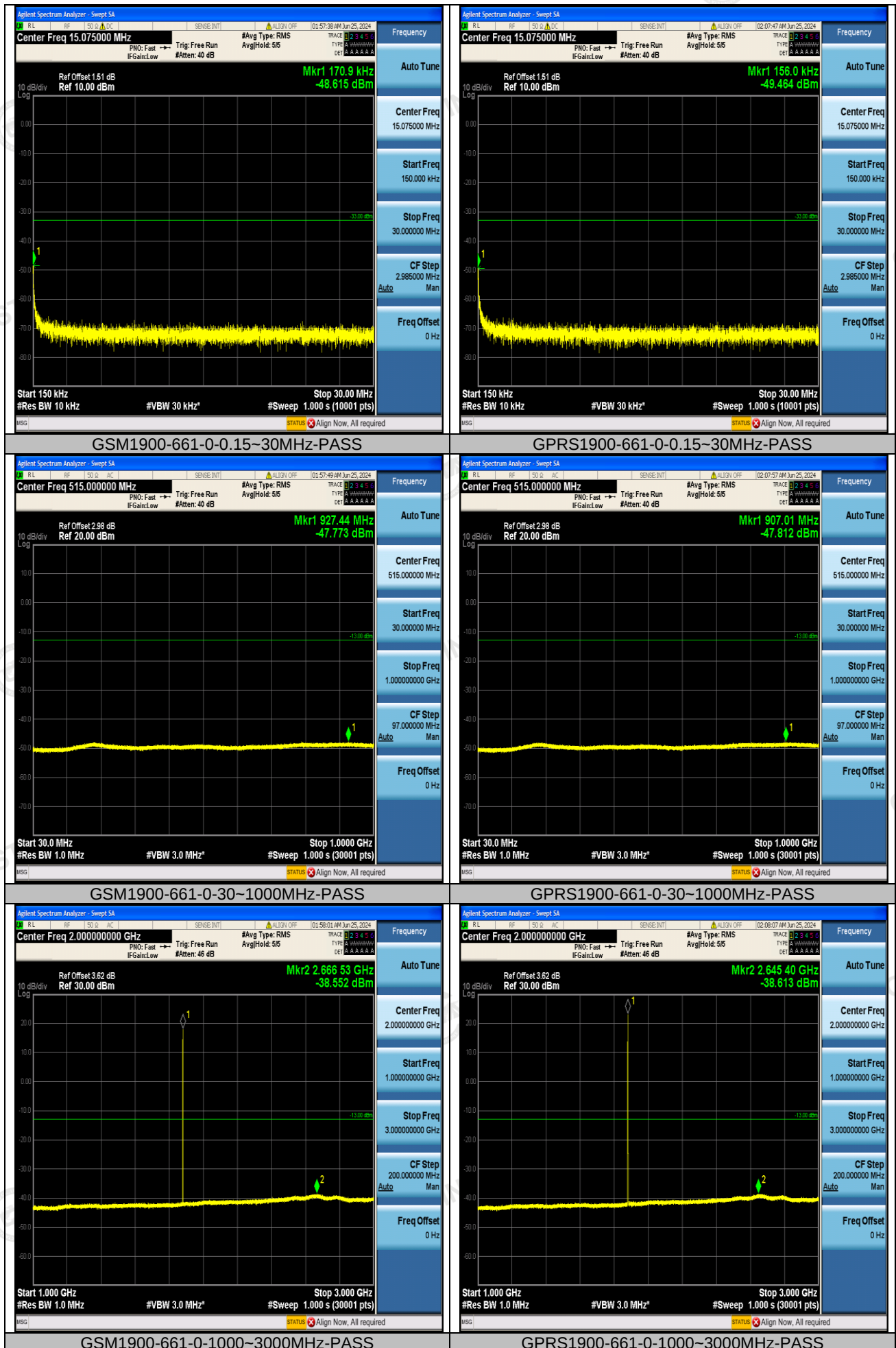
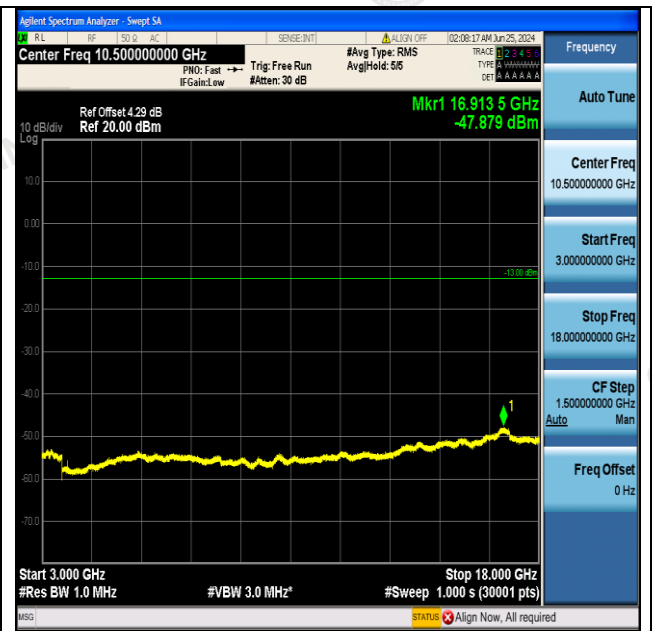


