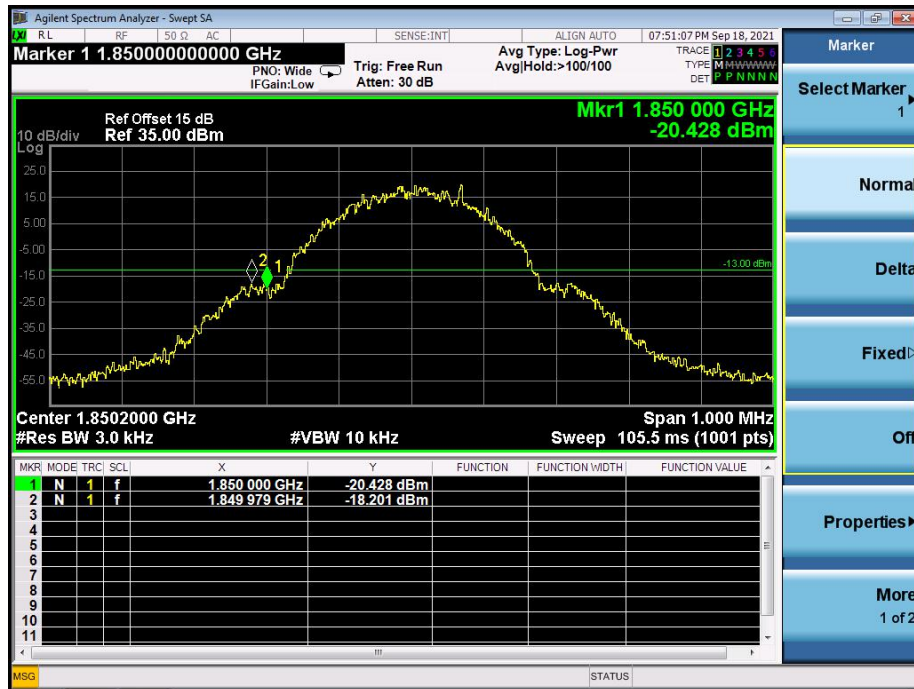
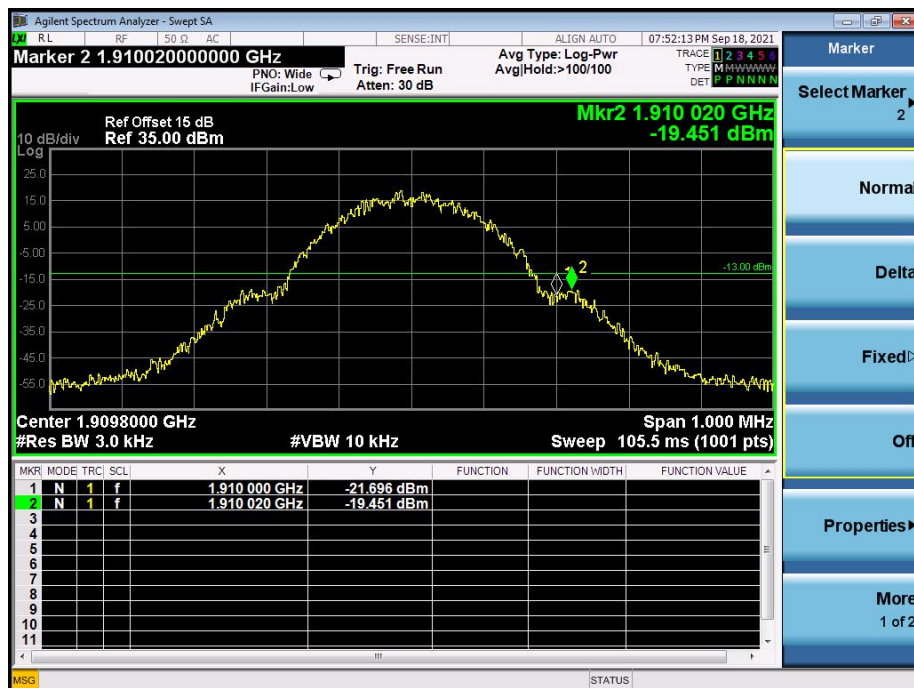


