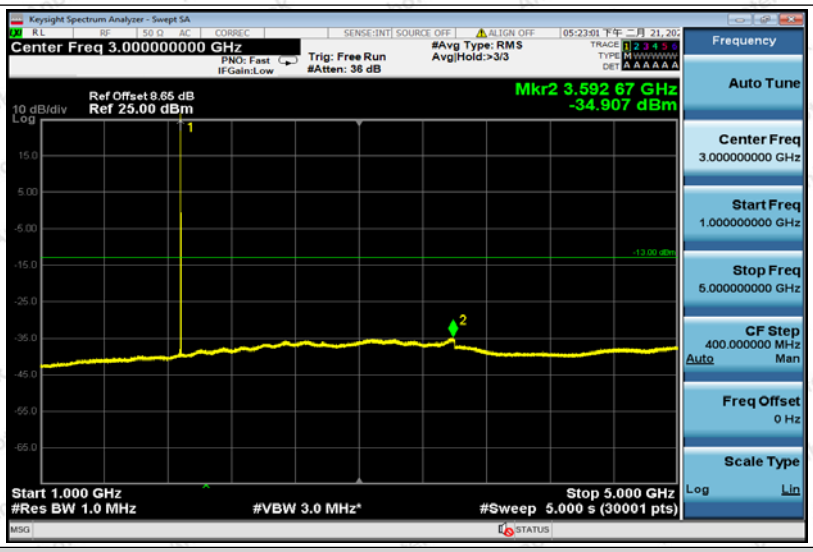

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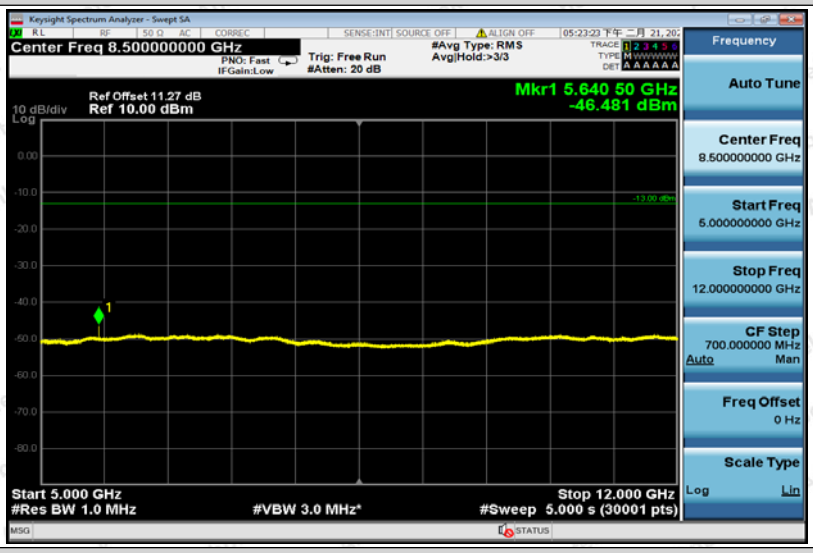

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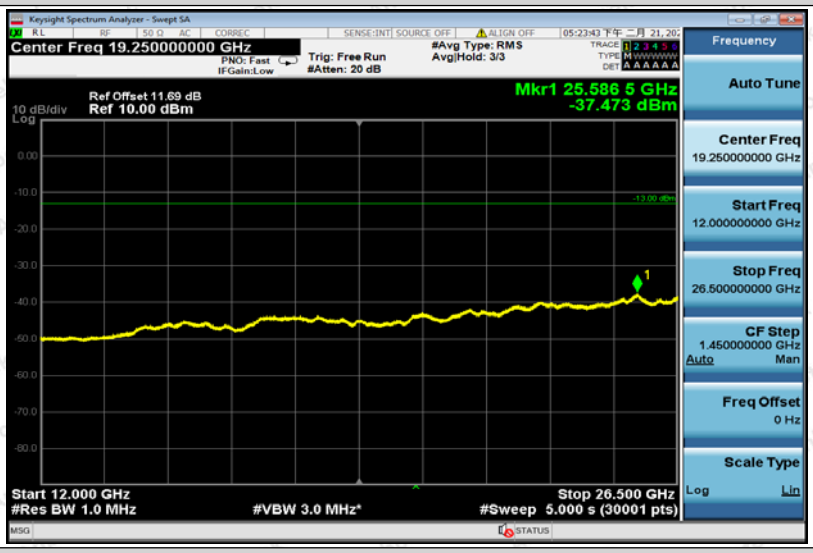

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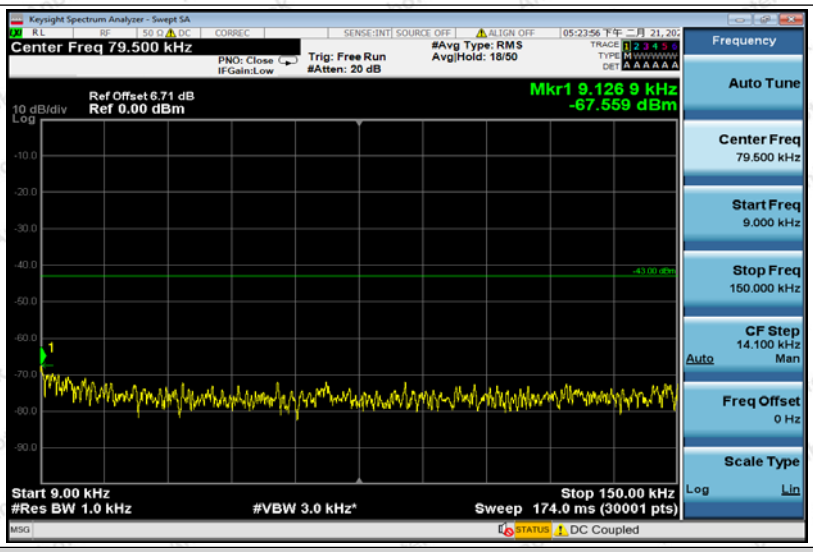

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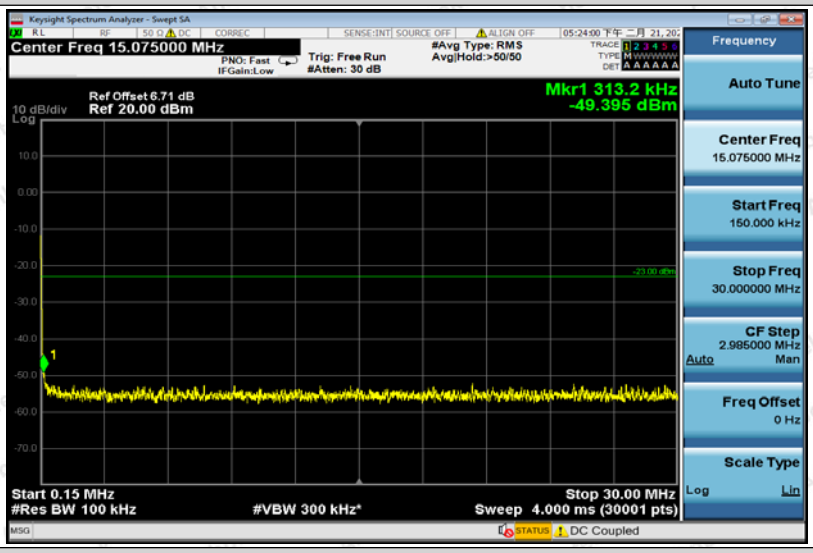

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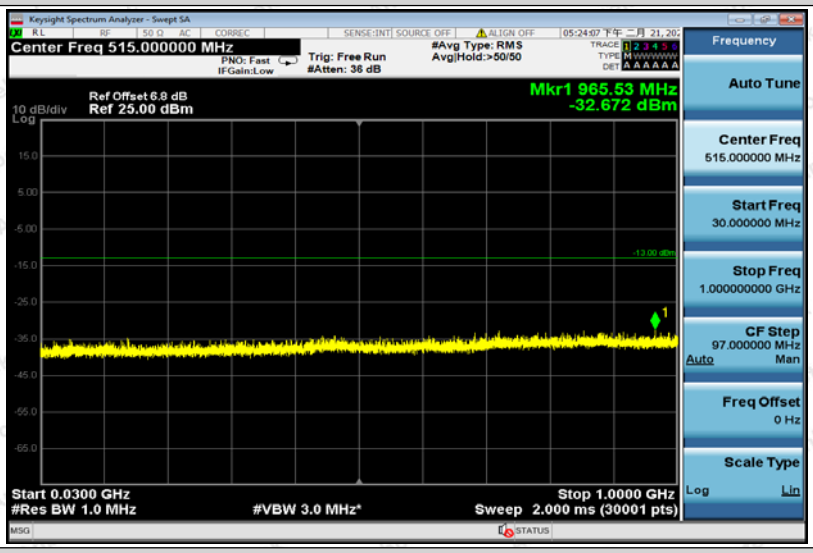

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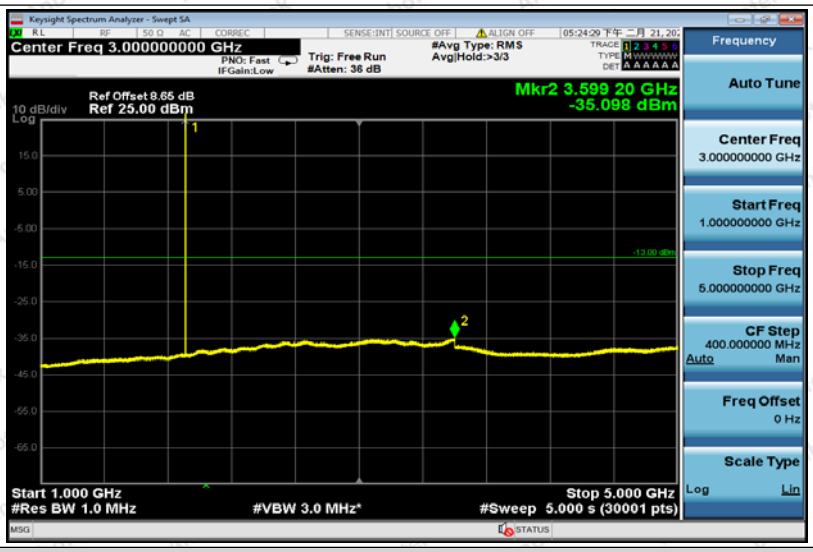

