



TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0014 Page (1) of (137)	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 : 2024-11-11

2. Use of Report : Certification

3. Name of Product / Model : Tablet PC / SM-X356B

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

5. FCC ID : A3LSMX356B

6. Date of Test : 2024-11-29 to 2025-03-06

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

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

Affirmation	Tested by Name : Kwonse Kim (Signature)	Technical Manager Name : Harim Lee (Signature)
-------------	--	---

2025-03-06

Eurofins KCTL Co.,Ltd.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0014 Page (2) of (137)	
---	--	---

REPORT REVISION HISTORY

Date	Revision	Page No
2025-03-06	Originally issued	-

This report shall not be reproduced except in full, without the written approval of Eurofins KCTL Co.,Ltd. This document may be altered or revised by Eurofins KCTL Co.,Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by Eurofins KCTL Co.,Ltd. will constitute fraud and shall nullify the document. This test report is a general report that does not use the KOLAS accreditation mark and is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

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	4
2.	Device information	4
2.1.	Frequency/channel operations.....	5
3.	Maximum ERP power	7
4.	Summary of tests	9
4.1.	Worst case orientation	10
5.	Measurement uncertainty	13
6.	Measurement results explanation example	14
7.	Test results	16
7.1.	Conducted output power.....	16
7.2.	99% Occupied Bandwidth & 26dB Bandwidth	27
7.3.	Band Edge Emissions at Antenna Terminal	51
7.4.	Spurious Emissions at Antenna Terminal.....	89
7.5.	Peak to Average Power Ratio (PAPR)	102
7.6.	Frequency stability	112
7.7.	Radiated Power (ERP)	120
7.8.	Radiated Spurious Emissions	128
8.	Measurement equipment	137

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
 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 : Tablet PC
 Model : SM-X356B
 Modulation technique : GSM : GMSK
 : WCDMA : QPSK
 : LTE : QPSK, 16QAM, 64QAM, 256QAM
 : 5G NR DFT-s OFDM : PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
 : 5G NR CP OFDM : QPSK, 16QAM, 64QAM, 256QAM
 Power source : DC 3.85 V
 Antenna specification : Main/Sub Antenna1 : LDS Antenna
 : (GSM 850, WCDMA 850, LTE B5, 26, 5G NR n5, 26)
 Antenna gain : Main Antenna 1 : 0.1 dBi
 : Sub Antenna 1 : 1.2 dBi
 5G NR Antenna operation : SA/NSA
 5G NR SCS : 15 kHz
 Frequency range : GSM 850 : 824.2 MHz ~ 848.8 MHz
 : WCDMA 850 : 826.4 MHz ~ 846.6 MHz
 : LTE B5 : 824.7 MHz ~ 848.3 MHz
 : LTE B26 : 824.7 MHz ~ 848.3 MHz
 : 5G NR n5 : 826.5 MHz ~ 846.5 MHz
 : 5G NR n26 : 826.5 MHz ~ 846.5 MHz
 Bandwidth : LTE B5 : 1.4/3/5/10 MHz
 : LTE B26 : 1.4/3/5/10/15 MHz
 : 5G NR n5 : 5/10/15/20 MHz
 : 5G NR n26 : 5/10/15/20 MHz
 Software version : X356B.001
 Hardware version : REV1.0
 Test device serial No. : Conducted : R32XB0066LV, R32XB006PFD
 : Radiated : R32Y100QWZF
 Operation Temperature : 0 °C ~ 35 °C

2.1. Frequency/channel operations

This device contains the following capabilities:

GSM 850, WCDMA 850, LTE B5/26, 5G NR n5/26

GSM 850

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

Table 2.1-1.
Voice/GPRS/EDGE

WCDMA 850

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

Table 2.1-2.
RMC/HSDPA/HSUPA/
DC-HSDPA

LTE B5

Ch.	Frequency (MHz)
20407	824.7
20525	836.5
20643	848.3

Table 2.1-3. 1.4M BW

Ch.	Frequency (MHz)
20415	825.5
20525	836.5
20635	847.5

Table 2.1-4. 3M BW

Ch.	Frequency (MHz)
20425	826.5
20525	836.5
20625	846.5

Table 2.1-5. 5M BW

Ch.	Frequency (MHz)
20450	829.0
20525	836.5
20600	844.0

Table 2.1-6. 10M BW

LTE B26

Ch.	Frequency (MHz)
26797	824.7
26915	836.5
27033	848.3

Table 2.1-7. 1.4M BW

Ch.	Frequency (MHz)
26805	825.5
26915	836.5
27025	847.5

Table 2.1-8. 3M BW

Ch.	Frequency (MHz)
26815	826.5
26915	836.5
27015	846.5

Table 2.1-9. 5M BW

Ch.	Frequency (MHz)
26840	829.0
26915	836.5
26990	844.0

Table 2.1-10. 10M BW

Ch.	Frequency (MHz)
26865	831.5
26915	836.5
26965	841.5

Table 2.1-11. 15M BW

5G NR n5

Ch.	Frequency (MHz)
165300	826.5
167300	836.5
169300	846.5

Table 2.1-12. 5M BW

Ch.	Frequency (MHz)
165800	829.0
167300	836.5
168800	844.0

Table 2.1-13. 10M BW

Ch.	Frequency (MHz)
166300	831.5
167300	836.5
168300	841.5

Table 2.1-14. 15M BW

Ch.	Frequency (MHz)
166800	834.0
167300	836.5
167800	839.0

Table 2.1-15. 20M BW

5G NR n26

Ch.	Frequency (MHz)
165300	826.5
167300	836.5
169300	846.5

Table 2.1-16. 5M BW

Ch.	Frequency (MHz)
165800	829.0
167300	836.5
168800	844.0

Table 2.1-17. 10M BW

Ch.	Frequency (MHz)
166300	831.5
167300	836.5
168300	841.5

Table 2.1-18. 15M BW

Ch.	Frequency (MHz)
166800	834.0
167300	836.5
167800	839.0

Table 2.1-19. 20M BW

3. Maximum ERP power

GSM 850

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
GSM 850 (Voice)	824.2 ~ 848.8	248KF9W	30.31	1.074
GSM 850 (EDGE)	824.2 ~ 848.8	244KF9W	25.64	0.366

WCDMA 850

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
WCDMA 850	826.4 ~ 846.6	4M17F9W	22.76	0.189

LTE B5

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
LTE B5	824.7 ~ 848.3	1M11G7D	22.52	0.178
		1M12W7D	21.57	0.143
	825.5 ~ 847.5	2M72G7D	22.63	0.183
		2M71W7D	21.59	0.144
	826.5 ~ 846.5	4M53G7D	22.56	0.180
		4M52W7D	21.70	0.148
	829.0 ~ 844.0	8M99G7D	22.46	0.176
		8M99W7D	21.53	0.142

LTE B26

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
LTE B26	824.7 ~ 848.3	1M11G7D	21.72	0.149
		1M11W7D	20.86	0.122
	825.5 ~ 847.5	2M71G7D	21.67	0.147
		2M72W7D	20.85	0.121
	826.5 ~ 846.5	4M53G7D	21.74	0.149
		4M53W7D	20.92	0.123
	829.0 ~ 844.0	8M99G7D	21.43	0.139
		9M02W7D	20.71	0.118
	831.5 ~ 841.5	13M5G7D	21.53	0.142
		13M5W7D	20.62	0.115

5G NR n5

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
5G NR n5	826.5 ~ 846.5	4M50G7D	22.37	0.172
		4M55W7D	21.32	0.136
	829.0 ~ 844.0	8M99G7D	22.48	0.177
		8M99W7D	21.62	0.145
	831.5 ~ 841.5	13M5G7D	22.93	0.196
		13M6W7D	22.02	0.159
	834.0 ~ 839.0	17M9G7D	22.77	0.189
		17M9W7D	21.97	0.157

5G NR n26

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
5G NR n26	826.5 ~ 846.5	4M50G7D	22.42	0.175
		4M56W7D	21.54	0.142
	829.0 ~ 844.0	8M99G7D	22.36	0.172
		8M99W7D	21.73	0.149
	831.5 ~ 841.5	13M5G7D	22.83	0.192
		13M5W7D	21.83	0.153
	834.0 ~ 839.0	17M9G7D	22.56	0.180
		18M1W7D	21.77	0.150

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)	B Edge Emissions at Antenna Terminal	<43 + 10Log ₁₀ (P) dB at B Edge and for all out of B emissions		Pass
	Spurious Emissions at Antenna Terminal			Pass
-	Peak to Average Power Ratio	<13 dB		Pass
2.1055 22.355	Frequency stability	< 2.5 ppm		Pass
22.913(a)(5)	Effective Radiated Power	< 7 Watts max. ERP	Radiated	Pass
2.1053 22.917(a)	Radiated Spurious Emissions	<43 + 10Log ₁₀ (P) dB for all out of B emissions		Pass

Notes:

- 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 v02r02

4.1. Worst case orientation

- 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.
- In the case of radiated spurious emissions, only the worst case bandwidth results were reported.
- Output power measurements were measured on all of modulation. All tests except output power was performed with below modulation with highest power.
 - GSM: Voice, Edge
 - WCDMA: RMC
 - LTE: QPSK, 16QAM
 - NR: QPSK, 16QAM
 - Waveform: DFT-s OFDM
 - Mode: NSA/SA [Worst case: SA]
- However, the PAPR was evaluated for all wave forms and modulations during pre-test, then all Bandwidth was performed for the modulations with the highest result.
 - LTE: QPSK, 16QAM
 - NR: QPSK, 256 QAM
 - Waveform: DFT-s OFDM/CP OFDM [Worst case: CP OFDM]
- In case of EN-DC mode, highest EIRP/ERP for stand-alone test case for LTE or 5GNR was configured then the spurious emissions were evaluated for simultaneous transmissions.

Test case	5GNR Band	NR Antenna	LTE EN-DC Band		
			Main Antenna 1	Main Antenna 2	Sub Antenna 1
1	NR n5	Main Antenna 1	B2, 66	-	-

*Tested EN-DC combinations for NSA.

- All configurations have been performed (Stand-alone, Stand-alone with TA, With accessories).
 - Accessory type: S-pen, TA, DLC, Protective cover
- The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z and all of the radiated tests have been performed with the accessories as below. It was determined that below orientation was worst case orientation for each band.

Band	Stand-alone			Stand-alone with TA			With accessories		
	X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis
GSM 850	-	-	-	-	-	-	O	-	-
WCDMA 850	-	-	-	-	-	-	O	-	-
LTE B5	-	-	-	-	-	-	O	-	-
LTE B26	-	-	-	-	-	-	O	-	-
NR n5	-	-	-	-	-	-	O	-	-
NR n26	-	-	-	-	-	-	O	-	-

8. Test Condition

- The measurement was performed with various configurations then worst results are reported.

