASS
Band2	20MHz	QPSK	19100	100RB#0	NV	50	-14.00	-0.007368	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	-30	12.20	0.006559	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	-20	5.00	0.002688	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	0	12.60	0.006774	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	10	10.80	0.005806	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	20	8.50	0.004570	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	30	10.10	0.005430	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	40	11.90	0.006398	±2.5	PASS
Band2	20MHz	16QAM	18700	100RB#0	NV	50	-20.60	-0.011075	±2.5	PASS

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Band2	20MHz	16QAM	18900	100RB#0	NV	-30	7.80	0.004149	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	-20	14.20	0.007553	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	0	-16.10	-0.008564	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	10	-28.40	-0.015106	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	20	-6.00	-0.003191	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	30	-10.20	-0.005426	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	40	-31.30	-0.016649	±2.5	PASS
Band2	20MHz	16QAM	18900	100RB#0	NV	50	5.30	0.002819	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	-30	17.80	0.009368	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	-20	18.90	0.009947	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	0	11.50	0.006053	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	10	7.90	0.004158	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	20	10.40	0.005474	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	30	12.60	0.006632	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	40	8.80	0.004632	±2.5	PASS
Band2	20MHz	16QAM	19100	100RB#0	NV	50	2.40	0.001263	±2.5	PASS

## 10.5.4. Frequency Stability Measurement Result: LTE-Band 5

### 10.5.4.1. Frequency Vs Voltage

Voltage										
BAND	Bandwidth	Modulation	Channel	RB Config-ure	Volt-age [Vdc]	Tempera- ture (°C)	Devia- tion (Hz)	Deviation (ppm)	Limit (ppm)	Ver- dict
Band5	10MHz	QPSK	20450	50RB#0	VL	NT	-15.50	-0.018697	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	VN	NT	6.70	0.008082	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	VH	NT	-9.00	-0.010856	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VL	NT	-15.00	-0.017932	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VN	NT	-4.10	-0.004901	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	VH	NT	-8.10	-0.009683	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	VL	NT	-14.50	-0.017180	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	VN	NT	-14.50	-0.017180	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	VH	NT	-10.80	-0.012796	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	VL	NT	-3.70	-0.004463	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	VN	NT	-7.50	-0.009047	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	VH	NT	-6.30	-0.007600	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	VL	NT	-6.30	-0.007531	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	VN	NT	-7.10	-0.008488	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	VH	NT	-5.60	-0.006695	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	VL	NT	0.10	0.000118	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	VN	NT	-7.50	-0.008886	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	VH	NT	3.50	0.004147	±2.5	PASS

### 10.5.4.2. Frequency Vs Temperature

Temperature										
BAND	Bandwidth	Modulation	Channel	RB Configure	Volt-age [Vdc]	Tempera- ture (°C)	Devia- tion (Hz)	Deviation (ppm)	Limit (ppm)	Ver- dict

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Band5	10MHz	QPSK	20450	50RB#0	NV	-30	-13.00	-0.015682	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	-20	-13.70	-0.016526	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	0	-9.50	-0.011460	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	10	-13.20	-0.015923	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	20	-13.80	-0.016647	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	30	-7.60	-0.009168	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	40	-10.50	-0.012666	±2.5	PASS
Band5	10MHz	QPSK	20450	50RB#0	NV	50	-7.40	-0.008926	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	-30	-2.50	-0.002989	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	-20	-6.00	-0.007173	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	0	-2.10	-0.002510	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	10	-5.90	-0.007053	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	20	4.50	0.005380	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	30	-16.70	-0.019964	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	40	-13.70	-0.016378	±2.5	PASS
Band5	10MHz	QPSK	20525	50RB#0	NV	50	-9.20	-0.010998	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	-30	0.10	0.000118	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	-20	-0.70	-0.000829	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	0	-14.40	-0.017062	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	10	3.20	0.003791	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	20	-22.70	-0.026896	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	30	-8.40	-0.009953	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	40	-8.40	-0.009953	±2.5	PASS
Band5	10MHz	QPSK	20600	50RB#0	NV	50	-8.50	-0.010071	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	-30	-3.60	-0.004343	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	-20	1.00	0.001206	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	0	-0.30	-0.000362	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	10	-8.80	-0.010615	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	20	1.80	0.002171	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	30	-5.00	-0.006031	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	40	6.40	0.007720	±2.5	PASS
Band5	10MHz	16QAM	20450	50RB#0	NV	50	-3.10	-0.003739	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	-30	0.50	0.000598	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	-20	-8.10	-0.009683	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	0	-9.90	-0.011835	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	10	-1.80	-0.002152	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	20	-11.20	-0.013389	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	30	8.40	0.010042	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	40	-5.60	-0.006695	±2.5	PASS
Band5	10MHz	16QAM	20525	50RB#0	NV	50	-0.50	-0.000598	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	-30	-5.70	-0.006754	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	-20	-12.90	-0.015284	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	0	-5.80	-0.006872	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	10	4.10	0.004858	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	20	-7.70	-0.009123	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	30	-7.30	-0.008649	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	40	-13.80	-0.016351	±2.5	PASS
Band5	10MHz	16QAM	20600	50RB#0	NV	50	-13.60	-0.016114	±2.5	PASS

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## 10.5.5. Frequency Stability Measurement Result: LTE-Band 7

### 10.5.5.1. Frequency Vs Voltage

Voltage										
BAND	Bandwidth	Modulation	Channel	RB Config-ure	Volt-age [Vdc]	Tempera-ture (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Ver-dict
Band7	20MHz	QPSK	20850	100RB#0	VL	NT	-8.80	-0.003506	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	VN	NT	-21.40	-0.008526	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	VH	NT	-10.40	-0.004143	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	VL	NT	-34.50	-0.013609	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	VN	NT	-7.20	-0.002840	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	VH	NT	-17.50	-0.006903	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	VL	NT	6.10	0.002383	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	VN	NT	-31.90	-0.012461	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	VH	NT	11.10	0.004336	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	VL	NT	-7.20	-0.002869	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	VN	NT	-10.40	-0.004143	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	VH	NT	-20.70	-0.008247	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	VL	NT	28.70	0.011321	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	VN	NT	-4.20	-0.001657	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	VH	NT	10.70	0.004221	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	VL	NT	-2.20	-0.000859	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	VN	NT	-1.50	-0.000586	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	VH	NT	-2.50	-0.000977	±2.5	PASS

### 10.5.5.2. Frequency Vs Temperature

Temperature										
BAND	Bandwidth	Modulation	Channel	RB Config-ure	Volt-age [Vdc]	Tempera-ture (°C)	Devia-tion (Hz)	Deviation (ppm)	Limit (ppm)	Ver-dict
Band7	20MHz	QPSK	20850	100RB#0	NV	-30	-36.70	-0.014622	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	-20	38.70	0.015418	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	0	-21.30	-0.008486	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	10	-999	-0.398008	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	20	-5.50	-0.002191	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	30	-17.00	-0.006773	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	40	-23.60	-0.009402	±2.5	PASS
Band7	20MHz	QPSK	20850	100RB#0	NV	50	12.60	0.005020	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	-30	-20.20	-0.007968	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	-20	-28.10	-0.011085	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	0	-28.20	-0.011124	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	10	-13.50	-0.005325	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	20	-37.10	-0.014635	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	30	17.50	0.006903	±2.5	PASS

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Band7	20MHz	QPSK	21100	100RB#0	NV	40	20.50	0.008087	±2.5	PASS
Band7	20MHz	QPSK	21100	100RB#0	NV	50	11.20	0.004418	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	-30	2.30	0.000898	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	-20	-1.90	-0.000742	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	0	1.00	0.000391	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	10	-25.00	-0.009766	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	20	-4.70	-0.001836	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	30	-18.00	-0.007031	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	40	22.90	0.008945	±2.5	PASS
Band7	20MHz	QPSK	21350	100RB#0	NV	50	-2.30	-0.000898	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	-30	26.00	0.010359	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	-20	-17.80	-0.007092	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	0	10.30	0.004104	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	10	-4.90	-0.001952	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	20	-17.40	-0.006932	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	30	-32.70	-0.013028	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	40	-21.60	-0.008606	±2.5	PASS
Band7	20MHz	16QAM	20850	100RB#0	NV	50	33.10	0.013187	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	-30	16.90	0.006667	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	-20	24.60	0.009704	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	0	-31.50	-0.012426	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	10	-20.40	-0.008047	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	20	-26.10	-0.010296	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	30	-14.20	-0.005602	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	40	13.10	0.005168	±2.5	PASS
Band7	20MHz	16QAM	21100	100RB#0	NV	50	-25.50	-0.010059	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	-30	18.40	0.007188	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	-20	-0.20	-0.000078	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	0	3.50	0.001367	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	10	-14.70	-0.005742	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	20	4.90	0.001914	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	30	-13.70	-0.005352	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	40	-5.40	-0.002109	±2.5	PASS
Band7	20MHz	16QAM	21350	100RB#0	NV	50	-6.30	-0.002461	±2.5	PASS

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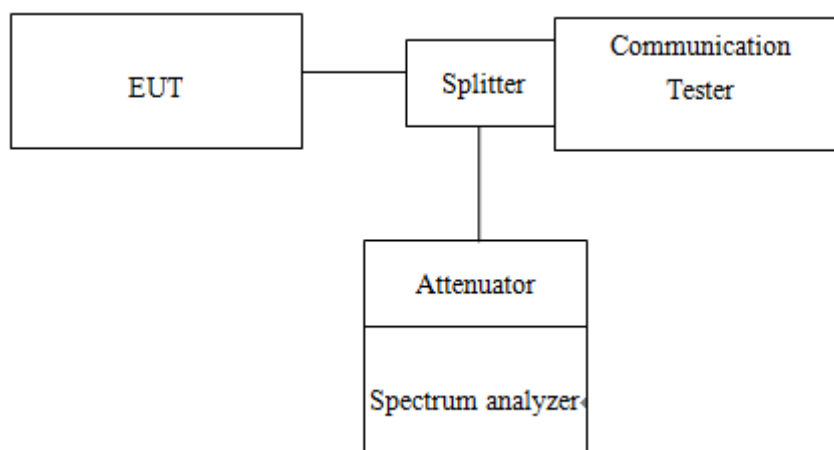
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## 11. PEAK TO AVERAGE RATIO

### 11.1. Standard Applicable

The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

### 11.2. Test SET-UP



### 11.3. Measurement Procedure

1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth; & internal =1ms
3. Set the number of counts to a value that stabilizes the measured CCDF curve.

