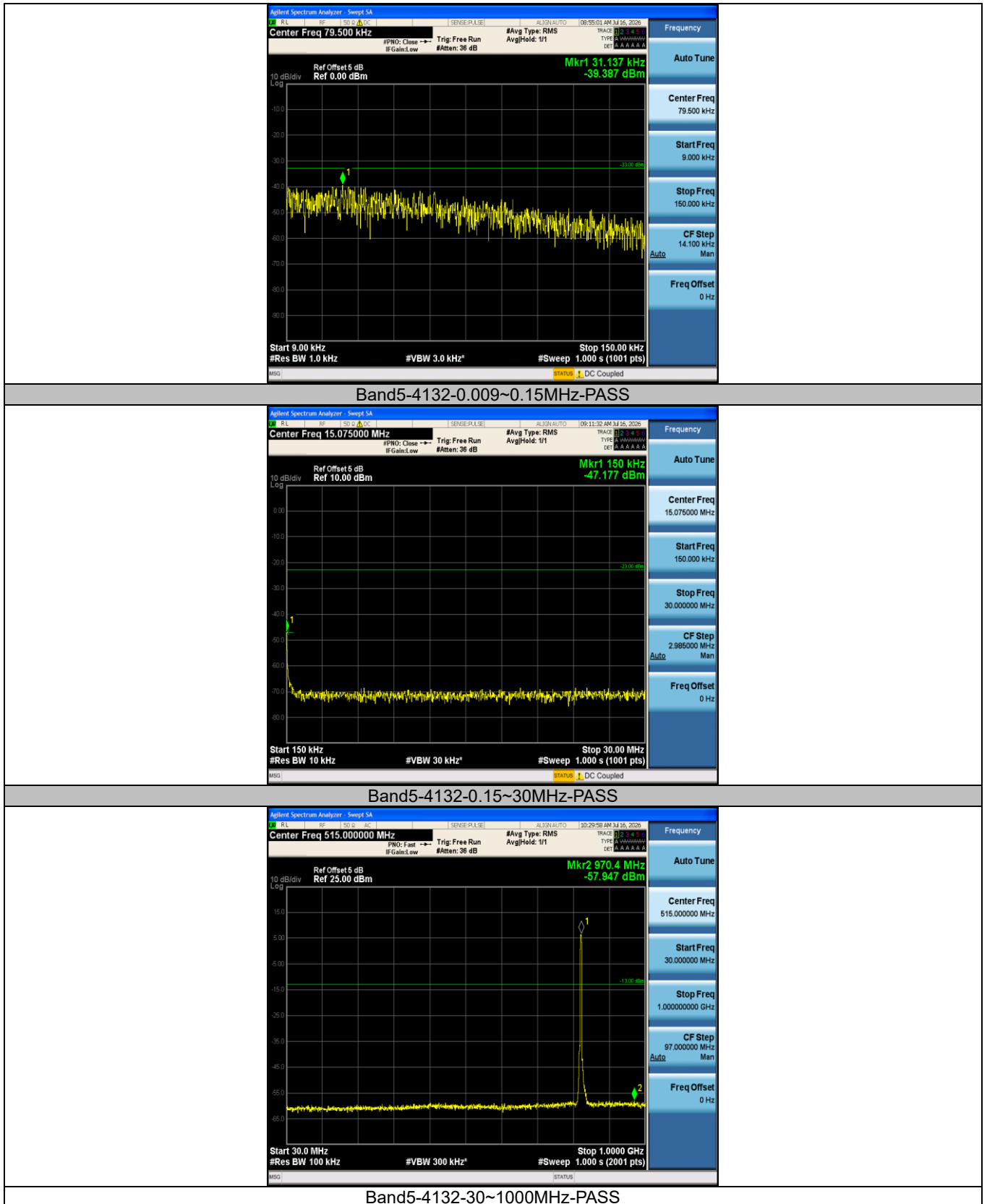
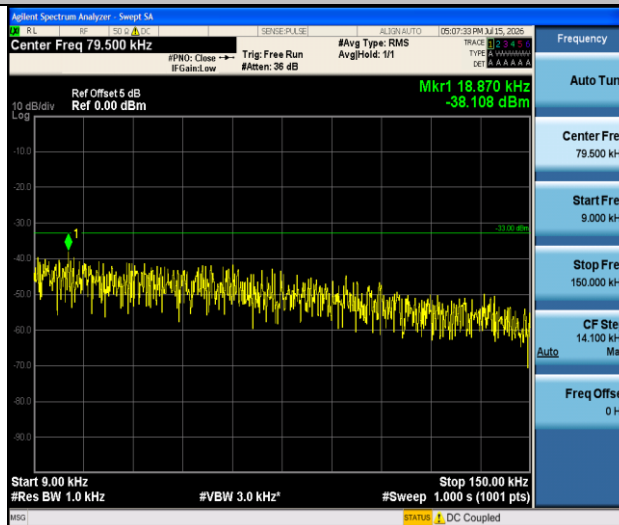




