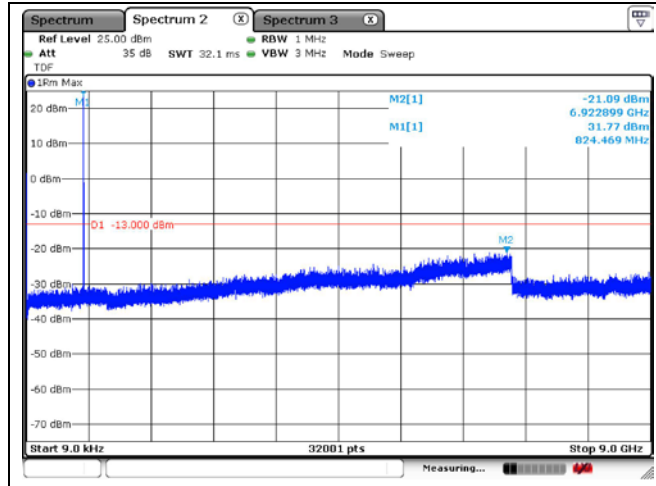
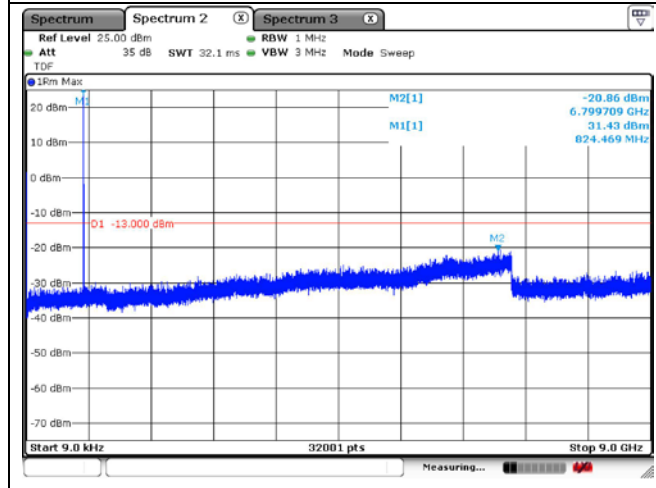


