



RF TEST REPORT

Report No.: SET2014-07305

Product: GSM/WCDMA MOBILE PHONE

FCC ID: CLNSS4045

Model No.: M4 SS4045

Applicant: MFOURTEL MEXICO S.A. DE C.V.

Address: Av. Ejercito Nacional 436 Piso 3 Chapultepec Morales Miguel
Hidalgo D.F 11570

Issued by: CCIC-SET

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Test Report

Product: GSM/WCDMA MOBILE PHONE

Brand Name.....: M4 SS4045

Trade Name.....: M4

Applicant.....: MFOURTEL MEXICO S.A. DE C.V.


Applicant Address: Av. Ejercito Nacional 436 Piso 3 Chapultepec Morales
Miguel Hidalgo D.F 11570

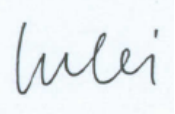
Manufacturer: CK Telecom Limited

Manufacturer Address: Technology Road.High-Tech Development Zone. Heyuan,
Guangdong,P.R.China.

Test Standards: 47 CFR Part 2(10-1-12 Edition) Frequency Allocations and
Radio Treaty Matters; General Rules and Regulations
47 CFR Part 22(10-1-12 Edition) Public Mobile Services
47 CFR Part 24(10-1-12 Edition)Personal Communications
Services

Test Result.....: PASS

Tested by:  2014.07.18
Haigang He, Test Engineer

Reviewed by.....:  2014.07.18
Lu Lei, Senior EGINEER


Approved by:  2014.07.18
Wu Li'an, Manager



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Change History		
Issue	Date	Reason for change
1.0	July.18 2014	First edition



middle and highest channel numbers (ARFCHs) used and tested in this report are separately 4132 (826.4MHz), 4183(836.6MHz) and 4233 (846.6MHz).

Note 4: The transmitter (Tx) frequency arrangement of the WCDMA 1900MHz band used by the EUT can be represented with the formula $F(n)=1852.4+0.2*(n-9262)$, $9262 \leq n \leq 9538$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

Note 5: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer

Note 6: The EUT does not support uplink function in EDGE mode.



1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22 and Part 24 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-12 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-12 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-12 Edition)	Personal Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.1046	Conducted RF Output Power	PASS
2	2.1049	99% Occupied Bandwidth	PASS
3	2.1055 22.355 24.235	Frequency Stability	PASS
4	2.1051 2.1057 22.917 24.238	Conducted Out of Band Emissions	PASS
5	2.1051 2.1057 22.917 24.238	Band Edge	PASS
6	22.913 24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
7	2.1053 2.1057 22.917 24.238	Radiated Out of Band Emissions	PASS

NOTE: Measurement method according to TIA/EIA 603.D-2010



1.3 Facilities and Accreditations

1.3.1 Test Facilities

CNAS-Lab Code: L1659

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

FCC-Registration No.: 406086

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 406086, Renewal date Nov. 19, 2011, valid time is until Nov. 18, 2014.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

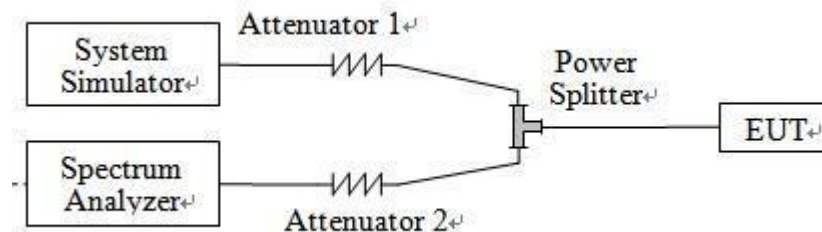
2.1 Conducted RF Output Power

2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
System Simulator	Agilent	E5515C	MY47510547	2013.09.14	2014.09.13
Spectrum Analyzer	R&S	FSP40	MY4510810	2014.06.09	2015.06.08
Spectrum Analyzer	Agilent	E4407B	1164.4391.40	2014.06.09	2015.06.08
Power Meter	Agilent	E4418B	GB43318055	2014.06.09	2015.06.08
Power Splitter	Weinschel	1506A	NW521	2014.06.11	2015.06.10
Attenuator 1	MCE/weinschel	10dB	BN3693	2014.06.11	2015.06.10
Attenuator 2	Resnet	3dB	(n.a.)	2014.06.09	2015.06.08



2.1.3 Test Results

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

1. GSM Model Test Verdict:

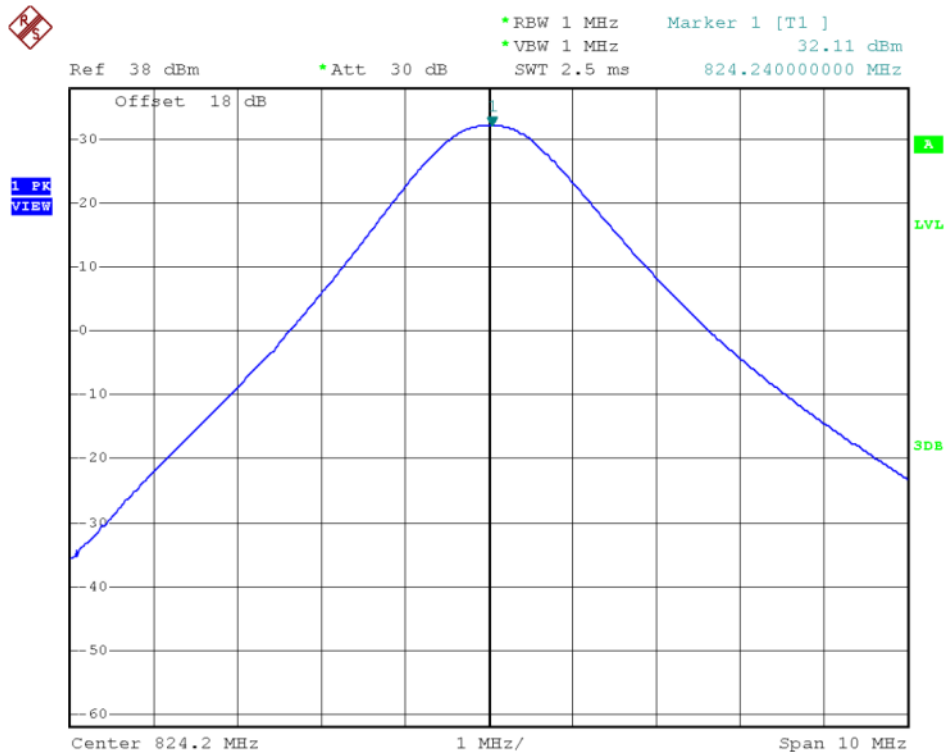
Band	Channel	Frequency (MHz)	Measured Output Power		Verdict
			dBm	Refer to Plot	
GSM 850MHz	128	824.2	32.11	Plot A1 to A3	PASS
	190	836.6	32.36		PASS
	251	848.8	32.51		PASS
GSM 1900MHz	512	1850.2	29.33	Plot B1 to B3	PASS
	661	1880.0	29.62		PASS
	810	1909.8	29.66		PASS
GPRS 850MHz	128	824.2	31.32	Plot C1 to C3 ^{Note 1}	PASS
	190	836.6	31.42		PASS
	251	848.8	31.55		PASS
GPRS 1900MHz	512	1850.2	28.40	Plot D1 to D3 ^{Note 1}	PASS
	661	1880.0	28.60		PASS
	810	1909.8	28.65		PASS

Note 1: For the GPRS model, all the slots were tested and just the worst data was record in this report.

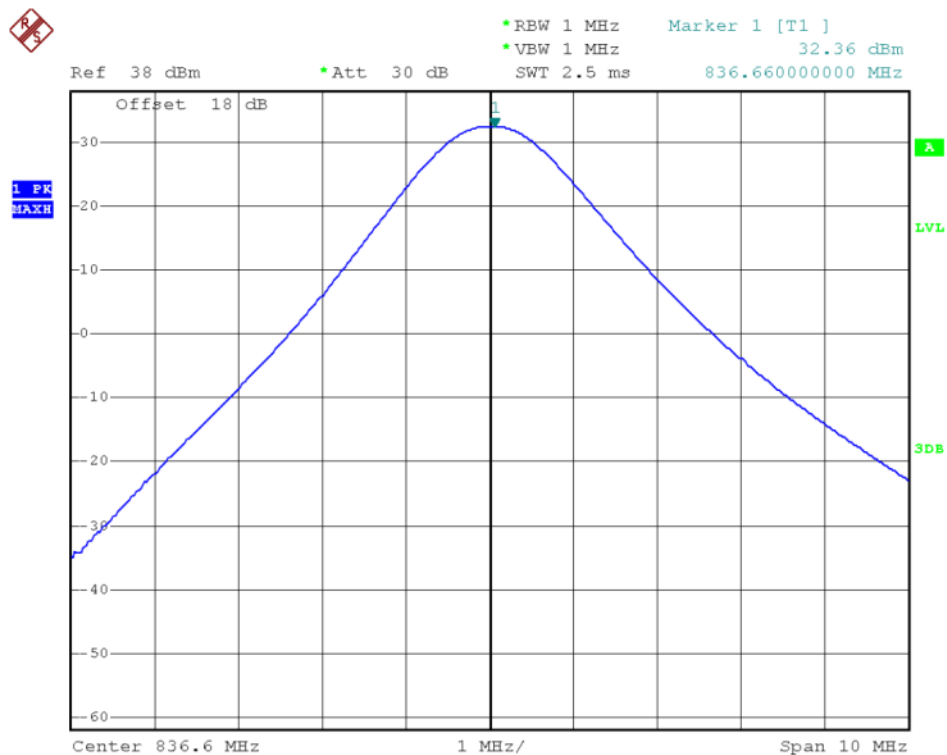
2. WCDMA Model Test Verdict:

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4183	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	22.68	22.52	22.61	22.78	22.55	22.70
HSDPA	1	22.31	22.20	22.43	22.47	22.34	22.41
	2	22.24	22.04	22.32	22.31	22.37	22.56
	3	21.67	21.87	21.88	21.96	21.97	22.00
	4	21.81	21.68	21.98	21.92	22.53	21.99
HSUPA	1	22.33	22.01	22.33	21.98	22.22	21.84
	2	22.45	22.10	22.43	21.60	21.94	21.61
	3	22.49	22.07	22.49	22.45	22.29	22.19
	4	22.40	22.05	22.53	21.95	21.48	21.60
	5	22.23	22.17	22.33	22.27	22.25	22.27
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA was tested by power meter.						

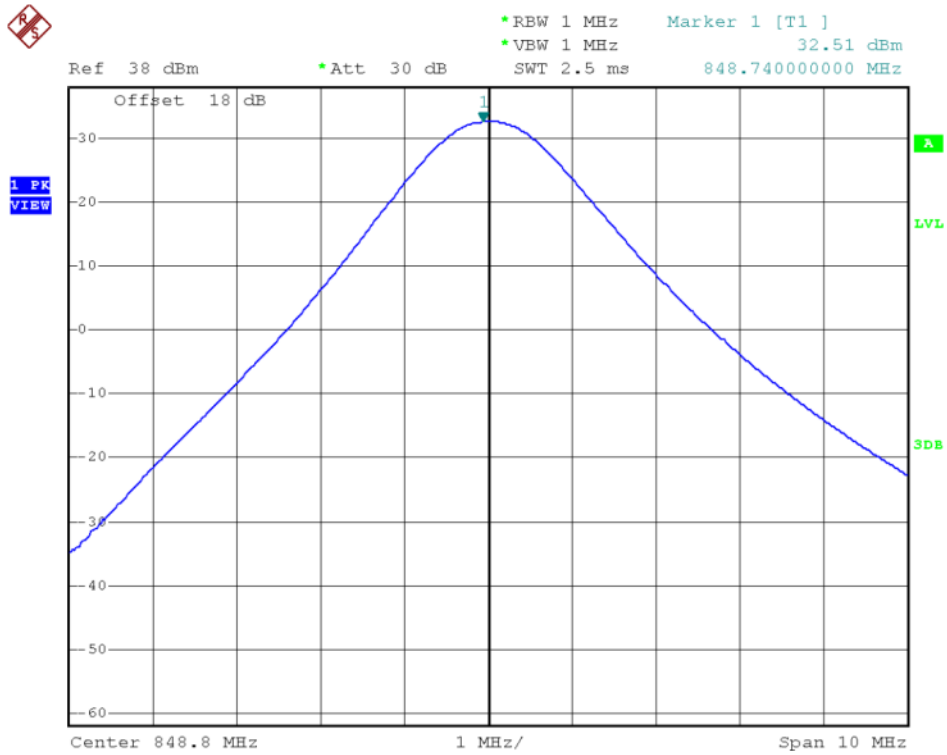
3. GSM Model Test Plots:



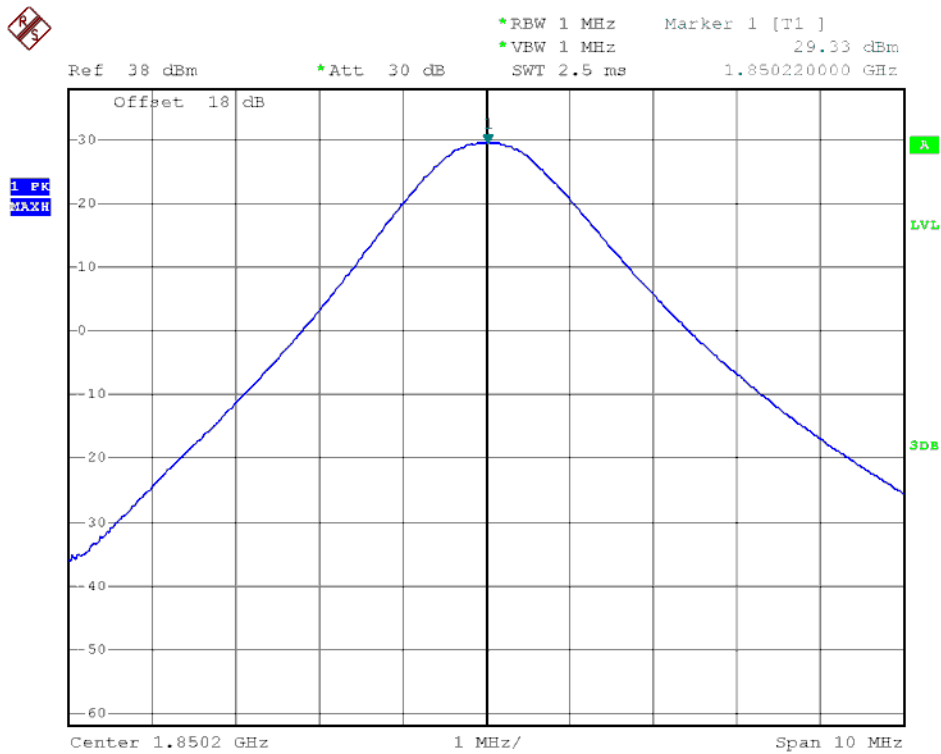
(Plot A1: GSM 850MHz Channel = 128)



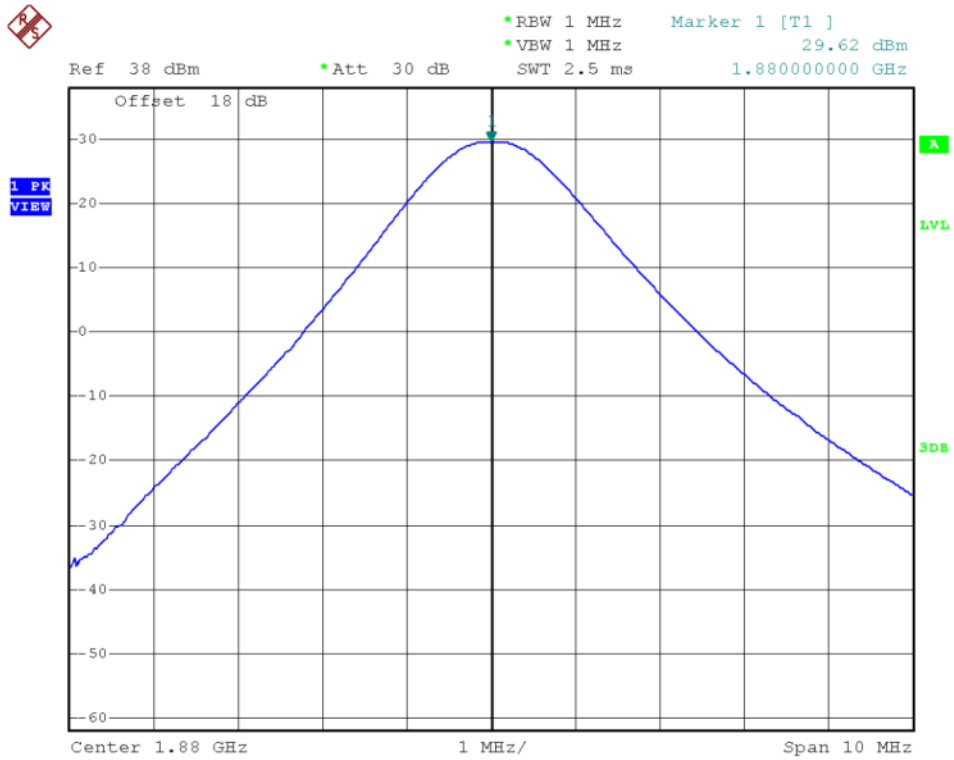
(Plot A2: GSM 850MHz Channel = 190)



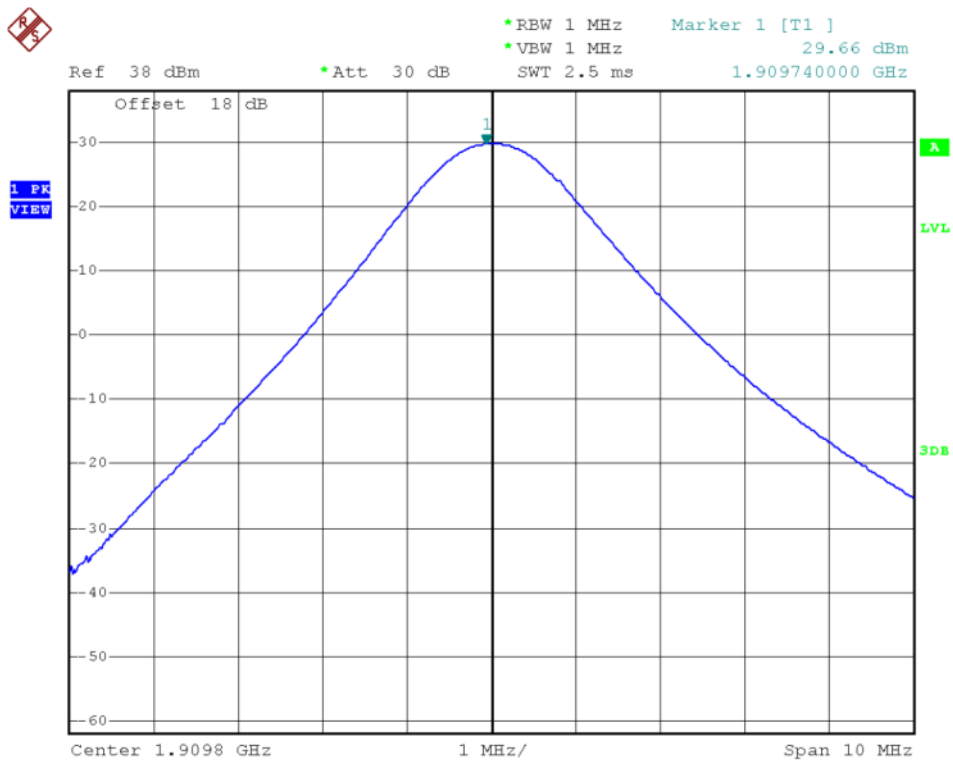
(Plot A3: GSM 850MHz Channel = 251)



(Plot B1: GSM 1900MHz Channel = 512)

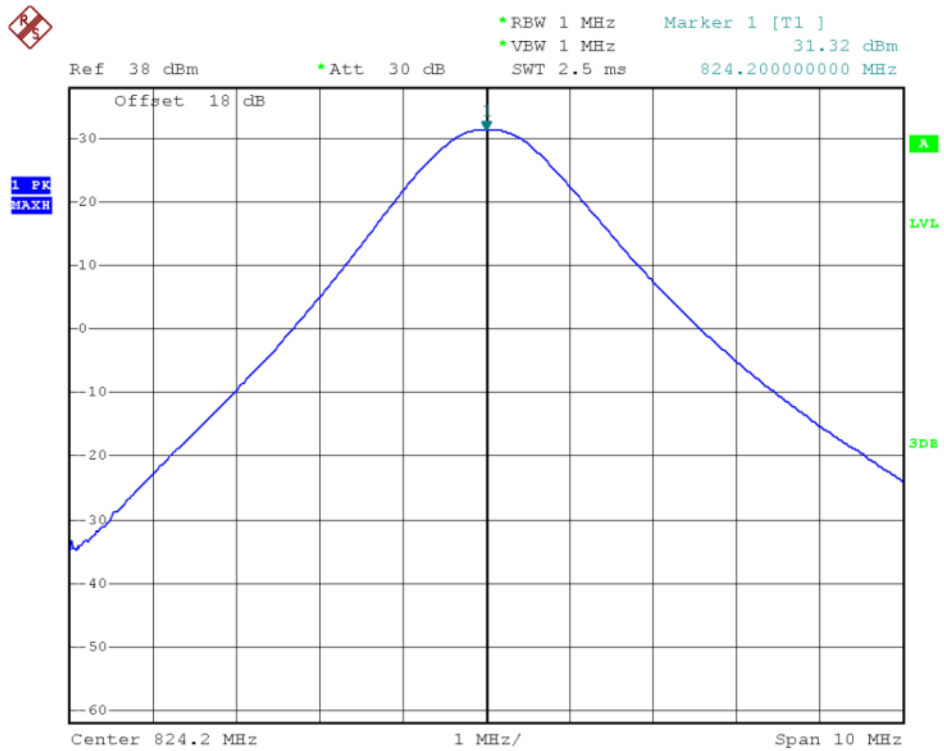


(Plot B2: GSM 1900MHz Channel = 661)

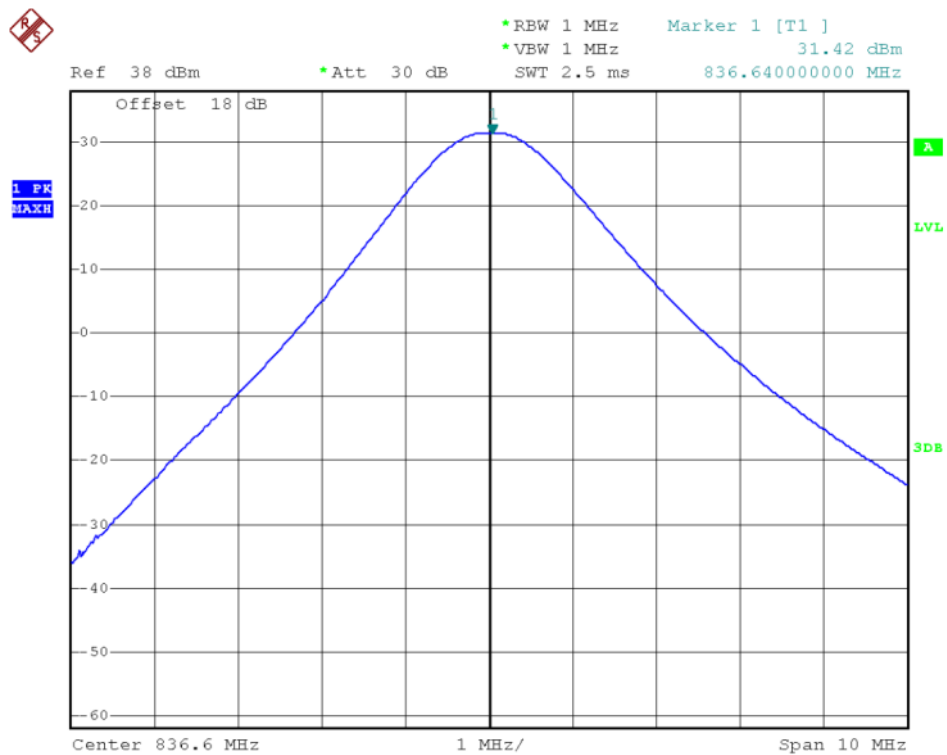


(Plot B3: GSM 1900MHz Channel = 810)

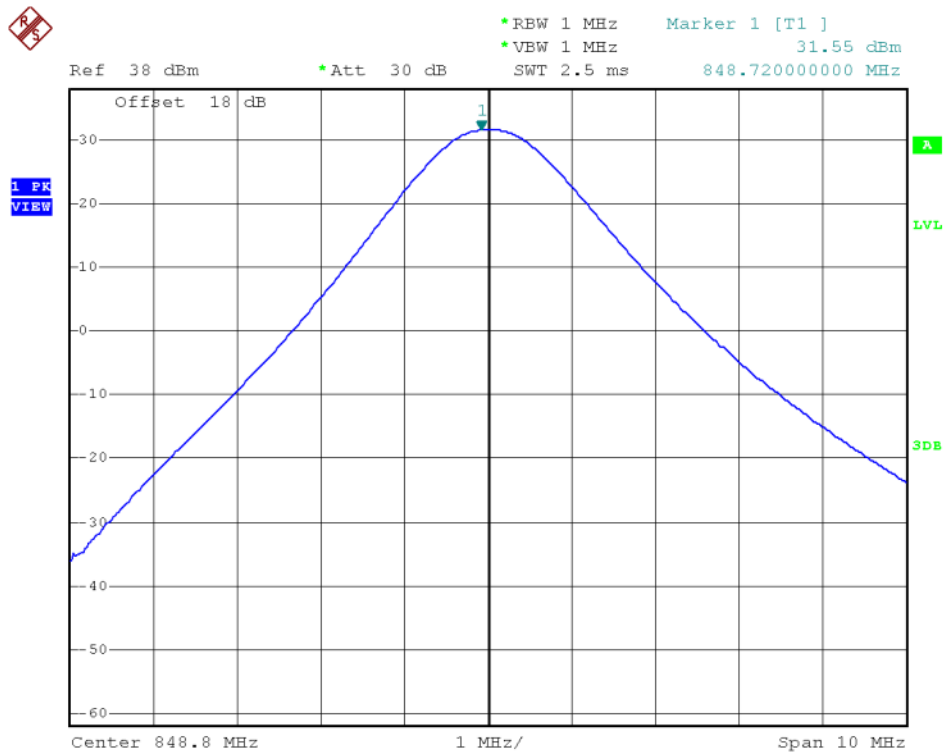
4. GPRS Model Test Plots:



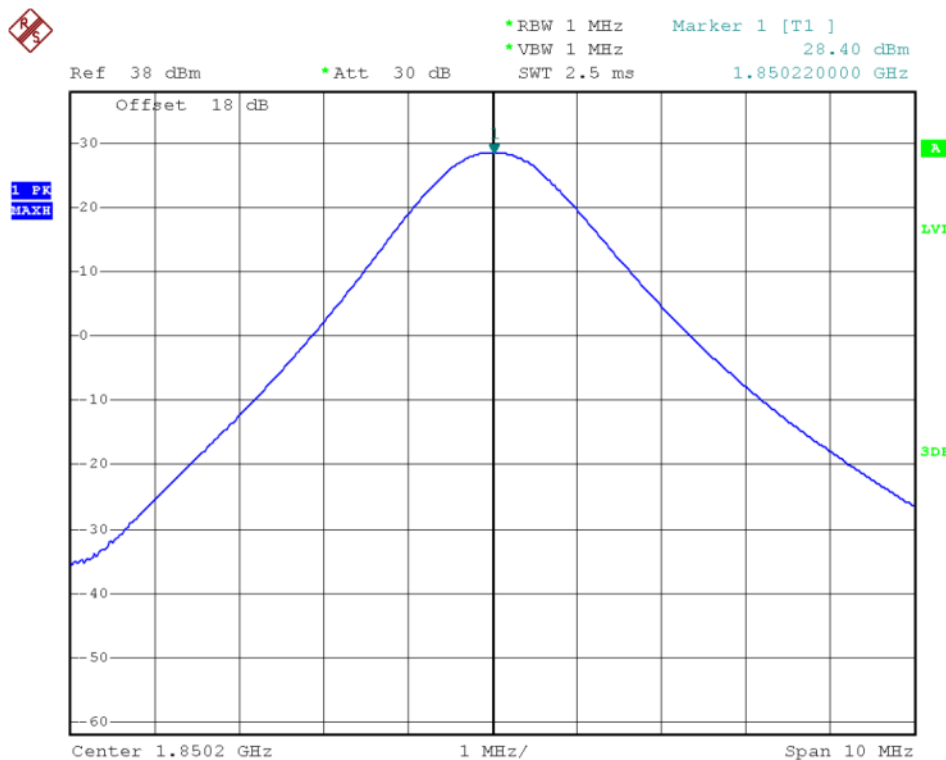
(Plot C1: GPRS 850MHz Channel = 128)



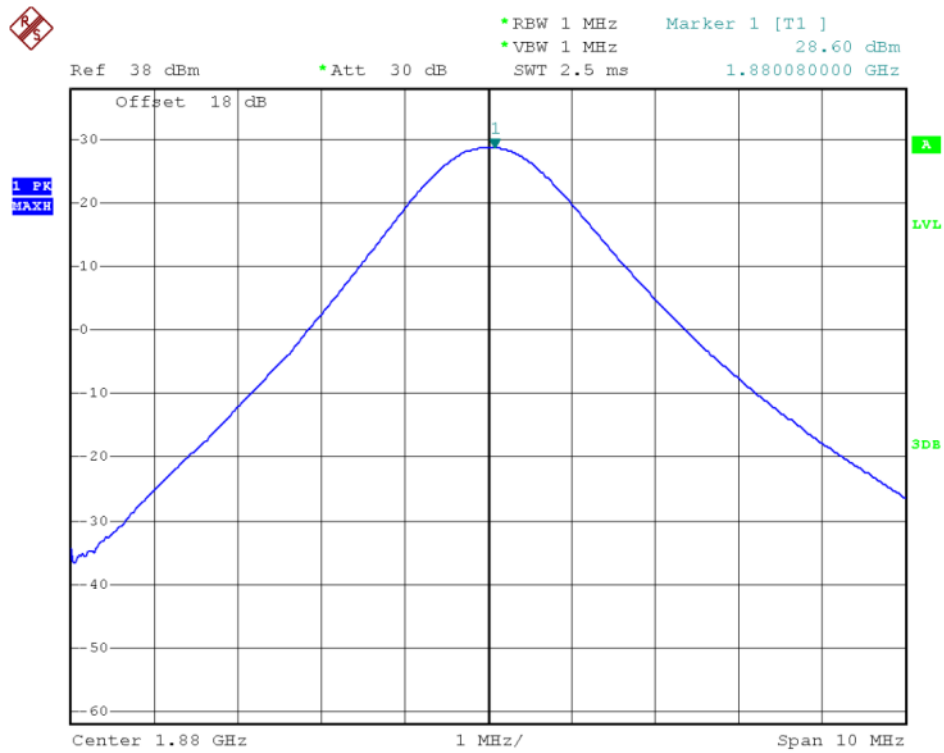
(Plot C2: GPRS 850MHz Channel = 190)



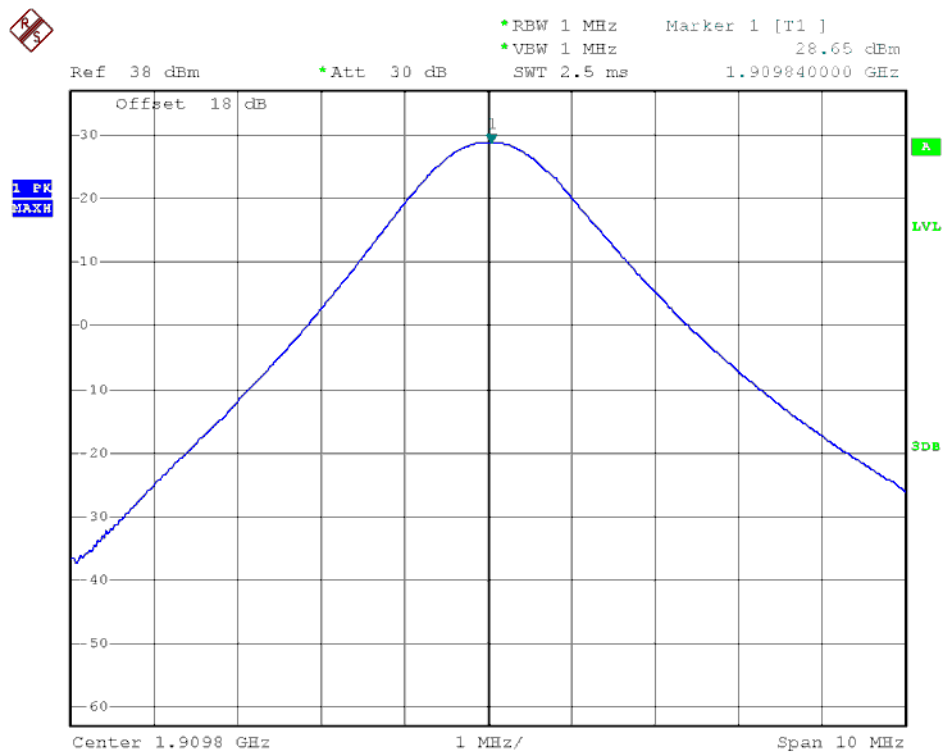
(Plot C3: GPRS 850MHz Channel = 251)



(Plot D1: GPRS 1900MHz Channel = 512)



(Plot D2: GPRS 1900MHz Channel = 661)



(Plot D3: GPRS 1900MHz Channel = 810)



2.2 Peak to Average Ratio

2.2.1 Definition

According to FCC section 2.1049 and FCC 24.232(d), the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2 Test Description

See section 2.1.2 of this report.

2.2.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

A. For GSM operating mode:

- a. Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
- b. Set EUT in maximum output power, and triggered the bust signal.
- c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average radio.

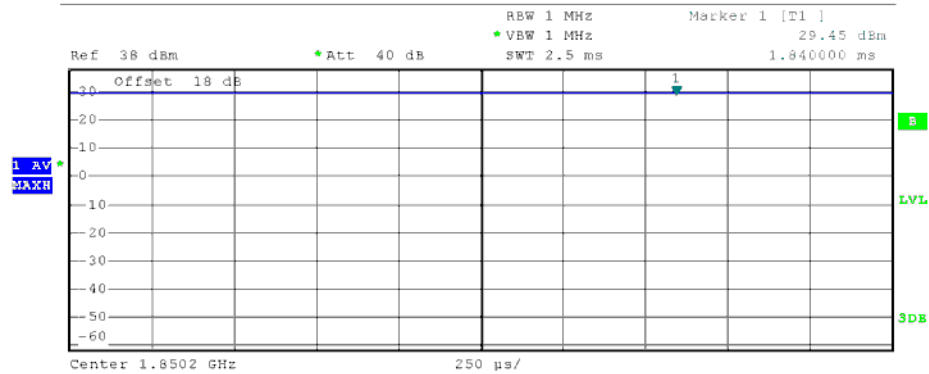
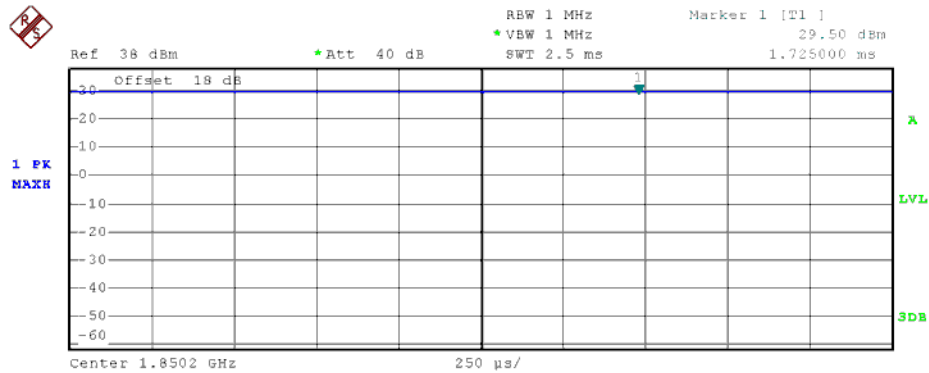
B. For UMTS operating mode:

- a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

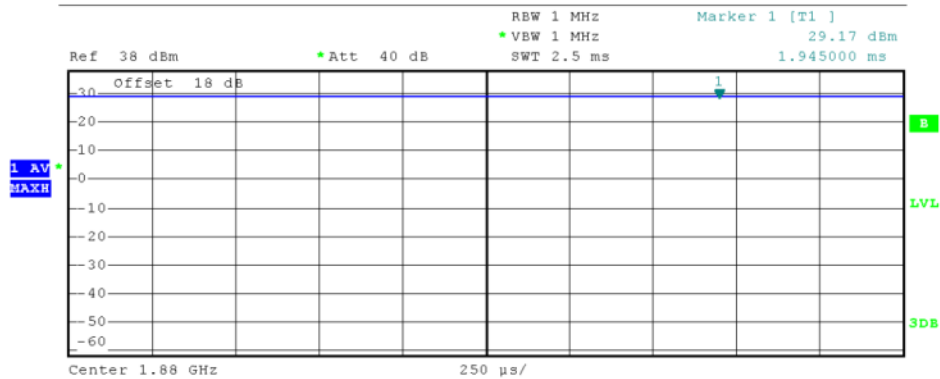
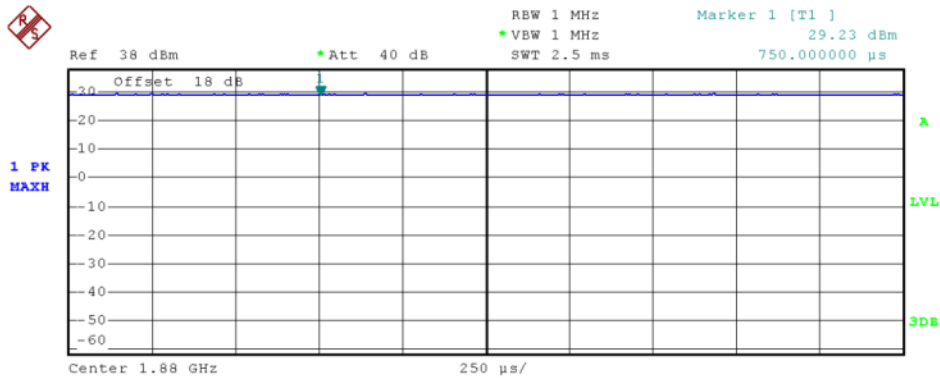
1. Test Verdict:

Band	Channel	Frequency (MHz)	Peak to Average radio		Limit dB	Verdict
			dB	Refer to Plot		
GSM 1900MHz	512	1850.2	0.05	Plot A1 to A3	13	PASS
	661	1880.0	0.06			PASS
	810	1909.8	0.07			PASS
WCDMA 1900MHz	9262	1852.4	3.12	Plot B1 toB3	13	PASS
	9400	1880.0	3.08			PASS
	9538	1907.6	3.00			PASS
HSDPA 1900MHz	9262	1852.4	3.12	Plot C1 toC3	13	PASS
	9400	1880.0	3.08			PASS
	9538	1907.6	3.04			PASS
HSUPA 1900MHz	9262	1852.4	3.12	Plot D1 toD3	13	PASS
	9400	1880.0	3.08			PASS
	9538	1907.6	3.00			PASS

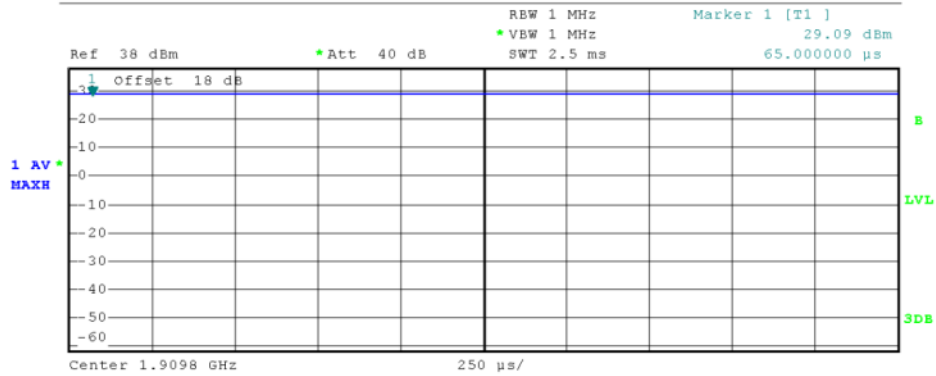
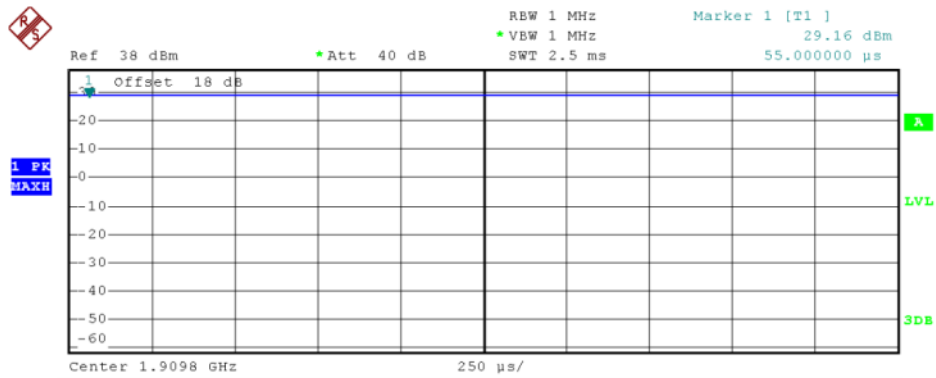
2. GSM Model Test Plots:



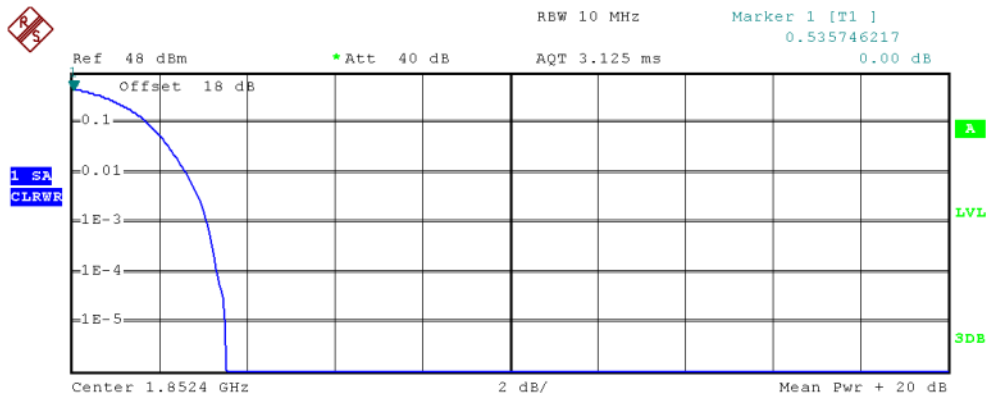
(Plot A1: GSM 1900 MHz Channel = 512)



(Plot A2: GSM 1900 MHz Channel = 661)



(Plot A3: GSM 1900MHz Channel = 810)



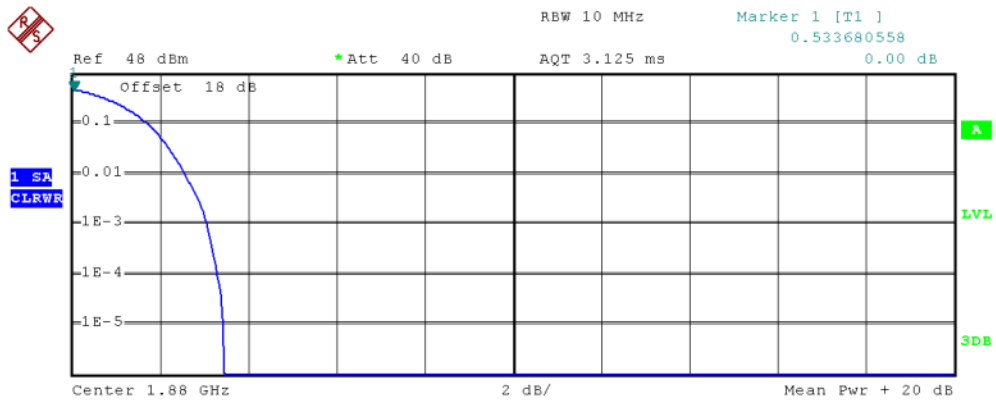
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.94 dBm
 Peak 26.47 dBm
 Crest 3.53 dB

10 % 1.76 dB
 1 % 2.64 dB
 .1 % 3.12 dB
 .01 % 3.36 dB

(Plot B1: WCDMA 1900MHz Channel = 9262)



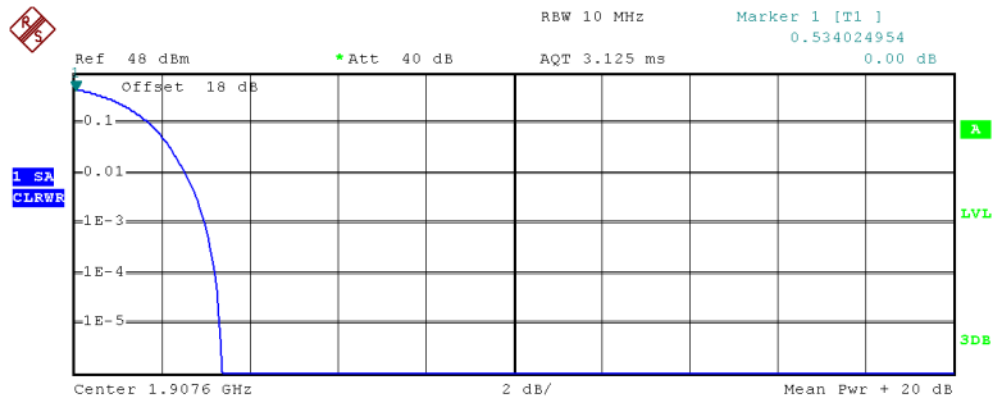
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.59 dBm
 Peak 26.05 dBm
 Crest 3.45 dB

10 % 1.76 dB
 1 % 2.60 dB
 .1 % 3.08 dB
 .01 % 3.32 dB

(Plot B2: WCDMA 1900MHz Channel = 9400)



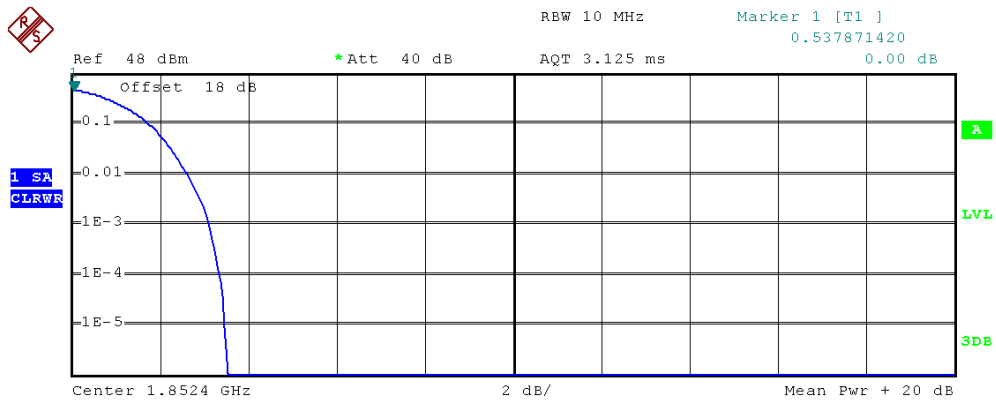
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.52 dBm
 Peak 25.91 dBm
 Crest 3.39 dB

10 % 1.76 dB
 1 % 2.56 dB
 .1 % 3.00 dB
 .01 % 3.24 dB

(Plot B3: WCDMA 1900MHz Channel = 9538)



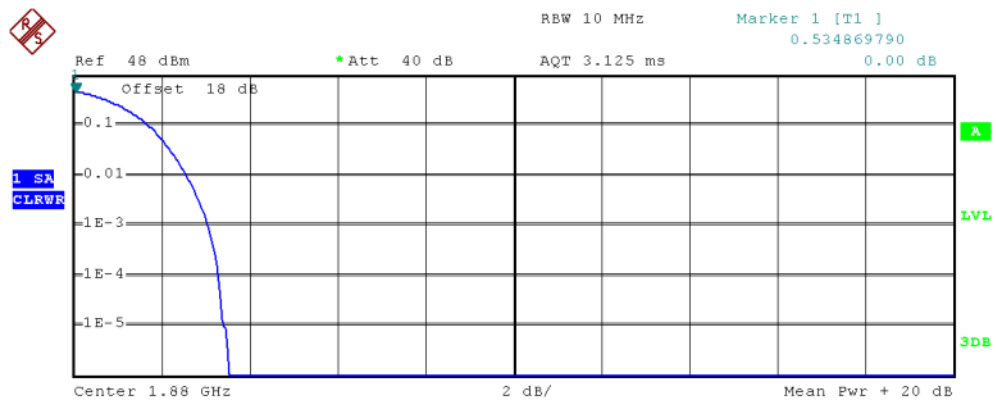
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.93 dBm
Peak 26.47 dBm
Crest 3.54 dB

10 % 1.76 dB
1 % 2.64 dB
.1 % 3.12 dB
.01 % 3.36 dB

(Plot C1: HSDPA 1900MHz Channel = 9262)



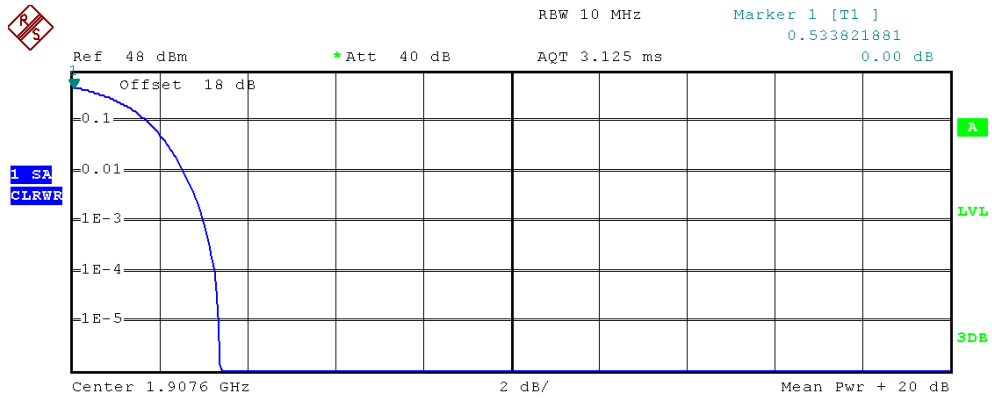
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.58 dBm
Peak 26.12 dBm
Crest 3.54 dB

10 % 1.76 dB
1 % 2.60 dB
.1 % 3.08 dB
.01 % 3.32 dB

(Plot C2: HSDPA 1900MHz Channel = 9400)



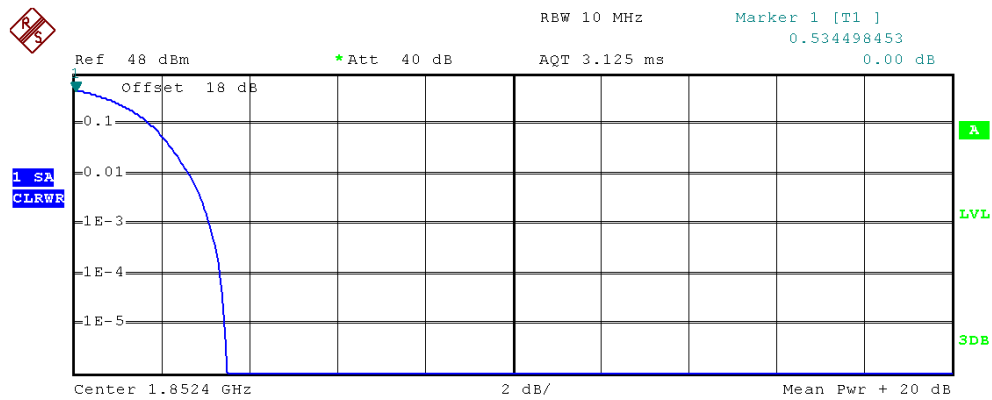
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.51 dBm
 Peak 25.91 dBm
 Crest 3.40 dB

10 % 1.76 dB
 1 % 2.56 dB
 .1 % 3.04 dB
 .01 % 3.28 dB

(Plot C3: HSDPA 1900MHz Channel = 9538)



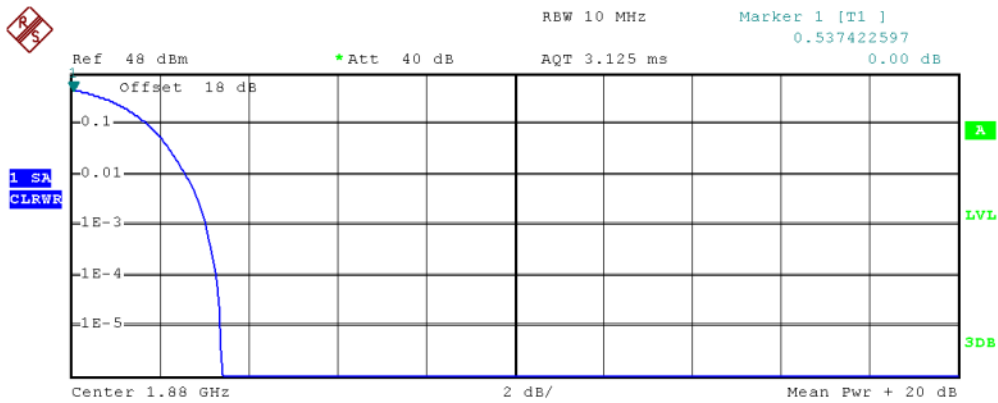
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.91 dBm
 Peak 26.40 dBm
 Crest 3.49 dB

10 % 1.80 dB
 1 % 2.64 dB
 .1 % 3.12 dB
 .01 % 3.36 dB

(Plot D1: HSUPA 1900MHz Channel = 9262)



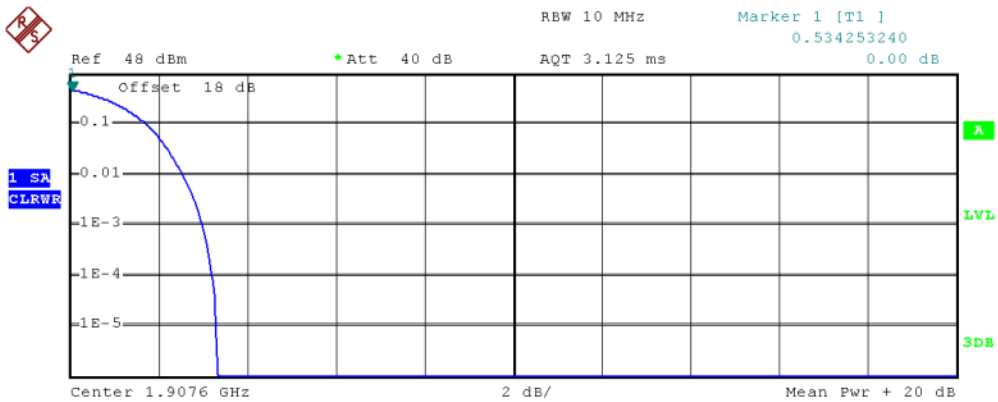
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.58 dBm
 Peak 25.98 dBm
 Crest 3.40 dB

10 % 1.76 dB
 1 % 2.60 dB
 .1 % 3.08 dB
 .01 % 3.28 dB

(Plot D2: HSUPA 1900MHz Channel = 9400)



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean 22.52 dBm
 Peak 25.84 dBm
 Crest 3.32 dB

10 % 1.76 dB
 1 % 2.56 dB
 .1 % 3.00 dB
 .01 % 3.24 dB

(Plot D3: HSUPA 1900MHz Channel = 9538)



2.3 99% Occupied Bandwidth

2.3.1 Definition

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,

2.3.2 Test Description

See section 2.1.2 of this report.