### 11.4. Measurement Equipment Used

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
Dual Output Mobile Communication DC Source	Agilent Technologies Inc	66311B	W009-09	2018/9/15	2019/9/15
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2018/3/13	2019/3/12
Coaxial Cable	SGS	N/A	SEM031-01	2018/7/12	2019/7/11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018/9/2	2019/9/2
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	HTC-1	W006-17	2018/9/10	2019/9/10
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2017/12/4	2018/12/4
Wideband Radio Communication Tester	Anristu	MT8821C	6201462742	2018/5/2	2019/5/1
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	W005-02	2018/3/13	2019/3/12

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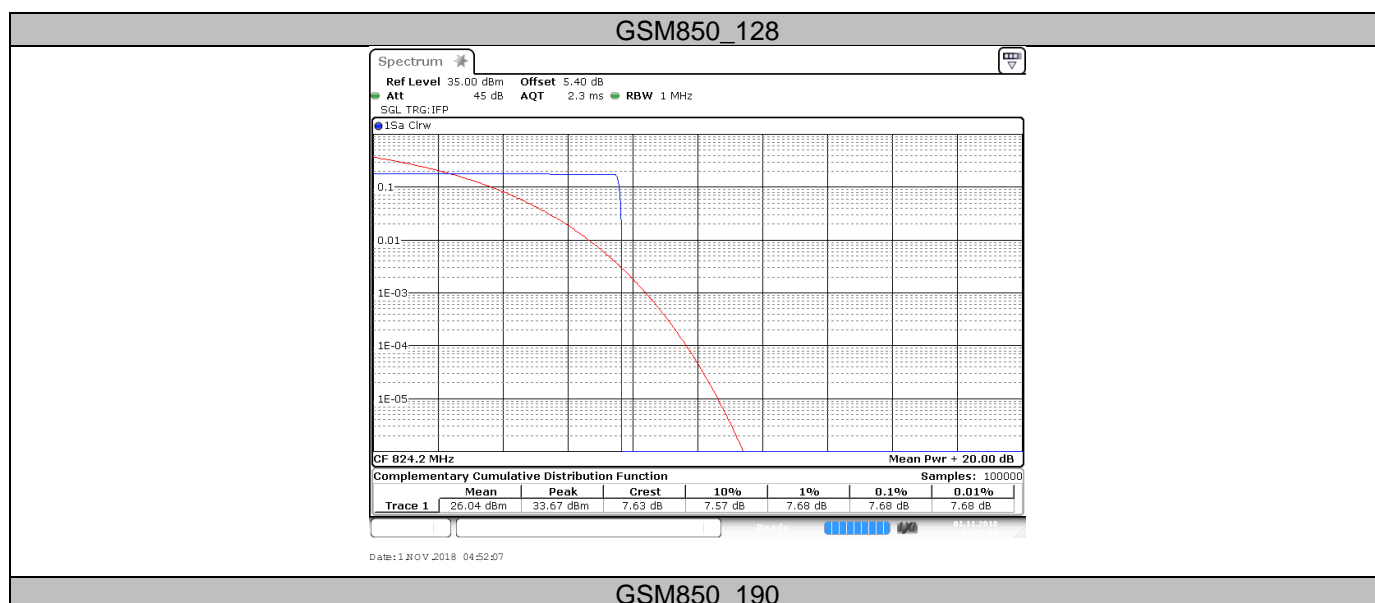


## 11.4.1. Peak-to-Average Ratio :GSM

### 11.4.1.1. Test Result

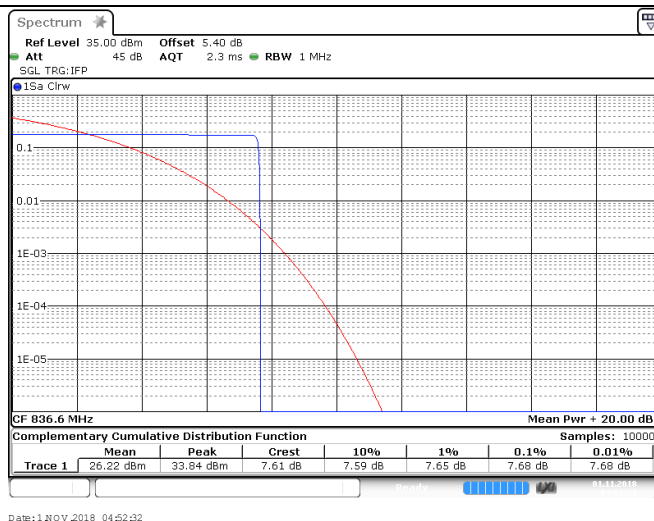
BAND	Channel	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
GSM850	128	7.68	13	PASS
GSM850	190	7.68	13	PASS
GSM850	251	7.65	13	PASS
EGPRS850	128	10.78	13	PASS
EGPRS850	190	10.58	13	PASS
EGPRS850	251	10.58	13	PASS
GSM1900	512	7.65	13	PASS
GSM1900	661	7.71	13	PASS
GSM1900	810	7.68	13	PASS
EGPRS1900	512	10.38	13	PASS
EGPRS1900	661	10.23	13	PASS
EGPRS1900	810	10.55	13	PASS

### 11.4.1.2. Part II - Test Plots

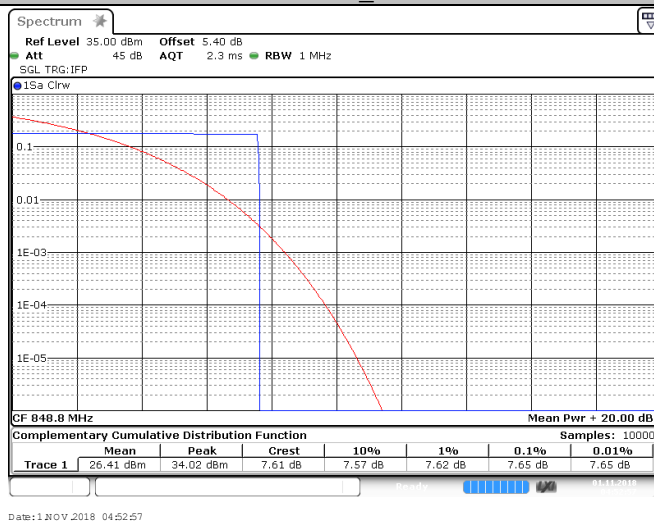


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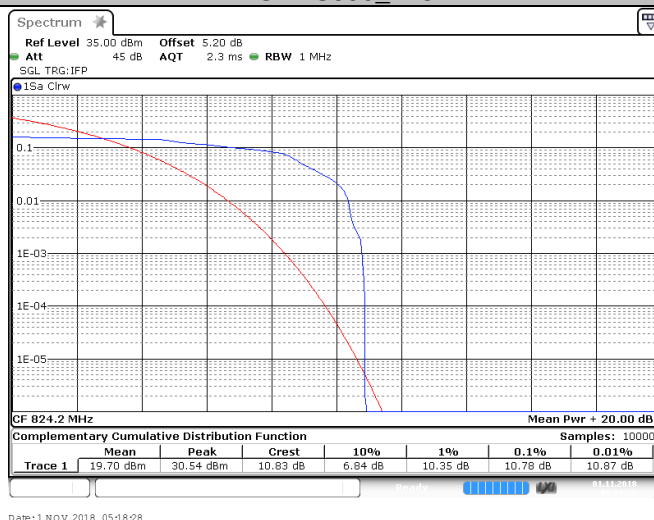
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## GSM850\_251



## EGPRS850\_128



## EGPRS850\_190

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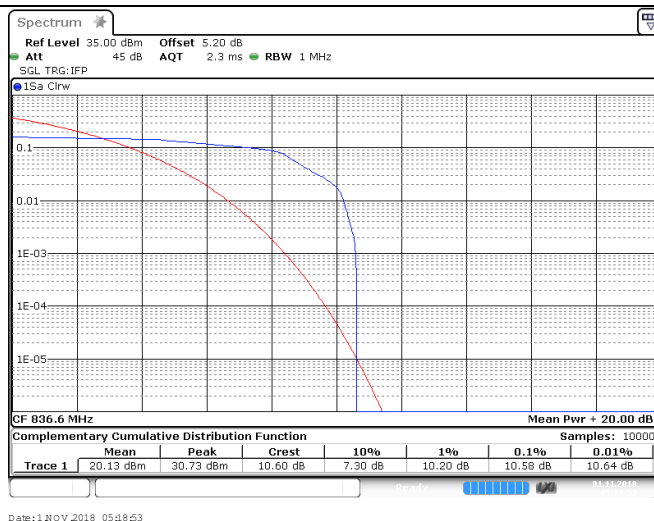
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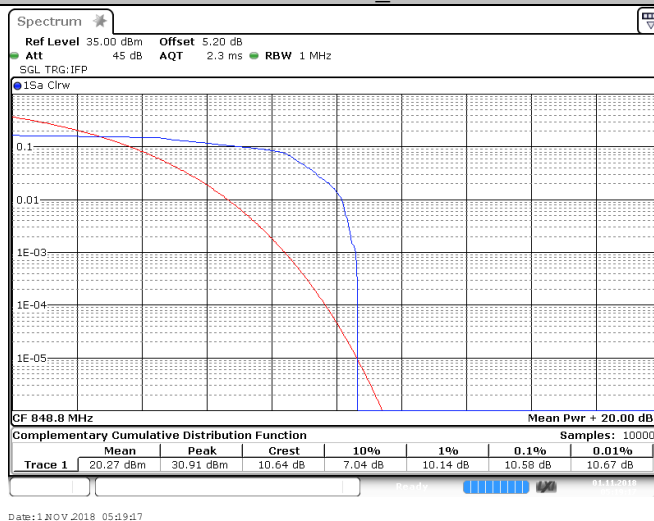
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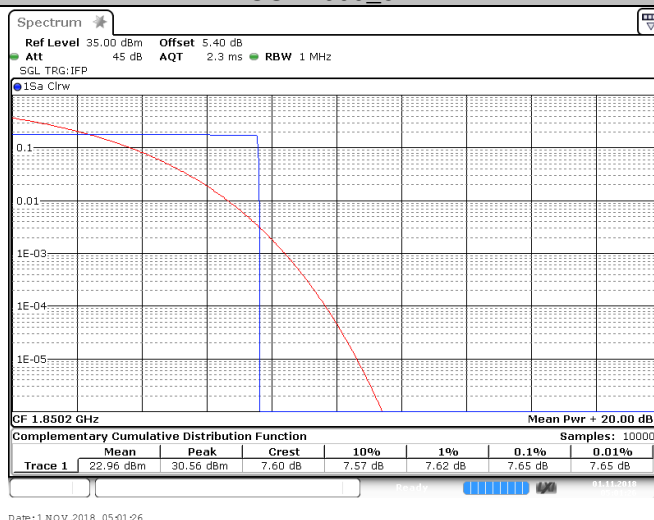
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## EGPRS850\_251