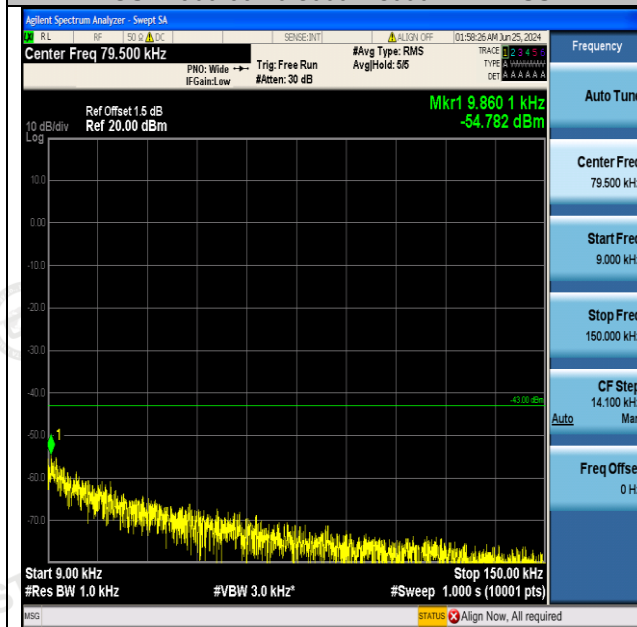




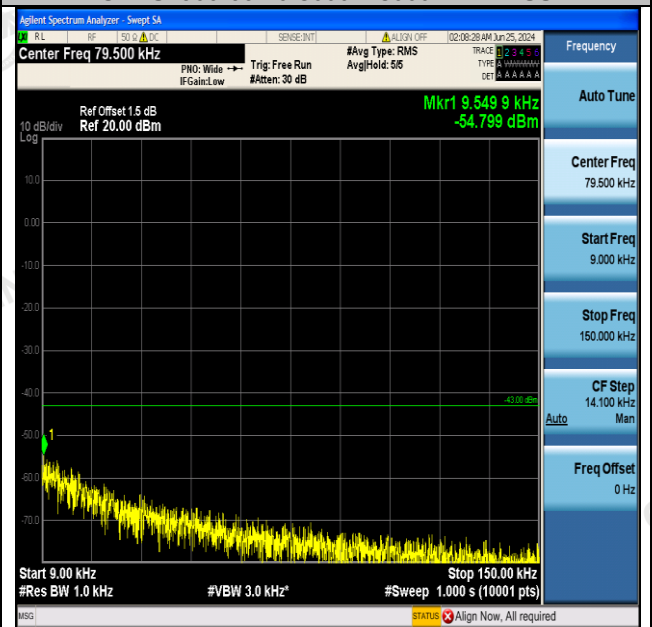
GSM1900-661-0-3000-18000MHz-PASS



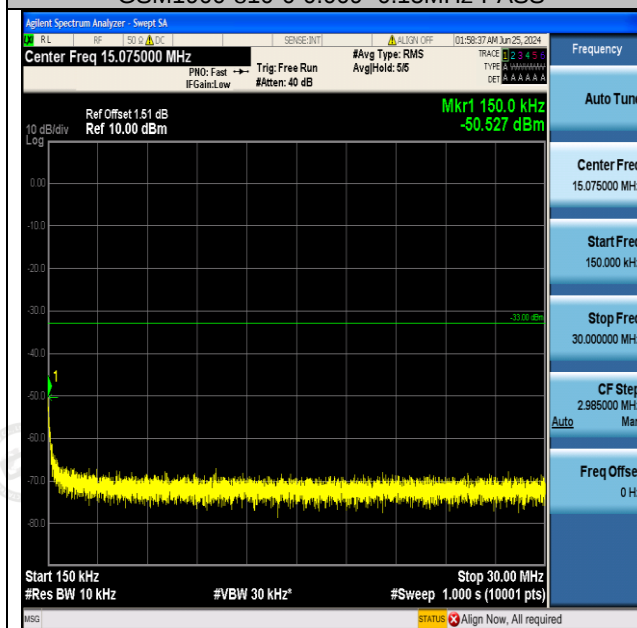
GPRS1900-661-0-3000-18000MHz-PASS



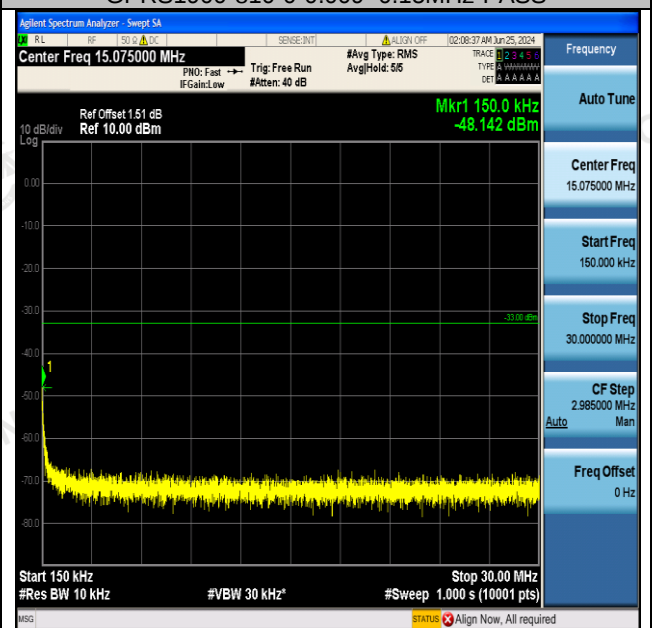
GSM1900-810-0-0.009-0.15MHz-PASS



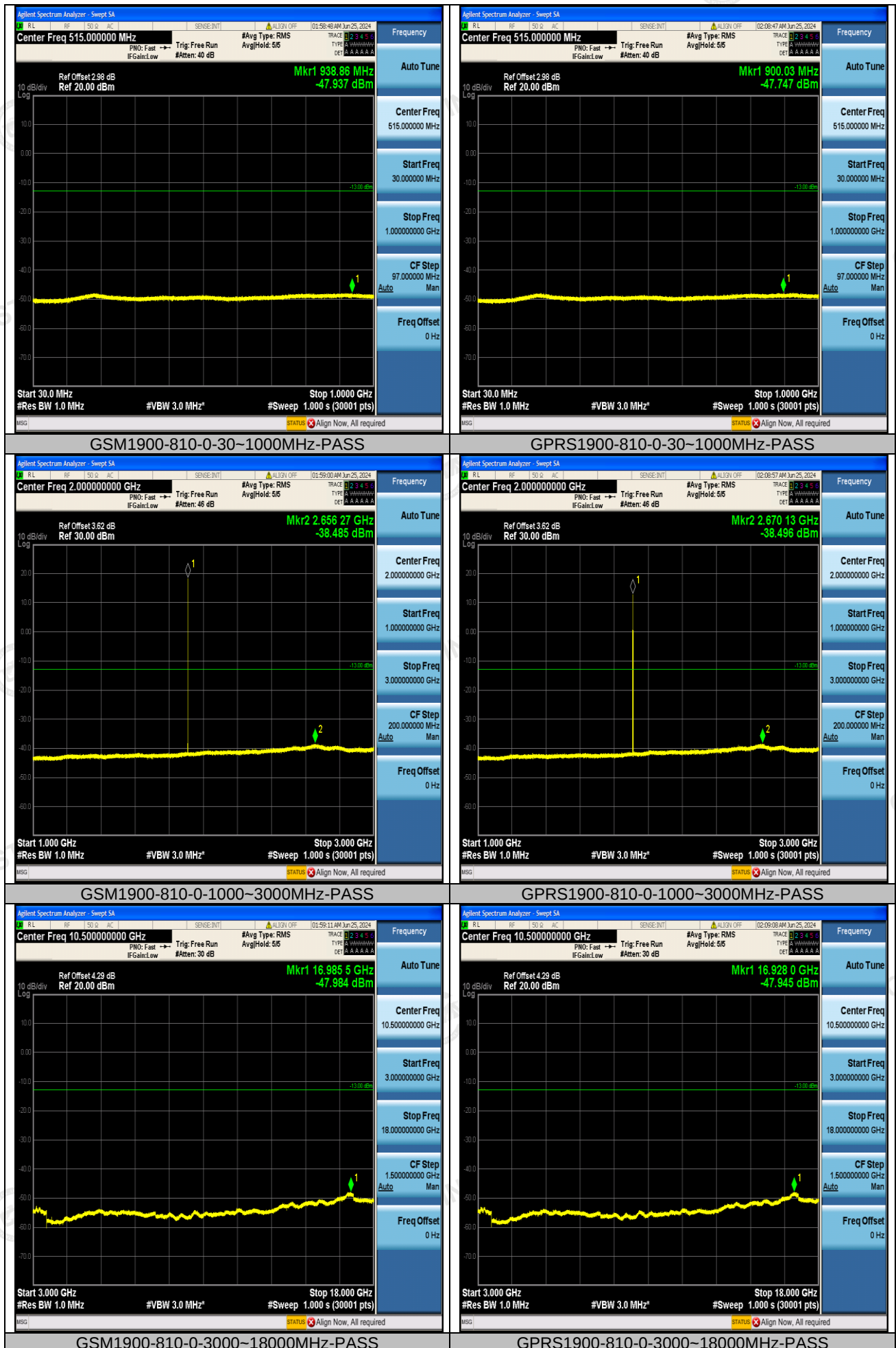
GPRS1900-810-0-0.009-0.15MHz-PASS



GSM1900-810-0-0.15-30MHz-PASS



GPRS1900-810-0-0.15-30MHz-PASS



4.6 Frequency Stability Test

TEST APPLICABLE

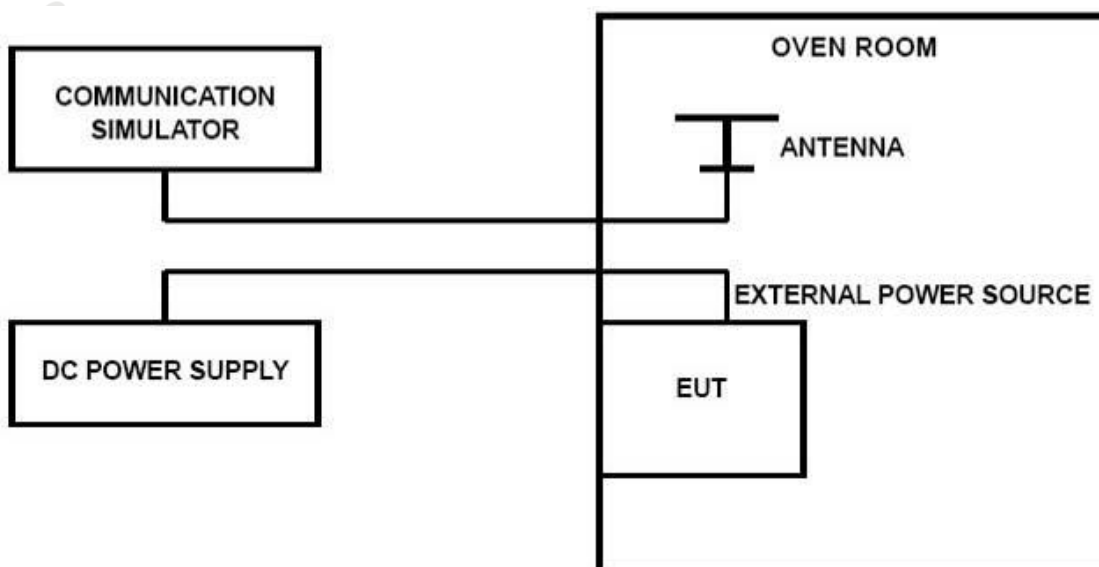
1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30°C to +50°C centigrade.
2. According to FCC Part 2 Section 2.1055 (E) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried voltage equipment and the end voltage point was 10.8V.

TEST PROCEDURE

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature;
2. Subject the EUT to overnight soak at -30°C;
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on middle channel of PCS 1900 and GSM850, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 0.5 hours unpowered, to allow any self-heating to stabilize, before continuing;
