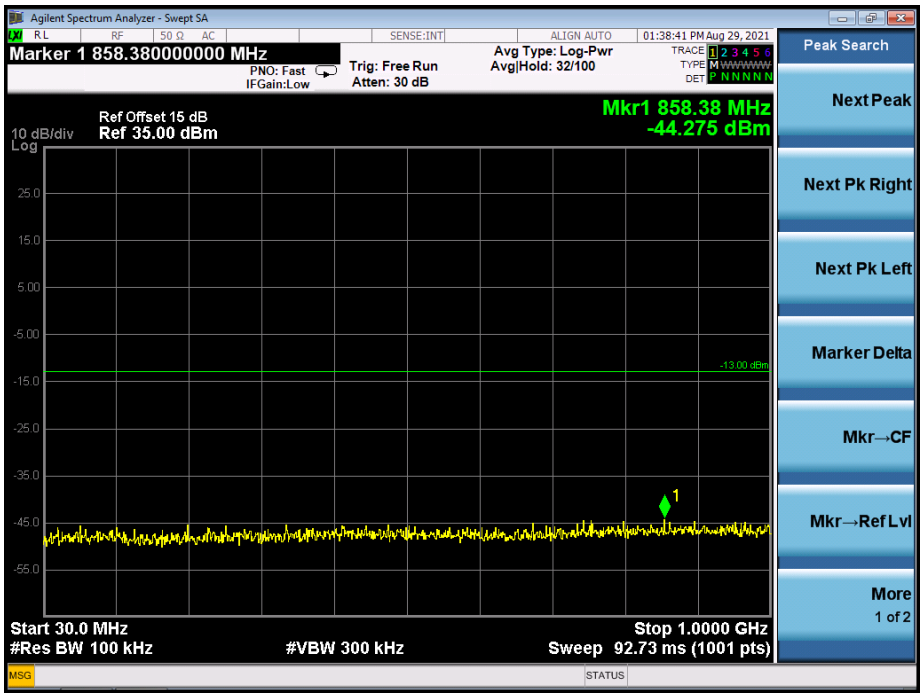
HSUPA Low Band Spurious Emission

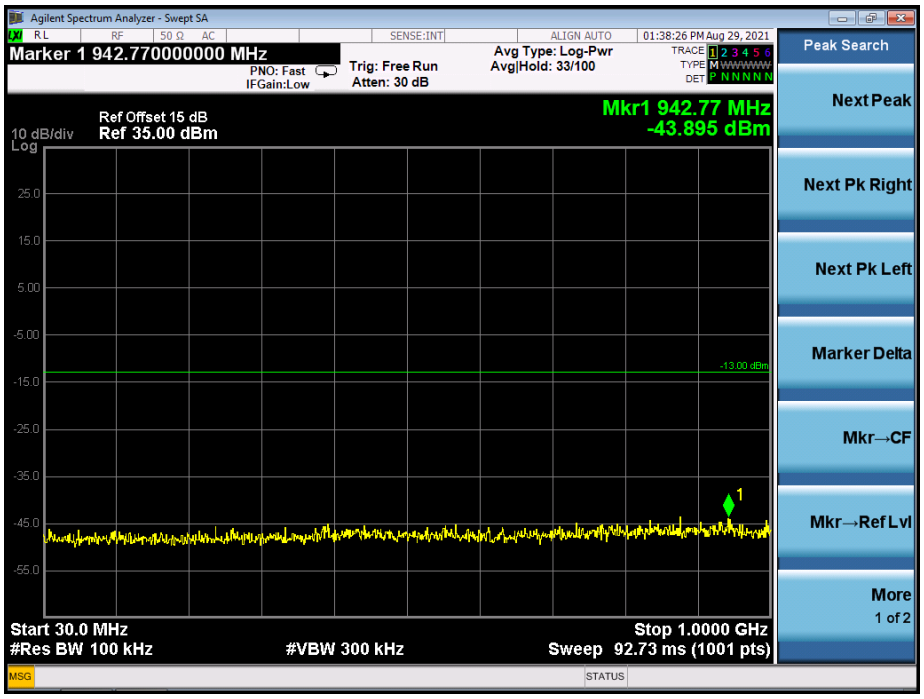
HSUPA High Band Spurious Emission

For WCDMA Band IV

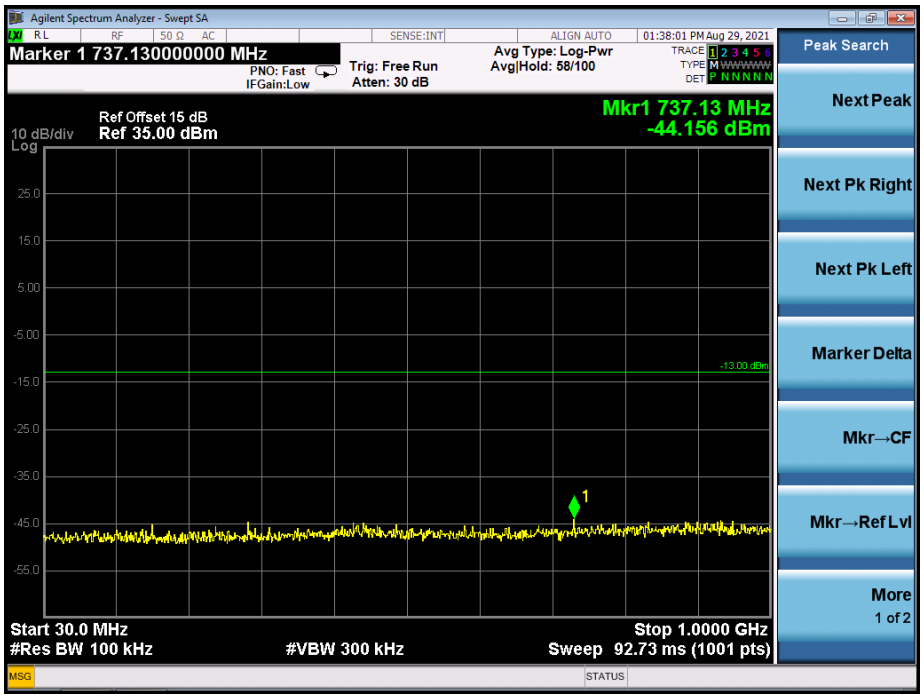
WCDMA Low Channel



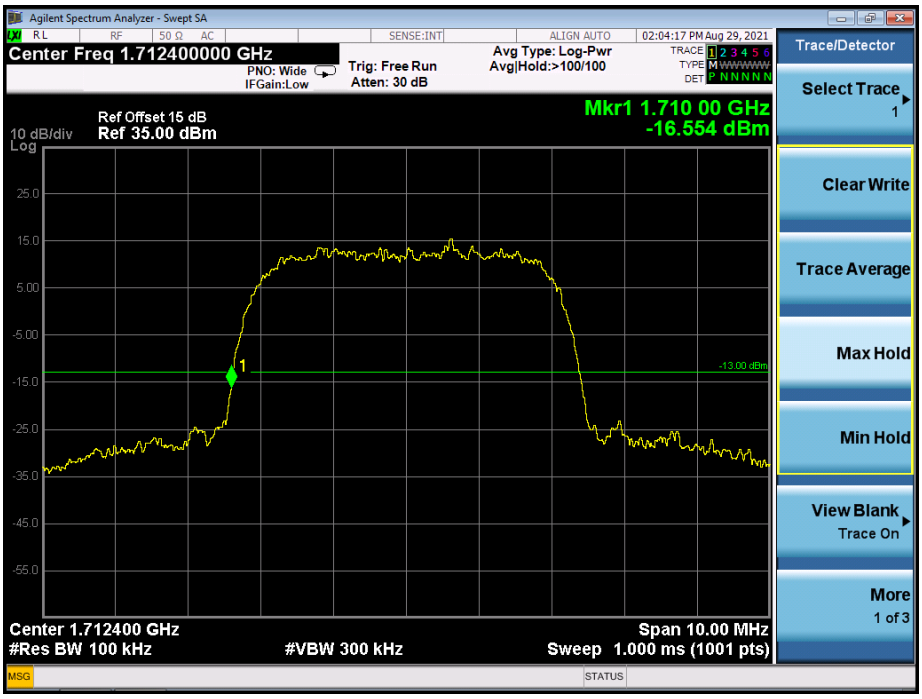
WCDMA Middle Channel



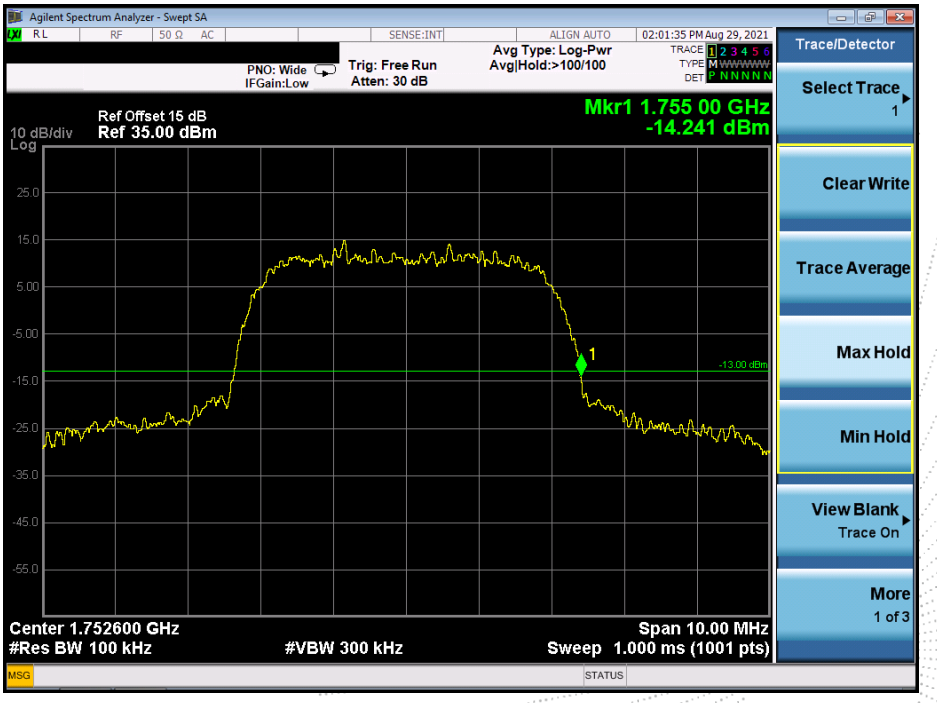
WCDMA High Channel



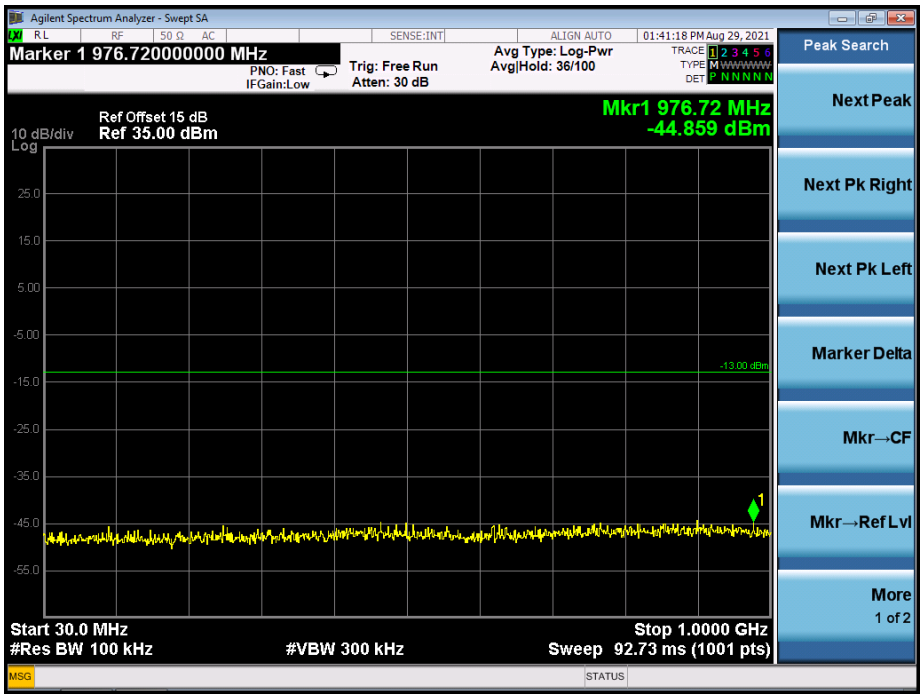
WCDMA Low Band Spurious Emission



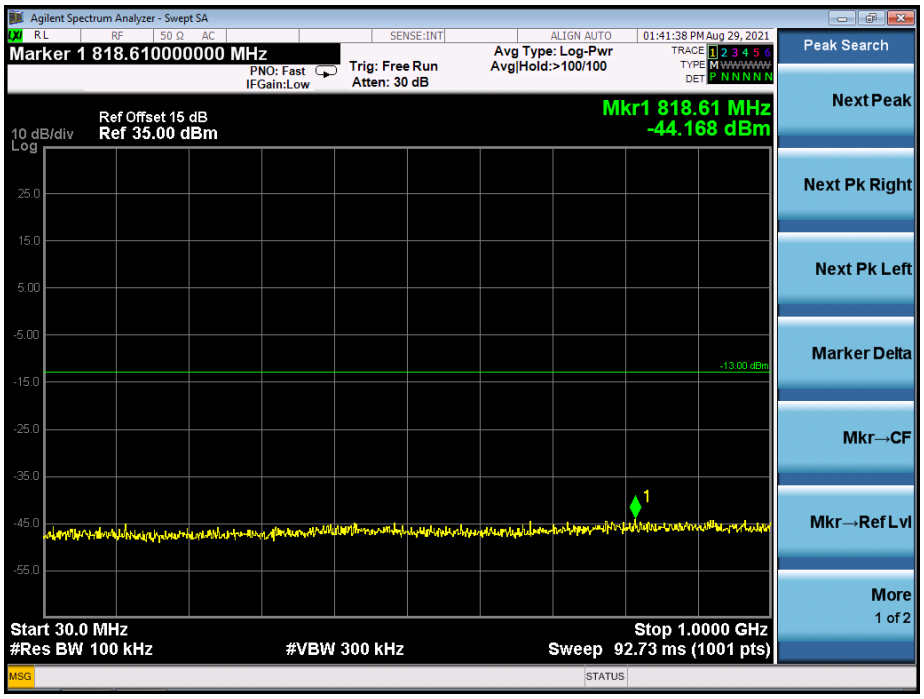
WCDMA High Band Spurious Emission



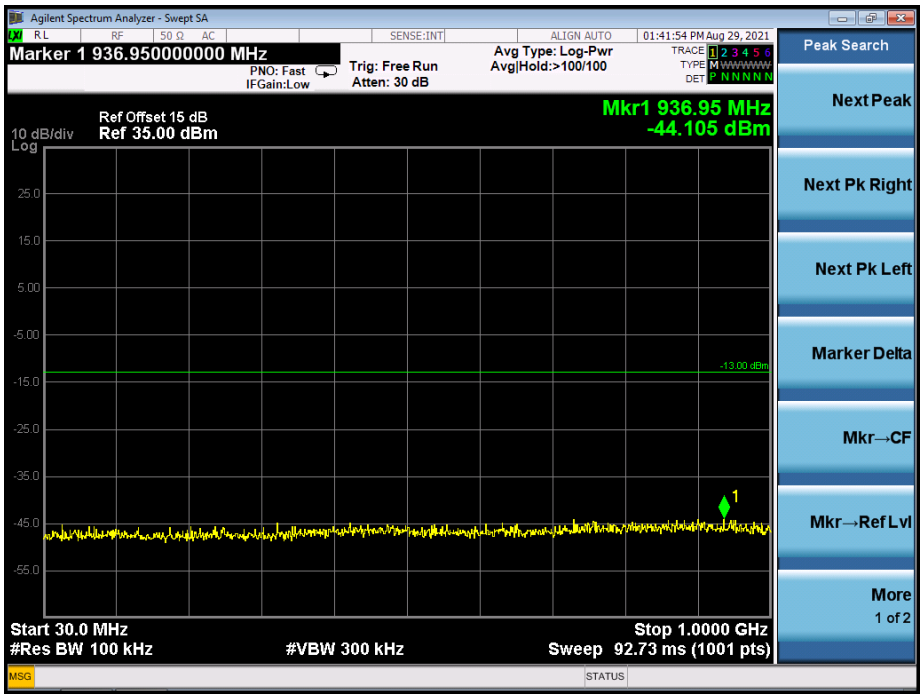
HSDPALow Channel



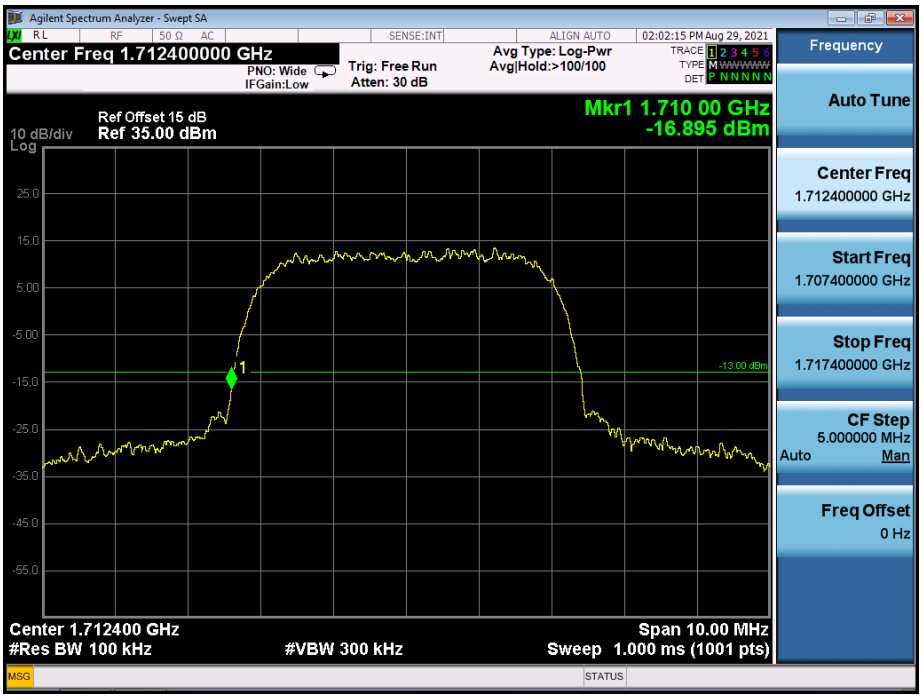
HSDPA Middle Channel



HSDPA High Channel

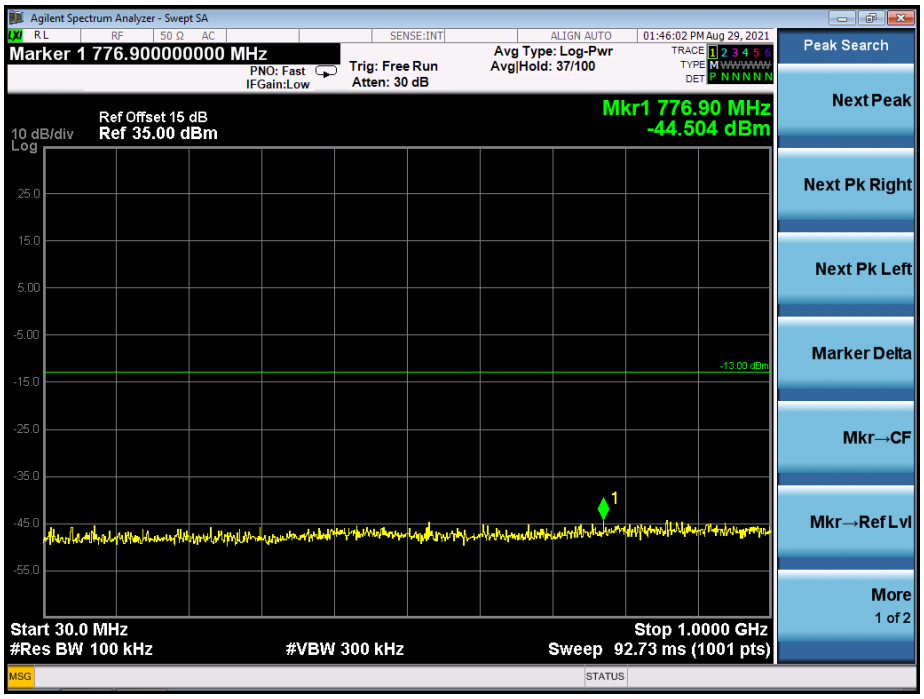


HSDPA Low Band Spurious Emission

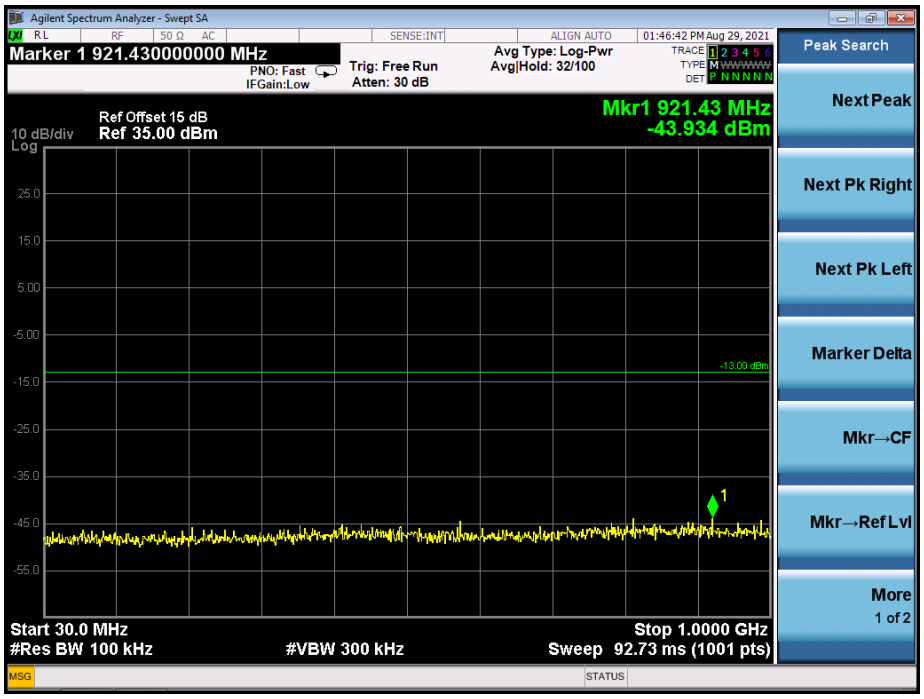


HSDPA High Band Spurious Emission

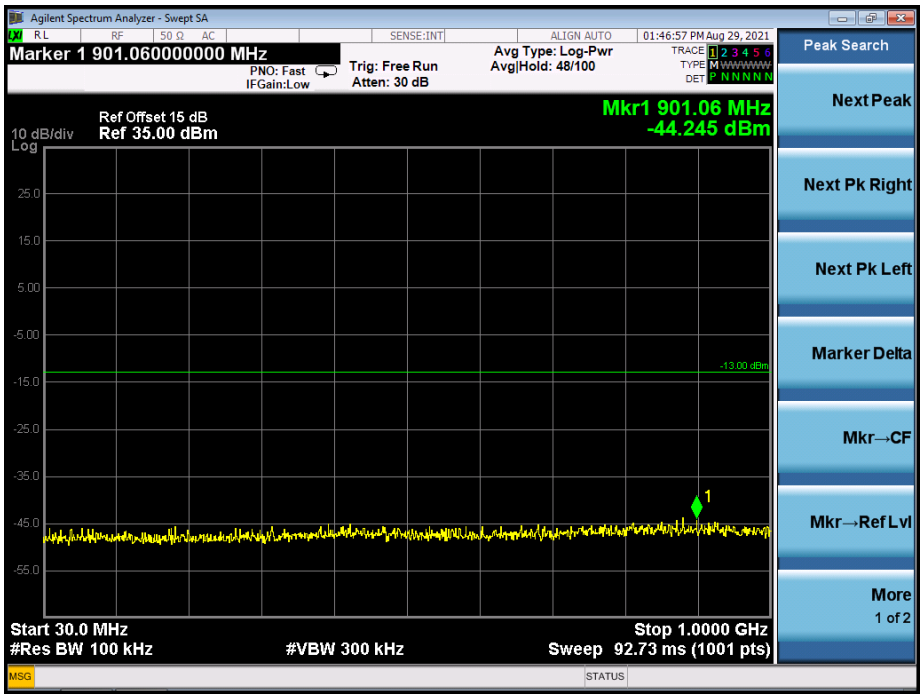