## GSM1900\_512



## GSM1900\_661

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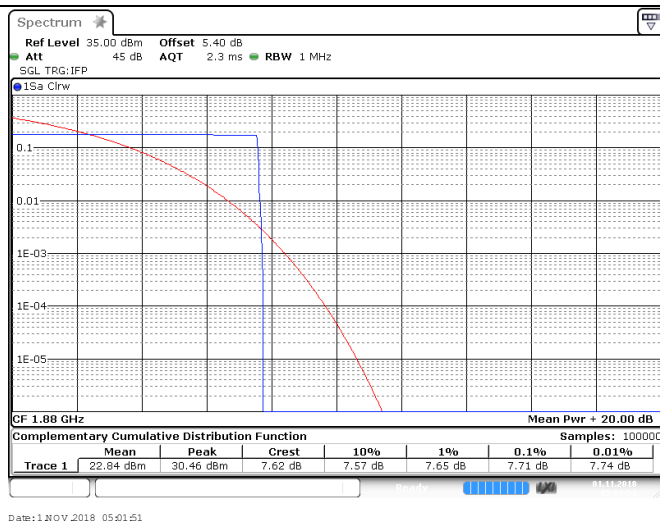
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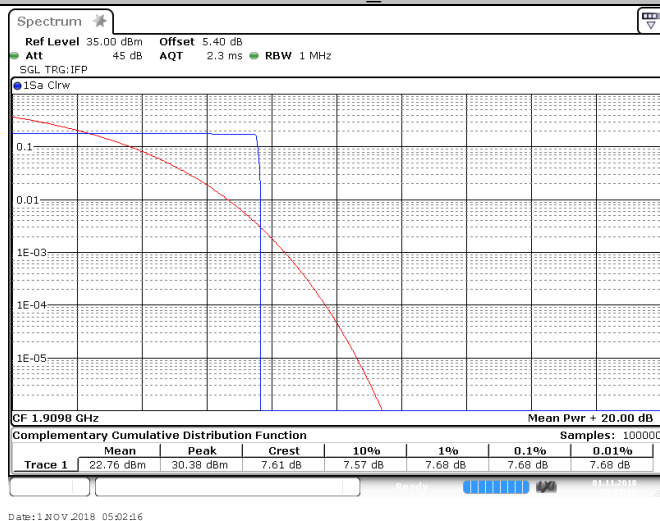
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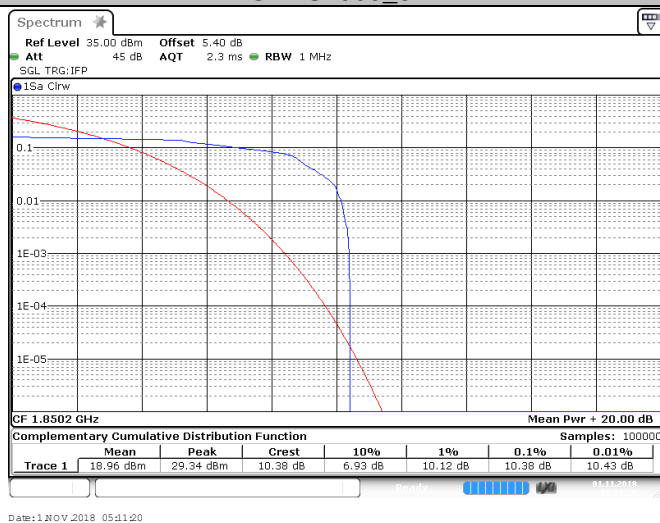
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## GSM1900\_810



## EGPRS1900\_512



## EGPRS1900\_661

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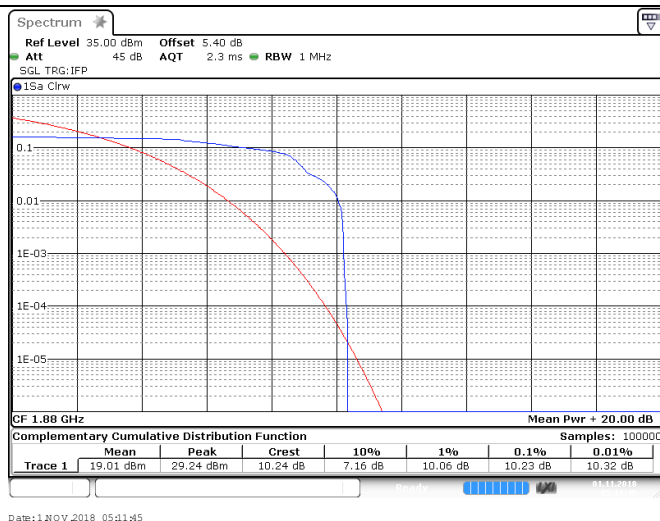
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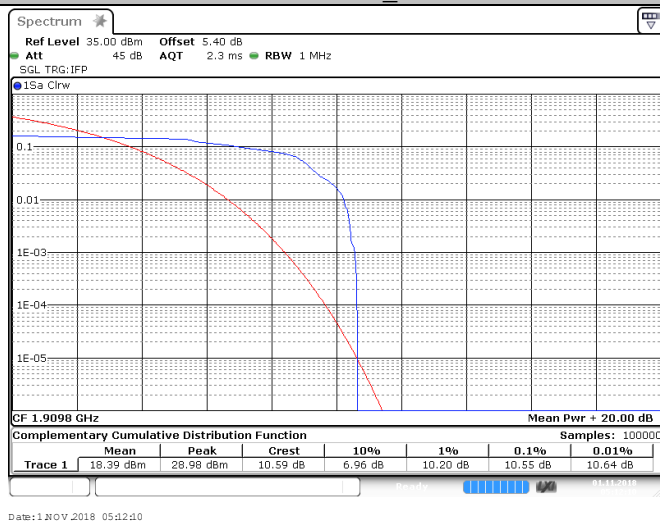
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## EGPRS1900\_810



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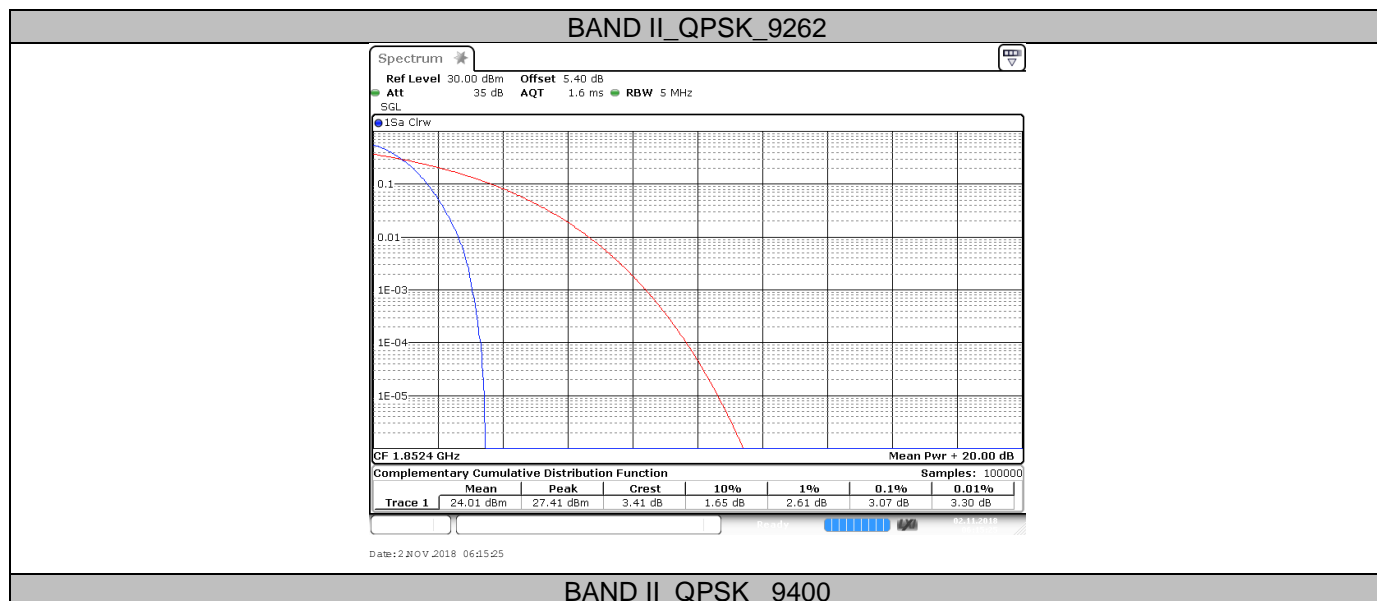


## 11.4.2. Peak-to-Average Ratio :WCDMA

### 11.4.2.1. Test Result

BAND	Modulation	Channel	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
Band II	QPSK	9262	3.13	13	PASS
Band II	QPSK	9400	3.13	13	PASS
Band II	QPSK	9538	3.13	13	PASS
Band II	16QAM	9262	3.07	13	PASS
Band II	16QAM	9400	3.07	13	PASS
Band II	16QAM	9538	3.07	13	PASS
Band V	QPSK	4132	3.30	13	PASS
Band V	QPSK	4182	3.30	13	PASS
Band V	QPSK	4233	3.30	13	PASS
Band V	16QAM	4132	3.28	13	PASS
Band V	16QAM	4182	3.28	13	PASS
Band V	16QAM	4233	3.28	13	PASS