2.3.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

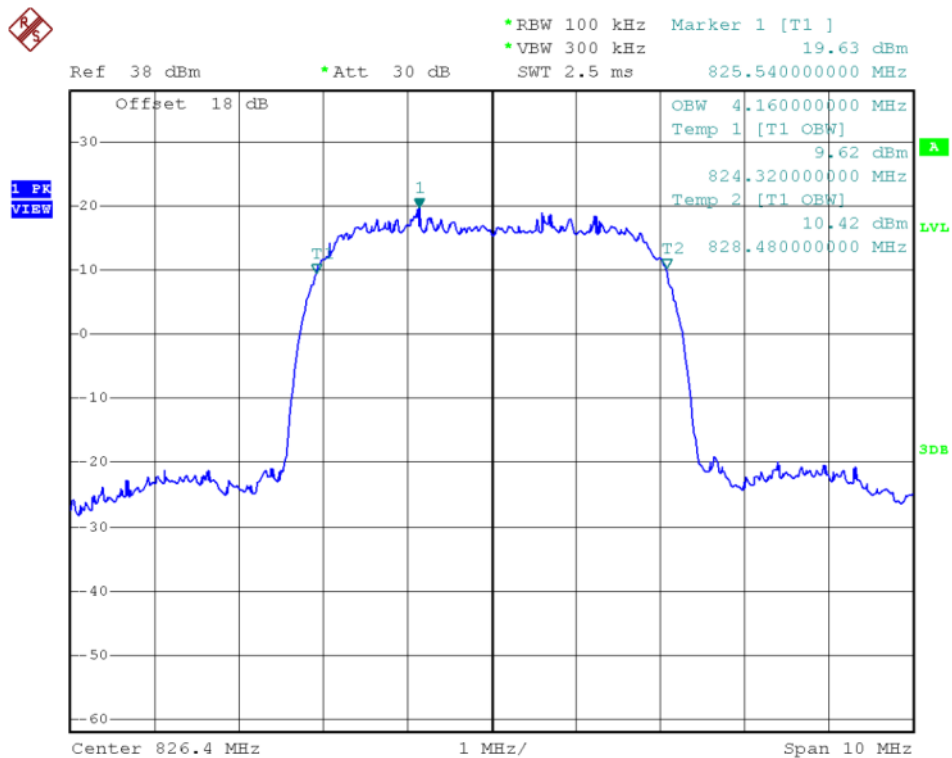
1. Test Verdict:

Band	Channel	Frequency (MHz)	99% occupied bandwidth	26dB bandwidth	Refer to Plot
WCDMA 850MHz	4132	826.4	4.16MHz	4.70MHz	Plot A1-A2
	4183	836.6	4.18MHz	4.68MHz	Plot B1-B2
	4233	846.6	4.18MHz	4.70MHz	Plot C1-C2
WCDMA 1900MHz	9262	1852.4	4.16MHz	4.68MHz	Plot D1-D2
	9400	1880	4.16MHz	4.70MHz	Plot E1-E2
	9538	1907.6	4.18MHz	4.70MHz	Plot F1-F2
HSDPA 850MHz	4132	826.4	4.18MHz	4.72MHz	Plot G1-G2
	4183	836.6	4.18MHz	4.70MHz	Plot H1-H2
	4233	846.6	4.18MHz	4.70MHz	Plot I1-I2
HSDPA 1900MHz	9262	1852.4	4.16MHz	4.72MHz	Plot J1-J2
	9400	1880	4.18MHz	4.72MHz	Plot K1-K2
	9538	1907.6	4.18MHz	4.72MHz	Plot L1-L2
HSUPA 850MHz	4132	826.4	4.16MHz	4.68MHz	Plot M1-M2
	4183	836.6	4.18MHz	4.72MHz	Plot N1-N2
	4233	846.6	4.16MHz	4.72MHz	Plot O1-O2
HSUPA 1900MHz	9262	1852.4	4.16MHz	4.68MHz	Plot P1-P2
	9400	1880	4.16MHz	4.70MHz	Plot Q1-Q2
	9538	1907.6	4.16MHz	4.72MHz	Plot R1-R2
GSM 850MHz	128	824.2	246KHz	324KHz	Plot S1-S2

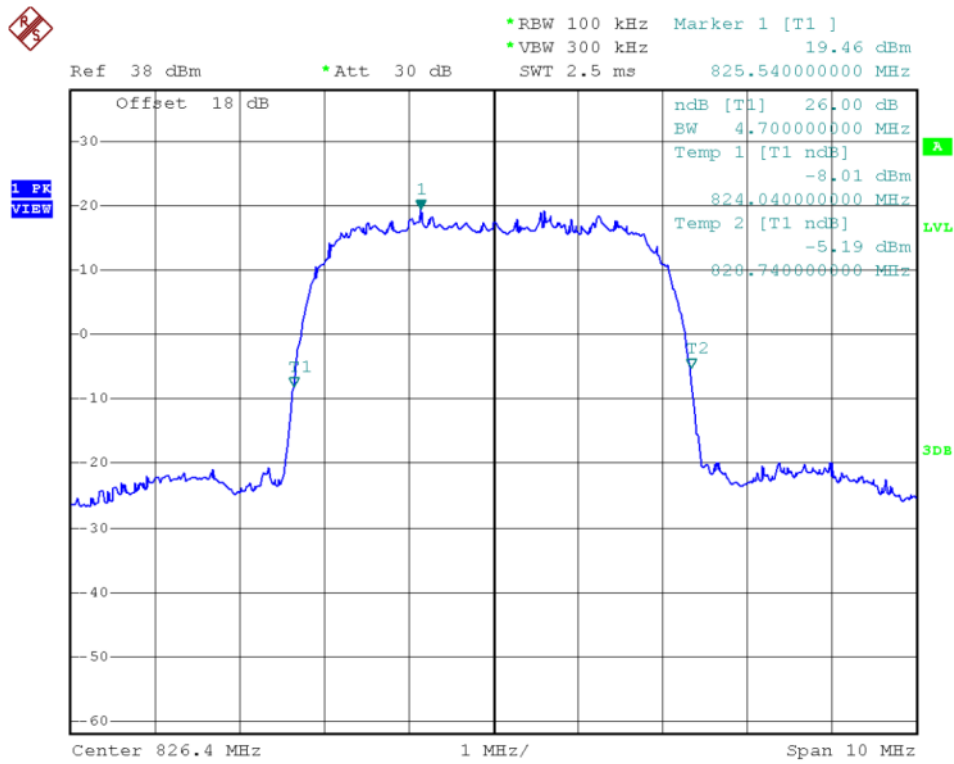


Band	Channel	Frequency (MHz)	99% occupied bandwidth	26dB bandwidth	Refer to Plot
	190	836.6	244KHz	324KHz	Plot T1-T2
	251	848.8	244KHz	324KHz	Plot U1-U2
GSM 1900MHz	512	1850.2	248KHz	320KHz	Plot V1-V2
	661	1880.0	248KHz	328KHz	Plot W1-W2
	810	1909.8	248KHz	316KHz	Plot X1-X2
GPRS 850MHz	128	824.2	244KHz	324KHz	Plot Y1-Y2
	190	836.6	252KHz	324KHz	Plot Z1-Z2
	251	848.8	244KHz	324KHz	Plot a1-a2
GPRS 1900MHz	512	1850.2	244KHz	320KHz	Plot b1-b2
	661	1880.0	244KHz	324KHz	Plot c1-c2
	810	1909.8	244KHz	324KHz	Plot d1-d2

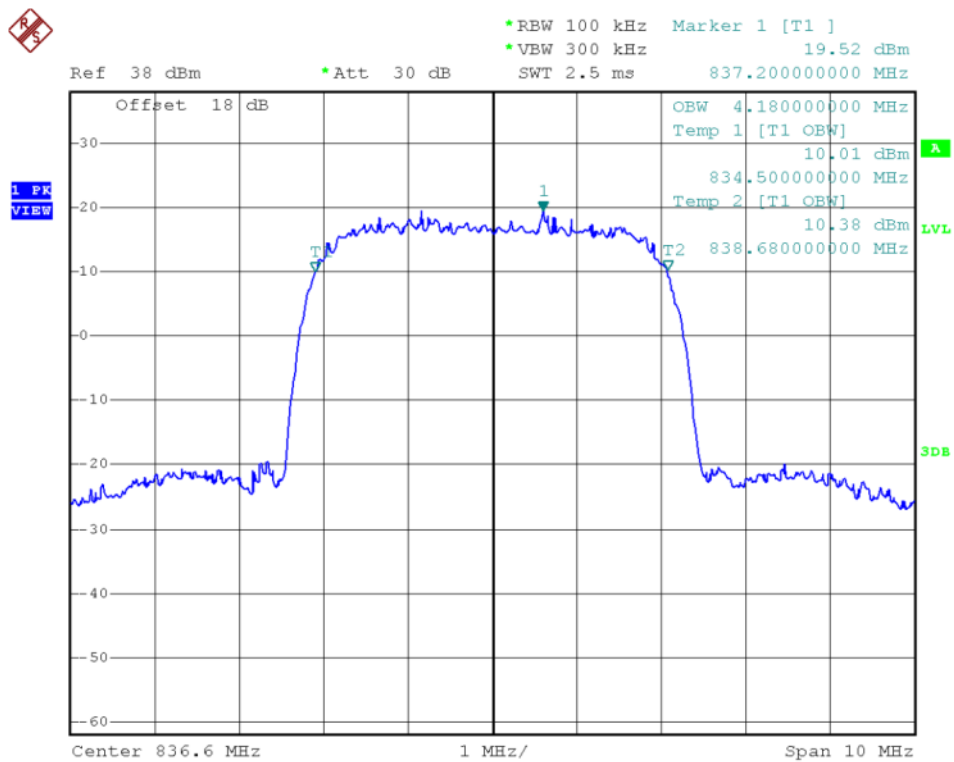
2. Test Plots:



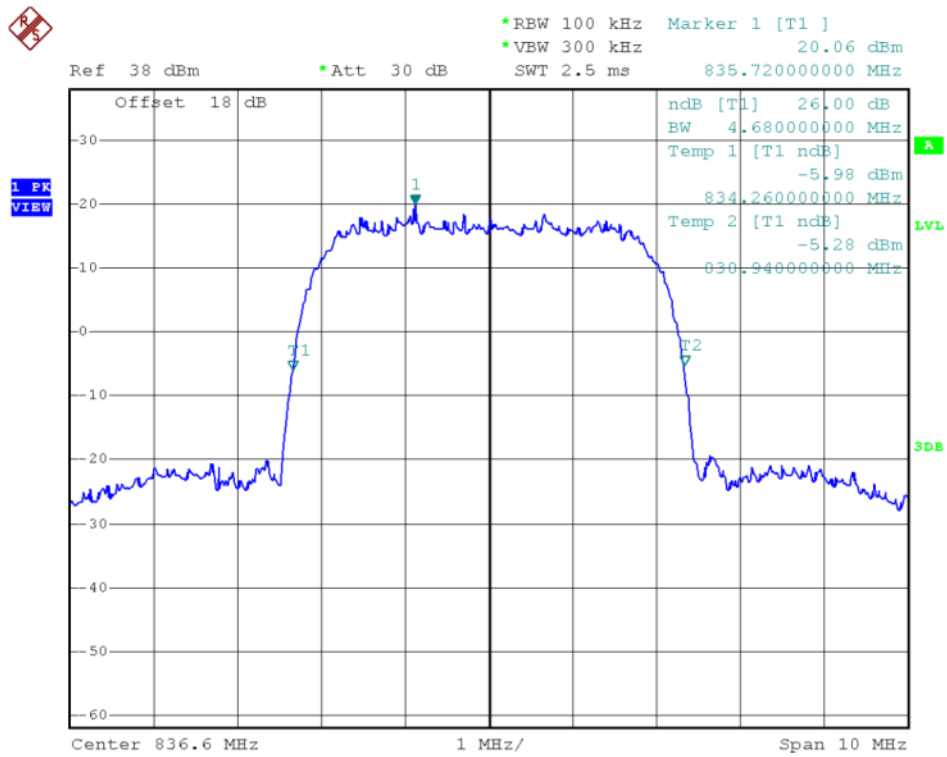
(Plot A1: WCDMA 850MHz Channel = 4132)



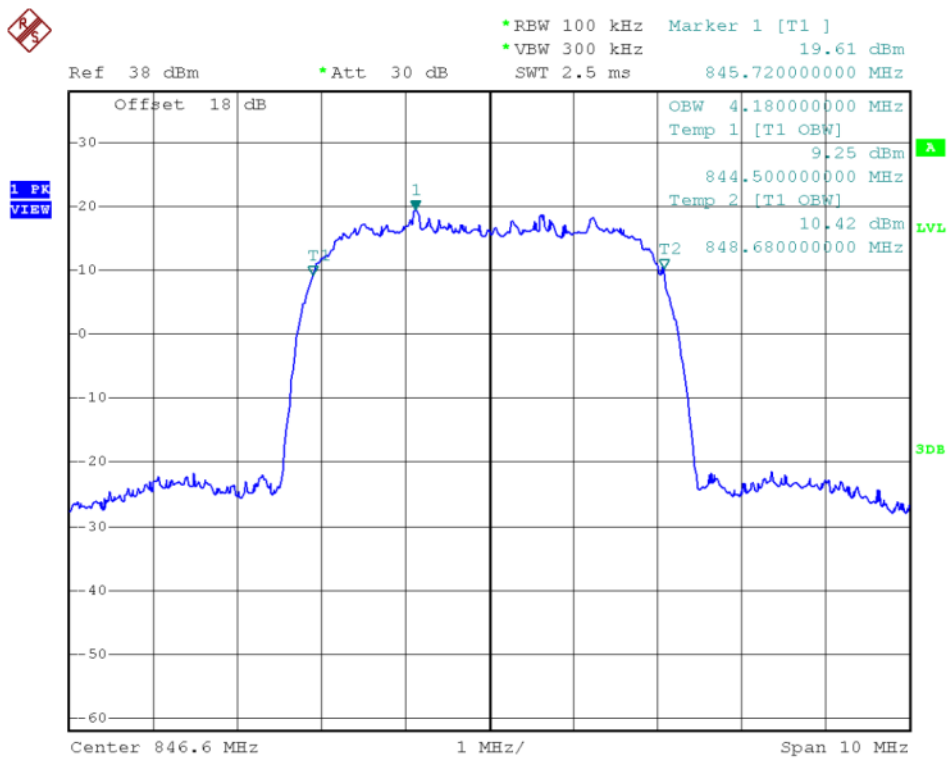
(Plot A2: WCDMA 850MHz Channel = 4132)



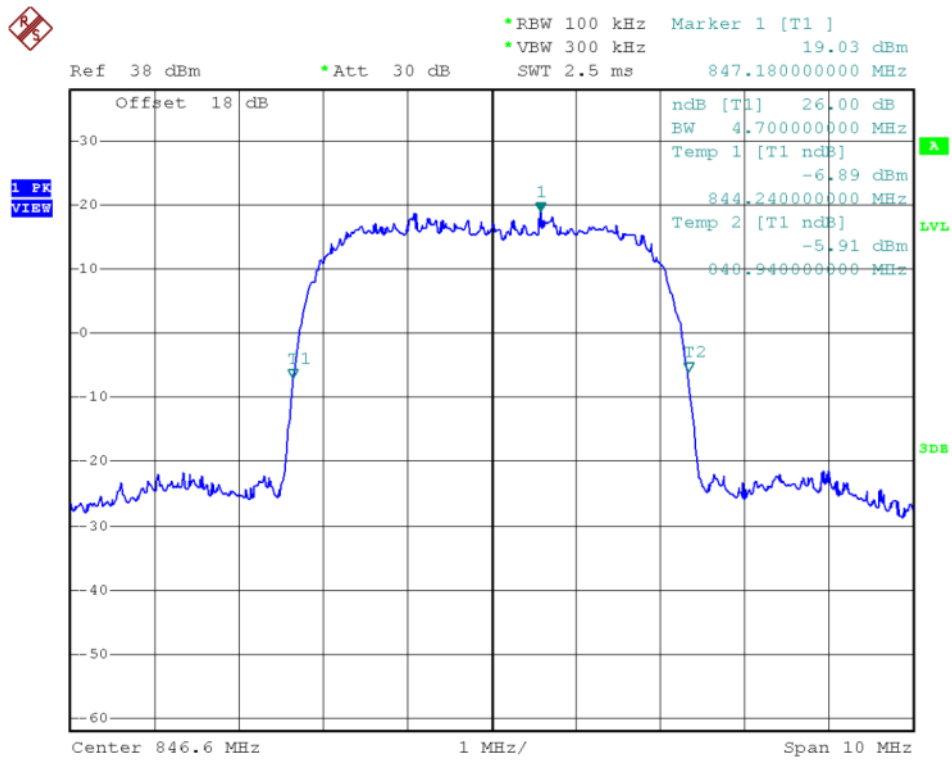
(Plot B1: WCDMA 850 MHz Channel = 4183)



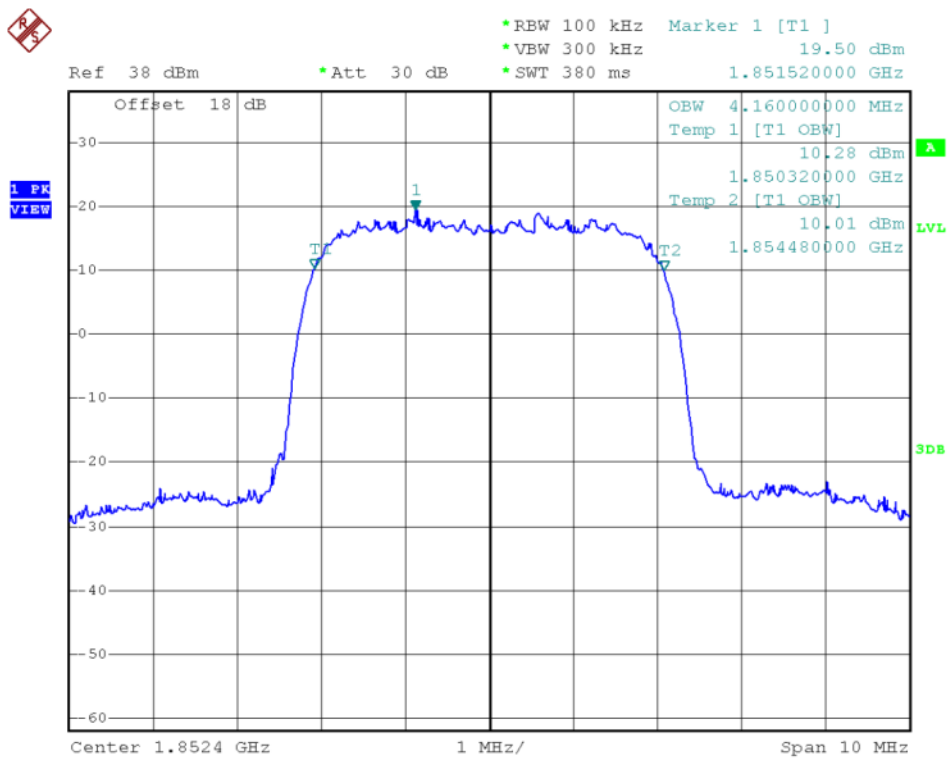
(Plot B2: WCDMA 850 MHz Channel = 4183)



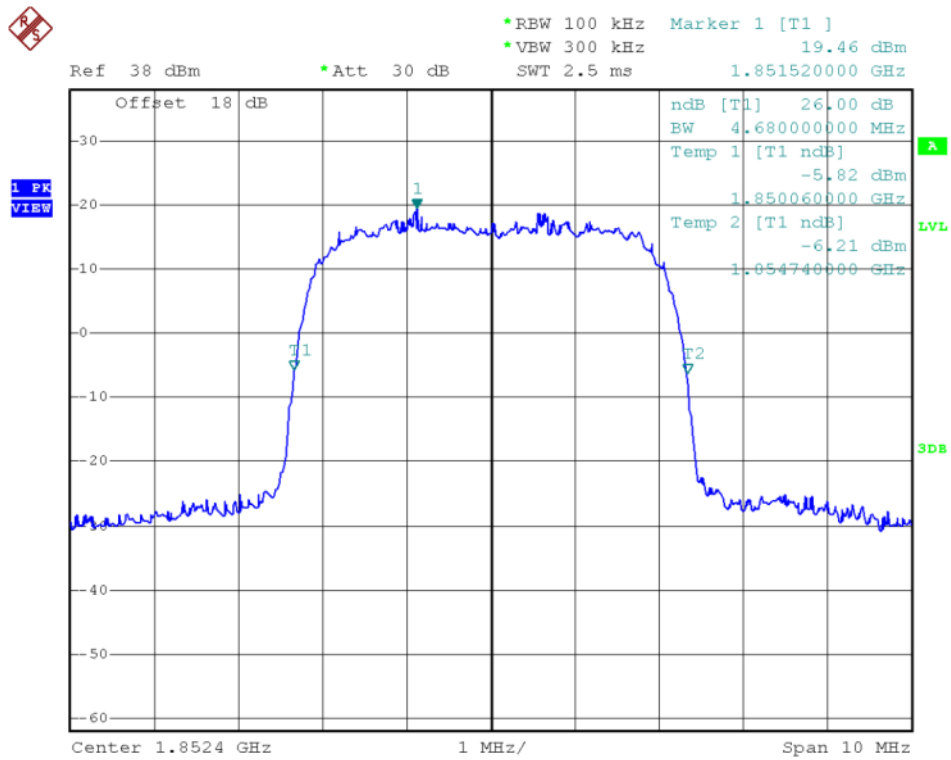
(Plot C1: WCDMA 850MHz Channel = 4233)



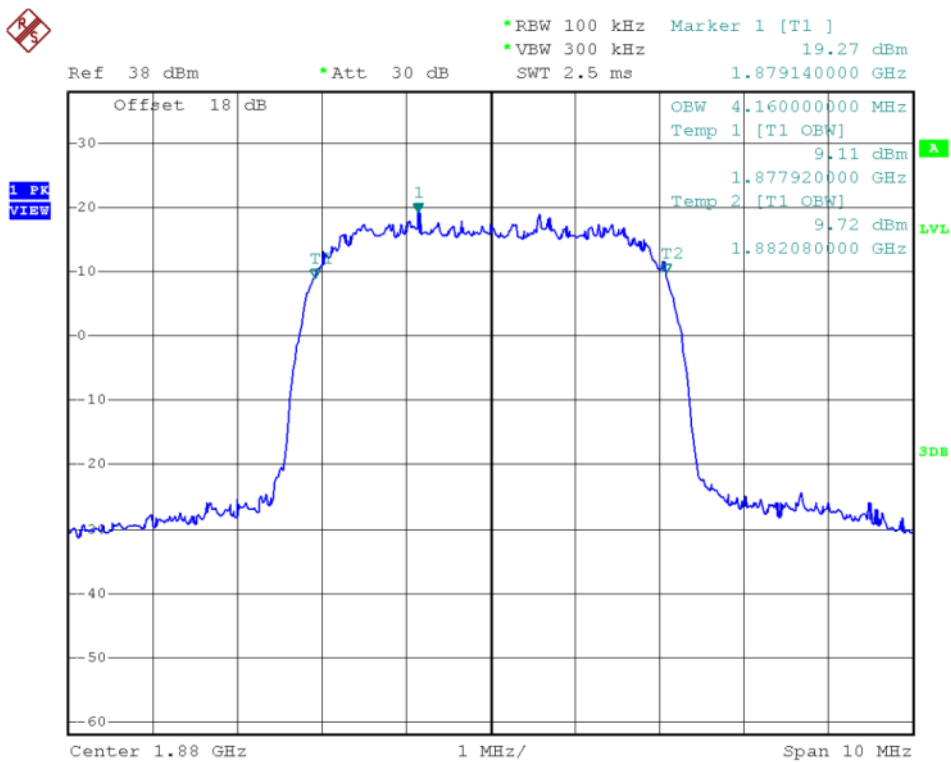
(Plot C2: WCDMA 850MHz Channel = 4233)



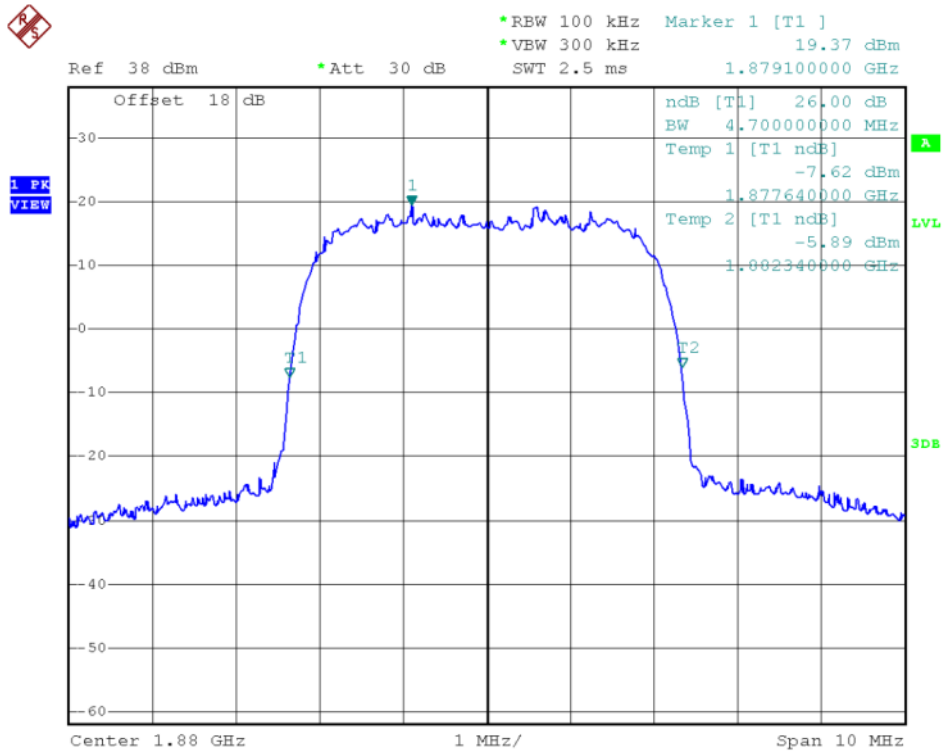
(Plot D1: WCDMA 1900MHz Channel = 9262)