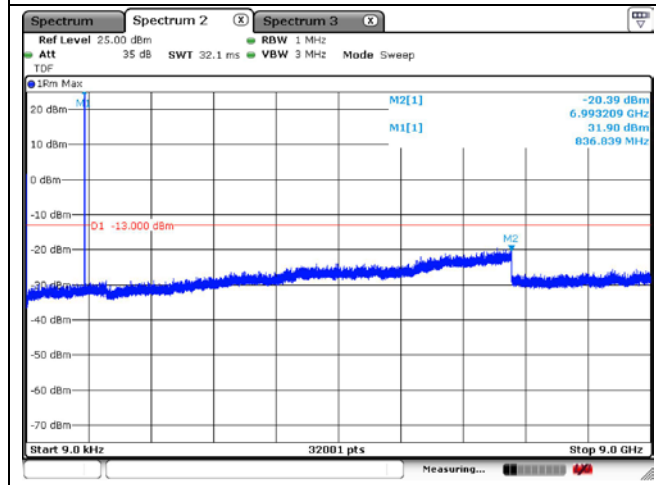
GSM 850



GSM 850 VOICE Low Channel

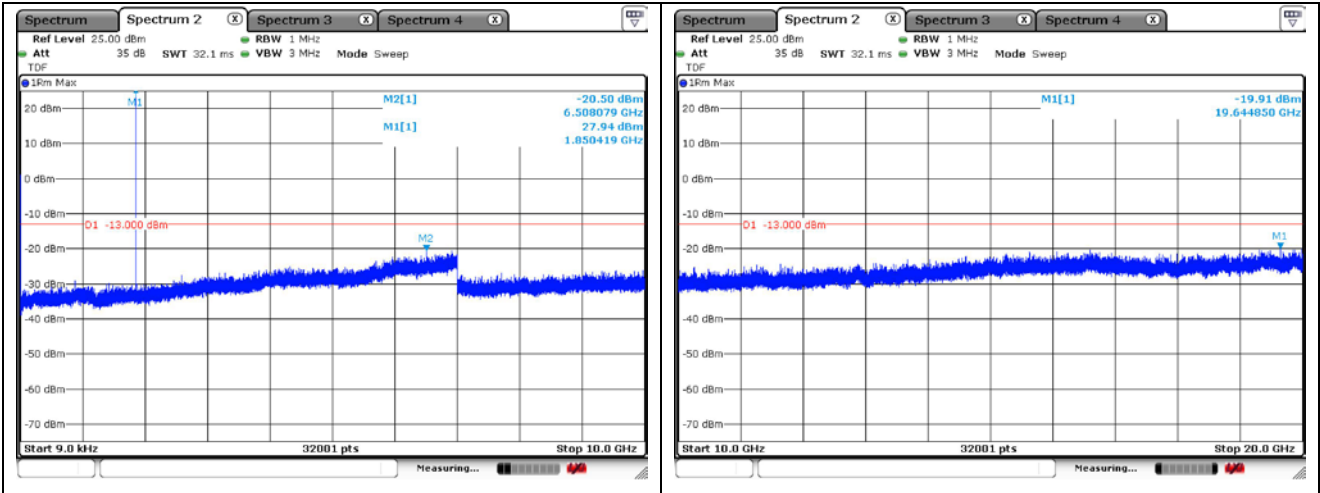


GSM 850 VOICE Middle Channel

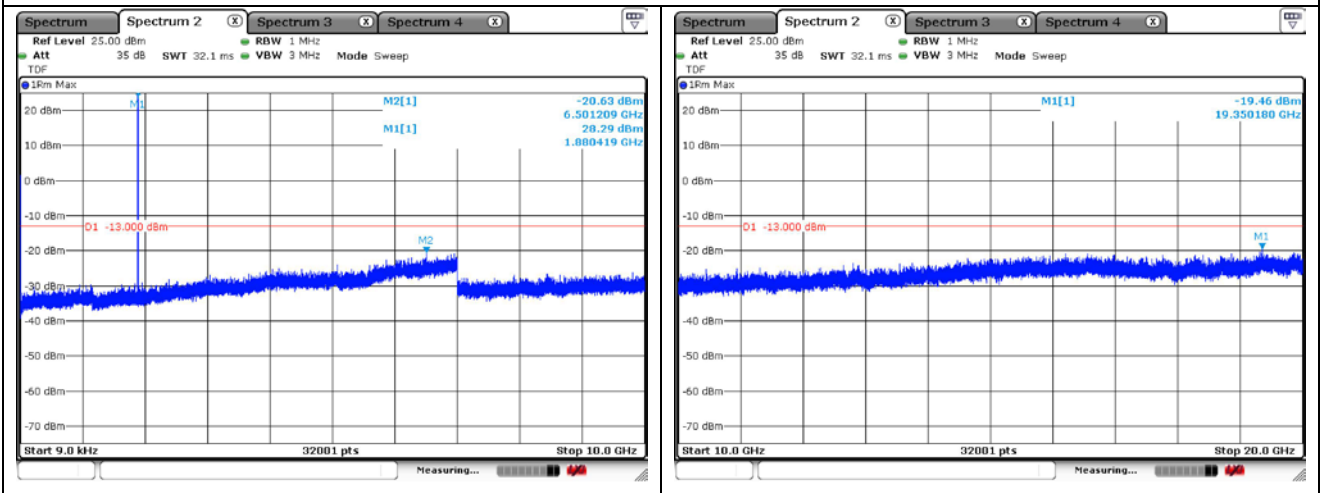


GSM 850 VOICE High Channel

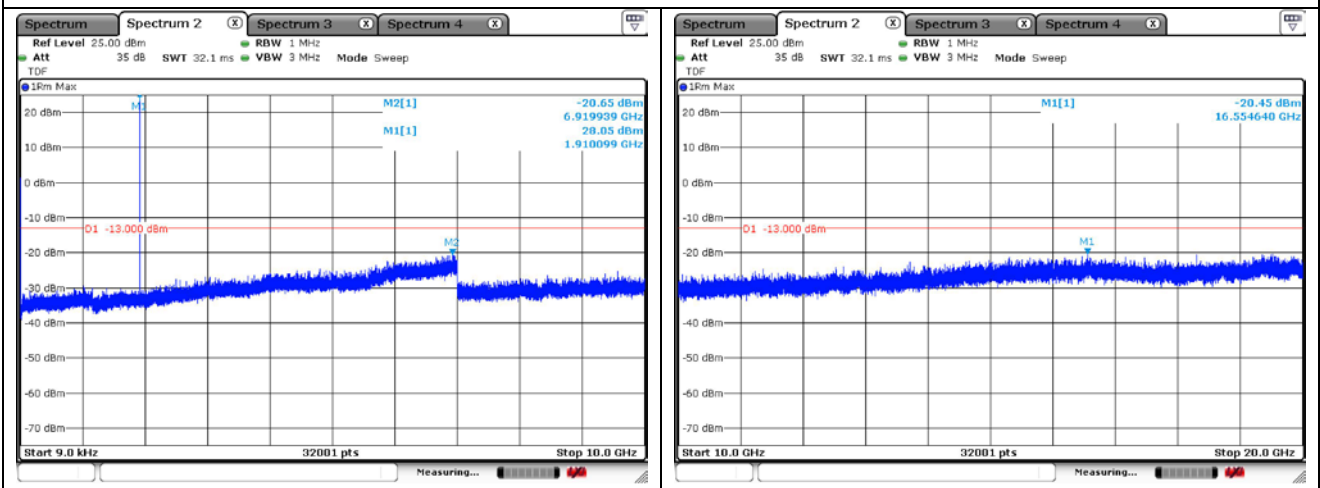
GSM 1900



GSM 1900 VOICE Low Channel

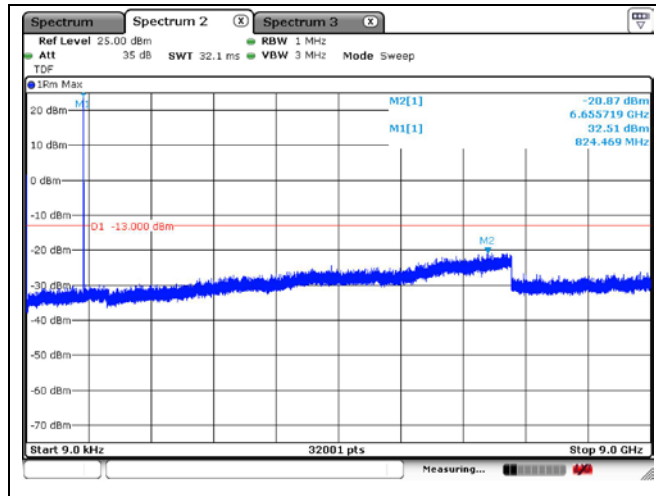


GSM 1900 VOICE Middle Channel

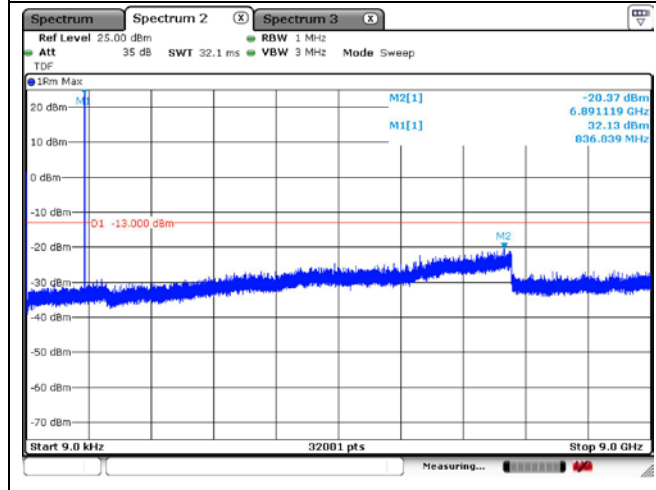


GSM 1900 VOICE High Channel

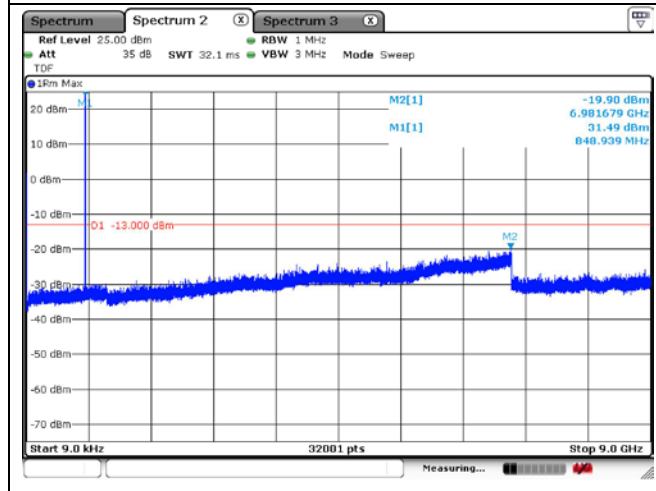
SIM2
GSM 850



GSM 850 VOICE Low Channel

