TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR23-SRF0043 Page (1) of (51)	eurofins | KCTL

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2022-12-05

2. Use of Report : Certification

3. Name of Product / Model : Mobile phone / SM-A245M/DSN

4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Vietnam

5. FCC ID : A3LSMA245M

6. Date of Test : 2022-12-14 to 2023-01-13

7. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

8. Test method used : FCC Part 2
FCC Part 22 Subpart H
FCC Part 24 Subpart E
FCC Part 27 Subpart C

9. Test Result : Refer to the test result in the test report

	Tested by	Technical Manager
Affirmation	Name : Kwonse Kim (Signature)	Name : Seungyong Kim (Signature)

2023-01-19

Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2023-01-19	Originally issued	-

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Factory	:	Samsung Electronics Vietnam Thai Nguyen Co., Ltd
Address	:	Yen Binh Industrial Park, Dong Tien Ward, Pho Yen Town, Thai Nguyen Province, Vietnam
Factory	:	SAMSUNG ELECTRONICS VIETNAM CO.,LTD.
Address	:	Yenphong 1 - I.P Yentrung Commune, Yenphong Dist., Bac Ninh Province, Vietnam
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 CAB Identifier: KR0040 ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Mobile phone		
Model	:	SM-A245M/DSN		
Derivative model	:	SM-A245M/N		
Modulation technique	:	QPSK,GMSK, 8-PSK		
Power source	:	DC 3.88 V		
Antenna specification	:	FPCB Type PIFA Antenna		
Frequency range	:	GSM 850	:	824.2 ㎒ ~ 848.8 ㎒
		GSM 1900	:	1 850.2 ㎒ ~ 1 909.8 ㎒
		WCDMA 850	:	826.4 ㎒ ~ 846.6 ㎒
		WCDMA 1700	:	1 712.4 ㎒ ~ 1 752.6 ㎒
		WCDMA 1900	:	1 852.4 ㎒ ~ 1 907.6 ㎒
Software version	:	A245M.001		
Hardware version	:	REV1.0		
Test device serial No.	:	Conducted	:	R38TC007DLW
		Radiated	:	R38TB005KQN
Operation temperature	:	-20 ℃ ~ 60 ℃		

Note. The Product equality letter includes detailed information about the differences between basic and derivative model.

2.1. Frequency/channel operations

This device contains the following capabilities:
WLAN (11a/b/g/n/ac), Bluetooth (BDR/EDR/BLE), LTE B2/4/5/12/13/17/26/41/66, GSM 850/1900, WCDMA 850/1700/1900, NFC

GSM 850

Ch.	Frequency (㎒)
128	824.2
190	836.6
251	848.8

Table 2.2.1.
GSM/GPRS/EDGE

GSM 1900

Ch.	Frequency (㎒)
512	1 850.2
661	1 880.0
810	1 909.8

Table 2.2.2.
GSM/GPRS/EDGE

WCDMA 850

Ch.	Frequency (㎒)
4132	826.4
4183	836.6
4233	846.6

Table 2.2.3.
RMC/HSDPA/HSUPA/
DC-HSDPA

WCDMA 1700

Ch.	Frequency (㎒)
1312	1 712.4
1412	1 732.4
1513	1 752.6

Table 2.2.4.
RMC/HSDPA/HSUPA/
DC-HSDPA

WCDMA 1900

Ch.	Frequency (㎒)
9262	1 852.4
9400	1 880.0
9538	1 907.6

Table 2.2.5.
RMC/HSDPA/HSUPA/
DC-HSDPA

3. Maximum ERP/EIRP power

GSM 850

Mode	Tx frequency (㎒)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
GSM 850 (Voice)	824.2 ~ 848.8	248KGXW	29.97	0.993
GSM 850 (EDGE)	824.2 ~ 848.8	248KG7W	24.26	0.267

GSM 1900

Mode	Tx frequency (㎒)	Emission designator	EIRP	
			Max. power (dBm)	Max. power (W)
GSM 1900 (Voice)	1 850.2 ~ 1 909.8	246KGXW	27.76	0.597
GSM 1900 (EDGE)	1 850.2 ~ 1 909.8	250KG7W	23.83	0.242

WCDMA 850

Mode	Tx frequency (㎒)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
WCDMA 850	826.4 ~ 846.6	4M17F9W	21.46	0.140

WCDMA 1700 / WCDMA 1900

Mode	Tx frequency (㎒)	Emission designator	EIRP	
			Max. power (dBm)	Max. power (W)
WCDMA 1700	1 712.4 ~ 1 752.6	4M15F9W	21.06	0.128
WCDMA 1900	1 852.4 ~ 1 907.6	4M17F9W	19.64	0.092

4. Summary of tests

FCC Part Section(s)	Parameter	Test Limit	Test Condition	Test results
2.1046	Conducted Output Power	N/A	Conducted	Pass
2.1049	Occupied Bandwidth & 26 dB Bandwidth	N/A		Pass
2.1051 22.917(a) 24.238(a) 27.53(h)	Band Edge Emissions at Antenna Terminal	<43 + 10Log$_{10}$(P) dB		Pass
	Spurious Emissions at Antenna Terminal			Pass
24.232(d) 27.50(d)(5)	Peak to Average Power Ratio	< 13 dB		Pass
2.1055 22.355	Frequency stability	< 2.5 ppm		Pass
24.235		Emission must remain in band		
27.54				
22.913(a)(5)	Effective Radiated Power	< 7 Watts max. ERP	Radiated	Pass
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		Pass
27.50(d)(4)		< 1 Watts max. EIRP		Pass
2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Spurious Emissions	<43 + 10Log$_{10}$(P) dB		Pass

