

TEST REPORT

Report Number: R15980274-E12a

Applicant : Samsung Electronics Co Ltd
129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 16677, Rep. of Korea

Model : SM-S942U, SM-S942U1

FCC ID : A3LSMS942U

EUT Description : GSM/WCDMA/LTE/NR/SCS/NTN Phone + BT/BLE, DTS/UNII
a/b/g/n/ac/ax/be, WPT and NFC

Test Standard(s) : FCC 47 CFR PART 2, PART 22H, PART 90S, PART 25
ISED RSS-GEN ISSUE 5 + A1 + A2, RSS-132 ISSUE 4

Date Of Issue:
2025-12-19

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-12-05	Initial Review	Noah Bennett
V2	2025-12-12	Various Typos Corrected. Added 16QAM Data to section 6.2.	Noah Bennett
V3	2025-12-16	Added 15MHz LTE26 (22H) Test Data. Added OBW data.	Noah Bennett
V4	2025-12-19	Added Out of Band Emissions Test Data for 15MHz LTE26 (22H).	Noah Bennett

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Samsung Electronics Co Ltd
129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 16677, Rep. of Korea

EUT DESCRIPTION: GSM/WCDMA/LTE/NR/SCS/NTN Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax/
be, WPT and NFC

SERIAL NUMBERS: YHI0909M, YHK0046M, YHK0177M

SAMPLE RECEIVE DATE: 2025-09-11

DATE TESTED: 2025-09-11 to 2025-12-15

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR PART 2, PART 22H, PART 90S, PART 25	Complies
ISED RSS-GEN ISSUE 5 + A1 + A2, RSS-132 ISSUE 4	

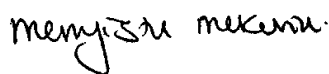
UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
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2. SUMMARY OF TEST RESULTS

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for correctly integrating customer-provided data with measurements performed by UL LLC.

Requirement Description	Band	Requirement Clause Number (FCC)	Requirement Clause Number (ISED)	Result	Remarks
RF Conducted Output Power	26 (90S)	2.1046, 90.635 (b)	--	Complies	None.
Effective Radiated Power	5, 26 (22)	22.913 (a)(5)	RSS132§5.4	Complies	None.
Occupied Bandwidth	5, 26	2.1049	RSS132, RSS-GEN§6.7	Complies	None.
Band Edge and Emission Mask	5, 26	2.1051, 22.917 (a), 90.691 (a)	RSS132§5.5	Complies	None.
Out of Band Emissions	5, 26	2.1051, 22.917 (a), 90.691 (a)	RSS132§5.5	Complies	None.
Frequency Stability	5, 26	2.1055, 22.355, 90.539, 90.213	RSS132§5.3	Complies	None.
Peak-to-Average Ratio	5, 26	22.913 (d)	RSS132§5.4	Complies	None.
Field Strength of Spurious Radiation	5, 26	2.1053, 22.917 (a), 90.691 (a)	RSS132§5.5	Complies	None.

SUPPLEMENTAL COVERAGE FROM SPACE (SCS)

Under section § 25.109 (f) of the FCC rules Space and SCS earth stations providing SCS are subject to technical rules in parts 2, 22, 24, and 27 of this chapter based on the operating frequency band. Section § 25.204 (g) specifies that earth stations providing SCS pursuant to §§ 25.125 and 25.115 shall comply with the power requirements and out-of-band emission limits corresponding to devices operating in parts 22, 24, or 27 of this chapter (e.g., §§ 22.913, 24.232, 27.50), as required for their operating frequencies. We have clarified through KDB inquiry that the technical requirements from Part 90R should be applied for SCS operations in the 700 MHz Public Safety Band.

The table below identifies the SCS frequencies available for use and, for each band, the applicable FCC Part 22, 24, 27, and 90R technical requirements, the air interfaces supported by the device for SCS use.

The bands available for SCS and the bands supported by the devices in the scope of this report are:

Band	Frequency		Part 22/24/27/90 Rule parts	3GPP Band	Supported	Applicable to This Report
	DL (MHz)	UL (MHz)				
600 MHz	614 – 652	663 – 698	27.5 (c) 27.50 (c) 27.53 (g)	71/n71	Yes	No
700 MHz	729 – 746	699 – 716	27.5 (c) 27.50 (c) 27.53 (g)	12/n12 17	Yes	No
	746 – 756	777 – 787	27.5 (b) 27.50 (b) 27.53 (f)	13/n13	Yes	No
	758 – 769	788 – 799	90R ^{Note 1}	14 / n14	Yes	No
	805 – 806				No	No
800 MHz	869 – 894	824 – 849	22H	WCDMA 5 5/n5 26/n26	Yes	Yes
Broadband PCS	1930 – 1995	1850 – 1915	24E	WCDMA 2 2/n2 25/n25	Yes	No
Note 1: Clarified through KDB inquiry that the technical requirements from Part 90R should be applied for SCS operations in the 700 MHz Public Safety Band.						

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following.
FCC published lists of [measurement procedures](#) for compliance testing.
ISED published lists of [normative test standards and acceptable alternatives procedures](#).

- ANSI C63.26:2015
- ANSI/TIA-603-E (2016)
- FCC 47 CFR Part 2, Part 22H, Part 90S, Part 25
- [FCC KDB 971168 D01](#): Power Meas License Digital Systems (ISED acceptable alternative procedure)
- [FCC KDB 971168 D02](#): Misc Rev Approv License Devices
- [FCC KDB 412172 D01](#): Determining ERP and EIRP
- [FCC KDB 273109 D02](#): Part 25 SCS and CMRS-Bands
- ISED RSS-Gen Issue 5 + A1 + A2, RSS-132 Issue 4

4. FACILITIES AND ACCREDITATION

UL LLC. is accredited by A2LA, certification #0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 2800 Suite Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A.	US0067	27265	825374

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U _{Lab}
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB
Occupied Channel Bandwidth	±0.39 %
Temperature	±0.9 °C
Supply voltages	±0.45 %
Time	±0.02 %

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE/NR/SCS/NTN Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax/be, WPT and NFC.