1) Radiated measurement

Test Description	Mode	Condition		Test Channel
Radiated Power	GSM	Voice, EDGE (1 Tx)		Low, Middle, High
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK, 16QAM	RB Size: 1	
	NR	DFT-s OFDM: QPSK, 16QAM	RB Size: 1	
Radiated Spurious Emissions	GSM	Voice		Low, Middle, High
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK	RB Size: 1	
	NR	DFT-s OFDM: QPSK	RB Size: 1	

Band	Bandwidth (MHz)	RB size	RB offset
LTE B5	1.4, 3, 5, 10	1	Low, Middle, High
LTE B26	1.4, 3, 5, 10, 15	1	Low, Middle, High
NR n5	5, 10, 15, 20	1	Low, Middle, High
NR n26	5, 10, 15, 20	1	Low, Middle, High

2) Conducted measurement

Test Description	Mode	Condition		Test Channel
OBW & 26 dB BW	GSM	Voice, EDGE (1 Tx)		Low, Middle, High
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK, 16QAM	RB Size: Full	
	NR	DFT-s OFDM: QPSK, 16QAM	RB Size: Full	
PAPR	GSM	Voice, EDGE (1 Tx)		Middle
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK, 16QAM	RB Size: Full	
	NR	CP OFDM: QPSK, 256QAM	RB Size: Full	
Stability	GSM	Voice (1 Tx)		Middle
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK	RB Size: Full	
	NR	DFT-s OFDM: QPSK	RB Size: Full	
Band Edge	GSM	Voice, EDGE (1 Tx)		Low, High
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK	RB Size: 1, Full	
	NR	DFT-s OFDM: QPSK	RB Size: 1, Full	
Spurious Emissions	GSM	Voice, EDGE (1 Tx)		Low, Middle, High
	WCDMA	RMC (12.2 kbps)		
	LTE	QPSK	RB Size: 1	
	NR	DFT-s OFDM: QPSK	RB Size: 1	

Band	Bandwidth (MHz)	RB size	RB offset
LTE B5	1.4, 3, 5, 10	1	0, 5, 14, 24, 49
		Full	0
LTE B26	1.4, 3, 5, 10, 15	1	0, 5, 14, 24, 49, 74
		Full	0
NR n5	5, 10, 15, 20	1	0, 23, 50, 77, 104
		Full	0
NR n26	5, 10, 15, 20	1	0, 23, 55, 77, 104
		Full	0

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 or 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 ($\pm$)	
Conducted RF power	0.9 dB	
Conducted spurious emissions	2.0 dB	
Radiated spurious emissions	Below 1 000 MHz	2.5 dB
	1 000 MHz to 18 000 MHz	2.5 dB
	Above 18 000 MHz	2.6 dB

6. Measurement results explanation example

[GSM, WCDMA, LTE]

Frequency (MHz)	Factor(dB)	Frequency (MHz)	Factor(dB)
30	6.15	11 000	9.26
50	6.19	12 000	8.88
100	6.27	13 000	6.58
200	6.40	14 000	9.49
300	6.50	15 000	10.19
400	6.59	16 000	10.31
500	6.67	17 000	10.19
600	6.71	18 000	10.51
700	6.78	19 000	10.77
800	6.84	20 000	10.96
900	6.91	21 000	10.91
1 000	6.95	22 000	11.03
2 000	7.40	23 000	11.14
3 000	7.67	24 000	10.80
4 000	8.01	25 000	10.72
5 000	8.08	26 000	10.71
6 000	8.27	26 500	11.14
7 000	8.19	27 000	11.30
8 000	8.83	28 000	12.27
9 000	8.90	29 000	13.16
10 000	9.17	30 000	12.10

Note.

- Offset(dB) = RF cable loss(dB) + Divider (dB)

[NR]

Frequency (MHz)	Factor(dB)	Frequency (MHz)	Factor(dB)
30	6.19	11 000	9.72
50	6.23	12 000	9.53
100	6.31	13 000	9.91
200	6.44	14 000	9.38
300	6.57	15 000	9.98
400	6.63	16 000	9.81
500	6.73	17 000	10.35
600	6.77	18 000	11.09
700	6.86	19 000	10.16
800	6.92	20 000	10.01
900	6.97	21 000	10.52
1 000	7.05	22 000	11.09
2 000	7.50	23 000	11.04
3 000	7.81	24 000	10.97
4 000	8.19	25 000	10.96
5 000	8.66	26 000	11.07
6 000	9.34	26 500	11.46
7 000	8.42	27 000	12.05
8 000	8.97	28 000	12.21
9 000	9.18	29 000	12.13
10 000	9.38	30 000	12.03

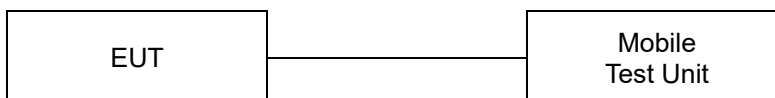
Note.

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

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 $\pm 2\%$) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to $[10\log (1/\text{duty cycle})]$. 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.

Note:

1. Offset(dB) = RF cable loss(dB)

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0014 Page (17) of (137)	
---	---	---

Test results

Main Antenna

Maximum Average Power (dBm)										
Test Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM850	Low	32.18	32.15	30.92	28.93	26.96	26.26	24.47	22.47	21.36
	Middle	32.21	32.21	31.02	28.79	26.82	26.04	24.53	22.19	21.23
	High	32.09	32.06	30.48	28.59	26.68	26.08	24.16	22.13	21.14

Test Band	Test mode	Maximum Average Power (dBm)		
		Channel		
		Low	Middle	High
WCDMA850	RMC	23.80	23.75	23.68
	HSDPA-Subtest 1	22.62	22.62	22.56
	HSDPA-Subtest 2	22.06	21.83	21.81
	HSDPA-Subtest 3	21.02	21.04	21.25
	HSDPA-Subtest 4	21.07	21.31	21.23
	HSUPA-Subtest 1	22.67	22.72	22.64
	HSUPA-Subtest 2	20.74	20.70	20.71
	HSUPA-Subtest 3	21.70	21.79	21.82
	HSUPA-Subtest 4	20.74	20.69	20.61
	HSUPA-Subtest 5	22.72	22.68	22.67
	DC-HSDPA-Subtest 1	22.73	22.70	22.67
	DC-HSDPA-Subtest 2	22.74	22.75	22.68
	DC-HSDPA-Subtest 3	22.22	22.21	22.15
	DC-HSDPA-Subtest 4	22.20	22.23	22.16

Test Band	Bandwidth (MHz)	Test mode	RB size	RB offset	Maximum Average Power (dBm)		
					Channel		
					Low	Middle	High
LTE B5	1.4	QPSK	1	0	23.71	23.72	23.60
			1	3	23.76	23.78	23.68
			1	5	23.78	23.76	23.62
			3	0	23.73	23.72	23.65
			3	1	23.75	23.75	23.65
			3	3	23.80	23.72	23.61
			6	0	22.69	22.66	22.62
		16QAM	1	0	22.91	22.90	22.73
			1	3	22.90	22.76	22.89
			1	5	22.71	22.93	22.75
			3	0	22.86	22.73	22.68
			3	1	22.87	22.72	22.68
			3	3	22.86	22.80	22.74
			6	0	21.77	21.63	21.61
		64QAM	1	0	21.96	21.95	21.83
			1	3	21.93	21.94	21.77
			1	5	21.93	21.87	21.78
			3	0	21.74	21.78	21.75
			3	1	21.91	21.91	21.72
			3	3	21.96	21.89	21.79
			6	0	20.75	20.68	20.73
		256QAM	1	0	18.90	18.67	18.62
			1	3	18.92	18.89	18.83
			1	5	18.80	18.91	18.64
			3	0	18.86	18.76	18.75
			3	1	18.74	18.94	18.83
			3	3	18.78	18.74	18.80
			6	0	18.78	18.63	18.72
	3	QPSK	1	0	23.64	23.64	23.60
			1	8	23.79	23.80	23.71
			1	14	23.69	23.65	23.58
			8	0	22.75	22.68	22.58
			8	4	22.74	22.68	22.62
			8	7	22.73	22.74	22.66
			15	0	22.75	22.70	22.58
			1	0	22.93	22.80	22.65
		16QAM	1	8	22.91	22.97	22.77
			1	14	22.89	22.76	22.80
			8	0	21.81	21.69	21.57
			8	4	21.77	21.77	21.62
			8	7	21.76	21.72	21.67
			15	0	21.69	21.72	21.62
		64QAM	1	0	21.93	21.93	21.94
			1	8	22.03	21.85	21.91
			1	14	21.88	21.72	21.72
			8	0	20.75	20.70	20.60
			8	4	20.85	20.79	20.73
			8	7	20.82	20.70	20.69
			15	0	20.70	20.80	20.70
		256QAM	1	0	18.78	18.86	18.71
			1	8	18.97	18.99	18.76
			1	14	18.71	18.78	18.65
			8	0	18.78	18.76	18.65
			8	4	18.83	18.75	18.64
			8	7	18.71	18.74	18.63
			15	0	18.77	18.70	18.60

Test Band	Bandwidth (MHz)	Test mode	RB size	RB offset	Maximum Average Power (dBm)		
					Channel		
					Low	Middle	High
LTE B5	5	QPSK	1	0	23.72	23.61	23.62
			1	12	23.79	23.78	23.72
			1	24	23.71	23.70	23.58
			12	0	22.69	22.61	22.56
			12	7	22.77	22.70	22.70
			12	13	22.71	22.73	22.65
		16QAM	25	0	22.77	22.67	22.67
			1	0	22.90	22.75	22.82
			1	12	22.85	22.95	22.90
			1	24	22.80	22.95	22.79
			12	0	21.71	21.72	21.59
			12	7	21.77	21.70	21.70
			12	13	21.74	21.77	21.67
			25	0	21.76	21.67	21.66
		64QAM	1	0	21.97	22.10	21.92
			1	12	21.91	22.11	21.82
			1	24	21.84	21.79	21.67
			12	0	20.63	20.63	20.59
			12	7	20.80	20.67	20.77
			12	13	20.75	20.81	20.68
			25	0	20.82	20.64	20.72
		256QAM	1	0	18.77	18.69	18.69
			1	12	18.99	18.91	18.95
			1	24	18.76	18.86	18.80
			12	0	18.67	18.76	18.65
			12	7	18.80	18.72	18.75
			12	13	18.71	18.80	18.62
			25	0	18.71	18.72	18.68
	10	QPSK	1	0	23.79	23.74	23.72
			1	25	23.78	23.76	23.73
			1	49	23.67	23.66	23.58
			25	0	22.71	22.71	22.64
			25	12	22.82	22.73	22.65
			25	25	22.75	22.72	22.69
		16QAM	50	0	22.77	22.69	22.60
			1	0	22.90	22.93	22.92
			1	25	22.88	22.92	22.88
			1	49	22.84	22.65	22.85
			25	0	21.74	21.78	21.66
			25	12	21.79	21.73	21.66
		64QAM	25	25	21.74	21.76	21.67
			50	0	21.78	21.70	21.65
			1	0	21.90	21.98	21.84
			1	25	21.86	21.93	21.82
			1	49	21.89	21.78	21.81
			25	0	20.74	20.65	20.70
		256QAM	25	12	20.80	20.67	20.67
			25	25	20.78	20.70	20.79
			50	0	20.80	20.66	20.64
			1	0	18.75	18.59	18.73
			1	25	18.84	18.90	18.70
			1	49	18.84	18.77	18.66
			25	0	18.74	18.71	18.66
			25	12	18.82	18.76	18.67
			25	25	18.80	18.76	18.73
			50	0	18.80	18.68	18.70

Test Band	Bandwidth (MHz)	Test mode	RB size	RB offset	Maximum Average Power (dBm)		
					Channel		
					Low	Middle	High
LTE B26	1.4	QPSK	1	0	22.81	22.76	22.62
			1	3	22.86	22.84	22.80
			1	5	22.72	22.79	22.70
			3	0	22.70	22.72	22.67
			3	1	22.81	22.79	22.67
			3	3	22.92	22.88	22.70
			6	0	21.45	21.33	21.27
		16QAM	1	0	22.19	22.16	22.19
			1	3	22.04	22.01	21.96
			1	5	22.07	22.14	22.02
			3	0	21.82	21.78	21.92
			3	1	21.96	21.97	21.85
			3	3	21.84	21.87	21.85
			6	0	20.93	20.87	20.75
		64QAM	1	0	20.97	20.90	20.95
			1	3	21.10	21.08	21.08
			1	5	20.92	20.86	20.91
			3	0	20.75	20.76	20.74
			3	1	21.00	21.05	20.93
			3	3	20.93	20.89	20.79
			6	0	19.75	19.69	19.72
		256QAM	1	0	17.85	17.82	17.77
			1	3	17.86	17.90	17.96
			1	5	17.93	17.76	17.73
			3	0	17.61	17.69	17.73
			3	1	17.84	17.97	17.81
			3	3	17.85	17.93	17.79
			6	0	17.92	17.84	17.78
	3	QPSK	1	0	22.75	22.80	22.59
			1	8	22.87	22.76	22.86
			1	14	22.62	22.63	22.62
			8	0	21.72	21.74	21.68
			8	4	21.88	21.92	21.83
			8	7	21.78	21.72	21.72
		16QAM	15	0	21.83	21.82	21.78
			1	0	21.92	22.03	22.00
			1	8	22.17	22.17	22.07
			1	14	22.02	22.06	22.00
			8	0	20.74	20.79	20.72
			8	4	20.79	20.80	20.78
		64QAM	8	7	20.81	20.95	20.90
			15	0	20.88	20.90	20.81
			1	0	20.82	20.84	20.76
			1	8	20.76	20.90	20.76
			1	14	20.51	20.57	20.83
			8	0	19.66	19.72	19.69
		256QAM	8	4	19.79	19.88	19.87
			8	7	19.84	19.89	19.81
			15	0	19.67	19.72	19.78
			1	0	17.95	17.93	17.74
			1	8	17.93	17.81	17.90
			1	14	17.87	17.86	17.80
			8	0	17.76	17.77	17.66
			8	4	17.86	17.88	17.91
			8	7	17.77	17.75	17.79
			15	0	17.61	17.63	17.74