HSUPALow Channel



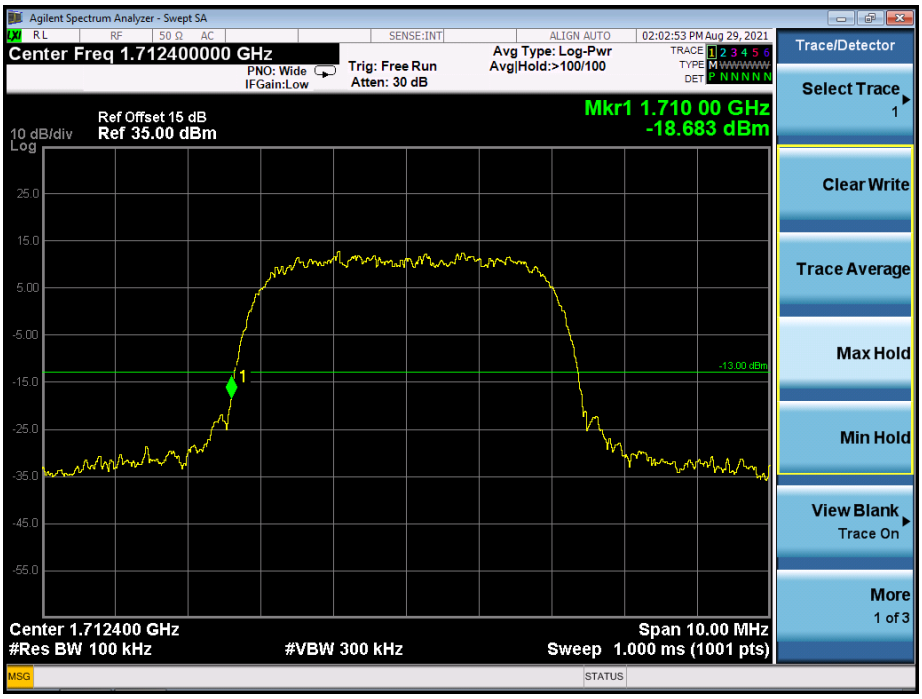
HSUPA Middle Channel



HSUPA High Channel



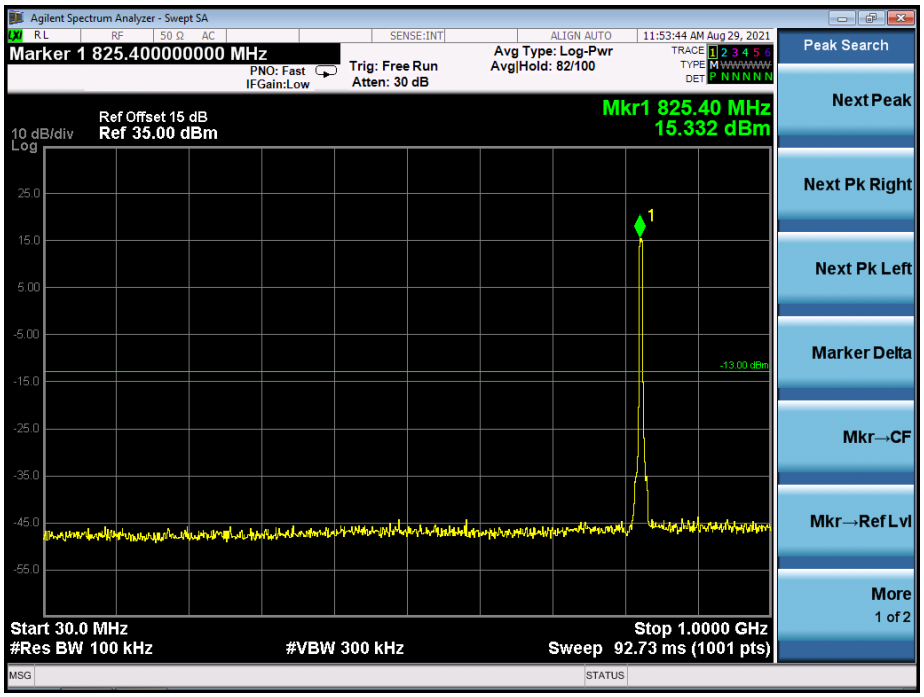
HSUPA Low Band Spurious Emission



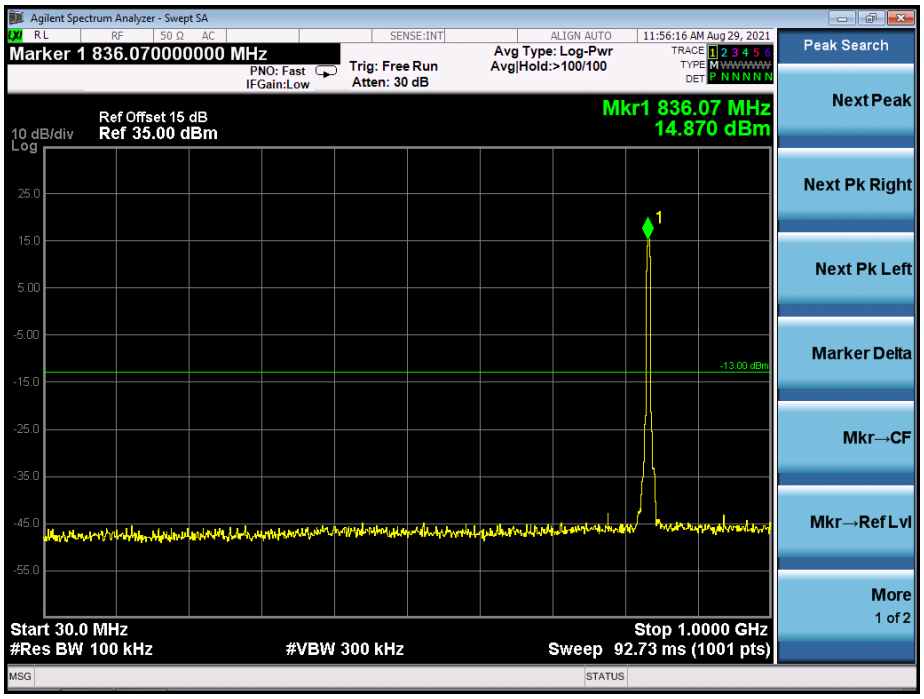
HSUPA High Band Spurious Emission

For WCDMA Band V

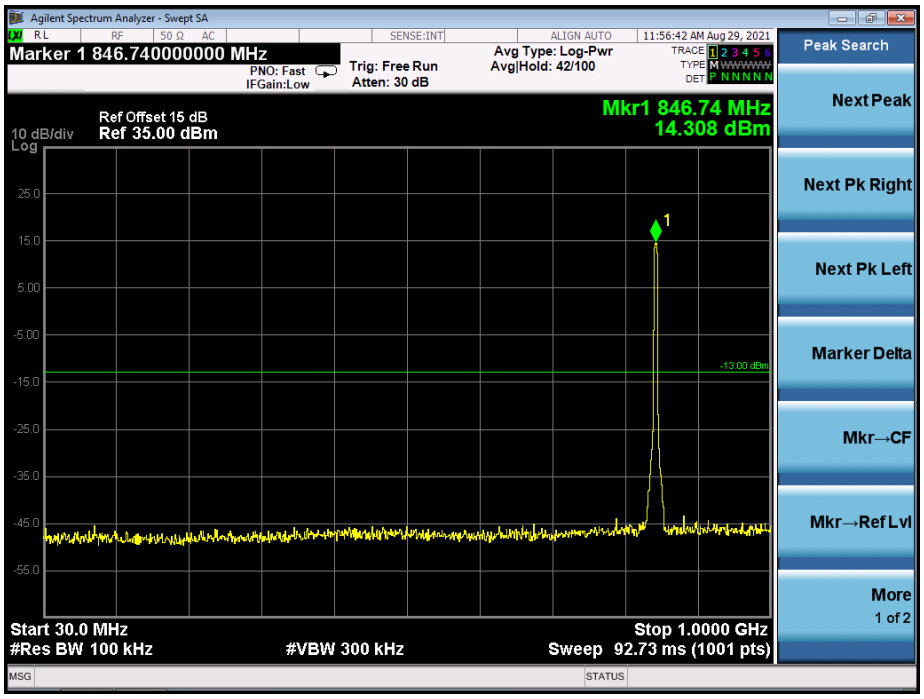
WCDMA Low Channel



WCDMA Middle Channel

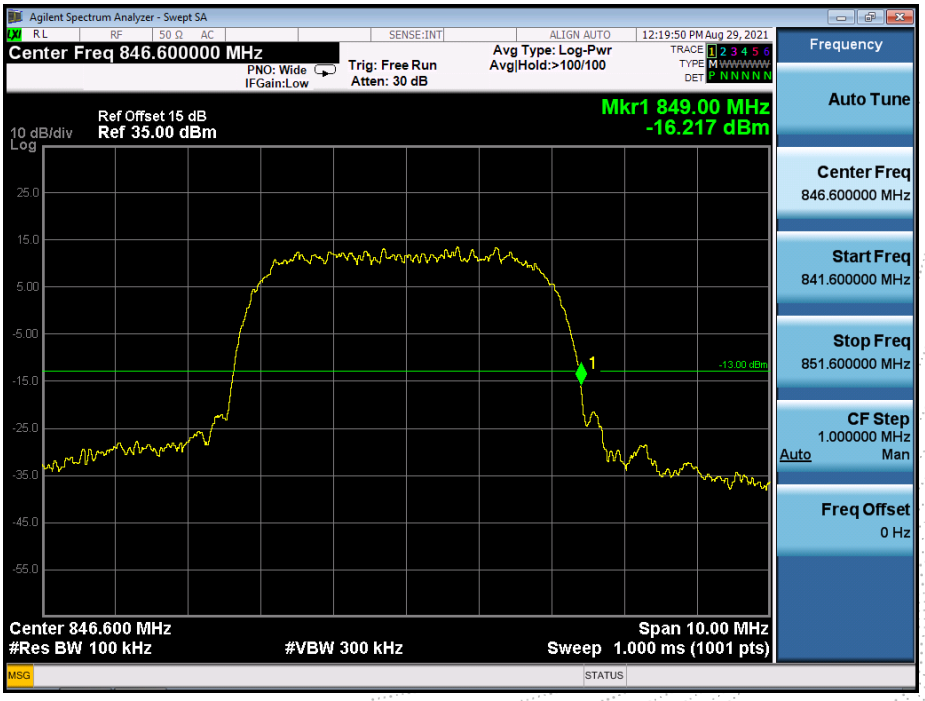


WCDMA High Channel

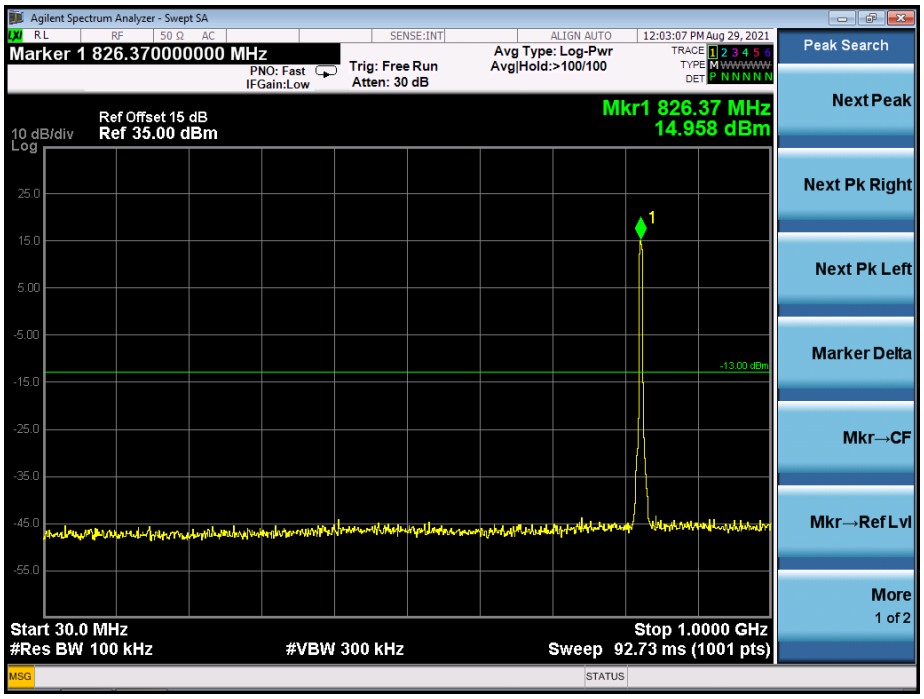


WCDMA Low Band Spurious Emission

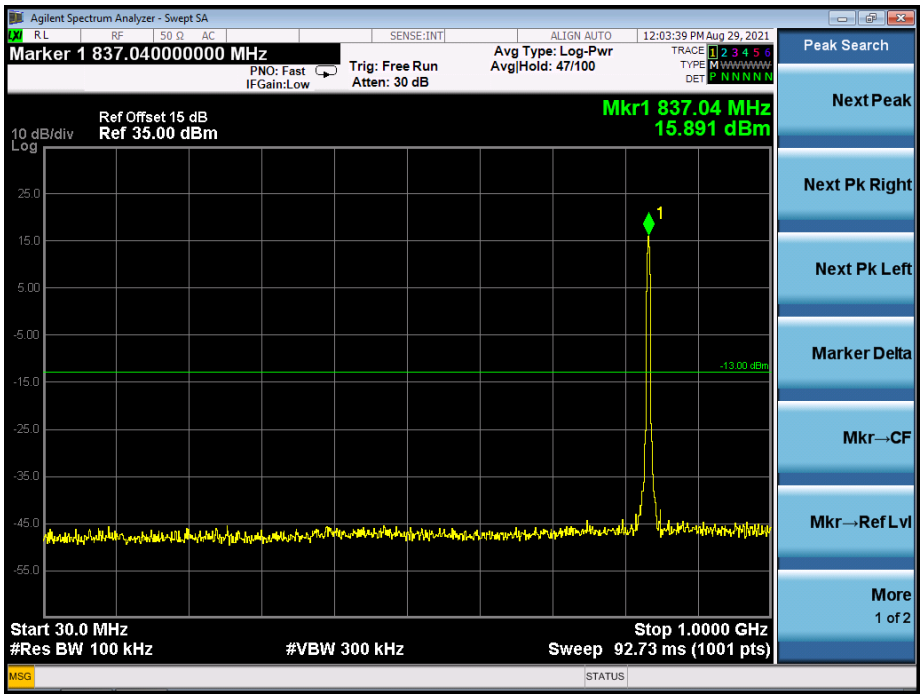
WCDMA High Band Spurious Emission



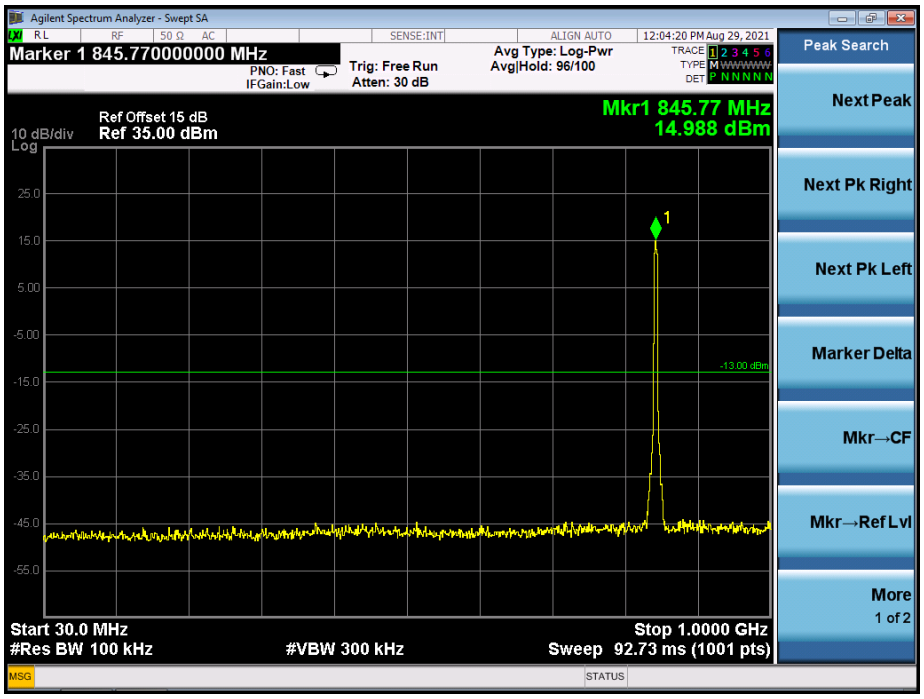
HSDPA Low Channel



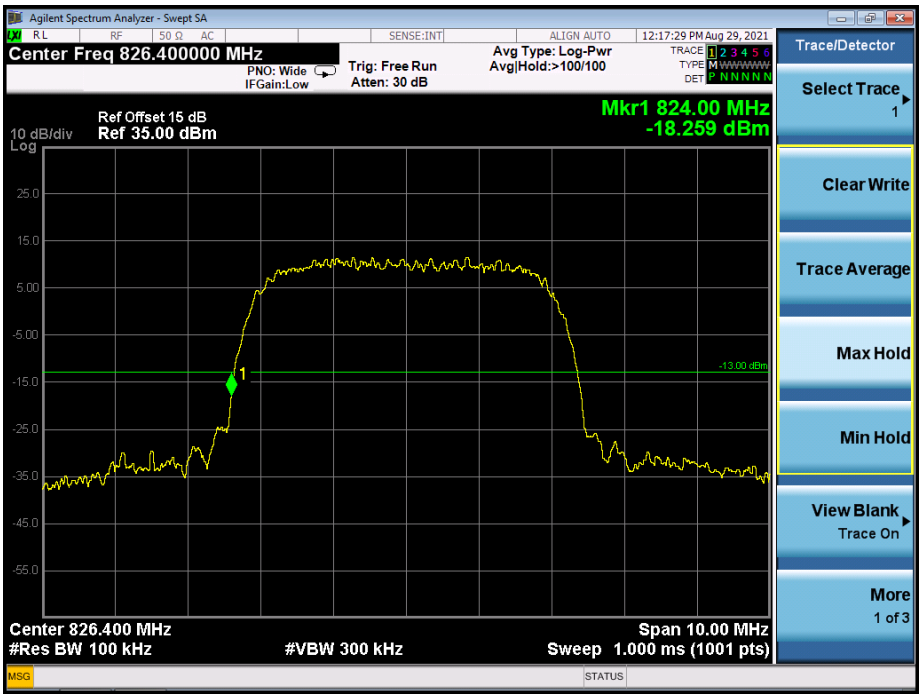
HSDPA Middle Channel



HSDPA High Channel

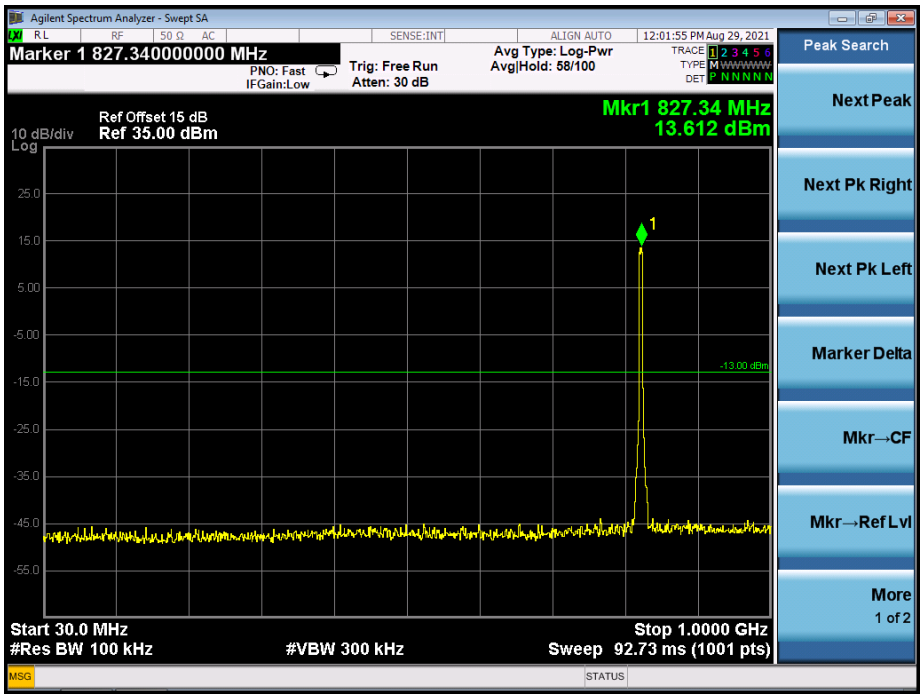


HSDPA Low Band Spurious Emission

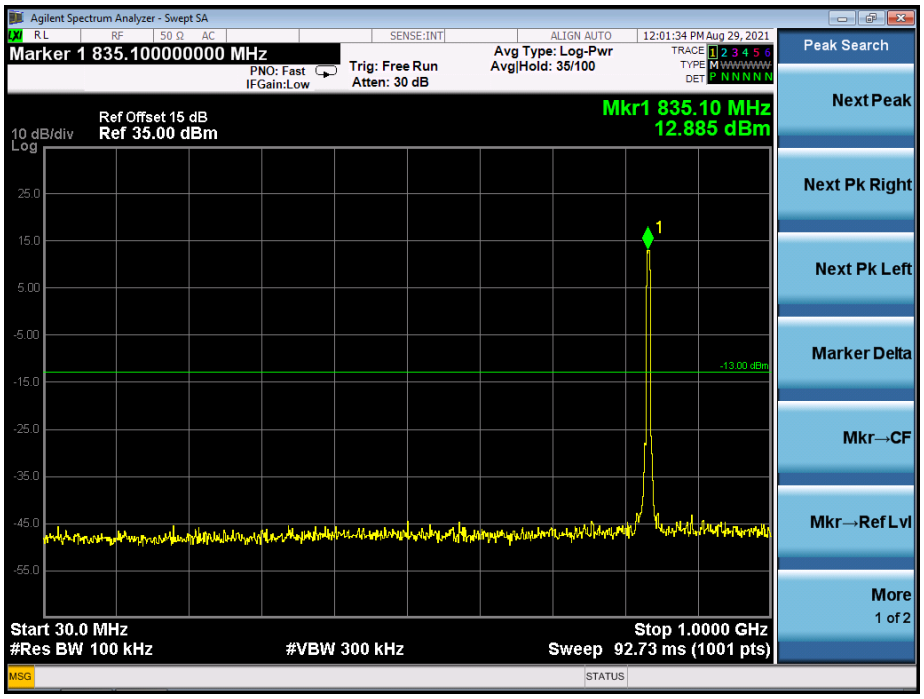