The EUT supports the following LTE and 5G NR Bands and their antenna configurations:

LTE & 5G NR Bands	Config 0	Config 1
LTE B5 & 5G NR n5	ANT E	ANT A
LTE B26 & 5G NR n26 (Part 90)		
LTE B26 & 5G NR n26 (Part 22)		

6.2. MAXIMUM OUTPUT POWER

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

$$\text{ERP/EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

EUT includes different power levels for head use configuration and body use configuration and the tables below contain the highest of all configurations average conducted and peak ERP output powers as follows:

LTE BAND 26 (FCC Part 90S)

Part 90S										
Conducted Limit (W)		100.00								
Antenna Gain (dBi)		-3.70								
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	Conducted Average (W)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
10.0	QPSK	814.0	824.0	17.10	0.05	18.65	0.073	8.986	8986	8M99G7W
15.0	QPSK	814.0	829.0	17.48	0.06	19.03	0.080	13.475	13475	13M5G7W
	16QAM			16.98	0.05	18.53	0.071	13.408	13408	13M4D7W

5G NR n26 (FCC Part 90S)

Part 90S										
Conducted Limit (W)		100.00								
Antenna Gain (dBi)		-3.70								
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	Conducted Average (W)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
15.0	BPSK	816.5	829.0	17.10	0.05	18.65	0.073	13.391	13391	13M4G7W
20.0	BPSK	814.0	834.0	16.61	0.05	17.54	0.057	17.83	17830	17M8G7W
	16QAM			14.80	0.03	16.35	0.043	17.916	17916	17M9D7W

LTE BAND 5&26 (FCC Part 22)

Part 22/RSS 132								
ERP Limit (W)		7.00						
Bandwidth (MHz)	Modulation	Low Frequency	Upper Frequency	ERP Average	ERP Average	99% BW (MHz)	99% BW (kHz)	Emission Designator
5.0	16QAM	826.5	846.5	19.34	0.086	4.505	4505	4M51D7W
15.0	QPSK	829.0	844.0	16.63	0.046	13.408	13408	13M4G7W
	16QAM			17.98	0.063	13.394	13394	13M4D7W

5G NR n5&n26 (FCC Part 22)

Part 22/RSS 132								
ERP Limit (W)		7.00						
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
5.0	BPSK	826.5	846.5	19.02	0.080	4.501	4501	4M50G7W
20.0	BPSK	826.5	846.5	18.94	0.078	17.953	17953	18M0G7W
	16QAM			17.91	0.062	17.957	17957	18M0D7W

6.3. MAXIMUM ANTENNA GAIN

The antenna(s) gain as provided by the manufacturer' are as follows:

Frequency Band	ANT E Antenna Gain (dBi)	ANT A Antenna Gain (dBi)
LTE B5 & 5G NR n5 824 – 849 MHz	-3.7	-3.7
LTE B26 & 5G NR n26 (Part 90) 814 – 824 MHz	-3.7	-3.7
LTE B26 & 5G NR n26 (Part 22) 824 – 849 MHz	-3.7	-3.7

6.4. WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based upon an engineering evaluation made on conducted average power provided by the manufacturer. The modulations with the highest output power were selected as worst-case. Conducted tests were performed on the worst-case antenna port per band. Full radiated Emissions Testing on each antenna was performed and reported.

For 5G NRs, conducted spurious emission tests were conducted on wider bandwidth with inner 1RB since this is the worst bandwidth and the highest output power.

For LTE, radiated spurious tests were conducted on wider bandwidth with 1RB to cover the entire 814 – 849 frequency range for both part 90S and 22H.

BPSK modulation applied only for 5G NR frequencies and has the same tune up power as QPSK modulations.

The DFT-s-OFDM and CP-OFDM waveforms were investigated, and DFT-s-OFDM was found to be the worst case.

Band FR1 n5 is covered by FR1 n26, as they share the same operating frequency range, and have equal output powers.

The following is the worst-case antenna port, and modulation, as tested:

LTE & 5G NR Bands	Worst-Case Antenna Port	Worst-Case Modulation
LTE B5 & 5G NR n5 824 – 849 MHz	ANT A	LTE (QPSK) 5G NR (BPSK)
LTE B26 & 5G NR n26 (Part 90) 814 – 824 MHz	ANT A	
LTE B26 & 5G NR n26 (Part 22) 824 – 849 MHz	ANT A	

The EUT was investigated in three orthogonal orientations X/Y/Z on both Low Band (Fundamental Below 1GHz) Mid Band (Fundamental between 1-3GHz) and High Band (Fundamental above 3GHz) over all antennas to find the worst-case orientation. For Simultaneous Tx scans in which there are two or more F_c ranges with different worst-case orientations, scans were performed in the orientation with the highest output power, and sufficient margin was added to cover other orientations. The following are the worst-case orientations:

LTE & 5G NR Bands	Config 0 Orientation	Config 1 Orientation
Low Band ($F_c < 1\text{GHz}$)	Z	Y
Mid Band ($1\text{GHz} < F_c < 3\text{GHz}$)	Z	-
High Band ($F_c > 3\text{GHz}$)	-	-

The EUT was tested while connected to AC Lines via charging cable and brick to represent worst case emissions.

Worst Case emissions from 9kHz-30Mhz, 30-1000MHz, 18-26.5GHz, and 26.5GHz-40GHz were done on the modes with the highest pre-tuned conducted average power per antenna. No emissions within 20dB were observed.

6.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Power Adapter	Flextronics	G-1000-US	Na	na

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB-C	1	USB-C	Shielded	<3m	Phone to power adapter

TEST SETUP

The EUT was connected to a base station simulator and set to transmit at max power for WWAN testing

SETUP DIAGRAM

Please see R15980274-EP1 for Setup Diagrams and Setup Photos.

7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Wireless Conducted Measurement Equipment

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted Room 1					
CBL036	N-Male to SMA-Male, 6Ft	Times Microwave	LMR-240 Coax Cable CBL036	2025-01-04	2026-01-04
208721	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2024-08-14	2025-08-14
213025	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2025-01-04	2026-01-04
207726	Temp/Humid Chamber	Thermotron	SM-32-8200	2025-01-15	2026-01-15
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
90416	Spectrum Analyzer	Keysight Technologies	N9030A	2024-09-23	2025-09-23
76022	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
CBL010	Micro-Coax UTIFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB293C-0-2400-300300	2025-06-06	2026-06-06
Pad II	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C27S-10	2025-05-20	2026-05-20

Test Equipment Used – Radiated Disturbance Emissions

Morrisville – Chamber 1

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
8939	Passive Loop Antenna	EMCO	EM-6872	2024-11-18	2026-11-18
8940	Passive Loop Antenna	EMCO	EM-6871	2024-11-18	2026-11-18
	30-1000 MHz				
90629	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-30	2026-01-30
	1-18 GHz				
135143	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-02-07	2026-02-07
	Gain-Loss Chains				
91974	Gain-loss string: 0.009-30MHz	Various	Various	2025-05-31	2026-05-31
91976	Gain-loss string: 25-1000MHz	Various	Various	2025-05-31	2026-05-31
91979	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-05-12	2026-05-12
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05
212967	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2025-02-07	2026-02-07
211003 (BPF001)	12-18GHz bandpass filter, 2W, Fhigh = 18GHz	Micro-Tronics	BRM50706	2025-03-13	2026-03-13
169106 (BRF008)	1710-1785MHz notch filter, 2W, Fhigh = 9GHz	Micro-Tronics	BRM50713-01	2025-03-13	2026-03-13
169108 (BRF010)	1.85-1.97GHz notch filter, 2W, Fhigh = 9GHz	Micro-Tronics	BRM50714-01	2025-03-13	2026-03-13
231408 (BRF011)	2.495-2.690GHz notch filter, 2W, Fhigh = 18GHz	Micro-Tronics	BRM50709-01	2025-03-13	2026-03-13
82635 (HPF009)	1GHz high-pass filter, 2W, Fhigh =10GHz	Micro-Tronics	HPM17672	2025-03-13	2026-03-13