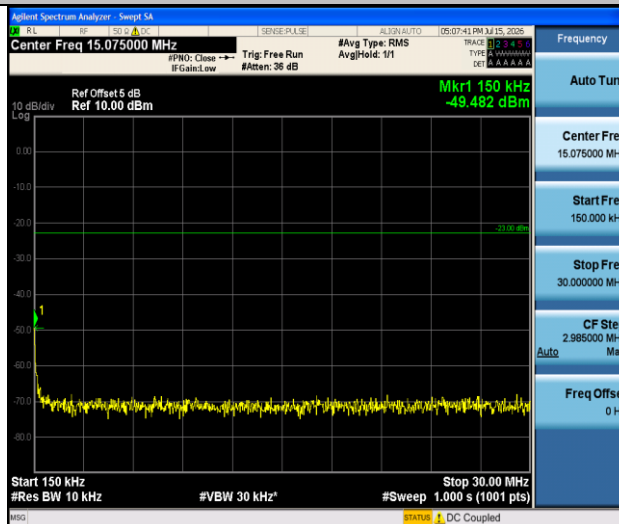
Band5-4132-30~1000MHz-PASS



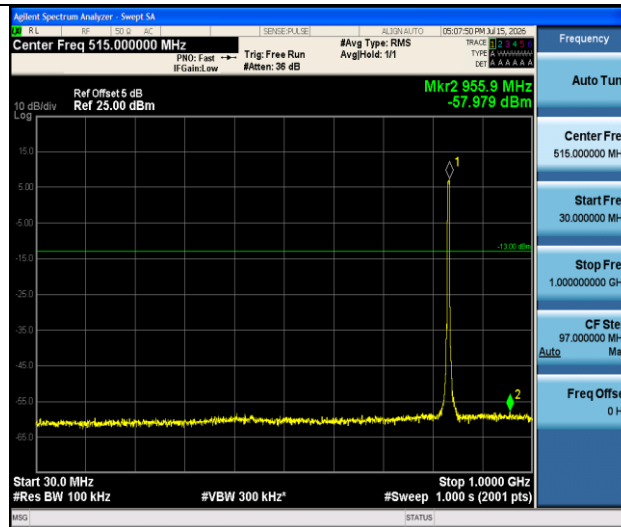
Band5-4132-1000~10000MHz-PASS



Band5-4182-0.009~0.15MHz-PASS



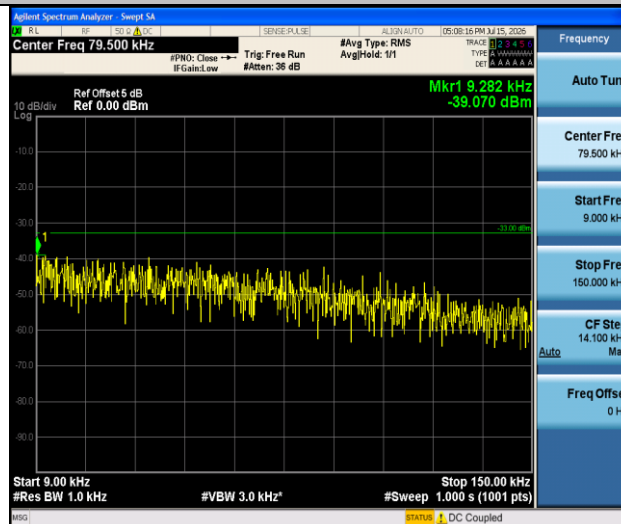
Band5-4182-0.15~30MHz-PASS



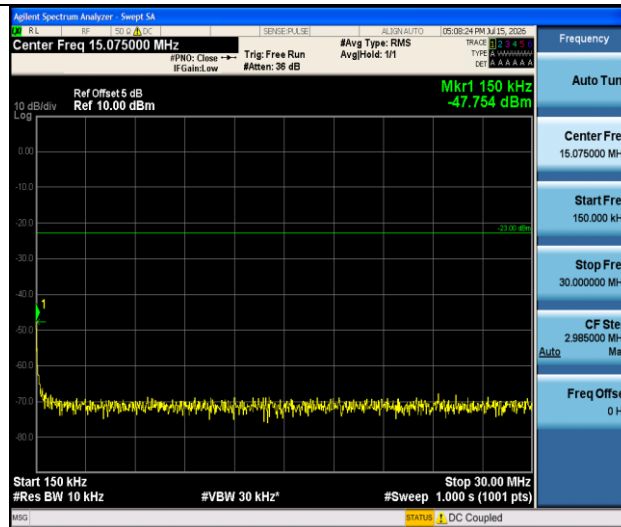
Band5-4182-30~1000MHz-PASS



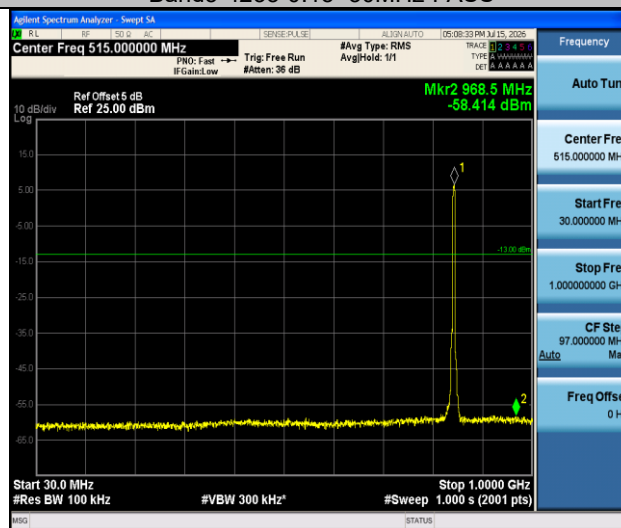
Band5-4182-1000~10000MHz-PASS



Band5-4233-0.009~0.15MHz-PASS



Band5-4233-0.15~30MHz-PASS



Band5-4233-30~1000MHz-PASS



Band5-4233-1000~10000MHz-PASS

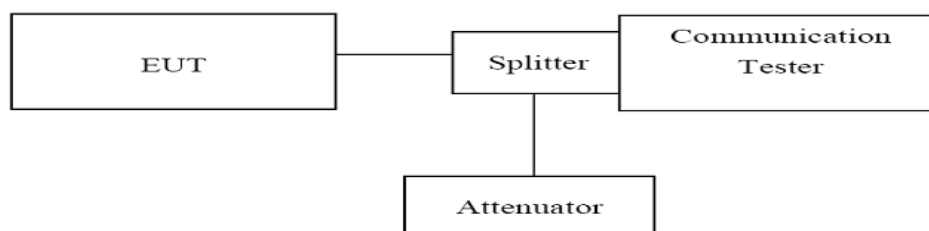
3.5. Band Edge compliance

LIMIT

FCC: §22.917, §24.238, §27.53 (h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to a R&S CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