### 11.4.2.2. Test Plots



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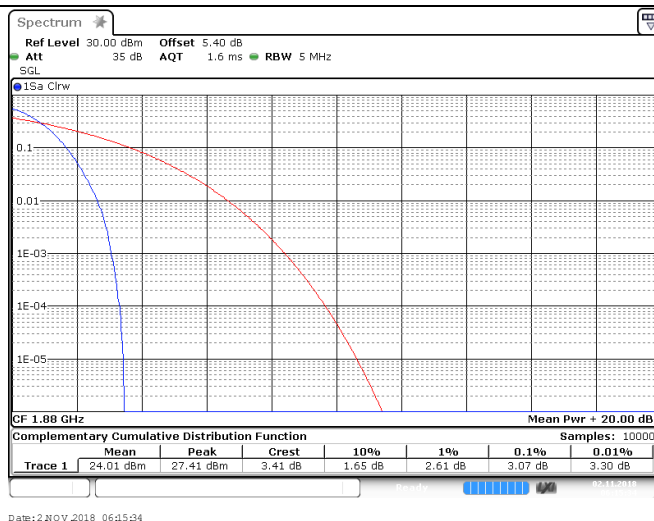
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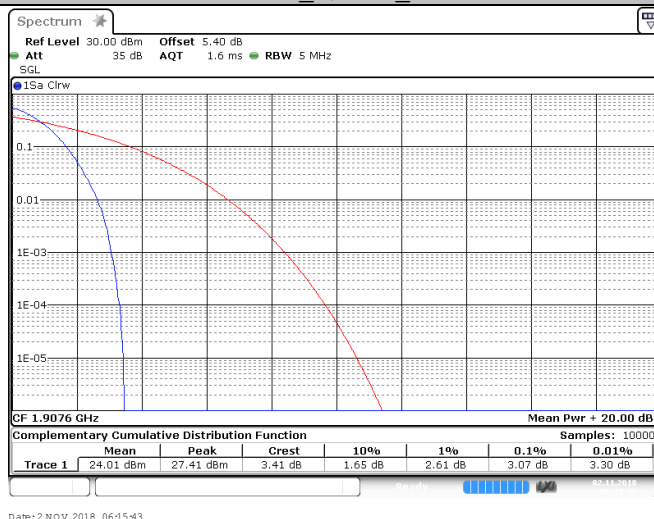
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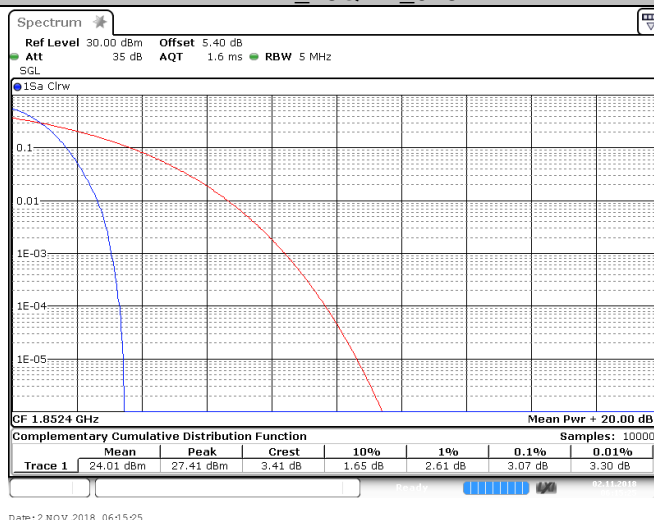
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## BAND II\_QPSK\_9538



## BAND II\_16QAM\_9262



## BAND II\_16QAM\_9400

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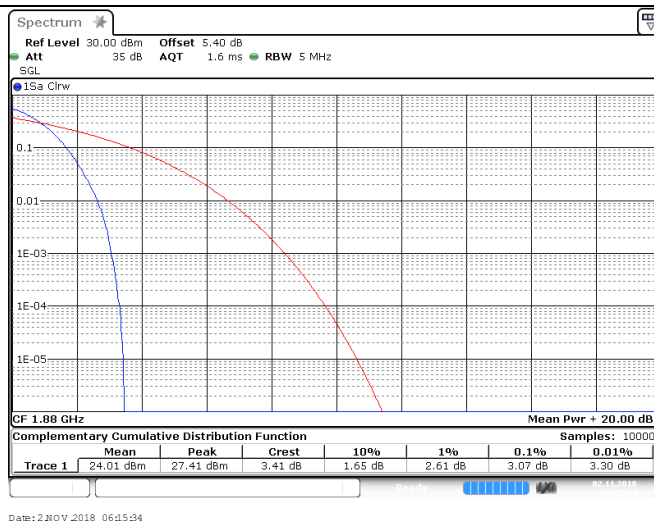
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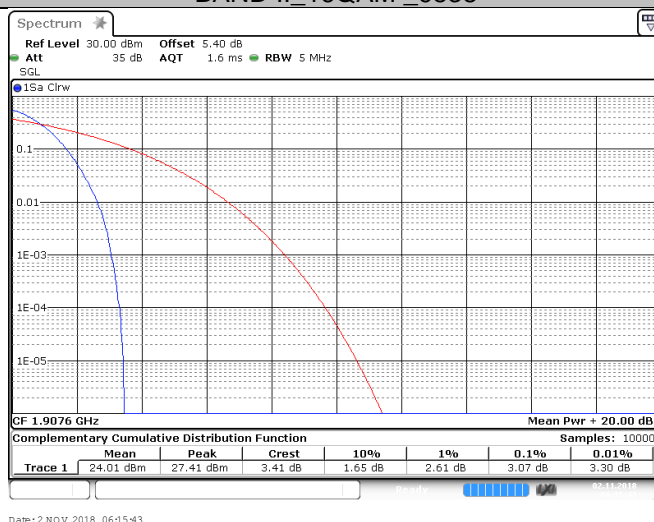
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## BAND II\_16QAM\_9538



## BAND V\_QPSK\_4132



## BAND V\_QPSK\_4182

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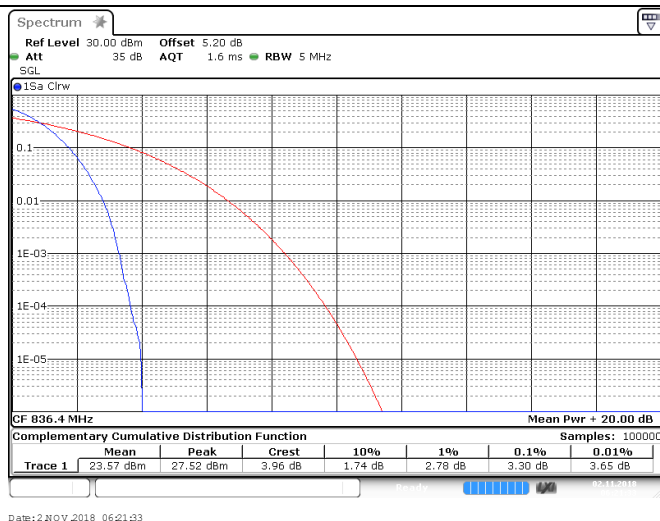
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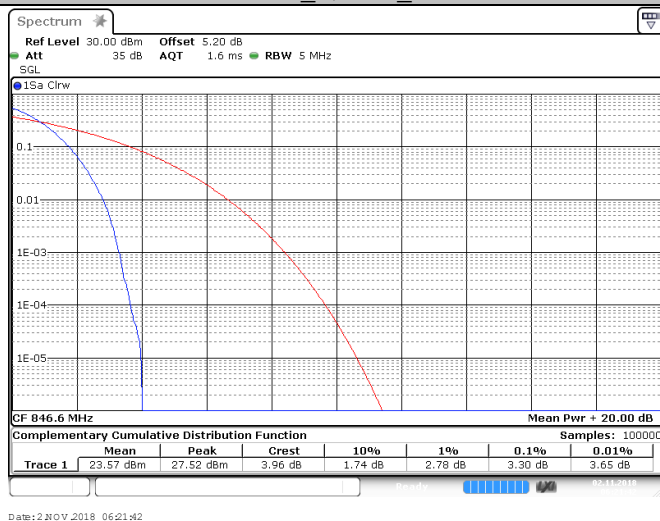
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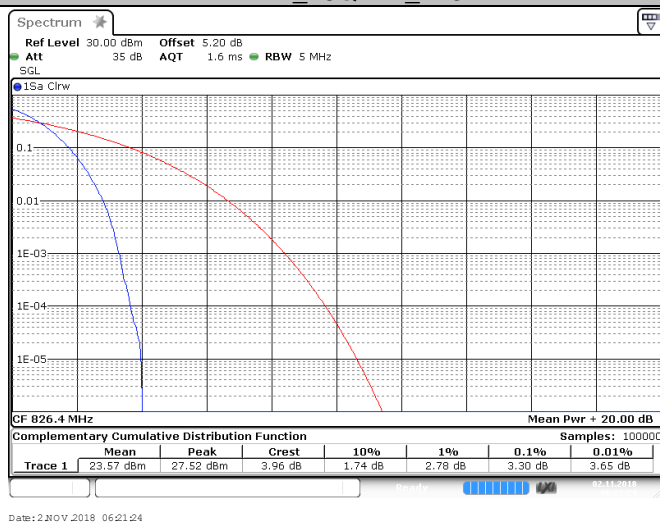
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## BAND V\_QPSK\_4233