Morrisville – Chamber 2

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	30-1000 MHz				
159203	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-03-05	2026-03-05
	1-18 GHz				
88761	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-10-05	2025-10-05
	Gain-Loss Chains				
91978	Gain-loss string: 25-1000MHz	Various	Various	2025-05-31	2026-05-31
91977	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
	Receiver & Software				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-07-29	2026-07-29
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
239540	Environmental Meter	Fisher Scientific	15-077-963	2025-08-05	2027-08-05
213025	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2025-01-14	2026-01-14
169106 (BRF008)	1710-1785MHz notch filter, 2W, Fhigh = 9GHz	Micro-Tronics	BRM50713-01	2025-03-13	2026-03-13
169108 (BRF010)	1.85-1.97GHz notch filter, 2W, Fhigh = 9GHz	Micro-Tronics	BRM50714-01	2025-03-13	2026-03-13
231408 (BRF011)	2.495-2.690GHz notch filter, 2W, Fhigh = 18GHz	Micro-Tronics	BRM50709-01	2025-03-13	2026-03-13
169109 (BRF012)	3.4-3.8GHz notch filter, 2W, Fhigh = 18GHz	Micro-Tronics	BRM50711-01	2025-03-13	2026-03-13
82635 (HPF009)	1GHz high-pass filter, 2W, Fhigh = 10GHz	Micro-Tronics	HPM17672	2025-03-13	2026-03-13

Morrisville – Chamber 4

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-04-09	2026-04-09
	18-40 GHz				
91186	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2024-05-16	2026-05-16
204705	Horn Antenna, 26-40GHz	Com-Power	AH-640	2023-07-20	2025-07-20
	Gain-Loss Chains				
207640	Gain-loss string: 1-18GHz	Various	Various	2025-06-13	2026-06-13
225795	Gain-loss string: 18-40GHz	Various	Various	2025-06-13	2026-06-13
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-04-21	2026-04-21
81018	Spectrum Analyzer	Agilent	E4446A	2024-07-31	2025-07-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05
212967	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2025-02-07	2026-02-07

NOTES:

- * Testing is completed before equipment expiration date.
- **Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
ISED: RSS132

LIMITS

For reporting purposes only.

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the middle channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

RESULTS

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested.

LTE BAND 26(FCC PART 90S)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 26	1.4MHz, QPSK	6/0	819.0	1.093	1.364
	1.4MHz, 16QAM			1.094	1.348
	3MHz, QPSK	15/0		2.704	3.041
	3MHz, 16QAM			2.706	3.060
	5MHz, QPSK	25/0		4.502	5.110
	5MHz, 16QAM			4.509	5.093
	10MHz, QPSK	50/0		8.986	9.906
	10MHz, 16QAM			8.983	9.891
	10MHz, QPSK	1/0		0.248	0.397
	15MHz, QPSK	75/0	821.5	13.475	14.22
	15MHz 16QAM			13.408	14.01

5G NR n26 (FCC PART 90S)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
5G NR n26 (Part 90S)	5MHz, BPSK	25/0	819.0	4.527	5.222
	5MHz, 16QAM			4.532	5.247
	10MHz, BPSK	50/0		8.993	9.813
	10MHz, 16QAM			9.016	9.891
	10MHz, BPSK	1/1		0.950	1.377
	15MHz, BPSK	75/0	824	13.391	13.91
	15MHz, 16QAM			13.414	13.88
	20MHz, BPSK	100/0		17.830	18.52
	20MHz, 16QAM			17.916	18.50

LTE BAND 5&26 (FCC PART 22)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 26	1.4MHz, QPSK	6/0	836.5	1.092	1.341
	1.4MHz, 16QAM			1.096	1.340
	3MHz, QPSK	15/0		2.708	3.050
	3MHz, 16QAM			2.707	3.047
	5MHz, QPSK	25/0		4.495	5.067
	5MHz, 16QAM			4.505	5.094
	10MHz, QPSK	50/0		8.991	9.926
	10MHz, 16QAM			8.995	9.940
	15MHz, QPSK	75/0		13.408	13.99
	15MHz, 16QAM			13.394	14.01
	10MHz, QPSK	1/0		0.275	0.477