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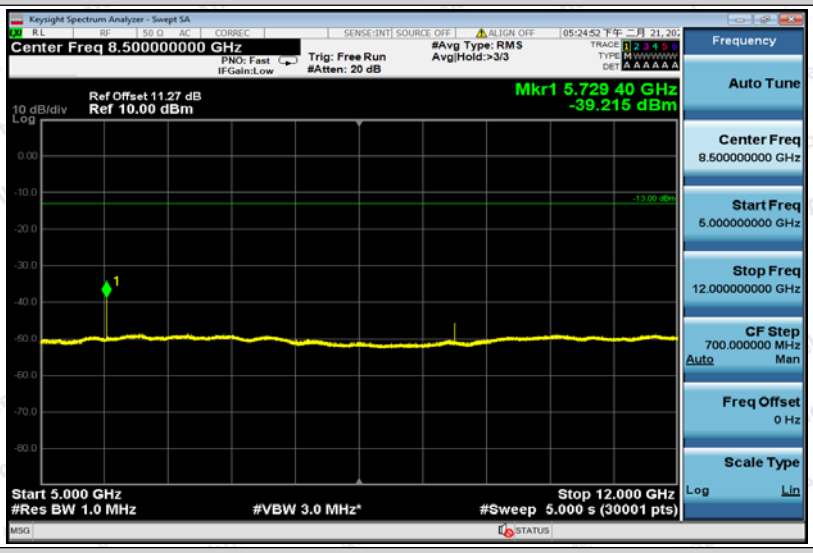

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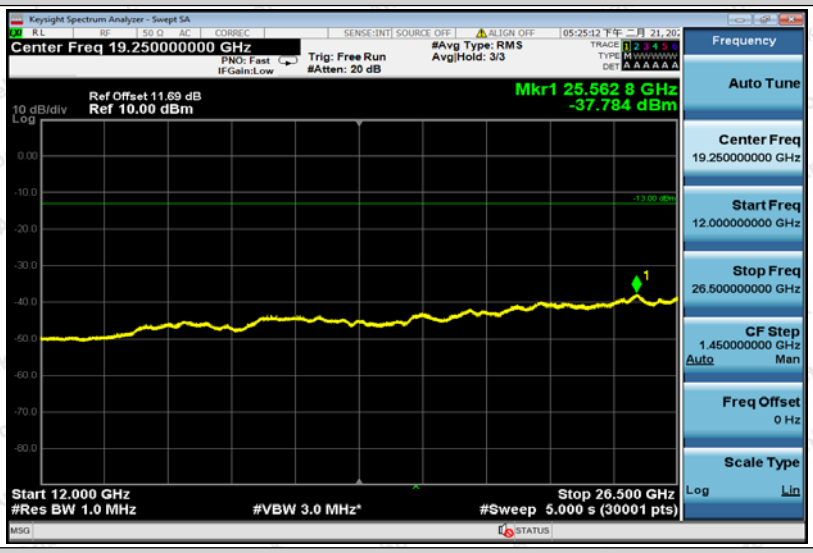

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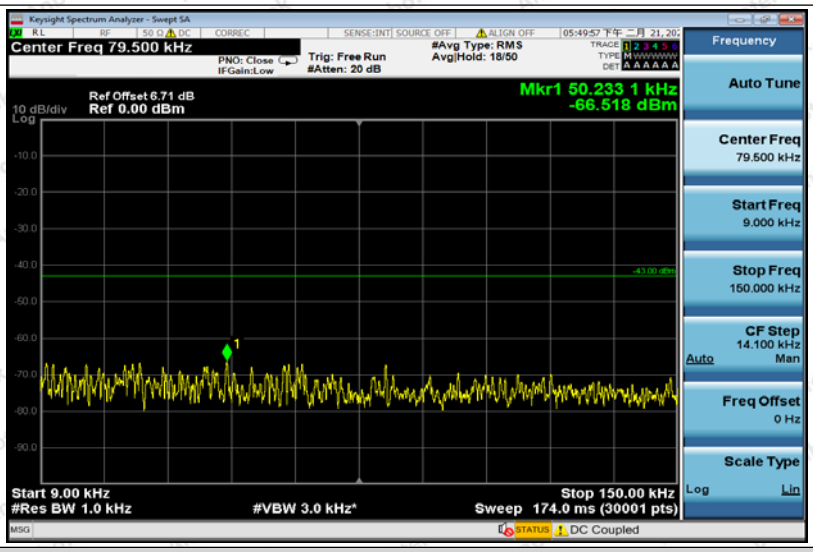

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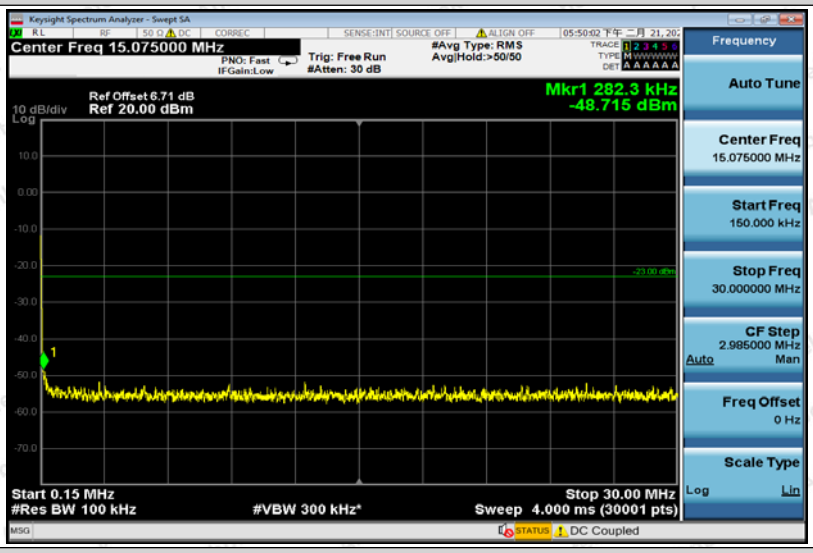

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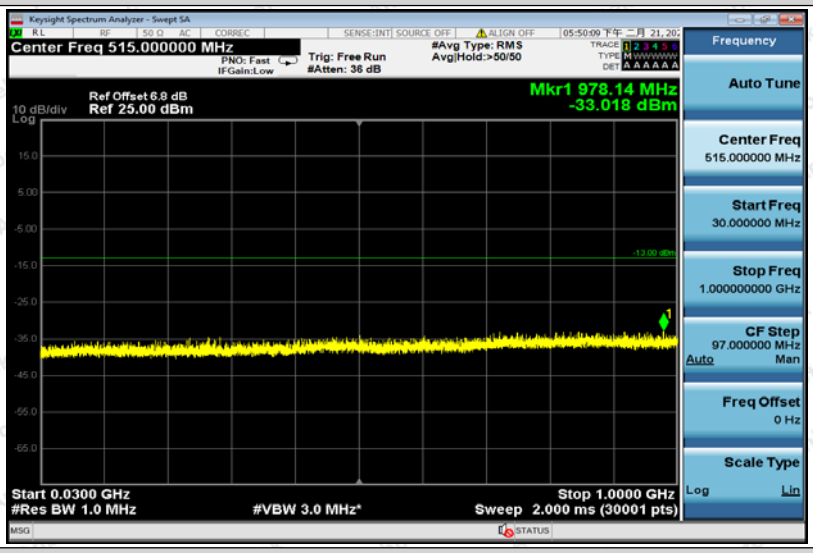

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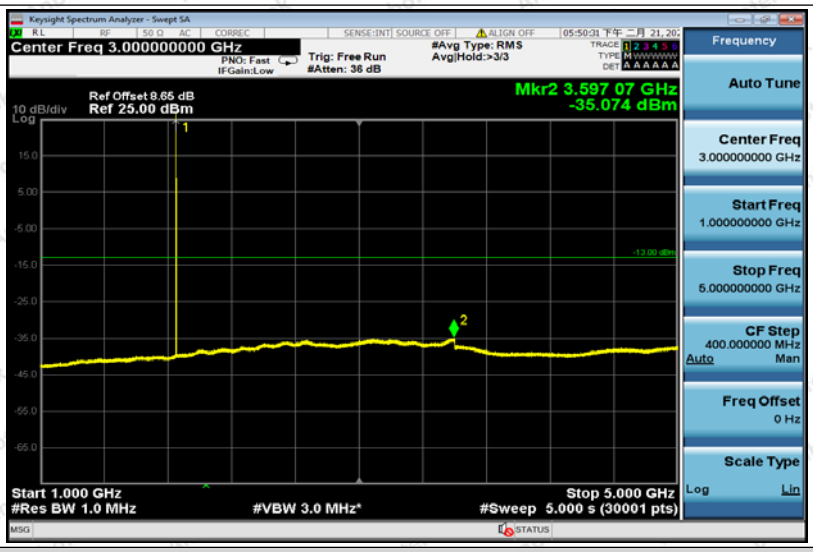

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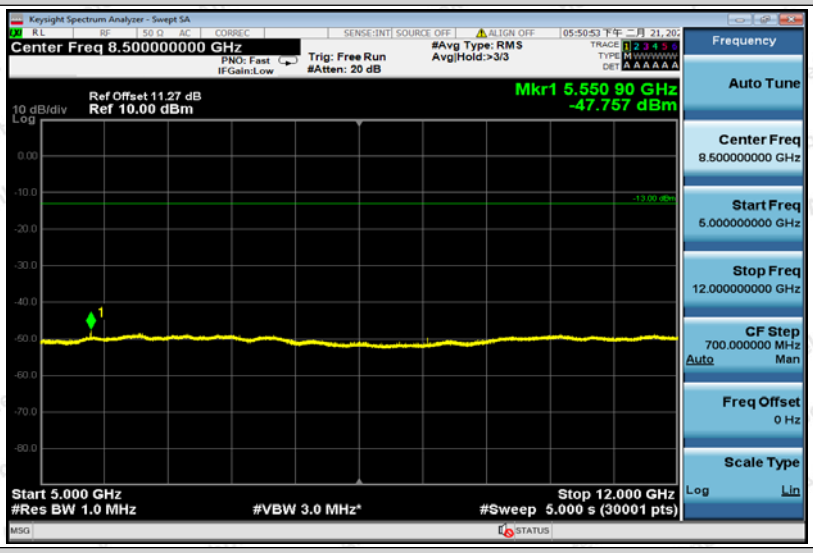