HSDPA High Band Spurious Emission

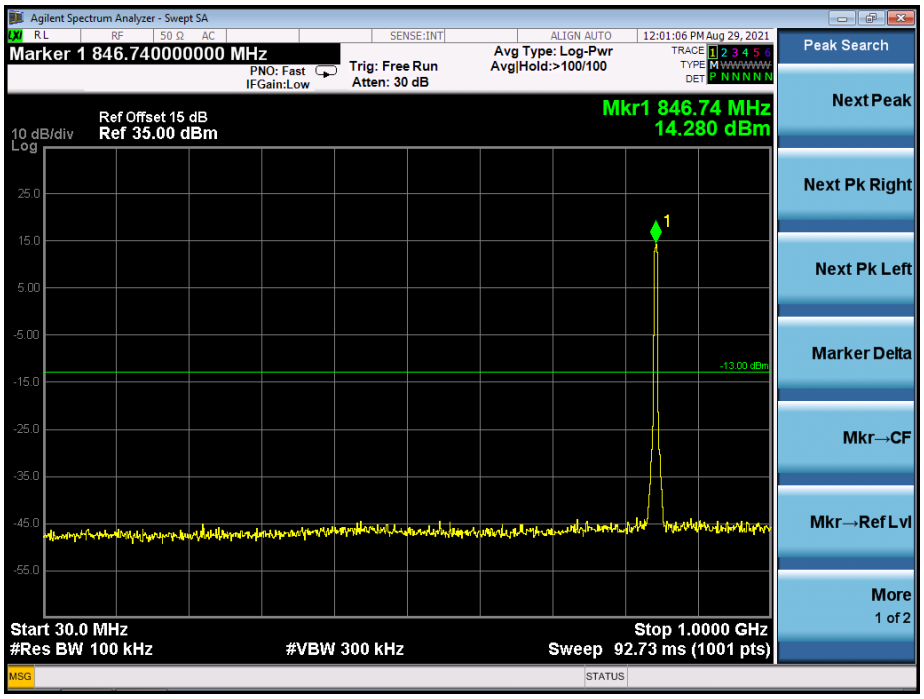
HSUPALow Channel



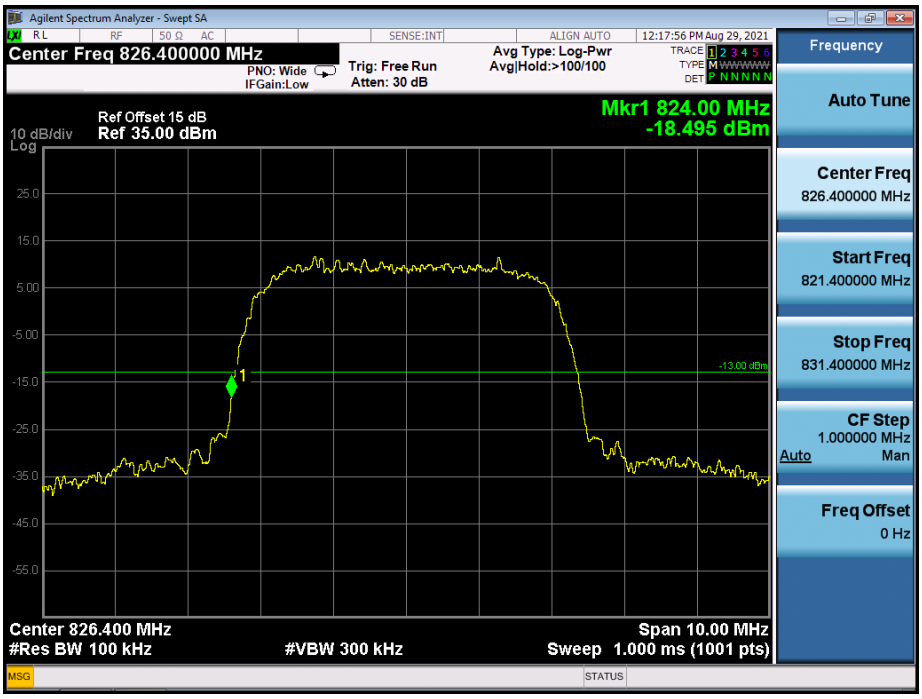
HSUPA Middle Channel



HSUPA High Channel



HSUPA Low Band Spurious Emission

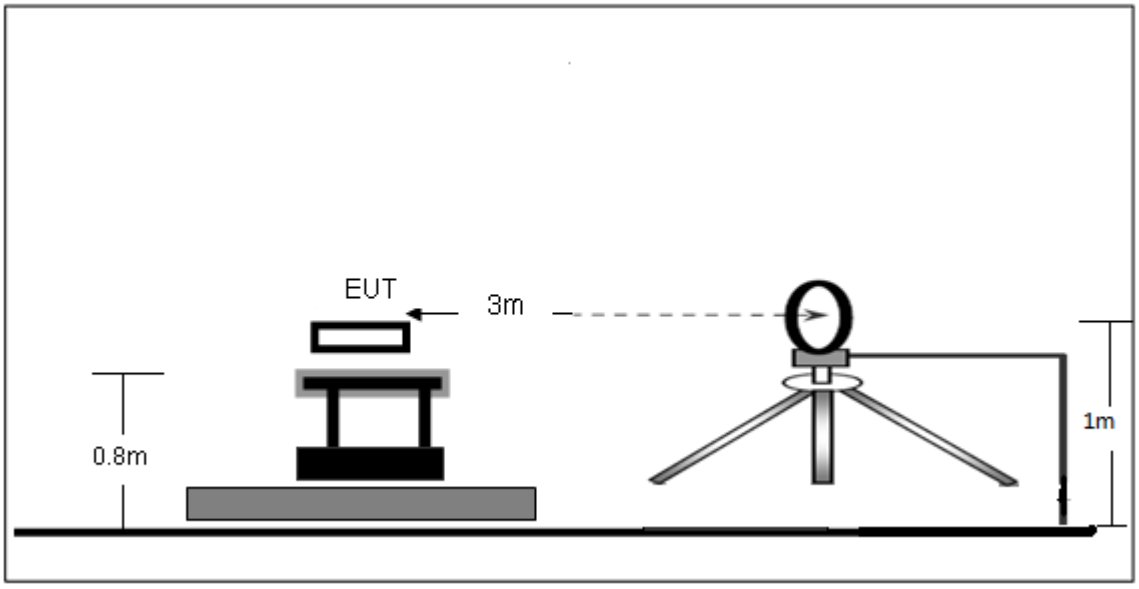


HSUPA High Band Spurious Emission

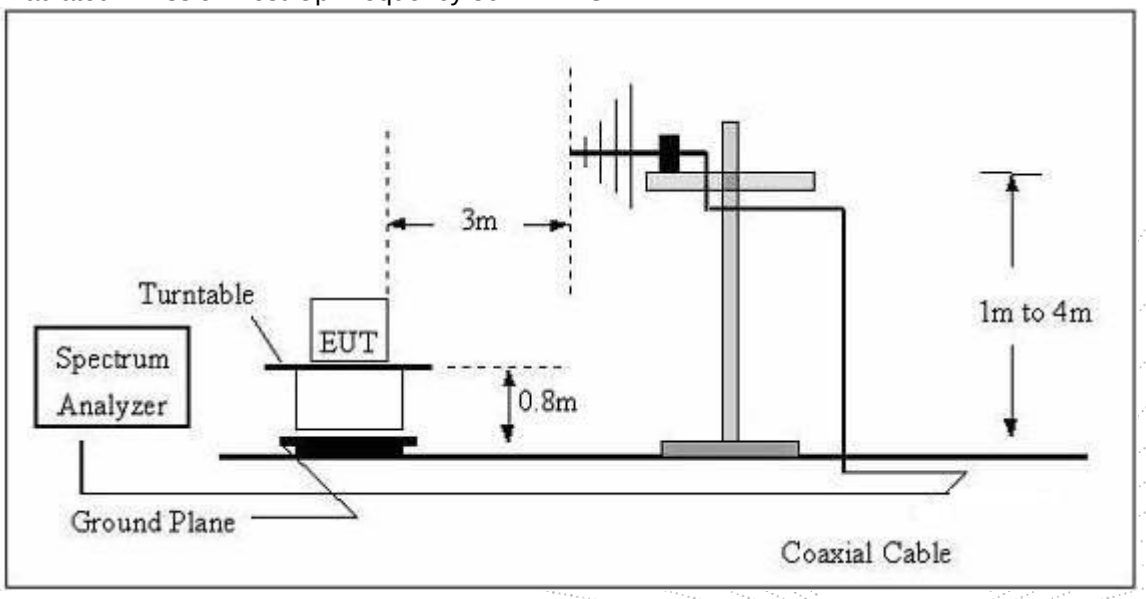
10. Spurious Radiated Emissions

10.1 Block Diagram Of Test Setup

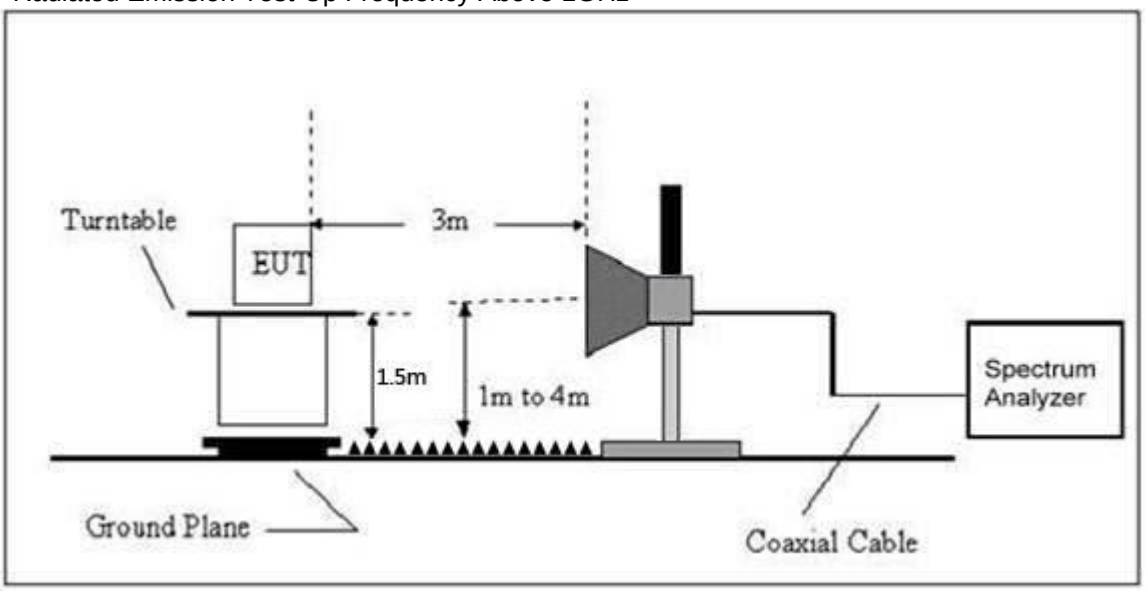
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



10.2 Limit

According to §22.917(a), the power of any emissions 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.

According to §24.238(a), the power of any emissions 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.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

10.3 Test procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603D and ANSI C63.4-2014 measurement procedure.