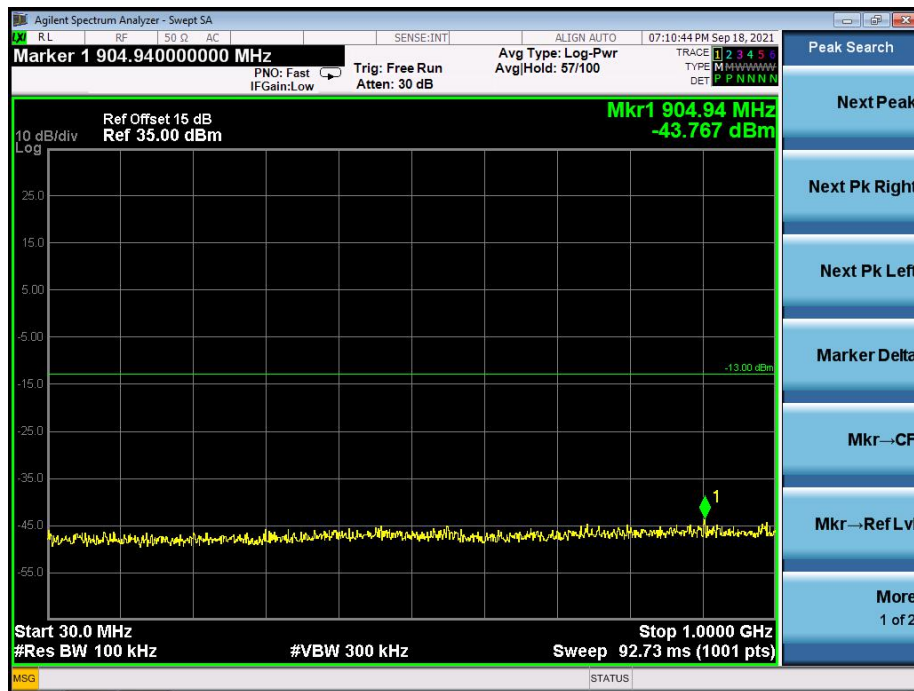
GSM Low Band Emission



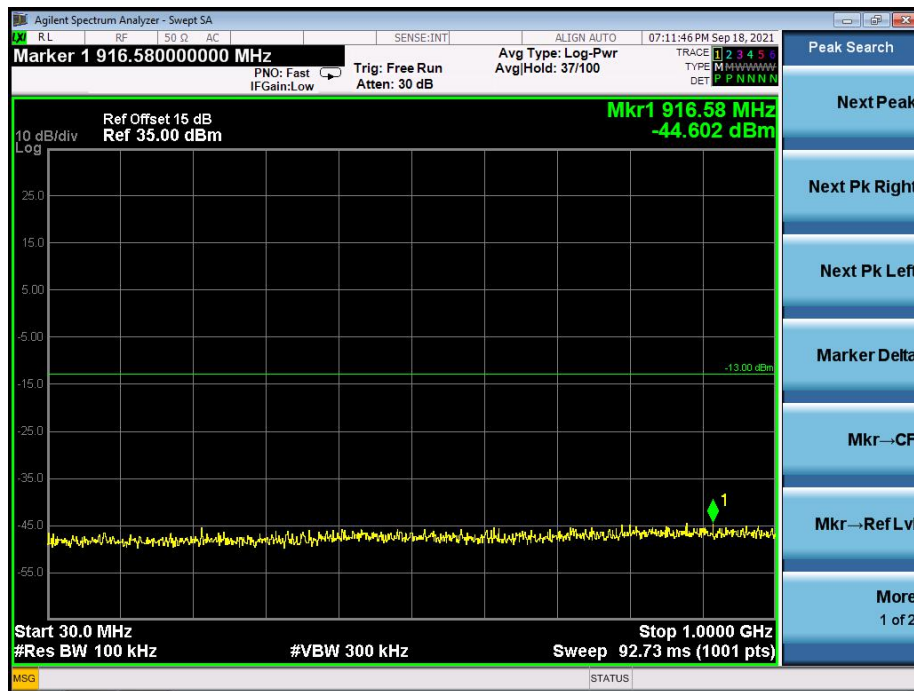
GSM High Band Emission



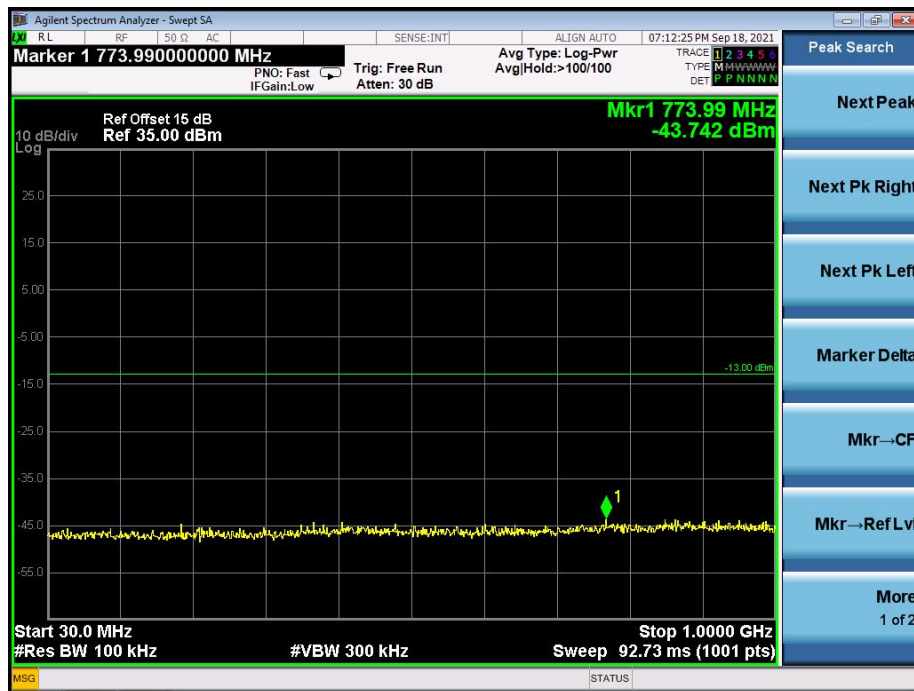
GPRS Low Channel



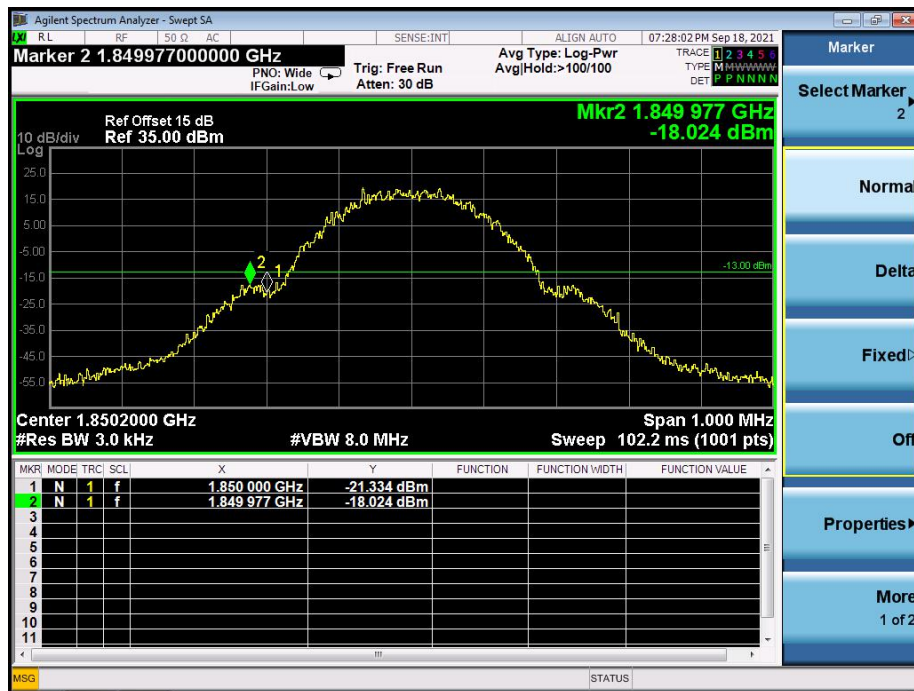
GPRS Middle Channel



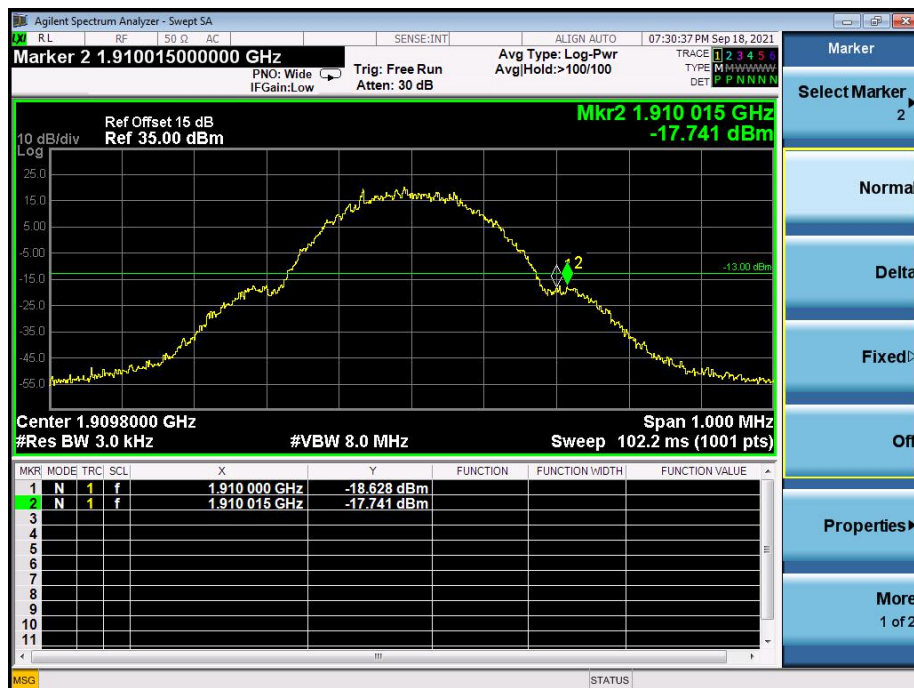
GPRS High Channel



GPRS Low Band Emission