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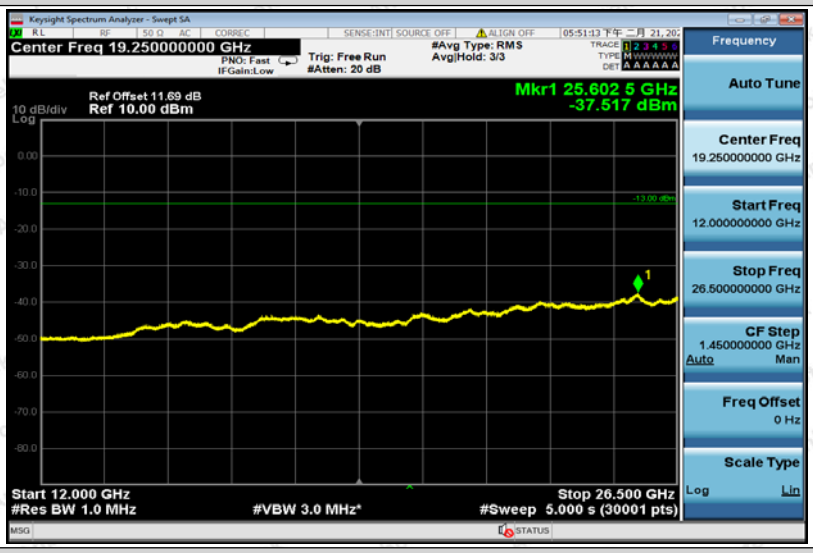

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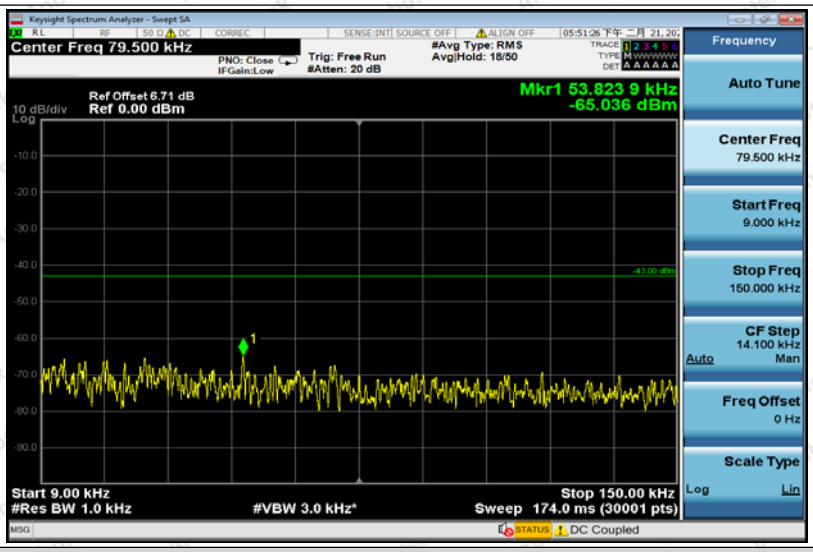

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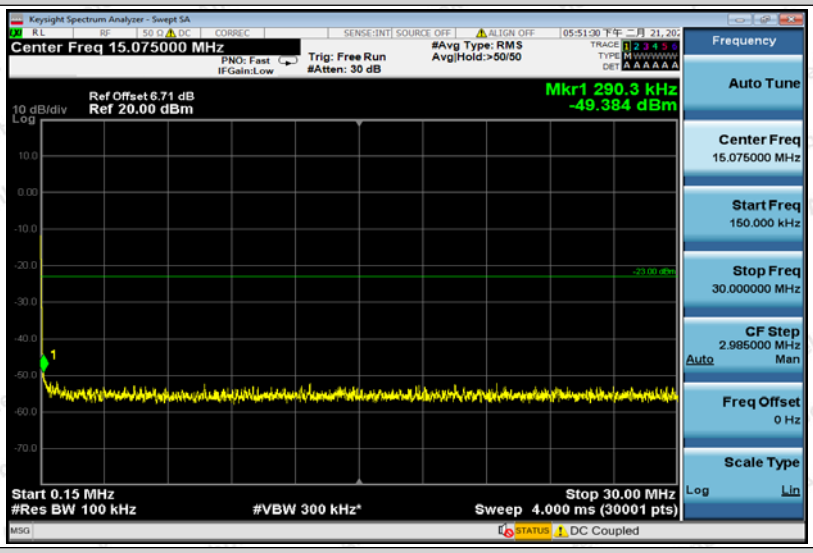

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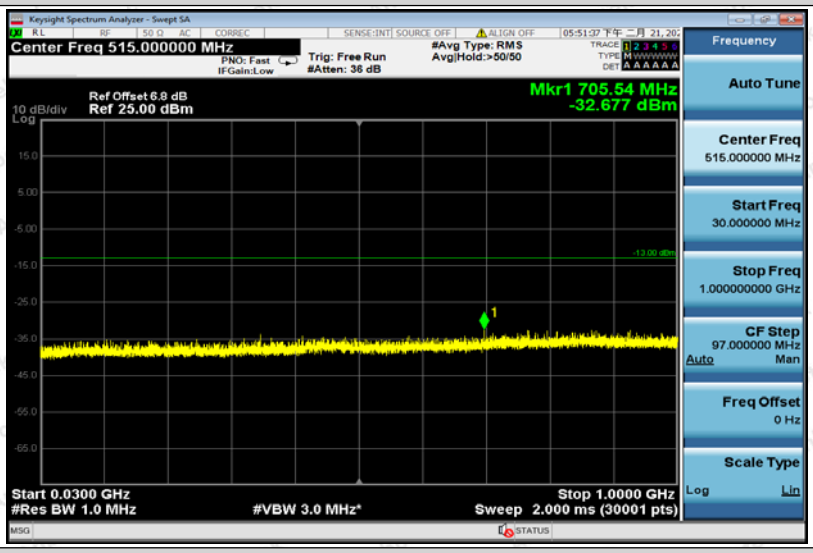

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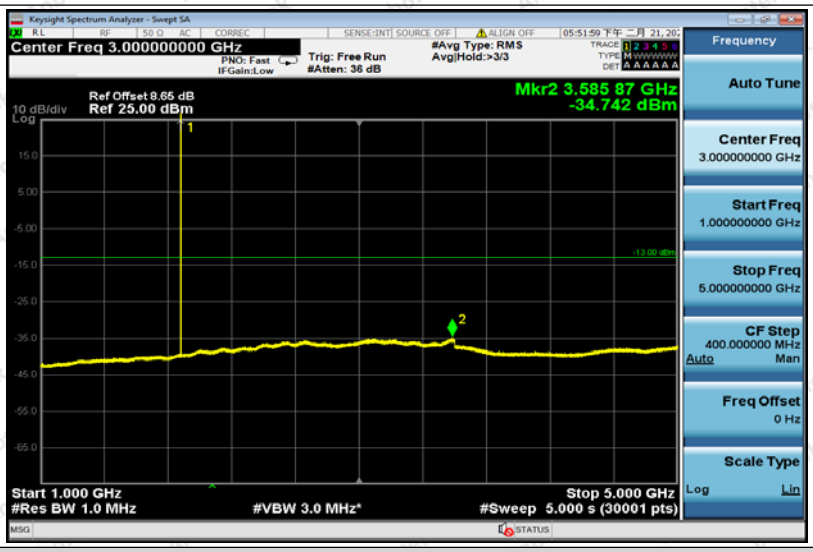

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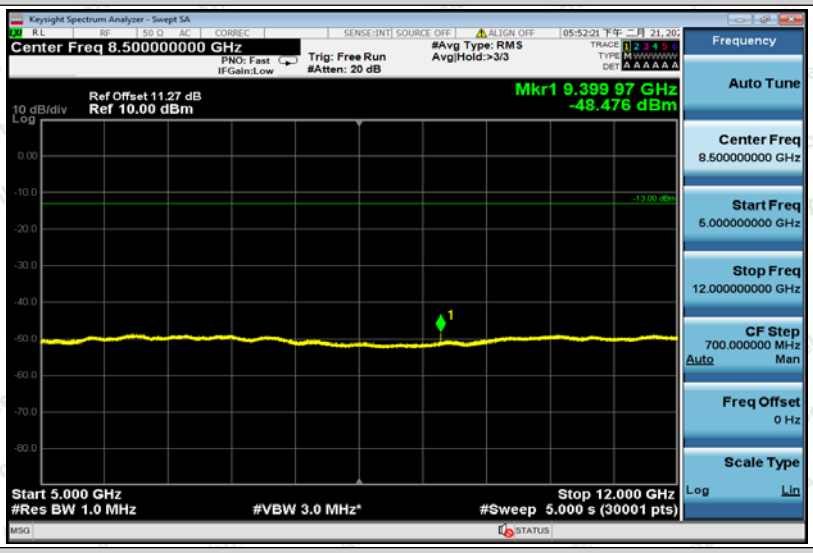

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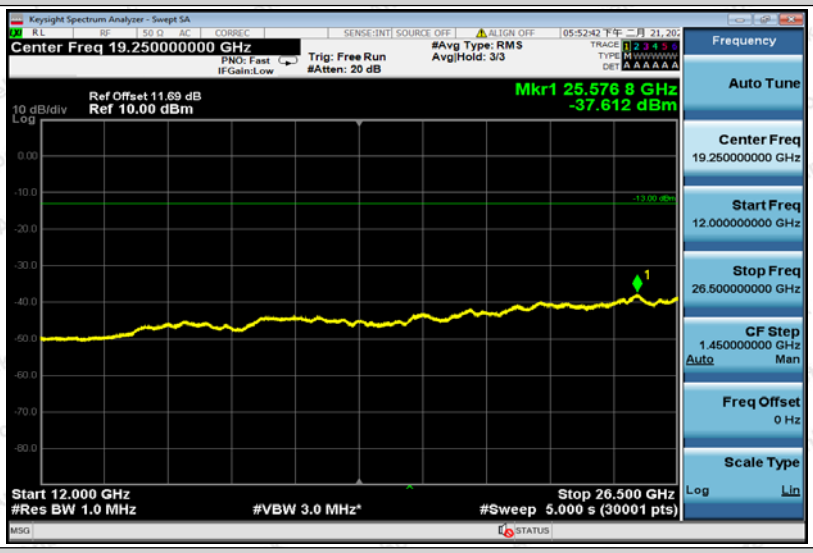