6. Subject the EUT to overnight soak at +50°C;
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
8. Repeat the above measurements at 10°C increments from +50°C to -30°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure;

TEST CONFIGURATION



TEST LIMITS***For Hand carried battery powered equipment***

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.40VDC and 4.20VDC, with a nominal voltage of 3.80 DC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

TEST RESULTS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	NV	-30	12.24	0.014851	±2.5	PASS
GSM850	128	NV	-20	10.23	0.012412	±2.5	PASS
GSM850	128	NV	-10	12.66	0.015360	±2.5	PASS
GSM850	128	NV	0	10.23	0.012412	±2.5	PASS
GSM850	128	NV	10	13.33	0.016173	±2.5	PASS
GSM850	128	NV	20	17.11	0.020760	±2.5	PASS
GSM850	128	NV	30	15.34	0.018612	±2.5	PASS
GSM850	128	NV	40	13.56	0.016452	±2.5	PASS
GSM850	128	NV	50	15.37	0.018648	±2.5	PASS
GPRS850	128	NV	-30	5.04	0.006115	±2.5	PASS
GPRS850	128	NV	-20	3.87	0.004695	±2.5	PASS
GPRS850	128	NV	-10	5.26	0.006382	±2.5	PASS
GPRS850	128	NV	0	3.13	0.003798	±2.5	PASS