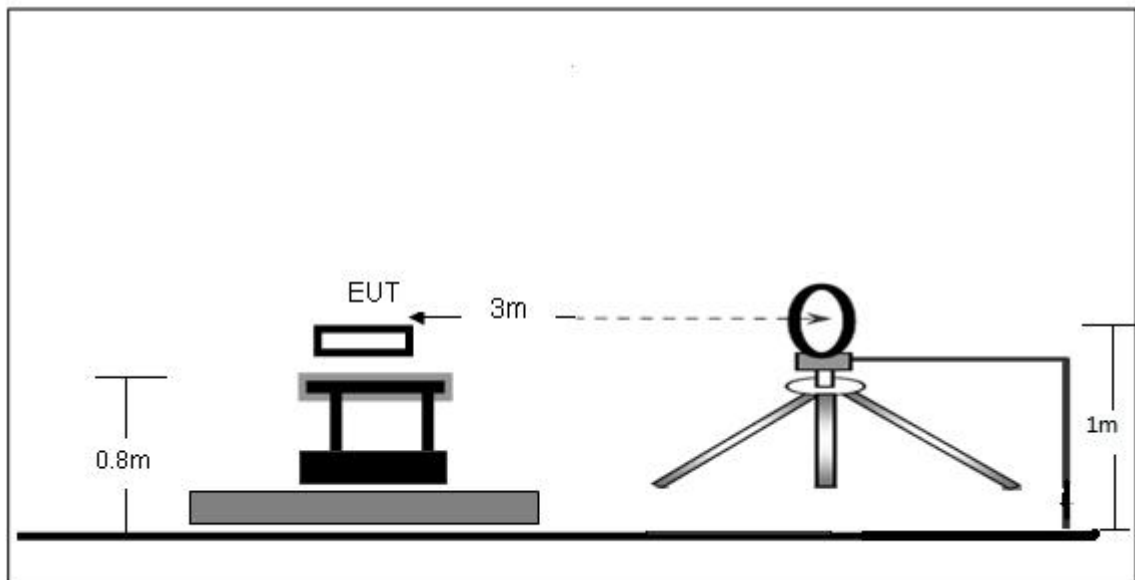
GPRS High Band Emission



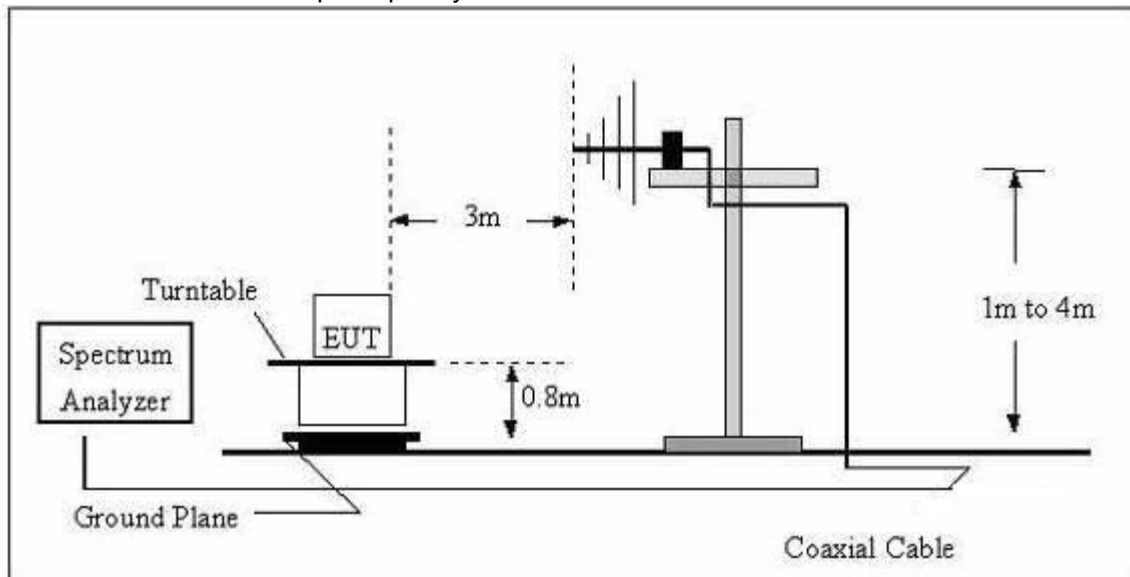
10. Spurious Radiated Emissions

10.1 Block Diagram Of Test Setup

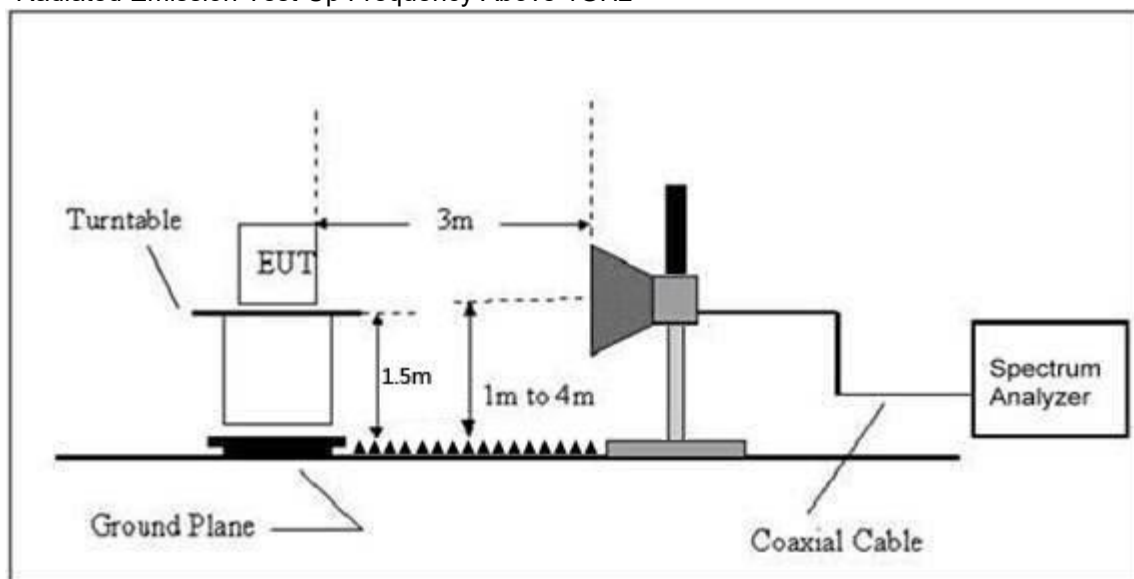
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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 $43 + 10 \log_{10}(P)$ 