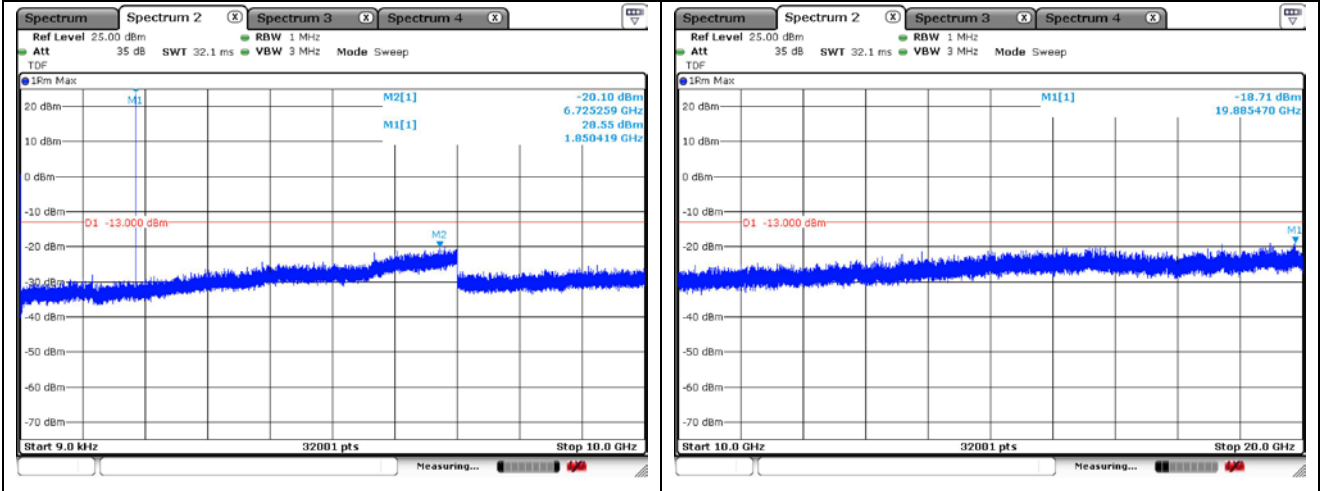


GSM 850 VOICE Middle Channel

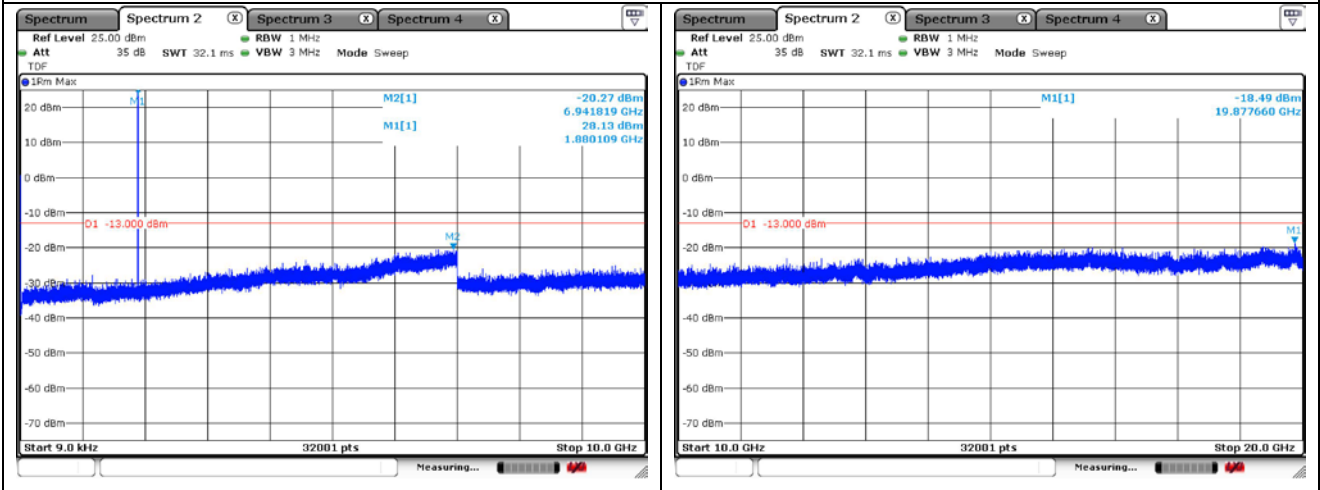


GSM 850 VOICE High Channel

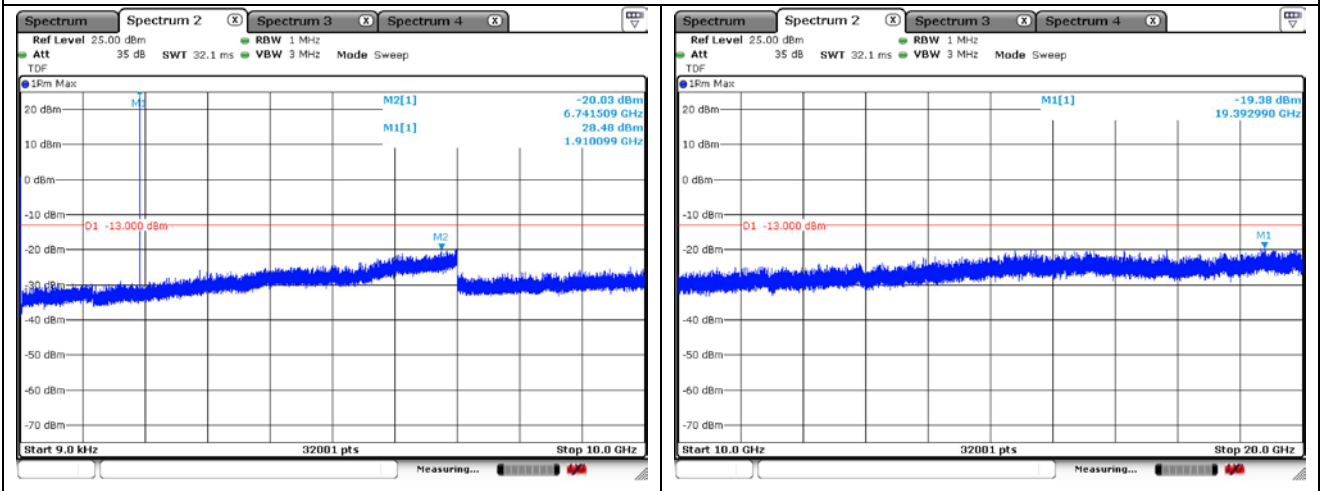
GSM 1900



GSM 1900 VOICE Low Channel



GSM 1900 VOICE Middle Channel



GSM 1900 VOICE High Channel

7. Band Edge

7.1. Limit

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

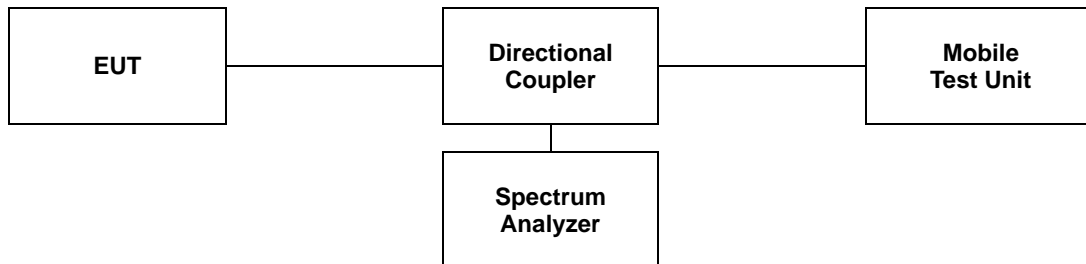
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, 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.