GPRS850	128	NV	10	4.94	0.005994	±2.5	PASS
GPRS850	128	NV	20	5.42	0.006576	±2.5	PASS
GPRS850	128	NV	30	9.56	0.011599	±2.5	PASS
GPRS850	128	NV	40	4.58	0.005557	±2.5	PASS
GPRS850	128	NV	50	1.94	0.002354	±2.5	PASS
GSM850	190	NV	-30	6.04	0.007220	±2.5	PASS
GSM850	190	NV	-20	7.78	0.009300	±2.5	PASS
GSM850	190	NV	-10	8.10	0.009682	±2.5	PASS
GSM850	190	NV	0	6.55	0.007829	±2.5	PASS
GSM850	190	NV	10	6.68	0.007985	±2.5	PASS
GSM850	190	NV	20	6.65	0.007949	±2.5	PASS
GSM850	190	NV	30	10.85	0.012969	±2.5	PASS
GSM850	190	NV	40	12.40	0.014822	±2.5	PASS
GSM850	190	NV	50	14.08	0.016830	±2.5	PASS
GPRS850	190	NV	-30	-0.36	-0.000430	±2.5	PASS
GPRS850	190	NV	-20	-0.90	-0.001076	±2.5	PASS
GPRS850	190	NV	-10	1.13	0.001351	±2.5	PASS
GPRS850	190	NV	0	1.68	0.002008	±2.5	PASS
GPRS850	190	NV	10	0.19	0.000227	±2.5	PASS
GPRS850	190	NV	20	-0.55	-0.000657	±2.5	PASS
GPRS850	190	NV	30	-5.00	-0.005977	±2.5	PASS
GPRS850	190	NV	40	-2.84	-0.003395	±2.5	PASS
GPRS850	190	NV	50	4.23	0.005056	±2.5	PASS
GSM850	251	NV	-30	5.52	0.006503	±2.5	PASS
GSM850	251	NV	-20	6.20	0.007304	±2.5	PASS
GSM850	251	NV	-10	4.94	0.005820	±2.5	PASS

