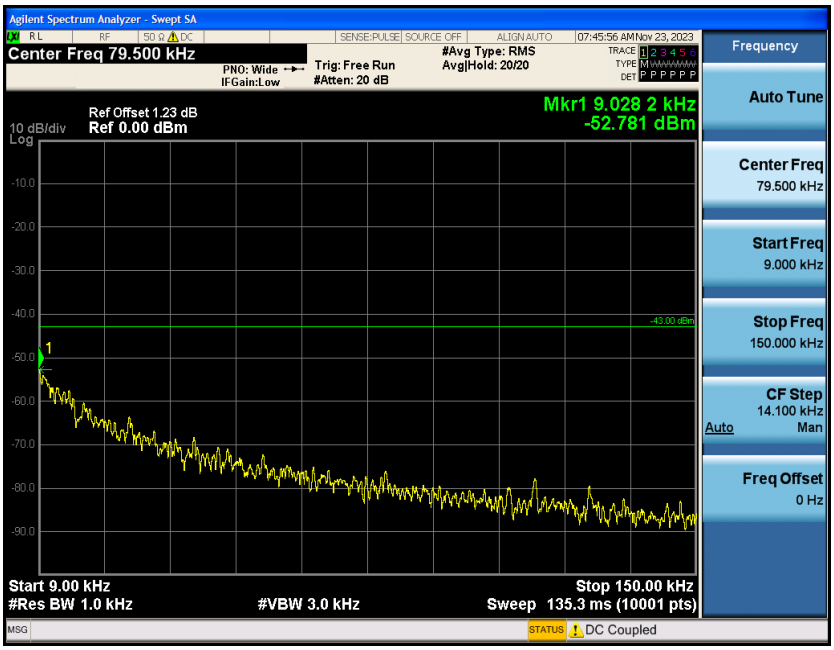
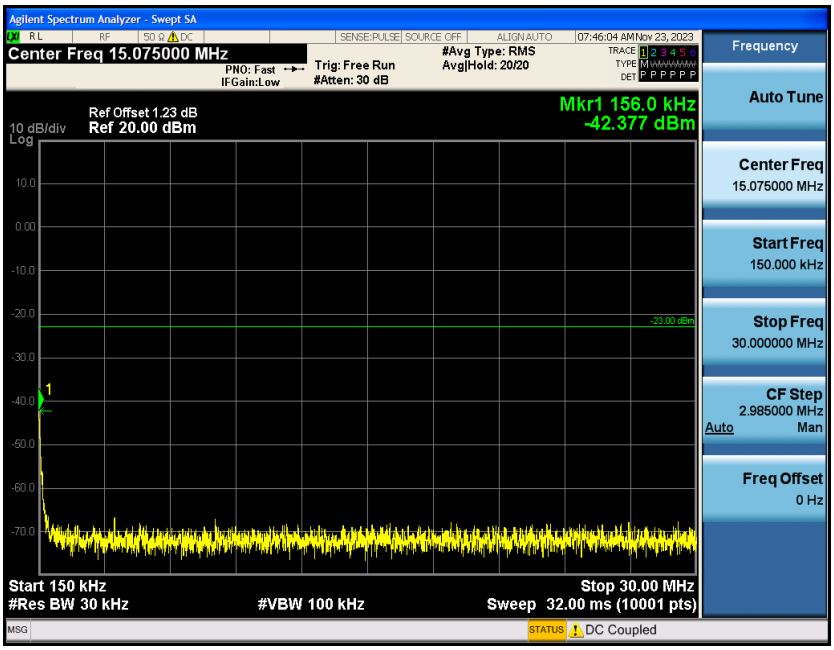
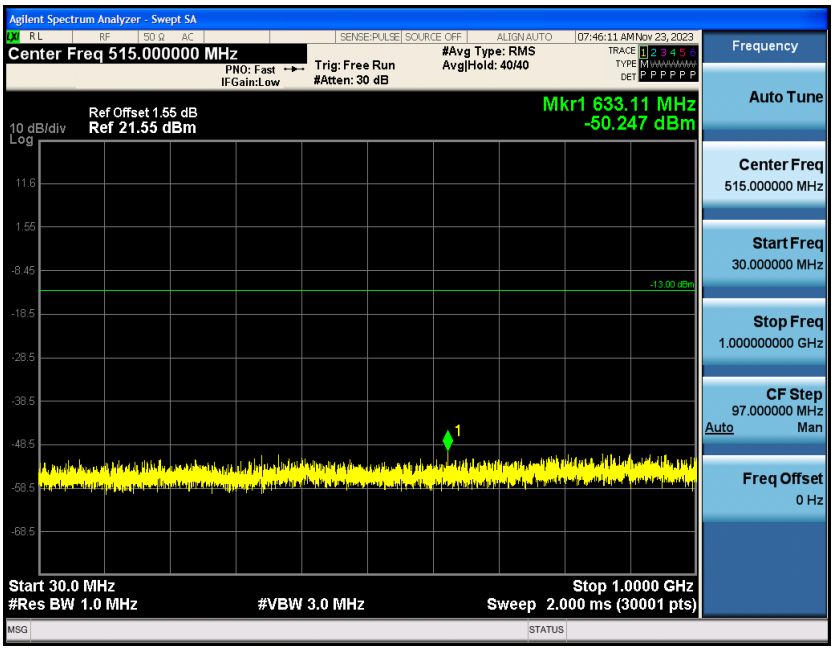


GSM1900-810-0.15~30MHz

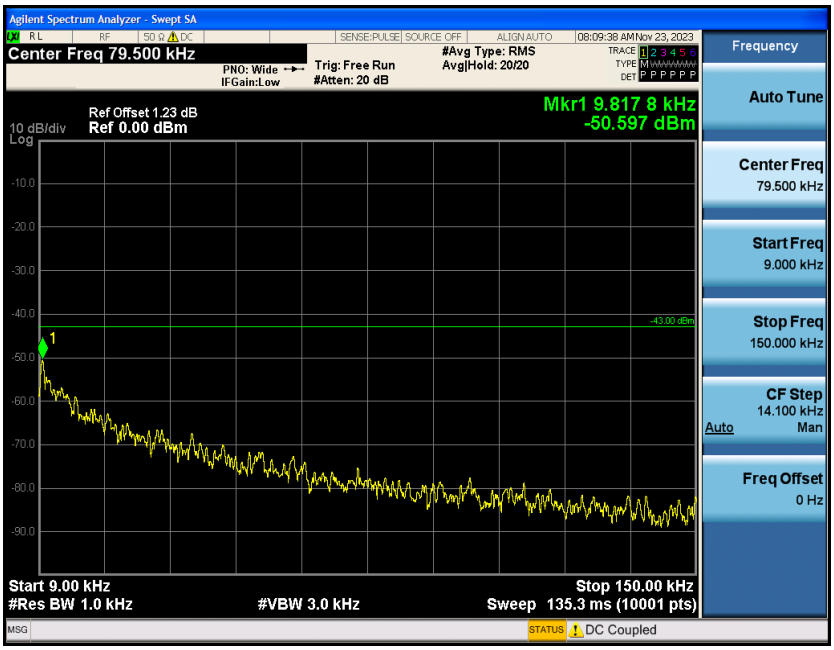


GSM1900-810-30~1000MHz

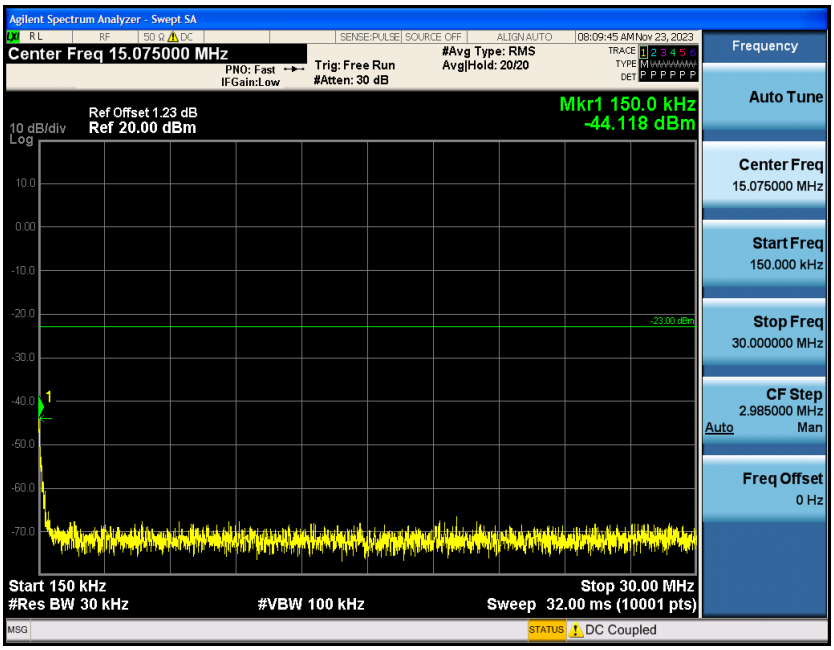


GSM1900-810-1000~18000MHz

GPRS1900-512-0.009~0.15MHz



GPRS1900-512-0.15~30MHz



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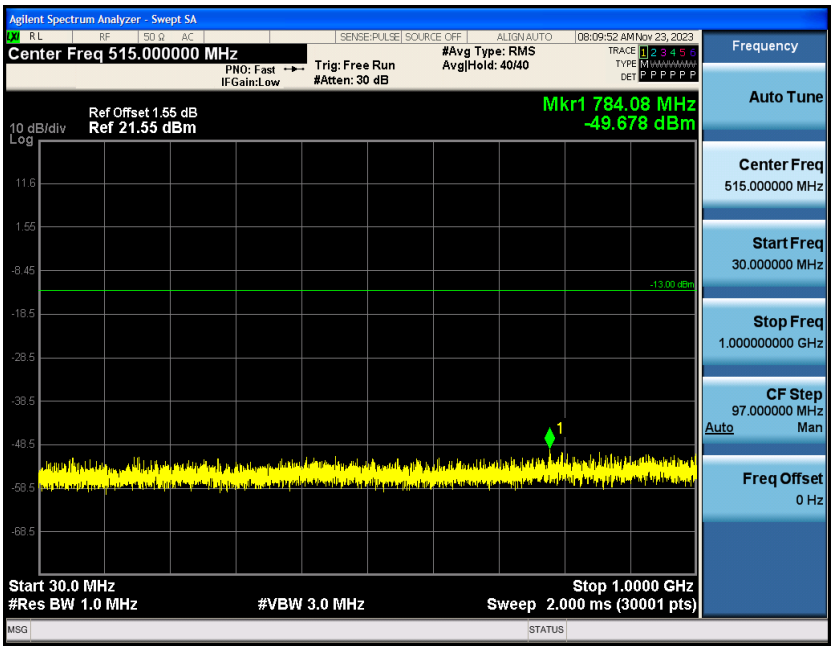
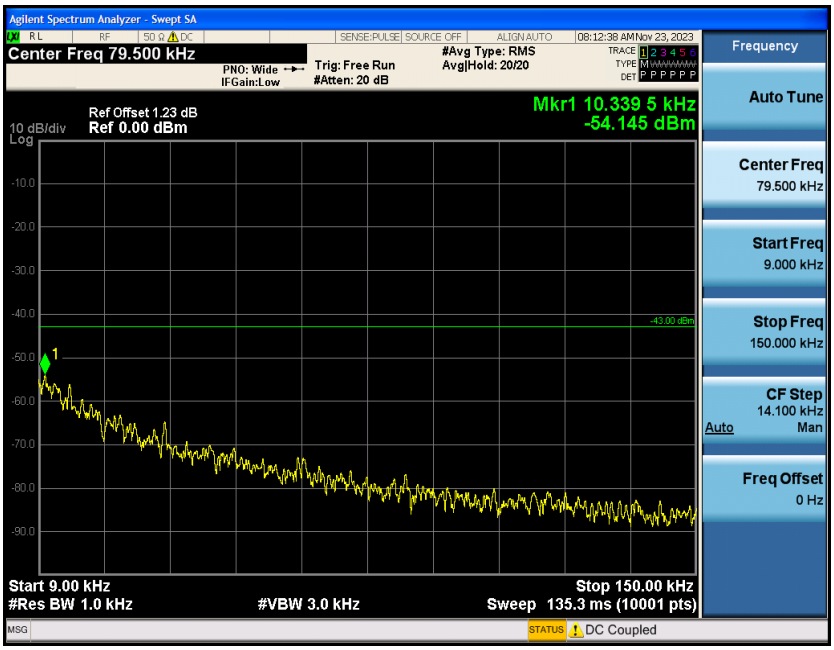
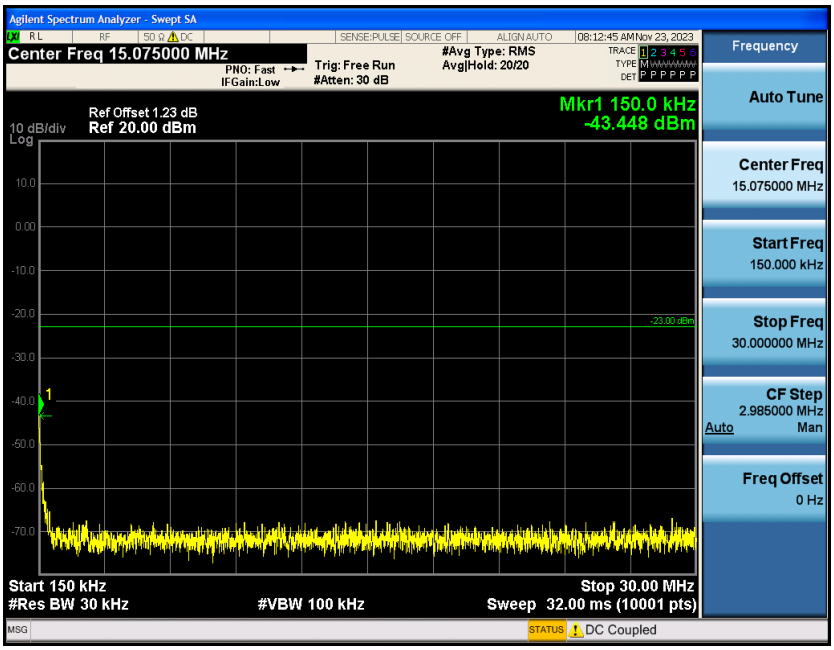