## BAND V\_16QAM\_4132



## BAND V\_16QAM\_4182

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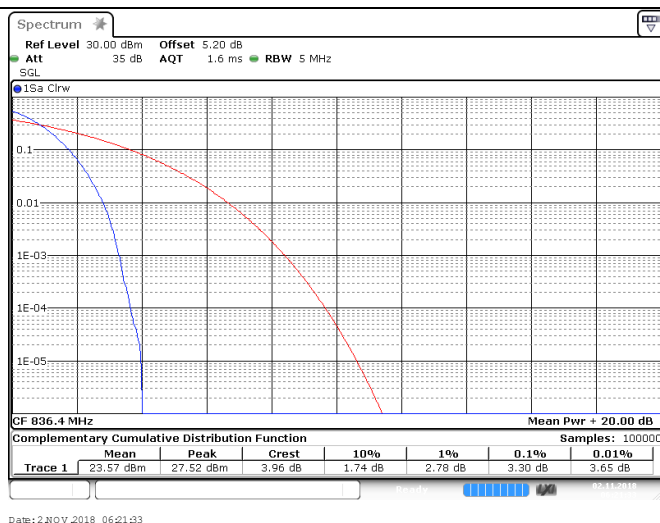
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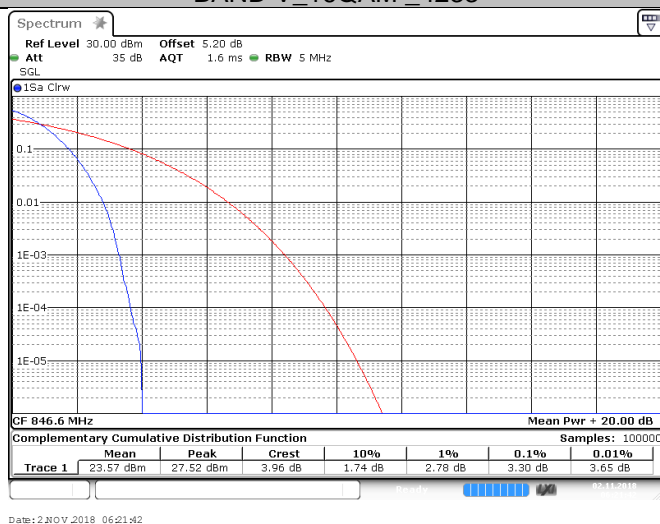
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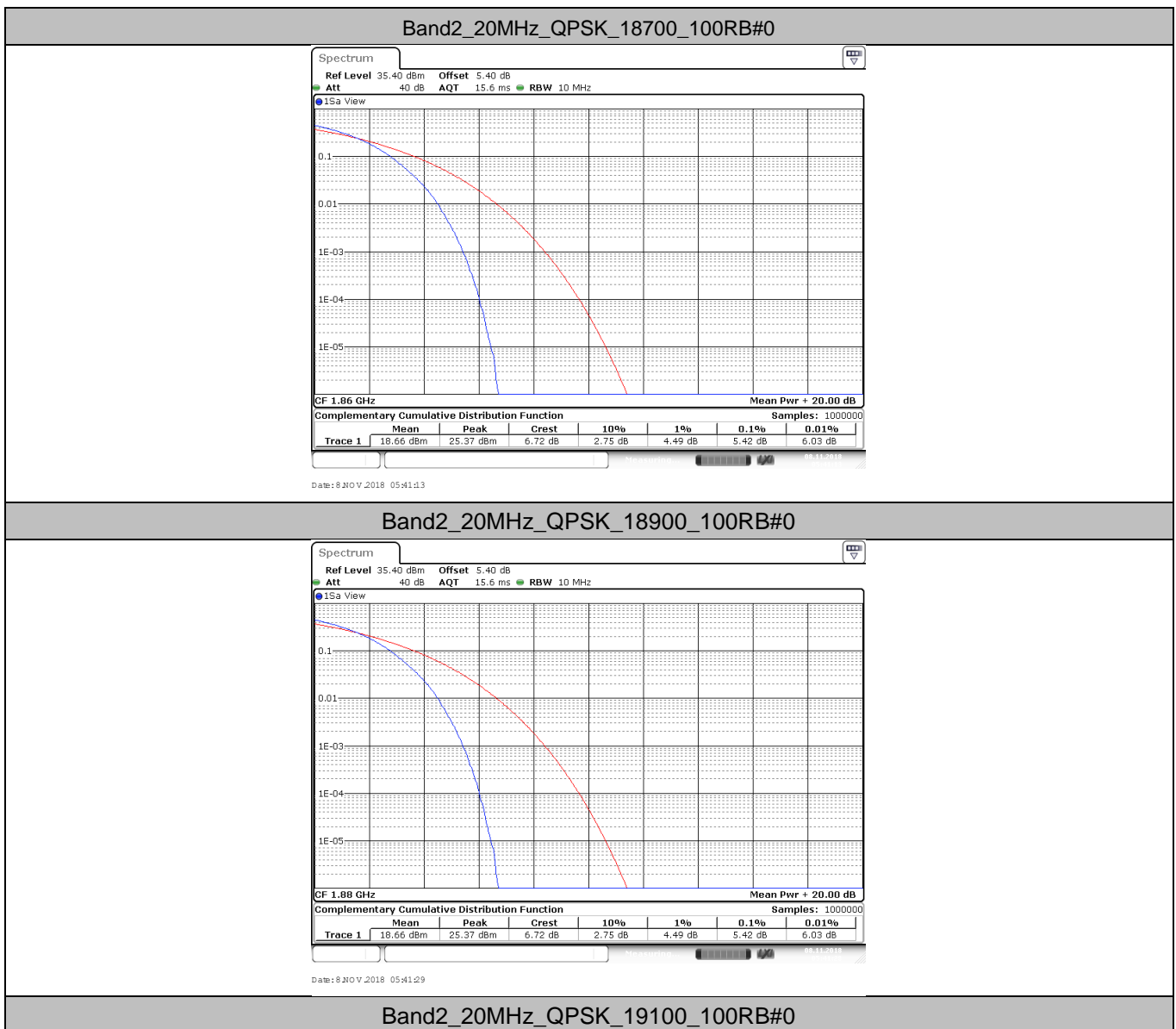


### 11.4.3. Peak-to-Average Ratio :LTE Band2

#### 11.4.3.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band2	20MHz	QPSK	18700	100RB#0	5.42	13	PASS
Band2	20MHz	QPSK	18900	100RB#0	5.42	13	PASS
Band2	20MHz	QPSK	19100	100RB#0	5.42	13	PASS
Band2	20MHz	16QAM	18700	100RB#0	5.42	13	PASS
Band2	20MHz	16QAM	18900	100RB#0	5.42	13	PASS
Band2	20MHz	16QAM	19100	100RB#0	5.42	13	PASS

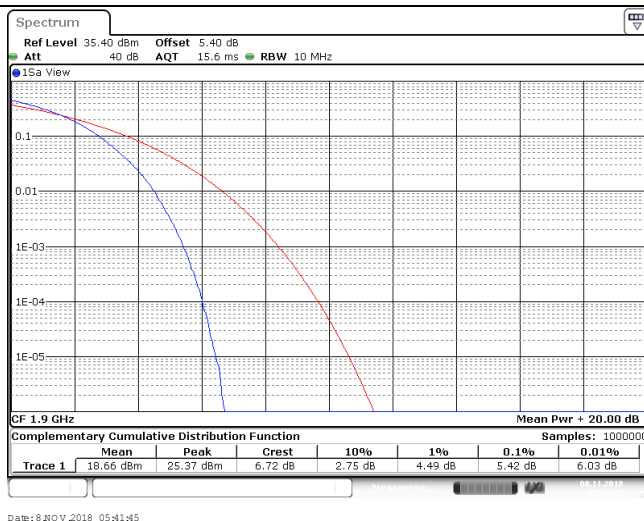
#### 11.4.3.2. Test Plots



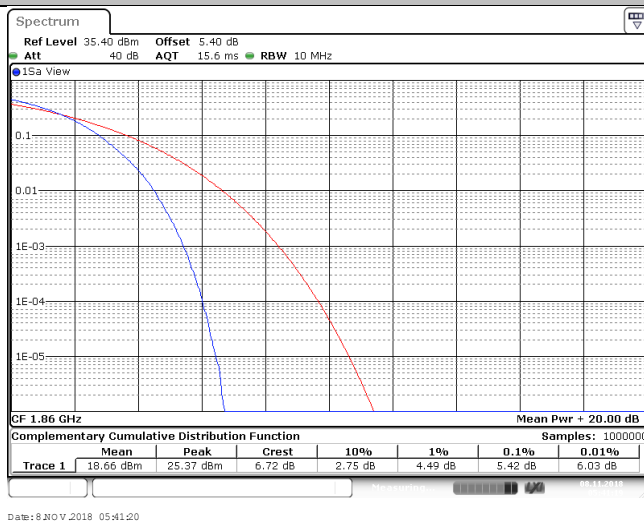
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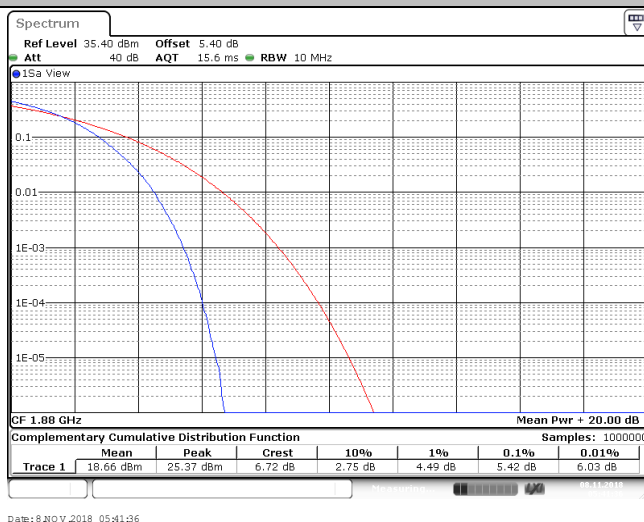
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Band2\_20MHz\_16QAM\_18700\_100RB#0