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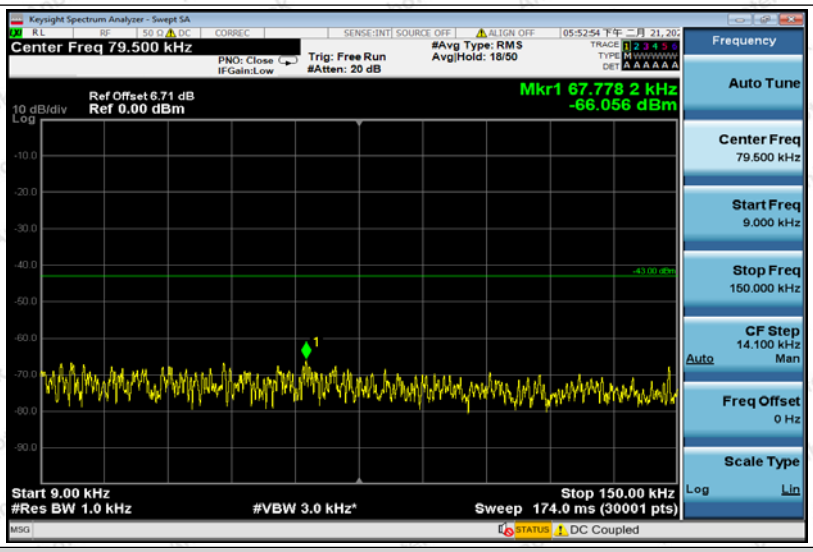

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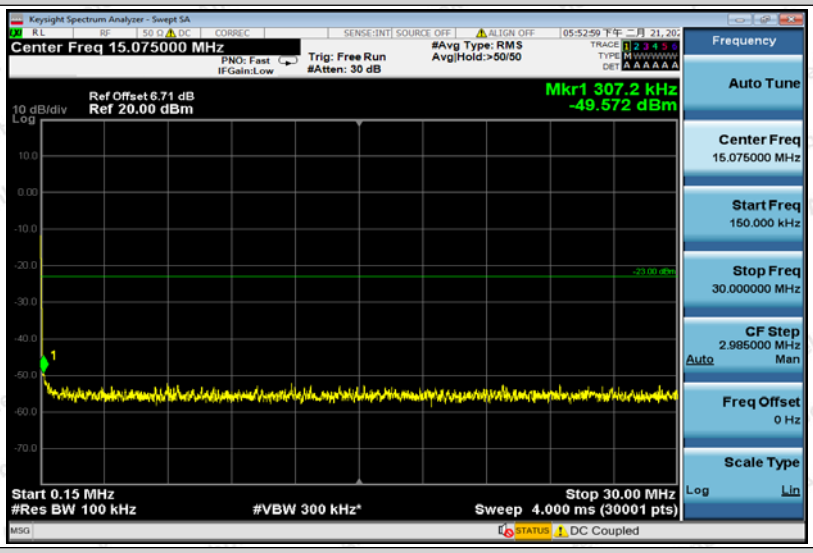

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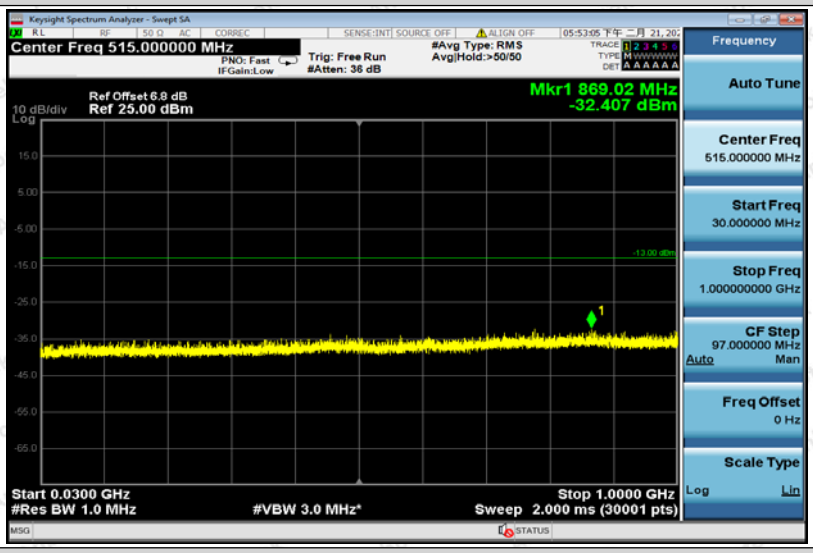

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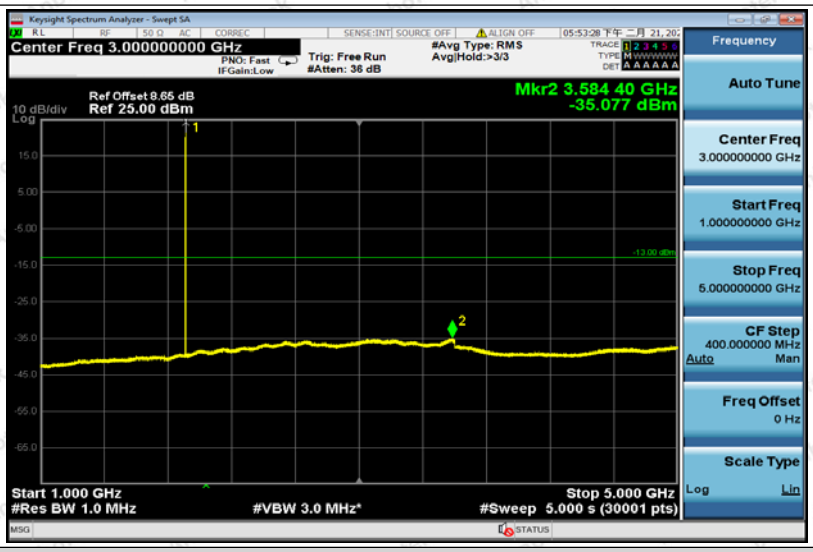

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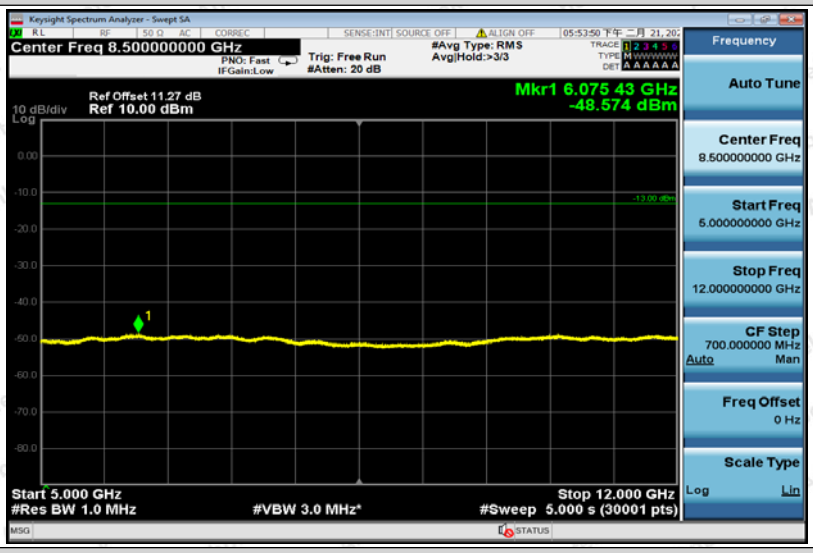

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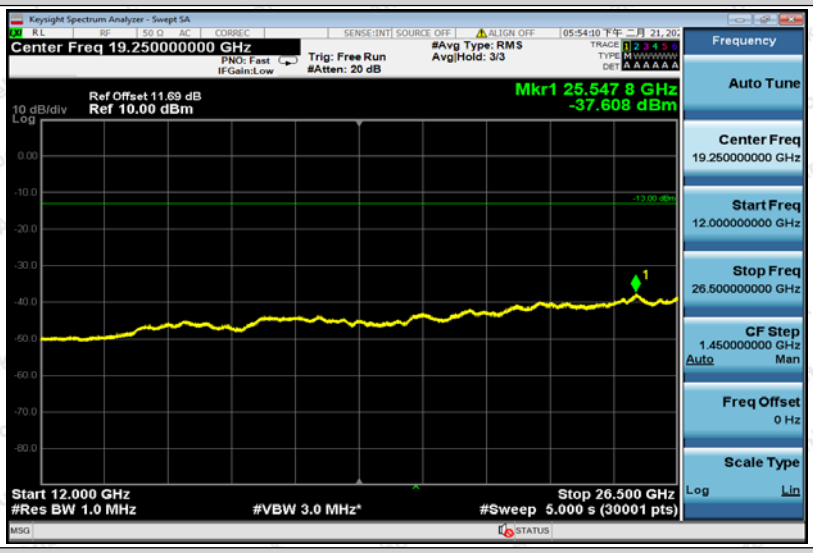

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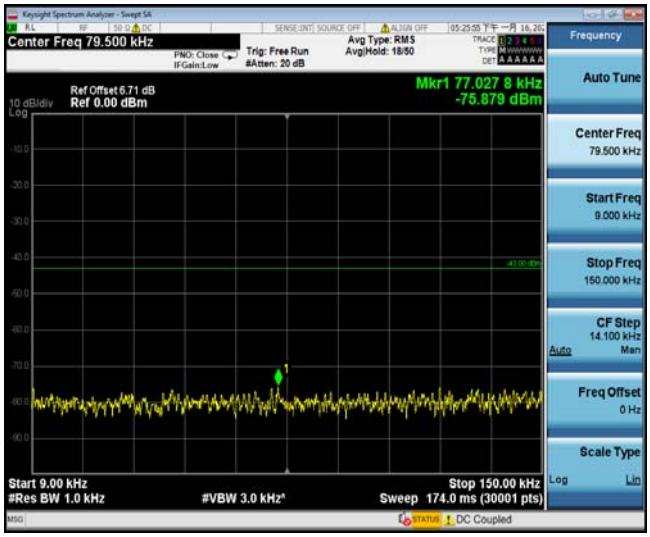
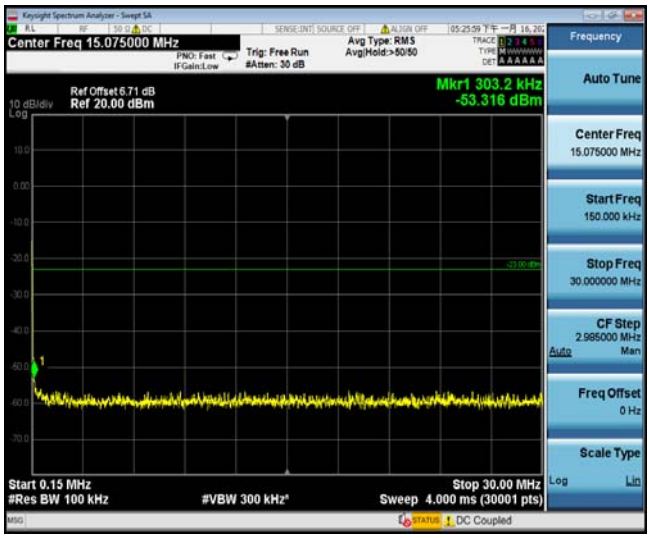