GPRS1900-512-1000~18000MHz

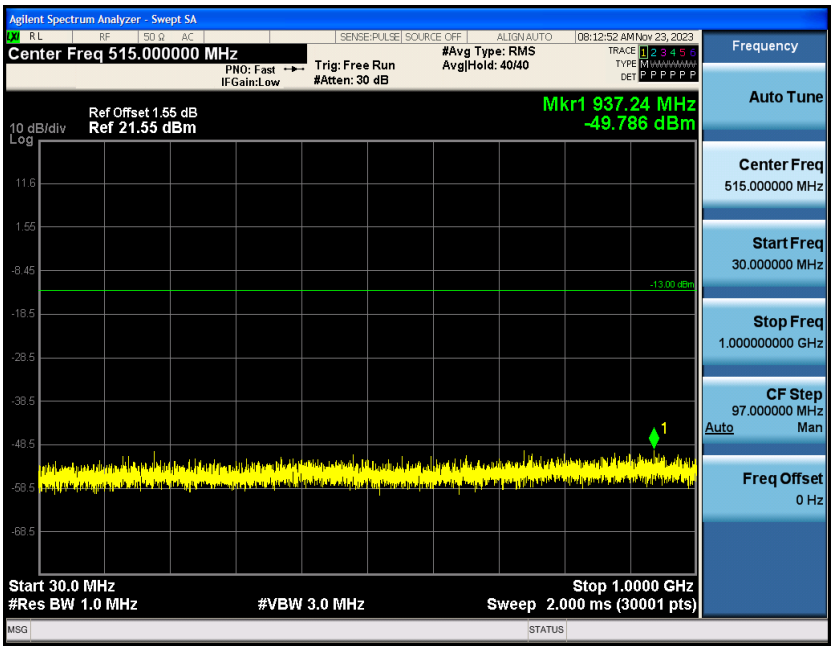
GPRS1900-661-0.009~0.15MHz



GPRS1900-661-0.15~30MHz

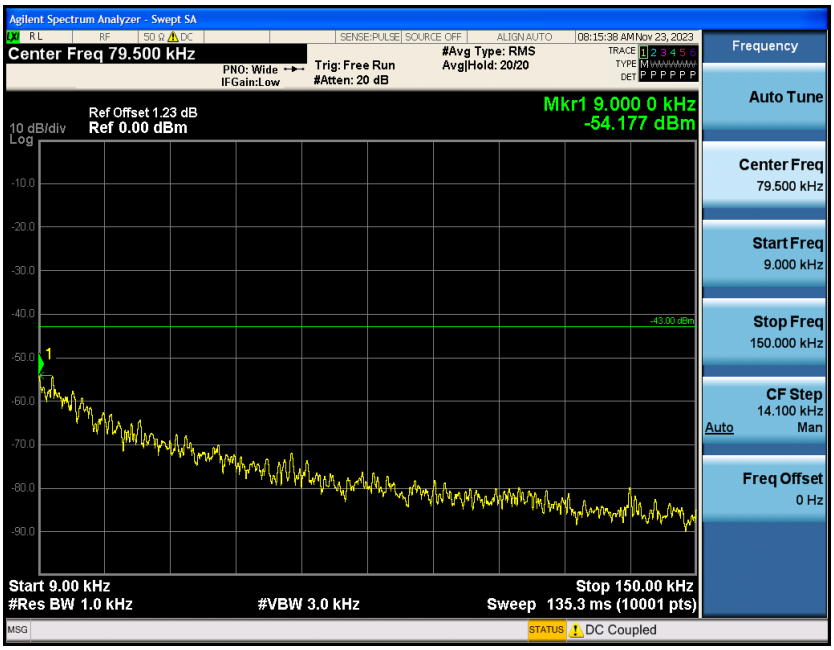


GPRS1900-661-30~1000MHz

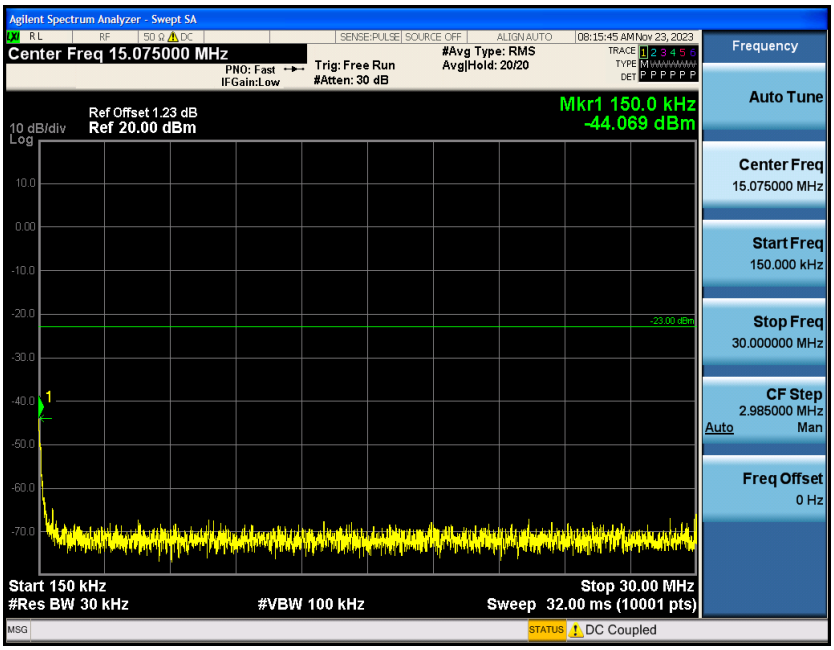


GPRS1900-661-1000~18000MHz

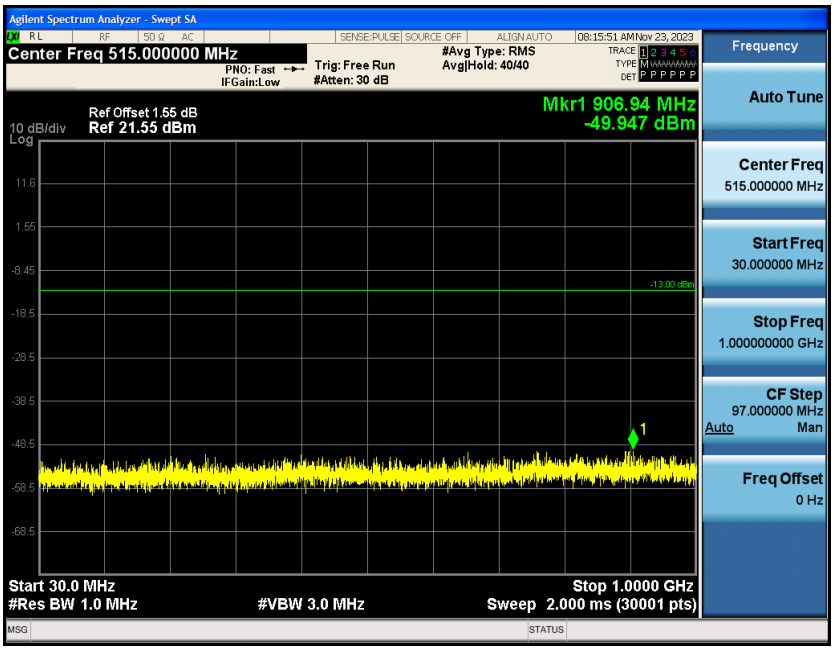
GPRS1900-810-0.009~0.15MHz



GPRS1900-810-0.15~30MHz

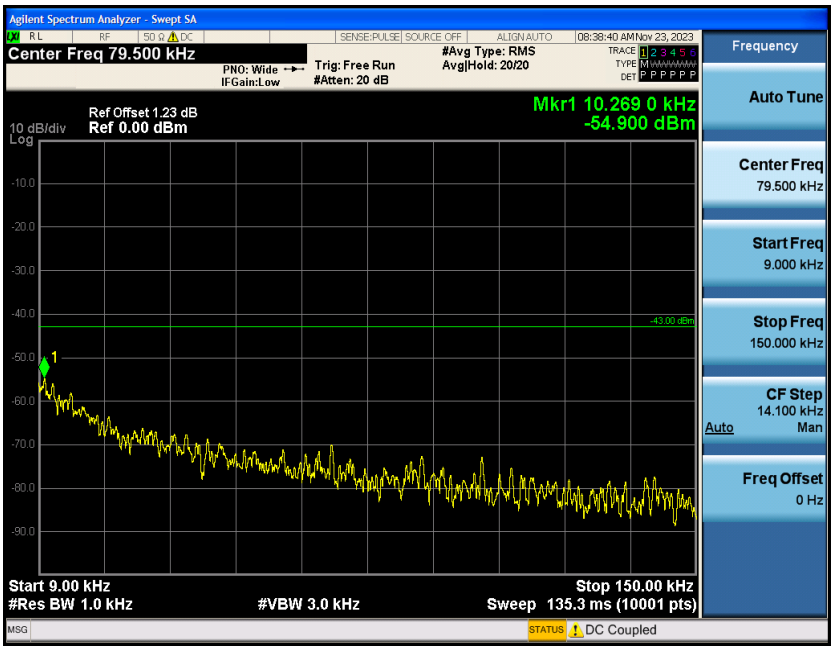


GPRS1900-810-30~1000MHz

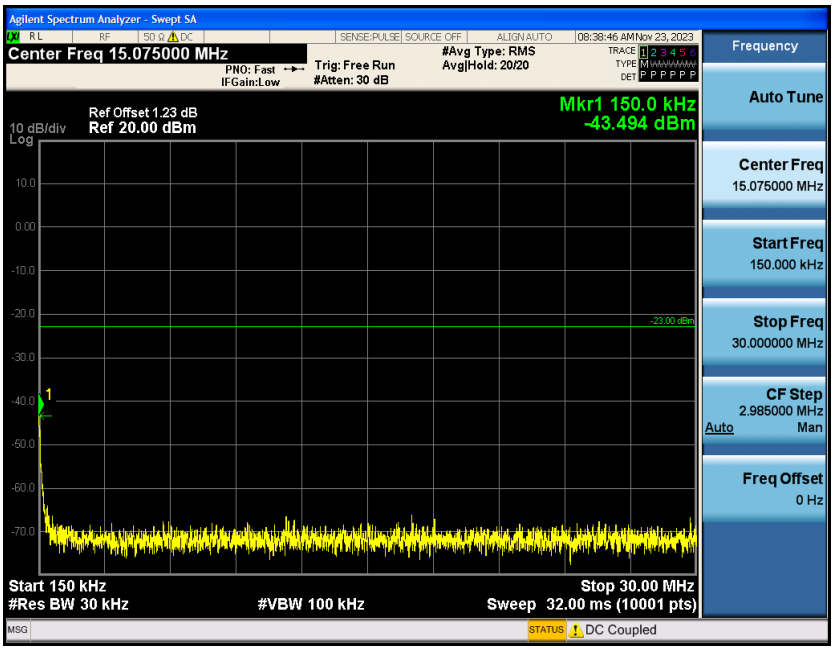


GPRS1900-810-1000~18000MHz

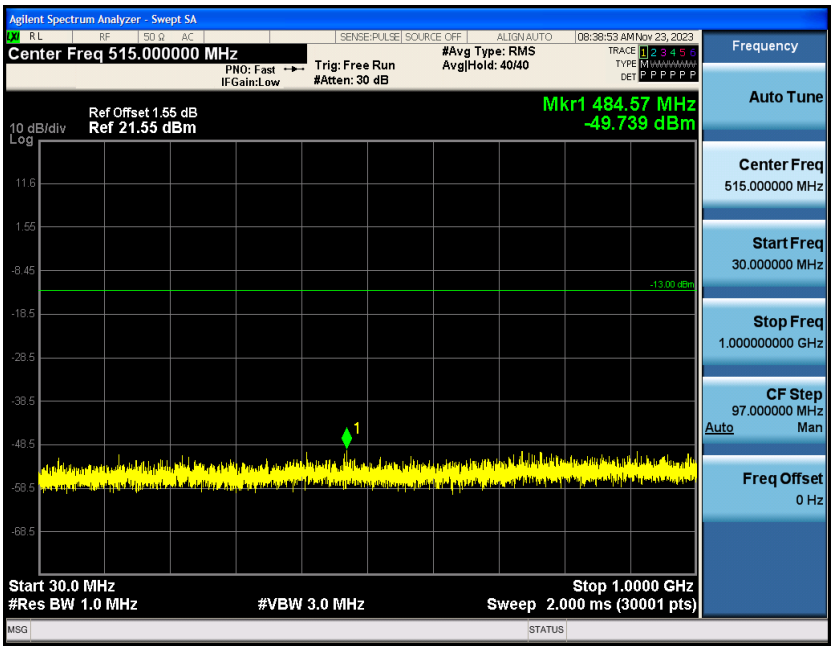
EGPRS1900-512-0.009~0.15MHz



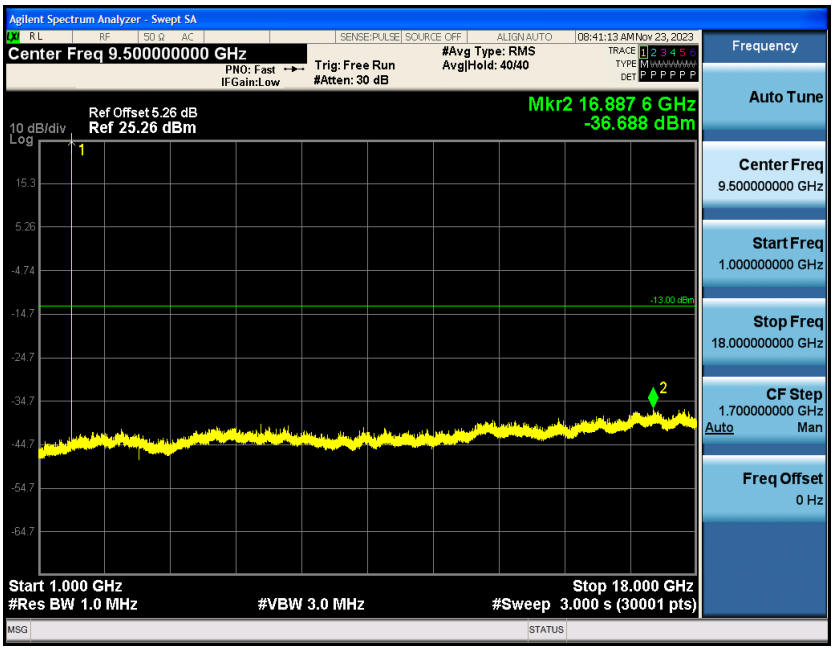
EGPRS1900-512-0.15~30MHz



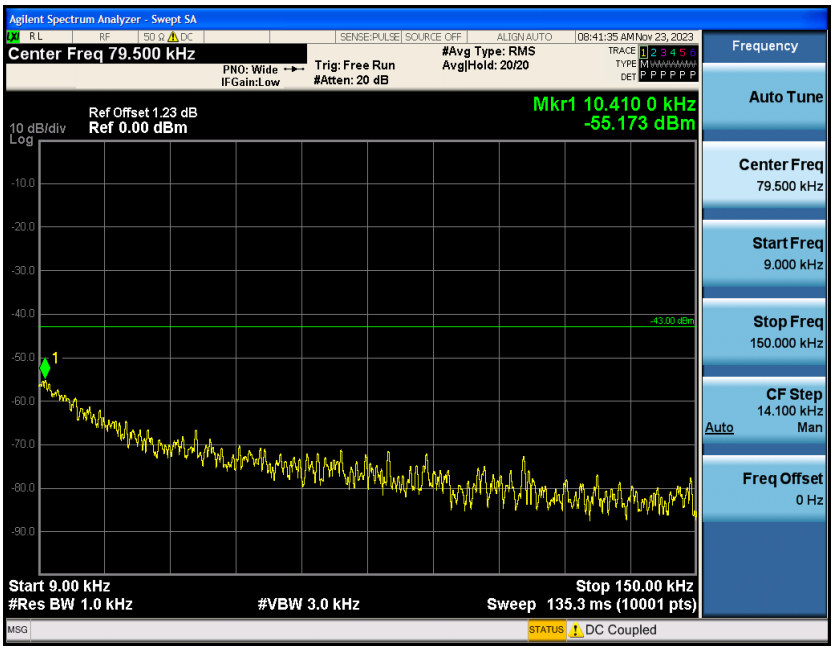
EGPRS1900-512-30~1000MHz



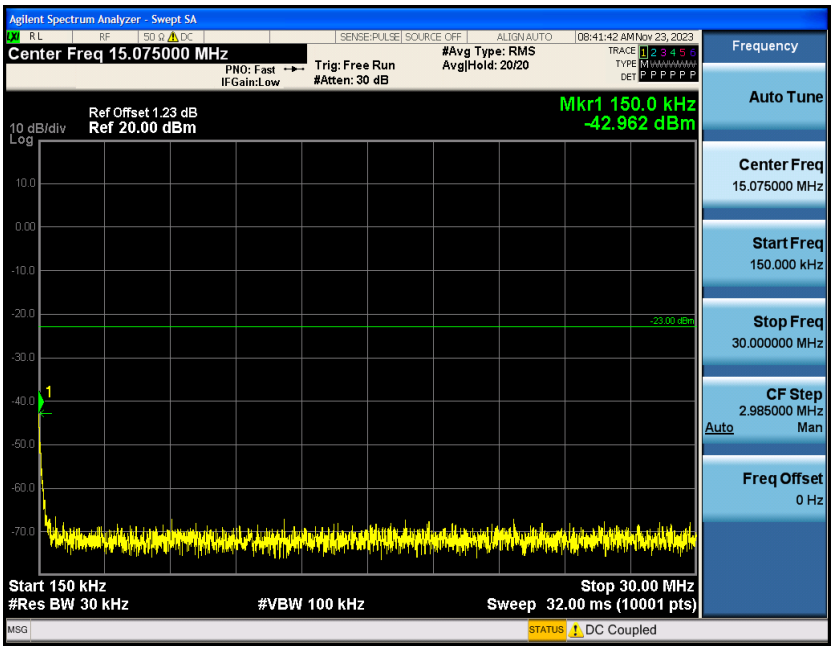
EGPRS1900-512-1000~18000MHz



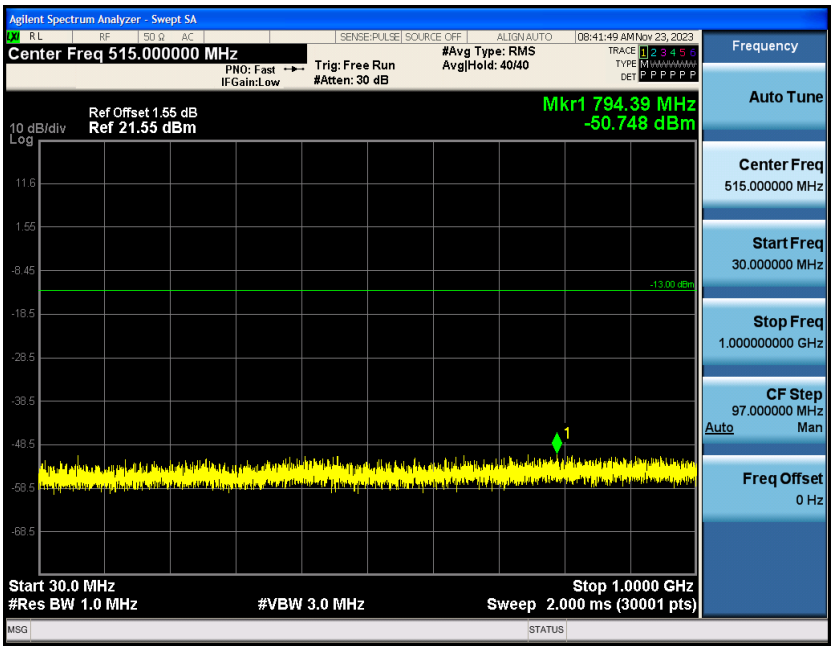
EGPRS1900-661-0.009~0.15MHz



EGPRS1900-661-0.15~30MHz

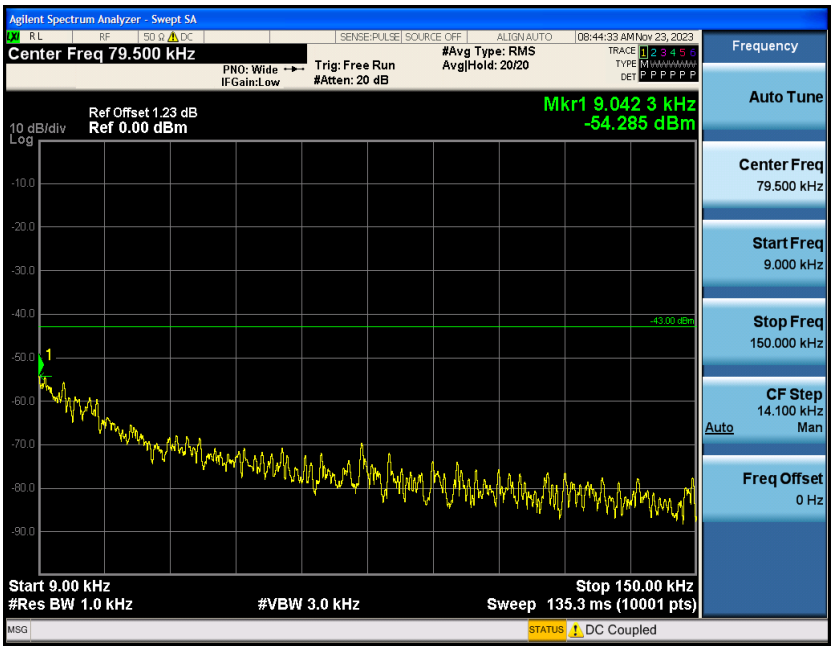


EGPRS1900-661-30~1000MHz

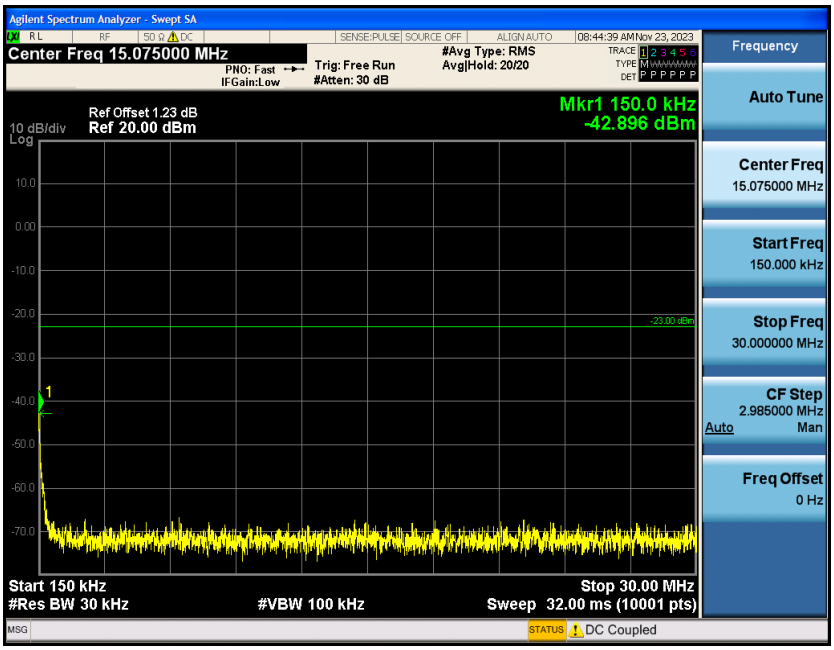