Band2\_20MHz\_16QAM\_18900\_100RB#0



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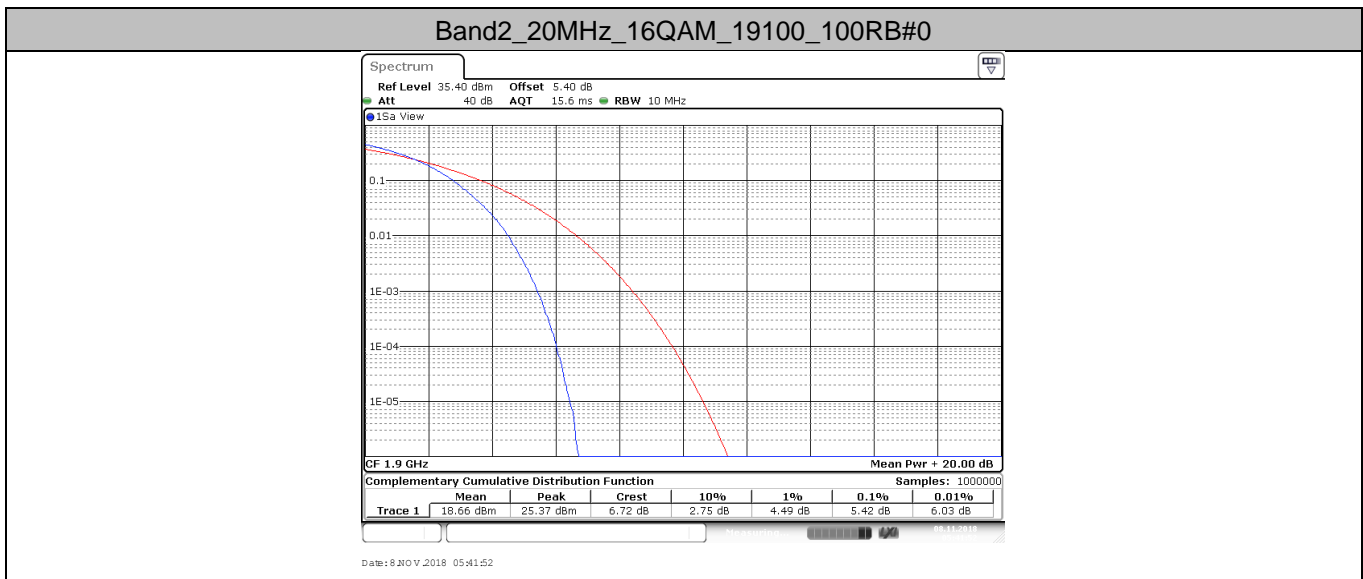
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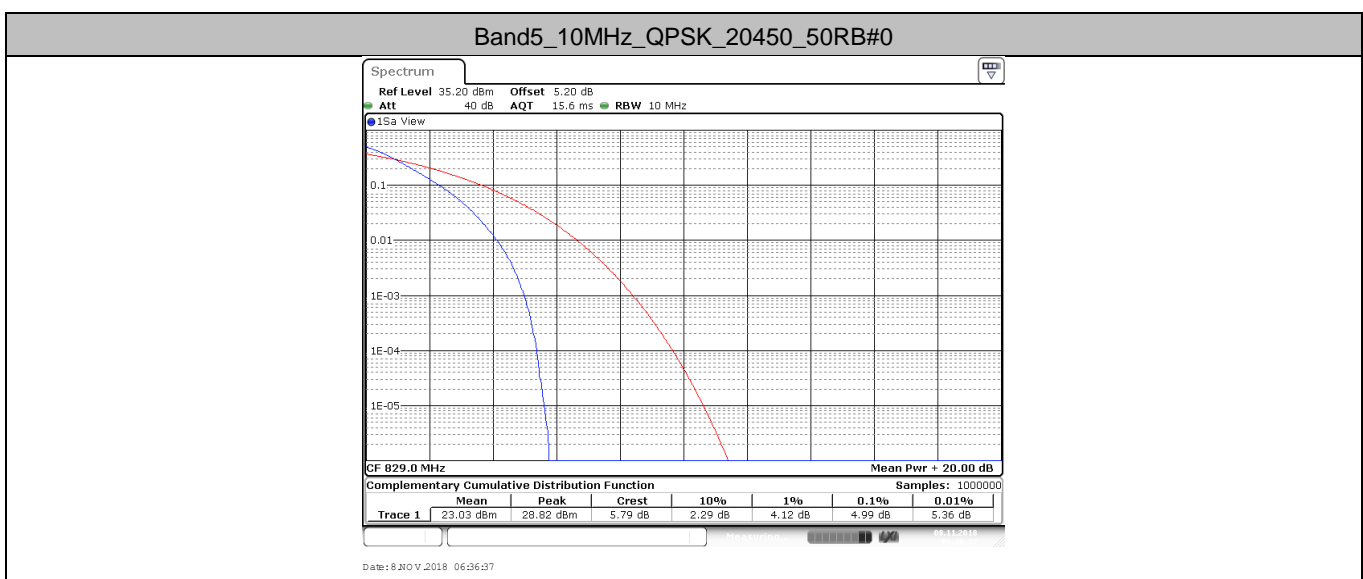


#### 11.4.4. Peak-to-Average Ratio :LTE Band5

##### 11.4.4.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band5	10MHz	QPSK	20450	50RB#0	4.99	13	PASS
Band5	10MHz	QPSK	20525	50RB#0	4.99	13	PASS
Band5	10MHz	QPSK	20600	50RB#0	4.99	13	PASS
Band5	10MHz	16QAM	20450	50RB#0	4.99	13	PASS
Band5	10MHz	16QAM	20525	50RB#0	4.99	13	PASS
Band5	10MHz	16QAM	20600	50RB#0	4.99	13	PASS

##### 11.4.4.2. Test Plots

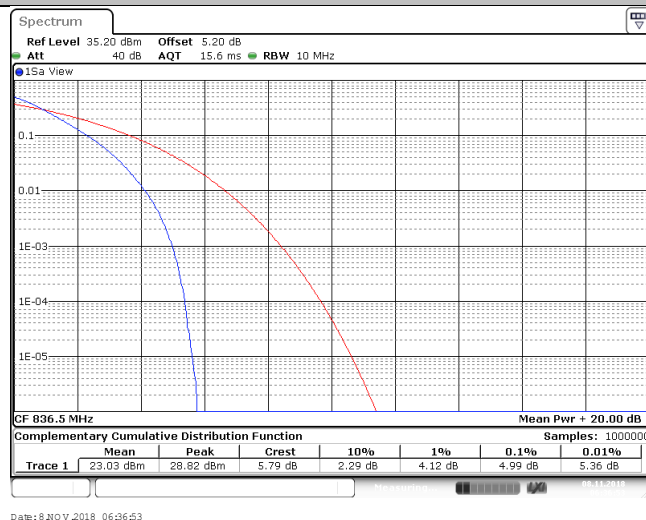


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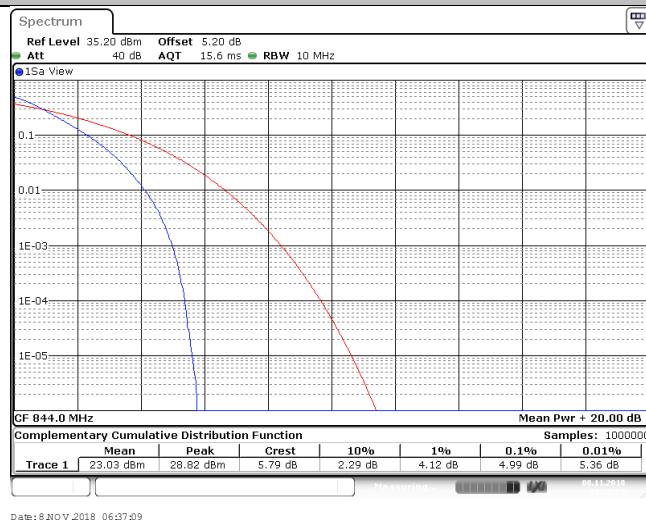
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## Band5\_10MHz\_QPSK\_20525\_50RB#0



## Band5\_10MHz\_QPSK\_20600\_50RB#0

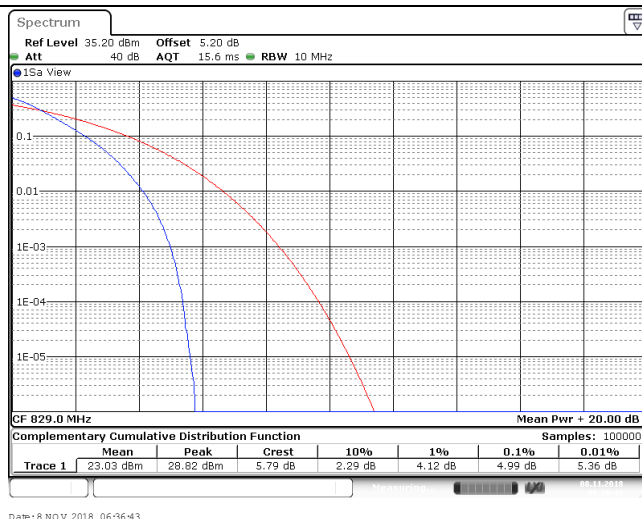


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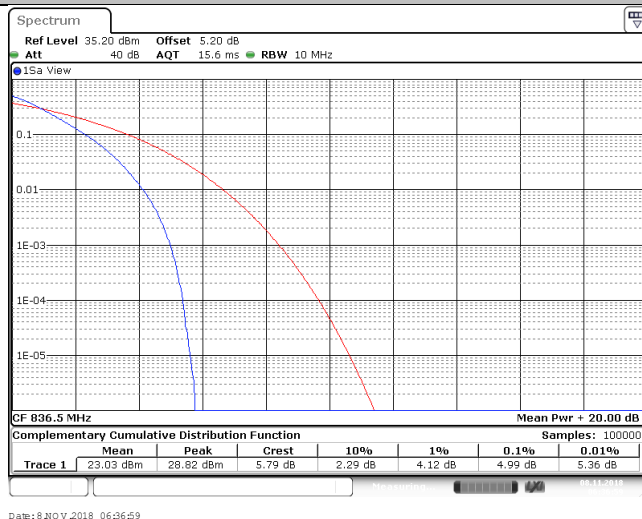
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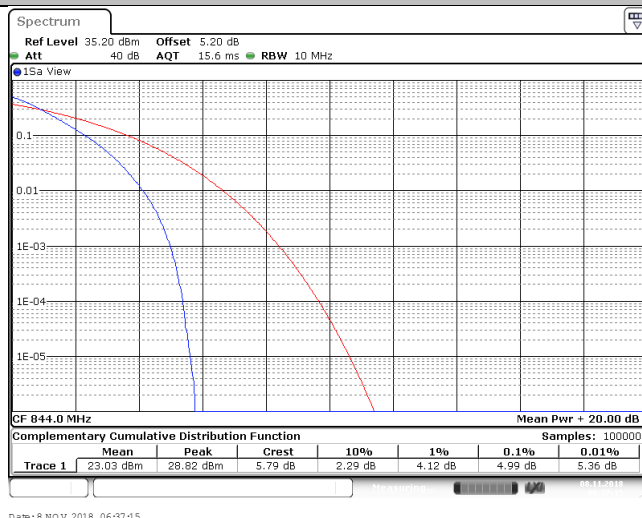
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## Band5\_10MHz\_16QAM\_20525\_50RB#0