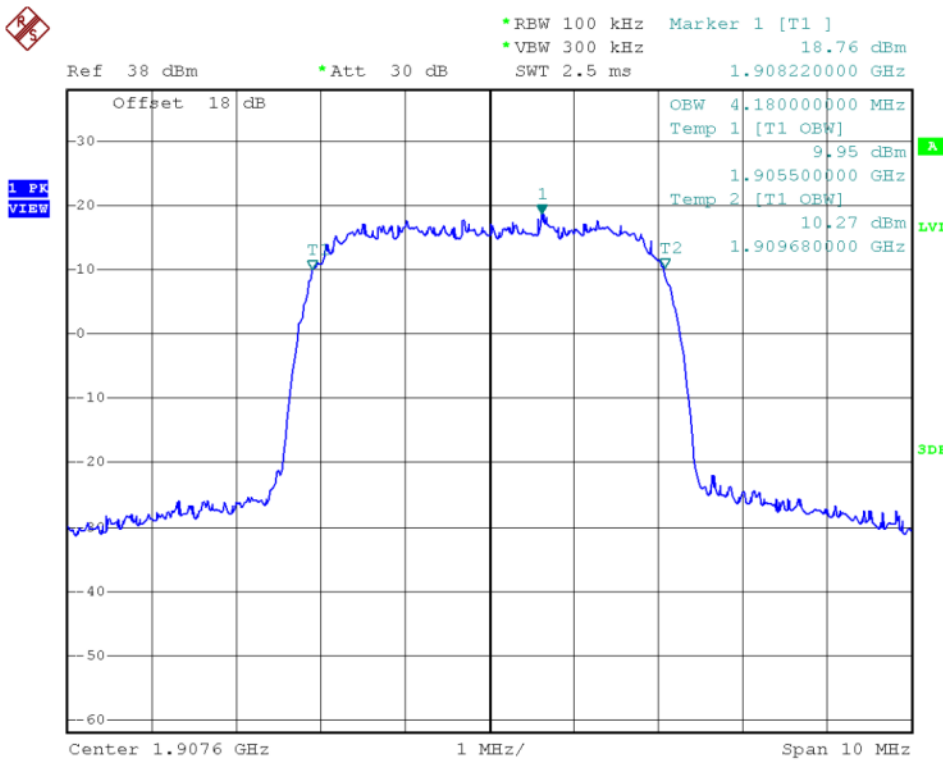
(Plot D2: WCDMA 1900MHz Channel = 9262)



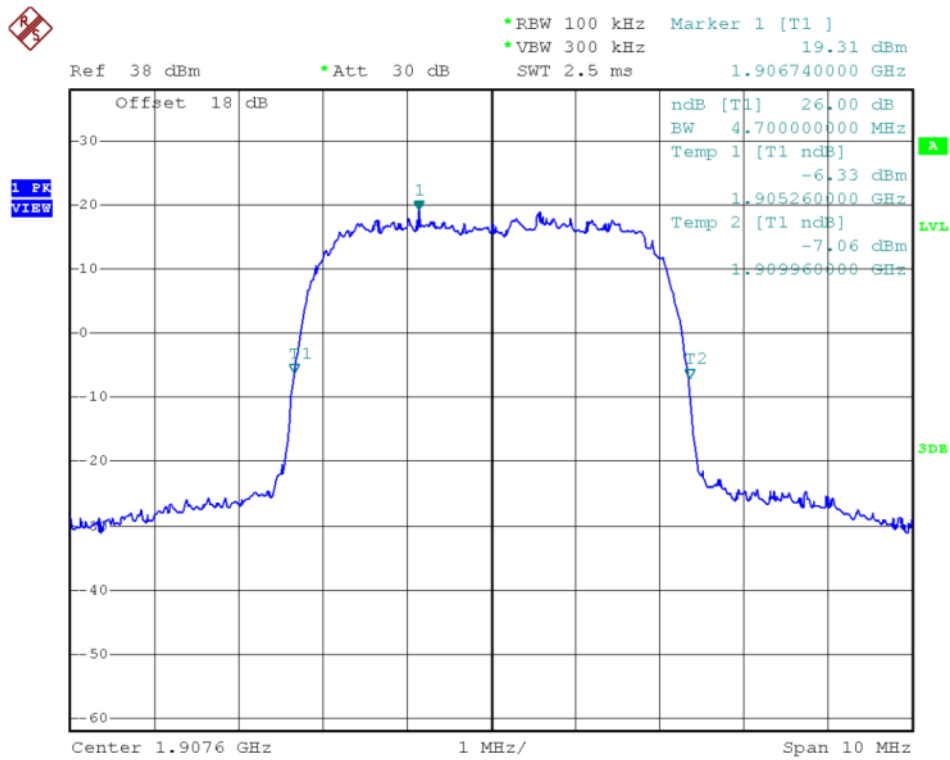
(Plot E1: WCDMA 1900 MHz Channel = 9400)



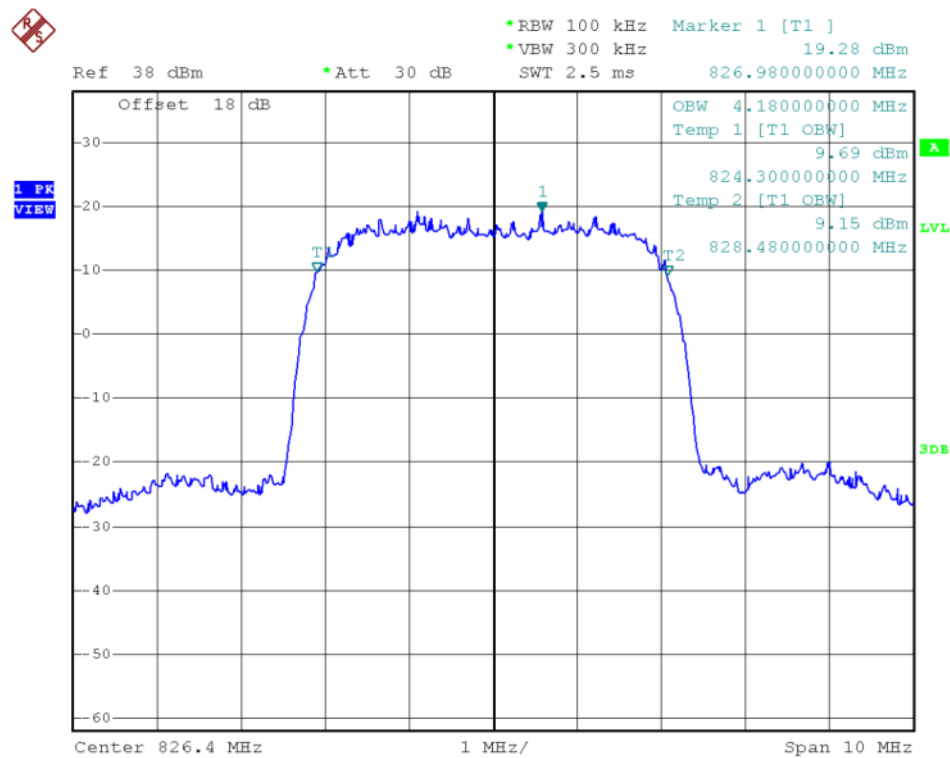
(Plot E2: WCDMA 1900 MHz Channel = 9400)



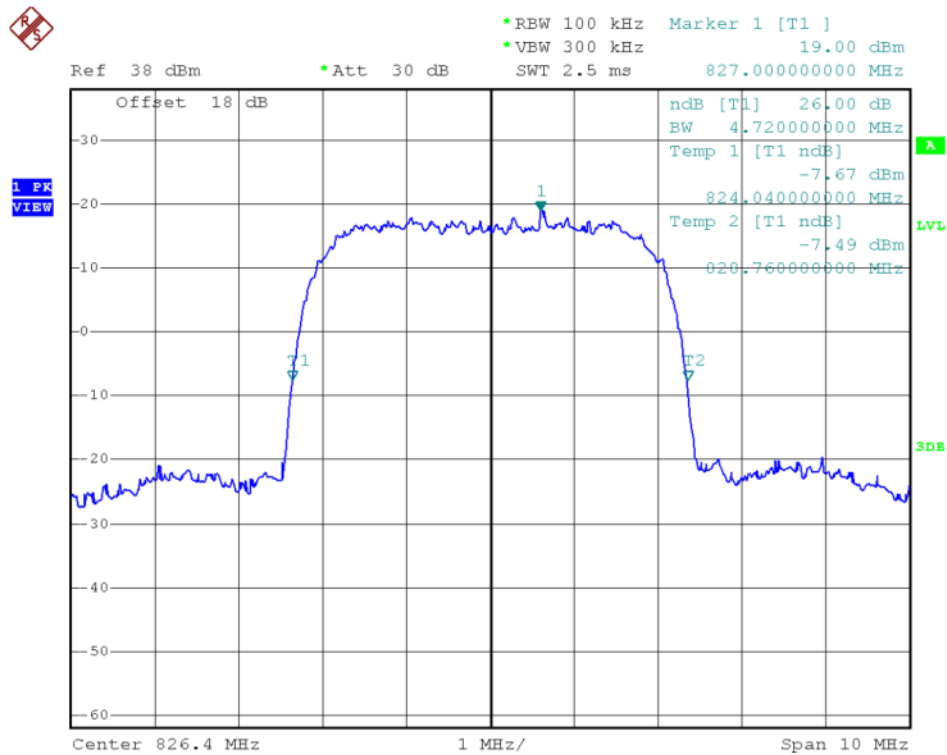
(Plot F1: WCDMA1900MHz Channel = 9538)



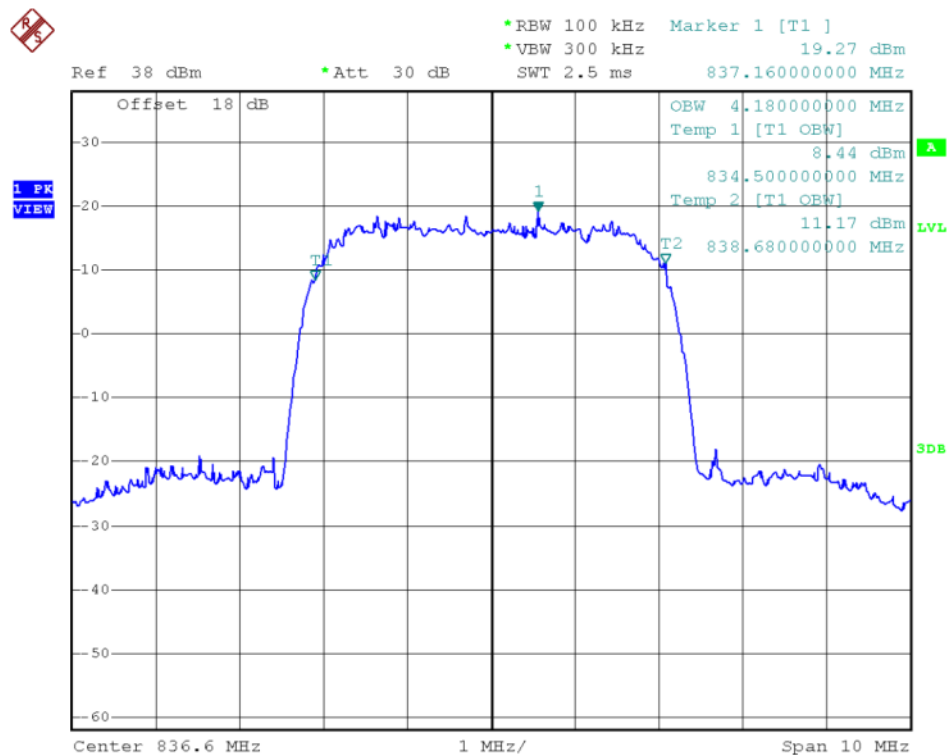
(Plot F2: WCDMA1900MHz Channel = 9538)



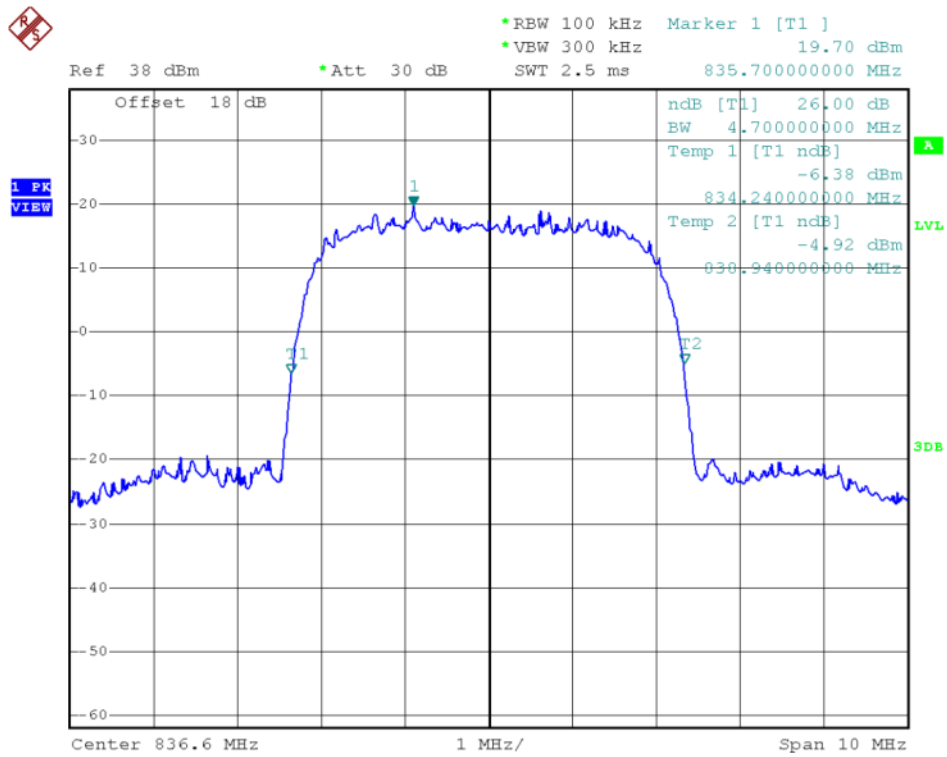
(Plot G1: HSDPA 850MHz Channel = 4132)



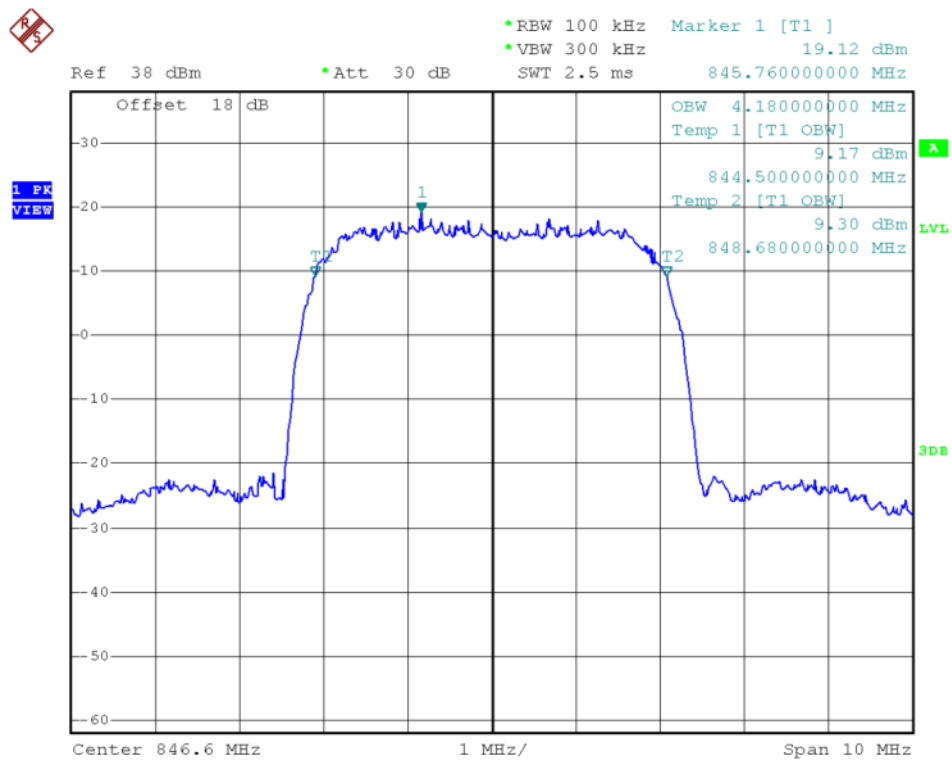
(Plot G2: HSDPA 850MHz Channel = 4132)



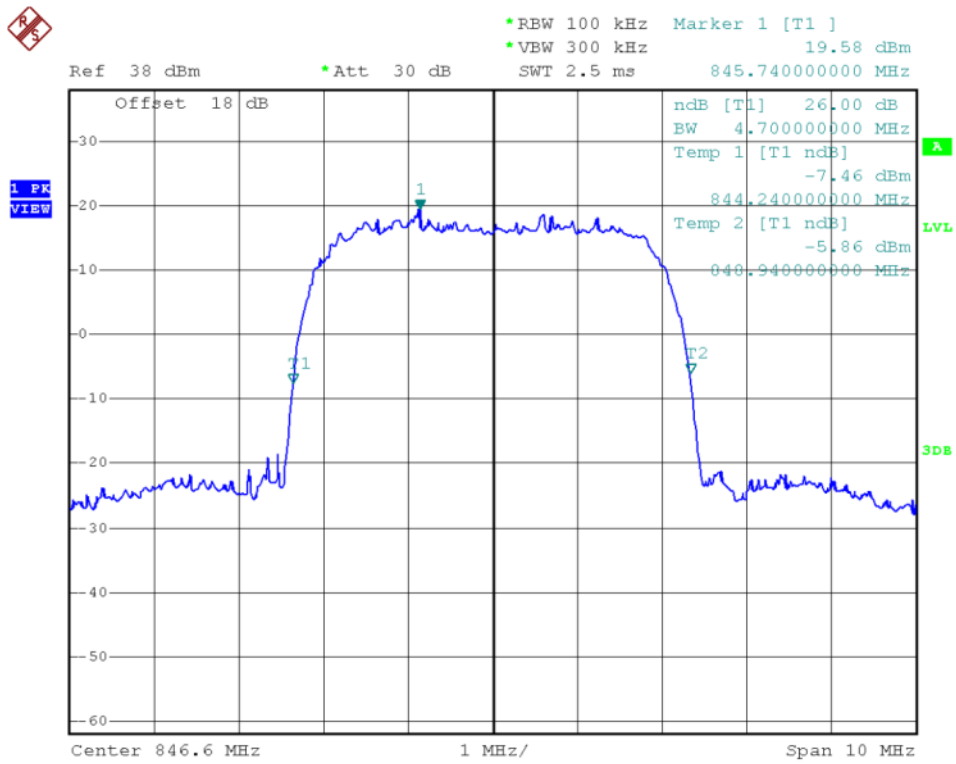
(Plot H1: HSDPA850 MHz Channel = 4183)



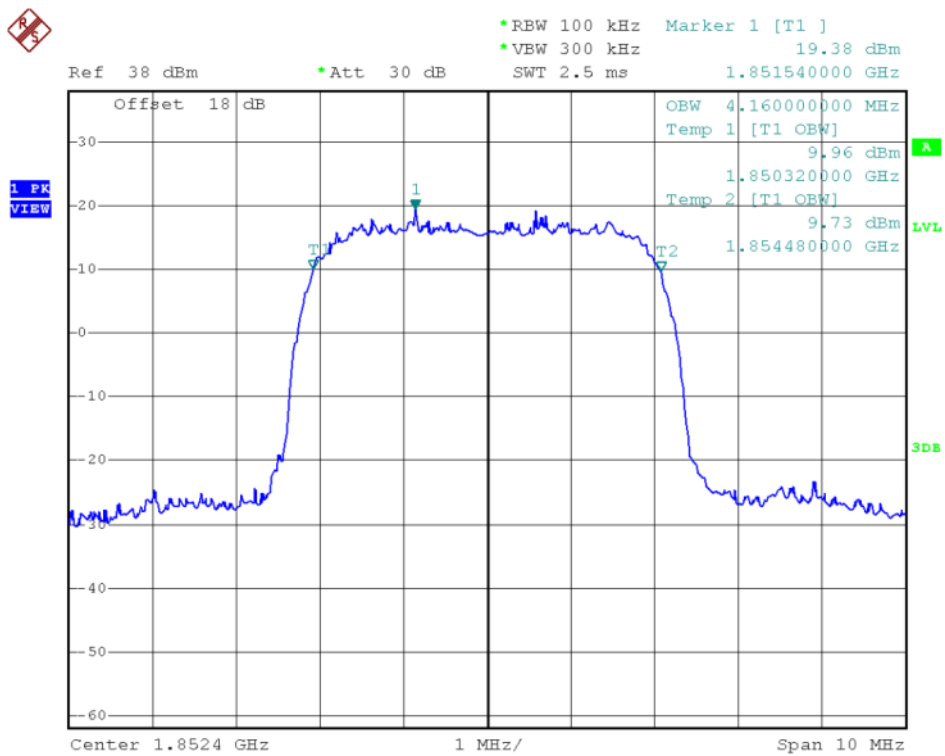
(Plot H2: HSDPA850 MHz Channel = 4183)



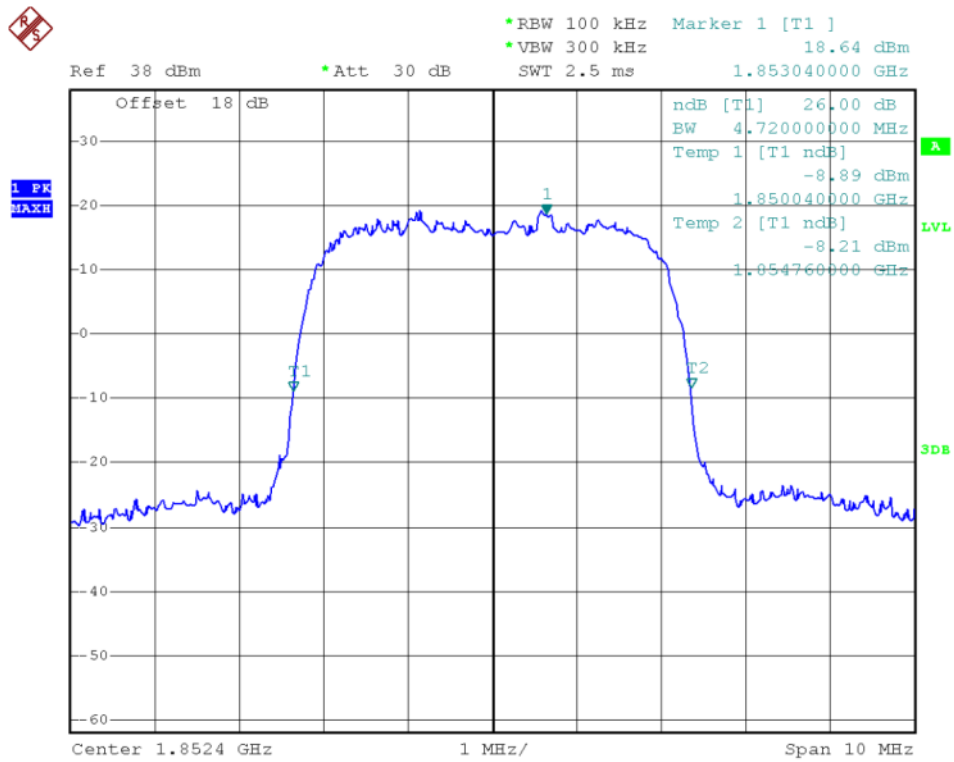
(Plot I1: HSDPA 850 MHz Channel = 4233)



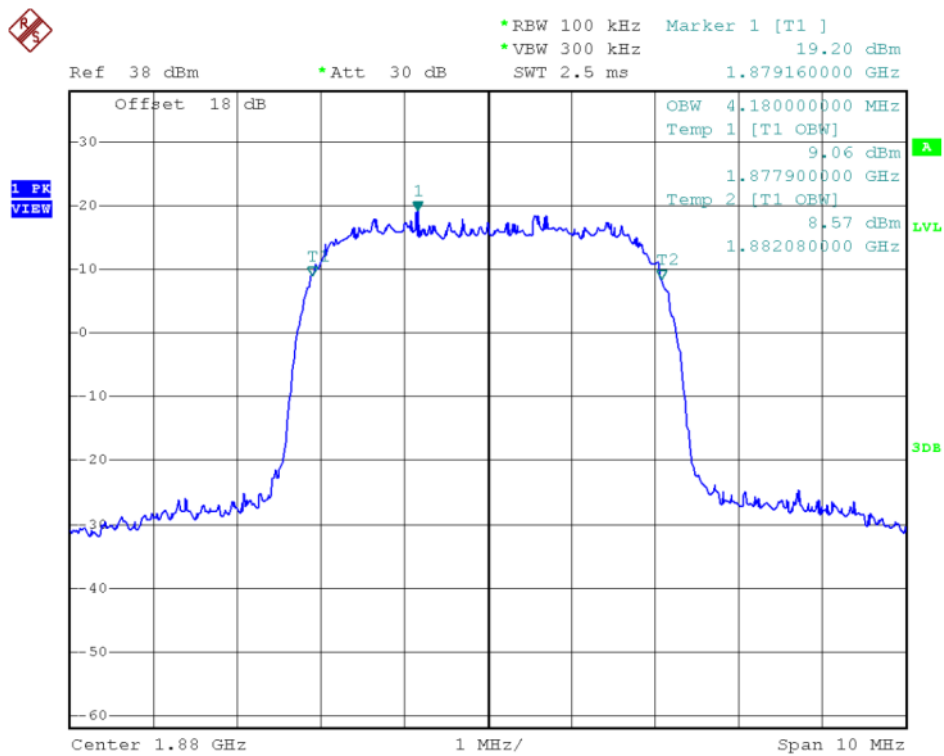
(Plot I2: HSDPA 850 MHz Channel = 4233)