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. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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.

Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

10.4 Test Result

For Band WCDMA Band II Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
52.36	-44.47	-15.46304	-59.94	-13.00	-46.94	H
3704.8	-25.79	-17.43	-43.22	-13.00	-30.22	H
5557.2	-29.28	-11.73	-41.01	-13.00	-28.01	H
52.36	-44.42	-15.46304	-59.88	-13.00	-46.88	V
3704.8	-29.01	-17.43	-46.44	-13.00	-33.44	V
5557.2	-30.54	-11.73	-42.27	-13.00	-29.27	V
Middle Channel (1880MHz)						
52.36	-41.88	-15.46304	-57.34	-13.00	-44.34	H
3760	-25.16	-16.98	-42.14	-13.00	-29.14	H
5640	-31.02	-11.33	-42.35	-13.00	-29.35	H
52.36	-42.62	-15.46304	-58.08	-13.00	-45.08	V
3760	-29.41	-16.98	-46.39	-13.00	-33.39	V
5640	-30.39	-11.33	-41.72	-13.00	-28.72	V
High Channel (1907.6MHz)						
52.36	-43.44	-15.46304	-58.90	-13.00	-45.90	H
3815.2	-25.13	-16.52	-41.65	-13.00	-28.65	H
5722.8	-30.03	-10.93	-40.96	-13.00	-27.96	H
52.36	-41.83	-15.46304	-57.29	-13.00	-44.29	V
3815.2	-27.45	-16.52	-43.97	-13.00	-30.97	V
5722.8	-29.77	-10.93	-40.70	-13.00	-27.70	V

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listedin the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

For Band WCDMA Band IV Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1712.4MHz)						
52.36	-43.03	-15.46	-58.49	-13.00	-45.49	H
3424.80	-27.18	-19.74	-46.92	-13.00	-33.92	H
5137.20	-30.00	-13.77	-43.77	-13.00	-30.77	H
52.36	-41.26	-15.46	-56.72	-13.00	-43.72	V
3424.80	-28.22	-19.74	-47.96	-13.00	-34.96	V
5137.20	-31.02	-13.77	-44.79	-13.00	-31.79	V