Band II_9262



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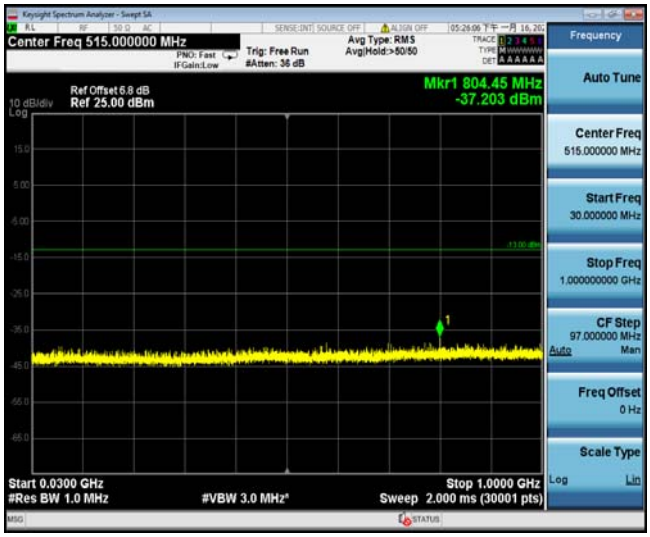
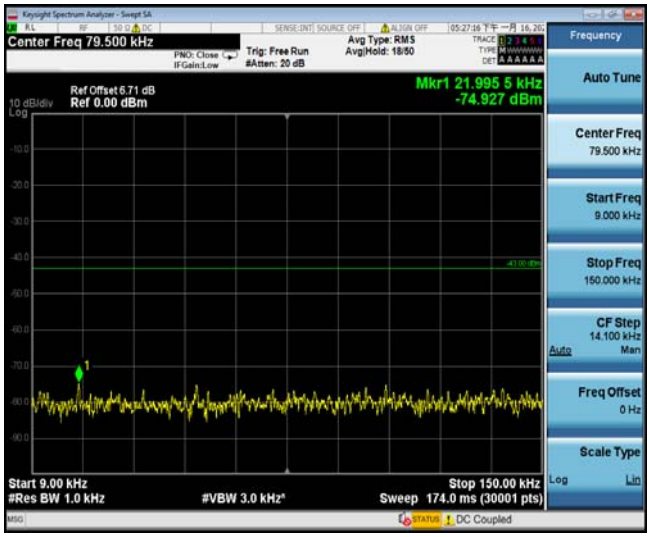


Band II_9262

Band II_9262

Band II_9262

Band II_9262



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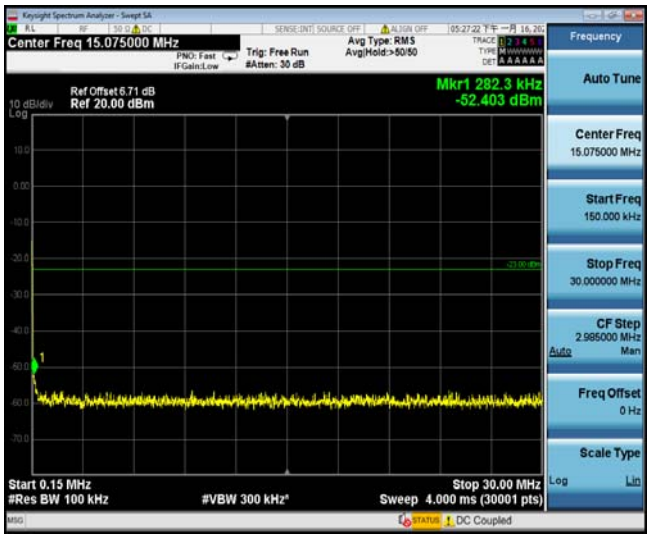

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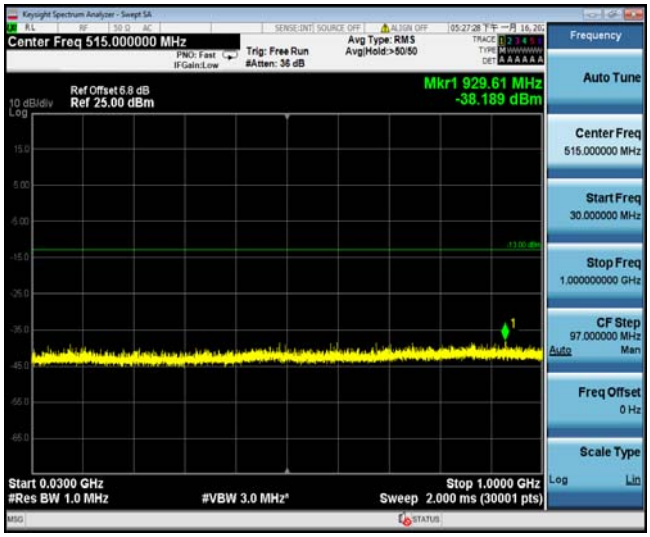
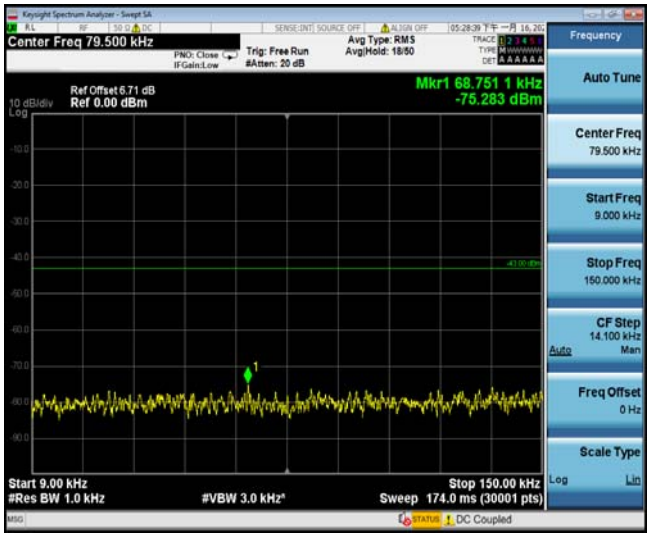


Band II_9400

Band II_9400

Band II_9400

Band II_9400



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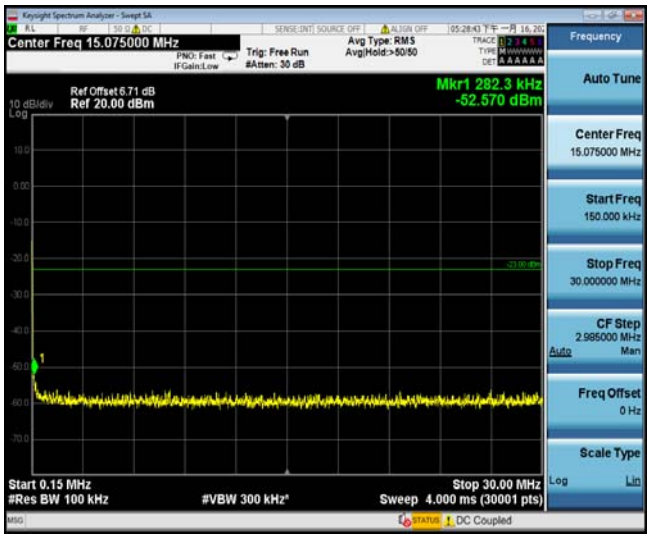

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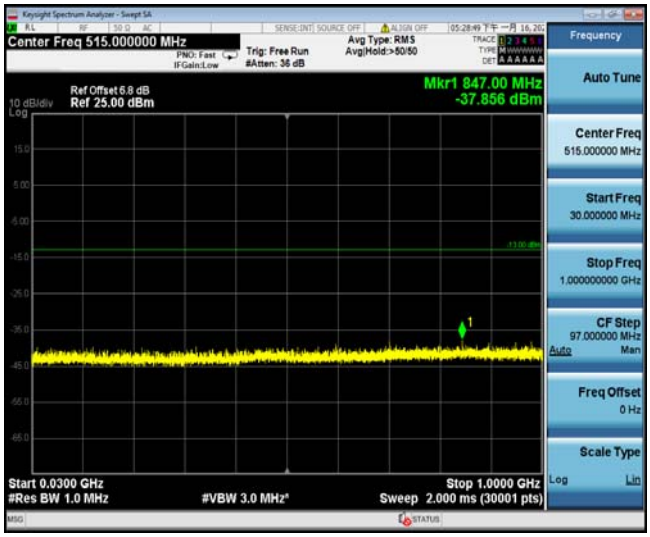
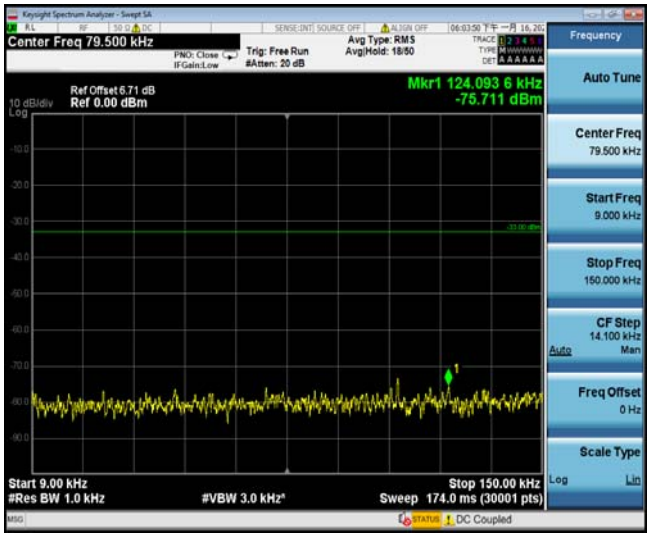