Notes:

1. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.26-2015
   - ANSI/TIA-603-E-2016
   - KDB 971168 D01 v03r01
   - KDB 971168 D02 v02r01

4.1. Worst case orientation

1. All modes of operation were investigated and the worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations in the test data.
2. All the radiated tests have been performed several case. (Stand-alone, with accessories (DLC Cable etc.))
   - Worst case: Stand-alone
3. EUT was investigated in three orthogonal orientations X, Y and Z. It was determined below as worst-case.
   - For GSM 850, WCDMA 850, testing was performed with the EUT in **X** orientation.
   - For GSM 1900, WCDMA 1700/1900, testing was performed with the EUT in **Z** orientation.
4. Test Condition
   - The measurement was performed with various configurations then worst results are reported.

1) Radiated measurement

Test Description	Mode	Modulation	Test Channel
Effective Radiated Power	GSM 850 WCDMA 850	Voice & EDGE (1 Tx)	Low, Mid, High
		RMC (12.2 kbps)	
Equivalent Isotropic Radiated Power	GSM 1900 WCDMA 1700/1900	Voice & EDGE (1 Tx)	Low, Mid, High
		RMC (12.2 kbps)	
Radiated Spurious Emissions	GSM 850/1900 WCDMA 850/1700/1900	GSM 850/1900 : Voice	Low, Mid, High
		RMC (12.2 kbps)	

2) Conducted measurement

Conducted Test			
Test Description	**Mode**	**Modulation**	**Test Channel**
Output Power	GSM 850/1900 WCDMA 850/1700/1900	GSM : Voice/GPRS/EDGE WCDMA : RMC/HSDPA/HSUPA/DC-HSUPA	Low, Mid, High
OBW & 26 dB BW		GSM : GPRS & EDGE (1 Tx) WCDMA : RMC (12.2 kbps)	Low, Mid, High
PAPR			Mid
Band Edge		GSM : GPRS WCDMA : RMC (12.2 kbps)	Low, High
Spurious Emissions			Low, Mid, High

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Conducted RF power	0.9 dB	
Conducted spurious emissions	1.1 dB	
Radiated spurious emissions	Below 1 000 ㎒	4.3 dB
	1 000 ㎒ ~ 18 000 ㎒	3.8 dB
	Above 1 8000 ㎒	5.9 dB

6. Measurement results explanation example

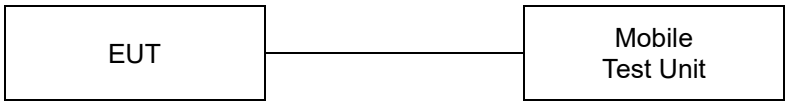
Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	6.16	11 000	10.75
50	6.25	12 000	10.59
100	6.36	13 000	10.72
200	6.49	14 000	10.12
300	6.66	15 000	10.43
400	6.73	16 000	10.94
500	6.76	17 000	11.85
600	6.87	18 000	11.30
700	6.88	19 000	12.71
800	6.94	20 000	12.19
900	7.03	21 000	11.41
1 000	6.99	22 000	11.61
2 000	7.52	23 000	12.14
3 000	7.64	24 000	12.72
4 000	7.42	25 000	11.05
5 000	8.36	26 000	11.51
6 000	8.64	26 500	12.78
7 000	9.84	27 000	12.80
8 000	9.93	28 000	12.38
9 000	10.15	29 000	13.89
10 000	10.32	30 000	14.27

Note.
Offset(㏈) = RF cable loss(㏈) + Divider (㏈)

7. Test results

7.1. Conducted output power

Test setup



Test procedure

971168 D01 v03r01 – Section 5.2
ANSI C63.26-2015 – Section 5.2.4.2
CFR 47, - Section §2.1046

Test settings

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurement be performed only over durations of active transmissions at maximum output power level applies. Thus, an average power meter can always be used to perform the measurement when the EUT can be configured to transmit continuously.

If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter:

a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels.
b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to ± 2%) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to [10log (1/duty cycle)]. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

See item r) of 4.1 for more information regarding power meter functional requirements and limitations, and consult the instrumentation-specific application literature for proper set-up and use.

Notes:

1. Offset(㏈) = RF cable loss(㏈)

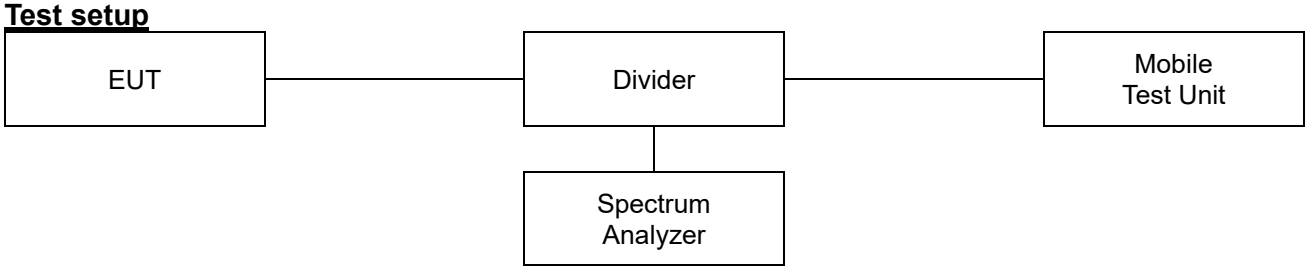
Test results

Maximum Burst-Average Output Power (dBm)										
Test Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM850	128	32.45	32.45	31.49	29.51	28.53	25.07	24.09	22.04	20.55
	190	32.52	32.52	31.55	29.56	28.58	25.13	24.00	22.06	20.62
	251	32.79	32.79	31.81	29.84	28.87	25.21	24.30	22.17	20.73
GSM1900	512	29.48	29.80	28.76	26.74	25.77	24.48	23.28	21.17	19.89
	661	29.91	29.91	28.85	26.83	25.86	24.48	23.29	21.18	19.89
	810	29.88	29.88	28.80	26.78	25.81	24.63	23.45	21.28	19.89