Middle Channel (1732.4MHz)						
52.36	-42.79	-15.46	-58.25	-13.00	-45.25	H
3464.80	-26.85	-19.41	-46.26	-13.00	-33.26	H
5197.20	-30.51	-13.48	-43.99	-13.00	-30.99	H
52.36	-44.76	-15.46	-60.22	-13.00	-47.22	V
3464.80	-26.19	-19.41	-45.60	-13.00	-32.60	V
5197.20	-31.75	-13.48	-45.23	-13.00	-32.23	V
High Channel (1752.6MHz)						
52.36	-43.32	-15.46	-58.78	-13.00	-45.78	H
3505.20	-25.41	-19.08	-44.49	-13.00	-31.49	H
5257.80	-31.56	-13.19	-44.75	-13.00	-31.75	H
52.36	-43.56	-15.46	-59.02	-13.00	-46.02	V
3505.20	-27.57	-19.08	-46.65	-13.00	-33.65	V
5257.80	-28.36	-13.19	-41.55	-13.00	-28.55	V

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listedin the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

For Band WCDMA Band V Mode

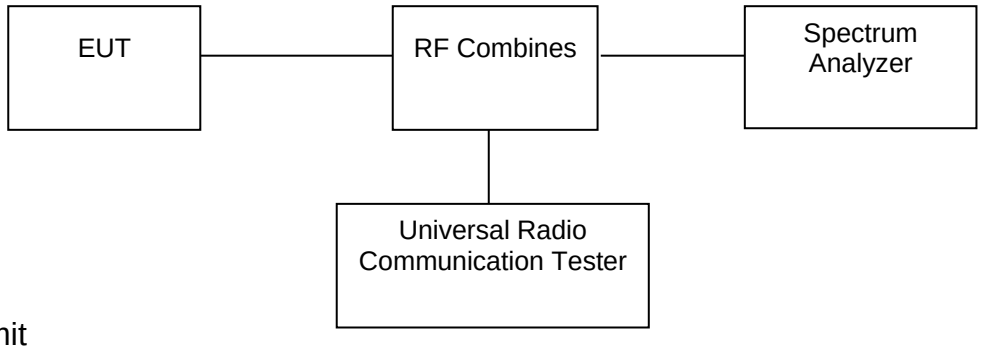
Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (826.4MHz)						