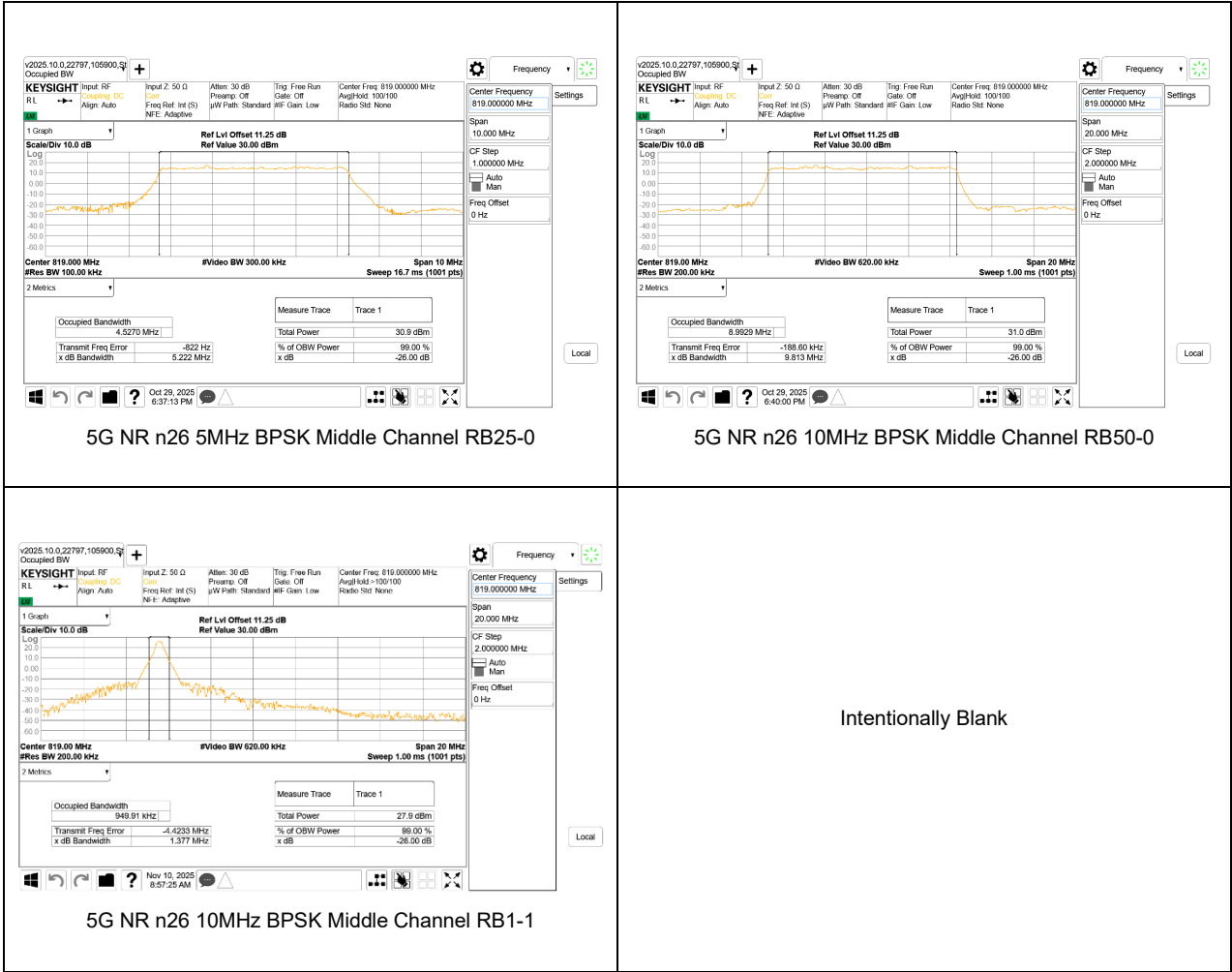
5G NR n5&n26 (FCC PART 22)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
5G NR n26 (FCC Part 22)	5MHz, BPSK	25/0	836.5	4.501	5.223
	5MHz, 16QAM			4.510	5.159
	10MHz, BPSK	50/0		8.995	9.847
	10MHz, 16QAM			9.009	9.926
	15MHz, BPSK	75/0		13.465	14.49
	15MHz, 16QAM			13.528	14.59
	20MHz, BPSK	100/0		17.953	19.21
	20MHz, 16QAM			17.957	19.11
	20MHz, BPSK	1/1		1.346	1.841

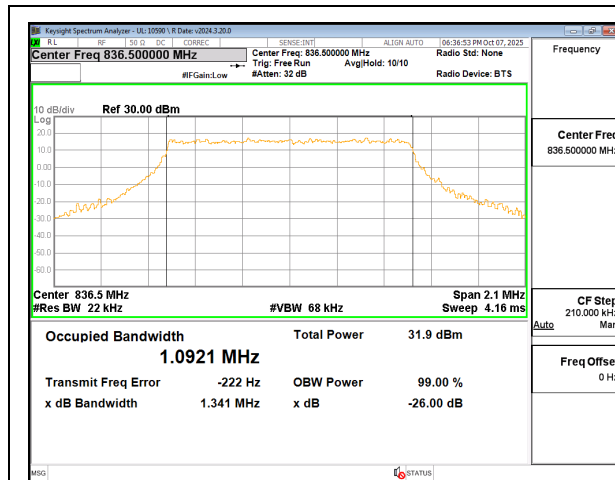
8.1.1. LTE BAND 26 (FCC PART 90S)



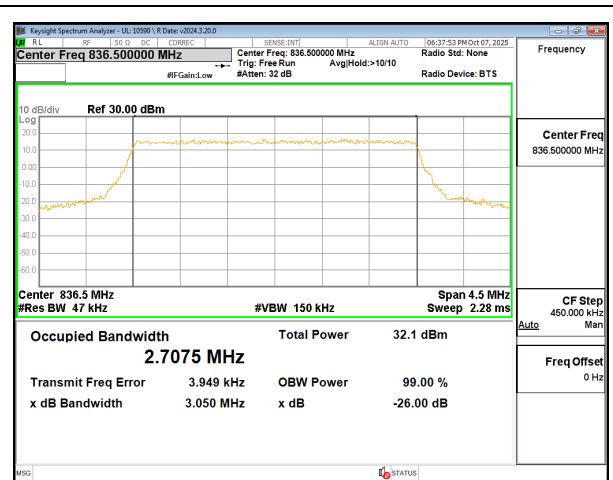
8.1.2. 5G NR n26 (FCC PART 90S)



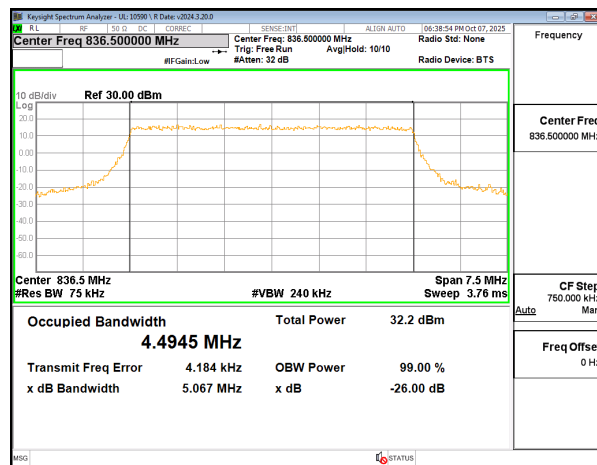
8.1.3. LTE BAND 5&26 (FCC PART 22)



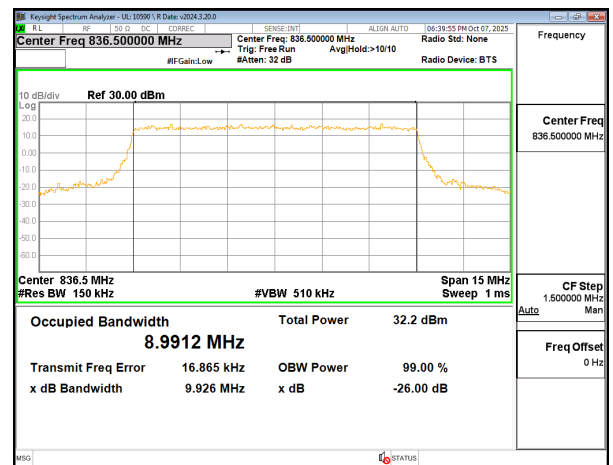
LTE B26 1.4MHz QPSK Middle Channel RB6-0