Test Band	Test mode	Average Conducted Power (dBm)			MPR (dB)
		Frequency (MHz)			
		Low	Middle	High	
WCDMA 850	RMC	24.34	24.26	24.44	-
	HSDPA-Subtest 1	23.31	23.30	23.49	0
	HSDPA-Subtest 2	22.48	22.35	22.58	0
	HSDPA-Subtest 3	21.75	21.77	22.14	0.5
	HSDPA-Subtest 4	21.57	21.60	22.06	0.5
	HSUPA-Subtest 1	22.27	22.27	22.46	0
	HSUPA-Subtest 2	20.27	20.28	20.47	2
	HSUPA-Subtest 3	21.30	21.24	21.44	1
	HSUPA-Subtest 4	20.29	20.27	20.44	2
	HSUPA-Subtest 5	22.26	22.28	22.48	0
	DC-HSDPA-Subtest 1	23.37	23.40	23.51	0
	DC-HSDPA-Subtest 2	23.33	23.35	23.55	0
	DC-HSDPA-Subtest 3	22.84	22.85	23.04	0.5
	DC-HSDPA-Subtest 4	22.85	22.84	23.02	0.5
WCDMA 1700	RMC	23.43	23.24	23.31	-
	HSDPA-Subtest 1	22.26	22.12	22.25	0
	HSDPA-Subtest 2	21.41	21.30	21.40	0
	HSDPA-Subtest 3	20.63	20.52	20.68	0.5
	HSDPA-Subtest 4	20.63	20.70	20.87	0.5
	HSUPA-Subtest 1	21.22	21.11	21.26	0
	HSUPA-Subtest 2	19.27	19.16	19.31	2
	HSUPA-Subtest 3	20.31	20.19	20.31	1
	HSUPA-Subtest 4	19.28	19.16	19.27	2
	HSUPA-Subtest 5	21.26	21.16	21.26	0
	DC-HSDPA-Subtest 1	22.30	22.16	22.29	0
	DC-HSDPA-Subtest 2	22.34	22.20	22.31	0
	DC-HSDPA-Subtest 3	21.81	21.72	21.80	0.5
	DC-HSDPA-Subtest 4	21.82	21.74	21.80	0.5
WCDMA 1900	RMC	23.31	23.33	23.47	-
	HSDPA-Subtest 1	22.28	22.30	22.39	0
	HSDPA-Subtest 2	21.46	21.61	21.50	0
	HSDPA-Subtest 3	20.91	20.75	20.83	0.5
	HSDPA-Subtest 4	20.85	20.84	20.95	0.5
	HSUPA-Subtest 1	21.24	21.27	21.30	0
	HSUPA-Subtest 2	19.29	19.33	19.37	2
	HSUPA-Subtest 3	20.22	20.29	20.34	1
	HSUPA-Subtest 4	19.30	19.33	19.34	2
	HSUPA-Subtest 5	21.26	21.30	21.36	0
	DC-HSDPA-Subtest 1	22.23	22.33	22.40	0
	DC-HSDPA-Subtest 2	22.29	22.36	22.40	0
	DC-HSDPA-Subtest 3	21.80	21.85	21.93	0.5
	DC-HSDPA-Subtest 4	21.83	21.82	21.95	0.5

7.2. 99% Occupied Bandwidth & 26dB Bandwidth

Test setup



Limit

According to §2.1049, the occupied bandwidth, that 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 shall be measured.

Test procedure

971168 D01 v03r01 – Section 4.2 and 4.3
ANSI C63.26-2015 – Section 5.4.3 and 5.4.4

Test settings

◆ **26dB Bandwidth**

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.

b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
See guidance provided in 4.2.3.

d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

f) Determine the reference value by either of the following:
   1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize.
   Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
   2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.

g) Determine the "−X dB amplitude" as equal to (Reference Value − X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.

h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).

i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "−X dB amplitude" determined in step f). If a marker is below this "−X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.

j) The spectral envelope can cross the "−X dB amplitude" at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the "−X dB amplitude."

k) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

◆ 99% Occupied Bandwidth

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient).

b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

d) Set the detection mode to peak, and the trace mode to max-hold.

e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.