Band II_9538

Band II_9538

Band II_9538

Band II_9538



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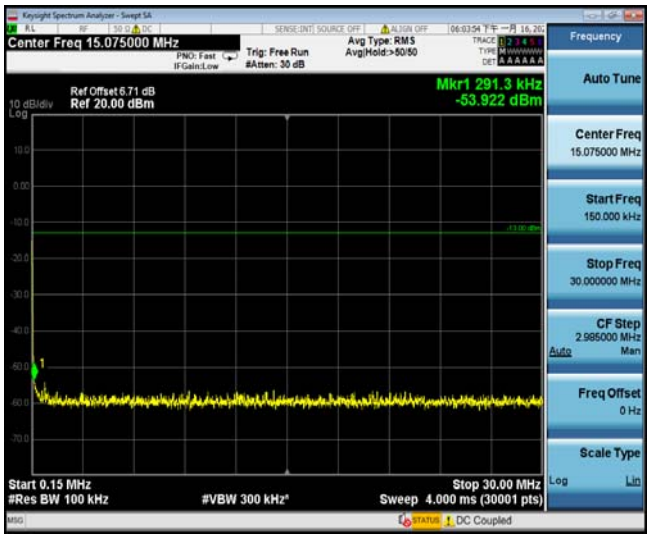

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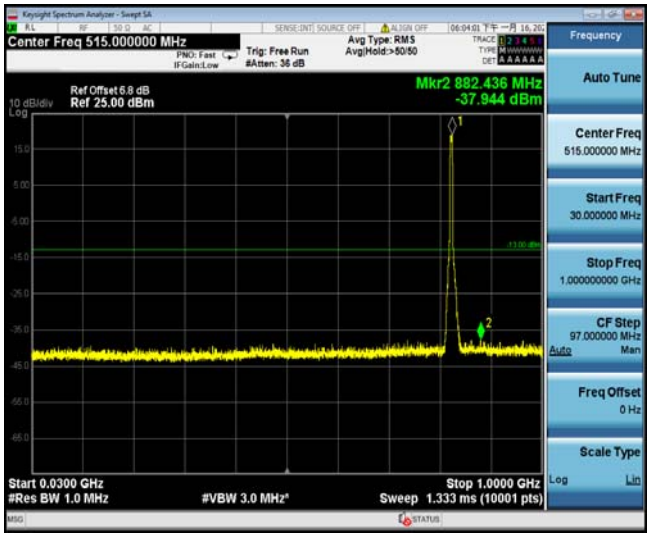
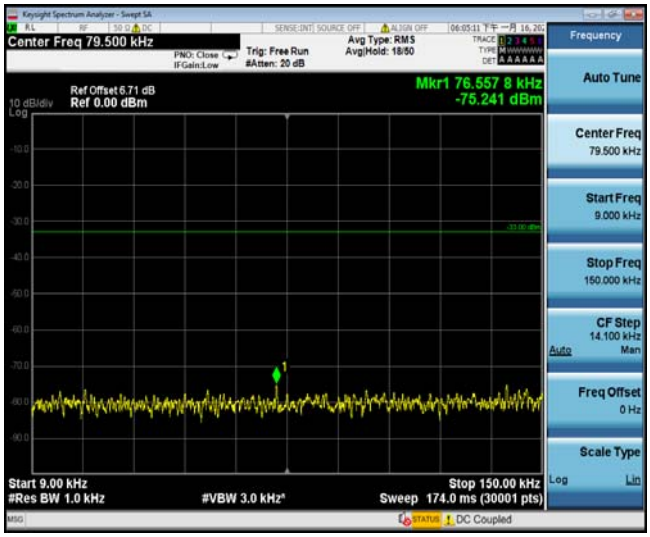


Band V_4132

Band V_4132

Band V_4132

Band V_4132



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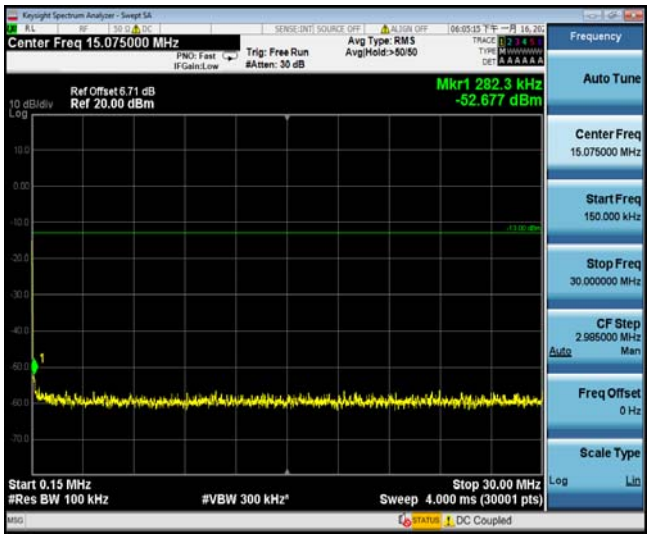

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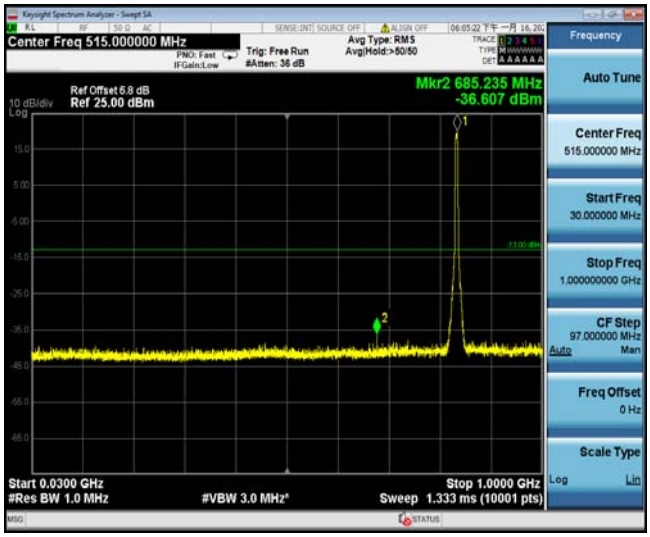
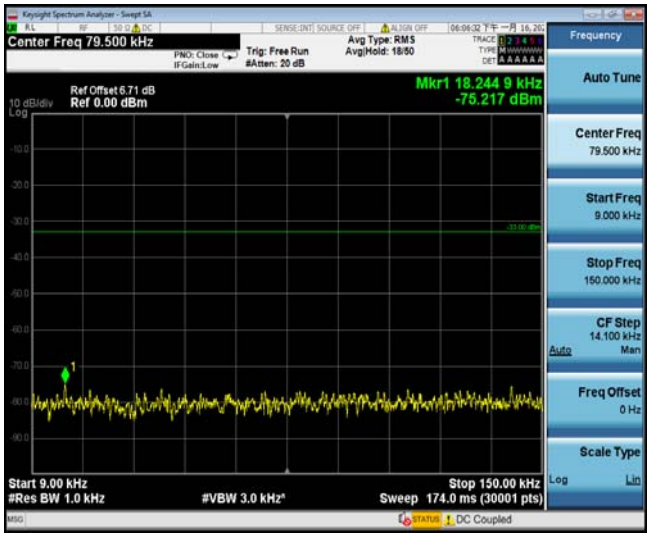


Band V_4182

Band V_4182

Band V_4182

Band V_4182



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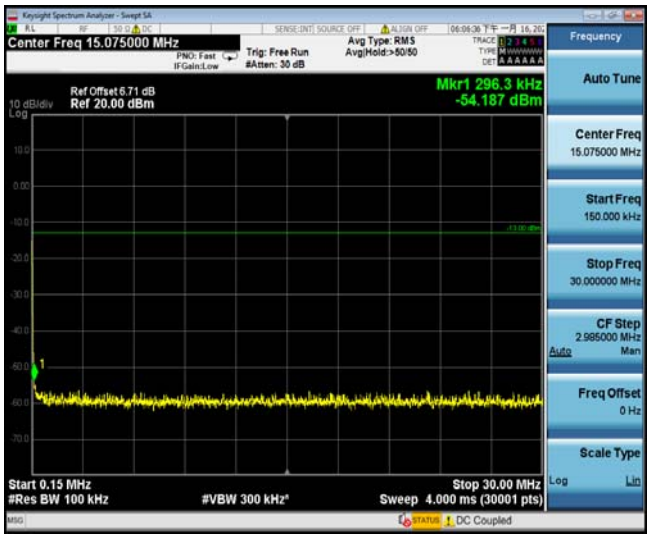
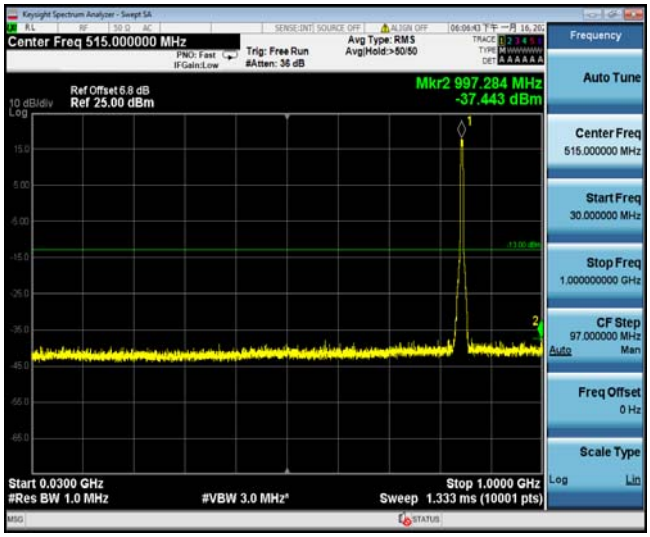


Band V_4233



Band V_4233

Band V_4233

Band V_4233

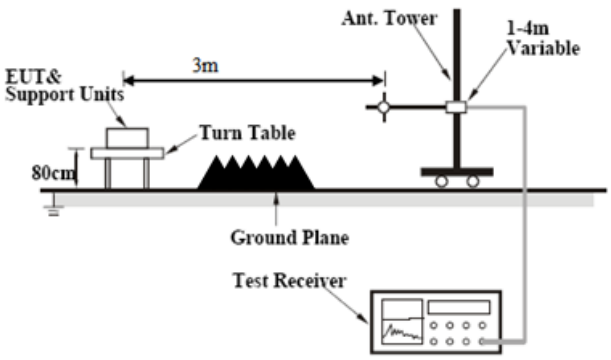
Band V_4233

8. Spurious Radiated Emissions

8.1. Test Standard and Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

8.2. Test Setup



8.3. Test Procedure

1.The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

2.The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

3.Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Sample Calculation:

EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)

8.4. Test Data

Please to see the following pages

GPRS 850,Middle Channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
280.6	-50.58	V	5.4	0.24	-45.42	-13	-32.42
280.6	-50.97	H	5.4	0.24	-45.81	-13	-32.81
1673.2	-49.06	V	7.95	0.78	-41.89	-13	-28.89
1673.2	-48.85	H	7.95	0.78	-41.68	-13	-28.68
2509.8	-43.71	V	9.89	2.39	-36.21	-13	-23.21
2509.8	-43.81	H	9.89	2.39	-36.31	-13	-23.31