7.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

- a. Span was set large enough so as to capture all out of band emissions near the band edge.
- b. RBW $\geq 1\%$ of OBW
- c. VBW $\geq 3 \times$ RBW.
- d. Detector = RMS.
- e. Trace mode = Average.
- f. Sweep time = Auto.
- g. The trace was allowed to stabilize.
- h. All path loss of frequency range was investigated and compensated to spectrum analyzer as TDF function.

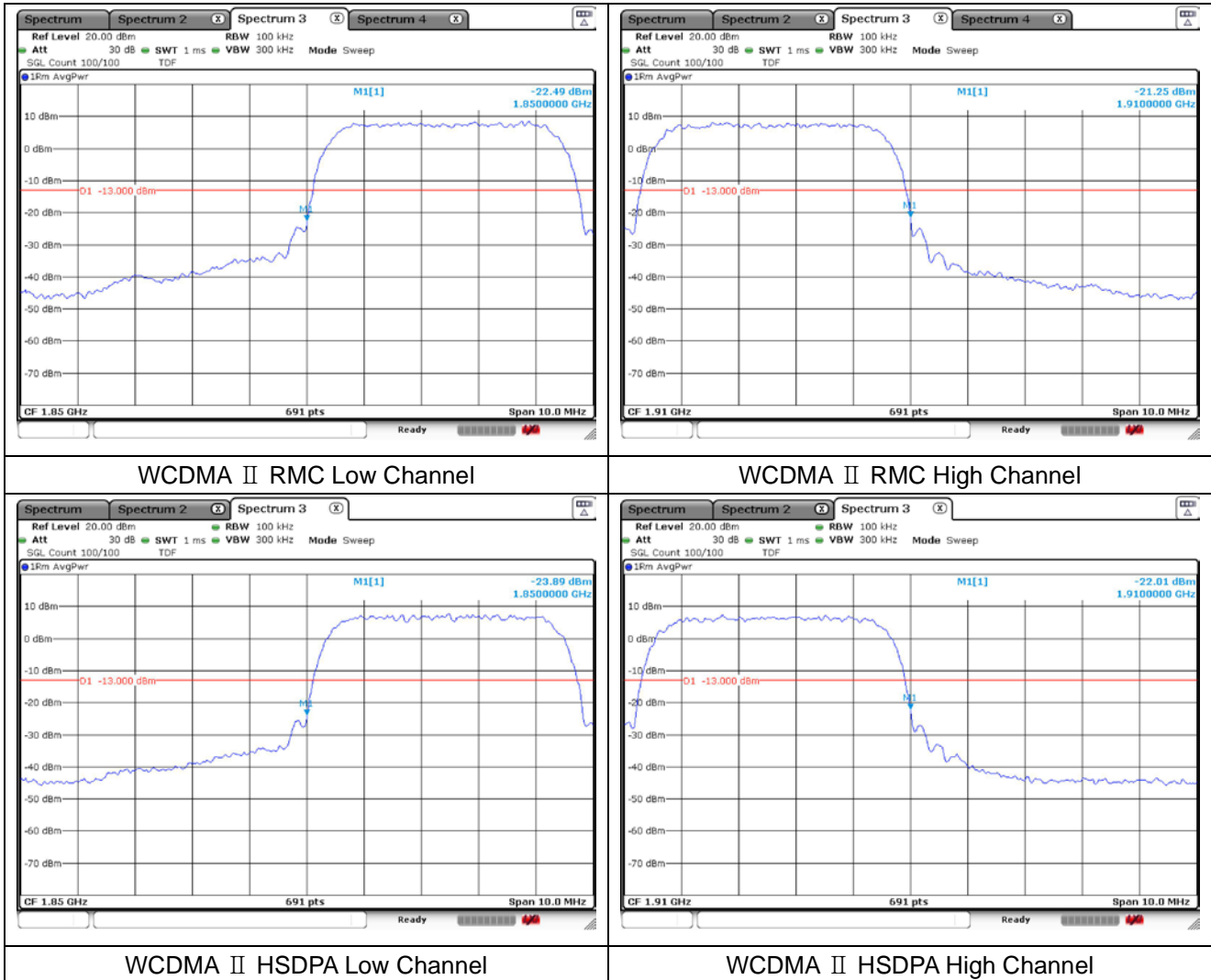


7.3. Test Results

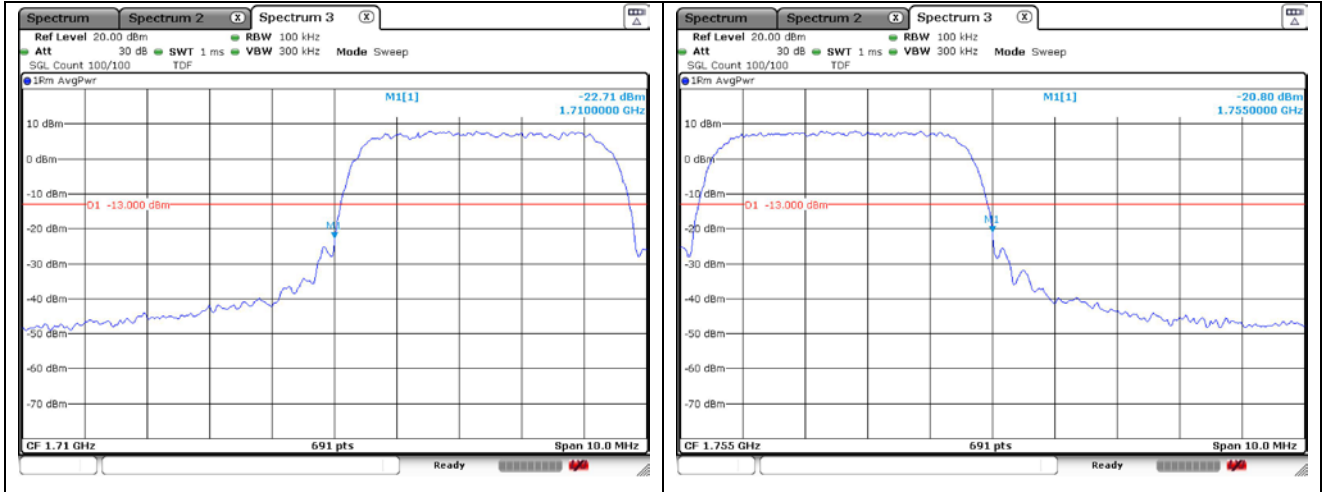
Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