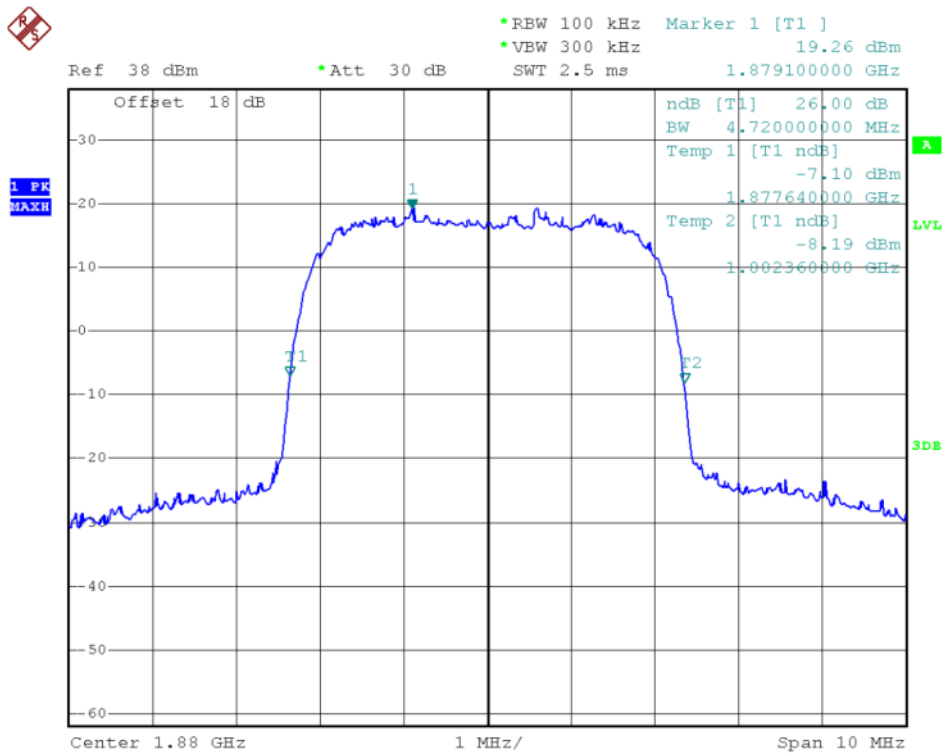
(Plot J1: HSDPA 1900 MHz Channel = 9262)



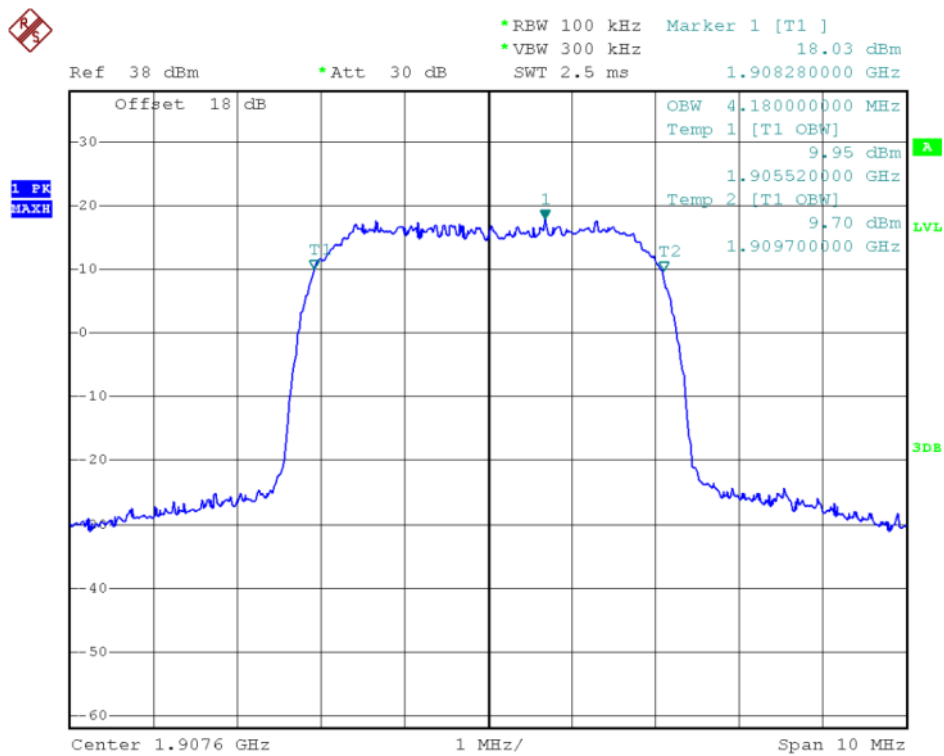
(Plot J2: HSDPA1900 MHz Channel = 9262)



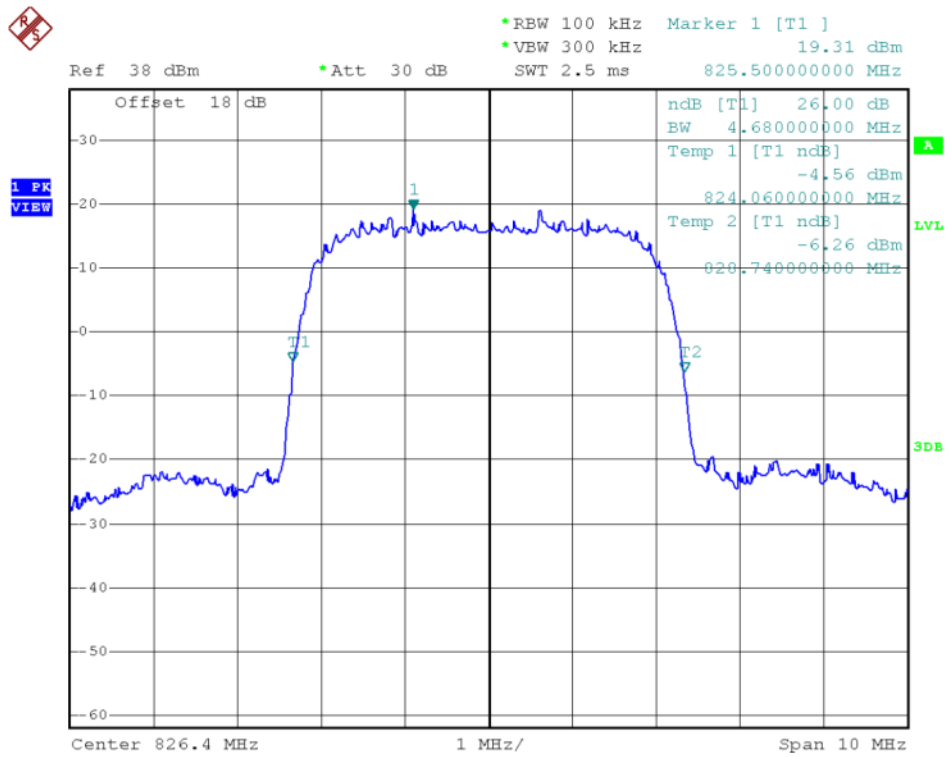
(Plot K1: HSDPA1900 MHz Channel = 9400)



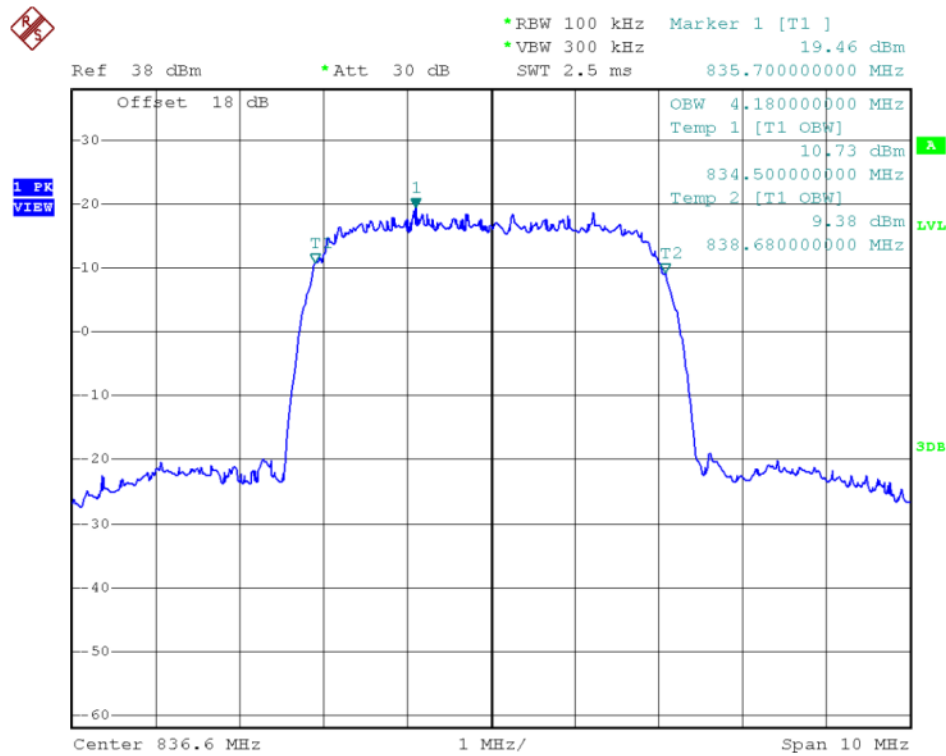
(Plot K2: HSDPA1900 MHz Channel = 9400)



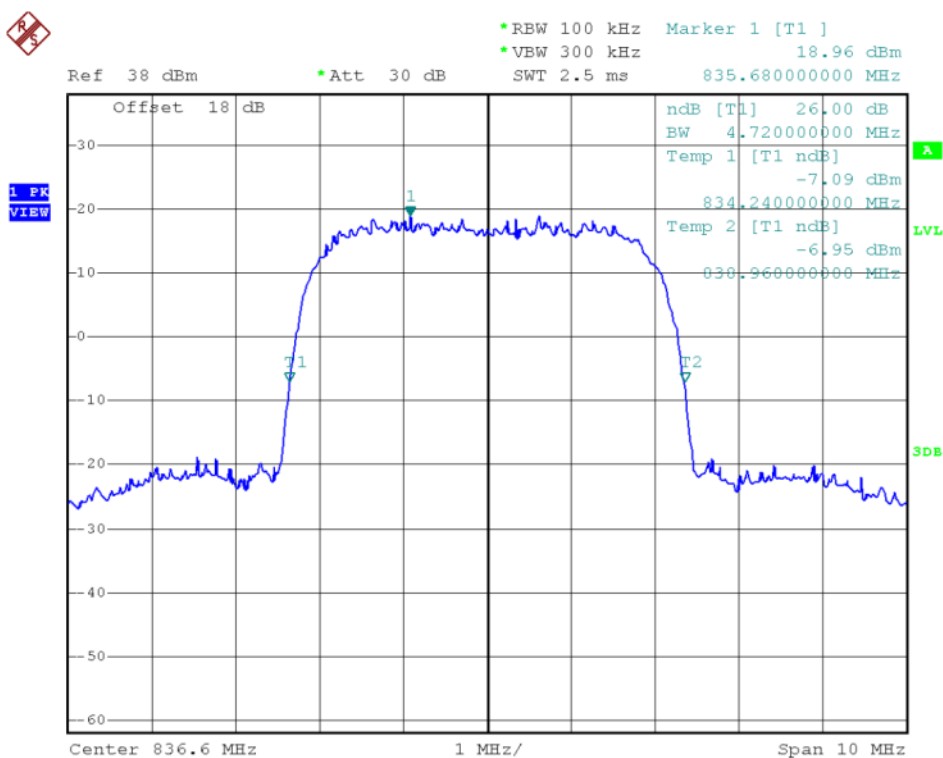
(Plot L1: HSDPA 1900 MHz Channel = 9538)



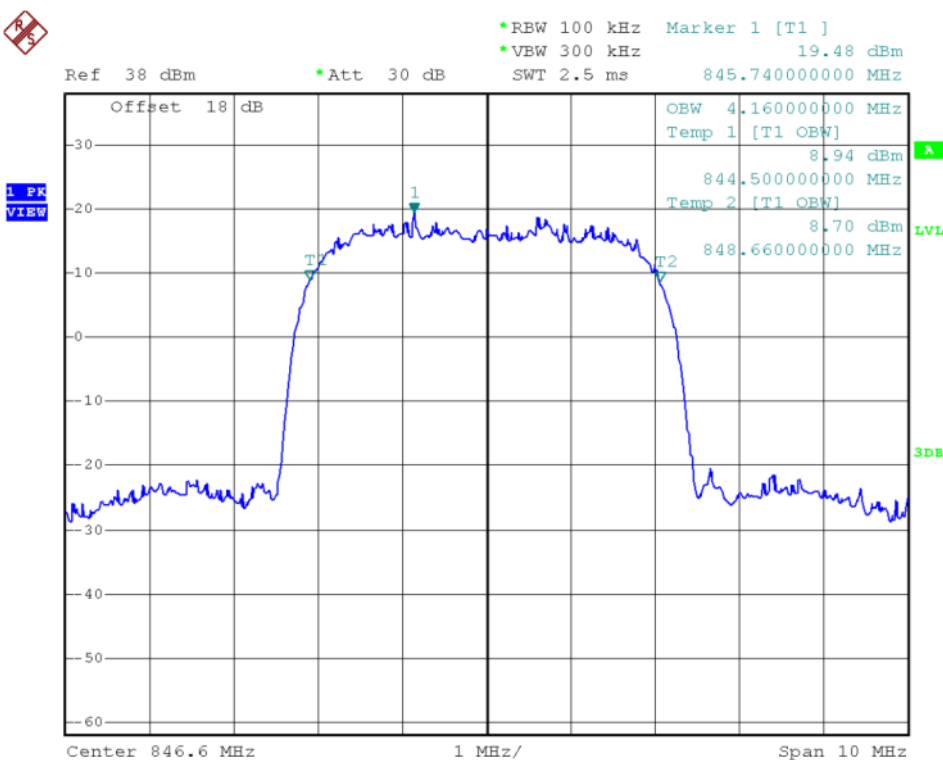
(Plot M2: HSUPA850 MHz Channel = 4132)



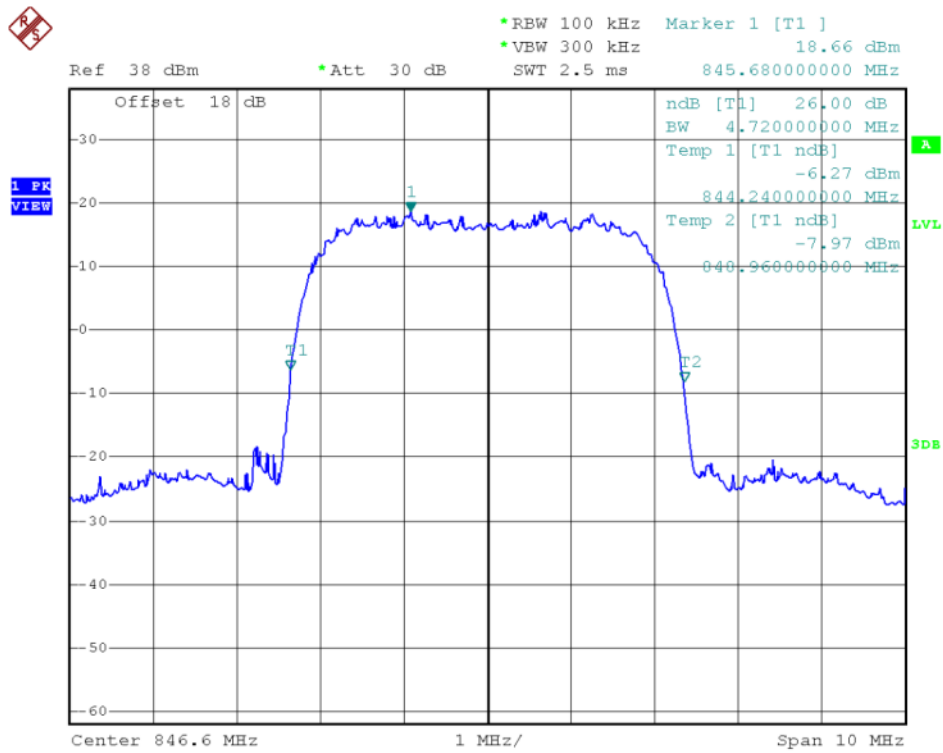
(Plot N1: HSUPA850 MHz Channel = 4183)



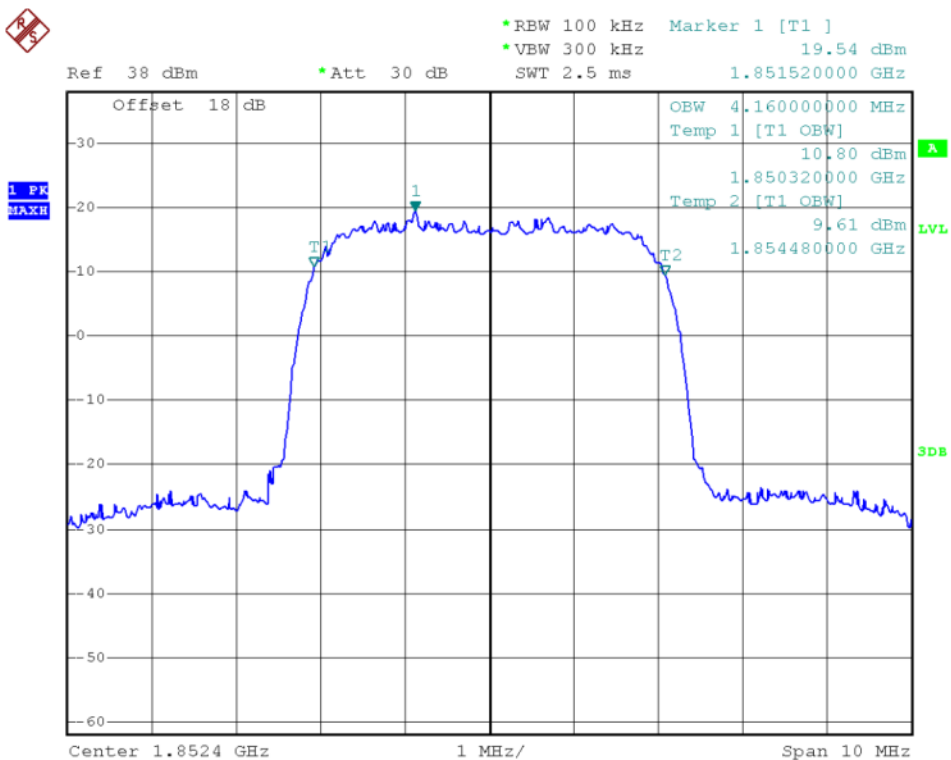
(Plot N2: HSUPA850 MHz Channel = 4183)



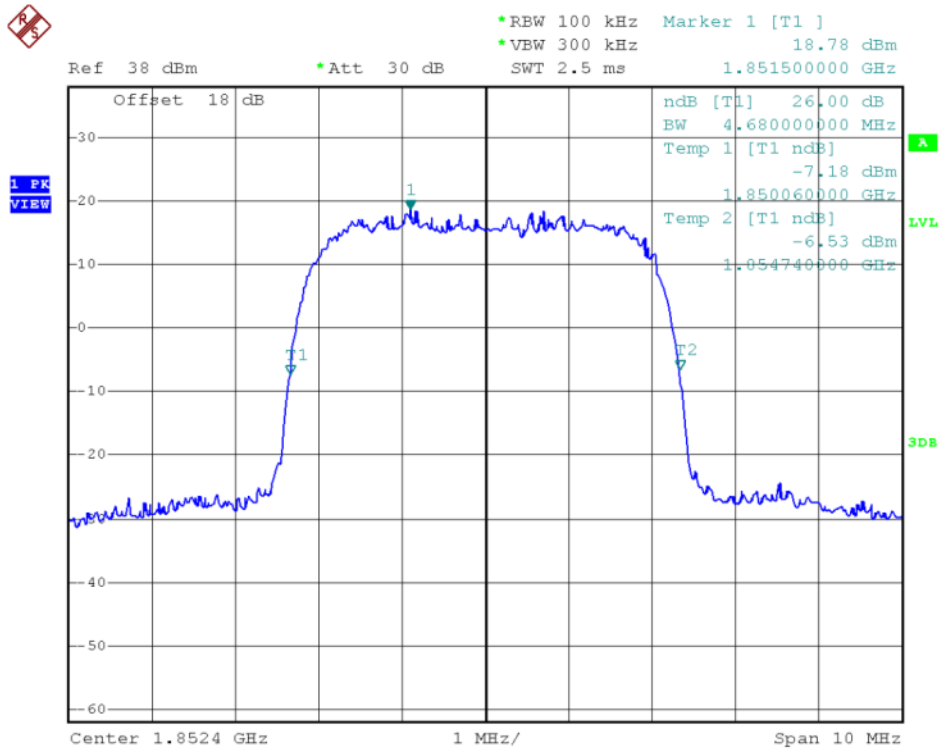
(Plot O1: HSUPA850 MHz Channel = 4233)



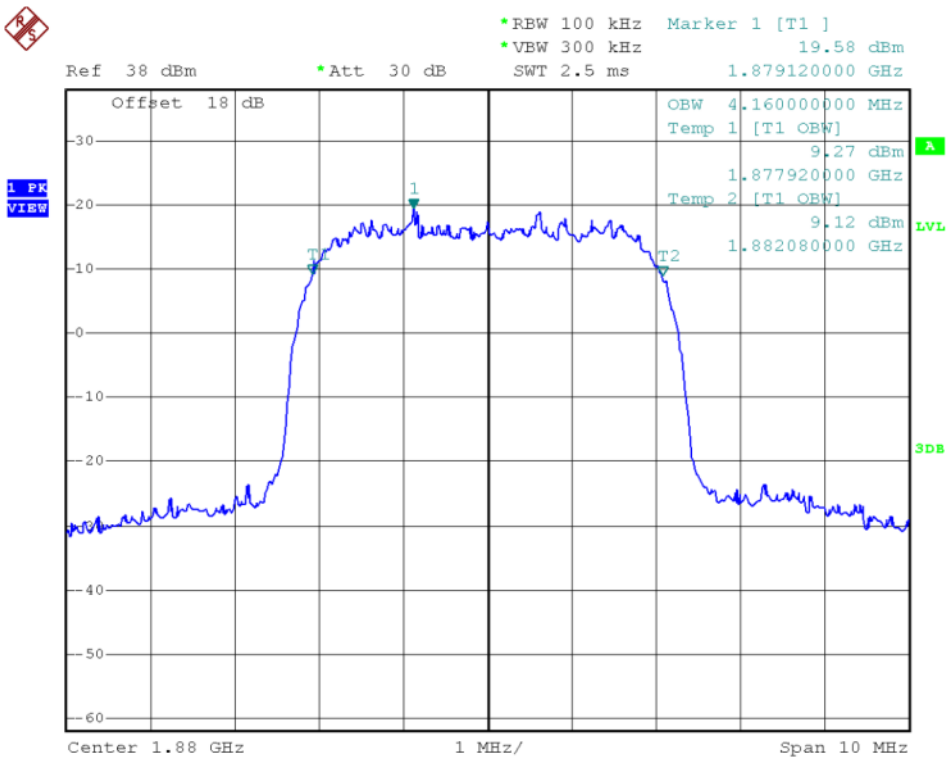
(Plot O2: HSUPA850 MHz Channel = 4233)



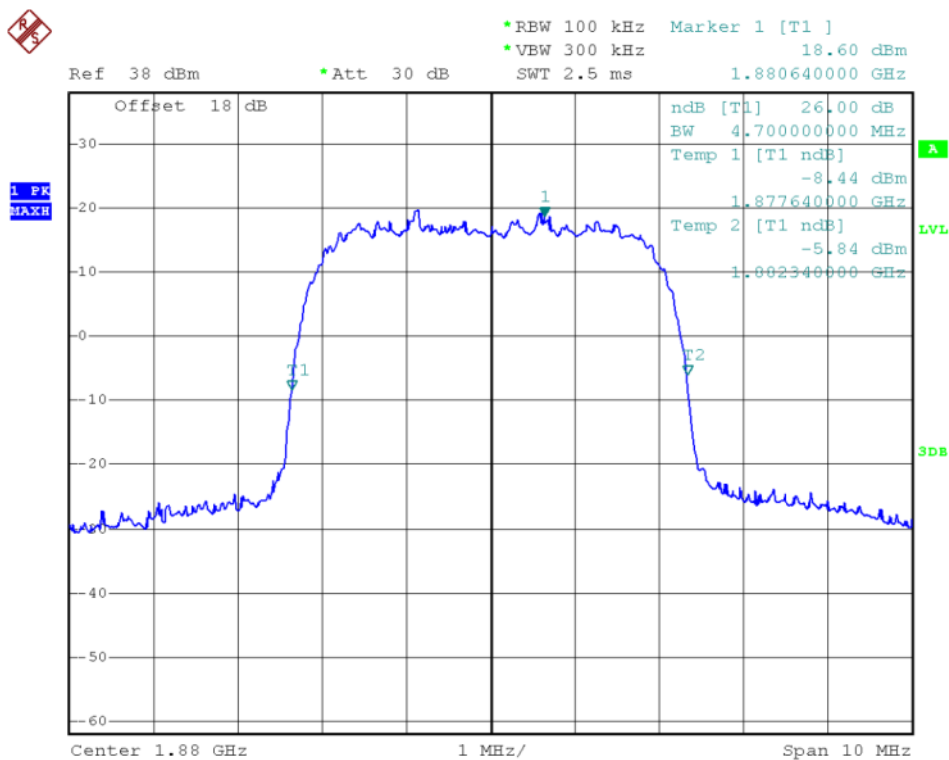
(Plot P1: HSUPA1900 MHz Channel = 9262)



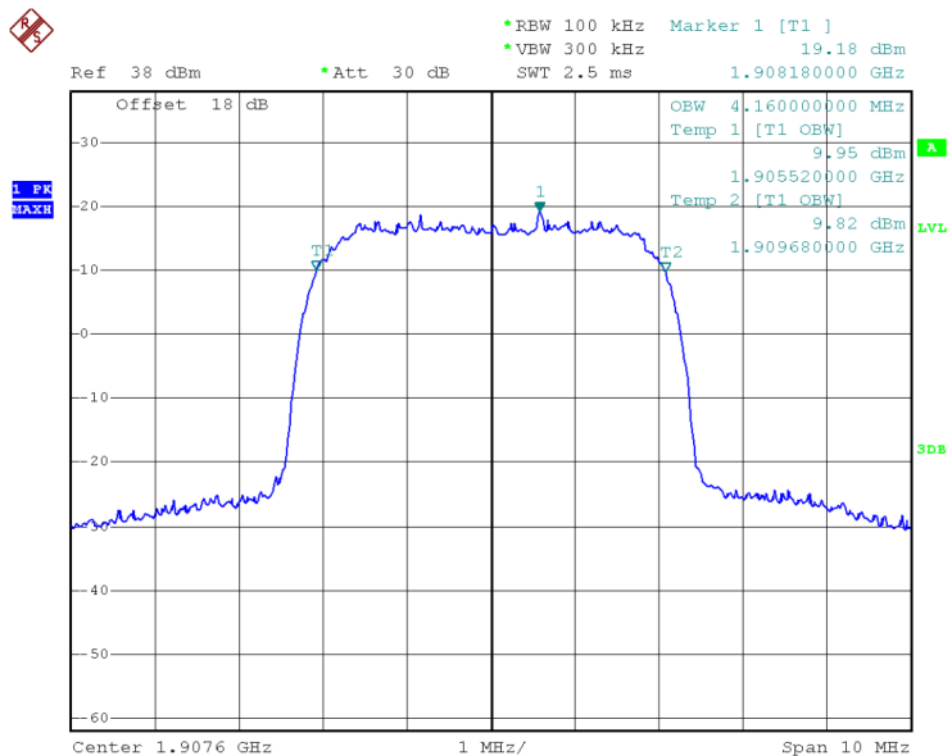
(Plot P2: HSUPA1900 MHz Channel = 9262)