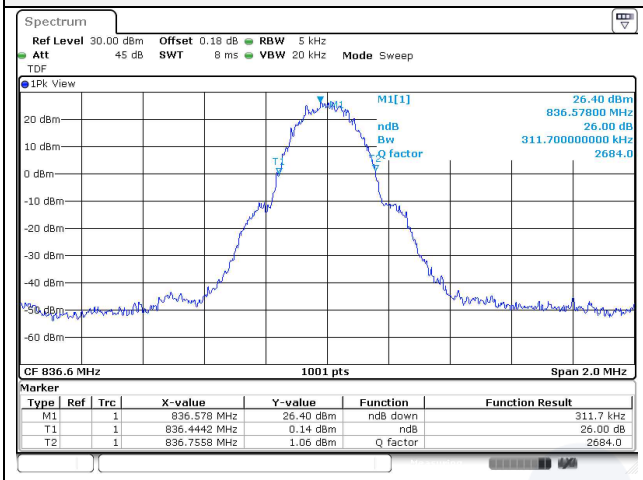
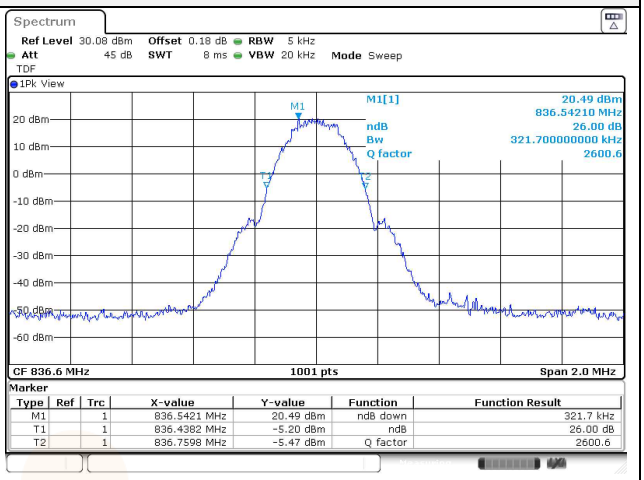
f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

Test results

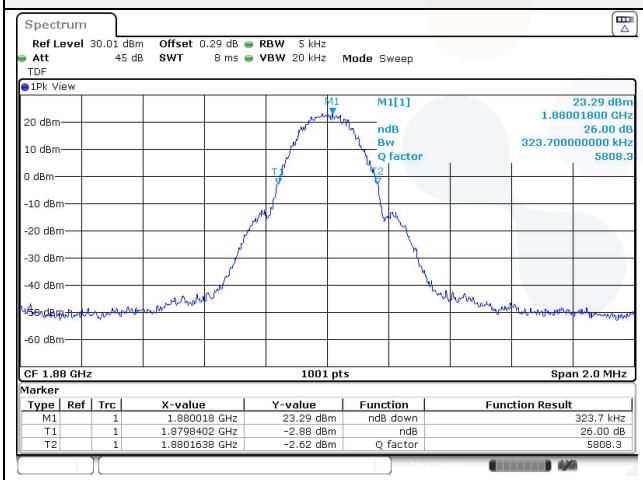
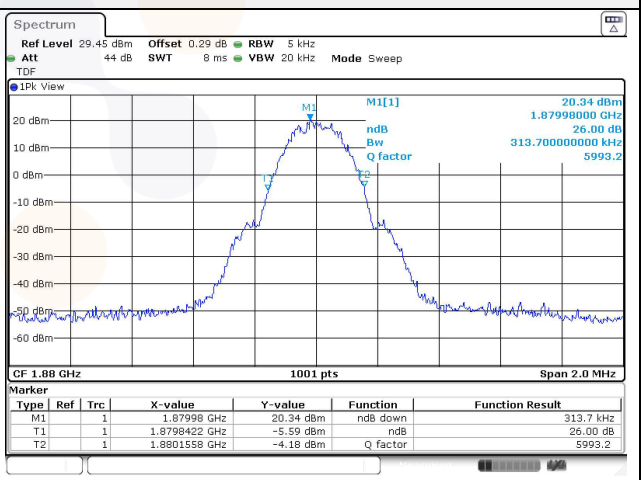
Test mode		Frequency (㎒)	26 ㏈ bandwidth (㎒)	99 % bandwidth (㎒)
GSM 850	GPRS	824.2	0.314	0.246
		836.6	0.312	0.240
		848.8	0.316	0.248
	EDGE	824.2	0.320	0.244
		836.6	0.322	0.244
		848.8	0.318	0.248
GSM 1900	GPRS	1850.2	0.320	0.246
		1880.0	0.324	0.246
		1909.8	0.316	0.244
	EDGE	1850.2	0.320	0.250
		1880.0	0.314	0.244
		1909.8	0.322	0.246
WCDMA 850	RMC	826.4	4.705	4.151
		836.6	4.720	4.166
		846.6	4.675	4.166
WCDMA 1700	RMC	1 712.4	4.705	4.151
		1 732.4	4.690	4.151
		1 752.6	4.690	4.151
WCDMA 1900	RMC	1 852.4	4.690	4.151
		1 880.0	4.690	4.166
		1 907.6	4.675	4.166

26dB Bandwidth

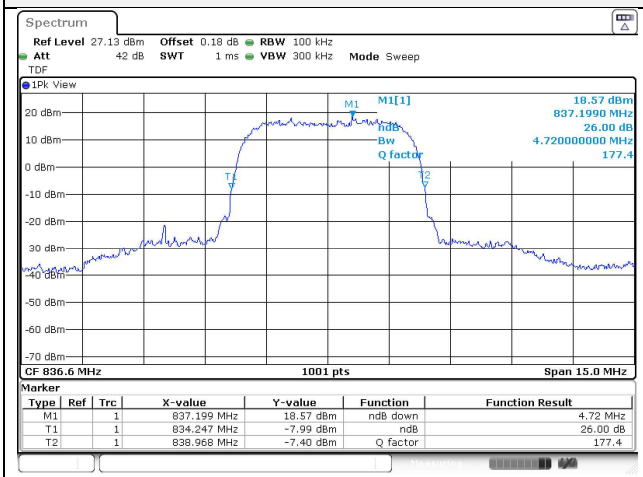
Test mode: GSM 850

GPRS Mid ch.	EDGE Mid ch.
	