Test Band	Bandwidth (MHz)	Test mode	RB size	RB offset	Maximum Average Power (dBm)		
					Channel		
					Low	Middle	High
LTE B26	5	QPSK	1	0	22.84	22.71	22.76
			1	12	22.78	22.70	22.78
			1	24	22.71	22.58	22.61
			12	0	21.76	21.74	21.68
			12	7	21.82	21.69	21.74
			12	13	21.74	21.69	21.73
		16QAM	25	0	21.83	21.79	21.79
			1	0	21.95	21.90	21.97
			1	12	22.13	22.10	22.12
			1	24	22.08	22.01	21.93
			12	0	20.73	20.74	20.75
			12	7	20.92	20.86	20.85
			12	13	20.83	20.80	20.82
			25	0	20.75	20.73	20.74
		64QAM	1	0	21.13	20.99	21.00
			1	12	21.15	21.02	20.97
			1	24	20.97	20.88	20.91
			12	0	19.73	19.65	19.67
			12	7	19.75	19.66	19.79
			12	13	19.86	19.79	19.83
			25	0	19.88	19.80	19.76
		256QAM	1	0	18.02	17.97	17.87
			1	12	18.07	17.94	18.04
			1	24	18.04	17.91	17.88
			12	0	17.86	17.80	17.73
			12	7	17.94	17.85	17.88
			12	13	17.90	17.88	17.83
			25	0	17.76	17.74	17.76
	10	QPSK	1	0	22.67	22.76	22.77
			1	25	22.69	22.74	22.78
			1	49	22.57	22.64	22.70
			25	0	21.64	21.69	21.67
			25	12	21.64	21.65	21.77
			25	25	21.72	21.69	21.74
			50	0	21.69	21.71	21.78
			1	0	21.98	22.10	22.19
		16QAM	1	25	21.91	21.93	22.06
			1	49	21.60	21.82	22.04
			25	0	20.57	20.71	20.71
			25	12	20.63	20.67	20.81
			25	25	20.66	20.65	20.78
			50	0	20.73	20.78	20.82
		64QAM	1	0	20.69	20.83	20.94
			1	25	20.63	20.72	20.88
			1	49	21.02	20.45	20.68
			25	0	19.47	19.54	19.74
			25	12	19.62	19.72	19.86
			25	25	19.75	19.75	19.86
			50	0	19.64	19.66	19.81
			1	0	17.59	18.09	17.97
		256QAM	1	25	17.71	17.85	17.99
			1	49	17.67	17.86	17.83
			25	0	17.67	17.70	17.77
			25	12	17.65	17.56	17.76
			25	25	17.71	17.69	17.83
			50	0	17.64	17.66	17.84

Test Band	Bandwidth (MHz)	Test mode	RB size	RB offset	Maximum Average Power (dBm)		
					Channel		
					Low	Middle	High
LTE B26	15	QPSK	1	0	22.50	22.59	22.52
			1	36	22.47	22.33	22.65
			1	74	22.64	22.47	22.33
			36	0	21.67	21.57	21.65
			36	18	21.62	21.54	21.61
			36	37	21.75	21.68	21.73
			75	0	21.74	21.57	21.70
		16QAM	1	0	21.61	21.68	21.84
			1	36	21.74	21.71	21.96
			1	74	21.59	21.70	21.62
			36	0	20.61	20.51	20.60
			36	18	20.62	20.53	20.66
			36	37	20.66	20.55	20.68
			75	0	20.73	20.64	20.75
		64QAM	1	0	20.95	20.86	20.81
			1	36	20.86	20.85	20.68
			1	74	20.59	20.54	20.76
			36	0	19.63	19.57	19.61
			36	18	19.63	19.54	19.61
			36	37	19.72	19.63	19.67
			75	0	19.74	19.67	19.72
		256QAM	1	0	17.67	17.55	17.78
			1	36	17.83	17.67	17.88
			1	74	17.70	17.59	17.85
			36	0	17.60	17.52	17.61
			36	18	17.69	17.58	17.64
			36	37	17.69	17.62	17.57
			75	0	17.69	17.62	17.67

Test Band	Bandwidth (MHz)	Waveform	SCS (kHz)	Modulation	RB size	RB offset	Maximum Average Power (dBm)		
							Channel		
							Low	Middle	High
5G NR n5	5	DFT-s OFDM	15	PI/2 BPSK	1	1	22.88	22.97	22.97
					1	13	22.86	22.93	22.77
					1	23	22.97	22.94	22.79
					12	0	22.31	22.34	22.45
					12	7	22.94	23.00	22.88
					12	13	22.56	22.36	22.31
					25	0	22.64	22.41	22.49
				QPSK	1	1	23.07	23.01	22.99
					1	13	22.95	22.97	22.74
					1	23	23.13	23.01	22.78
					12	0	21.98	21.82	21.88
					12	7	22.91	23.02	22.90
		12			13	22.19	21.85	21.60	
		25			0	22.01	21.86	21.79	
		16QAM		1	1	21.94	21.94	21.92	
		64QAM		1	1	20.67	20.44	20.47	
		256QAM		1	1	17.92	17.89	17.91	
		CP OFDM		QPSK	1	1	21.49	21.44	21.54
	10	DFT-s OFDM		PI/2 BPSK	1	1	22.75	22.81	22.76
					1	26	22.73	23.02	22.82
					1	50	22.71	22.90	22.71
					25	0	22.39	22.48	22.24
					25	14	22.94	23.01	22.78
					25	27	22.39	22.53	22.28
					50	0	22.49	22.51	22.41
				QPSK	1	1	22.98	22.94	22.81
					1	26	22.95	23.07	22.77
					1	50	22.87	22.99	22.66
					25	0	22.05	21.90	21.67
					25	14	22.88	23.04	22.93
					25	27	21.99	21.94	21.85
					50	0	21.88	21.98	21.82
				16QAM	1	1	21.78	21.80	21.73
				64QAM	1	1	20.45	20.38	20.32
				256QAM	1	1	17.73	17.76	17.80
		CP OFDM		QPSK	1	1	21.30	21.56	21.28

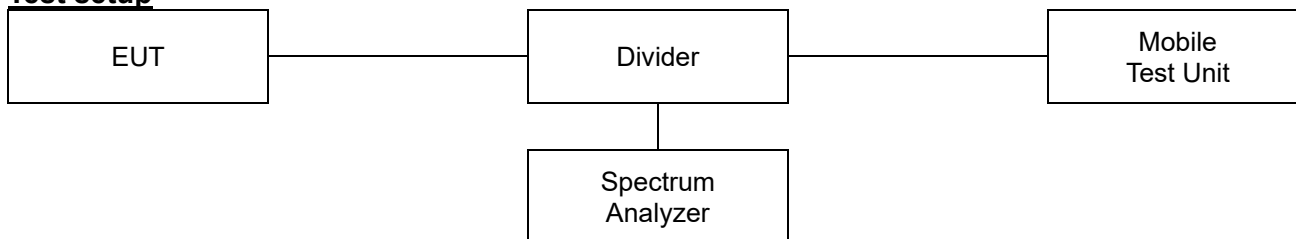
Test Band	Bandwidth (MHz)	Waveform	SCS (kHz)	Modulation	RB size	RB offset	Maximum Average Power (dBm)		
							Channel		
							Low	Middle	High
5G NR n5	15	DFT-s OFDM	15	PI/2 BPSK	1	1	22.94	23.07	22.96
					1	40	22.96	23.09	22.92
					1	77	22.96	22.93	22.89
					36	0	22.40	22.50	22.43
					36	22	23.05	23.09	22.86
					36	43	22.57	22.44	22.38
					75	0	22.57	22.49	22.38
				QPSK	1	1	23.02	23.17	23.00
					1	40	23.02	23.10	22.72
					1	77	23.10	22.99	22.68
					36	0	22.03	22.01	21.85
					36	22	23.07	23.10	22.92
					36	43	22.01	21.99	21.75
					75	0	22.08	22.06	21.88
				16QAM	1	1	21.98	22.04	21.85
				64QAM	1	1	20.67	20.56	20.58
				256QAM	1	1	17.97	18.05	18.04
		CP OFDM		QPSK	1	1	21.54	21.59	21.55
	20	DFT-s OFDM	15	PI/2 BPSK	1	1	22.86	22.96	23.08
					1	53	22.87	23.08	22.98
					1	104	22.75	22.98	22.95
					50	0	22.44	22.54	22.53
					50	28	22.93	23.07	22.97
					50	56	22.33	22.47	22.41
					100	0	22.47	22.57	22.52
				QPSK	1	1	22.95	23.09	23.08
					1	53	22.97	23.05	22.97
					1	104	22.84	23.04	22.98
					50	0	21.97	22.03	22.02
					50	28	22.92	23.08	23.02
					50	56	21.90	21.96	21.91
					100	0	21.93	22.07	22.01
				16QAM	1	1	21.89	21.98	22.05
				64QAM	1	1	20.54	20.58	20.69
				256QAM	1	1	17.93	17.97	18.10
		CP OFDM		QPSK	1	1	21.54	21.61	21.70

Test Band	Bandwidth (MHz)	Waveform	SCS (kHz)	Modulation	RB size	RB offset	Maximum Average Power (dBm)		
							Channel		
							Low	Middle	High
5G NR n26	5	DFT-s OFDM	15	PI/2 BPSK	1	1	22.75	22.82	22.84
					1	13	22.75	22.81	22.87
					1	23	22.74	22.85	22.87
					12	0	22.25	22.29	22.20
					12	7	22.78	22.81	22.79
					12	13	22.31	22.37	22.29
					25	0	22.26	22.26	22.36
				QPSK	1	1	22.84	22.82	22.84
					1	13	22.85	22.82	22.78
					1	23	22.78	22.92	22.82
					12	0	21.83	21.83	21.71
					12	7	22.83	22.77	22.81
					12	13	21.80	21.85	21.44
					25	0	21.81	21.81	21.72
				16QAM	1	1	21.78	21.79	21.80
				64QAM	1	1	20.41	20.47	20.34
				256QAM	1	1	17.77	17.74	17.76
		CP OFDM		QPSK	1	1	21.33	21.34	21.25
	10	DFT-s OFDM	15	PI/2 BPSK	1	1	22.76	22.79	22.74
					1	26	22.84	22.80	22.69
					1	50	22.77	22.85	22.85
					25	0	22.26	22.34	22.08
					25	14	22.90	22.81	22.69
					25	27	22.29	22.40	22.22
					50	0	22.34	22.29	22.07
				QPSK	1	1	22.76	22.83	22.44
					1	26	22.83	22.84	22.76
					1	50	22.77	22.86	22.53
					25	0	21.74	21.84	21.36
					25	14	22.86	22.80	22.65
					25	27	21.81	21.88	21.69
					50	0	21.84	21.80	21.68
				16QAM	1	1	21.71	21.87	21.32
				64QAM	1	1	20.33	20.49	20.04
				256QAM	1	1	17.77	17.81	17.60
		CP OFDM		QPSK	1	1	21.32	21.38	21.22

Test Band	Bandwidth (MHz)	Waveform	SCS (kHz)	Modulation	RB size	RB offset	Maximum Average Power (dBm)		
							Channel		
							Low	Middle	High
5G NR n26	15	DFT-s OFDM	15	PI/2 BPSK	1	1	22.95	22.96	22.91
					1	40	22.98	22.85	22.88
					1	77	22.74	22.95	22.94
					36	0	22.36	22.39	22.37
					36	22	22.85	22.85	22.86
					36	43	22.19	22.40	22.44
					75	0	22.28	22.38	22.43
				QPSK	1	1	22.92	22.96	22.89
					1	40	22.99	22.88	22.91
					1	77	22.79	22.96	22.84
					36	0	22.11	21.87	21.69
					36	22	22.83	22.90	22.81
					36	43	21.94	21.90	21.89
					75	0	22.24	21.88	22.03
				16QAM	1	1	21.89	21.87	21.74
				64QAM	1	1	20.59	20.51	20.59
				256QAM	1	1	17.95	17.96	18.02
		CP OFDM		QPSK	1	1	21.60	21.53	21.45
	20	DFT-s OFDM	15	PI/2 BPSK	1	1	22.82	22.90	22.94
					1	53	22.76	22.84	22.97
					1	104	22.73	22.85	22.95
					50	0	22.25	22.33	22.37
					50	28	22.75	22.82	22.87
					50	56	22.36	22.34	22.42
					100	0	22.33	22.37	22.41
				QPSK	1	1	22.93	22.95	22.95
					1	53	22.76	22.90	22.96
					1	104	22.80	22.85	22.99
					50	0	21.78	21.89	21.85
					50	28	22.70	22.86	22.91
					50	56	21.80	21.89	21.85
					100	0	21.78	21.91	21.90
				16QAM	1	1	21.85	21.98	21.86
				64QAM	1	1	20.49	20.65	20.50
				256QAM	1	1	17.78	17.95	17.94
		CP OFDM		QPSK	1	1	21.51	21.58	21.48

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

- 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.
- The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- 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.
- 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.
- Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- Determine the reference value by either of the following:
 - 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).
 - Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.
- 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.
- 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 $1.5 \times \text{OBW}$ 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 $\geq 3 \times \text{RBW}$.
- 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).