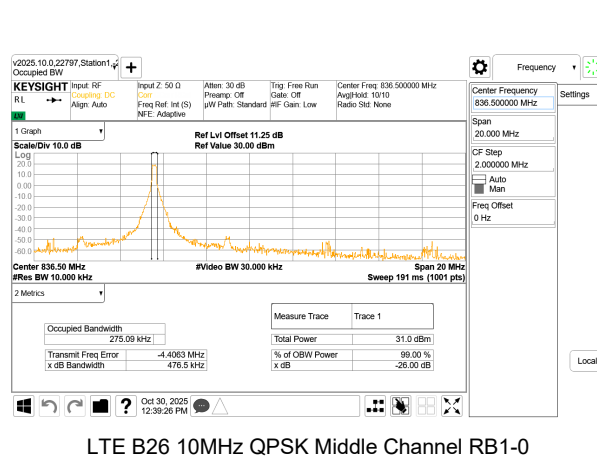
LTE B26 3MHz QPSK Middle Channel RB15-0



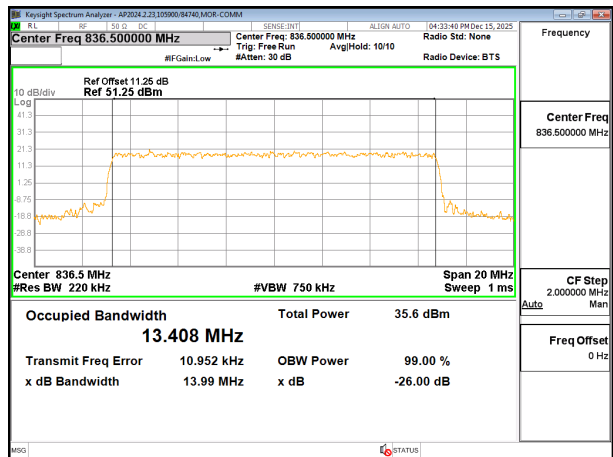
LTE B26 5MHz QPSK Middle Channel RB25-0



LTE B26 10MHz QPSK Middle Channel RB50-0

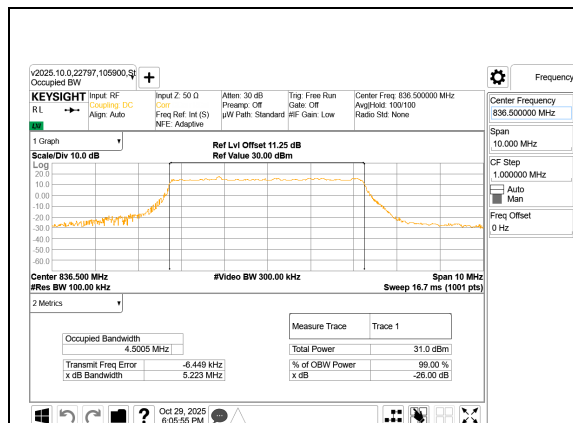


LTE B26 10MHz QPSK Middle Channel RB1-0

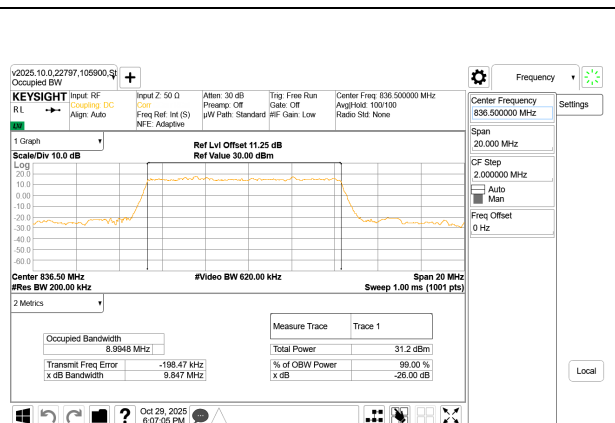


LTE B26 15MHz QPSK Middle Channel RB75-0

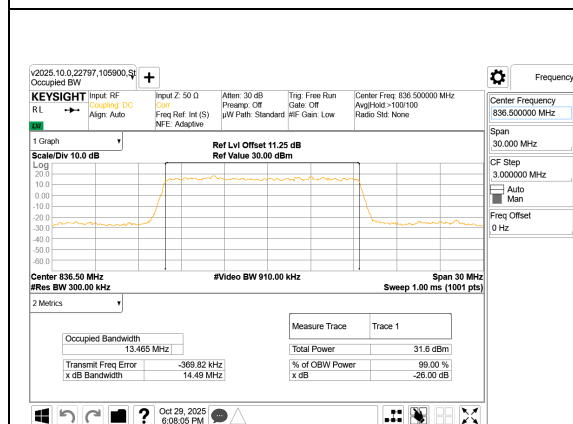
8.1.4. 5G NR n5&n26 (FCC PART 22)



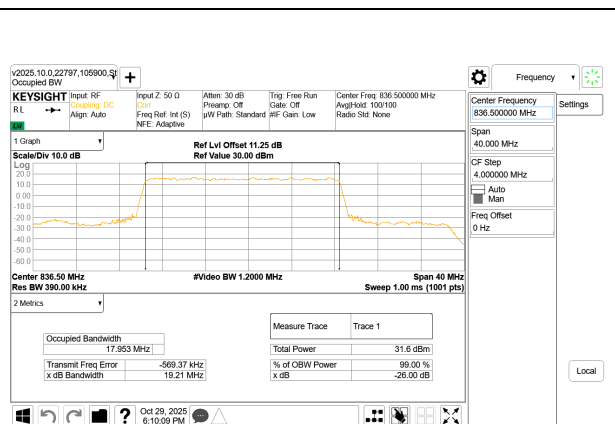
5G NR n26 5MHz BPSK Middle Channel RB25-0



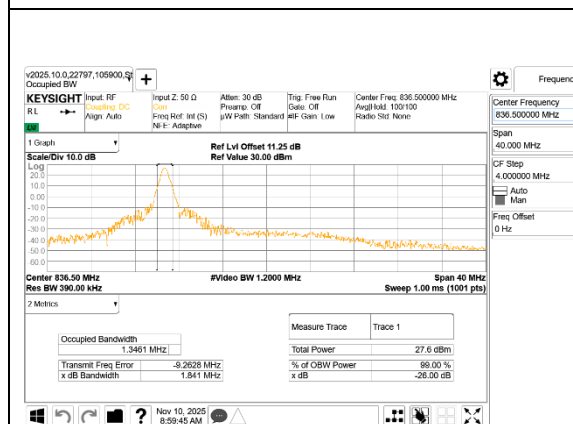
5G NR n26 10MHz BPSK Middle Channel RB50-0



5G NR n26 15MHz BPSK Middle Channel RB75-0



5G NR n26 20MHz BPSK Middle Channel RB100-0



5G NR n26 20MHz Middle High Channel RB1-0

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8.2. EMISSION MASK AND ADJACENT CHANNEL POWER

LIMITS

FCC: §22.917 (a)

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

FCC: §90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

NOTE: According to 971168 D02 Misc Rev Approv License Devices v02r01, Section VIII (c):

For Section 90.691(a) compliance testing, use RBW = 300 Hz for offsets less than 37.5 kHz from a channel edge; RBW = 100 kHz for offsets greater than 37.5 kHz is allowed.