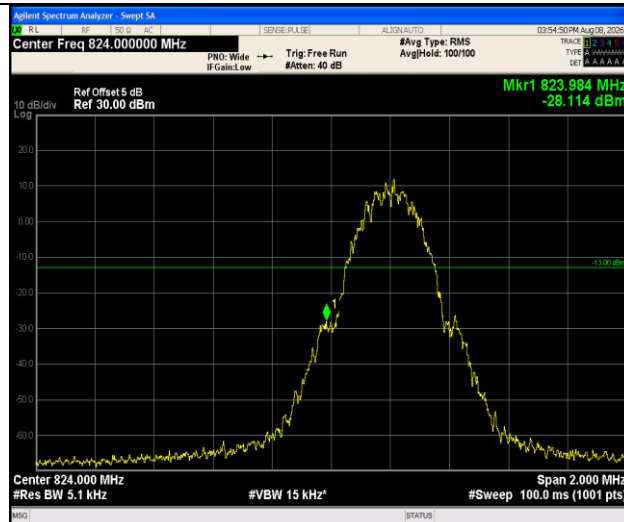
For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

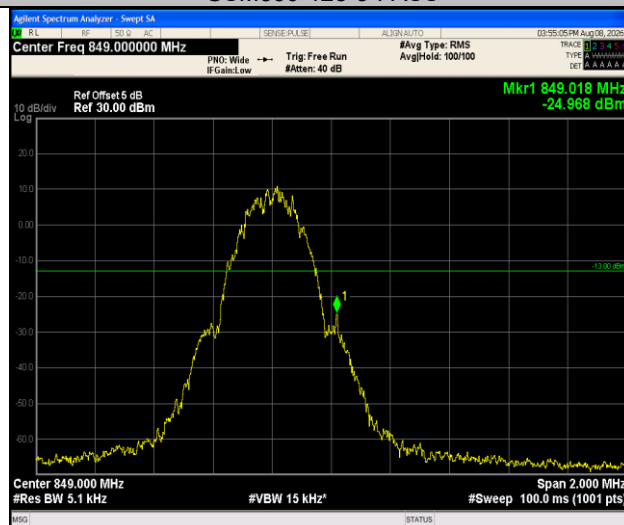
TEST RESULTS

Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM850	128	823.98	-28.11	-13	PASS
GSM850	251	849.02	-24.97	-13	PASS
GPRS850	128	823.99	-27.37	-13	PASS
GPRS850	251	849.02	-26.05	-13	PASS
EGPRS850	128	823.97	-31.87	-13	PASS
EGPRS850	251	849.04	-32.55	-13	PASS
GSM1900	512	1849.98	-29.04	-13	PASS
GSM1900	810	1910.02	-30.73	-13	PASS
GPRS1900	512	1849.98	-28.83	-13	PASS
GPRS1900	810	1910.02	-30.12	-13	PASS
EGPRS1900	512	1849.99	-36.10	-13	PASS
EGPRS1900	810	1910.00	-36.37	-13	PASS

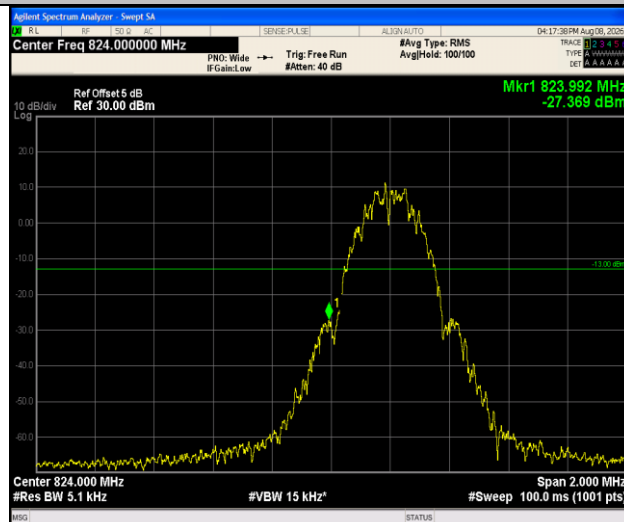
Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1850.00	-32.09	-13	PASS
Band2	9538	1910.01	-29.77	-13	PASS
Band5	4132	824.00	-31.26	-13	PASS
Band5	4233	849.00	-32.72	-13	PASS



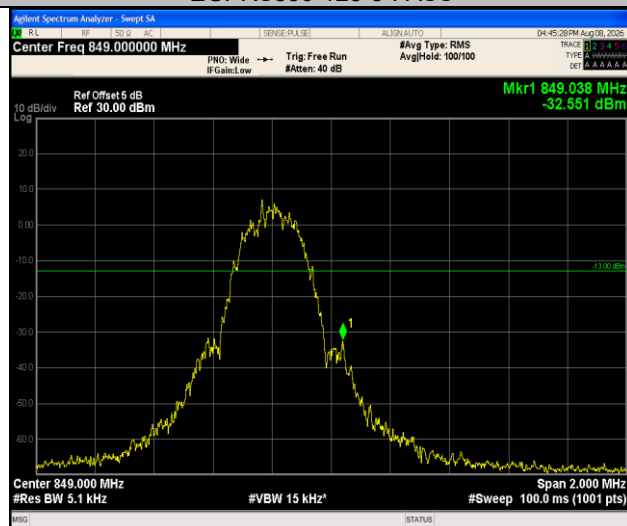
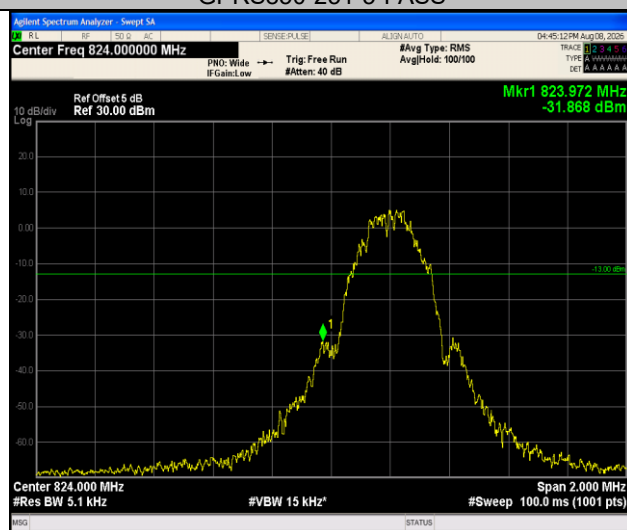
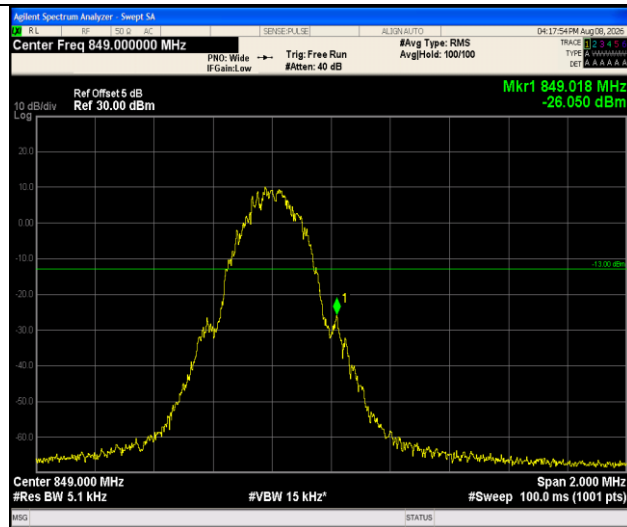
GSM850-128-5-PASS