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 = $43 + 10 \log_{10}(\text{power out in Watts})$

10.4 Test Result

For Cellular Band GSM850 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (824.2MHz)						
56.63	-44.97	-15.52	-60.49	-13.00	-47.49	H
1648.40	-20.14	-22.93	-43.07	-13.00	-30.07	H
2472.60	-25.48	-22.45	-47.93	-13.00	-34.93	H
56.63	-43.99	-15.52	-59.51	-13.00	-46.51	V
1648.40	-21.98	-22.93	-44.91	-13.00	-31.91	V
2472.60	-25.99	-22.45	-48.44	-13.00	-35.44	V
Middle Channel (836.6MHz)						
56.63	-43.02	-15.52	-58.54	-13.00	-45.54	H
1673.20	-21.15	-22.87	-44.02	-13.00	-31.02	H
2509.80	-26.24	-22.50	-48.74	-13.00	-35.74	H
56.63	-41.14	-15.52	-56.66	-13.00	-43.66	V
1673.20	-21.46	-22.87	-44.33	-13.00	-31.33	V
2509.80	-25.10	-22.50	-47.60	-13.00	-34.60	V
High Channel (848.8MHz)						
56.63	-42.02	-15.52	-57.55	-13.00	-44.55	H
1697.60	-18.71	-22.79	-41.50	-13.00	-28.50	H
2546.40	-24.36	-22.56	-46.92	-13.00	-33.92	H
56.63	-42.85	-15.52	-58.37	-13.00	-45.37	V
1697.60	-20.21	-22.79	-43.00	-13.00	-30.00	V
2546.40	-25.61	-22.56	-48.17	-13.00	-35.17	V