## Band5\_10MHz\_16QAM\_20600\_50RB#0



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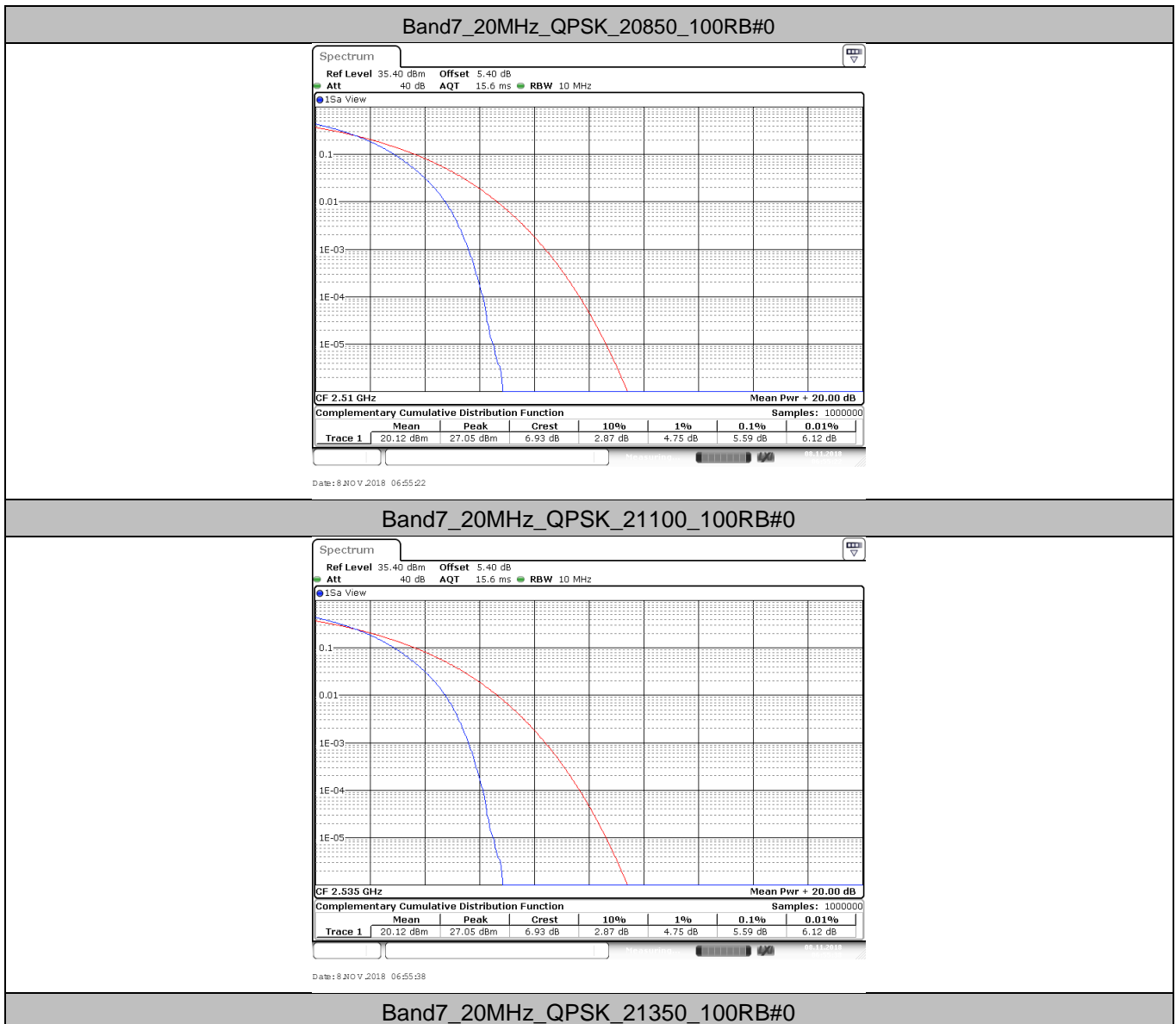


## 11.4.5. Peak-to-Average Ratio :LTE Band 7

### 11.4.5.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band7	20MHz	QPSK	20850	100RB#0	5.59	13	PASS
Band7	20MHz	QPSK	21100	100RB#0	5.59	13	PASS
Band7	20MHz	QPSK	21350	100RB#0	5.59	13	PASS
Band7	20MHz	16QAM	20850	100RB#0	5.59	13	PASS
Band7	20MHz	16QAM	21100	100RB#0	5.59	13	PASS
Band7	20MHz	16QAM	21350	100RB#0	5.59	13	PASS

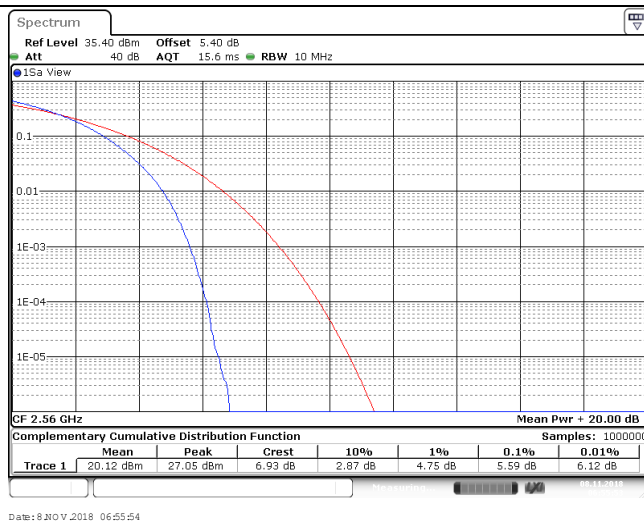
### 11.4.5.2. Test Plots



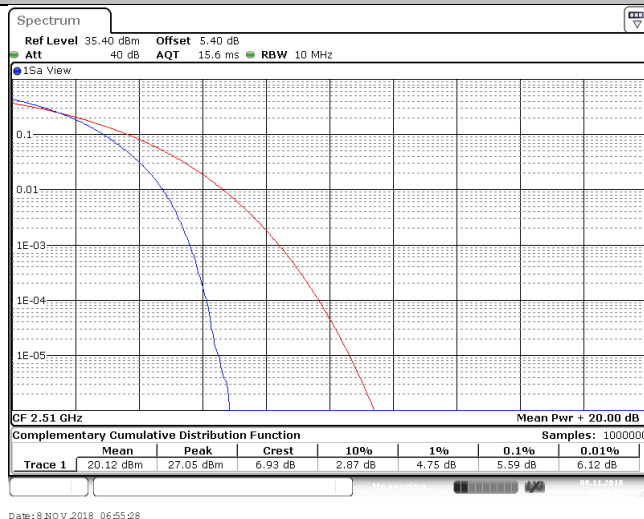
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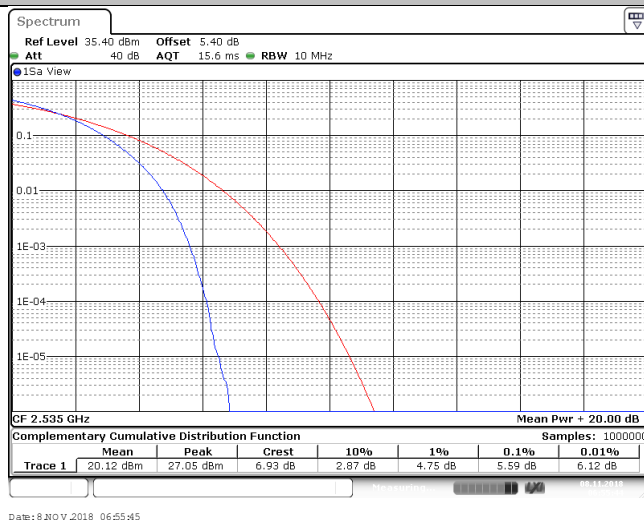
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Band7\_20MHz\_16QAM\_20850\_100RB#0



Band7\_20MHz\_16QAM\_21100\_100RB#0



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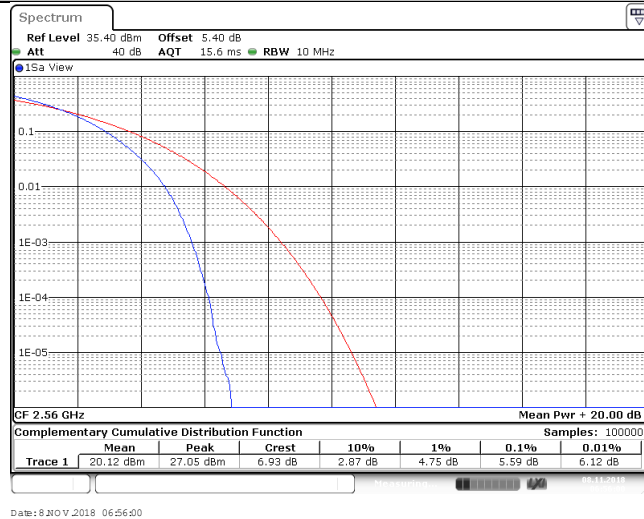
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## Band7\_20MHz\_16QAM\_21350\_100RB#0



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## 12. Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for ZR/2018/90027.

***~ End of Report ~***

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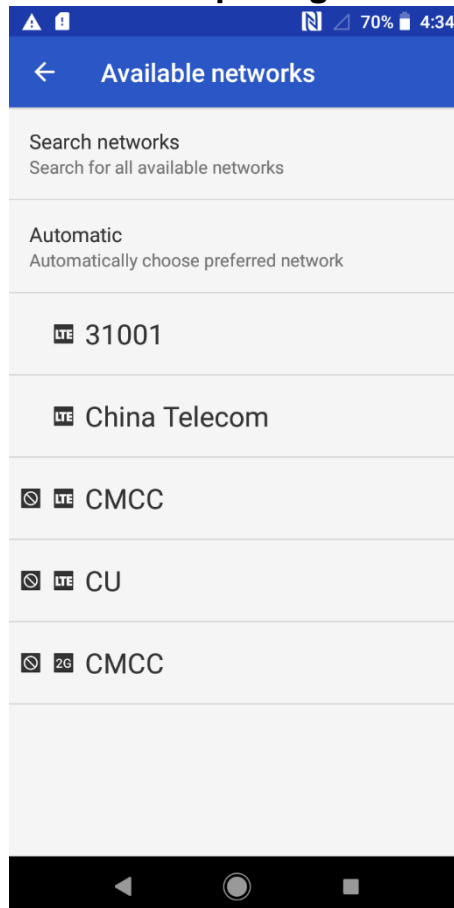
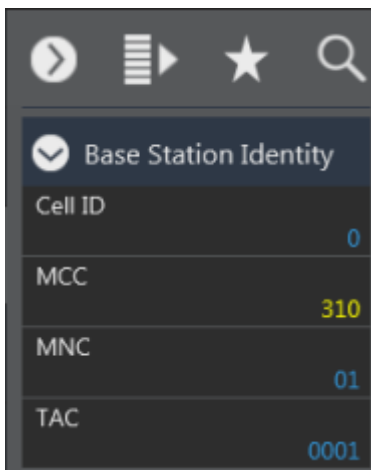
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## 13. Base station configures US MCC, and sets B38

### 13.1. Base station set US MCC & Sample registration information



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## 14. UE cannot register B38

The screenshot displays the SGS test software interface. The top status bar shows two phone configurations: Phone2 (LTE, 30.70#038) and Phone1 (LTE, 30.70#038). The central area is divided into 'Measurement' and 'Signaling' tabs. The 'Signaling' tab is active, showing a 'SequenceMonitor' diagram and a 'Signaling Trace' table. The 'SequenceMonitor' diagram illustrates the UE's state transitions: Off, Idle, Detach, Registration, Idle(Regist), UE Origination, NW Origination, Connected, Handover, UE Release, and NW Release. The 'Signaling Trace' table lists the following messages and their timestamps:

U-S	Message	Description	Time at RRC
-->	ULInformationTransfer	SECURITY MODE COMPLETE	01:02:50.837 (00:00.013)
<--	SecurityModeCommand		01:02:50.837 (00:00.000)
-->	SecurityModeComplete		01:02:50.853 (00:00.016)
<--	RRCONNReconfiguration	TRACKING AREA UPDATE ACCEPT	01:02:50.865 (00:00.012)
-->	RRCONNReconfigurationComplete		01:02:50.885 (00:00.020)
-->	ULInformationTransfer	TRACKING AREA UPDATE COMPLETE	01:02:50.887 (00:00.002)
---	Reconfiguration(HO)---		
<--	RRCONNReconfiguration		01:04:02.949 (01:12.062)
---	NW Origination---		
<--	Paging	SFN : 863 Subframe : 0	01:04:08.633 (00:05.684)
<--	Paging	SFN : 927 Subframe : 0	01:04:09.273 (00:00.640)
<--	Paging	SFN : 991 Subframe : 0	01:04:09.913 (00:00.640)
<--	Paging	SFN : 31 Subframe : 0	01:04:10.553 (00:00.640)
<--	Paging	SFN : 95 Subframe : 0	01:04:11.193 (00:00.640)
<--	Paging	SFN : 159 Subframe : 0	01:04:11.833 (00:00.640)

The right sidebar contains a 'Function' section with 'Measurement Report' set to 'Off', 'Trace Clear', and 'UE Capability Information'. The bottom right corner features a 'Home' button and a 'Menu' button.

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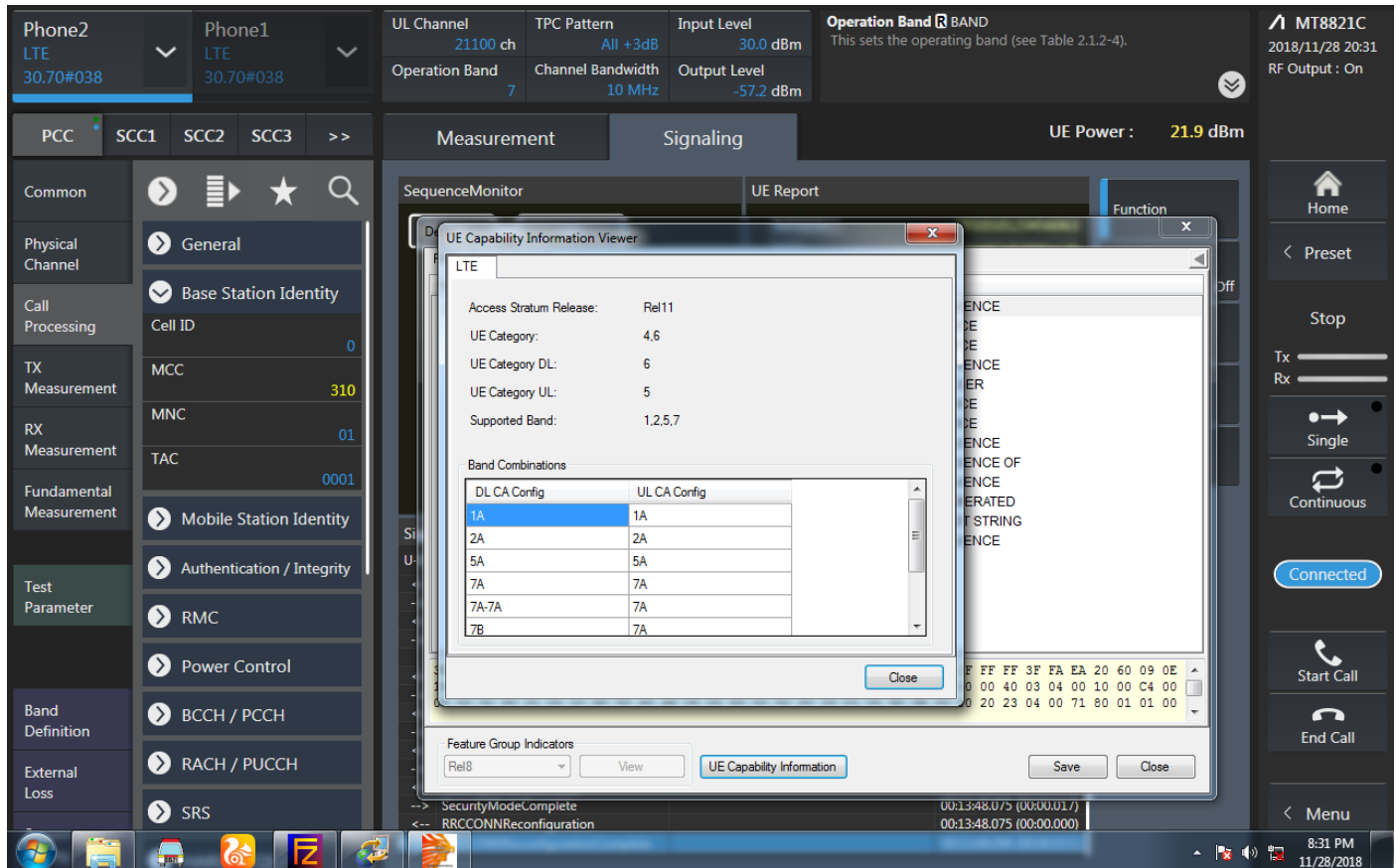
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## 15. Base station configures US MCC, and sets other bands, UE can register, and call box show UE capability does not have B38



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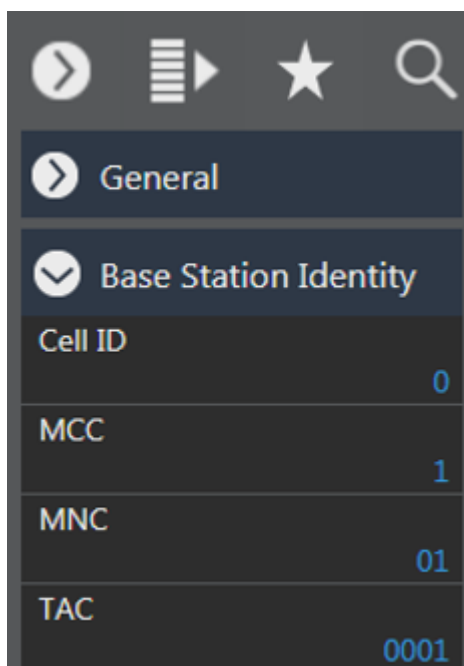
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## 16. Base station configures non-US MCC



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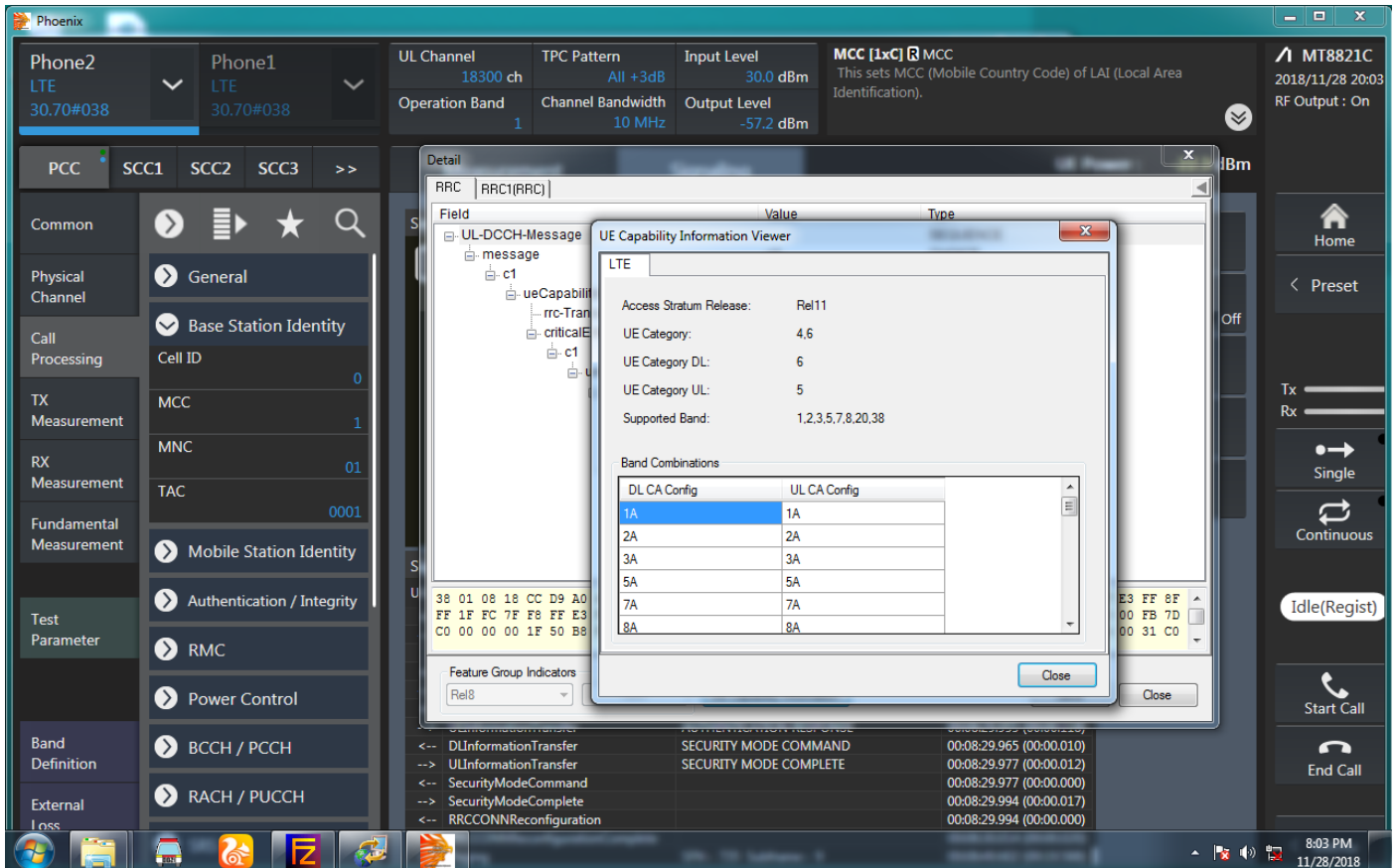
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## 17. UE registration on, and call box show UE capability does have

B38



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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