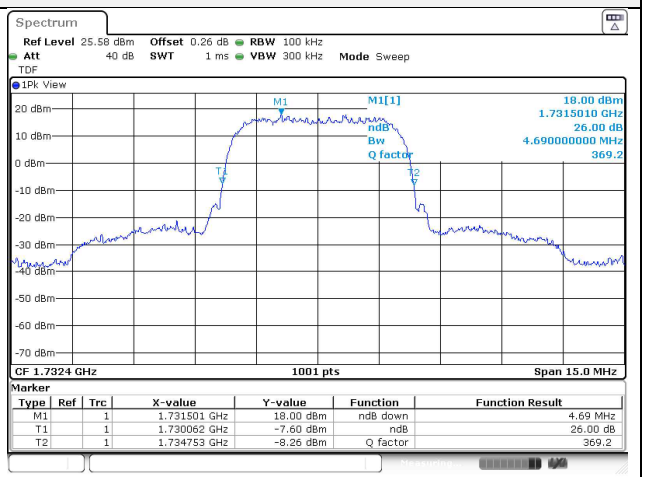
Test mode: GSM 1900

GPRS Mid ch.	EDGE Mid ch.
	

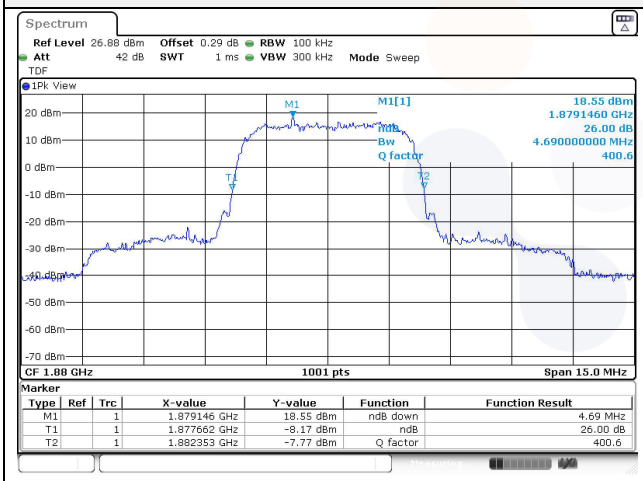
Test mode: WCDMA 850

RMC / Mid ch.


Test mode: WCDMA 1700

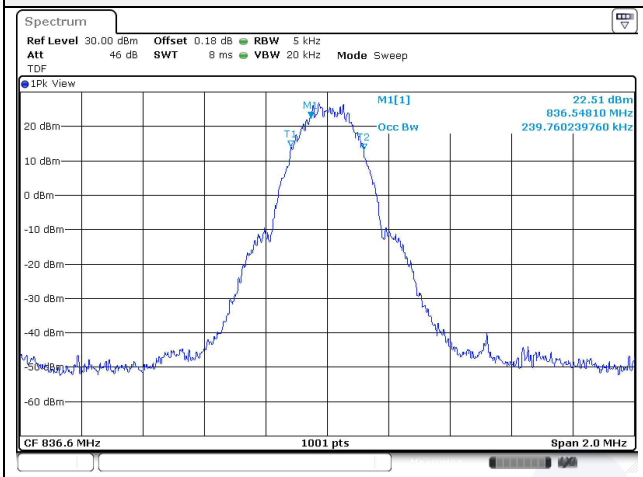
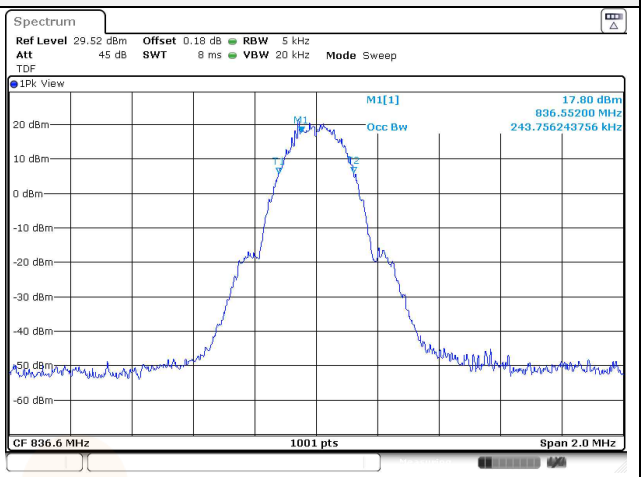
RMC / Mid ch.