GSM850	251	NV	0	5.52	0.006503	±2.5	PASS
GSM850	251	NV	10	9.07	0.010686	±2.5	PASS
GSM850	251	NV	20	5.97	0.007033	±2.5	PASS
GSM850	251	NV	30	10.62	0.012512	±2.5	PASS
GSM850	251	NV	40	9.52	0.011216	±2.5	PASS
GSM850	251	NV	50	11.17	0.013160	±2.5	PASS
GPRS850	251	NV	-30	4.26	0.005019	±2.5	PASS
GPRS850	251	NV	-20	3.49	0.004112	±2.5	PASS
GPRS850	251	NV	-10	2.36	0.002780	±2.5	PASS
GPRS850	251	NV	0	6.20	0.007304	±2.5	PASS
GPRS850	251	NV	10	5.26	0.006197	±2.5	PASS
GPRS850	251	NV	20	3.42	0.004029	±2.5	PASS
GPRS850	251	NV	30	1.19	0.001402	±2.5	PASS
GPRS850	251	NV	40	3.94	0.004642	±2.5	PASS
GPRS850	251	NV	50	3.20	0.003770	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	NV	-30	28.35	0.015323	±2.5	PASS
GSM1900	512	NV	-20	25.02	0.013523	±2.5	PASS
GSM1900	512	NV	-10	26.35	0.014242	±2.5	PASS
GSM1900	512	NV	0	26.76	0.014463	±2.5	PASS
GSM1900	512	NV	10	23.44	0.012669	±2.5	PASS
GSM1900	512	NV	20	25.09	0.013561	±2.5	PASS
GSM1900	512	NV	30	29.86	0.016139	±2.5	PASS
GSM1900	512	NV	40	25.22	0.013631	±2.5	PASS
GSM1900	512	NV	50	27.86	0.015058	±2.5	PASS
GPRS1900	512	NV	-30	23.31	0.012599	±2.5	PASS
GPRS1900	512	NV	-20	21.21	0.011464	±2.5	PASS
GPRS1900	512	NV	-10	20.57	0.011118	±2.5	PASS
GPRS1900	512	NV	0	21.76	0.011761	±2.5	PASS
GPRS1900	512	NV	10	22.37	0.012091	±2.5	PASS
GPRS1900	512	NV	20	22.76	0.012301	±2.5	PASS
GPRS1900	512	NV	30	25.22	0.013631	±2.5	PASS
GPRS1900	512	NV	40	19.34	0.010453	±2.5	PASS
GPRS1900	512	NV	50	21.99	0.011885	±2.5	PASS
GSM1900	661	NV	-30	25.38	0.013500	±2.5	PASS
GSM1900	661	NV	-20	26.38	0.014032	±2.5	PASS
GSM1900	661	NV	-10	20.95	0.011144	±2.5	PASS
GSM1900	661	NV	0	24.57	0.013069	±2.5	PASS
GSM1900	661	NV	10	25.15	0.013378	±2.5	PASS
GSM1900	661	NV	20	23.47	0.012484	±2.5	PASS
GSM1900	661	NV	30	28.02	0.014904	±2.5	PASS
GSM1900	661	NV	40	30.64	0.016298	±2.5	PASS
GSM1900	661	NV	50	23.54	0.012521	±2.5	PASS
GPRS1900	661	NV	-30	22.37	0.011899	±2.5	PASS
GPRS1900	661	NV	-20	21.34	0.011351	±2.5	PASS
GPRS1900	661	NV	-10	22.12	0.011766	±2.5	PASS
GPRS1900	661	NV	0	22.66	0.012053	±2.5	PASS
GPRS1900	661	NV	10	21.08	0.011213	±2.5	PASS
GPRS1900	661	NV	20	21.73	0.011559	±2.5	PASS
GPRS1900	661	NV	30	26.35	0.014016	±2.5	PASS
GPRS1900	661	NV	40	24.05	0.012793	±2.5	PASS
GPRS1900	661	NV	50	24.28	0.012915	±2.5	PASS
GSM1900	810	NV	-30	18.24	0.009551	±2.5	PASS
GSM1900	810	NV	-20	18.27	0.009566	±2.5	PASS
GSM1900	810	NV	-10	17.53	0.009179	±2.5	PASS
GSM1900	810	NV	0	17.79	0.009315	±2.5	PASS
GSM1900	810	NV	10	19.02	0.009959	±2.5	PASS
GSM1900	810	NV	20	17.01	0.008907	±2.5	PASS
GSM1900	810	NV	30	21.37	0.011190	±2.5	PASS
GSM1900	810	NV	40	26.54	0.013897	±2.5	PASS
GSM1900	810	NV	50	22.21	0.011629	±2.5	PASS