GPRS 1900 , Middle Channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
280.6	-50.23	V	5.4	0.24	-45.07	-13	-32.07
280.6	-49.38	H	5.4	0.24	-44.22	-13	-31.22
3760	-47.28	V	10.25	2.73	-39.76	-13	-26.76
3760	-47.58	H	10.25	2.73	-40.06	-13	-27.06

WCDMA Band V,Middle Channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
280.6	-49.47	V	5.4	0.24	-44.31	-13	-31.31

280.6	-50.29	H	5.4	0.24	-45.13	-13	-32.13
1673.2	-48.64	V	7.95	0.78	-41.47	-13	-28.47
1673.2	-48.92	H	7.95	0.78	-41.75	-13	-28.75
2509.8	-45.14	V	9.89	2.39	-37.64	-13	-24.64
2509.8	-43.78	H	9.89	2.39	-36.28	-13	-23.28

WCDMA Band II , Middle Channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
280.6	-50.43	V	5.4	0.24	-45.27	-13	-32.27
280.6	-50.15	H	5.4	0.24	-44.99	-13	-31.99
3760	-46.69	V	10.25	2.73	-39.17	-13	-26.17
3760	-48.43	H	10.25	2.73	-40.91	-13	-27.91

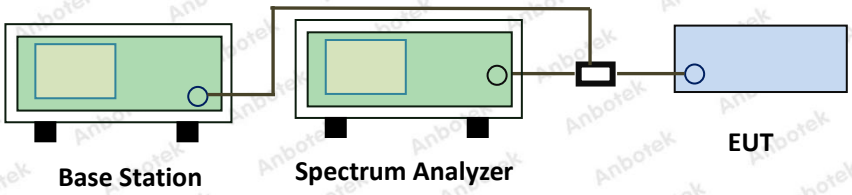
Note: The measurment have been performed for all mode, only report the worst case.

9. Band Edge Compliance

9.1. Test Standard and Limit

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

9.2. Test Setup



9.3. Test Procedure

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. For the bandedge: 2G:Set the RBW=5.1KHz, VBW = 15KHz, Sweep time= Auto

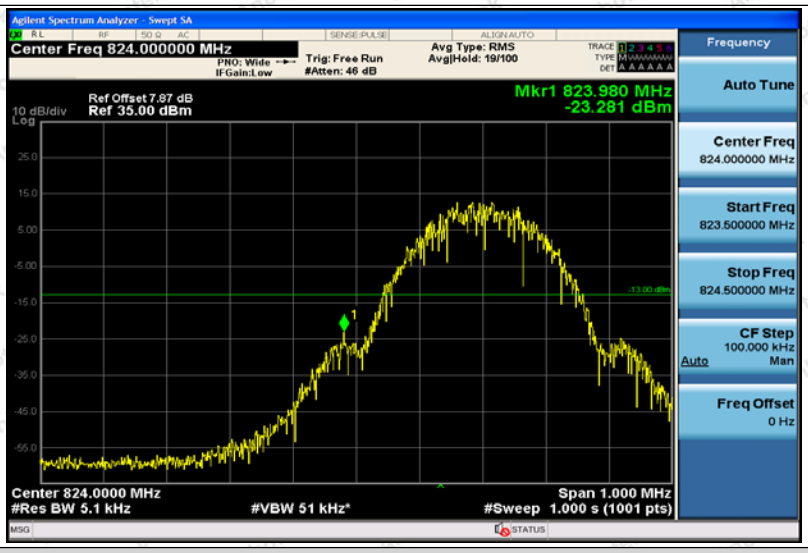
9.4. Test Data

Band	Channel	Value(dBm)	Limit(dBm)	Verdict
GPRS850	128	-23.28	-13	PASS
GPRS850	251	-22.71	-13	PASS
EGPRS850	128	-25.72	-13	PASS
EGPRS850	251	-27.92	-13	PASS
GPRS1900	512	-21.18	-13	PASS
GPRS1900	810	-20.88	-13	PASS
EGPRS1900	512	-17.62	-13	PASS
EGPRS1900	810	-20.14	-13	PASS

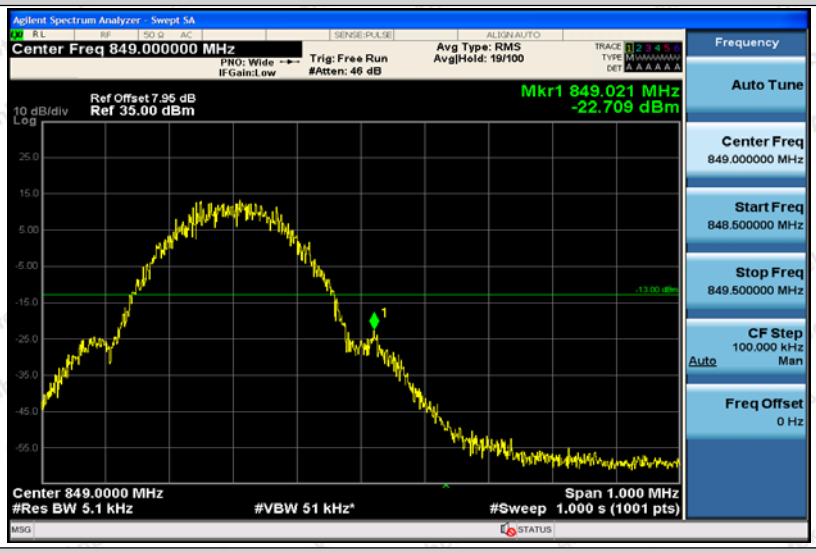
Band Edge only reflects the worst mode WCDMA data emissions.

Band	Channel	Value(dBm)	Limit(dBm)	Verdict
Band II	9262	-17.78	-13	PASS
Band II	9538	-16.69	-13	PASS
Band V	4132	-18.33	-13	PASS
Band V	4233	-18.41	-13	PASS