Test mode: WCDMA 1900

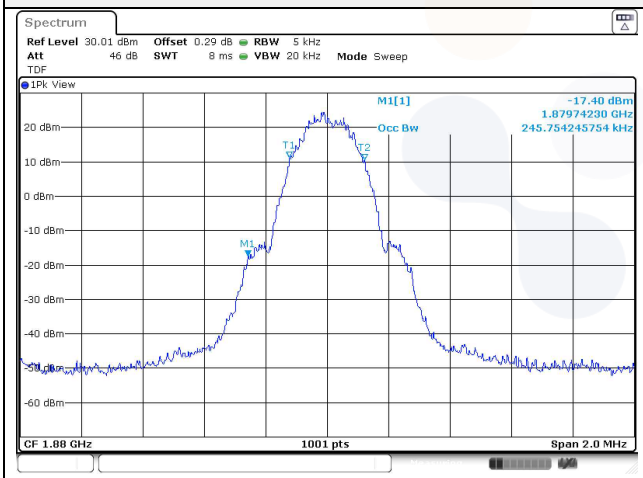
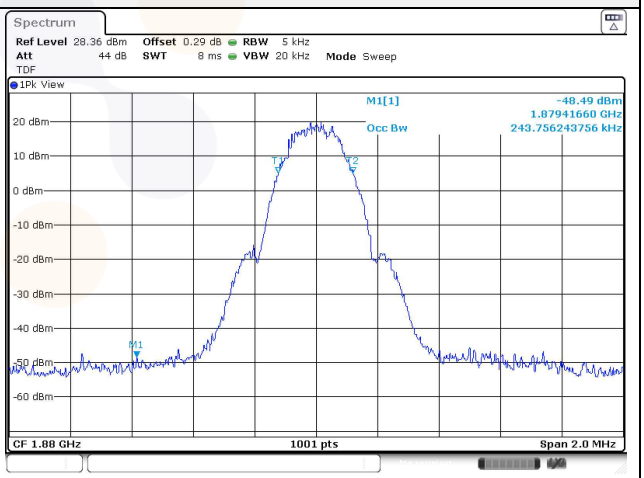
RMC / Mid ch.	-
	Blank

99% Occupied Bandwidth

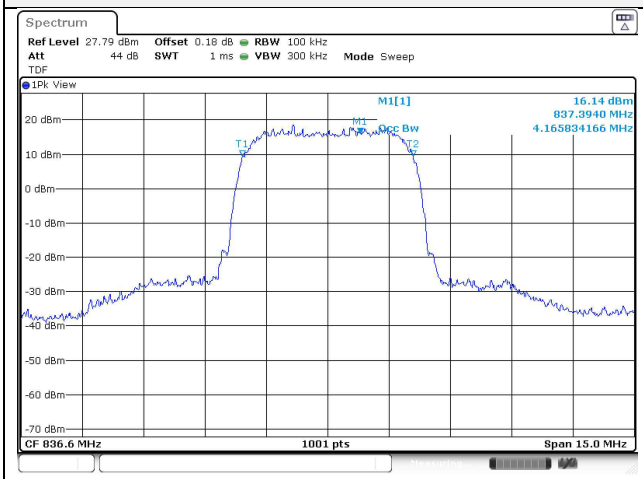
Test mode: GSM 850

GPRS Mid ch.	EDGE Mid ch.
	

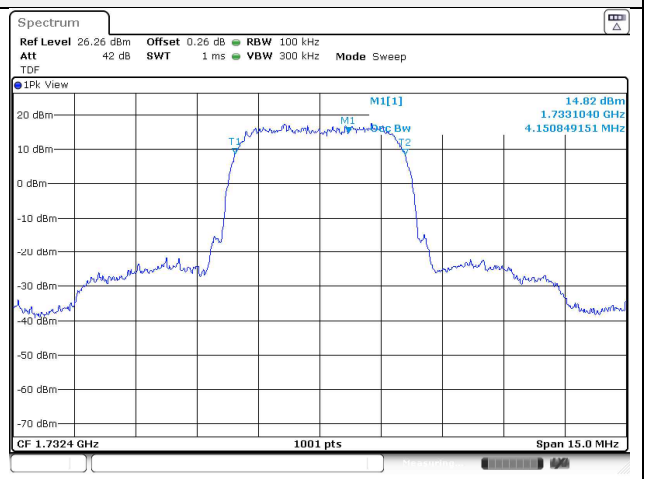
Test mode: GSM 1900

GPRS Mid ch.	EDGE Mid ch.
	

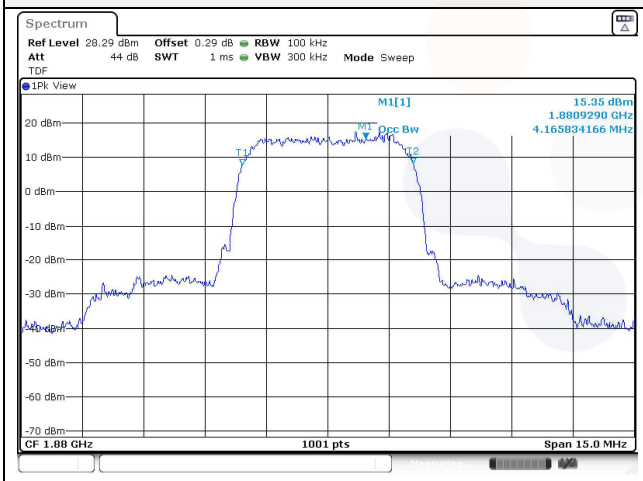
Test mode: WCDMA 850

RMC / Mid ch.


Test mode: WCDMA 1700

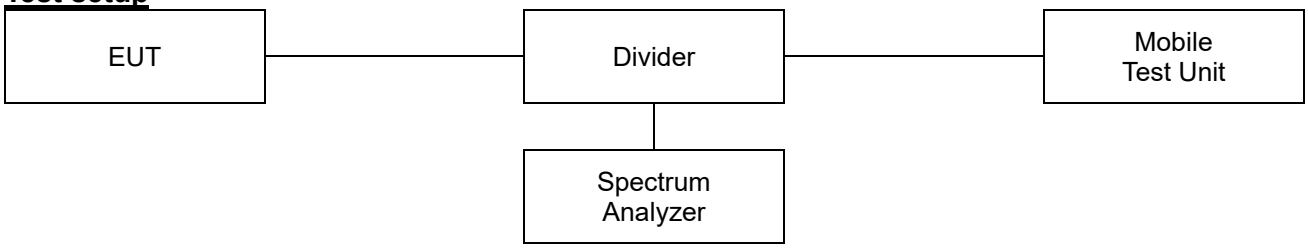
RMC / Mid ch.