ISED: RSS132§5.5

Equipment shall meet the unwanted emission limits specified below:

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB.
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

p is the output power specified in watts.

TEST PROCEDURE

For Spectrum Emission Mask plots, the spectrum analyzer is configured to sweep with a moving integration window, the width of which can be adjusted to different sizes across the sweep. The window width is configured to be greater than or equal to the required reference bandwidth. The center frequencies of the integration window for the different integration windows was set such that the upper and lower edges of the windows are aligned with the transition points in the reference bandwidths. This is achieved by setting the start / stop frequencies of the window with an offset equal to the reference bandwidth / 2 from the transition point.

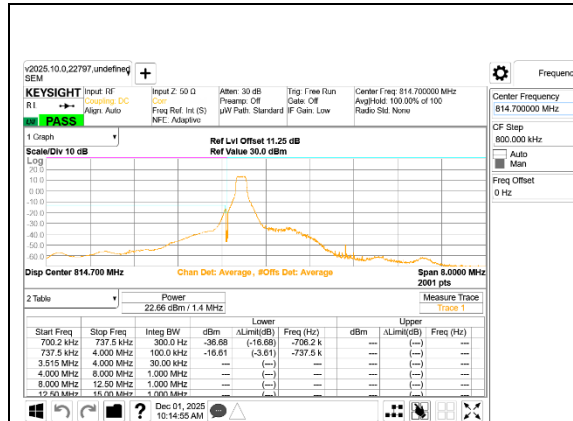
The transmitter output was connected to a base station simulator and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

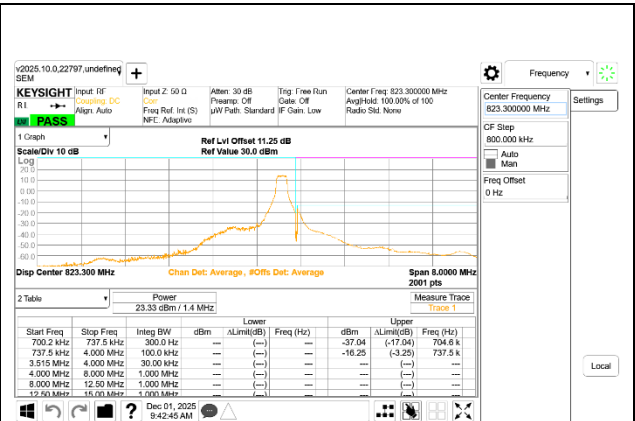
1. Set the spectrum analyzer span to include the block edge frequency.
2. Set a marker to point the corresponding band edge frequency in each test case.
3. Set display line at -13 dBm
4. Set resolution bandwidth to at least 1% of emission bandwidth.

RESULTS

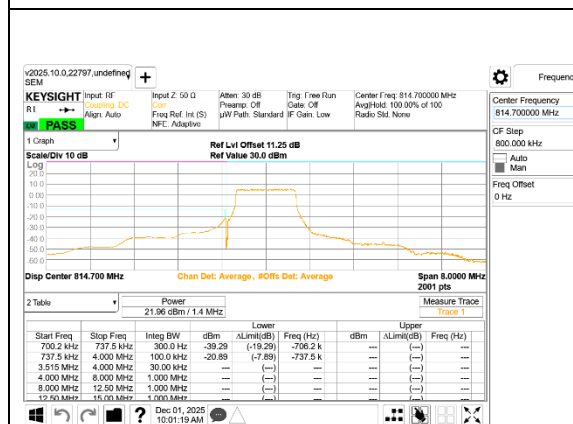
8.2.1. LTE BAND 26 (FCC PART 90S)