Notes:

1. The EUT was setup to maximum output power with all Bandwidth and modulation.

Test results

Test mode		Channel	26 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
GSM 850	Voice (GPRS)	Low	0.31	0.25
		Middle	0.32	0.25
		High	0.32	0.24
	EDGE	Low	0.32	0.24
		Middle	0.31	0.24
		High	0.32	0.24
WCDMA 850	RMC	Low	4.74	4.15
		Middle	4.72	4.17
		High	4.71	4.15

Test Band	Bandwidth (MHz)	Channel	Test mode	26dB Bandwidth (MHz)	99 % Bandwidth (MHz)
LTE B5	1.4	Low	QPSK	1.37	1.10
			16QAM	1.38	1.10
		Middle	QPSK	1.41	1.10
			16QAM	1.38	1.10
		High	QPSK	1.36	1.10
			16QAM	1.38	1.12
	3	Low	QPSK	3.06	2.72
			16QAM	3.08	2.70
		Middle	QPSK	3.04	2.71
			16QAM	3.08	2.71
		High	QPSK	3.06	2.70
			16QAM	3.06	2.70
	5	Low	QPSK	5.21	4.51
			16QAM	5.20	4.52
		Middle	QPSK	5.23	4.53
			16QAM	5.20	4.52
		High	QPSK	5.13	4.51
			16QAM	5.18	4.52
	10	Low	QPSK	9.99	8.99
			16QAM	9.92	8.97
		Middle	QPSK	9.89	8.99
			16QAM	9.82	8.94
		High	QPSK	9.84	8.99
			16QAM	9.94	8.99

Test Band	Bandwidth (MHz)	Channel	Test mode	26dB Bandwidth (MHz)	99 % Bandwidth (MHz)
LTE B26	1.4	Low	QPSK	1.38	1.10
			16QAM	1.38	1.10
		Middle	QPSK	1.37	1.10
			16QAM	1.39	1.10
		High	QPSK	1.39	1.11
			16QAM	1.39	1.10
	3	Low	QPSK	3.08	2.70
			16QAM	3.09	2.71
		Middle	QPSK	3.06	2.70
			16QAM	3.08	2.72
		High	QPSK	3.06	2.70
			16QAM	3.07	2.71
	5	Low	QPSK	5.22	4.52
			16QAM	5.17	4.51
		Middle	QPSK	5.22	4.53
			16QAM	5.18	4.53
		High	QPSK	5.20	4.51
			16QAM	5.17	4.51
	10	Low	QPSK	9.87	8.97
			16QAM	9.84	9.02
		Middle	QPSK	10.04	8.97
			16QAM	9.84	8.94
		High	QPSK	9.82	8.99
			16QAM	9.92	9.02
	15	Low	QPSK	14.84	13.45
			16QAM	14.80	13.49
		Middle	QPSK	14.80	13.49
			16QAM	14.65	13.45
		High	QPSK	14.84	13.45
			16QAM	14.84	13.45

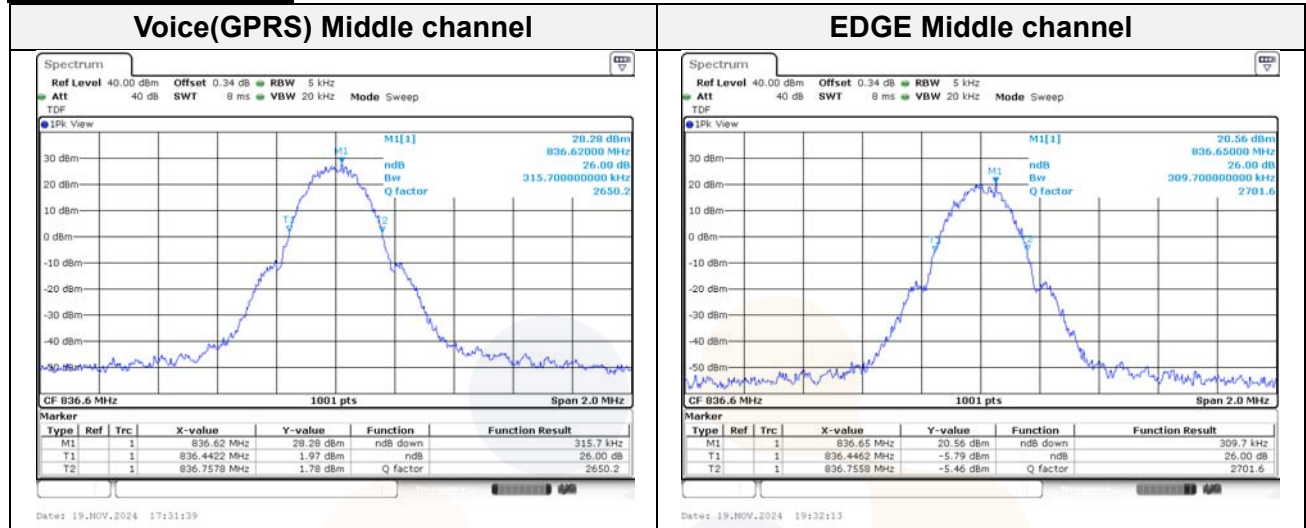
Test Band	Bandwidth (MHz)	Channel	Waveform	SCS (kHz)	Modulation	26dB Bandwidth (MHz)	99 % Bandwidth (MHz)
5G NR n5	5	Low	DFT-s OFDM	15	QPSK	5.07	4.50
		16QAM			5.24	4.55	
		Middle			QPSK	5.11	4.50
		16QAM			5.21	4.51	
		High			QPSK	5.09	4.50
		16QAM			5.22	4.55	
	10	Low	DFT-s OFDM		QPSK	9.64	8.99
		16QAM			9.87	8.99	
		Middle			QPSK	9.89	8.99
		16QAM			9.94	8.99	
		High			QPSK	9.84	8.97
		16QAM			9.84	8.99	
	15	Low	DFT-s OFDM		QPSK	14.65	13.45
		16QAM			14.72	13.52	
		Middle			QPSK	14.54	13.49
		16QAM			14.69	13.64	
		High			QPSK	14.61	13.49
		16QAM			14.57	13.49	
	20	Low	DFT-s OFDM		QPSK	19.43	17.93
		16QAM			19.43	17.93	
		Middle			QPSK	19.48	17.88
		16QAM			19.38	17.93	
		High			QPSK	19.43	17.93
		16QAM			19.48	17.93	

Test Band	Bandwidth (MHz)	Channel	Waveform	SCS (kHz)	Modulation	26dB Bandwidth (MHz)	99 % Bandwidth (MHz)
5G NR n26	5	Low	DFT-s OFDM	15	QPSK	5.11	4.50
					16QAM	5.22	4.56
		Middle			QPSK	5.09	4.50
					16QAM	5.18	4.51
		High			QPSK	5.12	4.50
					16QAM	5.19	4.55
	10	Low	DFT-s OFDM		QPSK	9.82	8.97
					16QAM	9.79	8.99
		Middle			QPSK	9.82	8.97
					16QAM	9.54	8.99
		High			QPSK	9.87	8.99
					16QAM	9.84	8.99
	15	Low	DFT-s OFDM		QPSK	14.57	13.45
					16QAM	14.72	13.49
		Middle			QPSK	14.57	13.45
					16QAM	14.65	13.49
		High			QPSK	14.57	13.45
					16QAM	14.61	13.49
	20	Low	DFT-s OFDM		QPSK	19.43	17.88
					16QAM	19.38	17.93
		Middle			QPSK	19.38	17.93
					16QAM	19.33	17.93
		High			QPSK	19.53	17.93
					16QAM	19.43	18.08

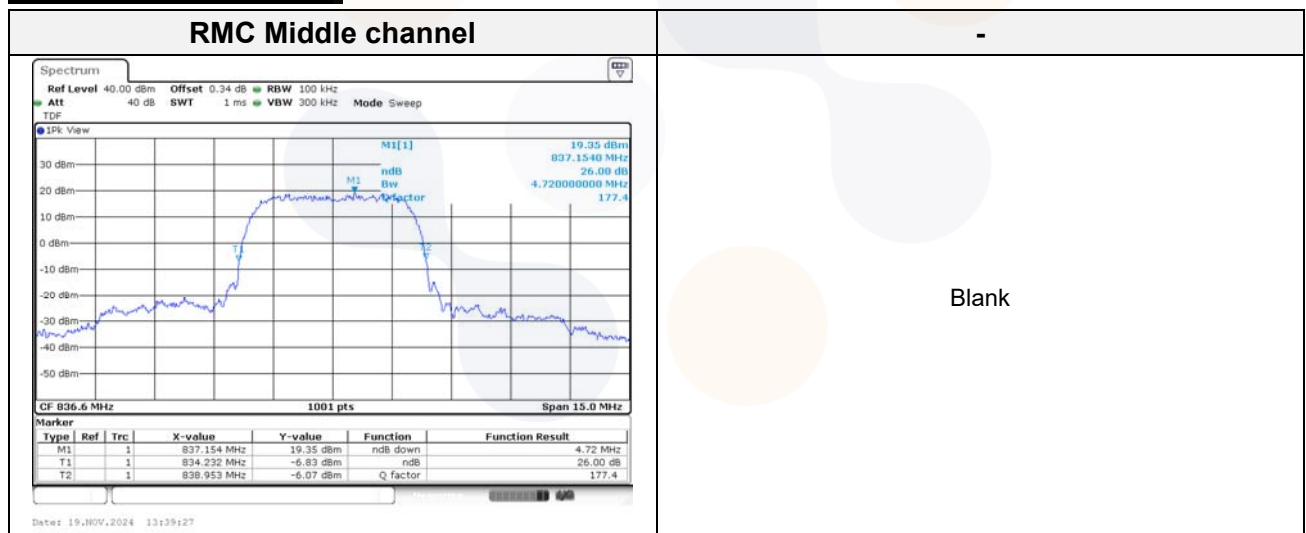
In order to simplify the report, only Middle channel test plots are attached