52.36	-43.39	-15.46	-58.85	-13.00	-45.85	H
1652.80	-21.95	-22.94	-44.89	-13.00	-31.89	H
2479.20	-25.40	-22.46	-47.86	-13.00	-34.86	H
52.36	-42.30	-15.46	-57.76	-13.00	-44.76	V
1652.80	-20.98	-22.94	-43.92	-13.00	-30.92	V
2479.20	-26.80	-22.46	-49.26	-13.00	-36.26	V
Middle Channel (836.6MHz)						
52.36	-41.89	-15.46	-57.36	-13.00	-44.36	H
1673.20	-18.37	-22.87	-41.24	-13.00	-28.24	H
2509.80	-23.81	-22.50	-46.31	-13.00	-33.31	H
52.36	-43.78	-15.46	-59.24	-13.00	-46.24	V
1673.20	-19.38	-22.87	-42.25	-13.00	-29.25	V
2509.80	-25.44	-22.50	-47.94	-13.00	-34.94	V
High Channel (846.6MHz)						
52.36	-43.27	-15.46	-58.73	-13.00	-45.73	H
1693.20	-21.69	-22.80	-44.49	-13.00	-31.49	H
2539.80	-25.93	-22.55	-48.48	-13.00	-35.48	H
52.36	-41.47	-15.46	-56.93	-13.00	-43.93	V
1693.20	-21.58	-22.80	-44.38	-13.00	-31.38	V
2539.80	-26.70	-22.55	-49.25	-13.00	-36.25	V