EGPRS1900-661-1000~18000MHz

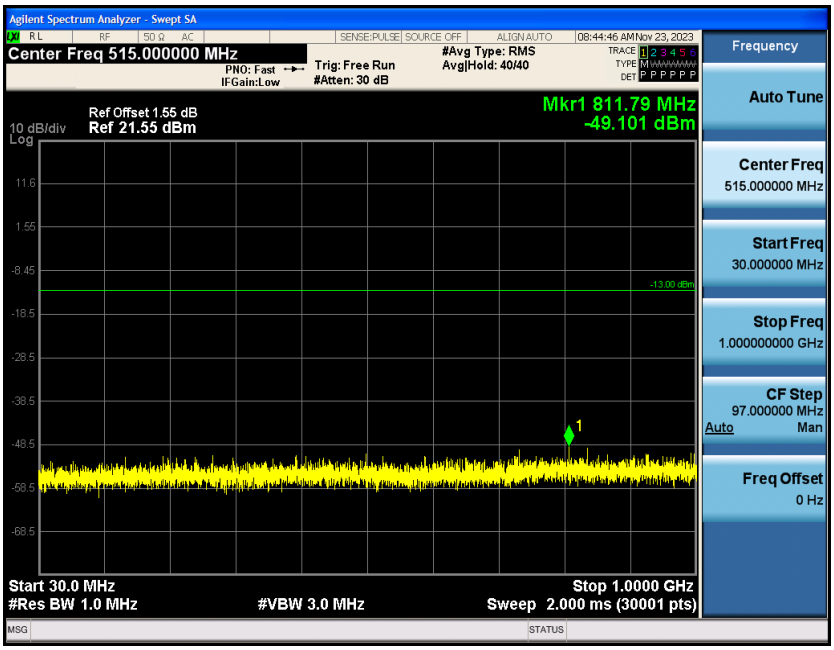
EGPRS1900-810-0.009~0.15MHz



EGPRS1900-810-0.15~30MHz



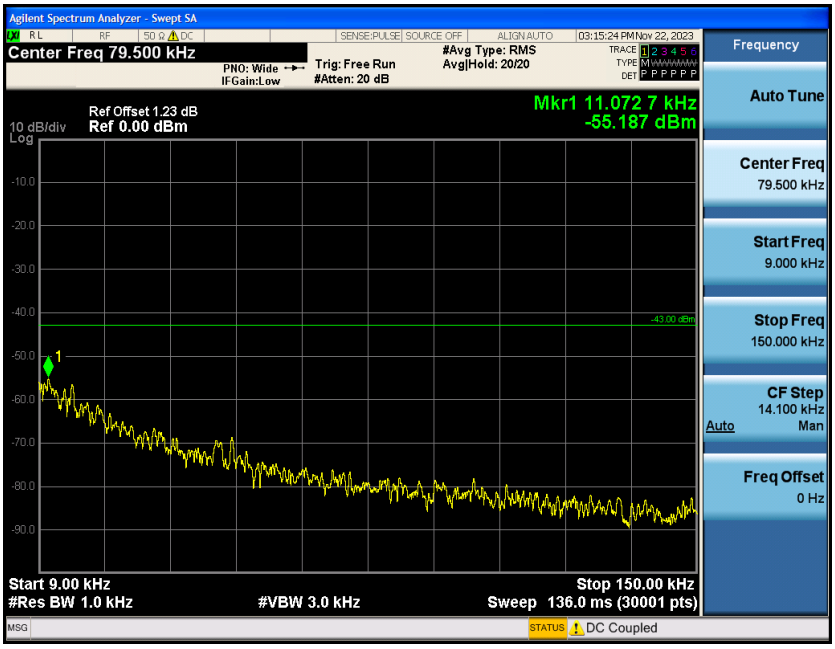
EGPRS1900-810-30~1000MHz



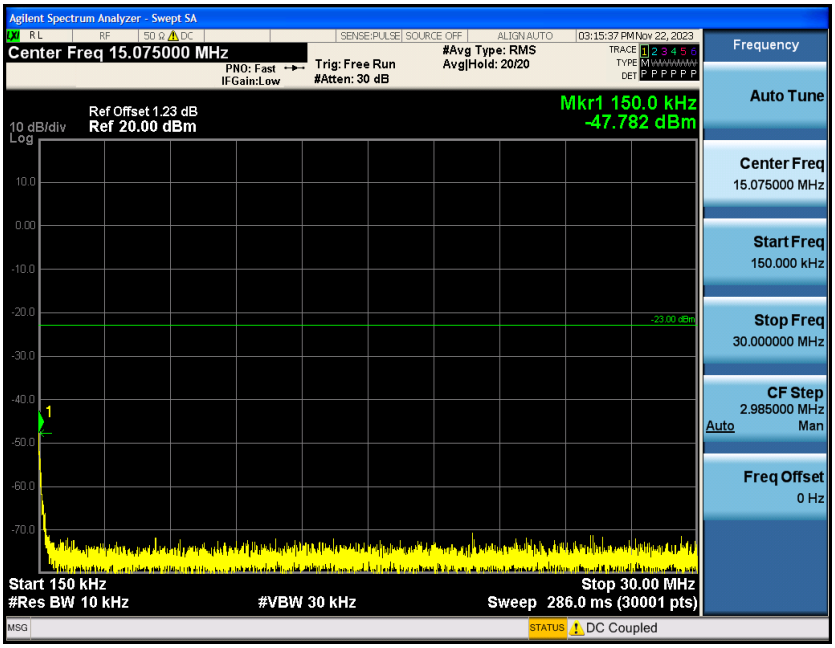
EGPRS1900-810-1000~18000MHz

Test Graphs for WCDMA

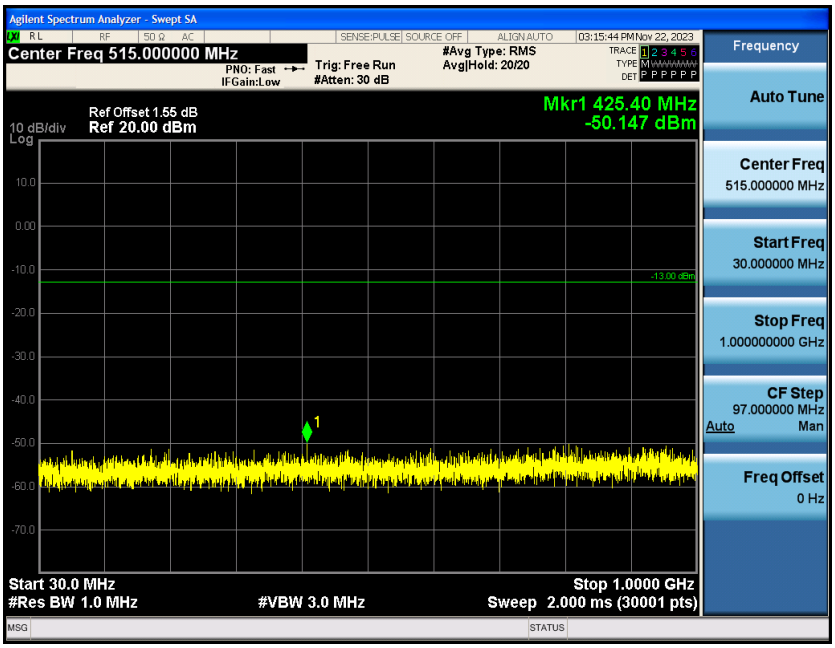
Band2-9262-0.009~0.15MHz



Band2-9262-0.15~30MHz

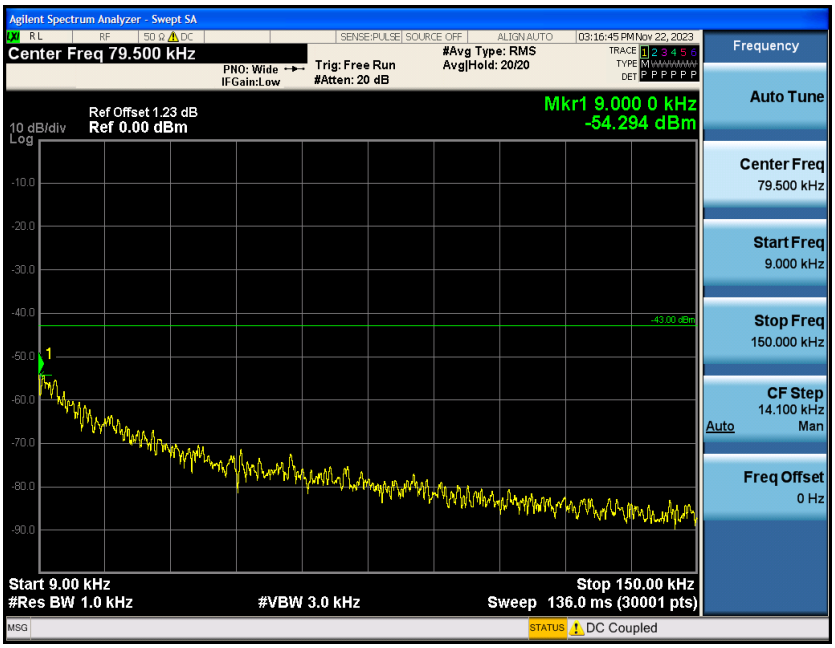


Band2-9262-30~1000MHz

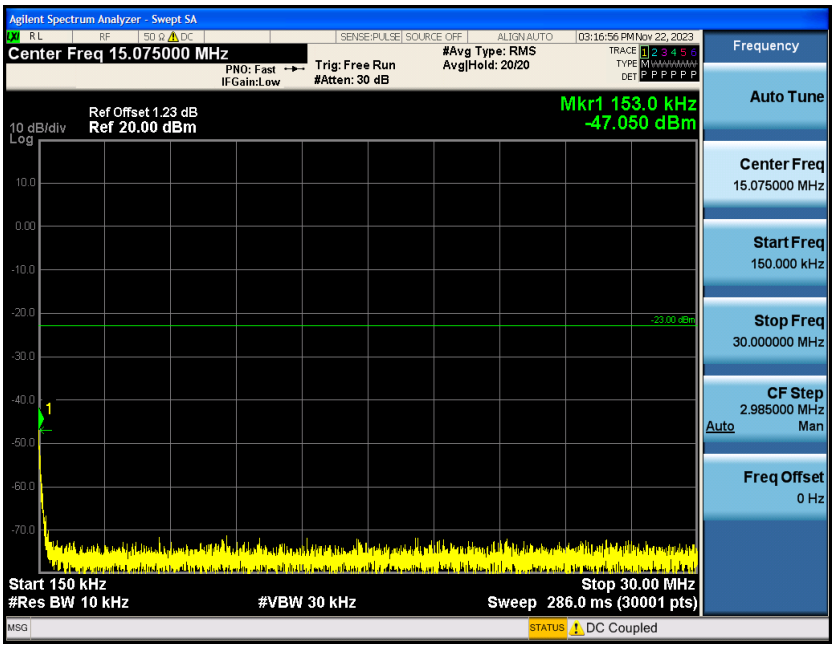


Band2-9262-1000~20000MHz

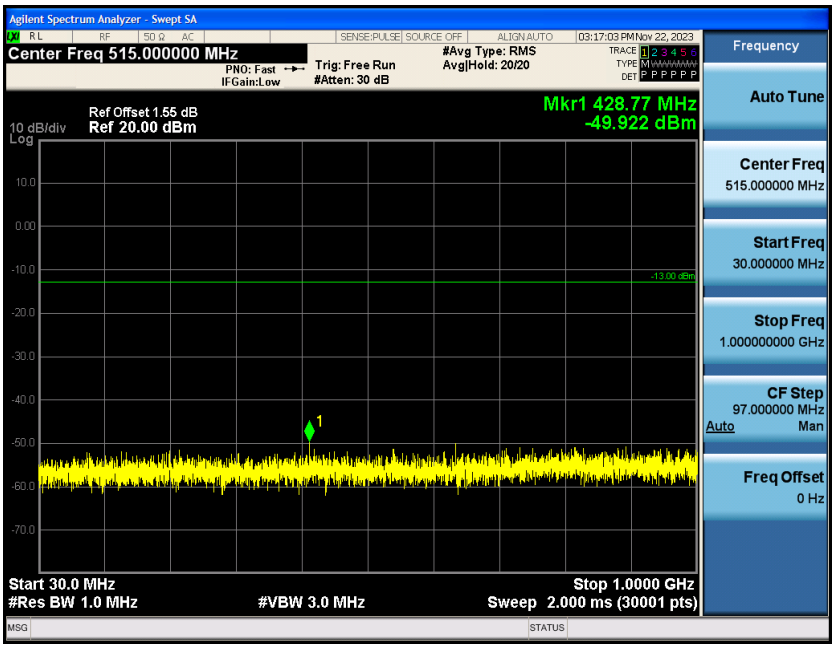
Band2-9400-0.009~0.15MHz



Band2-9400-0.15~30MHz

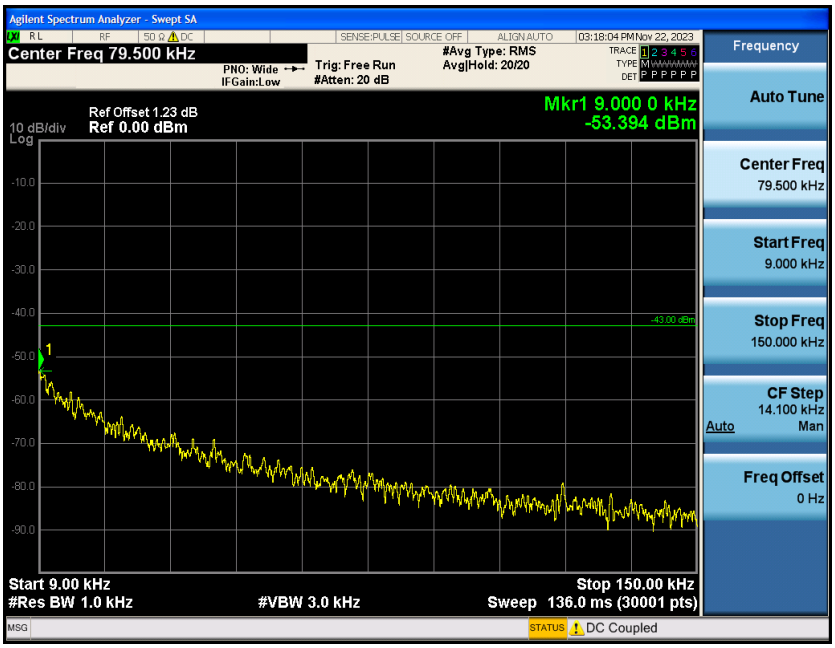


Band2-9400-30~1000MHz

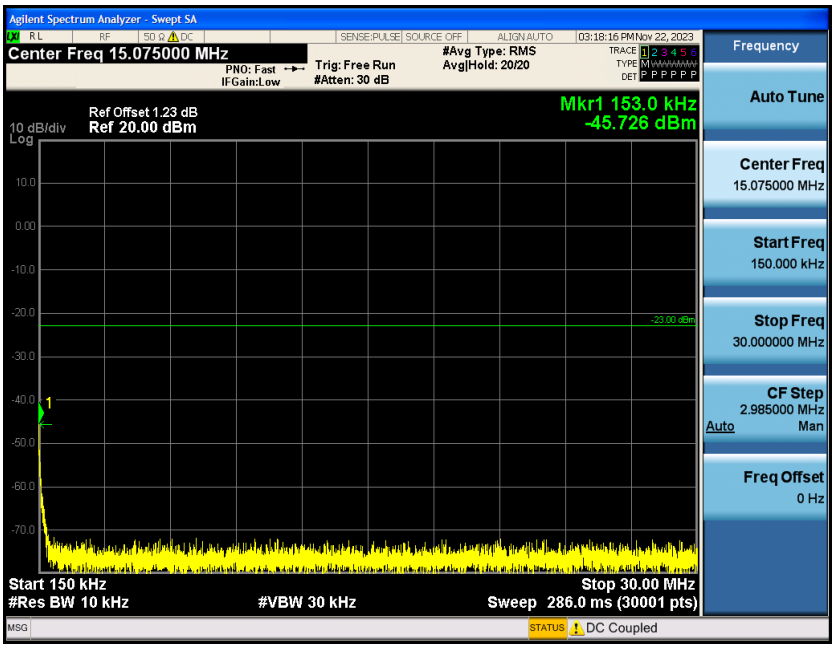


Band2-9400-1000~20000MHz

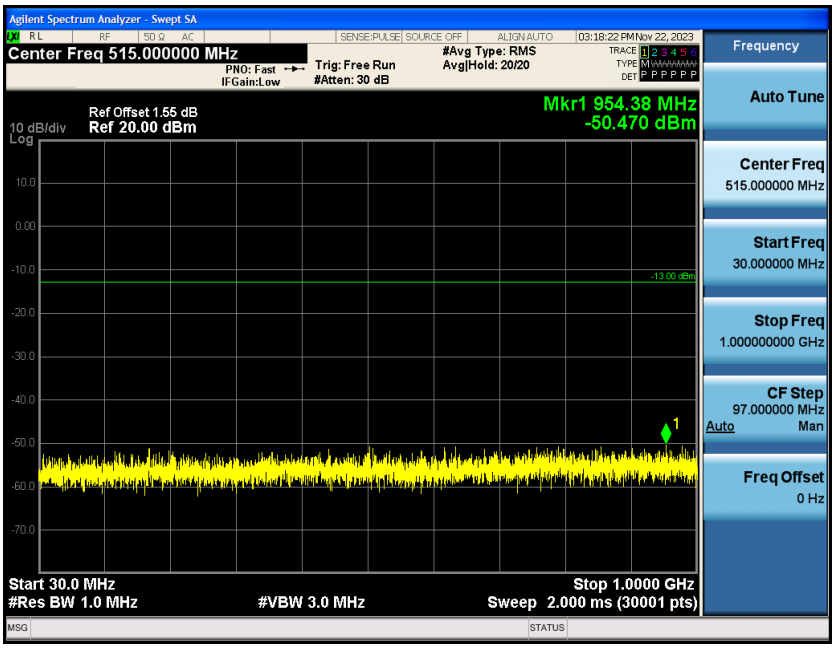
Band2-9538-0.009~0.15MHz



Band2-9538-0.15~30MHz

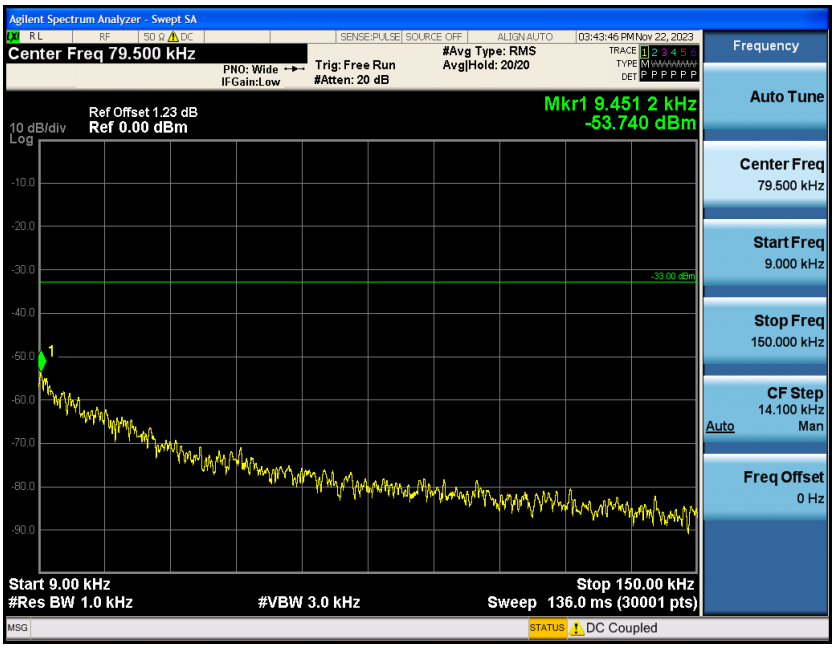


Band2-9538-30~1000MHz

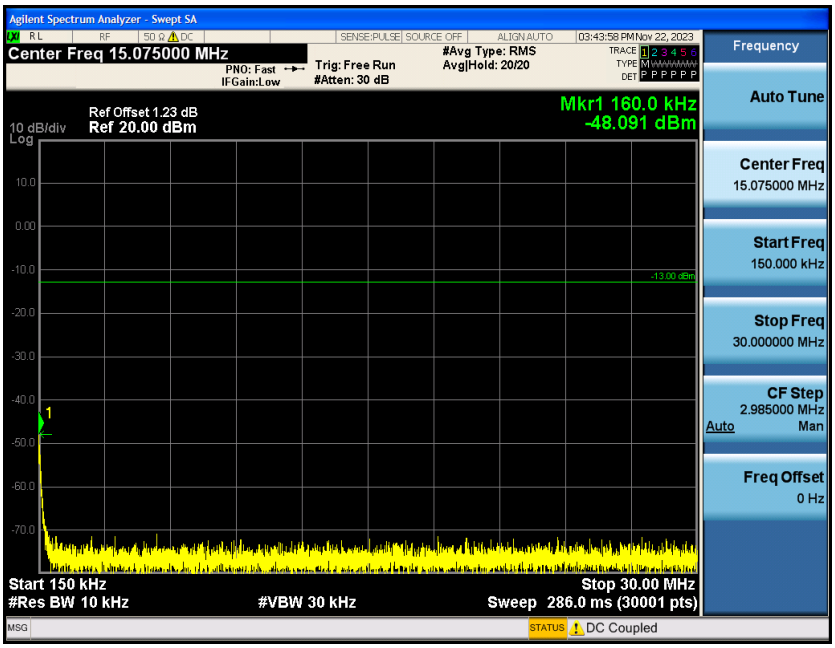


Band2-9538-1000~20000MHz