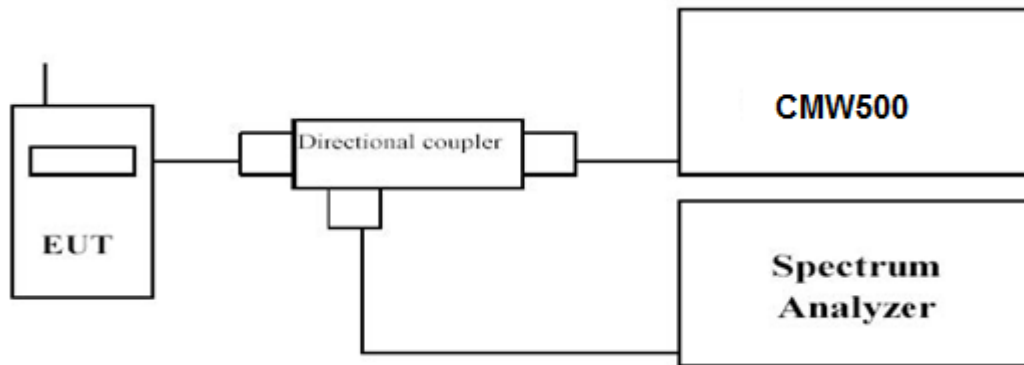
GPRS1900	810	NV	-30	17.21	0.009011	±2.5	PASS
GPRS1900	810	NV	-20	10.59	0.005545	±2.5	PASS
GPRS1900	810	NV	-10	14.30	0.007488	±2.5	PASS
GPRS1900	810	NV	0	14.27	0.007472	±2.5	PASS
GPRS1900	810	NV	10	14.33	0.007503	±2.5	PASS
GPRS1900	810	NV	20	12.53	0.006561	±2.5	PASS
GPRS1900	810	NV	30	13.14	0.006880	±2.5	PASS
GPRS1900	810	NV	40	19.89	0.010415	±2.5	PASS
GPRS1900	810	NV	50	16.79	0.008791	±2.5	PASS

4.7 Peak-to-Average Ratio (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

Use spectrum to measure the total peak power and record as P_{Pk} . Use spectrum to measure the total average power and record as P_{Avg} . Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm).

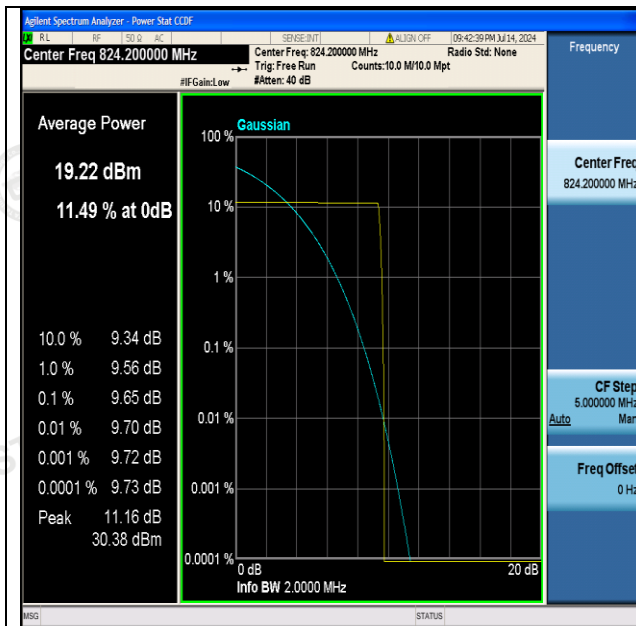
Determine the PAPR from:

$$PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).$$

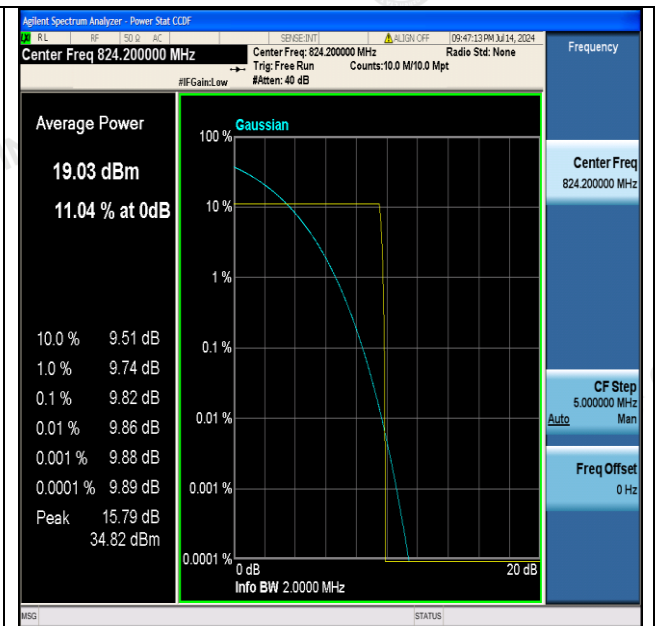
TEST RESULTS

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	128	9.65	13	PASS
GPRS850	128	9.82	13	PASS
GSM850	190	9.68	13	PASS
GPRS850	190	9.77	13	PASS
GSM850	251	9.64	13	PASS
GPRS850	251	9.87	13	PASS