26dB Bandwidth

Test mode: GSM 850

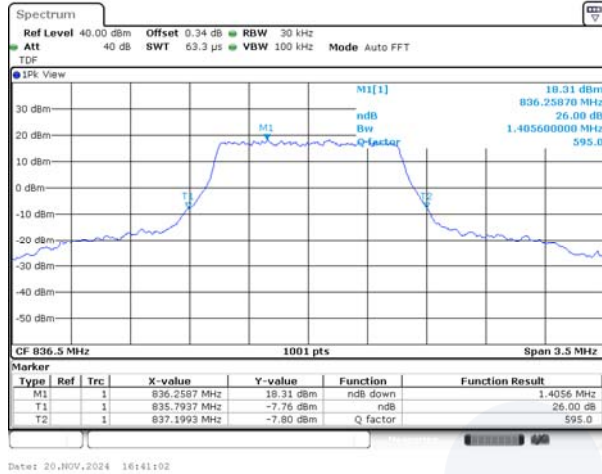


Test mode: WCDMA 850



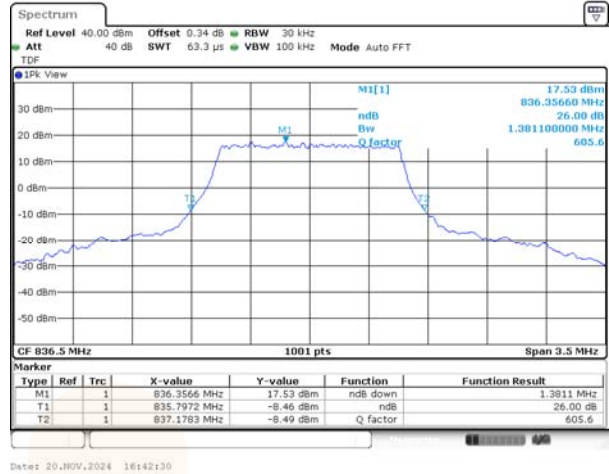
Test mode: LTE B5

1.4M BW QPSK Middle channel



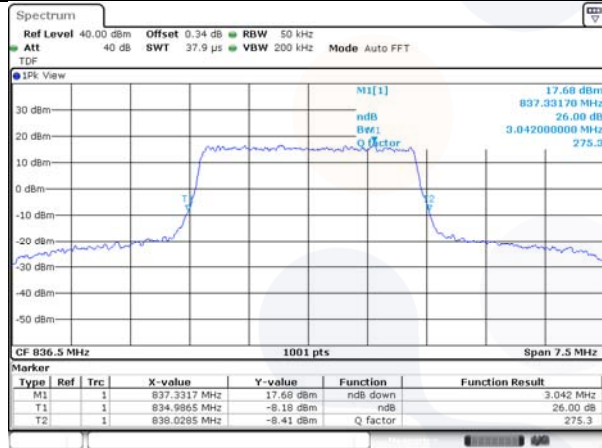
Date: 20,NOV,2024 16:41:02

1.4M BW 16QAM Middle channel



Date: 20,NOV,2024 16:42:30

3M BW QPSK Middle channel



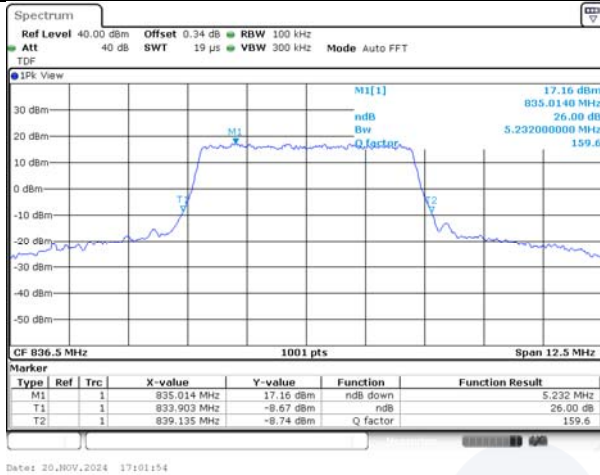
Date: 20,NOV,2024 16:51:31

3M BW 16QAM Middle channel

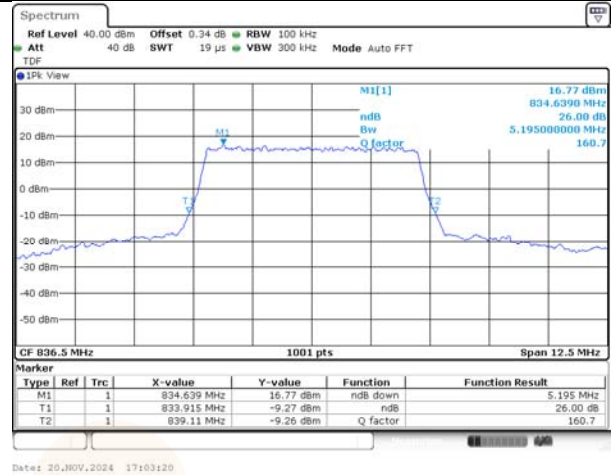


Date: 20,NOV,2024 16:52:57

5M BW QPSK Middle channel



5M BW 16QAM Middle channel



10M BW QPSK Middle channel

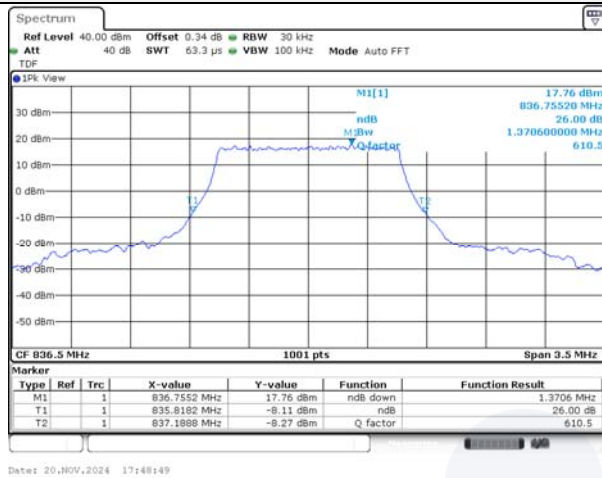


10M BW 16QAM Middle channel

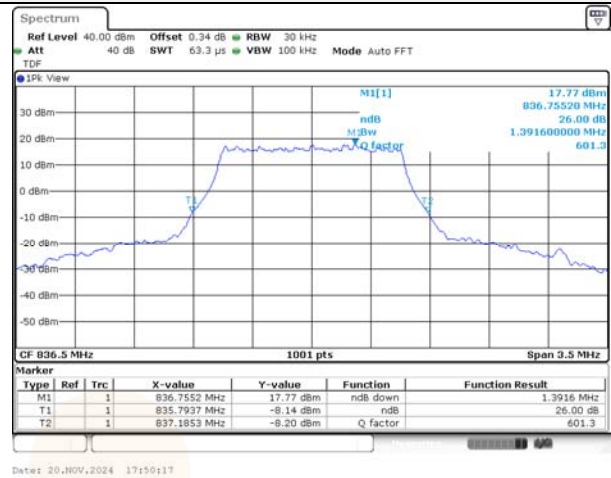


Test mode: LTE B26

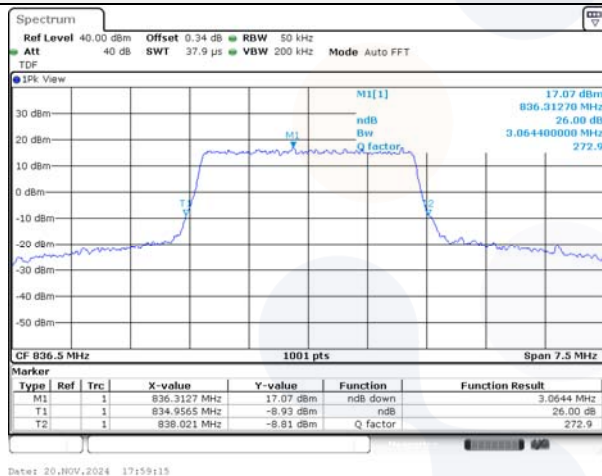
1.4M BW QPSK Middle channel



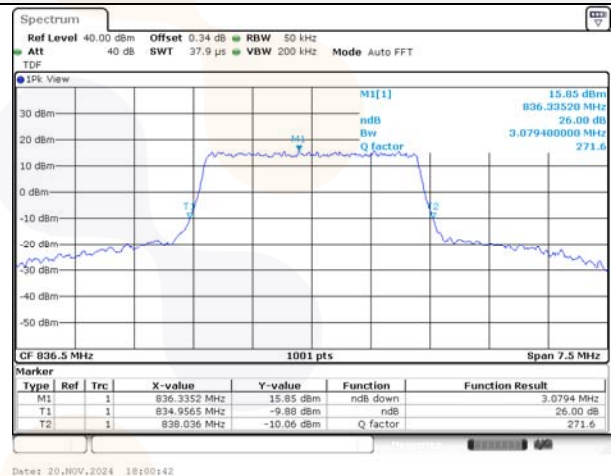
1.4M BW 16QAM Middle channel



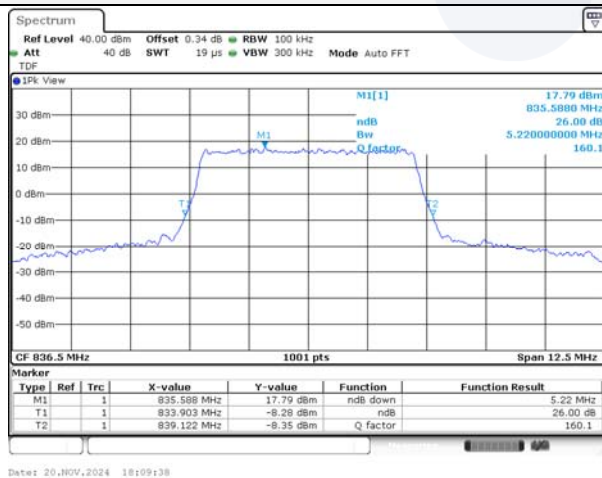
3M BW QPSK Middle channel



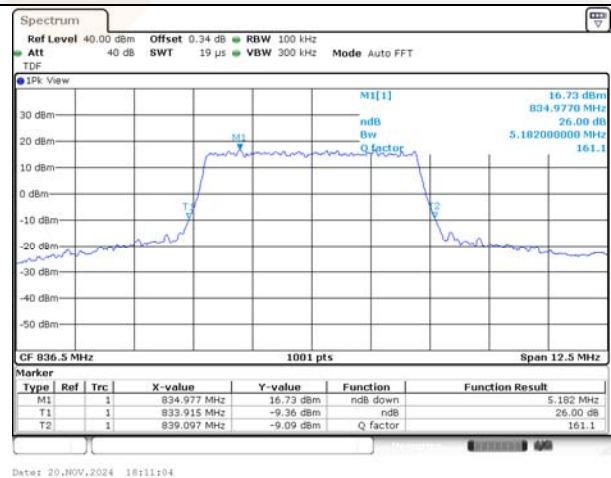
3M BW 16QAM Middle channel



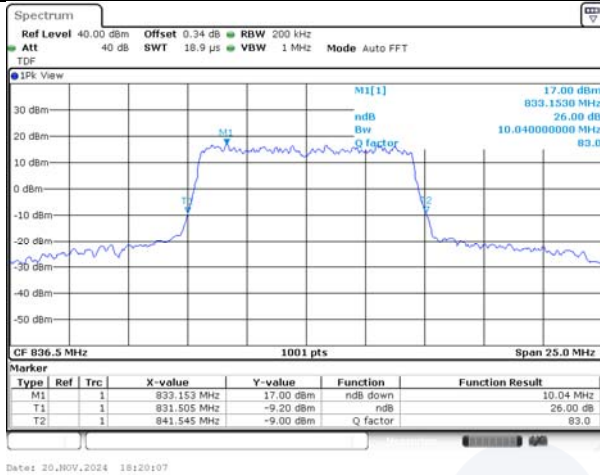
5M BW QPSK Middle channel



5M BW 16QAM Middle channel



10M BW QPSK Middle channel



10M BW 16QAM Middle channel



15M BW QPSK Middle channel

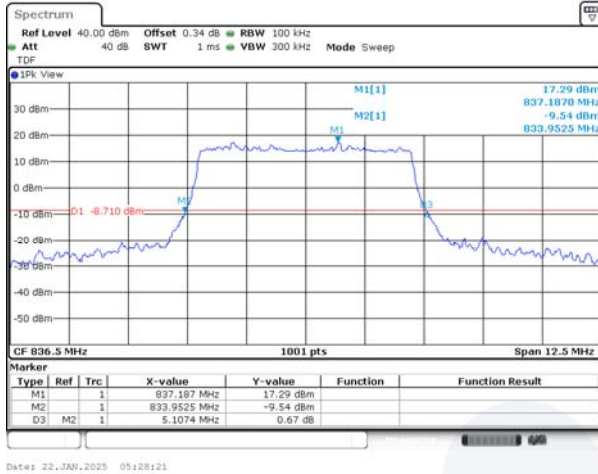


15M BW 16QAM Middle channel

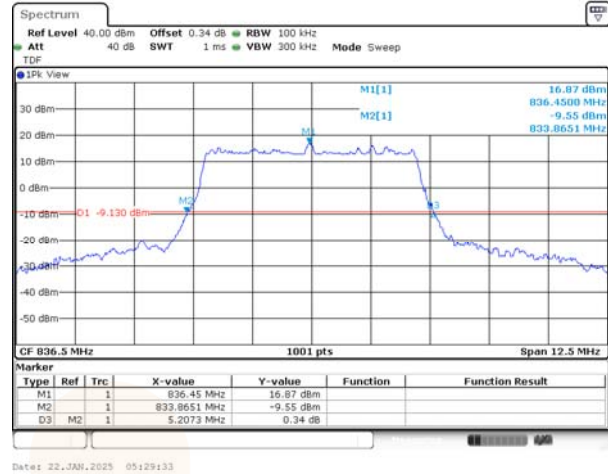


Test mode: 5G NR n5 DFT-s OFDM

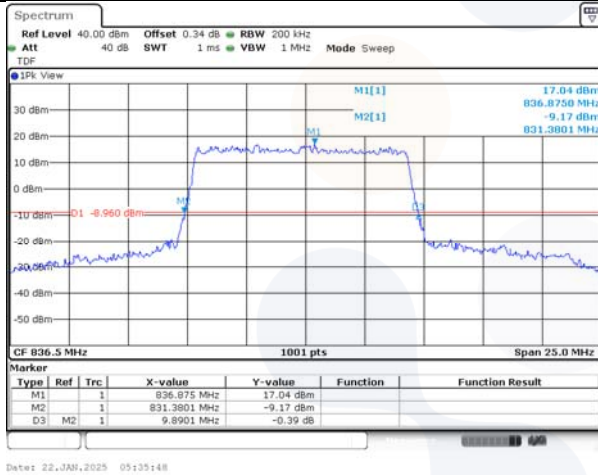
5M BW QPSK Middle channel



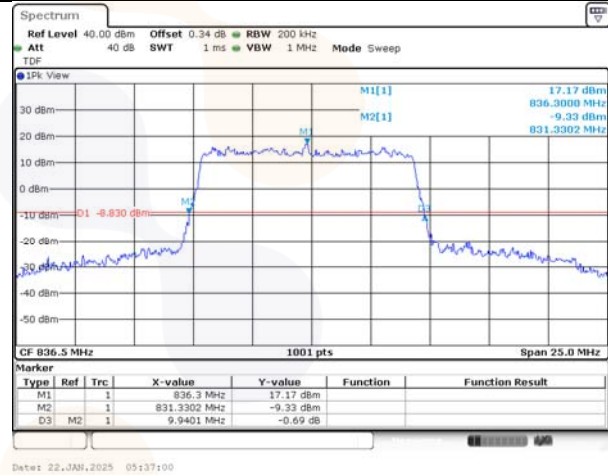
5M BW 16QAM Middle channel



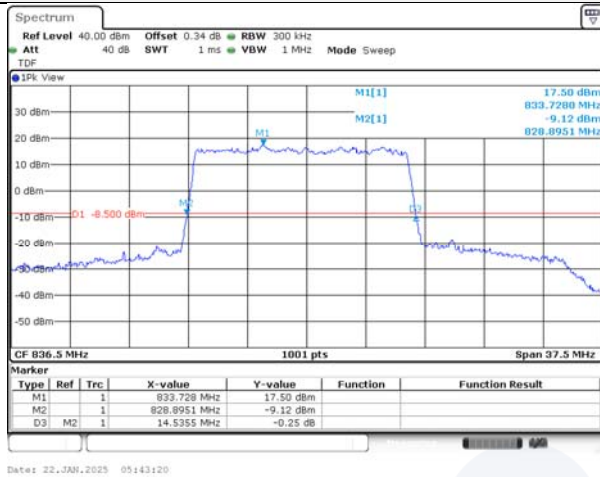
10M BW QPSK Middle channel



10M BW 16QAM Middle channel



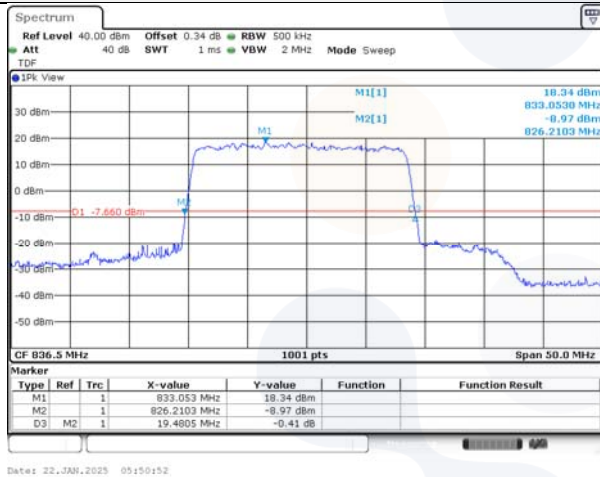
15M BW QPSK Middle channel



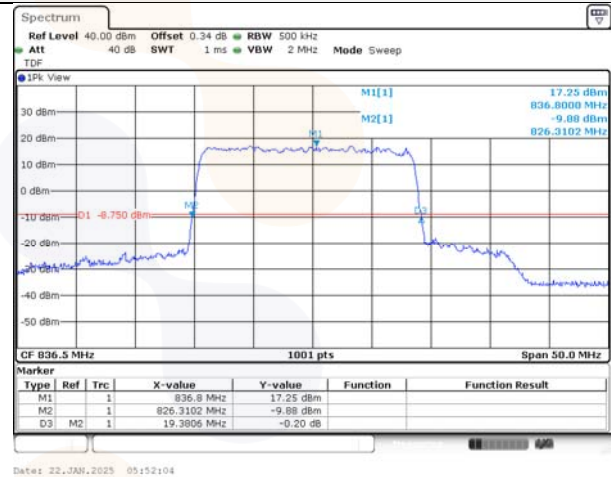
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