Test mode: WCDMA 1900

RMC / Mid ch.	
	Blank

7.3. Band Edge Emissions at Antenna Terminal

Test setup



Limit

According to §22.917(a), §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 + 10log(P) ㏈.

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 + 10log($P_{[Watts]}$) ㏈.

Test procedure

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ANSI C63.26-2015 – Section 5.7

Test settings

1) Start frequency was set to 30 ㎒ and stop frequency was set to at least 10th the fundamental frequency.
2) Span was set large enough so as to capture all out of band emissions near the band edge.
3) Set the RBW > 1% of the emission bandwidth.
4) Set the VBW ≥ 3 x RBW.
5) Set the number of sweep points ≥ 2 x Span/RBW
6) Detector = RMS
7) Trace mode = trace average
8) Sweep time should be auto for peak detection. For RMS detection the sweep time should be set as follows:
   a) If the device can be configured to transmit continuously (duty cycle ≥ 98%), set the (sweep time) > (number of points in sweep) x (symbol period) (e.g., by a factor of 10 x symbol period x number of points) Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols.
   b) If the device cannot transmit continuously (duty cycle < 98%), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time > (number of points in sweep) x (symbol period) but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time
   c) If the device cannot be configured to transmit continuously (duty cycle > 98%), and a free-running sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by

[10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%).

d) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations > ±2%), set the sweep time so that the averaging is performed over the on-period by setting the sweep time > (symbol period) × (number of points), while also maintaining the sweep time < (transmitter on-time). The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold art necessary to ensure that the maximum power is measured.

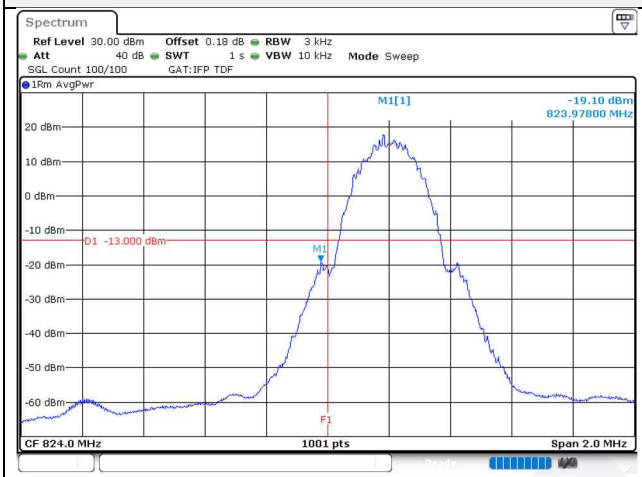
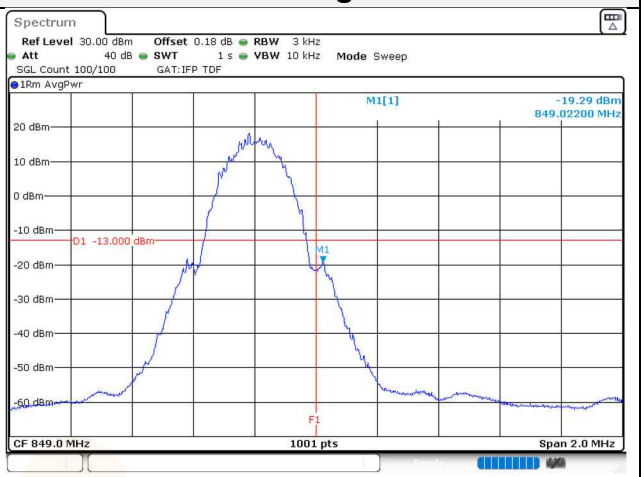
9) Allow trace to fully stabilize.

Notes:

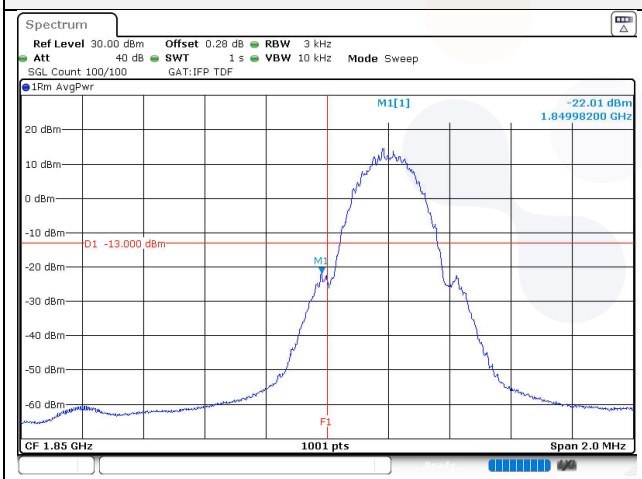
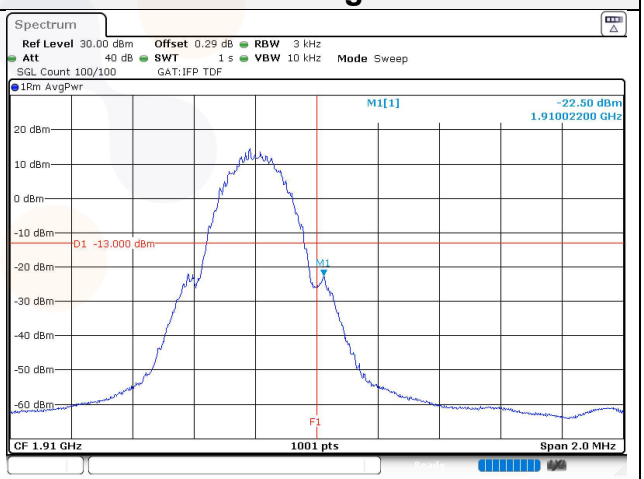
1. Per 22.917(b), 24.238(b), 27.53(h)(3), compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 ㎒ or greater. However in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be may be employed. 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 ㏈ below the transmitter power.