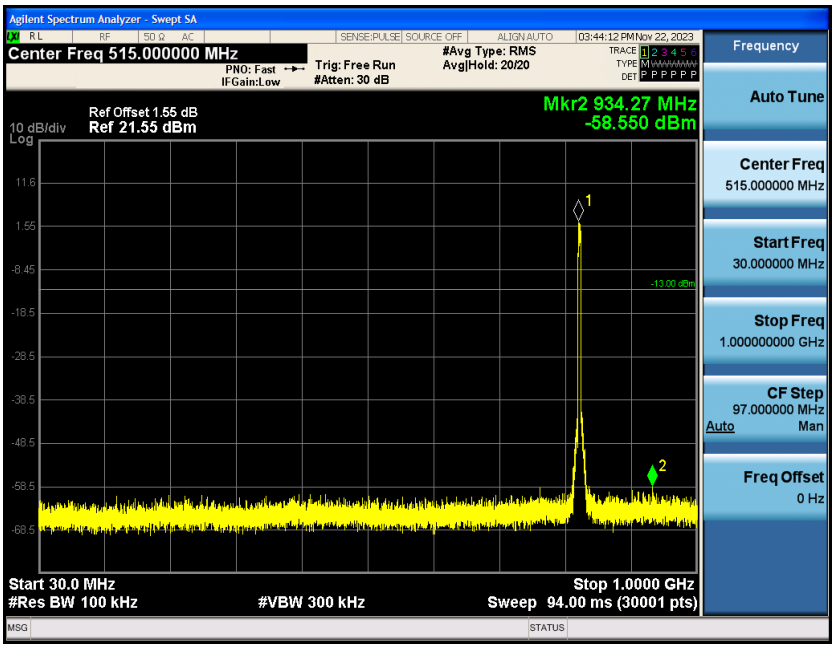
Band5-4132-0.009~0.15MHz



Band5-4132-0.15~30MHz

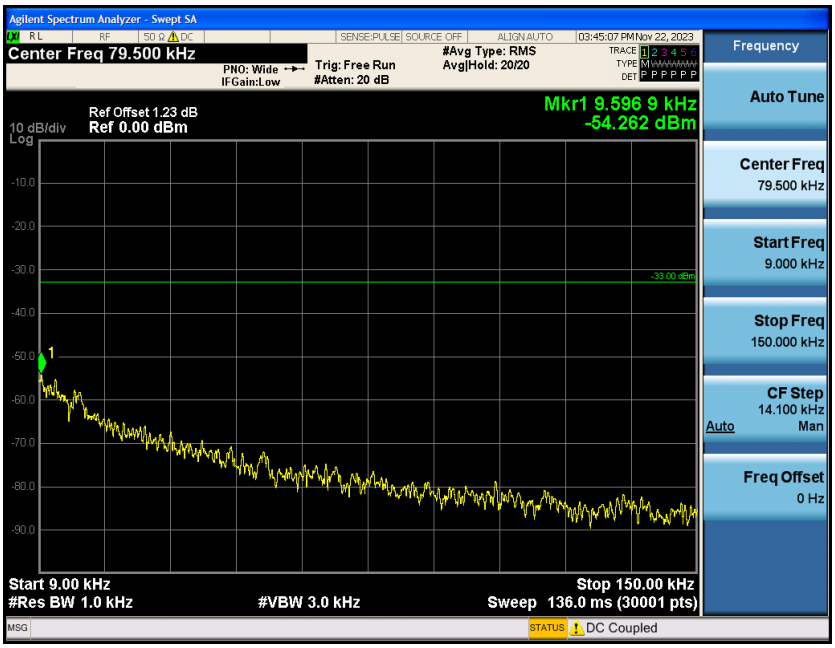


Band5-4132-30~1000MHz

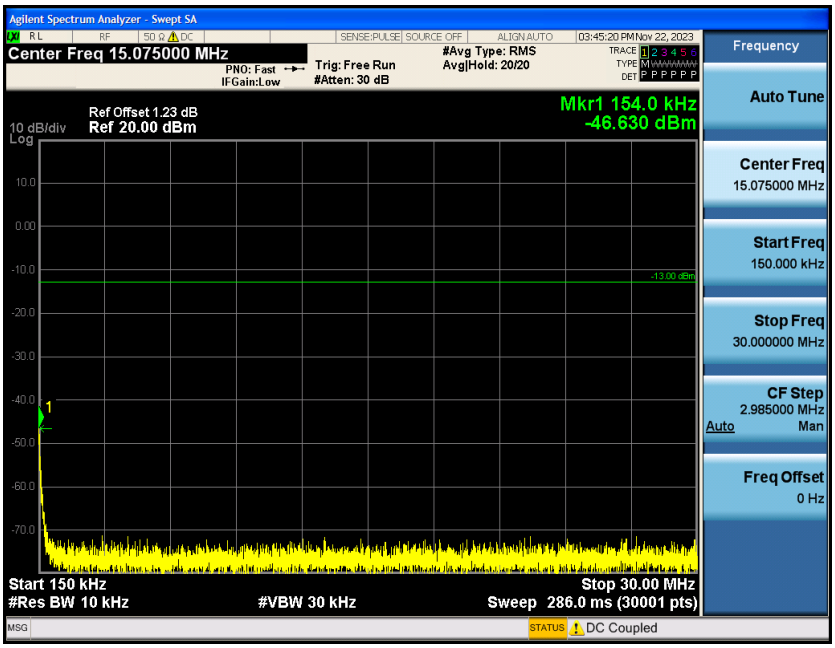


Band5-4132-1000~10000MHz

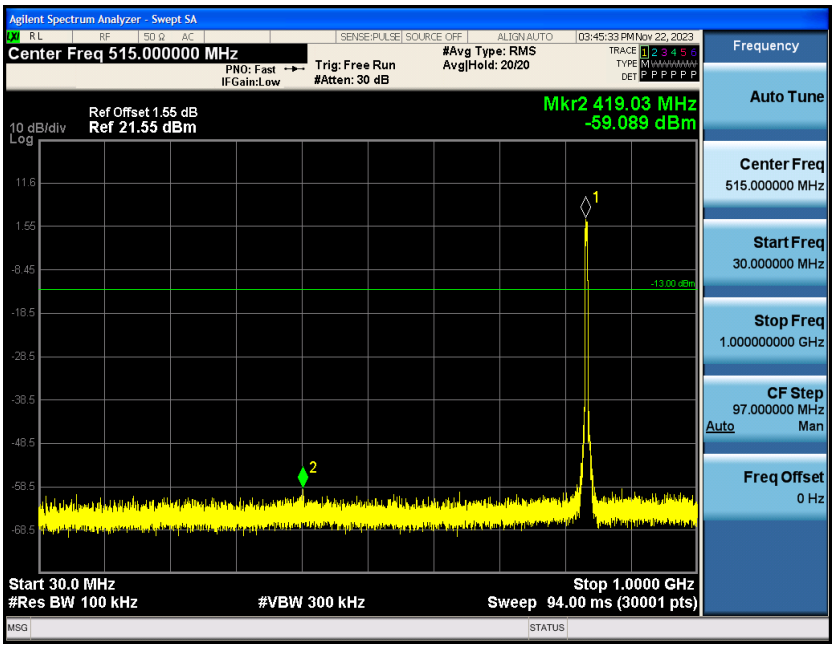
Band5-4182-0.009~0.15MHz



Band5-4182-0.15~30MHz

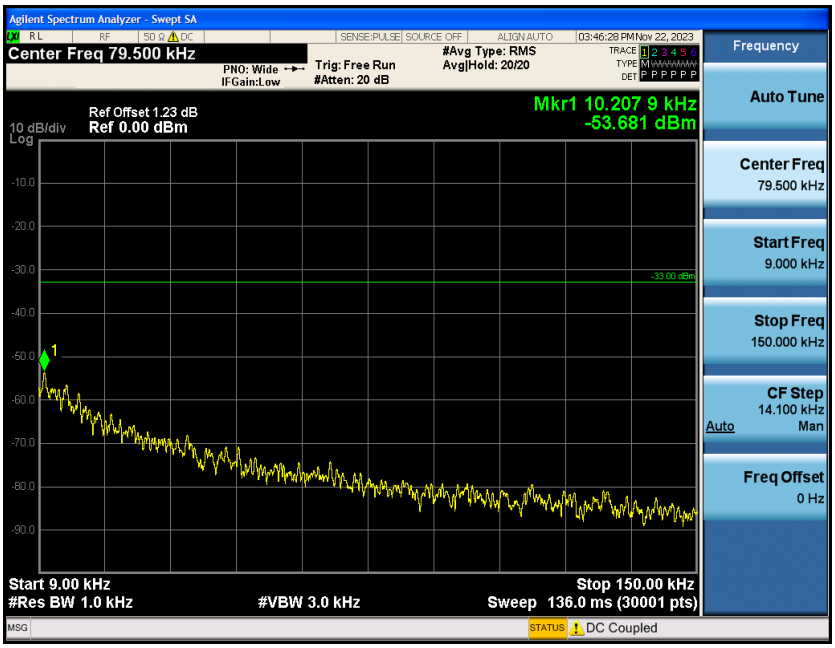


Band5-4182-30~1000MHz

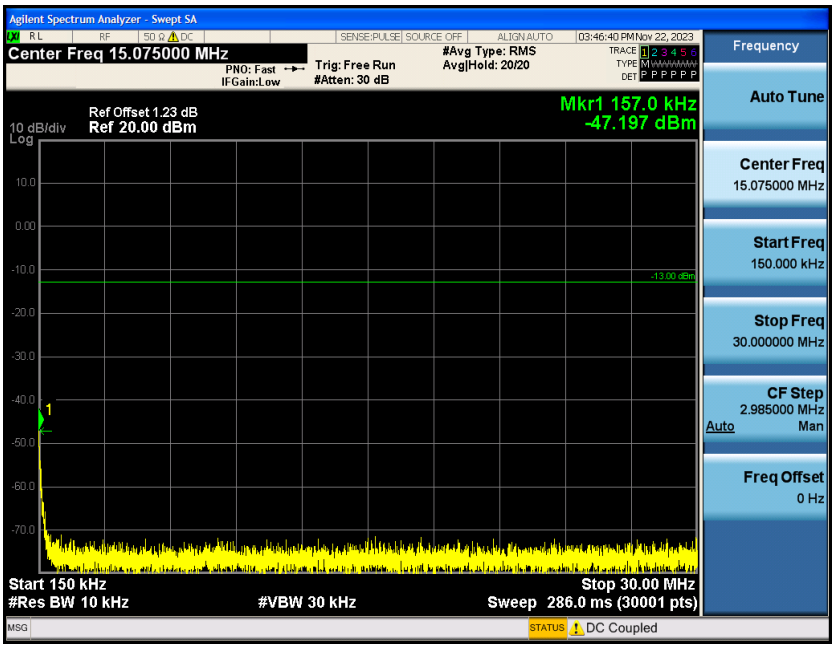


Band5-4182-1000~10000MHz

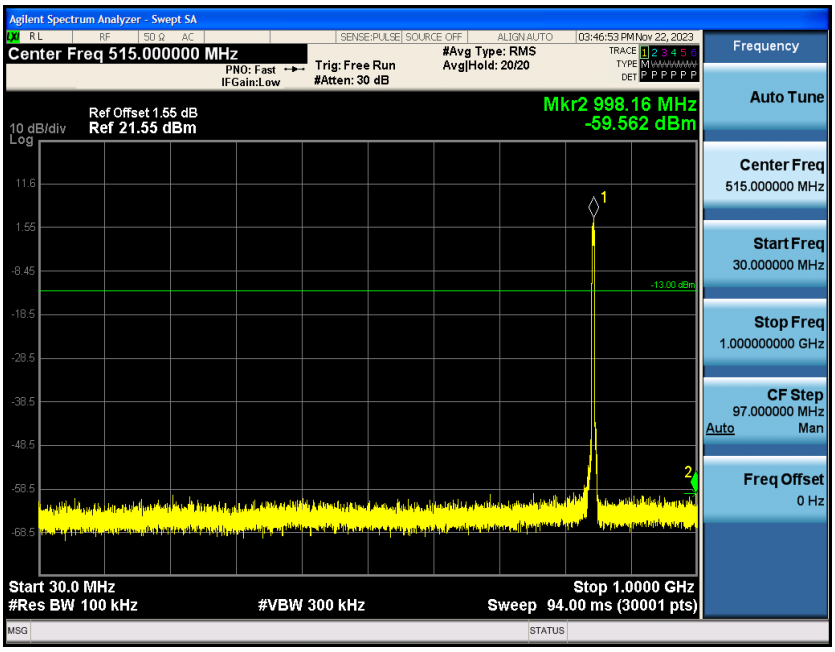
Band5-4233-0.009~0.15MHz



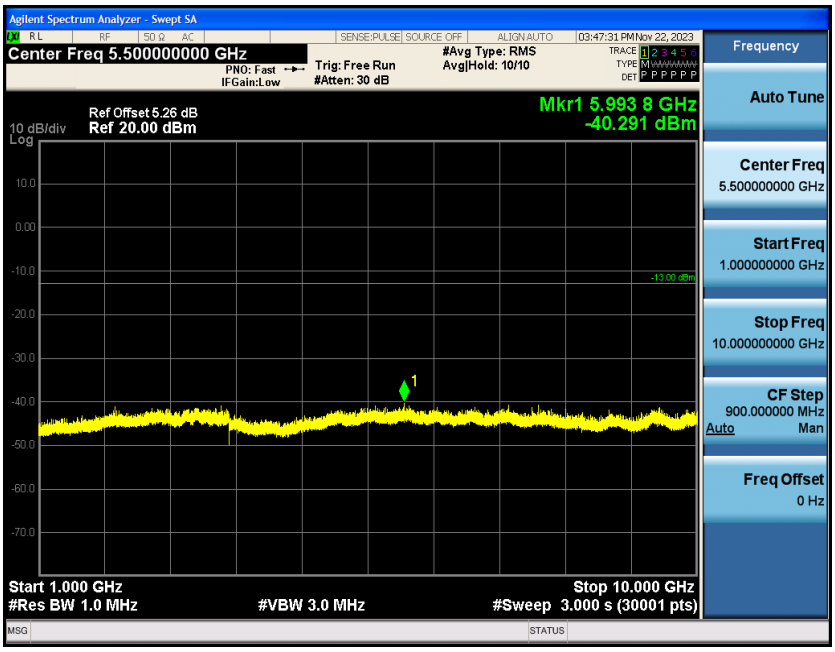
Band5-4233-0.15~30MHz



Band5-4233-30~1000MHz



Band5-4233-1000~10000MHz



12. RADIATED SPURIOUS EMISSION

12.1. PROVISIONS APPLICABLE

(A) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm.

At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

(B) For specific criteria, please refer to the description in section 9.2 of the report for corresponding evaluation.

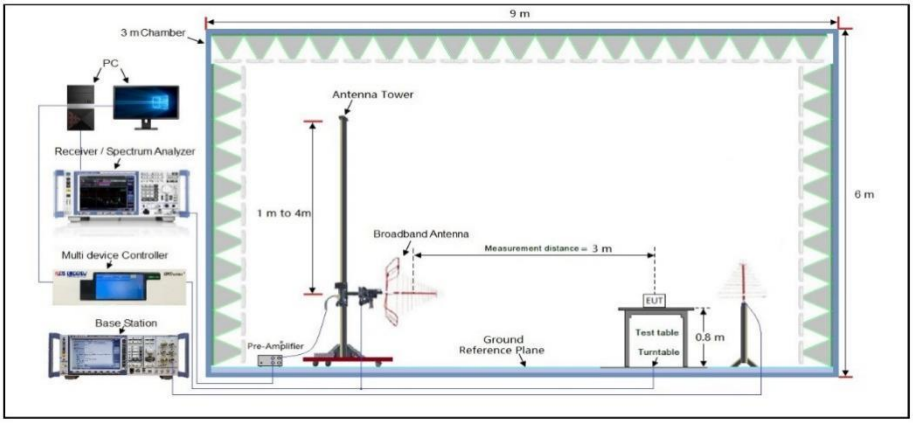