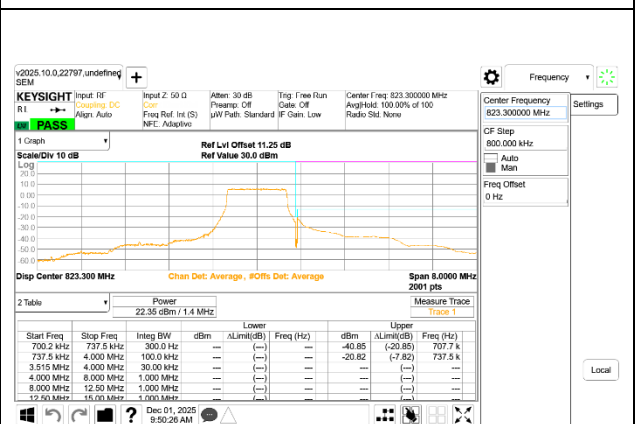
LTE B26 1.4MHz QPSK Low Channel RB1-0



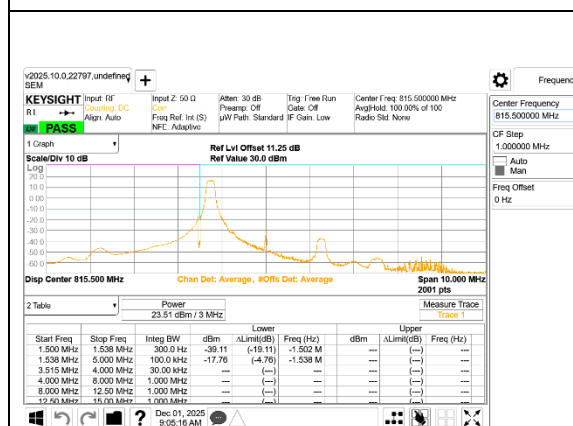
LTE B26 1.4MHz QPSK High Channel RB1-5



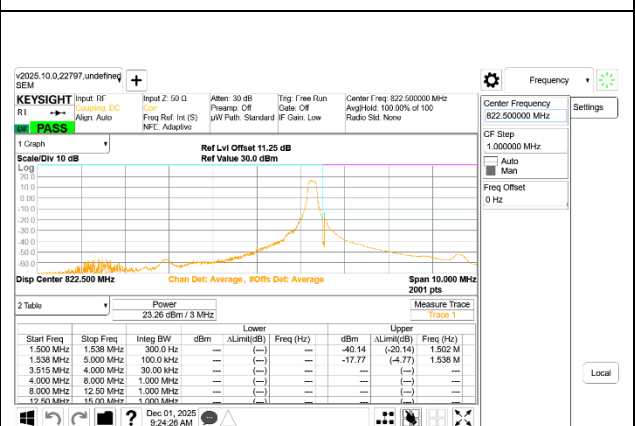
LTE B26 1.4MHz QPSK Low Channel RB6-0



LTE B26 1.4MHz QPSK High Channel RB6-0



LTE B26 3MHz QPSK Low Channel RB1-0



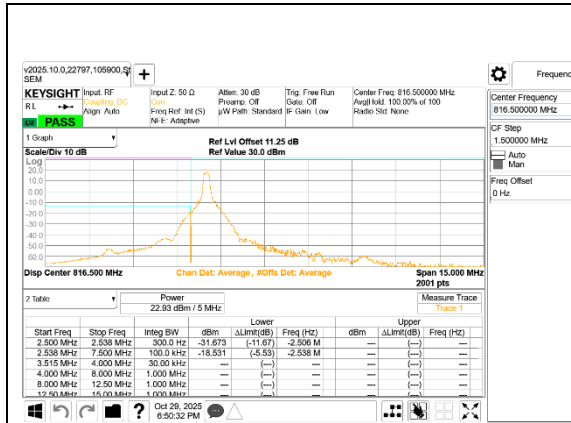
LTE B26 3MHz QPSK High Channel RB1-14



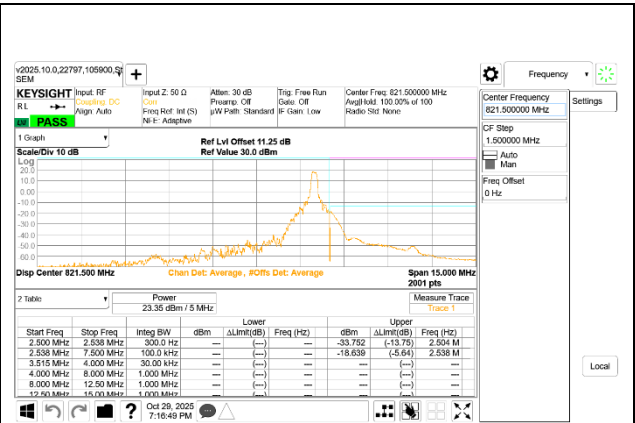


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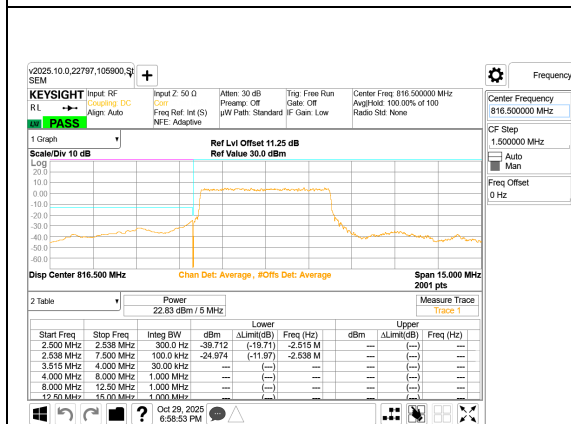
8.2.2. 5G NR n26 (FCC PART 90S)