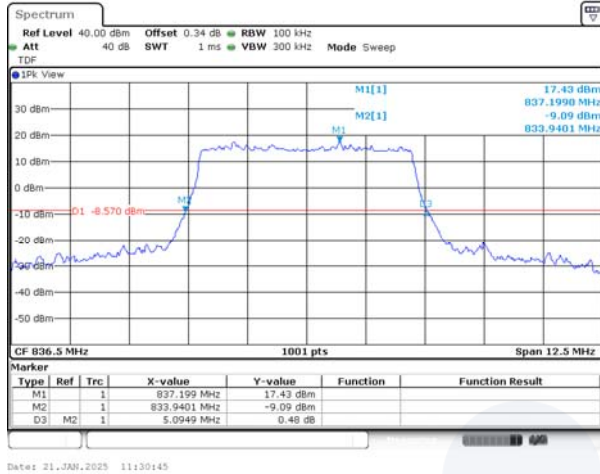


20M BW 16QAM Middle channel



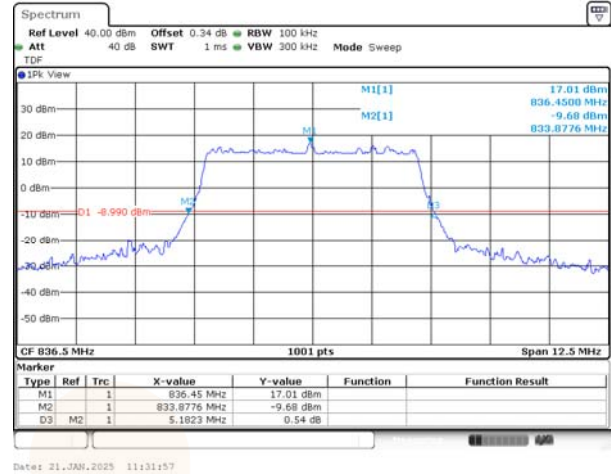
Test mode: 5G NR n26 DFT-s OFDM

5M BW QPSK Middle channel



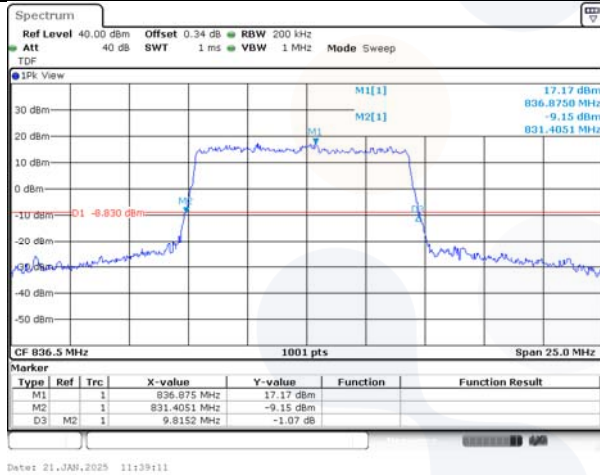
Date: 21.JAN.2025 11:30:45

5M BW 16QAM Middle channel



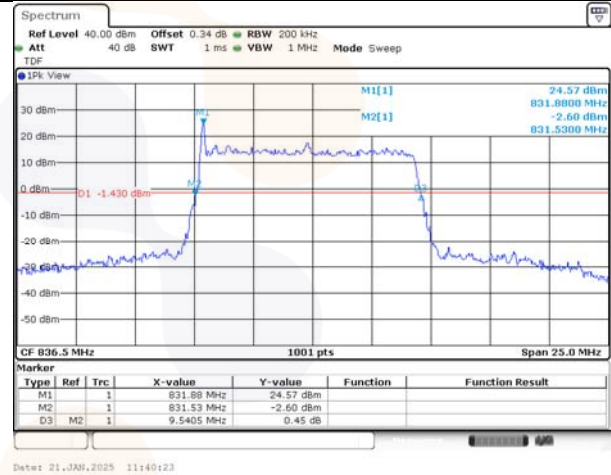
Date: 21.JAN.2025 11:31:57

10M BW QPSK Middle channel



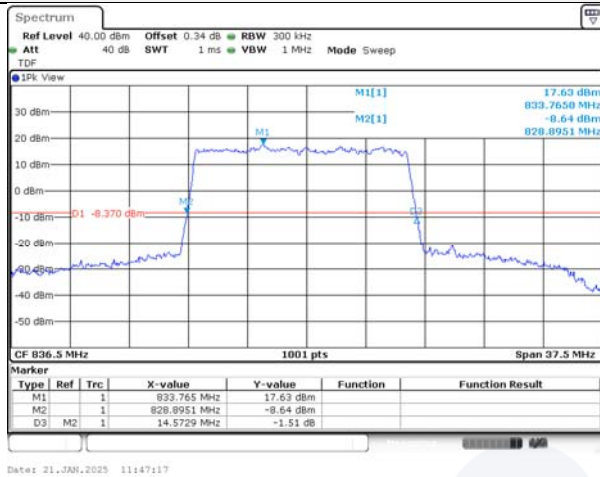
Date: 21.JAN.2025 11:39:11

10M BW 16QAM Middle channel

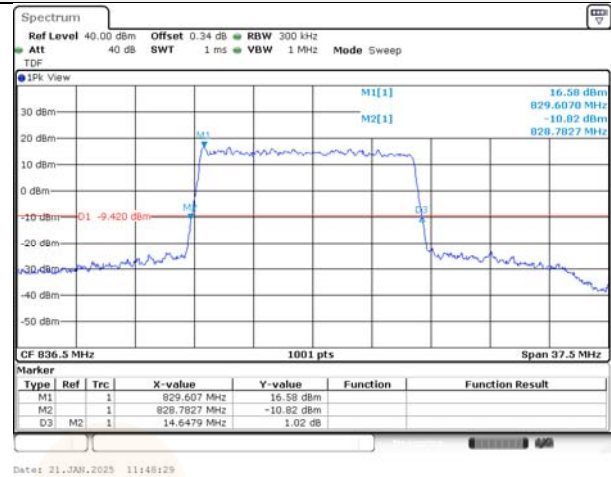


Date: 21.JAN.2025 11:40:23

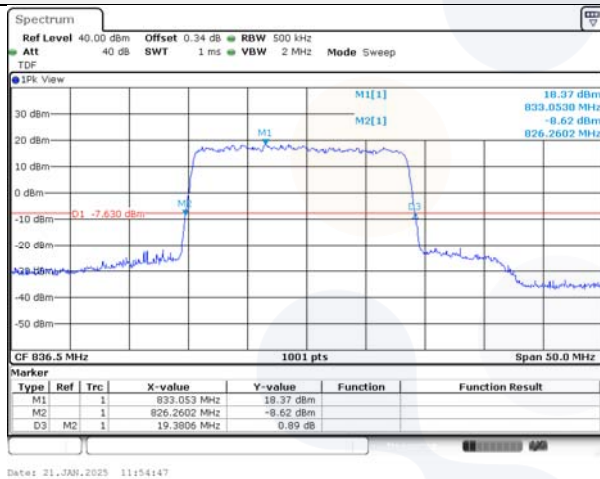
15M BW QPSK Middle channel



15M BW 16QAM Middle channel



20M BW QPSK Middle channel

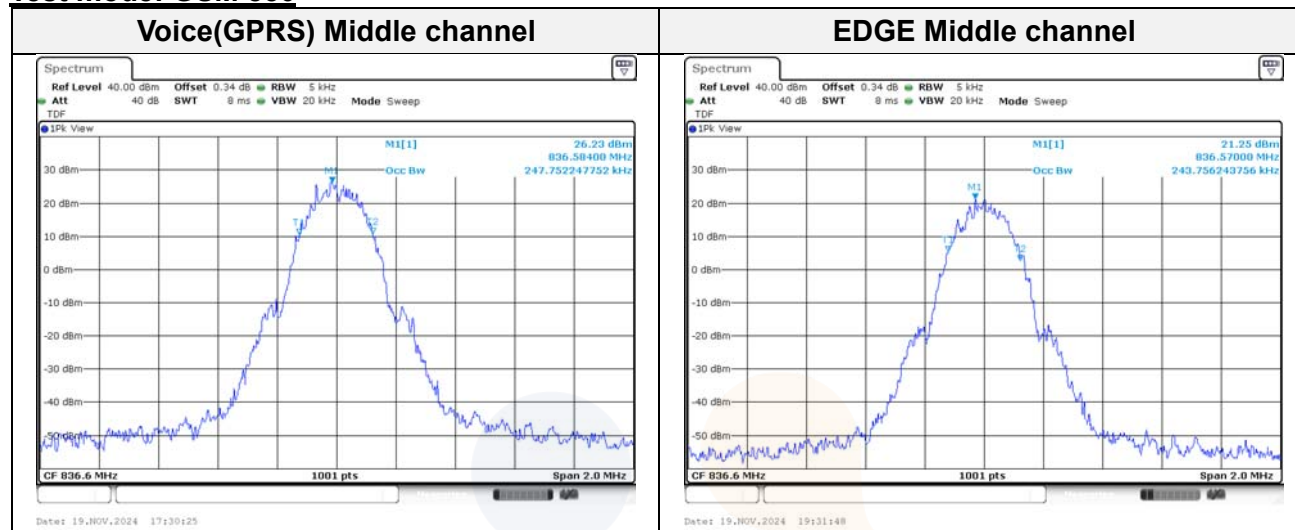


20M BW 16QAM Middle channel

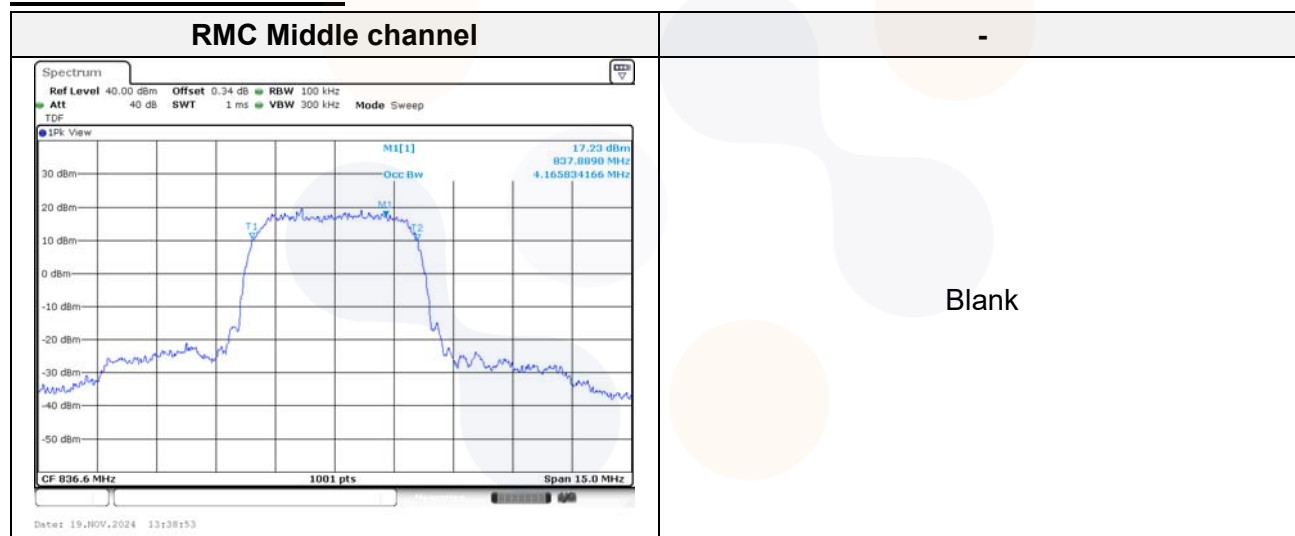


99% Occupied Bandwidth

Test mode: GSM 850



Test mode: WCDMA 850