12.2. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

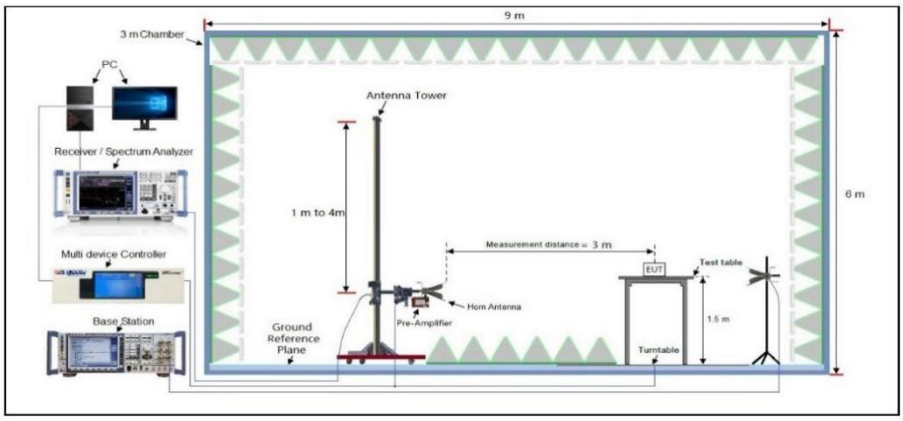
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.
11. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT.
    The substitute antenna is drivenby a signal generator and the previously recorded signal was duplicated.
    The spurious emissions is calculated by the following formula;
    Result(dBm) = Pg(dBm) +Factor(dB)
    Factor(dB) = Ant Gain(dB)-Cable Loss(dB) + Power Splitter(dB) (Above 1GHz)
    Factor(dB) = Ant Gain(dB)-Cable Loss(dB) (Below 1GHz)
    Where: Pgis the generator output power into the substitution antenna.
    If the fundalmatal frequency is below 1GHz, RF output power has been converted to EIRP.
    EIRP(dBm) = ERP(dBm) + 2.15

12.3. MEASUREMENT setup

Radiated Emissions 30MHz to 1GHz Test setup



Radiated Emissions Above 1GHz Test setup



12.4 MEASUREMENT RESULT

The measurement Below 1GHz data as follows:

GSM 850							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	158.12	-83.56	21.11	-62.45	-13	-49.45	Horizontal
2	237.54	-85.02	25.17	-59.86	-13	-46.86	Horizontal
3	676.77	-83.45	20.81	-62.64	-13	-49.64	Horizontal
4	40.91	-84.06	25.94	-58.12	-13	-45.12	Vertical
5	431.08	-63.71	15.39	-48.32	-13	-35.32	Vertical
6	496.26	-57.79	16.19	-41.61	-13	-28.61	Vertical
GSM_ Middle Channel							
1	29.27	-66.06	6.89	-59.18	-13	-46.18	Horizontal
2	158.05	-66.22	11.36	-54.86	-13	-41.86	Horizontal
3	237.43	-63.16	14.95	-48.21	-13	-35.21	Horizontal
4	40.42	-66.06	8.50	-57.55	-13	-44.55	Vertical
5	431.32	-65.07	15.32	-49.74	-13	-36.74	Vertical
6	496.23	-61.89	14.97	-46.92	-13	-33.92	Vertical
GSM_ Highest Channel							
1	158.02	-65.15	10.06	-55.09	-13	-42.09	Horizontal
2	237.49	-65.43	13.71	-51.72	-13	-38.72	Horizontal
3	678.16	-62.29	17.30	-45.00	-13	-32.00	Horizontal
4	40.88	-66.01	7.48	-58.54	-13	-45.54	Vertical
5	431.01	-63.91	15.02	-48.89	-13	-35.89	Vertical
6	496.07	-61.53	14.86	-46.66	-13	-33.66	Vertical