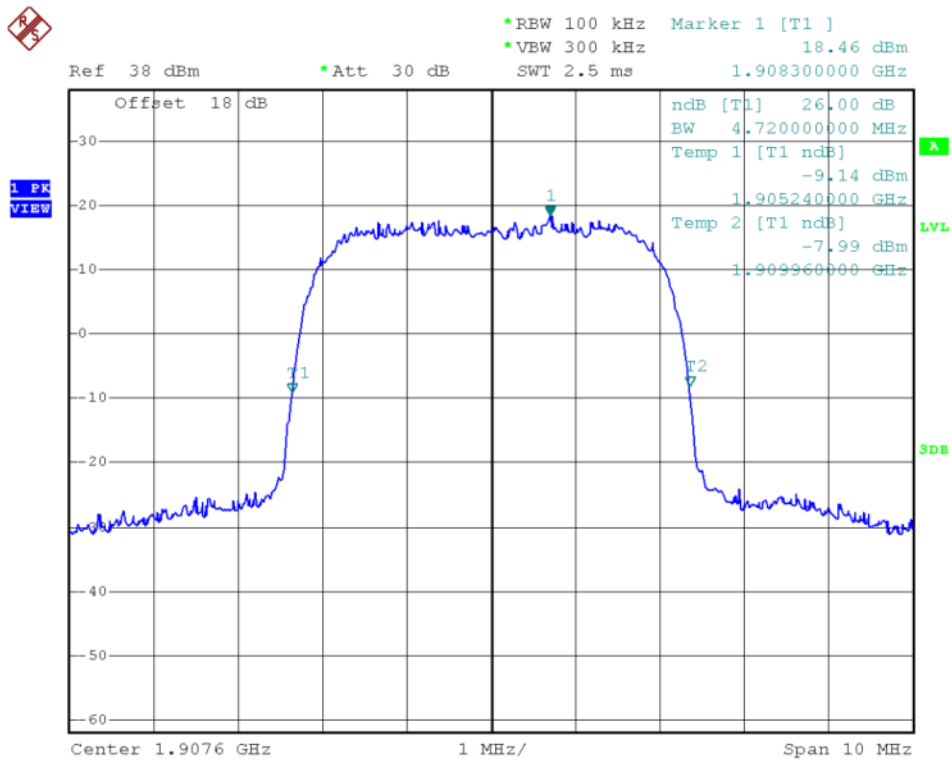
(Plot Q1: HSUPA1900 MHz Channel = 9400)



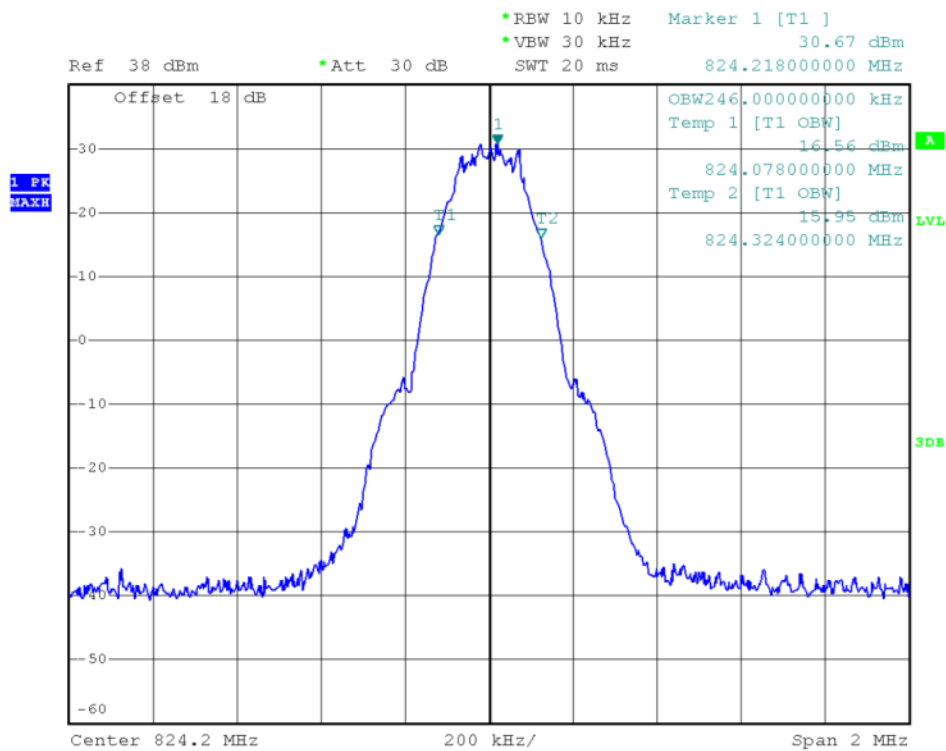
(Plot Q2: HSUPA1900 MHz Channel = 9400)



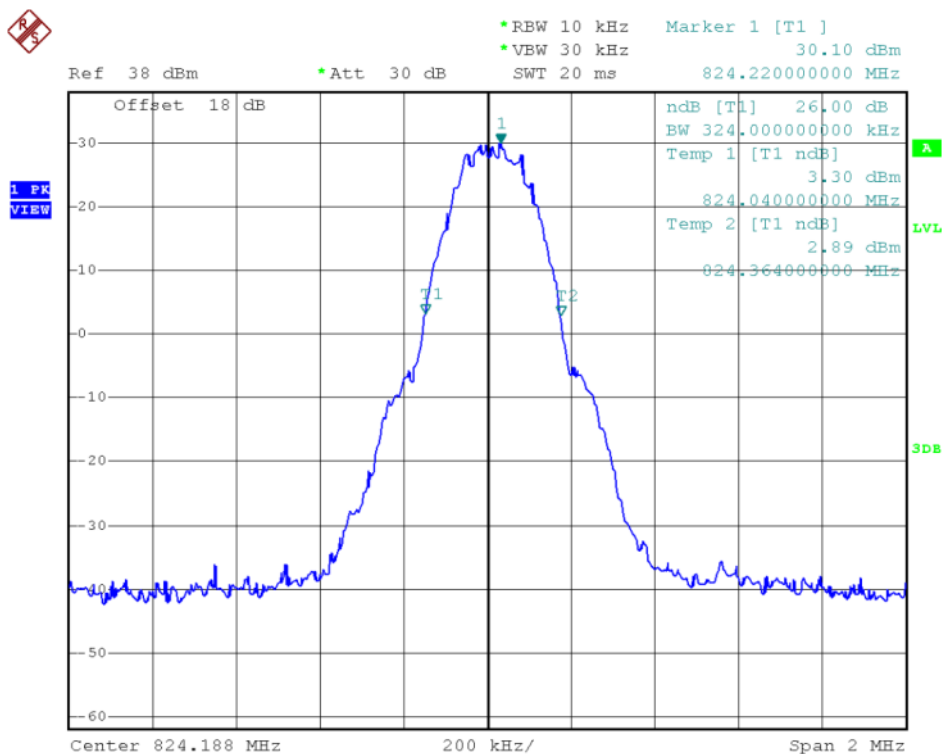
(Plot R1: HSUPA1900 MHz Channel = 9538)



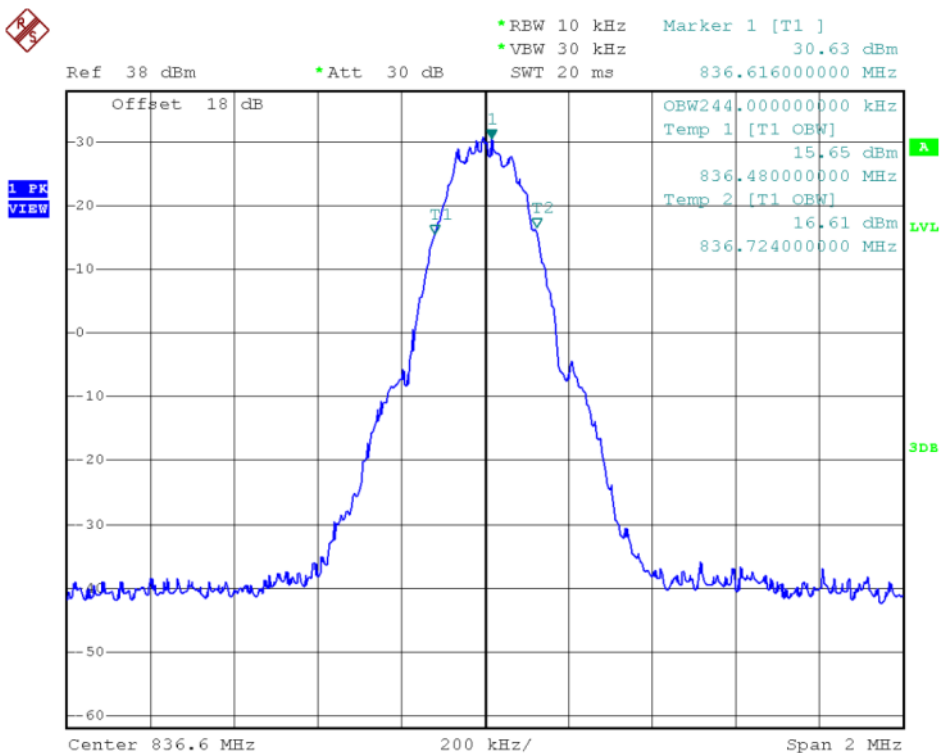
(Plot R2: HSUPA1900 MHz Channel = 9538)



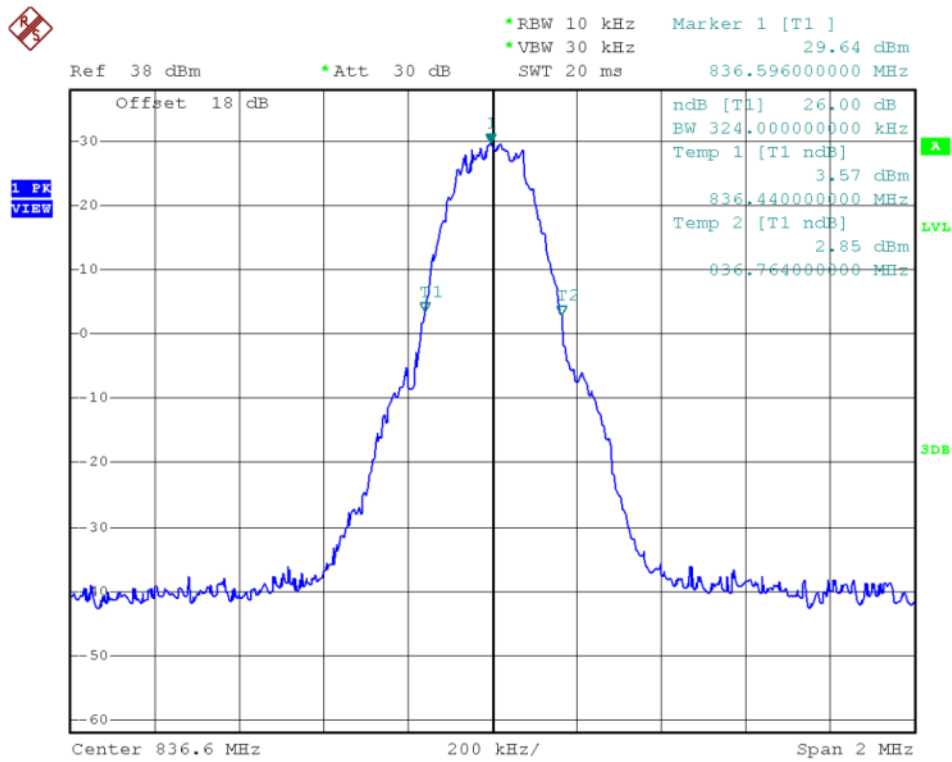
(Plot S1: GSM 850MHz Channel = 128)



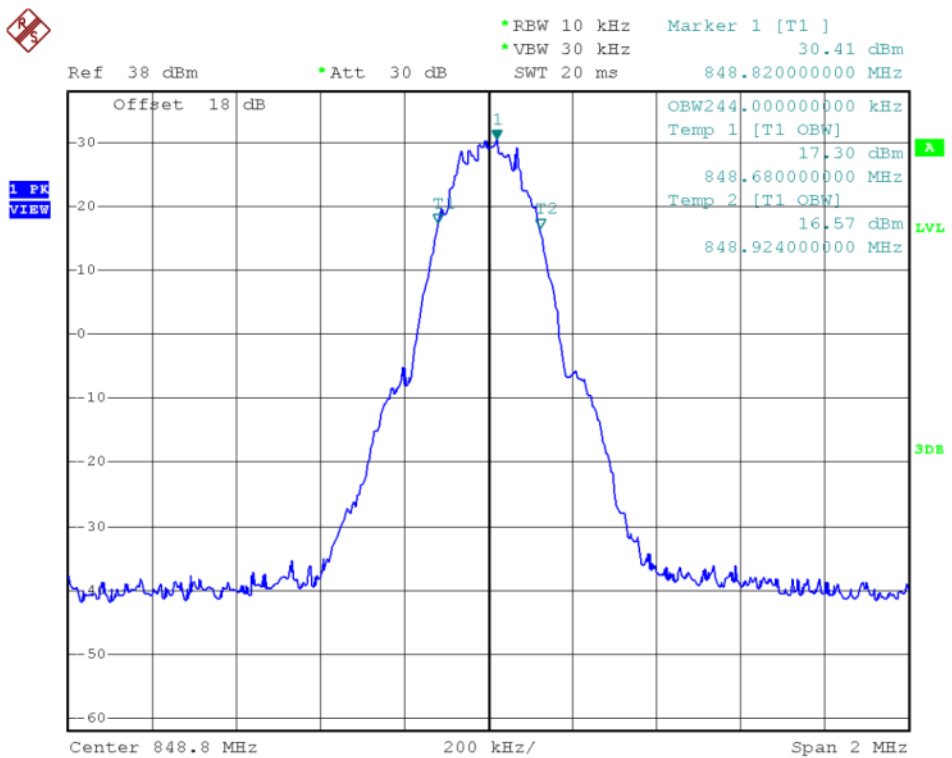
(Plot S2: GSM 850MHz Channel = 128)



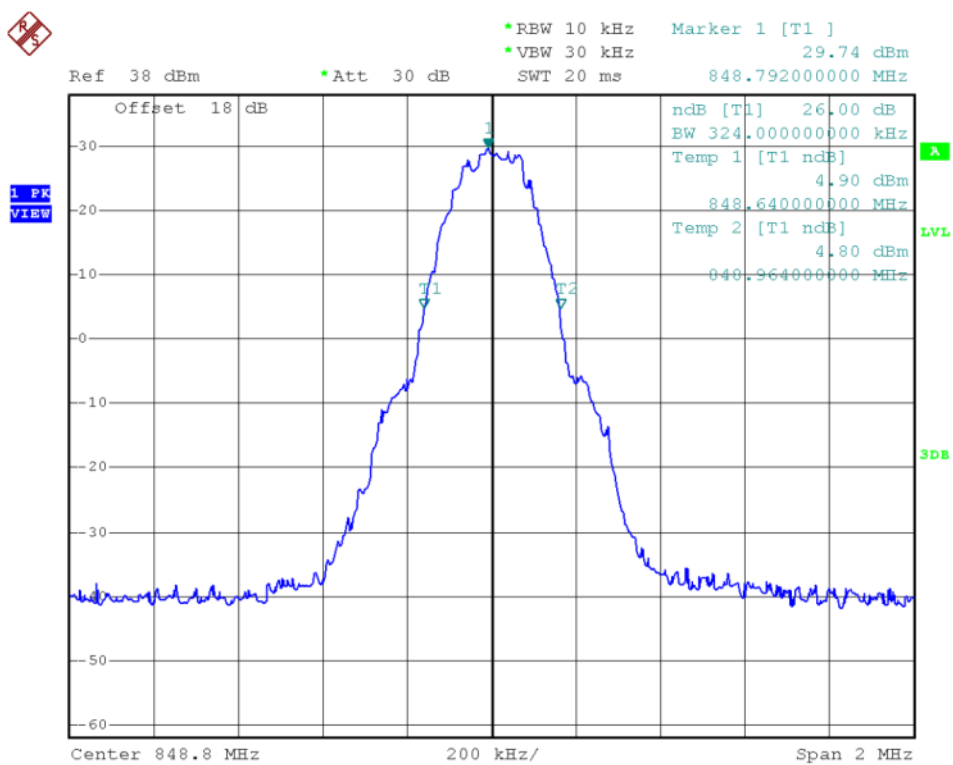
(Plot T1: GSM 850MHz Channel = 190)



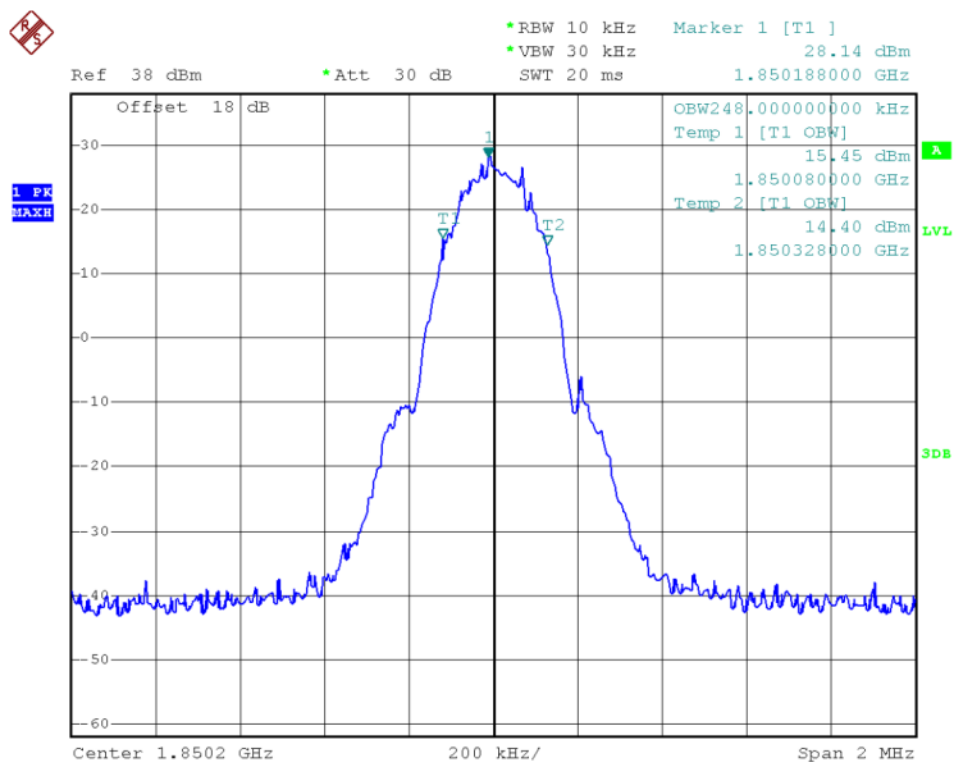
(Plot T2: GSM 850MHz Channel = 190)



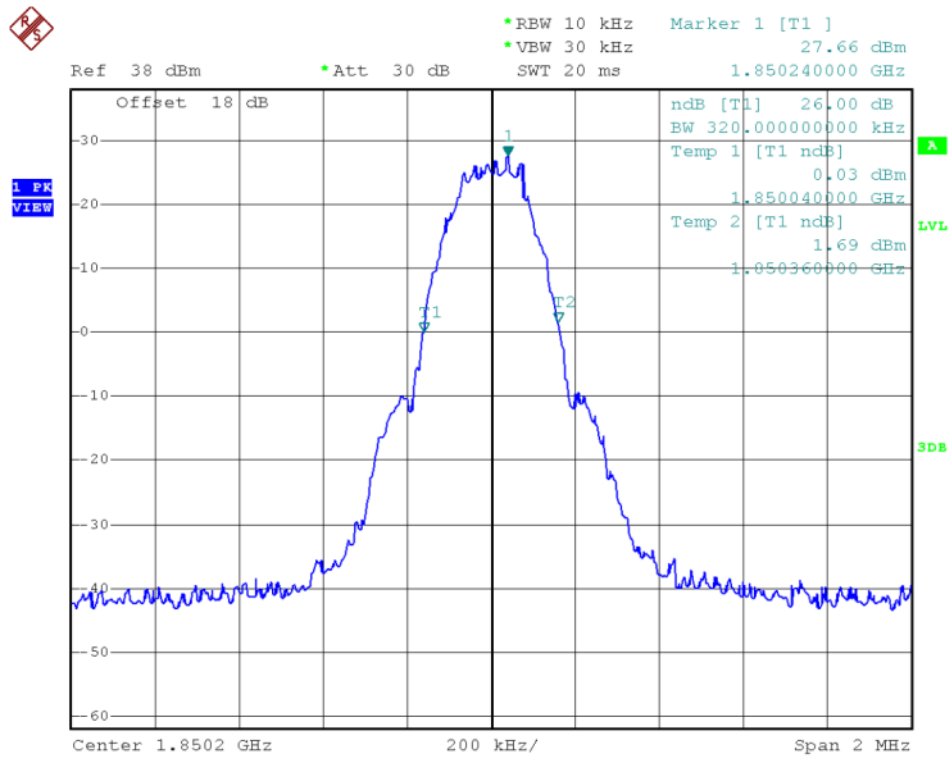
(Plot U1: GSM 850MHz Channel = 251)



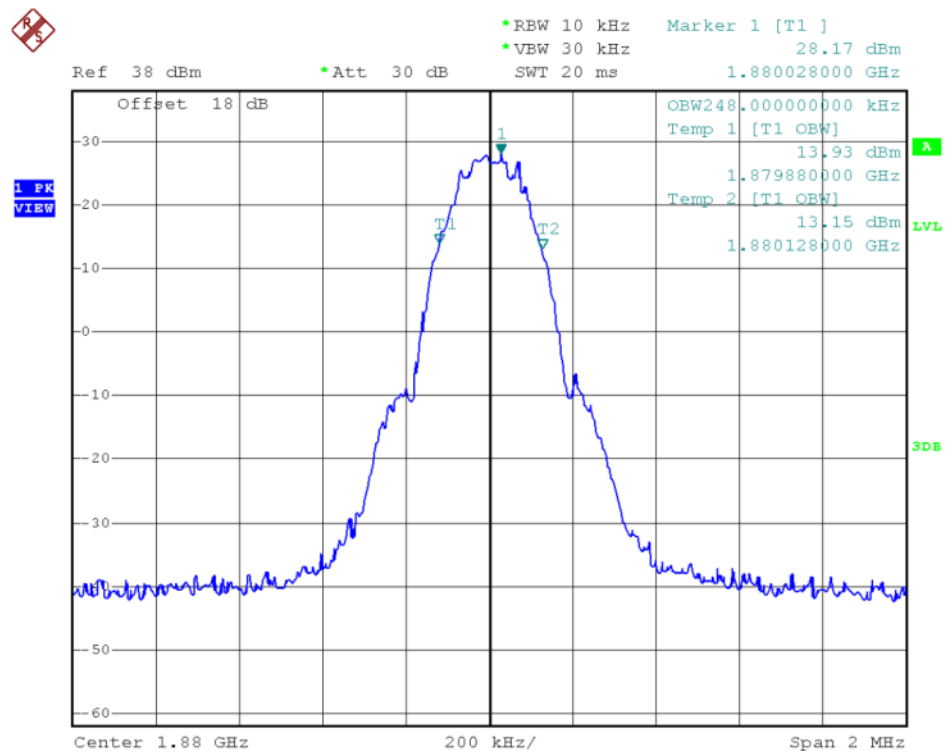
(Plot U2: GSM 850MHz Channel = 251)



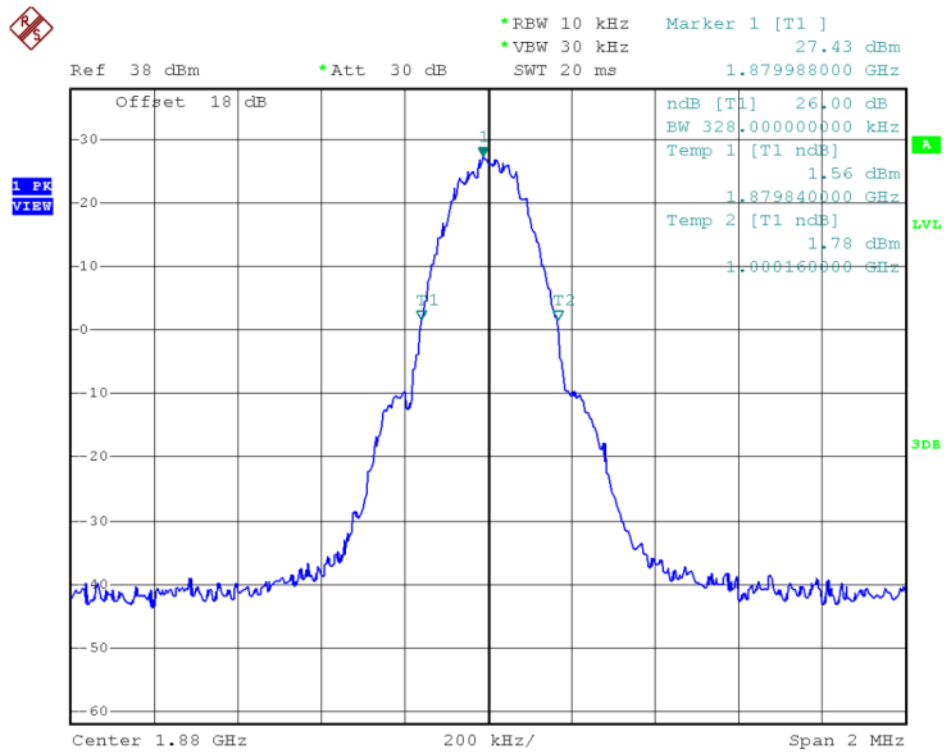
(Plot V1: GSM 1900MHz Channel = 512)



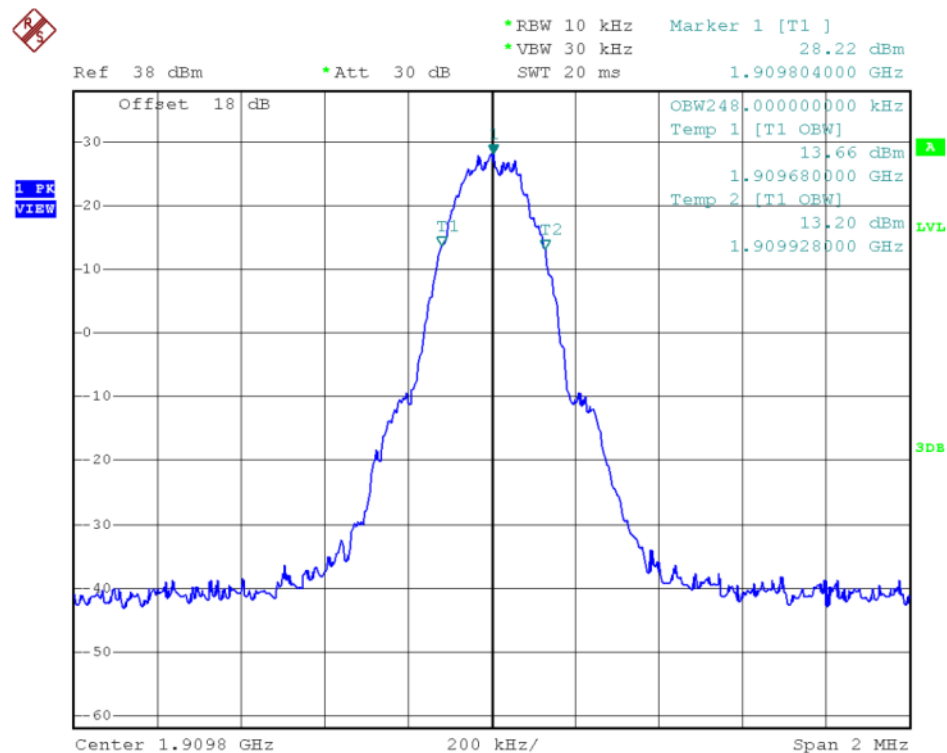
(Plot V2: GSM 1900MHz Channel = 512)