- Test plots

SIM 1 WCDMA II

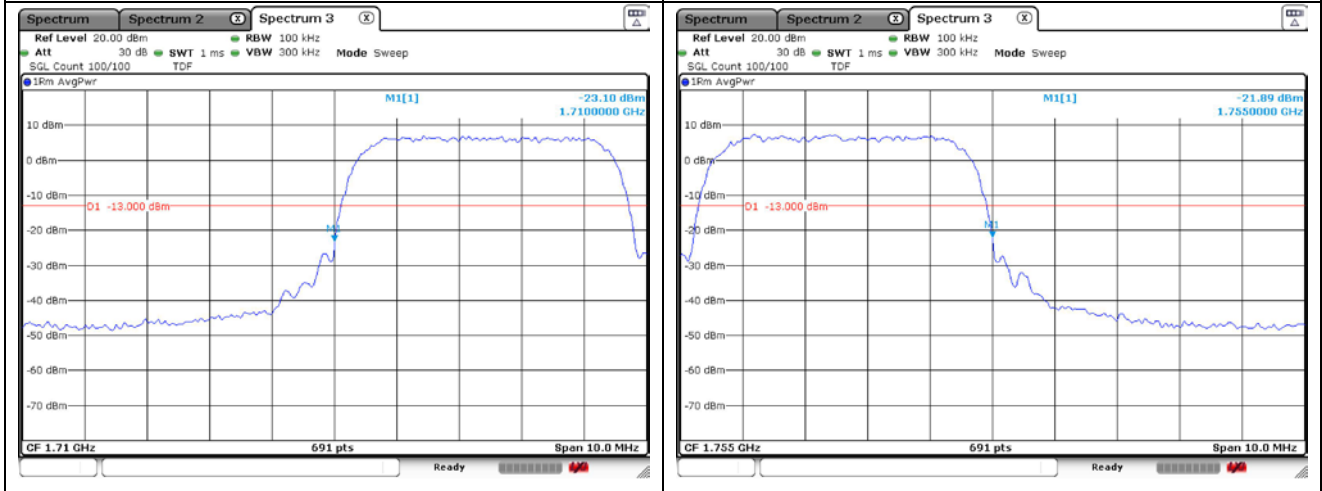


WCDMA IV



WCDMA IV RMC Low Channel

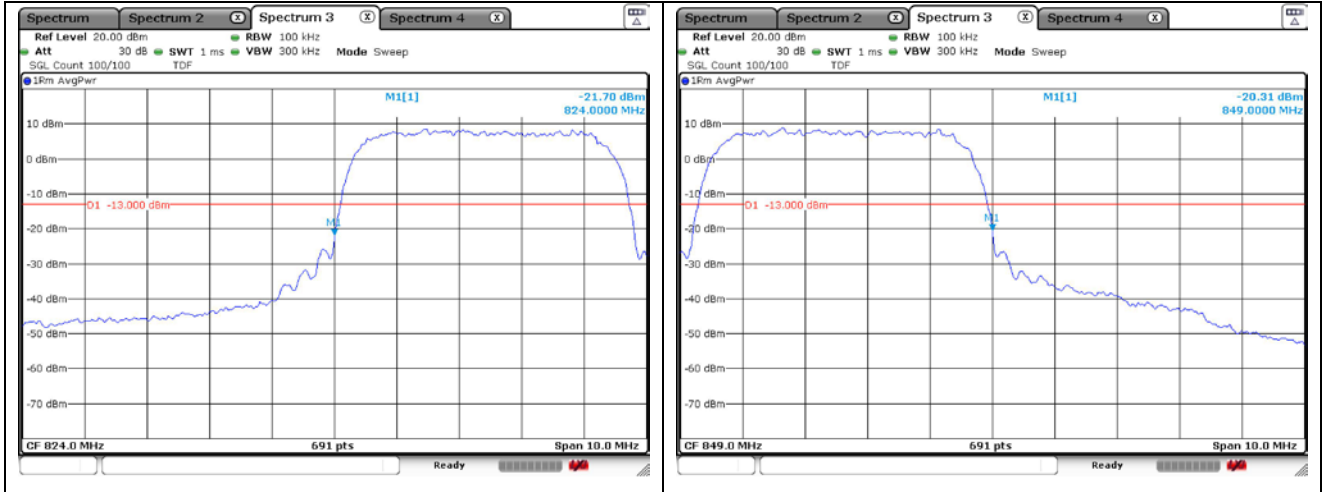
WCDMA IV RMC High Channel



WCDMA IV HSDPA Low Channel

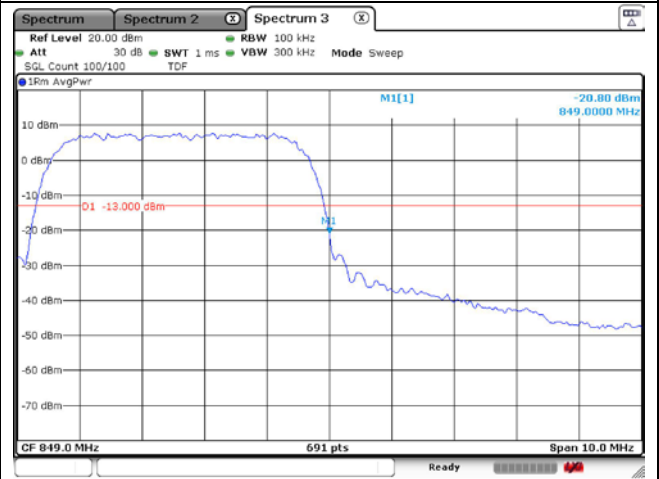
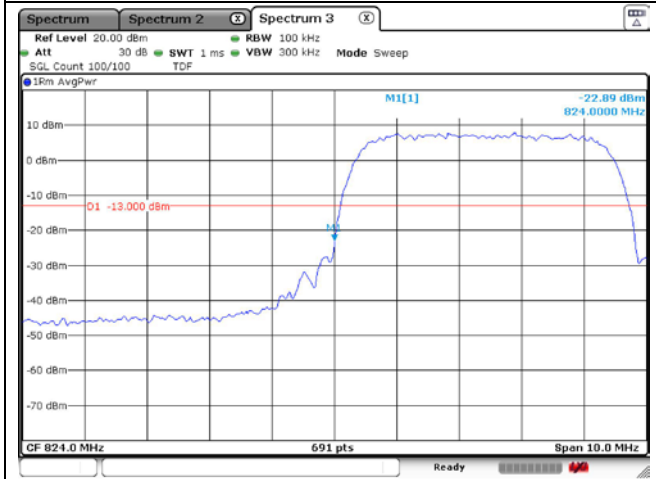
WCDMA IV HSDPA High Channel