PCS 1900							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	157.50	-65.83	12.99	-52.84	-13	-39.84	Horizontal
2	236.54	-63.83	14.35	-49.49	-13	-36.49	Horizontal
3	752.19	-59.92	16.22	-43.70	-13	-30.70	Horizontal
4	43.99	-64.49	8.23	-56.26	-13	-43.26	Vertical
5	431.69	-62.37	16.20	-46.17	-13	-33.17	Vertical
6	501.10	-60.95	16.22	-44.73	-13	-31.73	Vertical
GSM_ Middle Channel							
1	29.67	-64.36	6.36	-58.00	-13	-45.00	Horizontal
2	157.85	-63.98	10.78	-53.19	-13	-40.19	Horizontal
3	237.74	-63.65	14.07	-49.58	-13	-36.58	Horizontal
4	40.46	-65.58	8.37	-57.22	-13	-44.22	Vertical
5	430.76	-65.47	15.70	-49.77	-13	-36.77	Vertical
6	496.30	-59.87	15.73	-44.14	-13	-31.14	Vertical
GSM_ Highest Channel							
1	157.05	-66.58	11.29	-55.29	-13	-42.29	Horizontal
2	238.10	-62.93	13.46	-49.47	-13	-36.47	Horizontal
3	677.55	-62.12	16.72	-45.40	-13	-32.40	Horizontal
4	41.14	-64.91	8.15	-56.76	-13	-43.76	Vertical
5	431.10	-63.85	15.93	-47.92	-13	-34.92	Vertical
6	495.79	-59.85	15.62	-44.23	-13	-31.23	Vertical

WCDMA Band II							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
RMC 12.2kbps_ Lowest Channel							
1	158.03	-67.83	13.12	-54.71	-13	-41.71	Horizontal
2	238.94	-64.17	14.37	-49.79	-13	-36.79	Horizontal
3	752.28	-60.52	17.03	-43.49	-13	-30.49	Horizontal
4	45.45	-64.95	8.24	-56.71	-13	-43.71	Vertical
5	431.17	-63.02	16.87	-46.16	-13	-33.16	Vertical
6	499.48	-61.12	15.95	-45.17	-13	-32.17	Vertical
RMC 12.2kbps_ Middle Channel							
1	29.14	-66.13	7.88	-58.25	-13	-45.25	Horizontal
2	156.88	-65.64	10.42	-55.21	-13	-42.21	Horizontal
3	237.49	-62.80	13.92	-48.88	-13	-35.88	Horizontal
4	40.76	-65.09	6.95	-58.14	-13	-45.14	Vertical
5	432.29	-63.95	16.03	-47.92	-13	-34.92	Vertical
6	494.84	-61.44	16.56	-44.88	-13	-31.88	Vertical
RMC 12.2kbps_ Highest Channel							
1	156.62	-65.23	10.66	-54.57	-13	-41.57	Horizontal
2	237.45	-61.82	13.97	-47.84	-13	-34.84	Horizontal
3	678.17	-60.02	16.52	-43.50	-13	-30.50	Horizontal
4	40.83	-64.81	6.48	-58.33	-13	-45.33	Vertical
5	431.13	-62.29	15.85	-46.44	-13	-33.44	Vertical
6	495.52	-60.56	15.20	-45.36	-13	-32.36	Vertical

WCDMA Band V							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
RMC 12.2kbps_ Lowest Channel							
1	156.74	-64.74	13.40	-51.34	-13	-38.34	Horizontal
2	237.62	-60.46	13.80	-46.67	-13	-33.67	Horizontal
3	751.57	-57.85	16.89	-40.96	-13	-27.96	Horizontal
4	44.32	-61.74	8.16	-53.59	-13	-40.59	Vertical
5	431.34	-60.69	15.26	-45.43	-13	-32.43	Vertical
6	499.73	-59.07	16.24	-42.83	-13	-29.83	Vertical
RMC 12.2kbps_ Middle Channel							
1	29.77	-63.50	7.13	-56.37	-13	-43.37	Horizontal
2	156.53	-64.50	11.29	-53.21	-13	-40.21	Horizontal
3	238.91	-63.46	14.70	-48.76	-13	-35.76	Horizontal
4	41.85	-63.69	6.52	-57.17	-13	-44.17	Vertical
5	431.50	-61.60	14.89	-46.71	-13	-33.71	Vertical
6	496.32	-59.08	16.45	-42.63	-13	-29.63	Vertical
RMC 12.2kbps_ Highest Channel							
1	157.46	-63.82	11.23	-52.59	-13	-39.59	Horizontal
2	237.21	-62.04	14.57	-47.47	-13	-34.47	Horizontal
3	676.72	-62.83	16.08	-46.76	-13	-33.76	Horizontal
4	40.86	-62.45	8.34	-54.11	-13	-41.11	Vertical
5	429.96	-63.96	14.85	-49.11	-13	-36.11	Vertical
6	494.75	-58.53	14.78	-43.75	-13	-30.75	Vertical

The measurement Above 1GHz data as follows:

GSM 850							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	1647.77	-91.79	19.96	-71.83	-13	-58.83	Horizontal
2	2471.43	-89.64	26.37	-63.28	-13	-50.28	Horizontal
3	1647.10	-91.71	20.77	-70.94	-13	-57.94	Vertical
4	2470.05	-92.09	27.17	-64.91	-13	-51.91	Vertical
GSM_ Middle Channel							
1	1671.38	-92.44	21.10	-71.33	-13	-58.33	Horizontal
2	2508.82	-94.40	27.53	-66.88	-13	-53.88	Horizontal
3	1671.36	-92.92	21.41	-71.51	-13	-58.51	Vertical
4	2507.46	-95.60	27.72	-67.88	-13	-54.88	Vertical
GSM_ Highest Channel							
1	1695.26	-93.56	21.51	-72.05	-13	-59.05	Horizontal
2	2544.39	-95.28	26.92	-68.35	-13	-55.35	Horizontal
3	1696.34	-93.88	20.27	-73.61	-13	-60.61	Vertical
4	2544.34	-94.60	26.38	-68.22	-13	-55.22	Vertical

PCS 1900							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	3699.10	-90.05	30.37	-59.68	-13	-46.68	Horizontal
2	5548.43	-89.34	31.23	-58.11	-13	-45.11	Horizontal
3	3697.77	-91.46	29.93	-61.53	-13	-48.53	Vertical
4	5549.11	-89.34	30.65	-58.69	-13	-45.69	Vertical
GSM_ Middle Channel							
1	3758.48	-85.45	29.45	-56.00	-13	-43.00	Horizontal
2	5638.90	-88.38	30.22	-58.16	-13	-45.16	Horizontal
3	3759.27	-92.66	30.51	-62.16	-13	-49.16	Vertical
4	5639.55	-89.65	31.77	-57.88	-13	-44.88	Vertical
GSM_ Highest Channel							
1	3817.80	-85.47	29.63	-55.84	-13	-42.84	Horizontal
2	5727.19	-89.14	30.50	-58.64	-13	-45.64	Horizontal
3	3817.85	-92.52	29.57	-62.96	-13	-49.96	Vertical
4	5728.92	-89.98	30.71	-59.27	-13	-46.27	Vertical

WCDMA Band II							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
RMC 12.2kbps_ Lowest Channel							
1	3703.06	-85.35	27.94	-57.41	-13	-44.41	Horizontal
2	5555.49	-92.13	30.82	-61.31	-13	-48.31	Horizontal
3	3703.54	-82.57	29.49	-53.07	-13	-40.07	Vertical
4	5555.48	-88.11	30.22	-57.89	-13	-44.89	Vertical
RMC 12.2kbps_ Middle Channel							
1	3759.28	-81.63	27.49	-54.14	-13	-41.14	Horizontal
2	5638.23	-89.76	31.39	-58.37	-13	-45.37	Horizontal
3	3758.42	-83.32	30.53	-52.79	-13	-39.79	Vertical
4	5638.43	-86.35	28.44	-57.91	-13	-44.91	Vertical
RMC 12.2kbps_ Highest Channel							
1	3813.50	-84.91	28.02	-56.88	-13	-43.88	Horizontal
2	5720.54	-87.83	31.31	-56.53	-13	-43.53	Horizontal
3	3814.31	-84.48	30.45	-54.03	-13	-41.03	Vertical
4	5721.59	-85.92	30.82	-55.10	-13	-42.10	Vertical

WCDMA Band V							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
RMC 12.2kbps_ Lowest Channel							
1	1651.07	-86.43	20.62	-65.82	-13	-52.82	Horizontal
2	2478.38	-87.77	25.39	-62.38	-13	-49.38	Horizontal
3	1651.34	-85.17	21.26	-63.91	-13	-50.91	Vertical
4	2477.49	-83.92	26.17	-57.75	-13	-44.75	Vertical
RMC 12.2kbps_ Middle Channel							
1	1671.26	-83.63	21.06	-62.57	-13	-49.57	Horizontal
2	2507.88	-87.01	25.86	-61.16	-13	-48.16	Horizontal
3	1671.56	-86.34	21.26	-65.08	-13	-52.08	Vertical
4	2508.72	-84.35	25.54	-58.81	-13	-45.81	Vertical
RMC 12.2kbps_ Highest Channel							
1	1690.84	-84.86	20.96	-63.90	-13	-50.90	Horizontal
2	2538.91	-87.19	25.61	-61.58	-13	-48.58	Horizontal
3	1692.67	-86.40	21.79	-64.60	-13	-51.60	Vertical
4	2538.16	-84.44	25.97	-58.47	-13	-45.47	Vertical

Note:

1.Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.

2.Result = Reading + Correct Factor.

3.Margin = Result – Limit

4.he device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test. Subsequently, only the worst case emissions are reported.

13. FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

13.1 PROVISIONS APPLICABLE

13.1.1 For Hand carried battery powered equipment

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

13.1.2 For equipment powered by primary supply voltage

1 The carrier frequency of the transmitter is measured at room temperature (20°C to provide a
2 reference).
3 The equipment is turned on in a “standby” condition for fifteen minutes before applying power to
4 the transmitter. Measurement of the carrier frequency of the transmitter is made within oneminute after applying power to the transmitter.
5 Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at
6 least one half-hour is provided to allow stabilization of the equipment at each temperature level.

13.2 MEASUREMENT METHOD

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 CMW500 DIGITAL RADIO COMMUNICATION TESTER.

7 Measure the carrier frequency at room temperature.

8 Subject the EUT to overnight soak at -30℃. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on channel 20175 for LTE band 4 measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

9 Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

10 Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from

minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

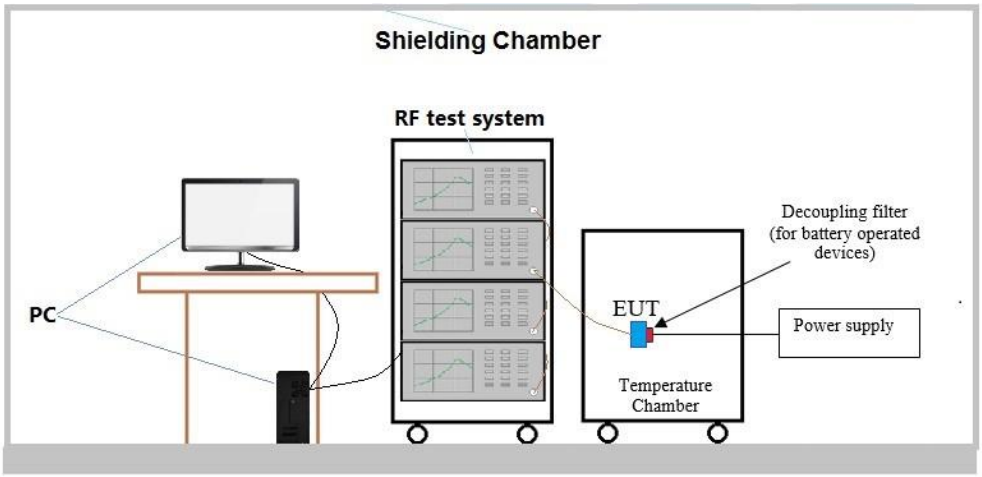
11 Subject the EUT to overnight soak at +50℃.

12 With the EUT, powered via nominal voltage, connected to the CMW500 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.