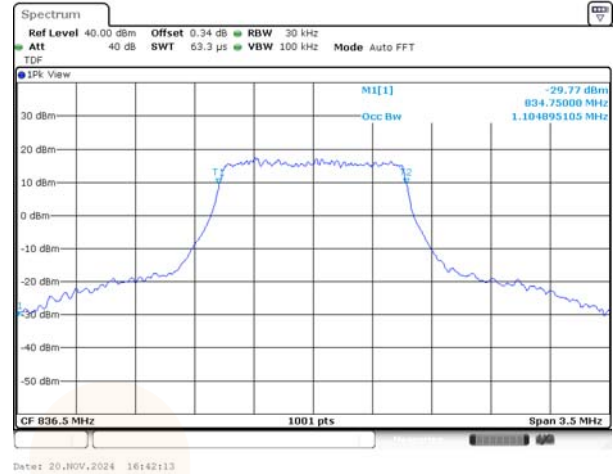


Test mode: LTE B5

1.4M BW QPSK Middle channel



1.4M BW 16QAM Middle channel



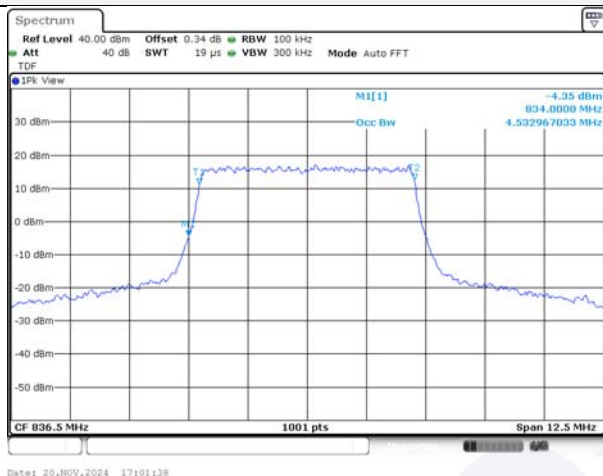
3M BW QPSK Middle channel



3M BW 16QAM Middle channel



5M BW QPSK Middle channel



5M BW 16QAM Middle channel



10M BW QPSK Middle channel



10M BW 16QAM Middle channel

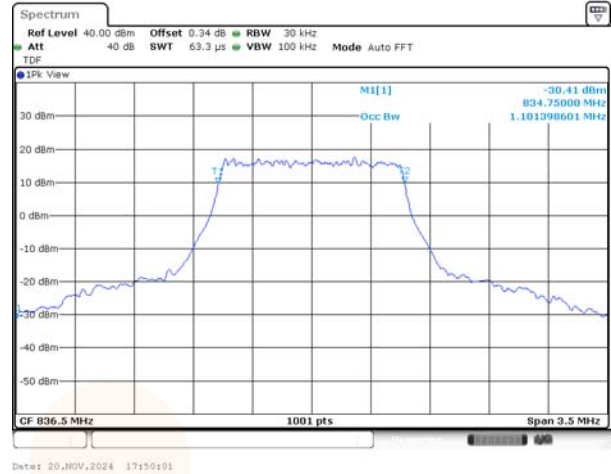


Test mode: LTE B26

1.4M BW QPSK Middle channel



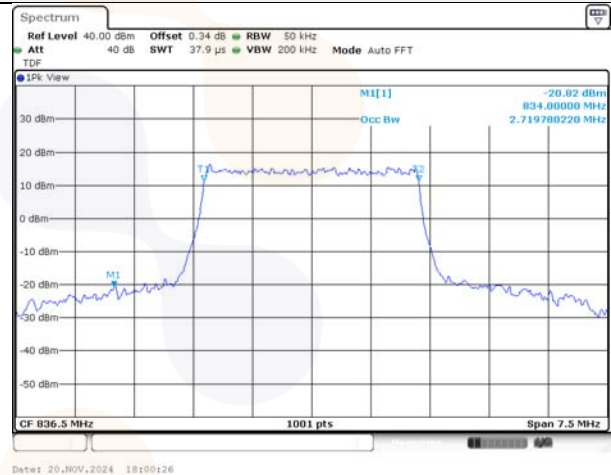
1.4M BW 16QAM Middle channel



3M BW QPSK Middle channel



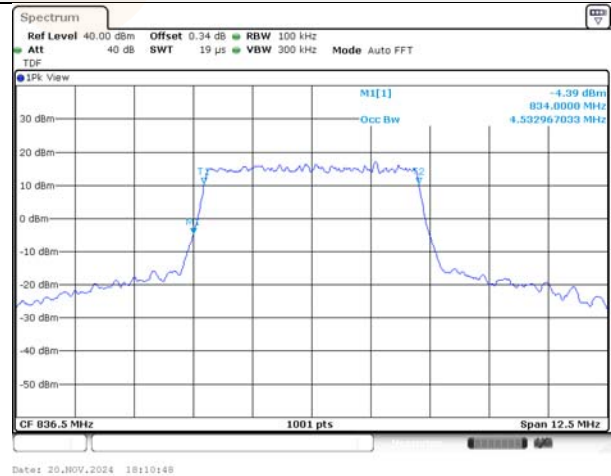
3M BW 16QAM Middle channel



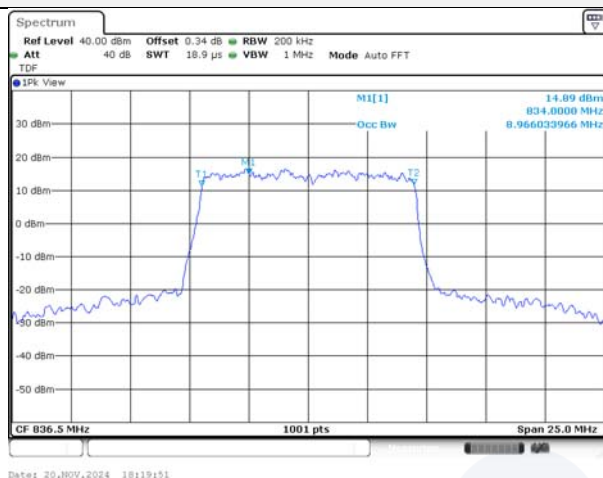
5M BW QPSK Middle channel



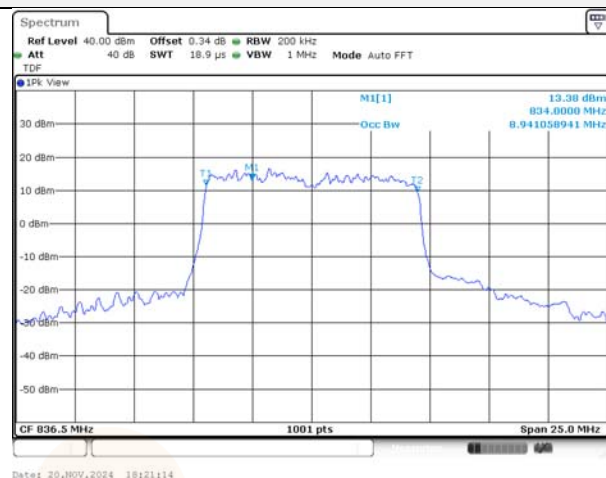
5M BW 16QAM Middle channel



10M BW QPSK Middle channel



10M BW 16QAM Middle channel



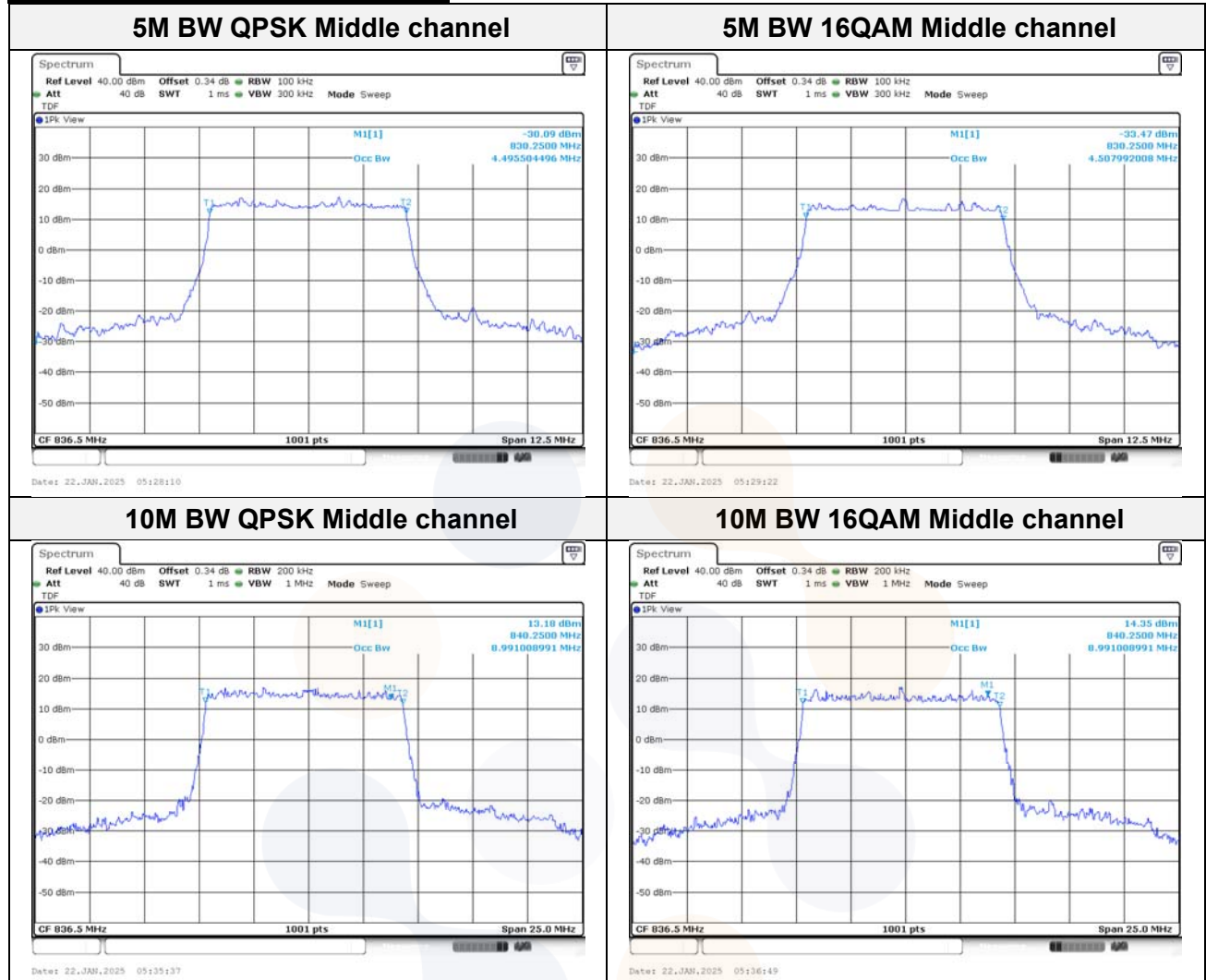
15M BW QPSK Middle channel