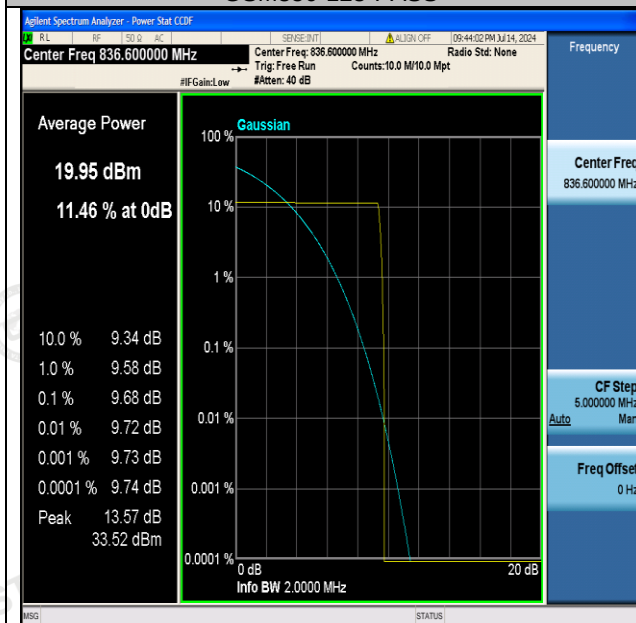
Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM1900	512	9.34	13	PASS
GPRS1900	512	9.52	13	PASS
GSM1900	661	9.46	13	PASS
GPRS1900	661	9.60	13	PASS
GSM1900	810	9.43	13	PASS
GPRS1900	810	9.59	13	PASS