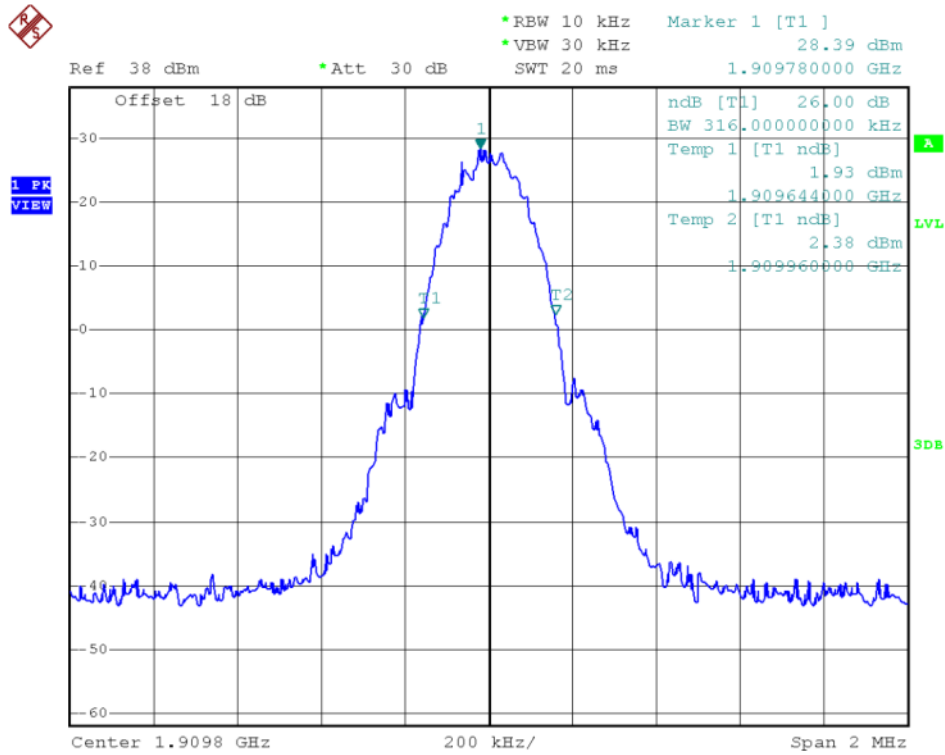
(Plot W1: GSM 1900MHz Channel = 661)



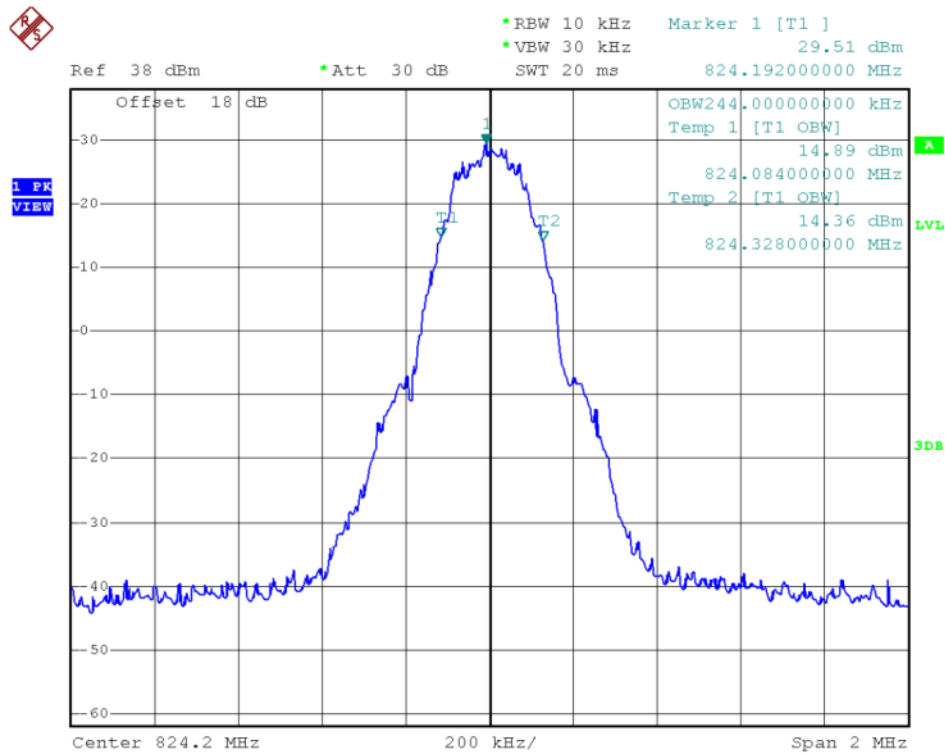
(Plot W2: GSM 1900MHz Channel = 661)



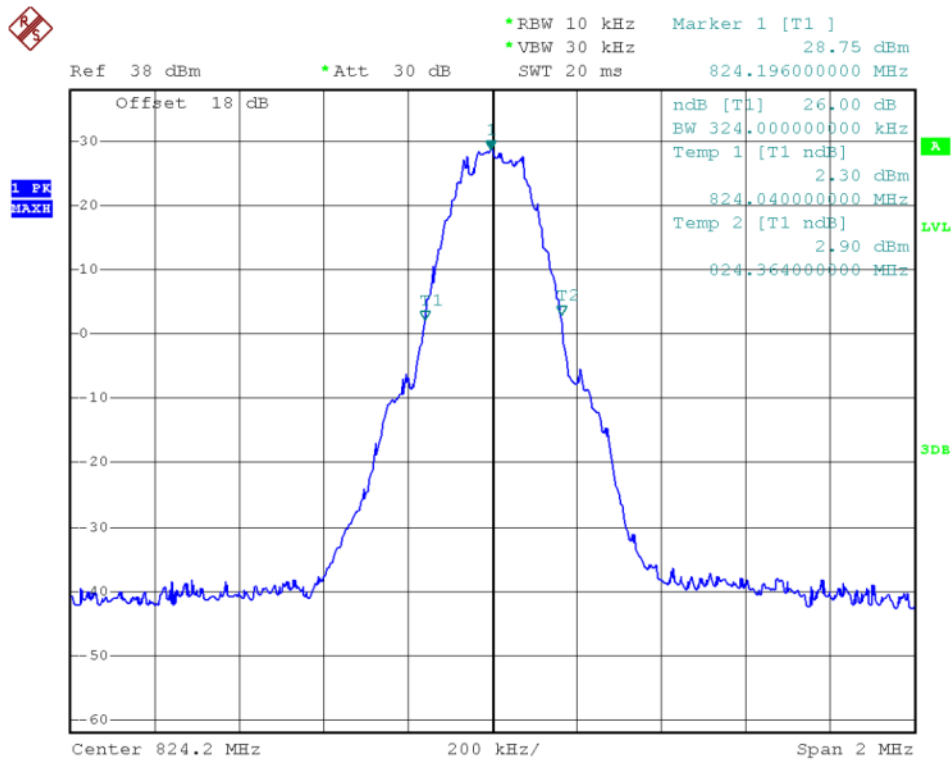
(Plot X1: GSM 1900MHz Channel = 810)



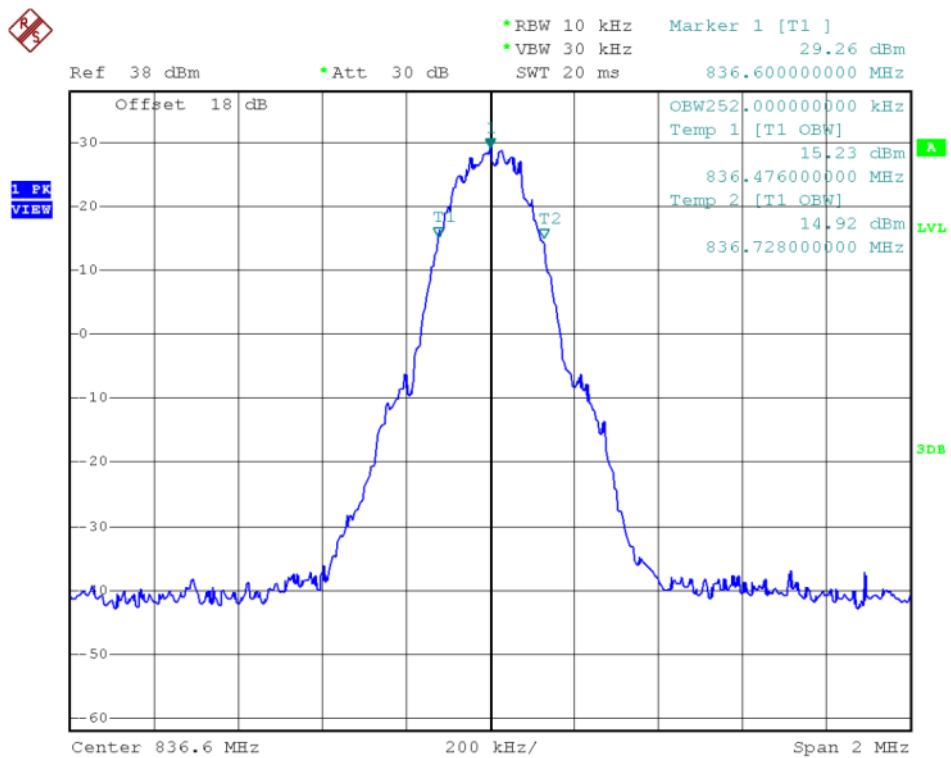
(Plot X2: GSM 1900MHz Channel = 810)



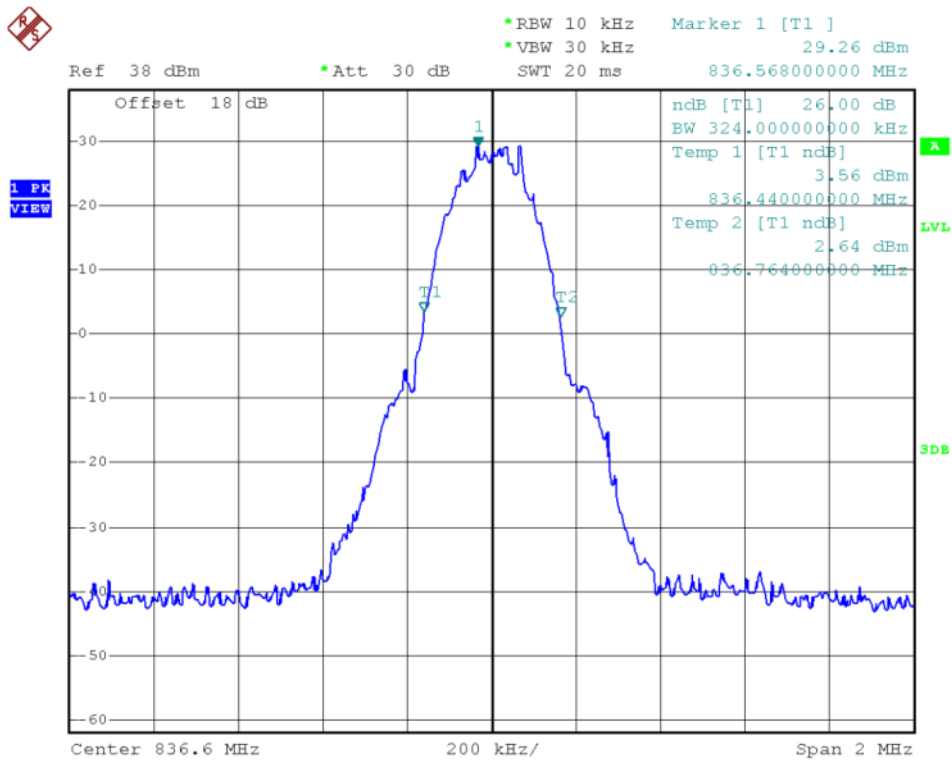
(Plot Y1: GPRS 850MHz Channel = 128)



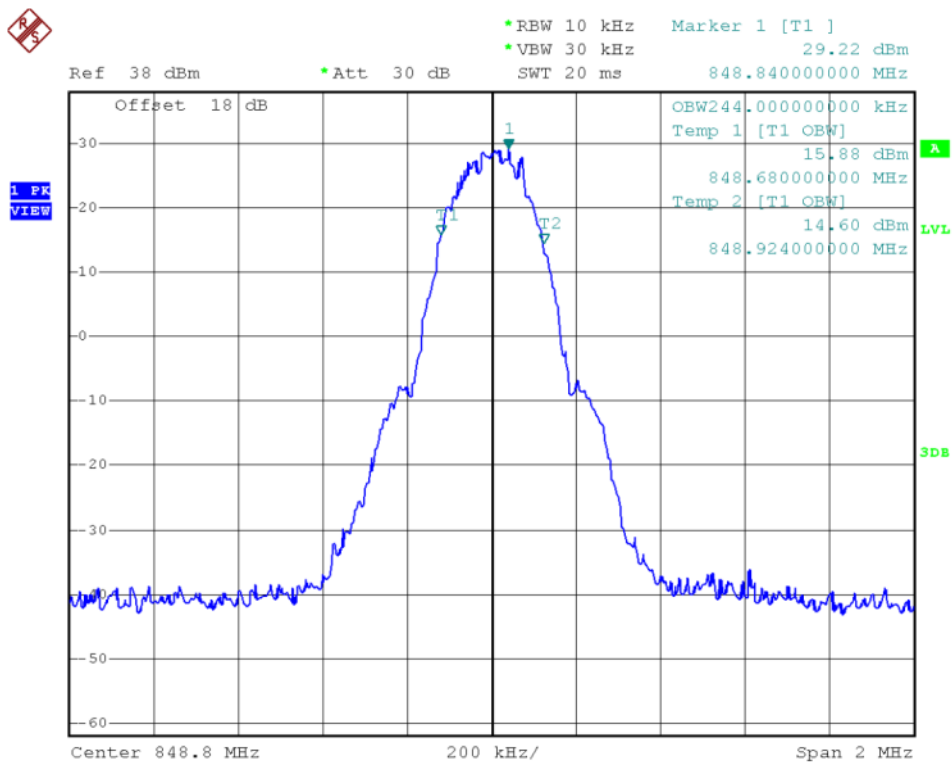
(Plot Y2: GPRS 850MHz Channel = 128)



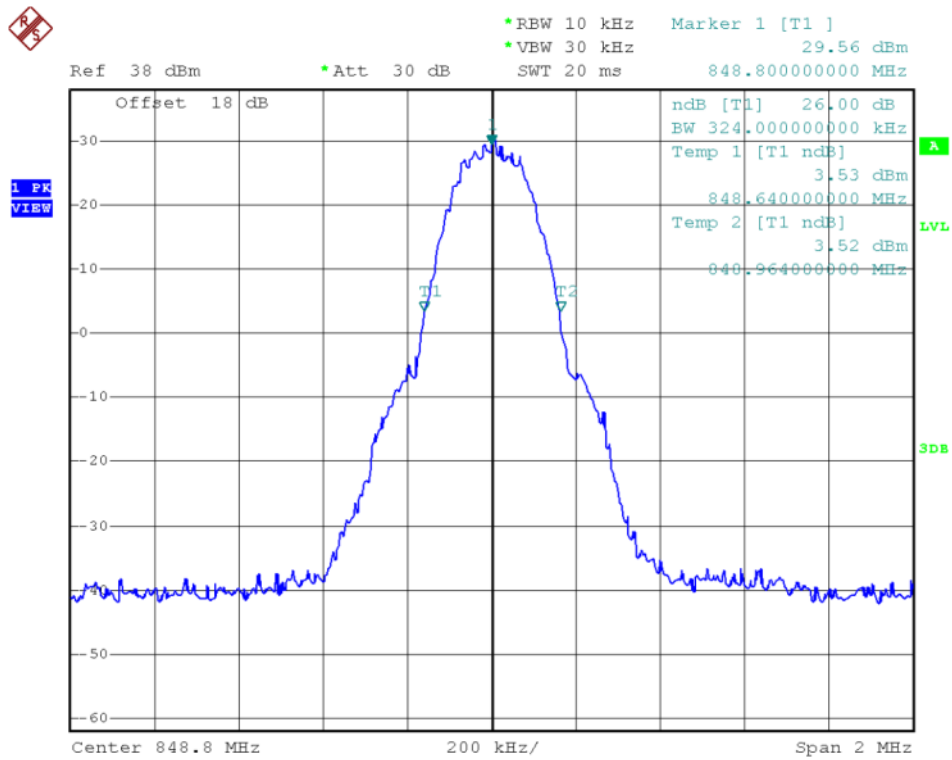
(Plot Z1: GPRS 850MHz Channel = 190)



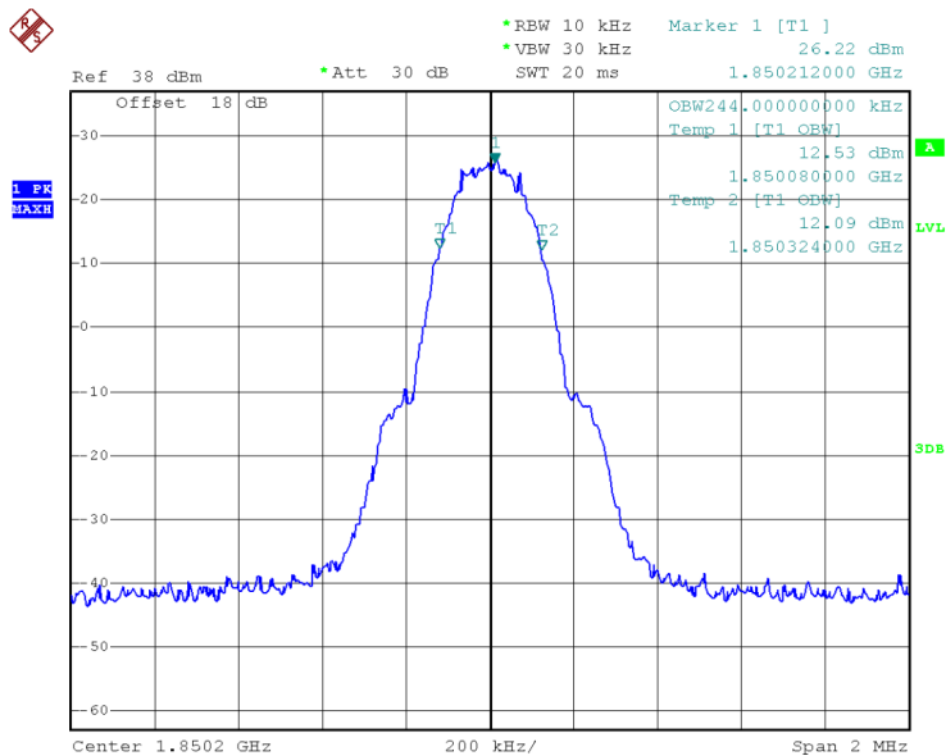
(Plot Z2: GPRS 850MHz Channel = 190)



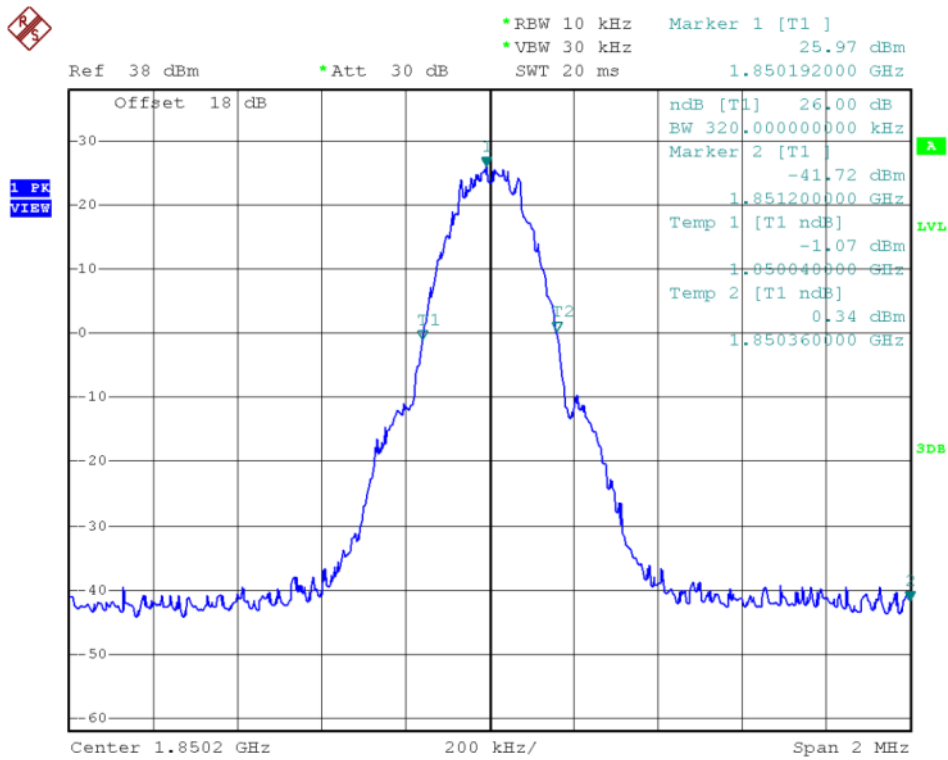
(Plot a1: GPRS850MHz Channel = 251)



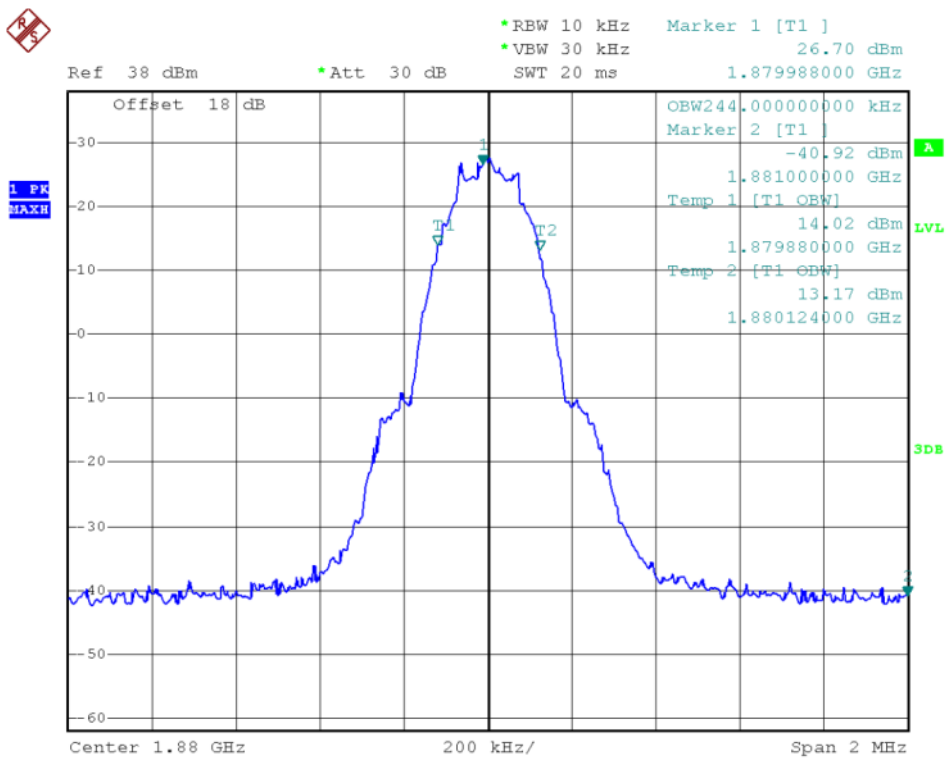
(Plot a2:GPRS850MHz Channel = 251)



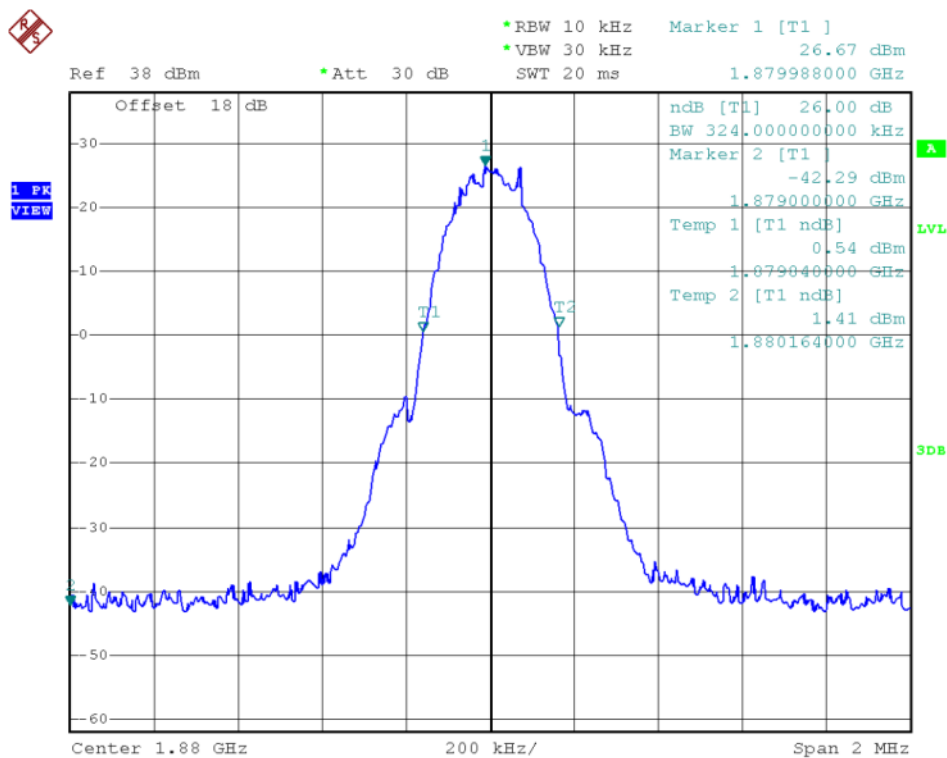
(Plot b1:GPRS 1900MHz Channel = 512)



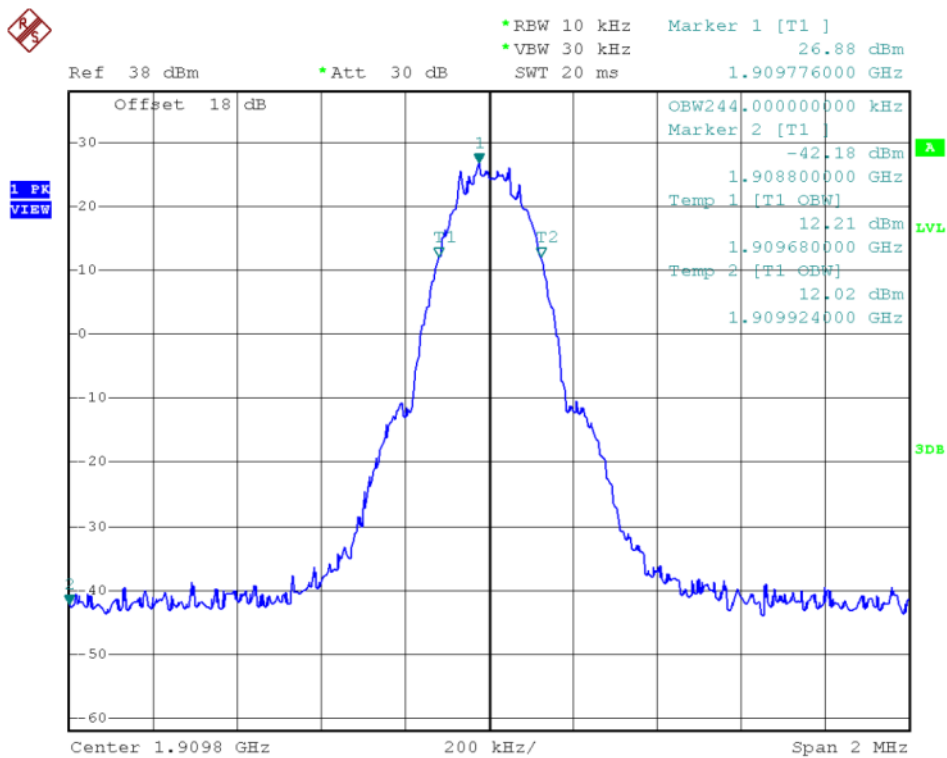
(Plot b2:GPRS 1900MHz Channel = 512)