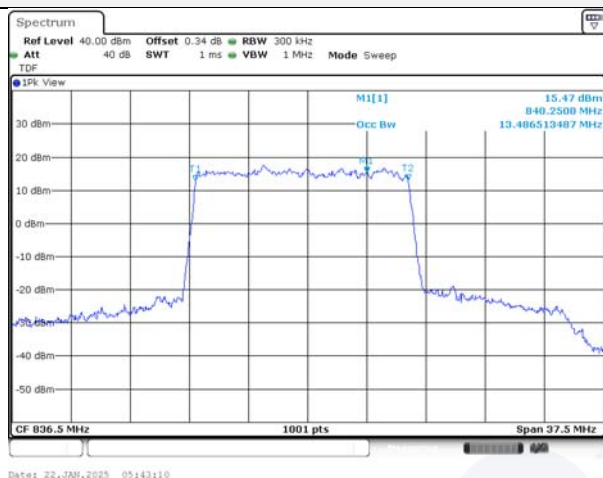
15M BW 16QAM Middle channel



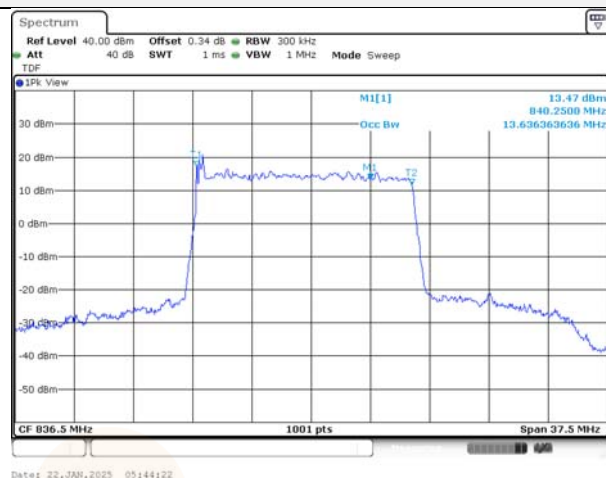
Test mode: 5G NR n5 DFT-s OFDM



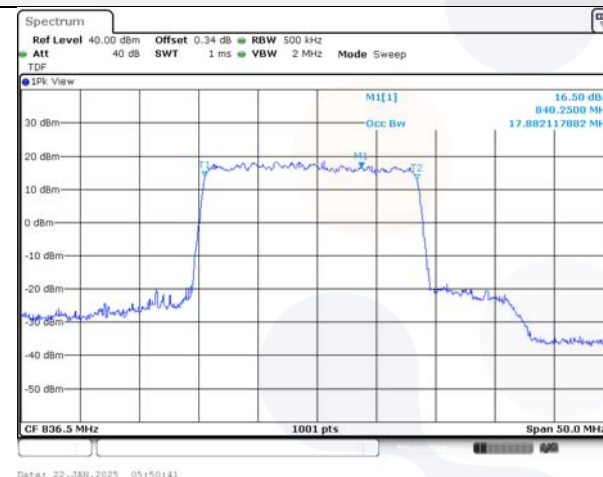
15M BW QPSK Middle channel



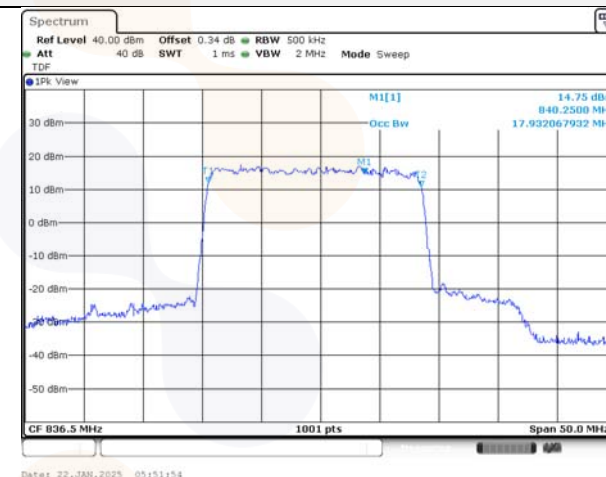
15M BW 16QAM Middle channel



20M BW QPSK Middle channel

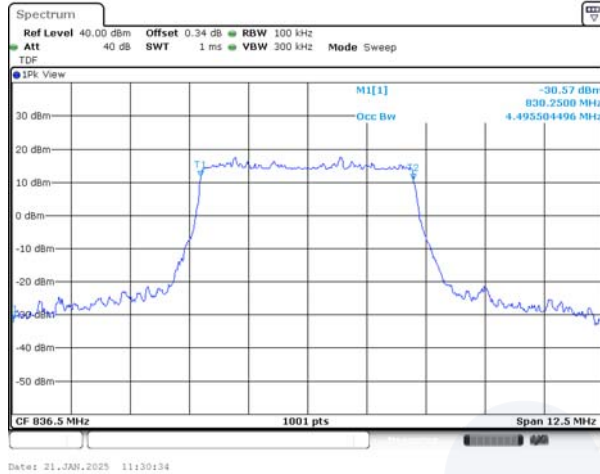


20M BW 16QAM Middle channel

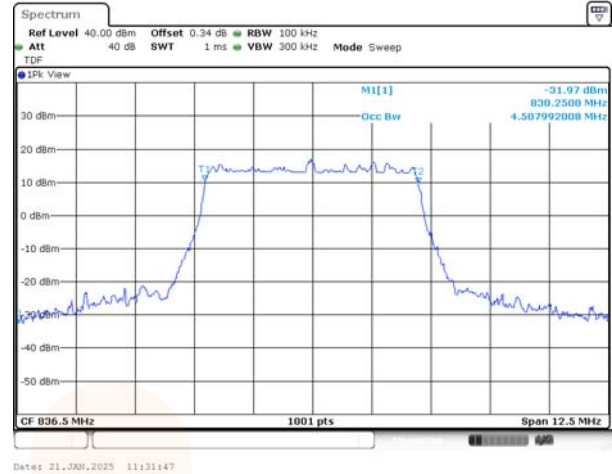


Test mode: 5G NR n26 DFT-s OFDM

5M BW QPSK Middle channel



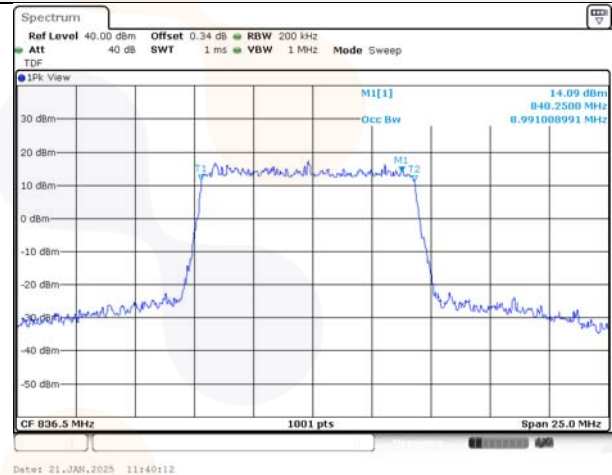
5M BW 16QAM Middle channel



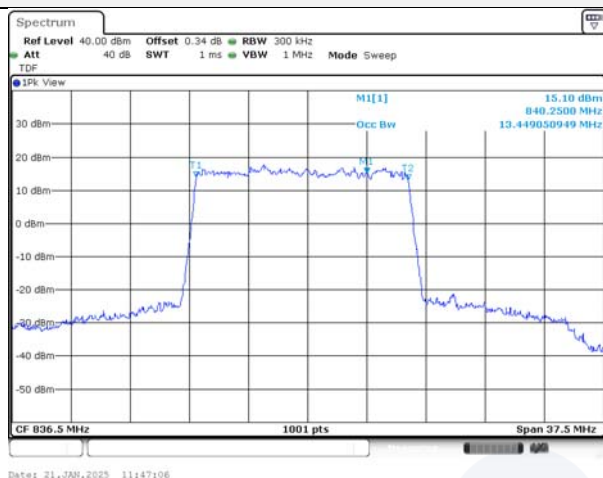
10M BW QPSK Middle channel



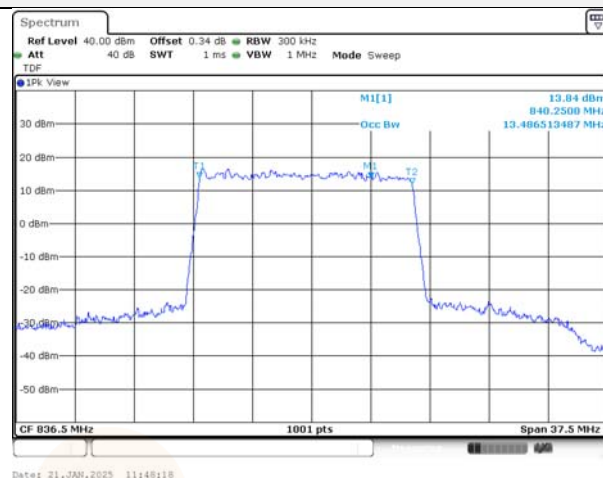
10M BW 16QAM Middle channel



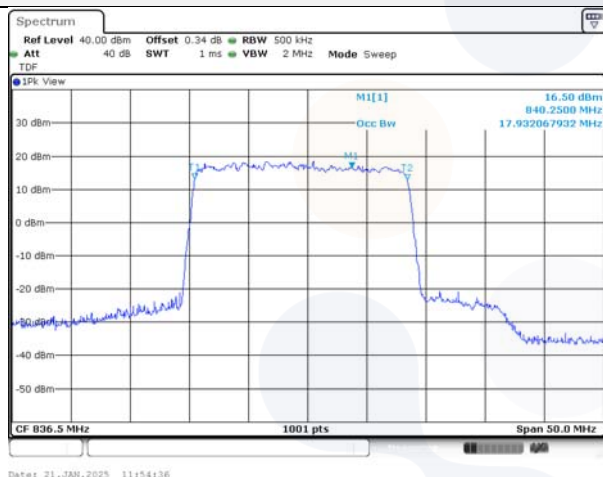
15M BW QPSK Middle channel



15M BW 16QAM Middle channel



20M BW QPSK Middle channel



20M BW 16QAM Middle channel