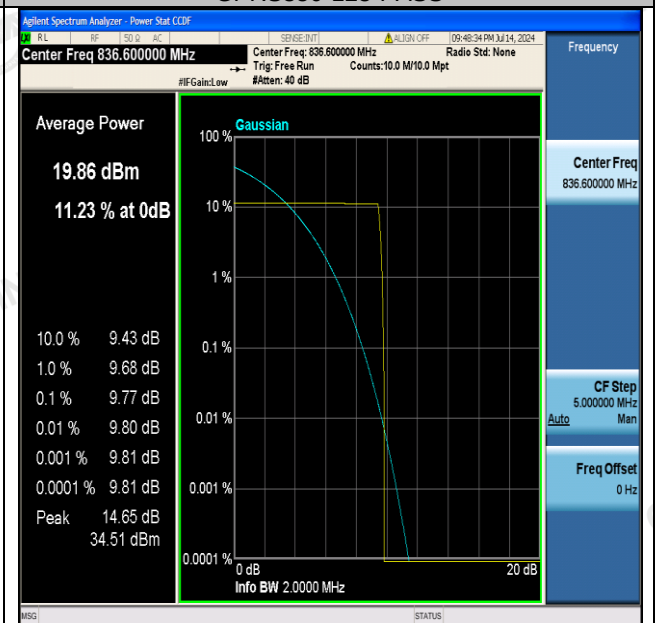
GSM850-128-PASS



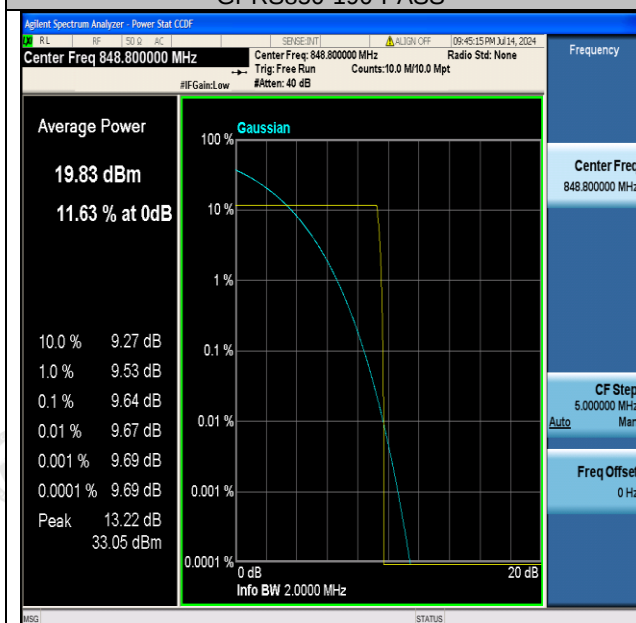
GPRS850-128-PASS



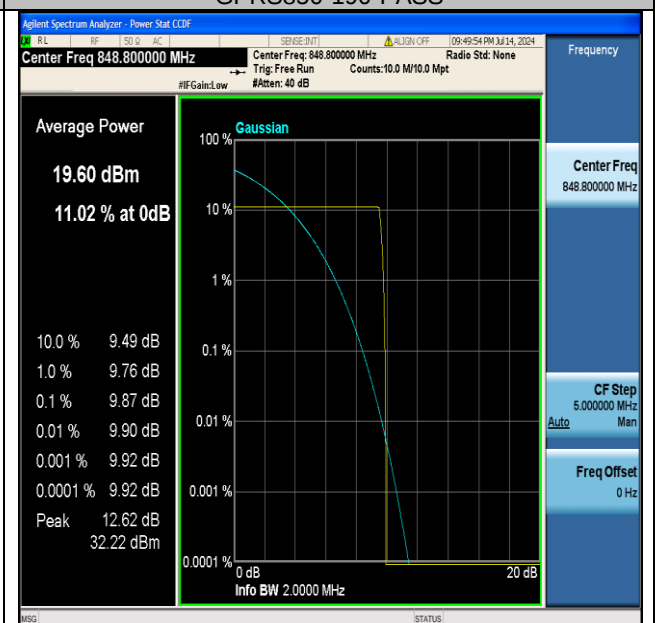
GPRS850-190-PASS



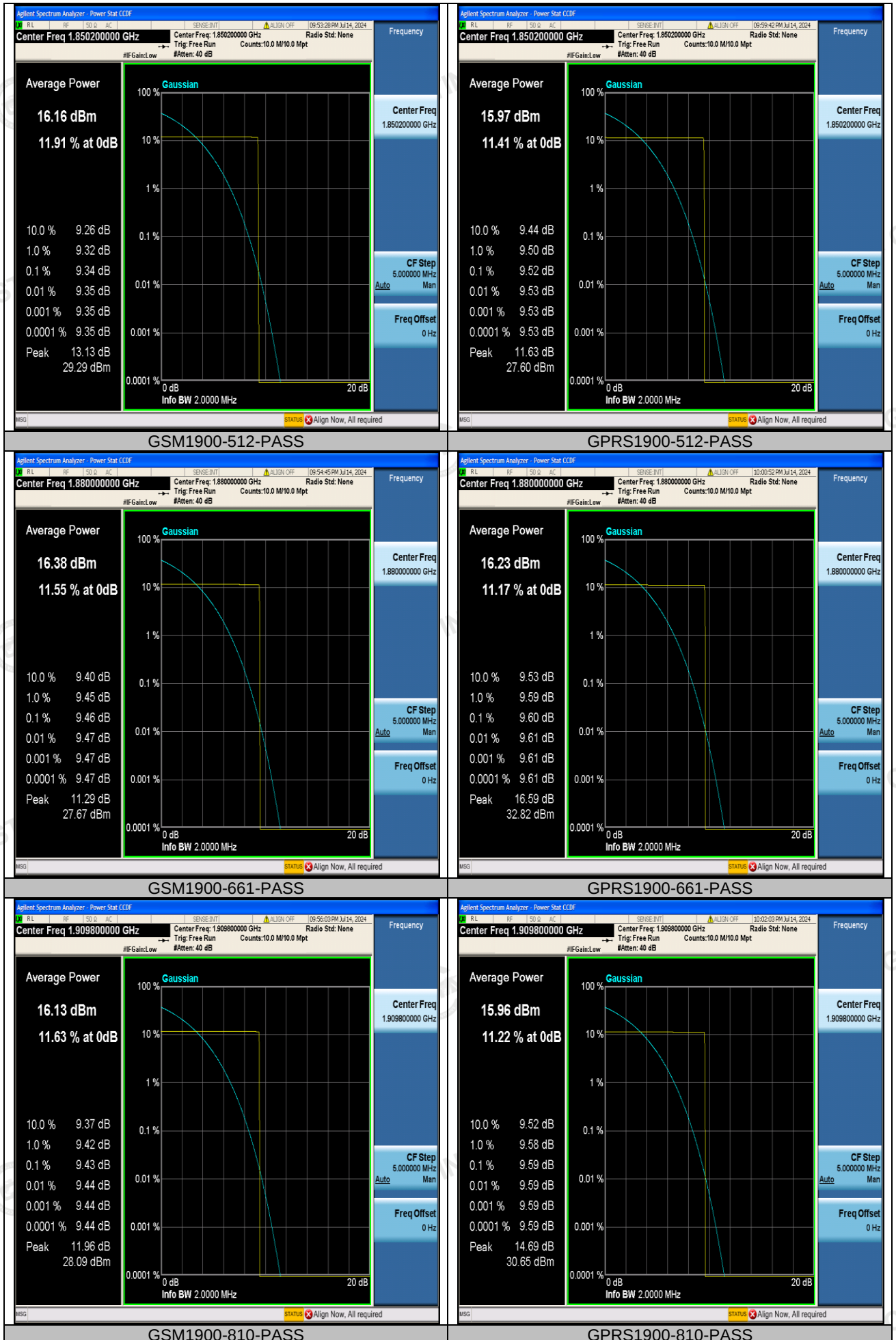
GPRS850-190-PASS



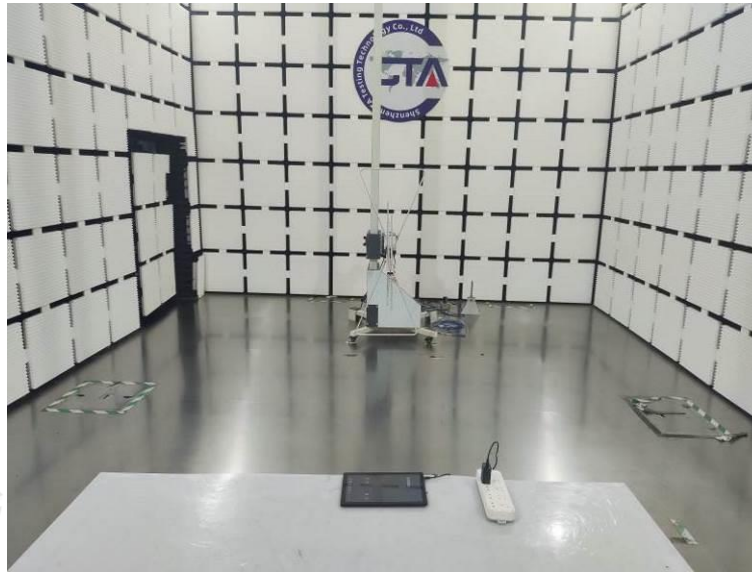
GPRS850-251-PASS



GPRS850-251-PASS



5 Test Setup Photos of the EUT



6 External and Internal Photos of the EUT

Reference to the test report No. CTA24062101501.

.....End of Report.....