Test results

Test mode: GSM 850

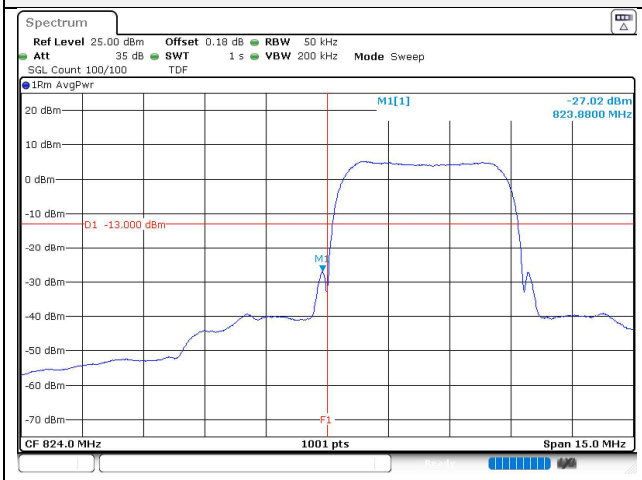
GPRS Low ch.	GPRS High ch.
	

Test mode: GSM 1900

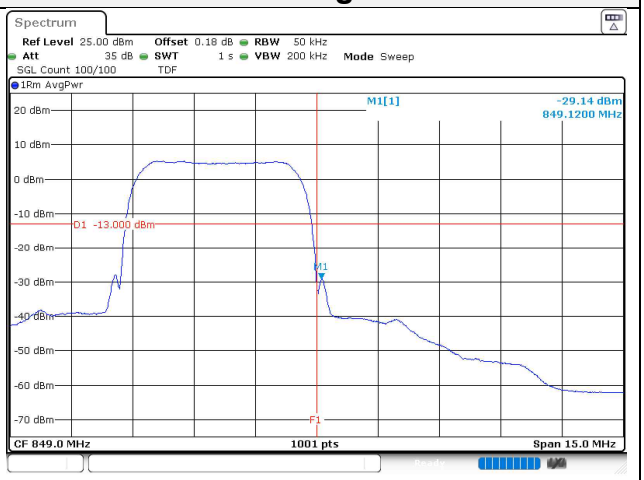
GPRS / Low ch.	GPRS / High ch.
	

Test mode: WCDMA 850

RMC / Low ch.



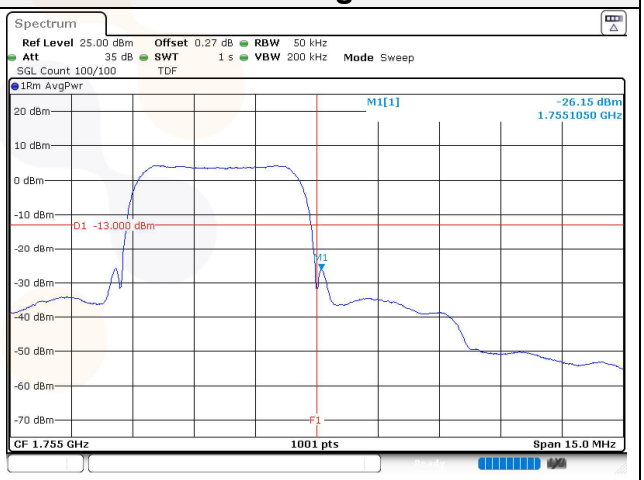
RMC / High ch.



Test mode: WCDMA 1700

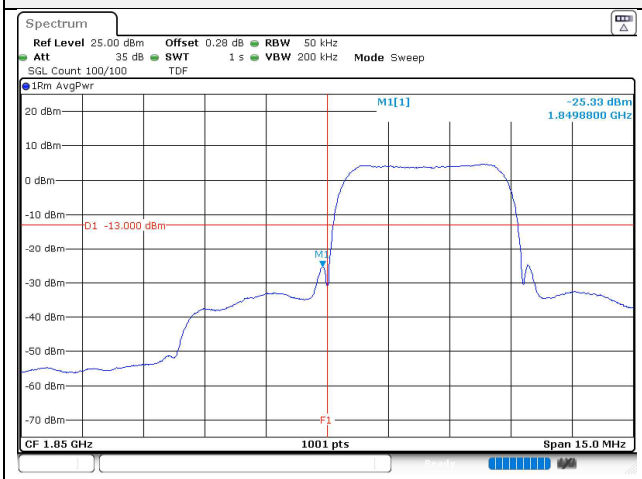
RMC / Low ch.

RMC / High ch.



Test mode: WCDMA 1900

RMC / Low ch.



RMC / High ch.