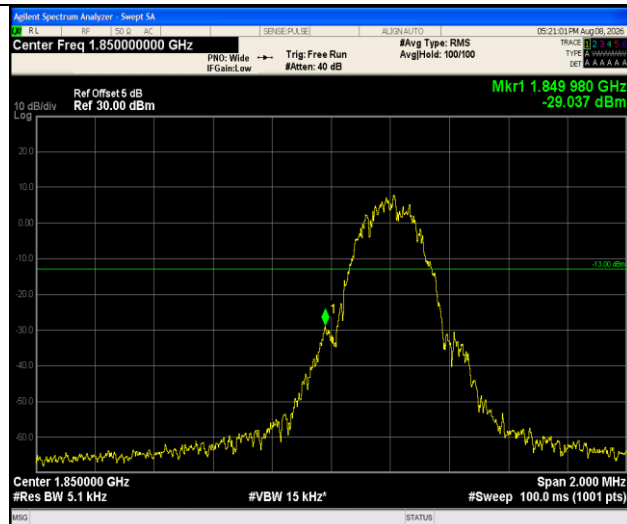


GSM850-251-5-PASS

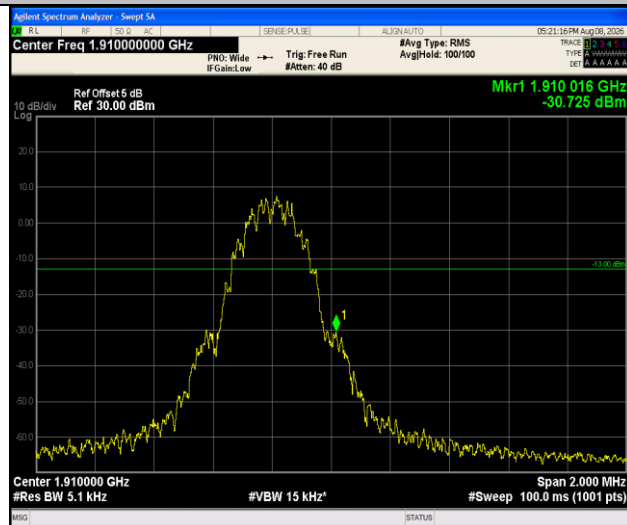


GPRS850-128-5-PASS

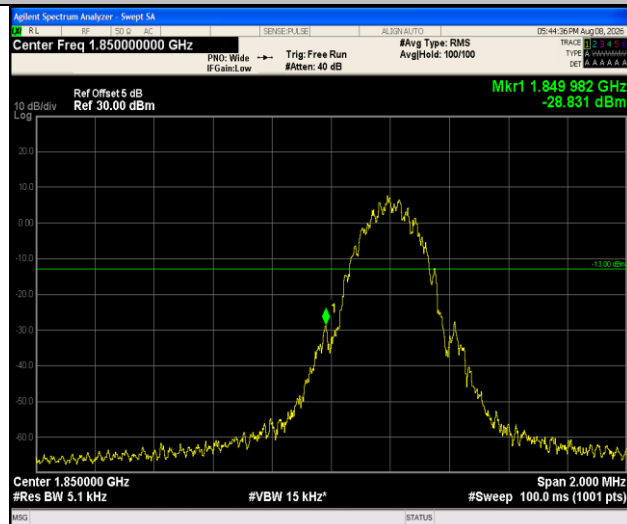




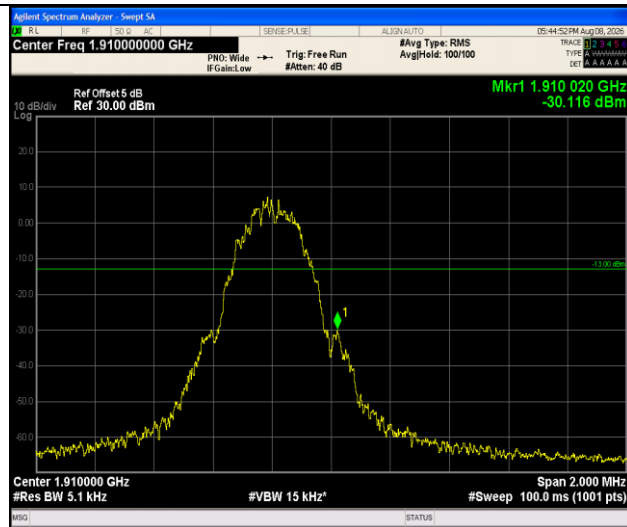
GSM1900-512-0-PASS



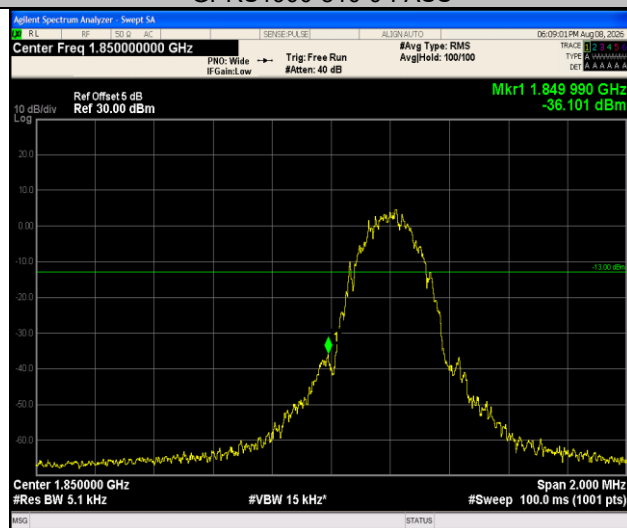
GSM1900-810-0-PASS



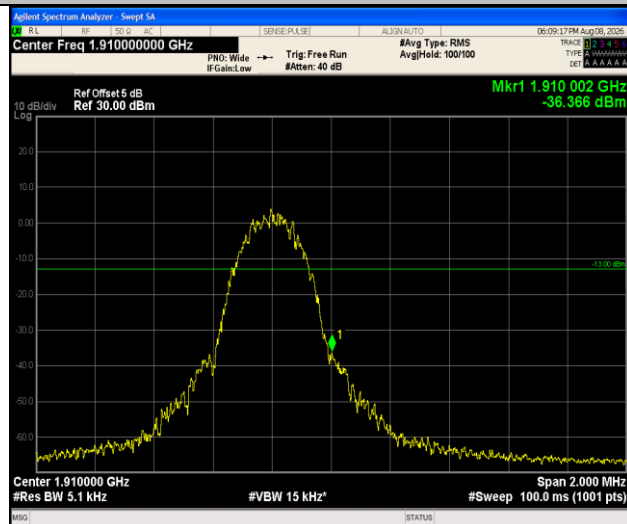
GPRS1900-512-0-PASS



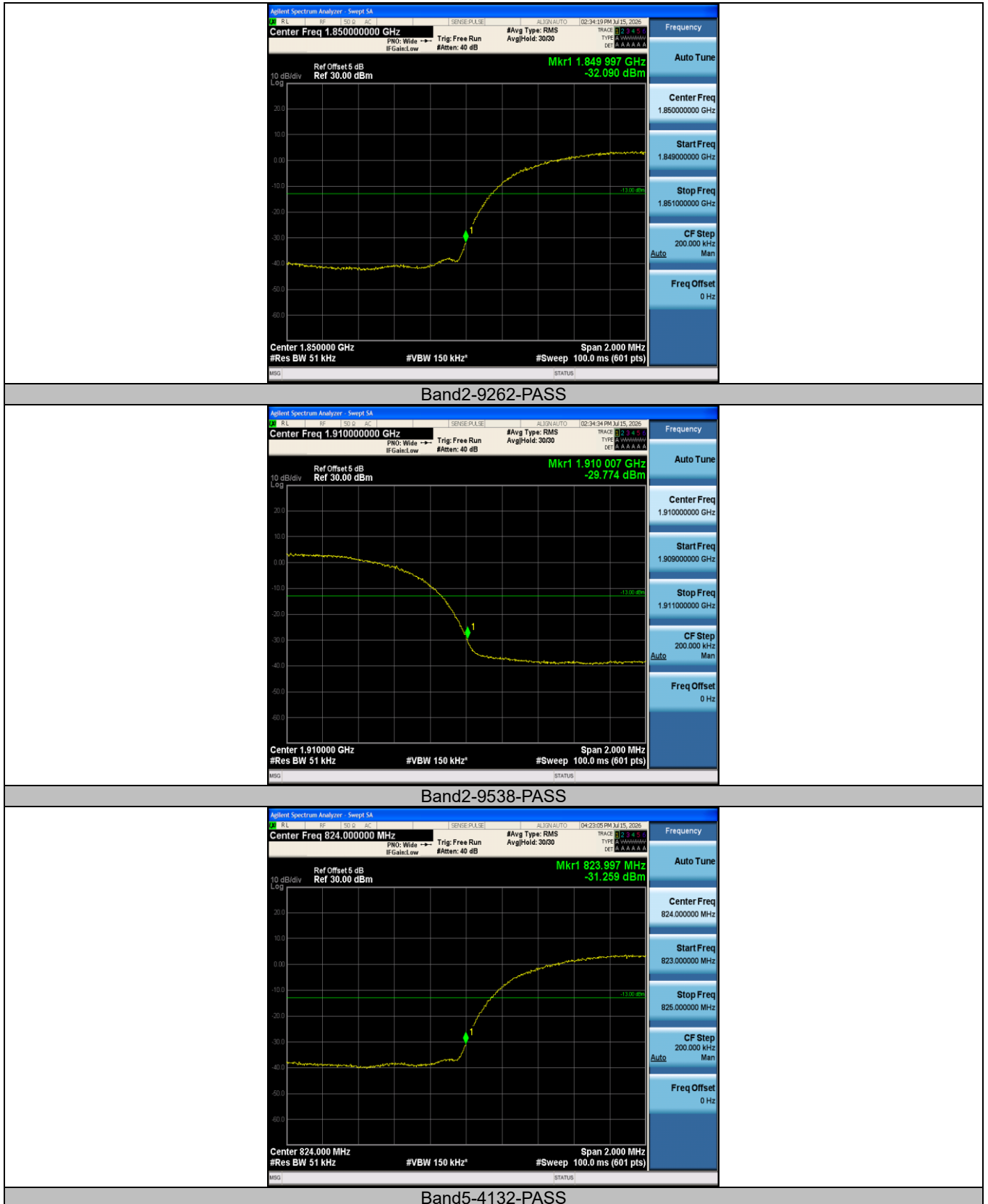
GPRS1900-810-0-PASS



EGPRS1900-512-2-PASS



EGPRS1900-810-2-PASS





3.6. Radiated Spurious Emission

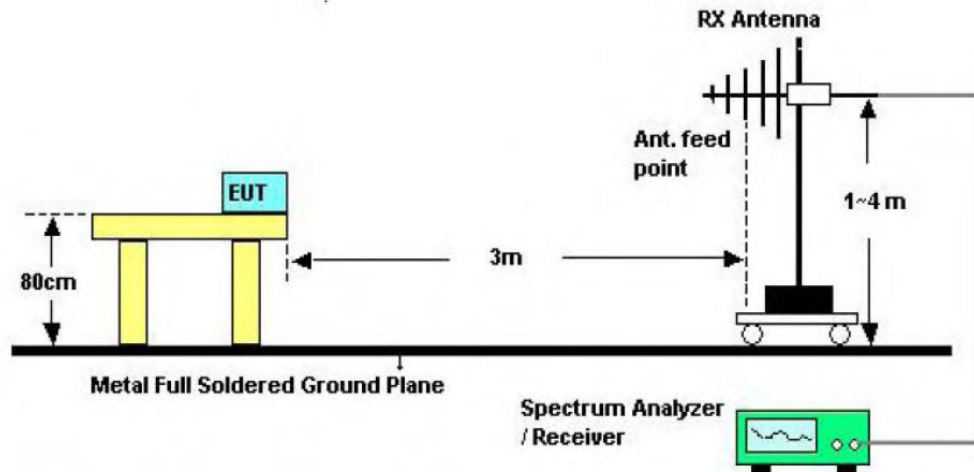
LIMIT

FCC: §22.917(a), §24.238(a), §27.53 (h)

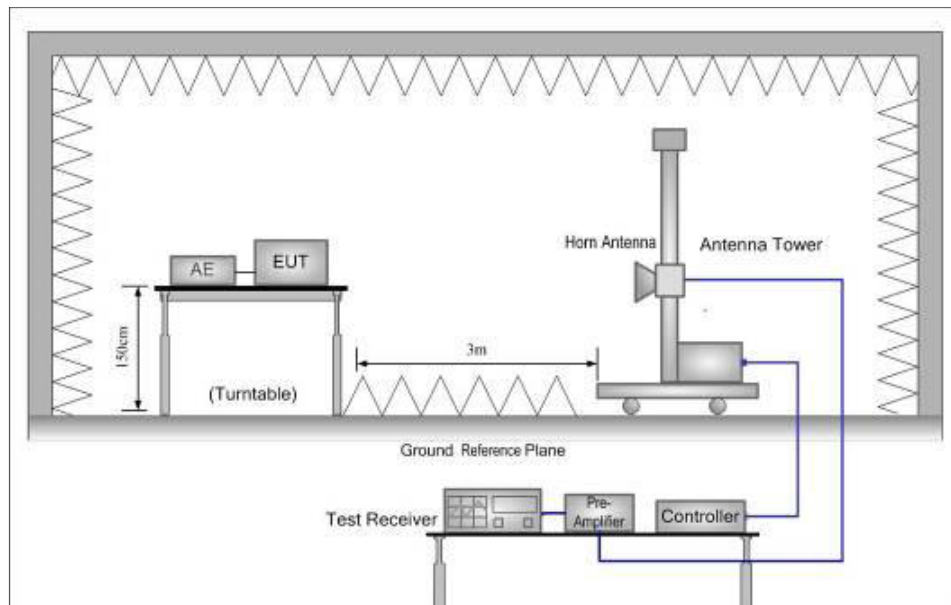
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST CONFIGURATION

For the actual test configuration, please refer to the related Item – EUT Test Photos.



Below 1GHz



Above 1GHz

TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission

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TRF No: CTC-TR-058_A5

Master TRF : Dated 2026-06-01

measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.

2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. An amplifier should be connected to the Signal Source output port. And the cable should be connecting between the Amplifier and the Substitution Antenna. The cable loss (Pcl), the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:

$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$

We used SMF100A microwave signal generator which signal level can up to 33dBm, so we not used power Amplifier for substitution test; The measurement results are amend as described below:

$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dBi) and known input power.
ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.
8. Test frequency range should extend to 10th harmonic of highest fundamental frequency.

TEST RESULTS

Remark:

1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, and test data recorded in this report.

GSM 850					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
190	1674.943	Horizontal	-38.94	-13.00	Pass
	2511.886	Horizontal	-34.6		
	3349.654	Horizontal	-45.09		
	1671.091	Vertical	-45.58		

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TRF No: CTC-TR-058_A5

Master TRF : Dated 2026-06-01

	2511.886	Vertical	-45.51		
	5754.399	Vertical	-38.11		

Remark :

1. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

PCS 1900					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
661	2414.672	Horizontal	-58.59	-13.00	Pass
	5746.982	Horizontal	-49.77		
	11368.003	Horizontal	-46.12		
	2414.672	Vertical	-56.59		
	5746.982	Vertical	-48.27		
	15759.048	Vertical	-40.93		

Remark :

1. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

WCDMA Band II					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
9400	5254.44	Horizontal	-53.58	-13.00	Pass
	9047.272	Horizontal	-52.35		
	14284.028	Horizontal	-46.02		
	1932.868	Vertical	-47.93		
	10917.177	Vertical	-48.72		
	14830.959	Vertical	-44.47		

Remark :

1. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

WCDMA Band V					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
4182	1399.587	Horizontal	-60.21	-13.00	Pass
	6760.83	Horizontal	-51.9		
	10000	Horizontal	-49.88		
	2500.345	Vertical	-60.33		
	5211.947	Vertical	-57.01		
	9120.108	Vertical	-51.76		

Remark :

1. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

3.7. Frequency stability

LIMIT

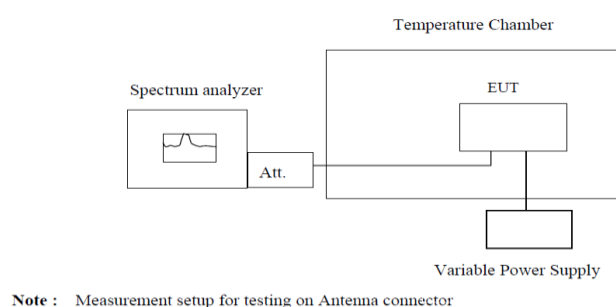
FCC §22.355

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

FCC §24.235 & §27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
7. Reduce the input voltage to specified extreme voltage variation (+/- 10%) and endpoint, record the maximum frequency change.