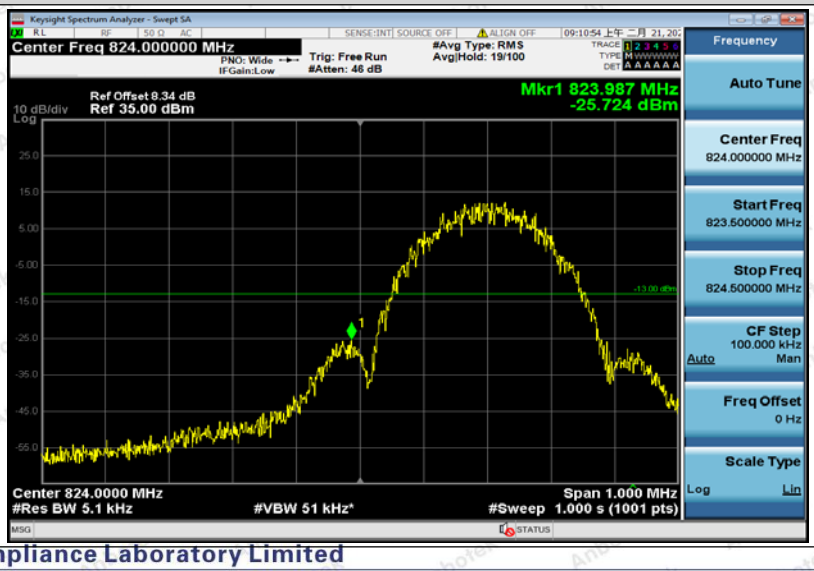
Test Plots



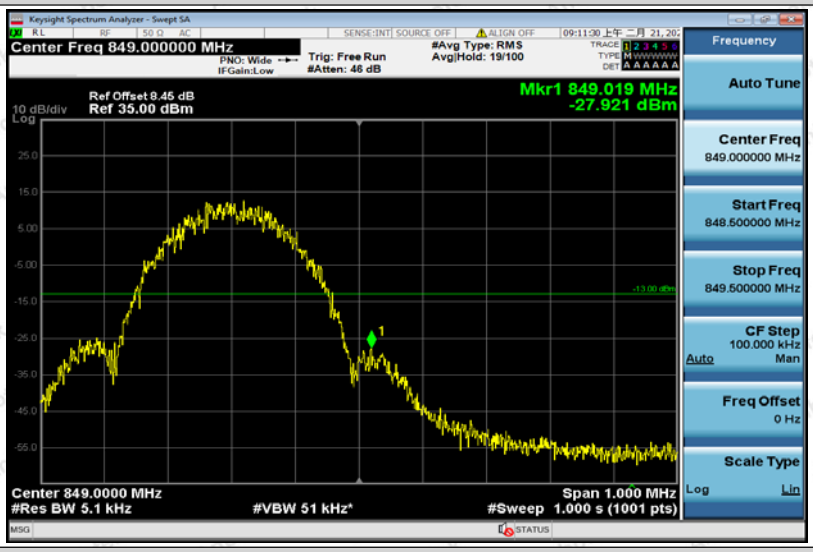
GPRS850-128



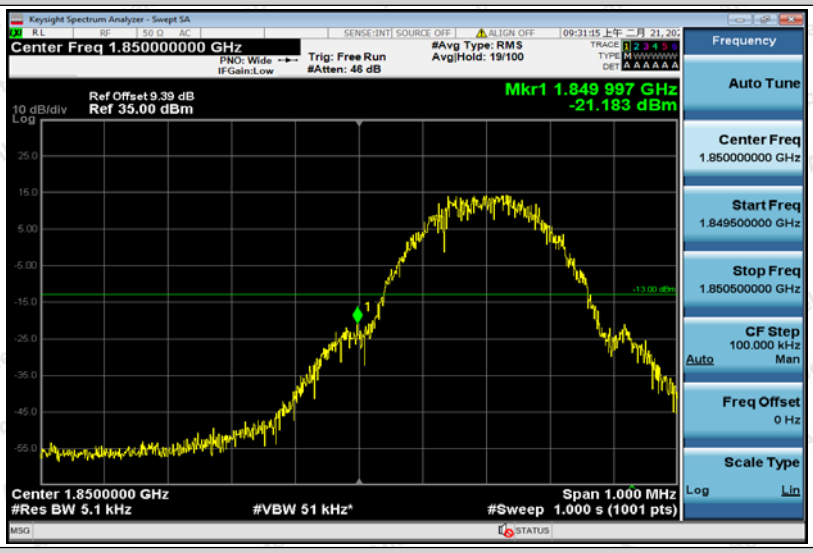
GPRS850-251



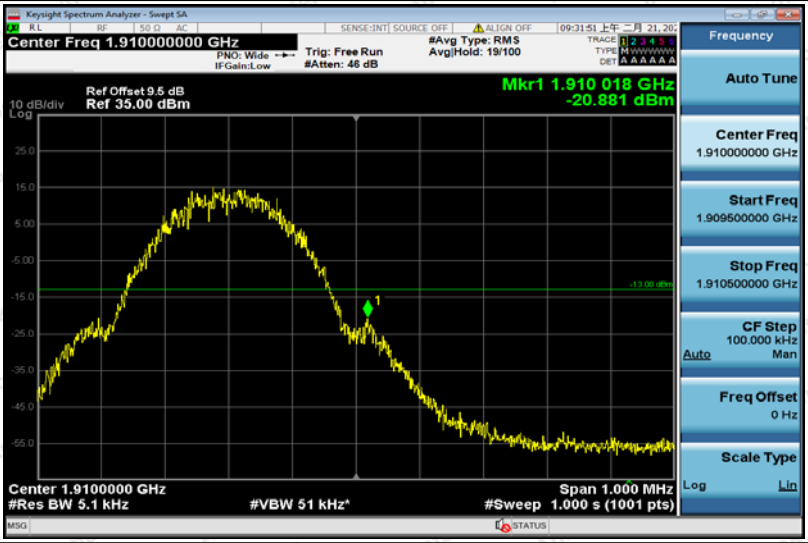
EGPRS850-128



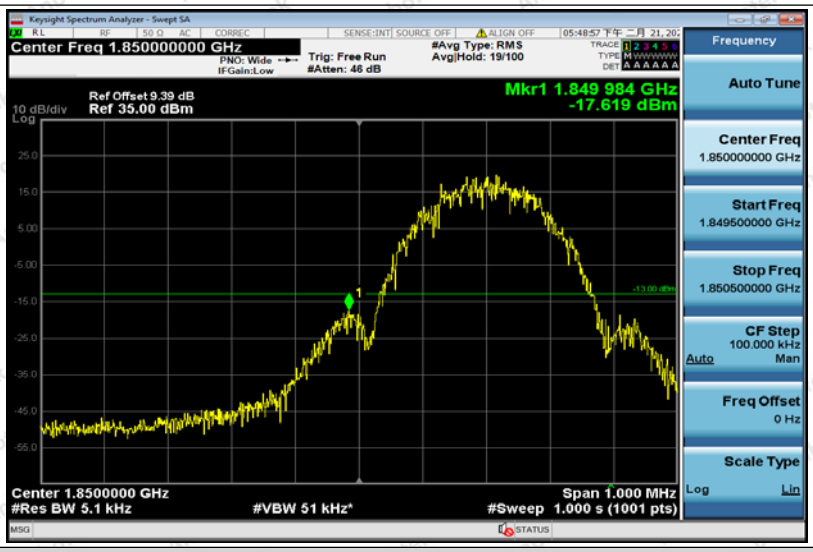
EGPRS850-251



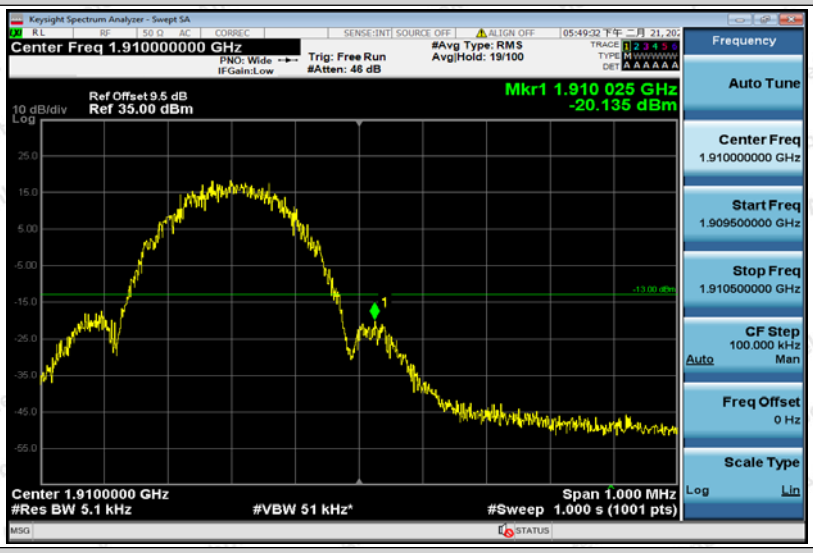
GPRS1900-512



GPRS1900-810



EGPRS1900-512



EGPRS1900-810

Band II_9262

Band II_9538

Band V_4132

Band V_4233

10. Frequency Stability

10.1. Test Standard and Limit

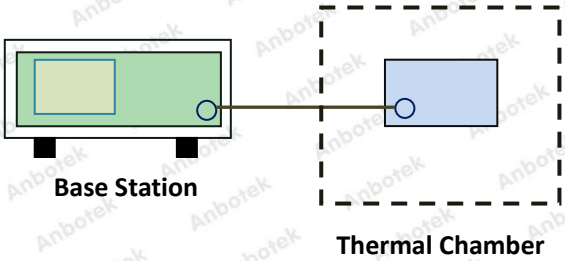
According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.

10.2. Test Setup



10.3. Test Procedure

A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage.

Limit: The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

10.4. Test Data

GPRS 850 Test Frequency: 836.6MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	14	0.0167	2.5
-20		5	0.0060	2.5
-10		16	0.0191	2.5
0		8	0.0096	2.5
10		8	0.0096	2.5
20		4	0.0048	2.5
30		11	0.0131	2.5
40		4	0.0048	2.5
50		16	0.0191	2.5
20	3.4	5	0.0060	2.5
20	4.1	6	0.0072	2.5

EGPRS 850 Test Frequency: 836.6MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	12	0.0143	2.5
-20		12	0.0143	2.5
-10		13	0.0155	2.5
0		16	0.0191	2.5
10		14	0.0167	2.5
20		13	0.0155	2.5
30		14	0.0167	2.5
40		14	0.0167	2.5
50		13	0.0155	2.5
20	3.4	10	0.0120	2.5
20	4.1	11	0.0131	2.5

GPRS 1900 Test Frequency：1880MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	-5	-0.0027	2.5
-20		-8	-0.0043	2.5
-10		-12	-0.0064	2.5
0		-1	-0.0005	2.5
10		-11	-0.0059	2.5
20		-8	-0.0043	2.5
30		-2	-0.0011	2.5
40		-1	-0.0005	2.5
50		-3	-0.0016	2.5
20	3.4	-2	-0.0011	2.5
20	4.1	-3	-0.0016	2.5

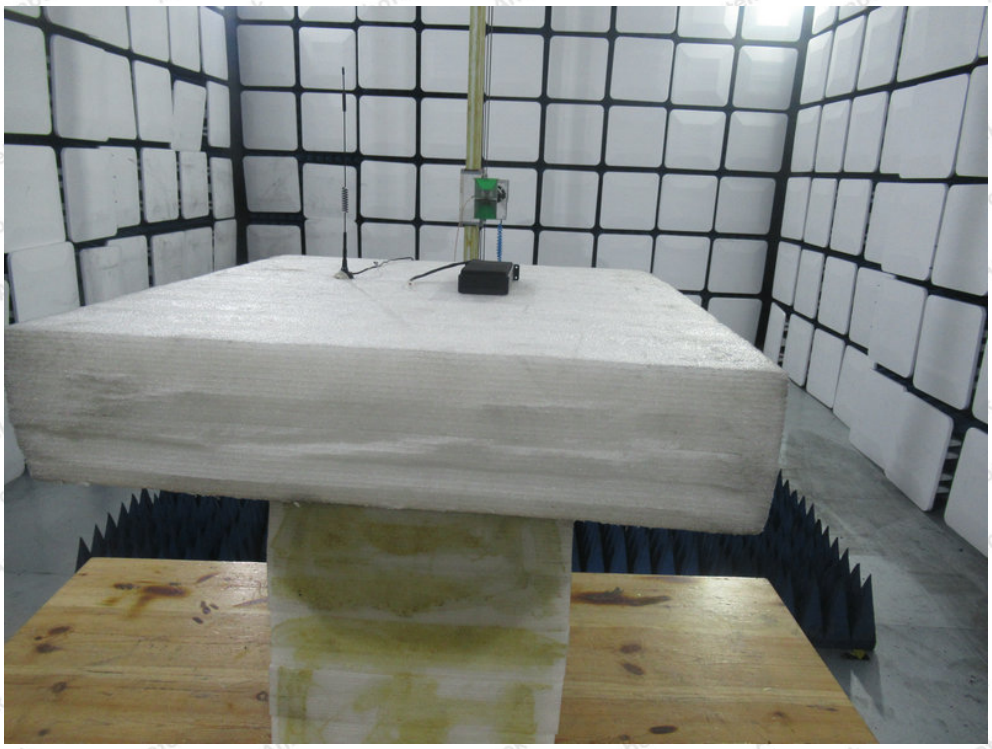
EGPRS 1900 Test Frequency：1880MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	-1	-0.0005	2.5
-20		-6	-0.0032	2.5
-10		-1	-0.0005	2.5
0		-2	-0.0011	2.5
10		-1	-0.0005	2.5
20		-2	-0.0011	2.5
30		2	0.0011	2.5
40		-1	-0.0005	2.5
50		2	0.0011	2.5
20	3.4	0	0.0000	2.5
20	4.1	-2	-0.0011	2.5

WCDMA Band V Test Frequency: 836.4MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	5	0.0060	2.5
-20		-1	-0.0012	2.5
-10		-1	-0.0012	2.5
0		4	0.0048	2.5
10		1	0.0012	2.5
20		2	0.0024	2.5
30		-1	-0.0012	2.5
40		-2	-0.0024	2.5
50		1	0.0012	2.5
20	3.4	-1	-0.0012	2.5
20	4.1	-4	-0.0048	2.5

WCDMA Band II Test Frequency：1880MHz				
Temperature(℃)	Power Supply (V^DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	-1	-0.0005	2.5
-20		5	0.0027	2.5
-10		3	0.0016	2.5
0		-2	-0.0011	2.5
10		-3	-0.0016	2.5
20		-1	-0.0005	2.5
30		5	0.0027	2.5
40		2	0.0011	2.5
50		5	0.0027	2.5
20	3.4	-6	-0.0032	2.5
20	4.1	-2	-0.0011	2.5

APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Radiation Emission Test



APPENDIX II -- PHOTOGRAPH

Reference to the test report SZAWW191225010-01

---------- End of Report ----------