13 Repeat the above measurements at 10℃ increments from +50℃ to -30℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

14 At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

13.3 MEASUREMENT SETUP



13.4 MEASUREMENT RESULT

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	GSM	LCH	TN	VL	-11.55	-0.31	±2.5	PASS
			TN	VN	-12.75	-0.36	±2.5	PASS
			TN	VH	-12.30	-0.15	±2.5	PASS
		MCH	TN	VL	-11.03	-0.12	±2.5	PASS
			TN	VN	-3.74	-0.07	±2.5	PASS
			TN	VH	-4.06	-0.82	±2.5	PASS
		HCH	TN	VL	12.55	-0.96	±2.5	PASS
			TN	VN	13.54	-0.39	±2.5	PASS
			TN	VH	10.09	-0.67	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	EDGE	LCH	TN	VL	-9.10	0.016713	±2.5	PASS
			TN	VN	-10.36	0.007256	±2.5	PASS
			TN	VH	-3.42	0.009313	±2.5	PASS
		MCH	TN	VL	-8.72	0.011391	±2.5	PASS
			TN	VN	-3.10	0.011840	±2.5	PASS
			TN	VH	-5.42	0.008208	±2.5	PASS
		HCH	TN	VL	-6.59	0.000425	±2.5	PASS
			TN	VN	-12.85	0.009242	±2.5	PASS
			TN	VH	-13.53	0.009934	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt. (V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Verdict
PCS1900	GSM	LCH	TN	VL	-6.49	0.001728	PASS
			TN	VN	-3.13	0.005789	PASS
			TN	VH	-4.46	0.003797	PASS
		MCH	TN	VL	-5.78	0.009241	PASS
			TN	VN	-0.94	0.002411	PASS
			TN	VH	1.36	0.001813	PASS
		HCH	TN	VL	-3.36	-0.001587	PASS
			TN	VN	-6.49	0.001728	PASS
			TN	VH	-4.65	0.005789	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt. (V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Verdict
PCS1900	EDGE	LCH	TN	VL	9.52	0.011551	PASS
			TN	VN	11.59	0.014062	PASS
			TN	VH	10.85	0.013164	PASS
		MCH	TN	VL	13.37	0.015981	PASS
			TN	VN	11.11	0.013280	PASS
			TN	VH	15.98	0.019101	PASS
		HCH	TN	VL	9.27	0.010921	PASS
			TN	VN	12.07	0.014220	PASS
			TN	VH	13.08	0.015410	PASS

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	GSM	LCH	VN	-30	-2.80	-0.017203	±2.5	PASS
			VN	-20	0.37	-0.010892	±2.5	PASS
			VN	-10	-1.24	-0.016395	±2.5	PASS
			VN	0	0.88	-0.005587	±2.5	PASS
			VN	10	-4.11	-0.017086	±2.5	PASS
			VN	20	0.29	-0.011937	±2.5	PASS
			VN	30	-3.50	-0.009473	±2.5	PASS
			VN	40	-3.10	-0.007353	±2.5	PASS
			VN	50	0.35	-0.008233	±2.5	PASS
GSM850	GSM	MCH	VN	-30	-4.44	-0.011595	±2.5	PASS
			VN	-20	-5.41	-0.013214	±2.5	PASS
			VN	-10	-4.72	-0.010922	±2.5	PASS
			VN	0	-3.17	-0.004871	±2.5	PASS
			VN	10	-3.75	-0.019378	±2.5	PASS
			VN	20	-2.90	-0.001619	±2.5	PASS
			VN	30	-3.00	-0.017162	±2.5	PASS
			VN	40	-4.13	-0.004264	±2.5	PASS
			VN	50	-4.70	0.012547	±2.5	PASS
GSM850	GSM	HCH	VN	-30	0.36	0.013472	±2.5	PASS
			VN	-20	1.14	0.012896	±2.5	PASS
			VN	-10	-3.55	0.008818	±2.5	PASS
			VN	0	-2.07	0.009711	±2.5	PASS
			VN	10	-2.23	0.020271	±2.5	PASS
			VN	20	0.20	0.011297	±2.5	PASS
			VN	30	-4.28	0.009048	±2.5	PASS
			VN	40	-1.60	0.009827	±2.5	PASS
			VN	50	-0.22	0.020317	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	EDGE	LCH	VN	-30	-15.95	0.005533	±2.5	PASS
			VN	-20	0.29	0.005121	±2.5	PASS
			VN	-10	7.23	0.004331	±2.5	PASS
			VN	0	-3.42	0.014336	±2.5	PASS
			VN	10	8.23	-0.001352	±2.5	PASS
			VN	20	9.88	0.002266	±2.5	PASS
			VN	30	-2.52	-0.001500	±2.5	PASS
			VN	40	-2.91	0.004796	±2.5	PASS
			VN	50	2.49	0.010754	±2.5	PASS
GSM850	EDGE	MCH	VN	-30	-5.42	-0.003542	±2.5	PASS
			VN	-20	-5.88	0.006849	±2.5	PASS
			VN	-10	-19.27	0.012441	±2.5	PASS
			VN	0	-15.63	0.003691	±2.5	PASS
			VN	10	-14.85	0.002383	±2.5	PASS
			VN	20	-17.40	0.000524	±2.5	PASS
			VN	30	-18.73	0.008807	±2.5	PASS
			VN	40	-16.89	0.006214	±2.5	PASS
			VN	50	-19.34	0.003264	±2.5	PASS
GSM850	EDGE	HCH	VN	-30	-12.33	-0.002118	±2.5	PASS
			VN	-20	-4.16	0.005215	±2.5	PASS
			VN	-10	-4.04	-0.005505	±2.5	PASS
			VN	0	-10.36	0.001314	±2.5	PASS
			VN	10	-7.36	0.000483	±2.5	PASS
			VN	20	-8.52	0.006248	±2.5	PASS
			VN	30	-9.10	0.004172	±2.5	PASS
			VN	40	-12.53	0.002003	±2.5	PASS
			VN	50	-7.36	0.001798	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	GSM	LCH	VN	-30	11.74	0.006345	±2.5	PASS
			VN	-20	19.09	0.010318	±2.5	PASS
			VN	-10	16.28	0.008799	±2.5	PASS
			VN	0	15.37	0.008307	±2.5	PASS
			VN	10	20.63	0.011150	±2.5	PASS
			VN	20	5.85	0.003162	±2.5	PASS
			VN	30	15.88	0.008583	±2.5	PASS
			VN	40	6.67	0.003605	±2.5	PASS
			VN	50	13.47	0.007280	±2.5	PASS
GSM1900	GSM	MCH	VN	-30	-0.48	-0.000255	±2.5	PASS
			VN	-20	-4.74	-0.002521	±2.5	PASS
			VN	-10	4.93	0.002622	±2.5	PASS
			VN	0	-3.42	-0.001819	±2.5	PASS
			VN	10	-3.46	-0.001840	±2.5	PASS
			VN	20	-3.54	-0.001883	±2.5	PASS
			VN	30	-2.75	-0.001463	±2.5	PASS
			VN	40	1.30	0.000691	±2.5	PASS
			VN	50	4.75	0.002527	±2.5	PASS
GSM1900	GSM	HCH	VN	-30	1.89	0.000990	±2.5	PASS
			VN	-20	4.06	0.002126	±2.5	PASS
			VN	-10	10.08	0.005278	±2.5	PASS
			VN	0	2.36	0.001236	±2.5	PASS
			VN	10	13.49	0.007064	±2.5	PASS
			VN	20	8.91	0.004665	±2.5	PASS
			VN	30	8.88	0.004650	±2.5	PASS
			VN	40	15.77	0.008257	±2.5	PASS
			VN	50	15.40	0.008064	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	EDGE	LCH	VN	-30	2.62	0.001416	±2.5	PASS
			VN	-20	18.17	0.009821	±2.5	PASS
			VN	-10	-9.22	-0.004983	±2.5	PASS
			VN	0	-4.46	-0.002411	±2.5	PASS
			VN	10	8.53	0.004610	±2.5	PASS
			VN	20	10.41	0.005626	±2.5	PASS
			VN	30	8.76	0.004735	±2.5	PASS
			VN	40	18.89	0.010048	±2.5	PASS
			VN	50	10.06	0.005351	±2.5	PASS
GSM1900	EDGE	MCH	VN	-30	12.13	0.006452	±2.5	PASS
			VN	-20	8.55	0.004548	±2.5	PASS
			VN	-10	14.43	0.007676	±2.5	PASS
			VN	0	7.47	0.003973	±2.5	PASS
			VN	10	17.90	0.009521	±2.5	PASS
			VN	20	13.26	0.007053	±2.5	PASS
			VN	30	23.43	0.012463	±2.5	PASS
			VN	40	18.62	0.009750	±2.5	PASS
			VN	50	21.67	0.011347	±2.5	PASS
GSM1900	EDGE	HCH	VN	-30	19.22	0.010064	±2.5	PASS
			VN	-20	15.32	0.008022	±2.5	PASS
			VN	-10	11.01	0.005765	±2.5	PASS
			VN	0	13.03	0.006823	±2.5	PASS
			VN	10	16.53	0.008655	±2.5	PASS
			VN	20	26.07	0.013651	±2.5	PASS
			VN	30	14.05	0.007357	±2.5	PASS
			VN	40	2.62	0.001416	±2.5	PASS
			VN	50	18.17	0.009821	±2.5	PASS

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA850	UMTS	LCH	TN	VL	-3.55	-0.000525	±2.5	PASS
			TN	VN	-2.07	0.003872	±2.5	PASS
			TN	VH	-2.23	0.000411	±2.5	PASS
		MCH	TN	VL	0.20	-0.003461	±2.5	PASS
			TN	VN	-4.28	0.003049	±2.5	PASS
			TN	VH	-1.60	0.006588	±2.5	PASS
		HCH	TN	VL	-0.22	0.002200	±2.5	PASS
			TN	VN	1.62	0.002457	±2.5	PASS
			TN	VH	-3.73	-0.000525	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Verdict
WCDMA1900	UMTS	LCH	TN	VL	-2.46	-0.004103	PASS
			TN	VN	-1.71	-0.002375	PASS
			TN	VH	-4.55	-0.003644	PASS
		MCH	TN	VL	-4.34	-0.000686	PASS
			TN	VN	-3.52	0.004697	PASS
			TN	VH	-1.42	-0.000590	PASS
		HCH	TN	VL	-1.02	0.002280	PASS
			TN	VN	-2.55	0.000215	PASS
			TN	VH	-1.90	-0.002191	PASS

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very samll. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA850	TM1	LCH	VN	-30	-2.32	-0.001252	±2.5	PASS
			VN	-20	8.25	0.004454	±2.5	PASS
			VN	-10	-5.08	-0.002742	±2.5	PASS
			VN	0	-0.75	-0.000399	±2.5	PASS
			VN	10	0.27	0.000144	±2.5	PASS
			VN	20	2.17	0.001154	±2.5	PASS
			VN	30	3.93	0.002060	±2.5	PASS
			VN	40	2.44	0.001279	±2.5	PASS
			VN	50	-3.96	-0.002076	±2.5	PASS
WCDMA850	TM1	MCH	VN	-30	2.96	0.001729	±2.5	PASS
			VN	-20	1.97	0.001150	±2.5	PASS
			VN	-10	2.93	0.001711	±2.5	PASS
			VN	0	0.83	0.000479	±2.5	PASS
			VN	10	-3.12	-0.001801	±2.5	PASS
			VN	20	0.57	0.000329	±2.5	PASS
			VN	30	-0.51	-0.000291	±2.5	PASS
			VN	40	-2.06	-0.001175	±2.5	PASS
			VN	50	2.86	0.001632	±2.5	PASS
WCDMA850	TM1	HCH	VN	-30	-1.17	-0.001416	±2.5	PASS
			VN	-20	0.14	0.000169	±2.5	PASS
			VN	-10	-0.40	-0.000484	±2.5	PASS
			VN	0	-0.29	-0.000347	±2.5	PASS
			VN	10	-0.86	-0.001028	±2.5	PASS
			VN	20	0.94	0.001124	±2.5	PASS
			VN	30	1.12	0.001323	±2.5	PASS
			VN	40	-1.41	-0.001665	±2.5	PASS
			VN	50	2.15	0.002540	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA1900	TM1	LCH	VN	-30	0.74	0.000399	±2.5	PASS
			VN	-20	2.43	0.001312	±2.5	PASS
			VN	-10	1.34	0.000713	±2.5	PASS
			VN	0	-0.31	-0.000165	±2.5	PASS
			VN	10	-2.39	-0.001271	±2.5	PASS
			VN	20	-1.38	-0.000734	±2.5	PASS
			VN	30	2.59	0.001378	±2.5	PASS
			VN	40	3.55	0.001861	±2.5	PASS
			VN	50	1.92	0.001007	±2.5	PASS
WCDMA1900	TM1	MCH	VN	-30	2.73	0.001431	±2.5	PASS
			VN	-20	-8.60	-0.004508	±2.5	PASS
			VN	-10	-5.30	-0.002778	±2.5	PASS
			VN	0	4.01	0.002342	±2.5	PASS
			VN	10	1.65	0.000964	±2.5	PASS
			VN	20	4.11	0.002400	±2.5	PASS
			VN	30	6.12	0.003574	±2.5	PASS
			VN	40	3.78	0.002207	±2.5	PASS
			VN	50	-2.52	-0.001454	±2.5	PASS
WCDMA1900	TM1	HCH	VN	-30	3.26	0.001882	±2.5	PASS
			VN	-20	2.97	0.001714	±2.5	PASS
			VN	-10	0.80	0.000462	±2.5	PASS
			VN	0	0.87	0.000502	±2.5	PASS
			VN	10	0.08	0.000046	±2.5	PASS
			VN	20	1.46	0.000833	±2.5	PASS
			VN	30	-3.08	-0.001757	±2.5	PASS
			VN	40	8.85	0.005050	±2.5	PASS
			VN	50	6.46	0.003686	±2.5	PASS

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very samll. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted duing the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

----END OF REPORT----