TEST RESULTS

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VN	NT	-0.99	-0.001201	± 2.5	PASS
GSM850	128	VL	NT	-6.54	-0.007935	± 2.5	PASS
GSM850	128	VH	NT	-5.95	-0.007219	± 2.5	PASS
GSM850	190	VN	NT	-6.09	-0.007279	± 2.5	PASS
GSM850	190	VL	NT	-5.29	-0.006323	± 2.5	PASS
GSM850	190	VH	NT	-6.49	-0.007758	± 2.5	PASS
GSM850	251	VN	NT	2.45	0.002886	± 2.5	PASS

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TRF No: CTC-TR-058_A5

Master TRF : Dated 2026-06-01

GSM850	251	VL	NT	-1.58	-0.001861	±2.5	PASS
GSM850	251	VH	NT	-6.88	-0.008106	±2.5	PASS
GSM1900	512	VN	NT	-11.18	-0.006043	±2.5	PASS
GSM1900	512	VL	NT	-13.09	-0.007075	±2.5	PASS
GSM1900	512	VH	NT	-17.34	-0.009372	±2.5	PASS
GSM1900	661	VN	NT	-5.63	-0.002995	±2.5	PASS
GSM1900	661	VL	NT	-7.47	-0.003973	±2.5	PASS
GSM1900	661	VH	NT	-11.98	-0.006372	±2.5	PASS
GSM1900	810	VN	NT	-14.43	-0.007556	±2.5	PASS
GSM1900	810	VL	NT	-13.18	-0.006901	±2.5	PASS
GSM1900	810	VH	NT	-17.64	-0.009237	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	NV	-30	-4.63	-0.005618	±2.5	PASS
GSM850	128	NV	-20	-6.95	-0.008432	±2.5	PASS
GSM850	128	NV	-10	-3.24	-0.003931	±2.5	PASS
GSM850	128	NV	0	0.71	0.000861	±2.5	PASS
GSM850	128	NV	10	-2.66	-0.003227	±2.5	PASS
GSM850	128	NV	20	-1.78	-0.002160	±2.5	PASS
GSM850	128	NV	30	-6.06	-0.007353	±2.5	PASS
GSM850	128	NV	40	-3.10	-0.003761	±2.5	PASS
GSM850	128	NV	50	-0.84	-0.001019	±2.5	PASS
GSM850	190	NV	-30	-2.33	-0.002785	±2.5	PASS
GSM850	190	NV	-20	0.83	0.000992	±2.5	PASS
GSM850	190	NV	-10	-3.25	-0.003885	±2.5	PASS
GSM850	190	NV	0	-2.84	-0.003395	±2.5	PASS
GSM850	190	NV	10	-10.25	-0.012252	±2.5	PASS
GSM850	190	NV	20	-2.55	-0.003048	±2.5	PASS
GSM850	190	NV	30	-1.09	-0.001303	±2.5	PASS
GSM850	190	NV	40	-2.58	-0.003084	±2.5	PASS
GSM850	190	NV	50	0.82	0.000980	±2.5	PASS
GSM850	251	NV	-30	-2.09	-0.002462	±2.5	PASS
GSM850	251	NV	-20	-6.92	-0.008153	±2.5	PASS
GSM850	251	NV	-10	-8.53	-0.010049	±2.5	PASS
GSM850	251	NV	0	-2.51	-0.002957	±2.5	PASS
GSM850	251	NV	10	0.37	0.000436	±2.5	PASS
GSM850	251	NV	20	-1.00	-0.001178	±2.5	PASS
GSM850	251	NV	30	-5.05	-0.005950	±2.5	PASS
GSM850	251	NV	40	-6.95	-0.008188	±2.5	PASS
GSM850	251	NV	50	0.21	0.000247	±2.5	PASS
GSM1900	512	NV	-30	-0.59	-0.000319	±2.5	PASS
GSM1900	512	NV	-20	-10.44	-0.005643	±2.5	PASS
GSM1900	512	NV	-10	-9.57	-0.005172	±2.5	PASS
GSM1900	512	NV	0	-15.22	-0.008226	±2.5	PASS
GSM1900	512	NV	10	-17.02	-0.009199	±2.5	PASS
GSM1900	512	NV	20	-23.15	-0.012512	±2.5	PASS
GSM1900	512	NV	30	-10.23	-0.005529	±2.5	PASS
GSM1900	512	NV	40	-15.52	-0.008388	±2.5	PASS
GSM1900	512	NV	50	-21.74	-0.011750	±2.5	PASS
GSM1900	661	NV	-30	-18.25	-0.009707	±2.5	PASS
GSM1900	661	NV	-20	-18.21	-0.009686	±2.5	PASS
GSM1900	661	NV	-10	-19.78	-0.010521	±2.5	PASS
GSM1900	661	NV	0	-3.26	-0.001734	±2.5	PASS
GSM1900	661	NV	10	-3.83	-0.002037	±2.5	PASS
GSM1900	661	NV	20	-5.57	-0.002963	±2.5	PASS
GSM1900	661	NV	30	-8.55	-0.004548	±2.5	PASS
GSM1900	661	NV	40	-12.17	-0.006473	±2.5	PASS
GSM1900	661	NV	50	-12.50	-0.006649	±2.5	PASS
GSM1900	810	NV	-30	-15.08	-0.007896	±2.5	PASS
GSM1900	810	NV	-20	-17.59	-0.009210	±2.5	PASS