WCDMA V



WCDMA V RMC Low Channel

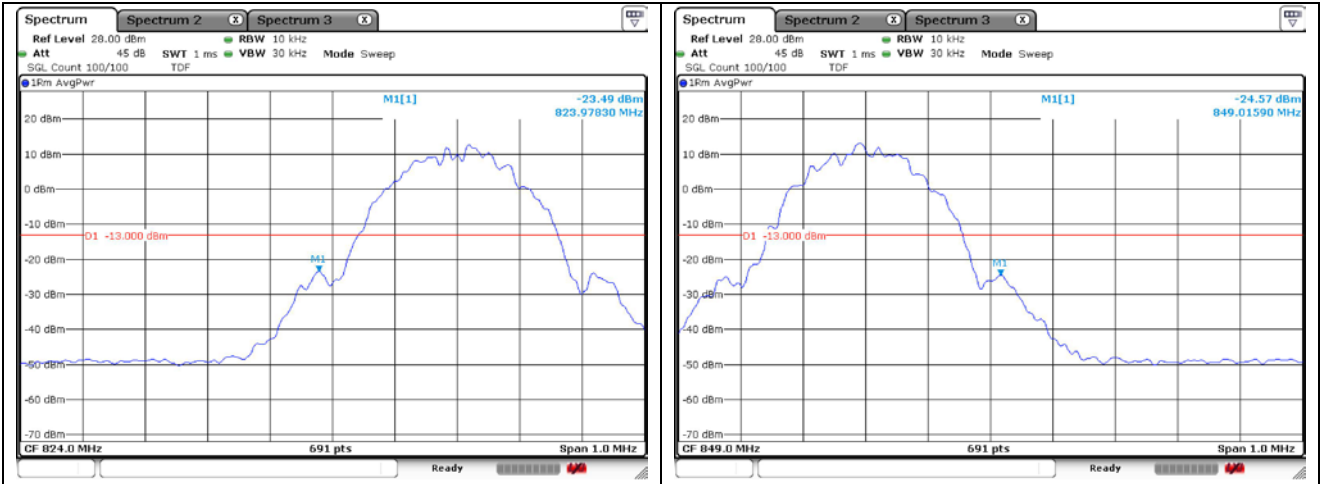
WCDMA V RMC High Channel



WCDMA V HSDPA Low Channel

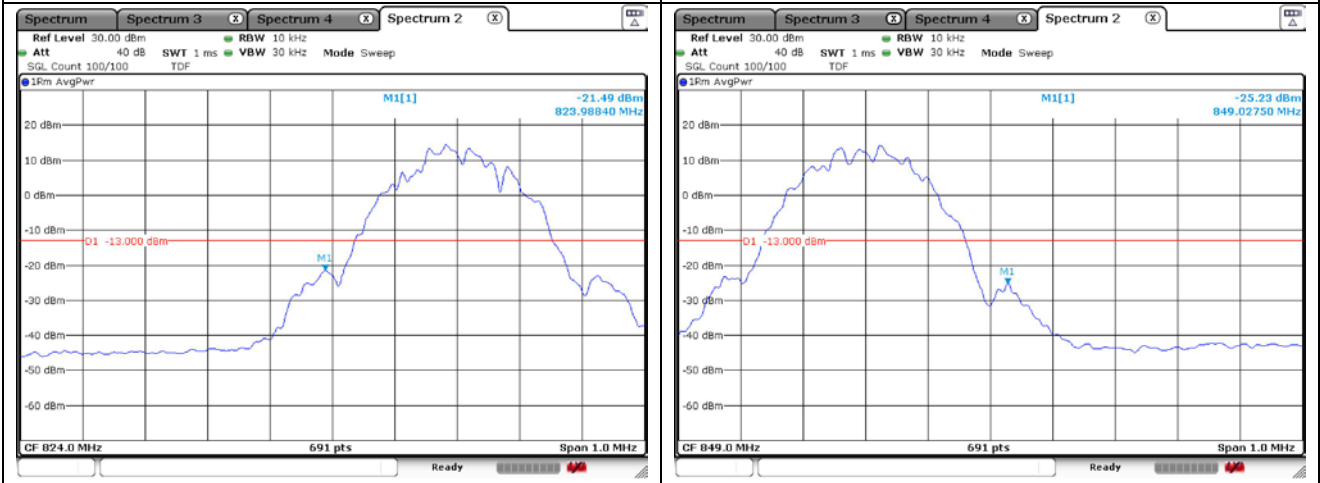
WCDMA V HSDPA High Channel

GSM 850



GSM 850 VOICE Low Channel

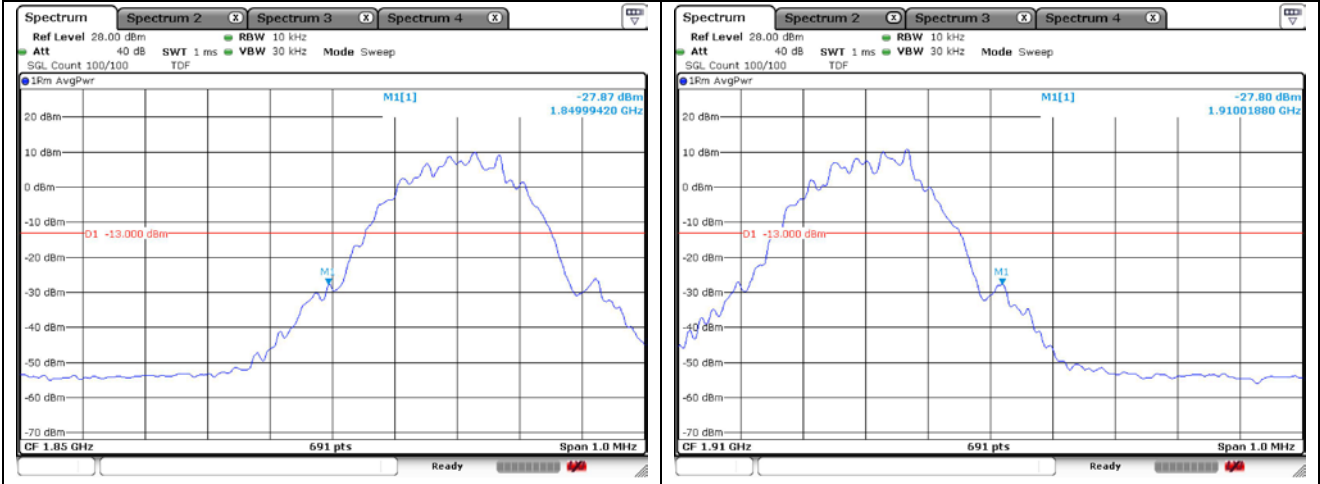
GSM 850 VOICE High Channel



GSM 850 EDGE Low Channel

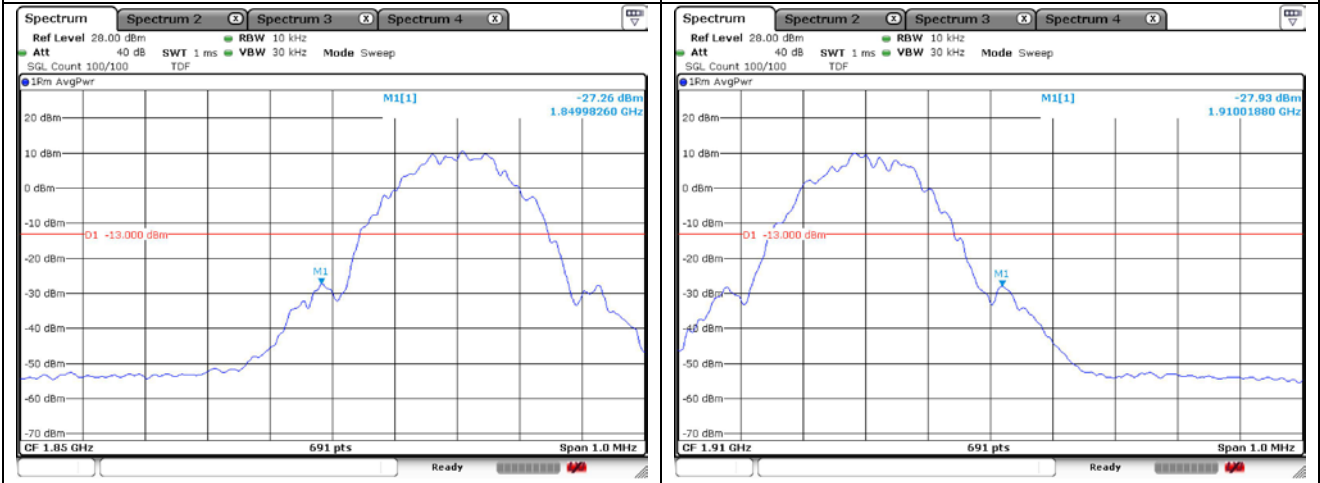
GSM 850 EDGE High Channel

GSM 1900



GSM 1900 VOICE Low Channel

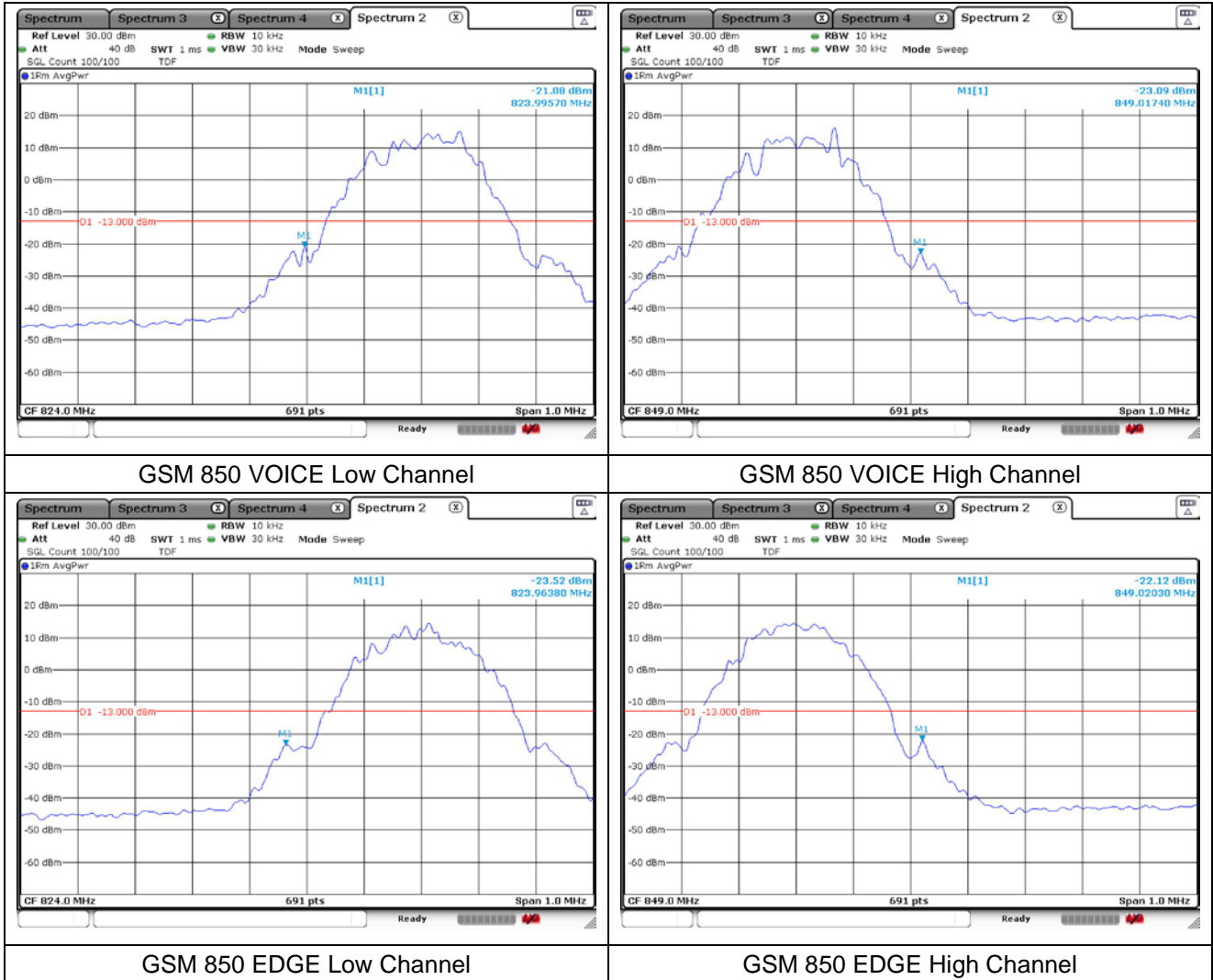
GSM 1900 VOICE High Channel



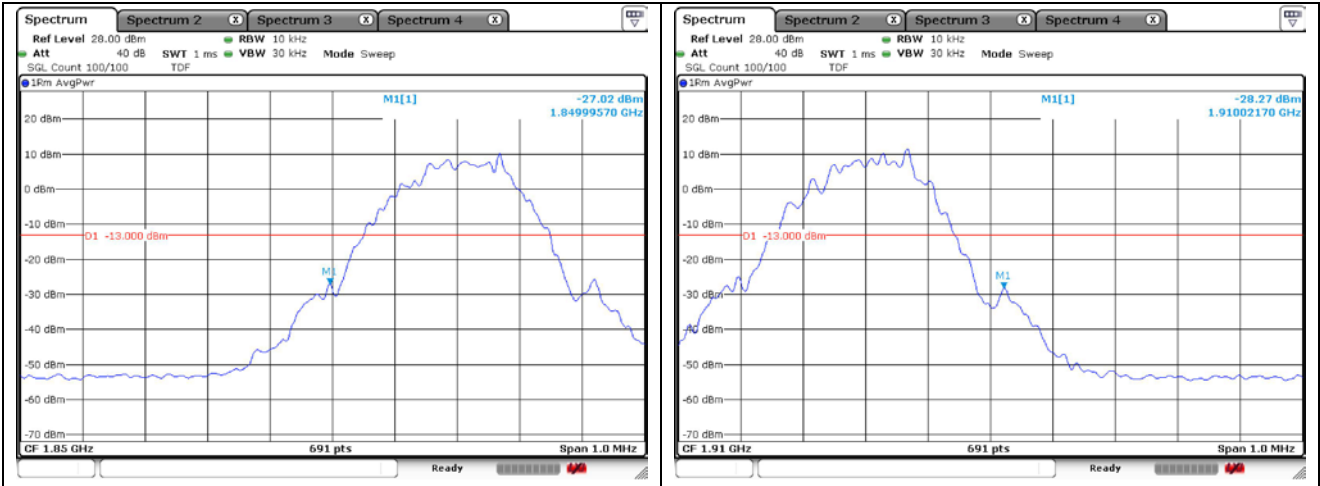
GSM 1900 EDGE Low Channel

GSM 1900 EDGE High Channel

SIM 2
GSM 850

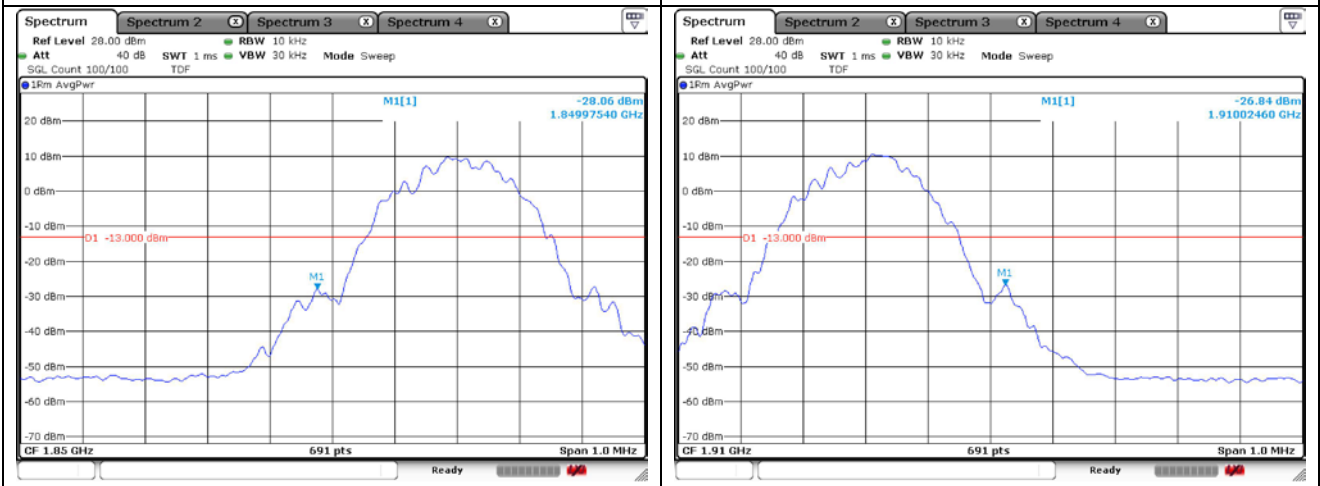


GSM 1900



GSM 1900 VOICE Low Channel

GSM 1900 VOICE High Channel



GSM 1900 EDGE Low Channel

GSM 1900 EDGE High Channel

8. Frequency Stability

8.1. Limit

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

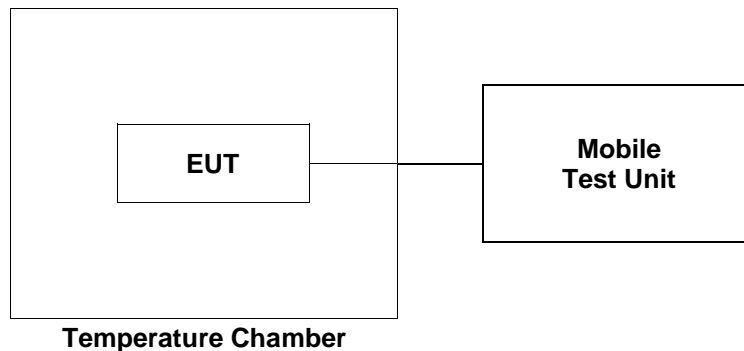
For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



8.3. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

SIM 1

WCDMA II mode at middle channel

Reference Frequency: 1 880.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	10.81	-0.001 36
40		13.74	0.000 20
30		14.59	0.000 65
20(Ref.)		13.36	-
10		16.72	0.001 79