For PCS Band GSM1900 Mode

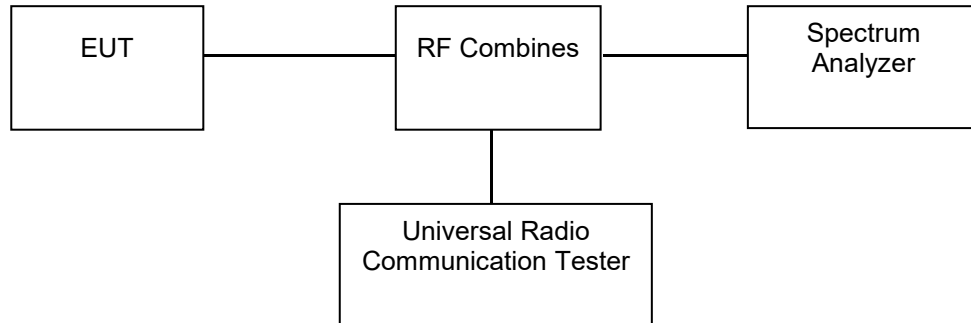
Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1850.2MHz)						
56.63	-42.89	-15.52	-58.41	-13.00	-45.41	H
3700.40	-26.95	-17.47	-44.42	-13.00	-31.42	H
5550.60	-29.73	-11.76	-41.49	-13.00	-28.49	H
56.63	-44.55	-15.52	-60.08	-13.00	-47.08	V
3700.40	-26.72	-17.47	-44.19	-13.00	-31.19	V
5550.60	-31.30	-11.76	-43.06	-13.00	-30.06	V
Middle Channel (1880MHz)						
56.63	-44.57	-15.52	-60.09	-13.00	-47.09	H
3760.00	-26.56	-16.98	-43.54	-13.00	-30.54	H
5640.00	-29.84	-11.33	-41.17	-13.00	-28.17	H
56.63	-44.99	-15.52	-60.51	-13.00	-47.51	V
3760.00	-29.04	-16.98	-46.02	-13.00	-33.02	V
5640.00	-29.56	-11.33	-40.89	-13.00	-27.89	V
High Channel (1909.8MHz)						
56.63	-44.18	-15.52	-59.71	-13.00	-46.71	H
3819.60	-24.90	-16.49	-41.39	-13.00	-28.39	H
5729.40	-30.30	-10.90	-41.20	-13.00	-28.20	H
56.63	-44.96	-15.52	-60.48	-13.00	-47.48	V
3819.60	-27.61	-16.49	-44.10	-13.00	-31.10	V
5729.40	-29.17	-10.90	-40.07	-13.00	-27.07	V

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

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in 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 Cellular Band GSM 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	3.7	64	0.077
40	3.7	55	0.066
30	3.7	50	0.060
20	3.7	50	0.060
10	3.7	42	0.050
0	3.7	42	0.050
-10	3.7	60	0.072
-20	3.7	45	0.054
-30	3.7	76	0.091
25	4.07	56	0.067
25	3.33	65	0.077

For PCS Band GSM 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	3.7	40	0.021
40	3.7	75	0.040
30	3.7	41	0.022
20	3.7	75	0.040
10	3.7	62	0.033
0	3.7	57	0.031
-10	3.7	42	0.022
-20	3.7	60	0.032
-30	3.7	78	0.042
25	4.07	67	0.036
25	3.33	42	0.022