GSM1900	810	NV	-10	-16.16	-0.008462	±2.5	PASS
GSM1900	810	NV	0	-16.84	-0.008818	±2.5	PASS
GSM1900	810	NV	10	-17.58	-0.009205	±2.5	PASS
GSM1900	810	NV	20	-0.39	-0.000204	±2.5	PASS
GSM1900	810	NV	30	-2.38	-0.001246	±2.5	PASS
GSM1900	810	NV	40	0.09	0.000047	±2.5	PASS
GSM1900	810	NV	50	-1.83	-0.000958	±2.5	PASS

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	VN	NT	-3.75	-0.002024	±NA	PASS
Band2	9262	VL	NT	-3.34	-0.001803	±NA	PASS
Band2	9262	VH	NT	-2.54	-0.001371	±NA	PASS
Band2	9400	VN	NT	-1.66	-0.000883	±NA	PASS
Band2	9400	VL	NT	1.95	0.001037	±NA	PASS
Band2	9400	VH	NT	-5.96	-0.003170	±NA	PASS
Band2	9538	VN	NT	-2.49	-0.001305	±NA	PASS
Band2	9538	VL	NT	-1.61	-0.000844	±NA	PASS
Band2	9538	VH	NT	1.09	0.000571	±NA	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	NV	-30	-2.54	-0.001371	±NA	PASS
Band2	9262	NV	-20	-4.15	-0.002240	±NA	PASS
Band2	9262	NV	-10	0.02	0.000011	±NA	PASS
Band2	9262	NV	0	-4.16	-0.002246	±NA	PASS
Band2	9262	NV	10	-3.13	-0.001690	±NA	PASS
Band2	9262	NV	20	3.12	0.001684	±NA	PASS
Band2	9262	NV	30	-4.91	-0.002651	±NA	PASS
Band2	9262	NV	40	-3.53	-0.001906	±NA	PASS
Band2	9262	NV	50	-0.42	-0.000227	±NA	PASS
Band2	9400	NV	-30	2.11	0.001122	±NA	PASS
Band2	9400	NV	-20	1.02	0.000543	±NA	PASS
Band2	9400	NV	-10	3.78	0.002011	±NA	PASS
Band2	9400	NV	0	3.17	0.001686	±NA	PASS
Band2	9400	NV	10	-6.20	-0.003298	±NA	PASS
Band2	9400	NV	20	3.08	0.001638	±NA	PASS
Band2	9400	NV	30	-4.95	-0.002633	±NA	PASS
Band2	9400	NV	40	1.76	0.000936	±NA	PASS
Band2	9400	NV	50	3.58	0.001904	±NA	PASS
Band2	9538	NV	-30	-2.35	-0.001232	±NA	PASS
Band2	9538	NV	-20	-6.74	-0.003533	±NA	PASS
Band2	9538	NV	-10	2.47	0.001295	±NA	PASS
Band2	9538	NV	0	-5.24	-0.002747	±NA	PASS
Band2	9538	NV	10	-7.25	-0.003801	±NA	PASS
Band2	9538	NV	20	-6.09	-0.003192	±NA	PASS
Band2	9538	NV	30	-8.61	-0.004514	±NA	PASS
Band2	9538	NV	40	1.90	0.000996	±NA	PASS
Band2	9538	NV	50	-2.14	-0.001122	±NA	PASS

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	VN	NT	-9.29	-0.011242	±2.5	PASS
Band5	4132	VL	NT	-7.80	-0.009439	±2.5	PASS
Band5	4132	VH	NT	-7.46	-0.009027	±2.5	PASS
Band5	4182	VN	NT	-6.02	-0.007198	±2.5	PASS
Band5	4182	VL	NT	-7.89	-0.009433	±2.5	PASS
Band5	4182	VH	NT	-6.67	-0.007975	±2.5	PASS

Band5	4233	VN	NT	-5.12	-0.006048	±2.5	PASS
Band5	4233	VL	NT	-4.10	-0.004843	±2.5	PASS
Band5	4233	VH	NT	-6.06	-0.007158	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	NV	-30	-6.92	-0.008374	±2.5	PASS
Band5	4132	NV	-20	-7.49	-0.009063	±2.5	PASS
Band5	4132	NV	-10	-7.08	-0.008567	±2.5	PASS
Band5	4132	NV	0	-6.69	-0.008095	±2.5	PASS
Band5	4132	NV	10	-6.84	-0.008277	±2.5	PASS
Band5	4132	NV	20	-6.08	-0.007357	±2.5	PASS
Band5	4132	NV	30	-6.26	-0.007575	±2.5	PASS
Band5	4132	NV	40	-6.91	-0.008362	±2.5	PASS
Band5	4132	NV	50	-6.79	-0.008216	±2.5	PASS
Band5	4182	NV	-30	-5.62	-0.006719	±2.5	PASS
Band5	4182	NV	-20	-6.98	-0.008345	±2.5	PASS
Band5	4182	NV	-10	-6.14	-0.007341	±2.5	PASS
Band5	4182	NV	0	-5.90	-0.007054	±2.5	PASS
Band5	4182	NV	10	-5.91	-0.007066	±2.5	PASS
Band5	4182	NV	20	-5.56	-0.006648	±2.5	PASS
Band5	4182	NV	30	-4.99	-0.005966	±2.5	PASS
Band5	4182	NV	40	-5.26	-0.006289	±2.5	PASS
Band5	4182	NV	50	-5.04	-0.006026	±2.5	PASS
Band5	4233	NV	-30	-3.93	-0.004642	±2.5	PASS
Band5	4233	NV	-20	-7.18	-0.008481	±2.5	PASS
Band5	4233	NV	-10	-5.82	-0.006875	±2.5	PASS
Band5	4233	NV	0	-5.74	-0.006780	±2.5	PASS
Band5	4233	NV	10	-6.63	-0.007831	±2.5	PASS
Band5	4233	NV	20	-5.23	-0.006178	±2.5	PASS
Band5	4233	NV	30	-5.00	-0.005906	±2.5	PASS
Band5	4233	NV	40	-4.79	-0.005658	±2.5	PASS
Band5	4233	NV	50	-6.57	-0.007760	±2.5	PASS

*****THE END*****