0		16.95	0.001 91
-10		18.74	0.002 86
-20		18.94	0.002 97
-30		18.54	0.002 76
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	10.99	-0.001 26
	14.38 (115%)	11.43	-0.001 03

WCDMA IV mode at middle channel

Reference Frequency: 1 732.6 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	-12.45	0.000 68
40		-15.34	-0.000 99
30		-14.43	-0.000 47
20(Ref.)		-13.62	-
10		-13.53	0.000 05
0		-12.90	0.000 42
-10		-13.10	0.000 30
-20		-13.39	0.000 13
-30		-13.88	-0.000 15
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	-12.28	0.000 77
	14.38 (115%)	-12.58	0.000 60

WCDMA V mode at middle channel

Reference Frequency: 836.6 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	-1.18	0.001 80
40		-2.47	0.000 26
30		-2.45	0.000 29
20(Ref.)		-2.69	-
10		1.63	0.005 16
0		-2.42	0.000 32
-10		3.29	0.007 15
-20		2.98	0.006 78
-30		2.65	0.006 38
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	-1.18	0.001 80
	14.38 (115%)	-0.83	0.002 22

GSM 850 mode at middle channel

Reference Frequency: 836.6 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	10.07	-0.016 76
40		17.90	-0.007 40
30		20.75	-0.003 99
20(Ref.)		24.09	-
10		23.45	-0.000 77
0		25.25	0.001 39
-10		29.12	0.006 01
-20		28.66	0.005 46
-30		29.57	0.006 55
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	17.81	-0.007 51