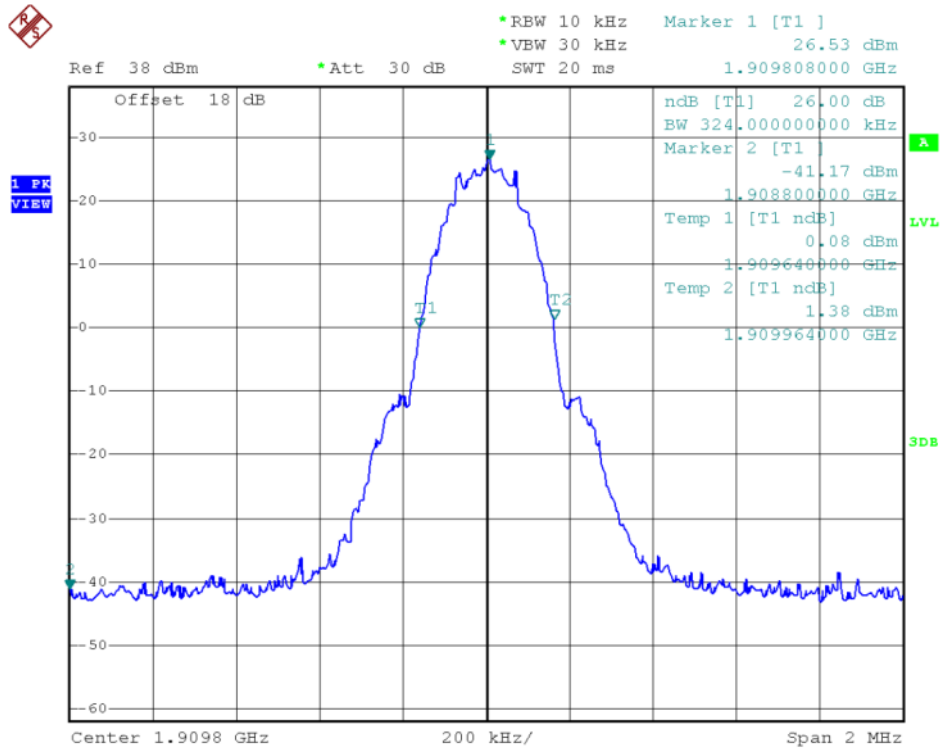
(Plot c1:GPRS 1900MHz Channel = 661)



(Plot c2:GPRS 1900MHz Channel = 661)



(Plot d1:GPRS 1900MHz Channel = 810)



(Plot d2:GPRS 1900MHz Channel = 810)

2.4 Frequency Stability

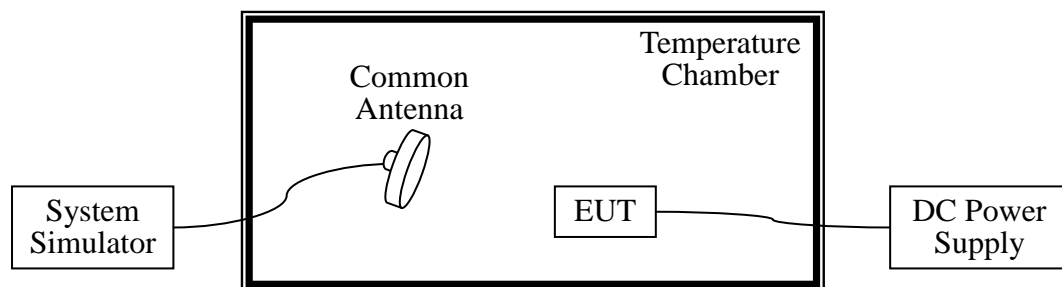
2.4.1 Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from $-30\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at intervals of not more than $10\text{ }^{\circ}\text{C}$.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2 Test Description

1. Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Data	Cal. Due Data
System Simulator	Agilent	E5515C	GB43130131	2014.06.10	2015.06.09
DC Power Supply	Good Will	GPS-3030DD	EF920938	2014.06.10	2015.06.09
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2014.06.10	2015.06.09

2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25 °C. The frequency deviation limit of 850MHz band is ± 2.5 ppm, and 1900MHz is ± 1 ppm

1. GSM 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	27.44	± 2060.5	15.44	± 2091.5	-18.99	± 2122	PASS
	-20	19.77		-18.23		17.30		
	-10	-19.48		24.02		1.29		
	0	27.88		6.16		27.60		
	+10	-28.36		11.01		24.32		
	+20	-11.09		10.74		-16.00		
	+30	11.42		-13.17		31.31		
	+40	22.49		-9.02		40.60		
+50	18.73	-3.21	38.40					
4.2	+25	25.94		-43.85		-12.37		
3.6	+25	41.08		10.80		-14.68		

2. GSM 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-8.15	± 1850.2	-2.59	± 1880.0	18.36	± 1909.8	PASS
	-20	22.78		14.29		-12.25		
	-10	23.39		22.25		-18.14		
	0	26.03		0.42		15.09		
	+10	-32.54		-4.53		21.98		
	+20	25.43		30.84		36.36		
	+30	-27.21		13.49		-37.15		
	+40	29.14		-19.43		22.18		
+50	15.43	40.40	-22.81					
4.2	+25	-19.29		7.14		23.28		
3.6	+25	29.31		15.70		28.96		

3. WCDMA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4183 (836.6MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	18.99	±2066	24.41	±2091.5	19.85	±2116.5	PASS
	-20	2.87		-3.86		-9.17		
	-10	19.53		-5.32		0.04		
	0	9.22		12.24		13.91		
	+10	-2.02		26.85		32.51		
	+20	-6.42		38.17		35.23		
	+30	22.68		-15.92		-11.93		
	+40	16.30		29.06		24.18		
+55	-16.06	7.56	14.22					
4.2	+25	27.61	-9.19	-3.82				
3.6	+25	-8.01	28.65	21.00				

4. WCDMA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-6.35	±1852.4	-10.99	±1880.0	2.37	±1907.6	PASS
	-20	15.64		16.44		22.31		
	-10	-15.98		23.61		3.13		
	0	14.56		-3.96		15.39		
	+10	19.06		25.41		27.07		
	+20	43.37		-10.17		19.55		
	+30	-5.57		17.51		-6.63		
	+40	-10.62		20.93		-9.67		
+55	-9.25	7.25	-17.09					
4.2	+25	11.57	28.68	20.20				
3.6	+25	36.36	-28.53	31.99				



5. HSDPA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4183 (836.6MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	-17.25	±2066	13.81	±2091.5	29.46	±2116.5	PASS
	-20	-10.50		7.25		-1.40		
	-10	33.31		30.37		11.85		
	0	-12.54		-25.26		13.77		
	+10	-17.28		-5.97		-22.74		
	+20	-18.27		35.45		8.56		
	+30	4.94		-8.27		-1.53		
	+40	-11.90		-20.86		24.05		
+55	19.83	36.15	-33.39					
4.2	+25	4.92	15.63	24.30				
3.6	+25	-21.22	-3.53	22.82				

6. HSDPA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	1.55	±1852.4	-1.95	±1880	16.43	±1907.6	PASS
	-20	27.02		-13.69		-11.34		
	-10	9.01		-7.66		14.76		
	0	-12.88		-6.84		-4.68		
	+10	4.94		11.3		16.05		
	+20	-1.87		-6.79		23.06		
	+30	30.32		13.56		-19		
	+40	13.24		22.66		27.59		
+55	-32.54	-5.86	9.66					
4.2	+25	24.06	2.54	-16.65				
3.6	+25	5.38	6.77	17.98				

7. HSUPA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4183 (836.6MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	11.55	±2066	20.62	±2091.5	27.52	±2116.5	PASS
	-20	20.26		-15.87		-9.04		
	-10	45.81		-13.71		-21.41		
	0	-8.21		-4.67		-12.20		
	+10	3.08		-3.32		-8.37		
	+20	21.57		-0.54		-12.07		
	+30	-5.90		16.31		29.53		
	+40	6.87		12.48		-4.88		
+55	38.23	20.22	-10.22					
4.2	+25	36.84	-7.58	-6.02				
3.6	+25	-13.01	15.24	6.85				

8. HSUPA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-4.67	±1852.4	1.57	±1880	33.57	±1907.6	PASS
	-20	3.02		-1.45		34.29		
	-10	-1.91		-2.83		-1.18		
	0	9.59		20.61		3.20		
	+10	-18.58		1.57		-12.72		
	+20	-5.69		17.42		16.00		
	+30	-8.38		7.56		-1.59		
	+40	4.00		-14.70		30.07		
+55	-11.48	-2.37	4.01					
4.2	+25	3.80	28.49	-14.81				
3.6	+25	8.16	-25.77	27.89				



2.5 Conducted Out of Band Emissions

2.5.1 Requirement

According to FCC section 22.917(a) and FCC section 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. This calculated to be -13dBm.

2.5.2 Test Description

See section 2.1.2 of this report.

2.5.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

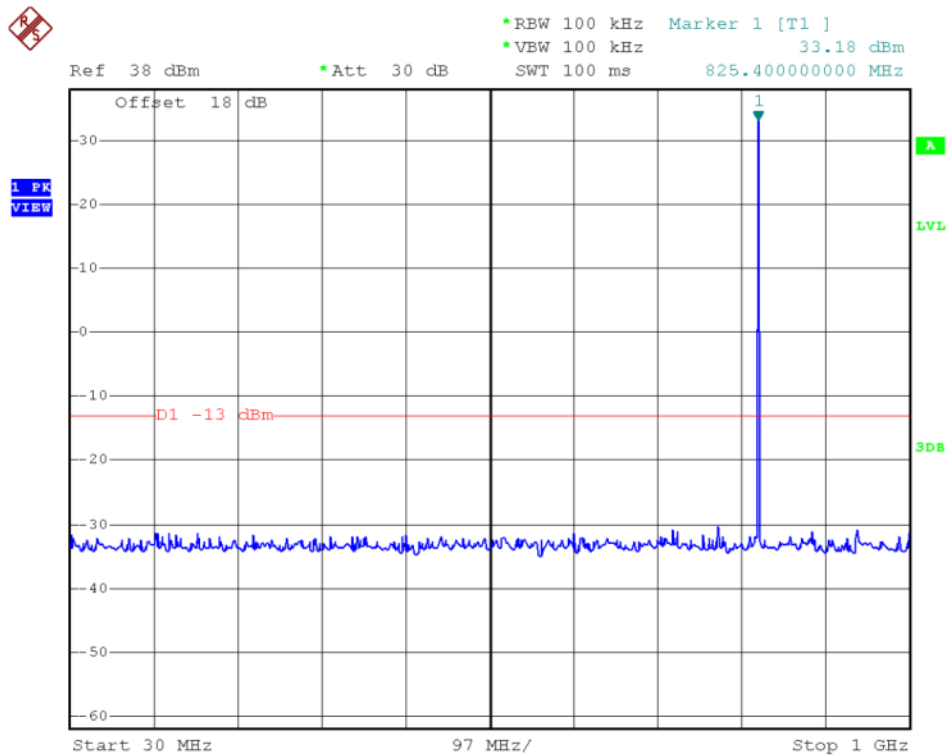
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-27.52	Plot A1toA1.1	-13	PASS
	190	836.6	-27.41	Plot A2toA2.1		PASS
	251	848.8	-27.82	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	-20.49	Plot B1toB1.1	-13	PASS
	661	1880.0	-18.39	Plot B2toB2.1		PASS
	810	1909.8	-18.83	Plot B3toB3.1		PASS
WCDMA 850MHz	4132	826.4	-27.61	Plot C1toC1.1	-13	PASS
	4183	836.6	-29.52	Plot C2toC2.1		PASS
	4233	846.6	-27.06	Plot C3toC3.1		PASS
WCDMA 1900MHz	9262	1852.4	-19.48	Plot D1toD1.1	-13	PASS
	9400	1880	-20.70	Plot D2toD2.1		PASS
	9538	1907.6	-19.38	Plot D3toD3.1		PASS
HSDPA 850MHz	4132	826.4	-27.31	Plot E1toE1.1	-13	PASS
	4183	836.6	-26.80	Plot E2toE2.1		PASS
	4233	846.6	-26.86	Plot E3toE3.1		PASS
HSDPA 1900MHz	9262	1852.4	-20.36	Plot F1toF1.1	-13	PASS
	9400	1880	-20.40	Plot F2toF2.1		PASS
	9538	1907.6	-18.90	Plot F3toF3.1		PASS



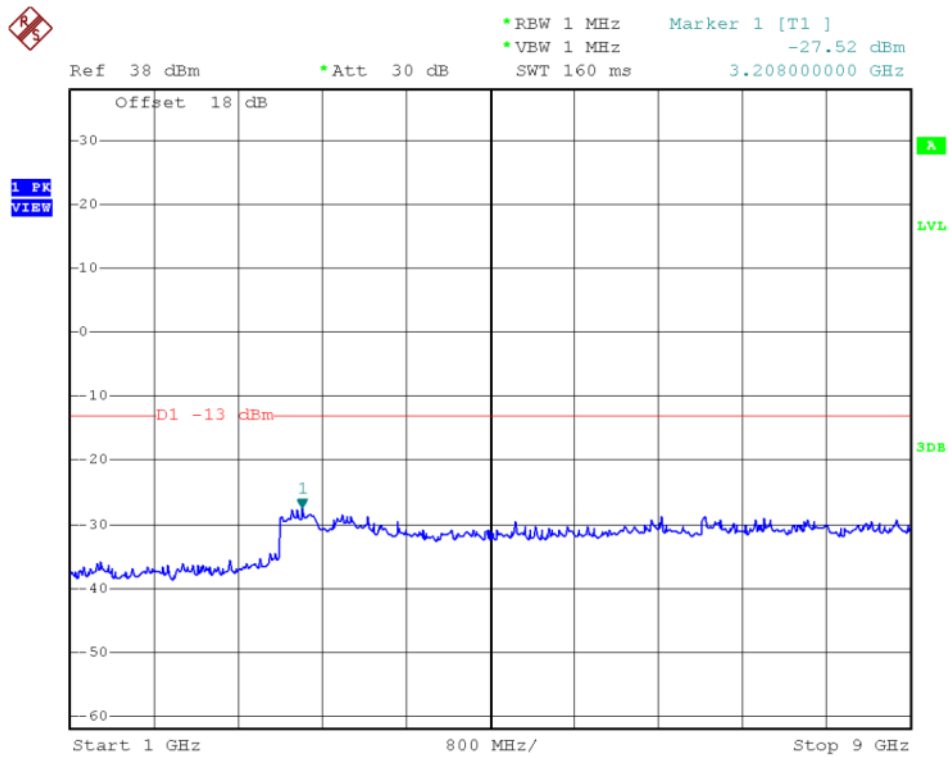
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
HSUPA 850MHz	4132	826.4	-28.26	Plot G1toG1.1	-13	PASS
	4183	836.6	-27.67	PlotG2toG2.1		PASS
	4233	846.6	-28.10	Plot G3toG3.1		PASS
HSUPA 1900MHz	9262	1852.4	-19.34	Plot H1toH1.1	-13	PASS
	9400	1880	-19.96	Plot H2toH2.1		PASS
	9538	1907.6	-20.54	Plot H3toH3.1		PASS

2. Test Plots for the Whole Measurement Frequency Range:

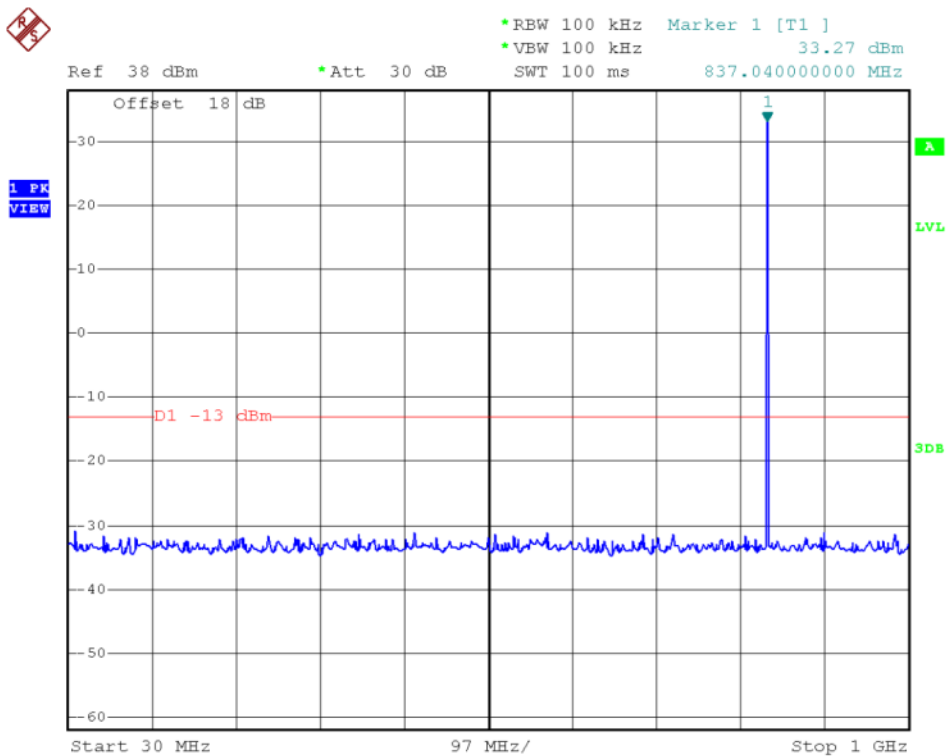
Note: the power of the EUT transmitting frequency should be ignored.



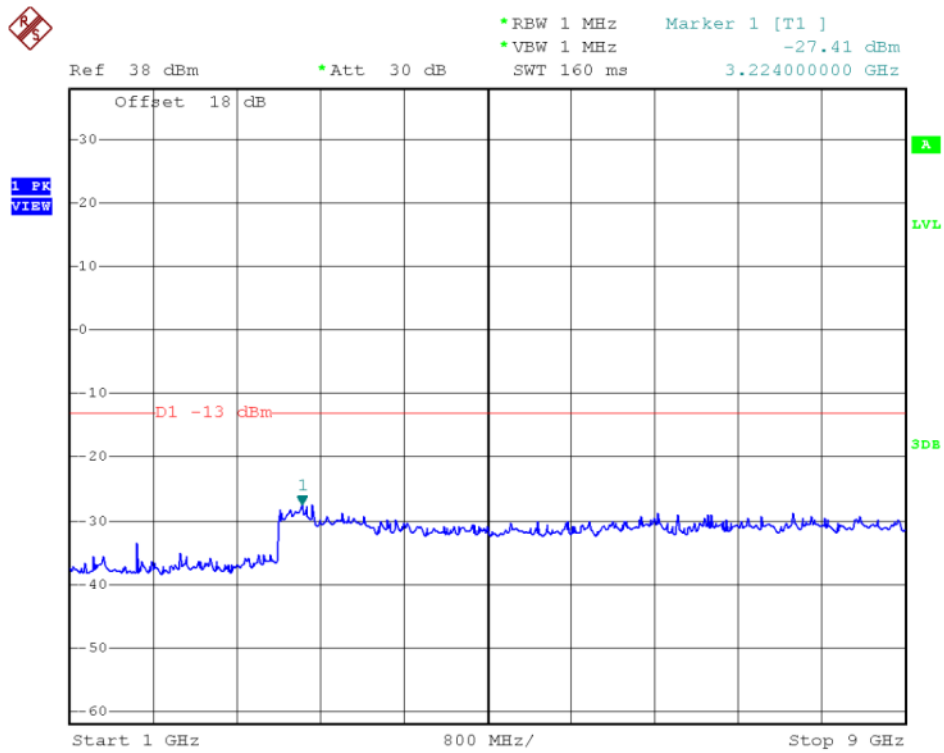
(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)



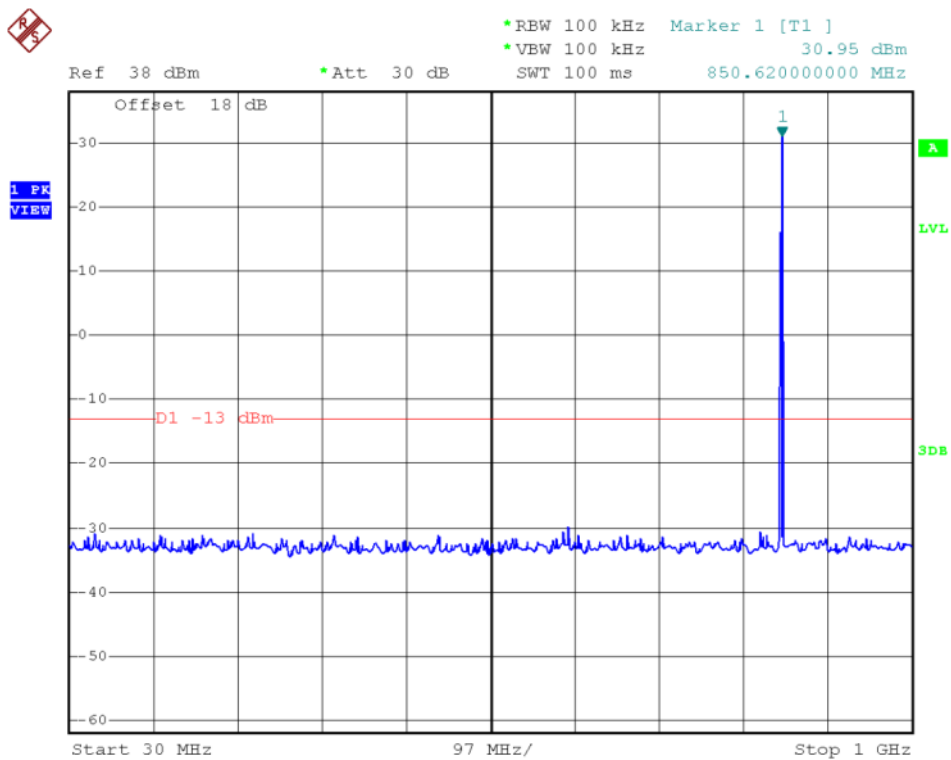
(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)



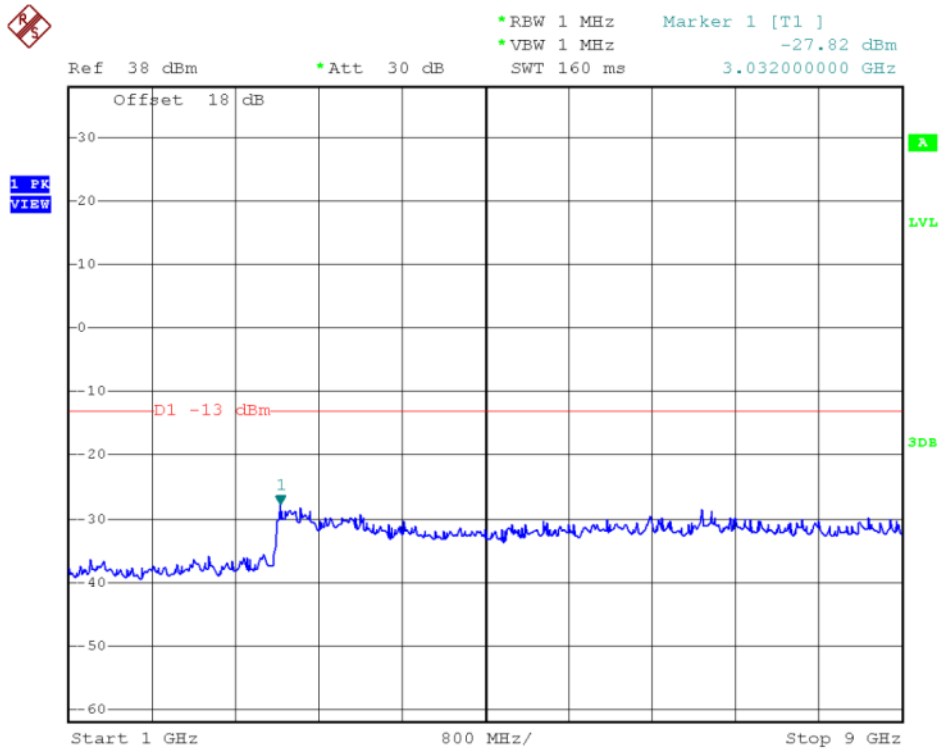
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



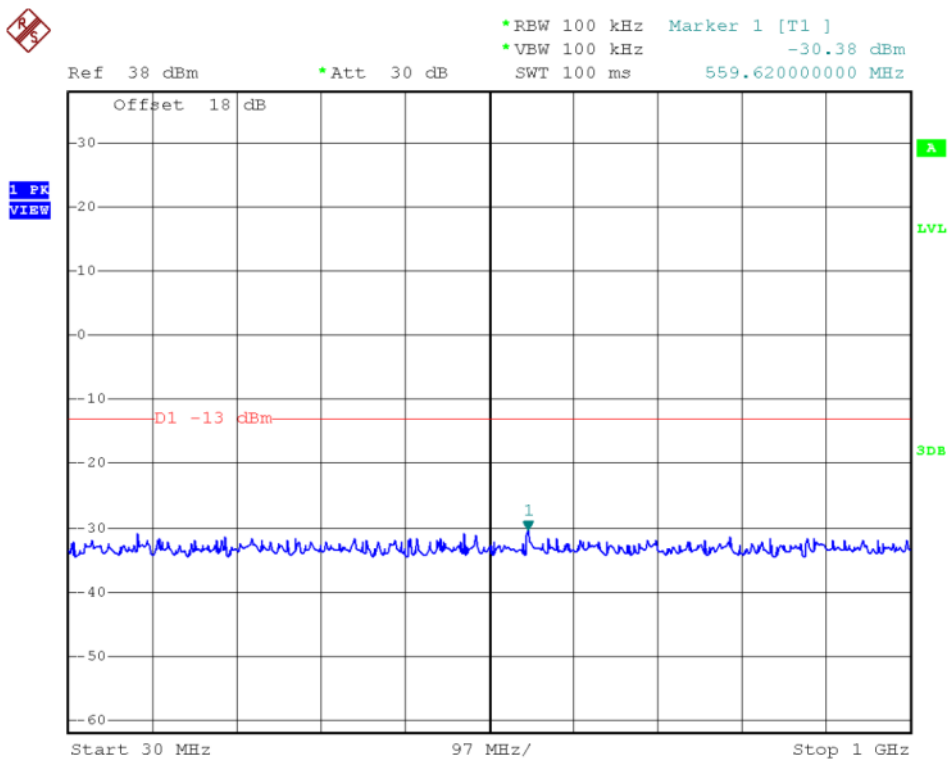
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)