For Cellular Band GPRS Mode

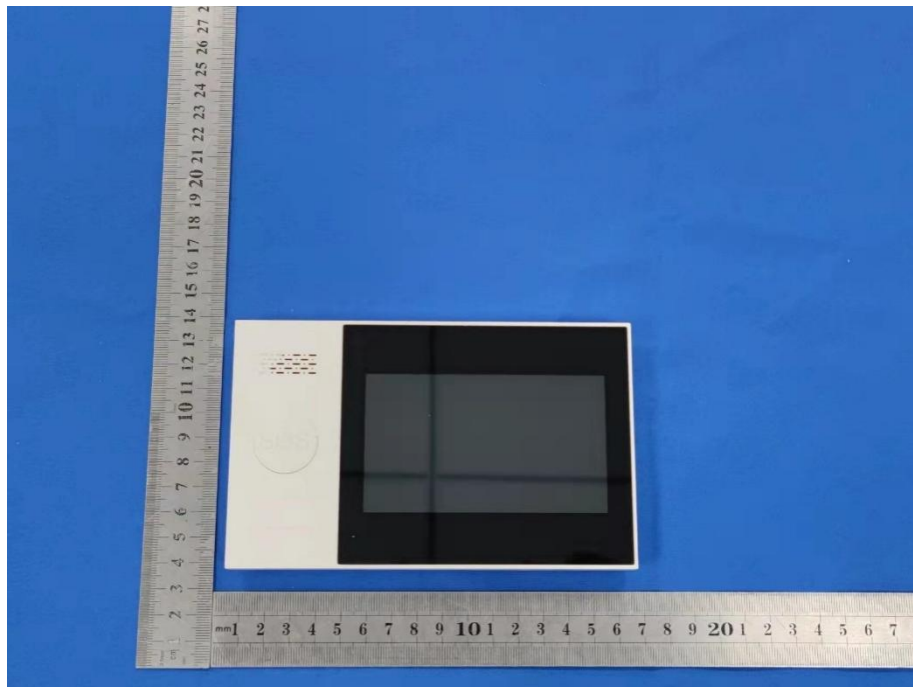
Reference Frequency(Middle Channel): 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	71	0.085
40	3.7	70	0.083
30	3.7	65	0.078
20	3.7	44	0.052
10	3.7	40	0.048
0	3.7	52	0.062
-10	3.7	55	0.066
-20	3.7	67	0.080
-30	3.7	74	0.088
25	4.07	66	0.078
25	3.33	77	0.092

For PCS Band GPRS 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	3.7	62	0.033
40	3.7	63	0.034
30	3.7	48	0.026
20	3.7	75	0.040
10	3.7	79	0.042
0	3.7	57	0.030
-10	3.7	59	0.032
-20	3.7	61	0.032
-30	3.7	58	0.031
25	4.07	46	0.025
25	3.33	68	0.036

12. EUT Photographs

EUT Photo 1

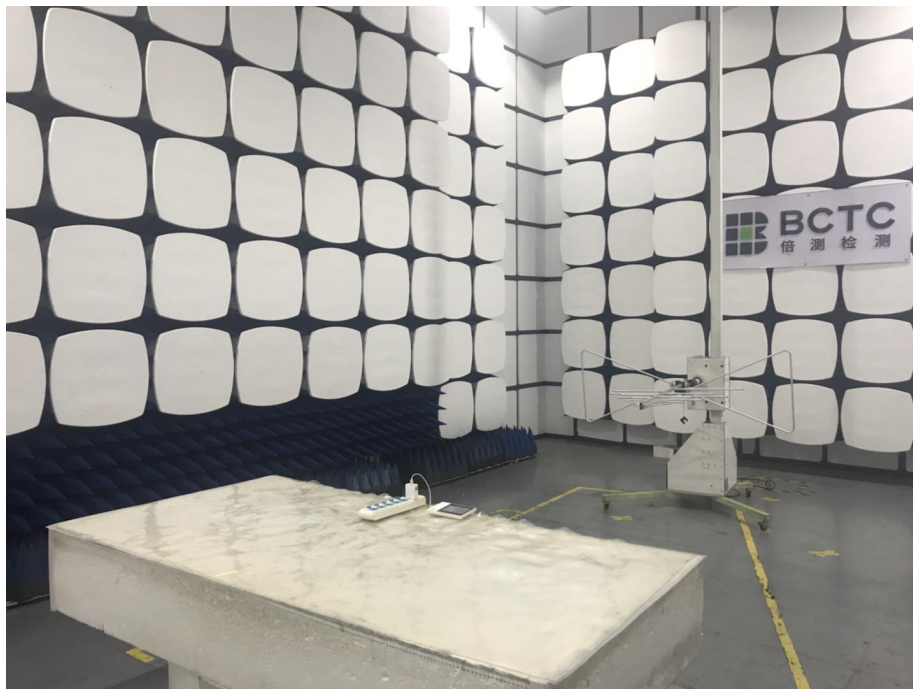


EUT Photo 2



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, FuhaiSubdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

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FAX: 0755-33229357

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E-Mail: bctc@bctc-lab.com.cn

***** END *****