	14.38 (115%)	23.31	-0.000 93

GSM 1900 mode at middle channel

Reference Frequency: 1 880.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	28.66	-0.003 20
40		23.52	-0.005 93
30		22.07	-0.006 70
20(Ref.)		34.67	-
10		42.02	0.003 91
0		35.86	0.000 63
-10		31.45	-0.001 71
-20		31.24	-0.001 82
-30		30.75	-0.002 09
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	12.12	-0.011 99
	14.38 (115%)	17.44	-0.009 16

SIM 2 GSM 850 mode at middle channel

Reference Frequency: 836.6 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	20.26	-0.008 43
40		15.40	-0.014 24
30		29.35	0.002 44
20(Ref.)		27.31	-
10		26.47	-0.001 00
0		18.54	-0.010 48
-10		13.65	-0.016 33
-20		16.83	-0.012 53
-30		24.40	-0.003 48
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	-3.30	-0.036 59
	14.38 (115%)	3.45	-0.028 52

GSM 1900 mode at middle channel

Reference Frequency: 1 880.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12.5	12.63	-0.003 07
40		36.72	0.009 74
30		49.52	0.016 55
20(Ref.)		18.40	-
10		15.16	-0.001 72
0			-0.009 79
-10		22.36	0.002 11
-20		28.45	0.005 35
-30		27.47	0.004 82
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	10.63 (85%)	15.52	-0.001 53
	14.38 (115%)	17.33	-0.000 57

- End of the Test Report -