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listedin the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

11. Frequency Stability

11.1 Block Diagram Of Test Setup



11.2 Limit

According to §22.917(b),The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §24.238(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

11.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

11.4 Test Result

For WCDMA Band II Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	63	0.034
40	12	56	0.030
30	12	50	0.027
20	12	76	0.040
10	12	60	0.032
0	12	76	0.040
-10	12	71	0.038
-20	12	49	0.026
-30	12	47	0.025
25	13.2	47	0.025
25	10.8	60	0.032

For HSDPA Band II Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	69	0.037
40	12	48	0.025
30	12	55	0.029
20	12	54	0.029
10	12	77	0.041
0	12	43	0.023
-10	12	58	0.031
-20	12	42	0.022
-30	12	48	0.026
25	13.2	46	0.025
25	10.8	58	0.031

For HSUPA Band II Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	65	0.035
40	12	77	0.041
30	12	68	0.036
20	12	51	0.027
10	12	80	0.042
0	12	63	0.034
-10	12	52	0.028
-20	12	49	0.026
-30	12	59	0.031
25	13.2	70	0.037
25	10.8	50	0.026

For WCDMA Band IV Mode

Reference Frequency(Middle Channel): 1732.4 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	59	0.034
40	12	48	0.028
30	12	74	0.043
20	12	65	0.038
10	12	66	0.038
0	12	51	0.029
-10	12	75	0.043
-20	12	76	0.044
-30	12	75	0.043
25	13.2	66	0.038
25	10.8	51	0.029

For HSDPA Band IV Mode

Reference Frequency(Middle Channel): 1732.4 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	72	0.041
40	12	44	0.026
30	12	43	0.025
20	12	42	0.024
10	12	48	0.027
0	12	71	0.041
-10	12	51	0.029
-20	12	71	0.041
-30	12	59	0.034
25	13.2	69	0.040
25	10.8	70	0.041

For HSUPA Band IV Mode

Reference Frequency(Middle Channel):1732.4MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	58	0.034
40	12	76	0.044
30	12	63	0.036
20	12	58	0.034
10	12	45	0.026
0	12	44	0.026
-10	12	47	0.027
-20	12	55	0.032
-30	12	42	0.024
25	13.2	77	0.044
25	10.8	42	0.024

For WCDMA Band V Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	53	0.063
40	12	66	0.079
30	12	78	0.094
20	12	76	0.091
10	12	67	0.080
0	12	57	0.068
-10	12	63	0.075
-20	12	64	0.077
-30	12	58	0.070
25	13.2	70	0.084
25	10.8	73	0.087

For HSDPA Band V Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	44	0.053
40	12	40	0.048
30	12	56	0.067
20	12	58	0.070
10	12	56	0.068
0	12	64	0.076
-10	12	62	0.074
-20	12	47	0.056
-30	12	57	0.069
25	13.2	80	0.096
25	10.8	71	0.085

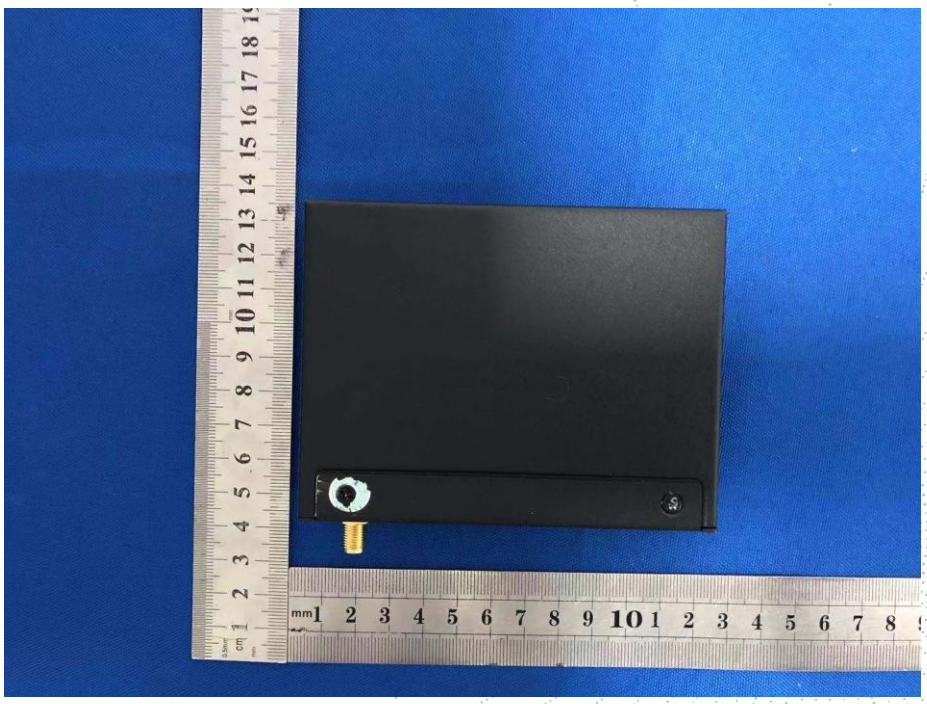
For HSUPA Band V Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	12	49	0.059
40	12	74	0.089
30	12	50	0.060
20	12	50	0.059
10	12	60	0.072
0	12	59	0.071
-10	12	64	0.077
-20	12	65	0.078
-30	12	60	0.072
25	13.2	44	0.053
25	10.8	44	0.053

12. EUT Photographs

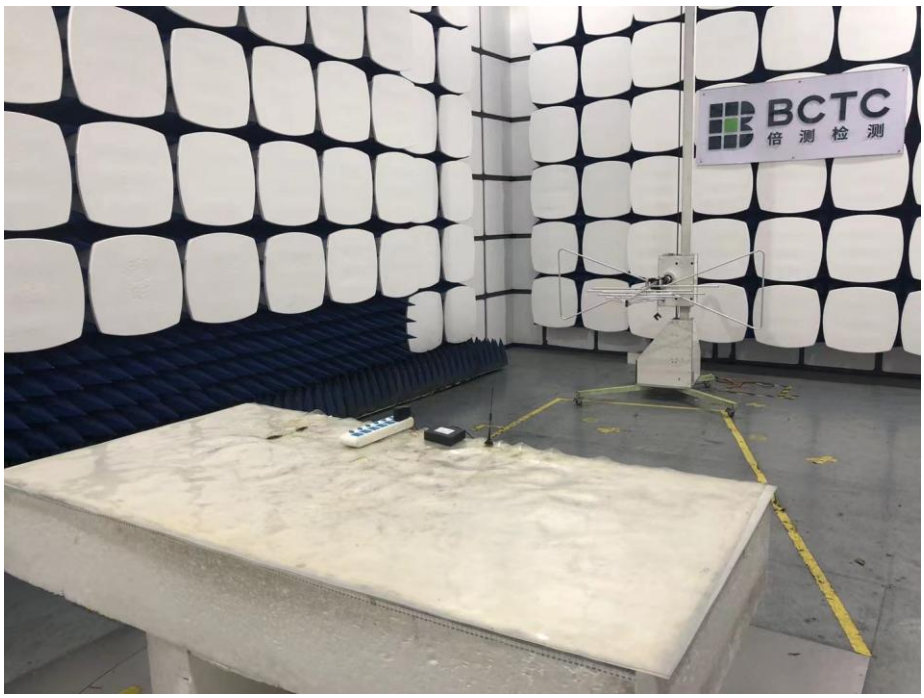
EUT Photo 1

EUT Photo 2



13. EUT Test Setup Photographs

Radiated Measurement Photos



STATEMENT

1.The equipment lists are traceable to the national reference standards.

2.The test report can not be partially copied unless prior written approval is issued from our lab.

3.The test report is invalid without stamp of laboratory.

4.The test report is invalid without signature of person(s) testing and authorizing.

5.The test process and test result is only related to the Unit Under Test.

6.The quality system of our laboratory is in accordance with ISO/IEC17025.

7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL：400-788-9558

P.C.: 518103

FAX：0755-33229357

Website：http://www.chnbctc.com

E-Mail：bctc@bctc-lab.com.cn

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