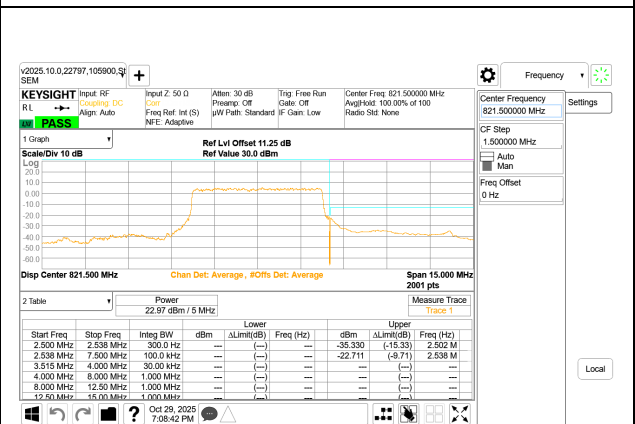
5G NR n26 5MHz BPSK Low Channel RB1-1



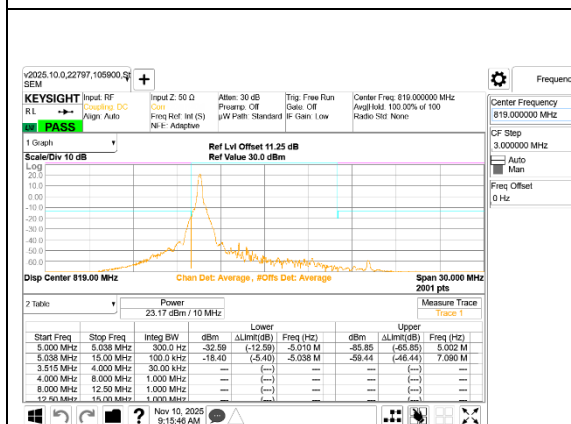
5G NR n26 5MHz BPSK High Channel RB1-23



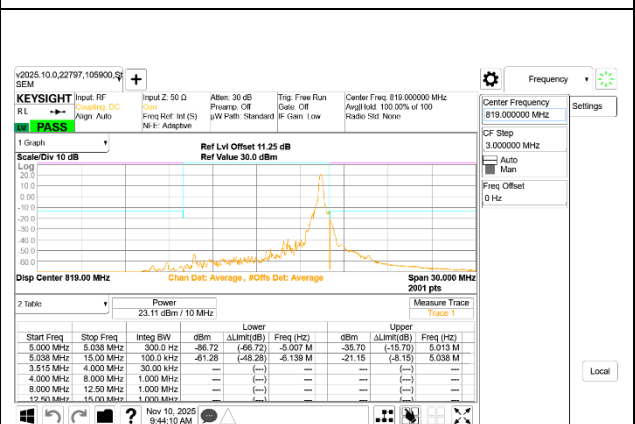
5G NR n26 5MHz BPSK Low Channel RB25-0



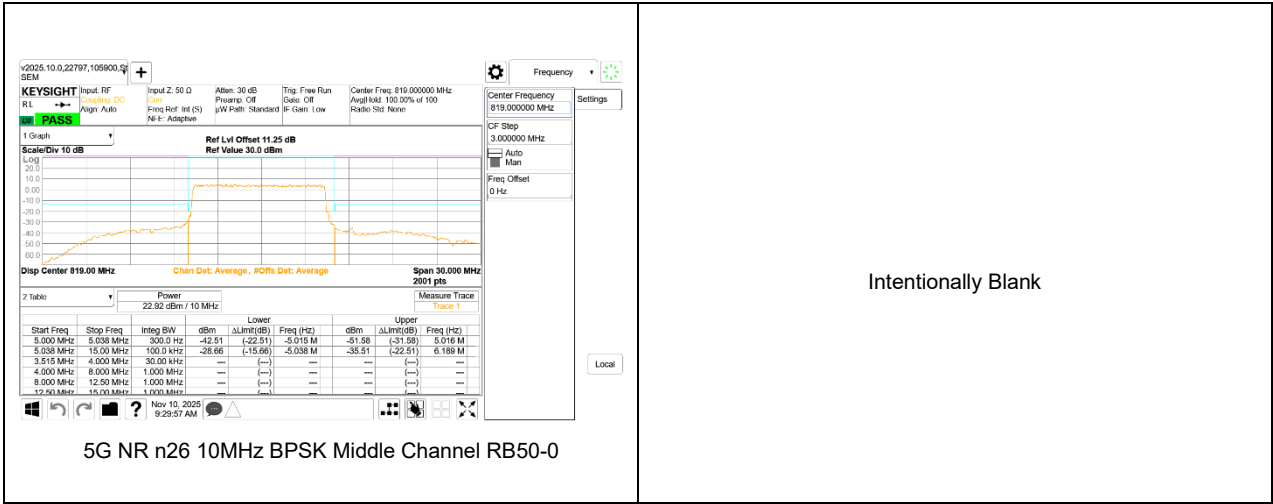
5G NR n26 5MHz BPSK High Channel RB25-0



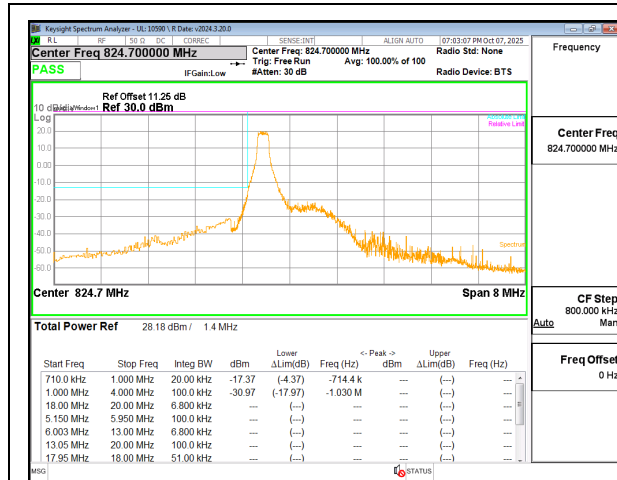
5G NR n26 10MHz BPSK Middle Channel RB1-1



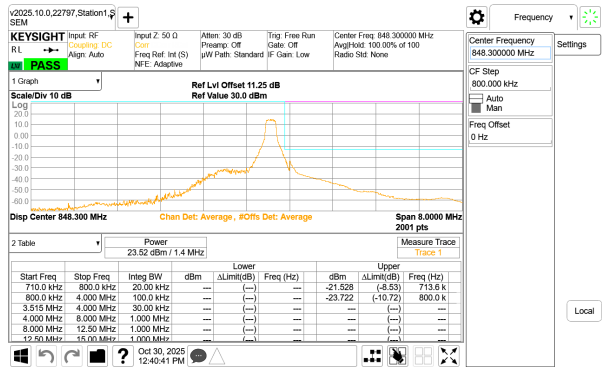
5G NR n26 10MHz BPSK Middle Channel RB1-50



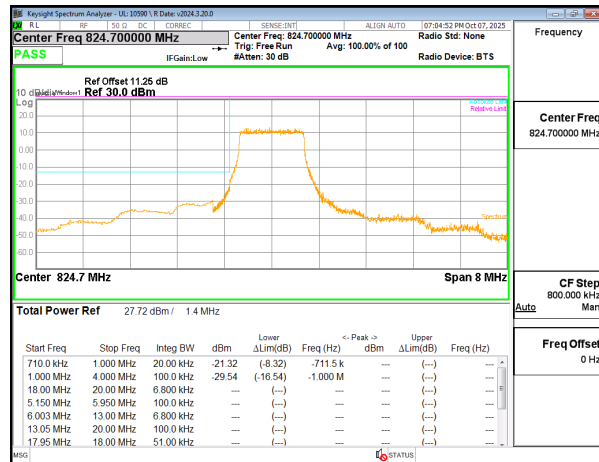
8.2.3. LTE BAND 5&26 (FCC PART 22)



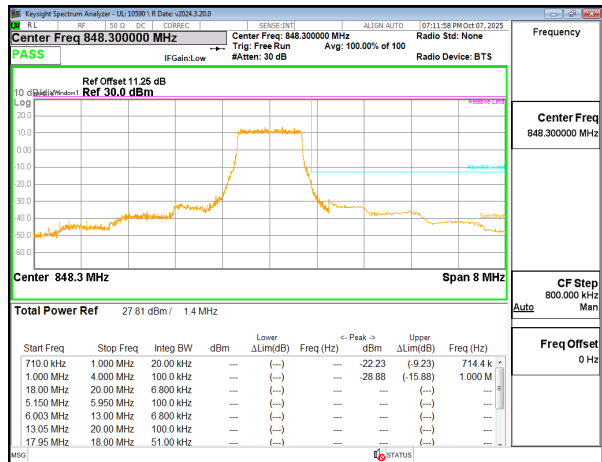
LTE B26 1.4MHz QPSK Low Channel RB1-0



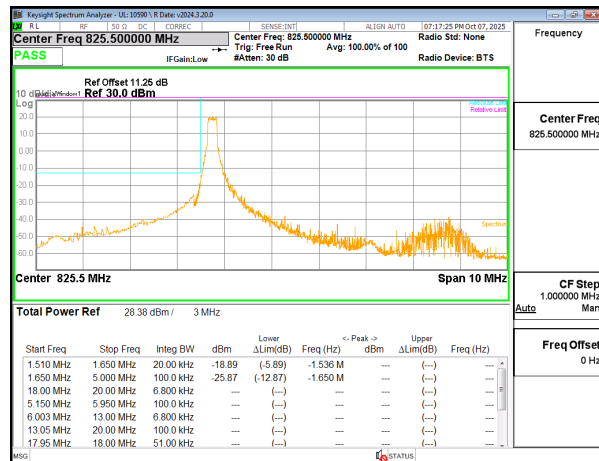
LTE B26 1.4MHz QPSK High Channel RB1-5



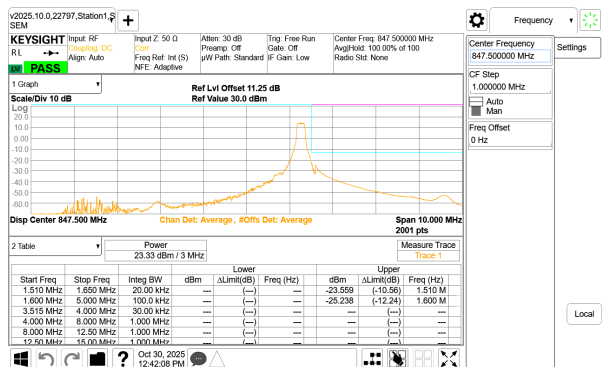
LTE B26 1.4MHz QPSK Low Channel RB6-0



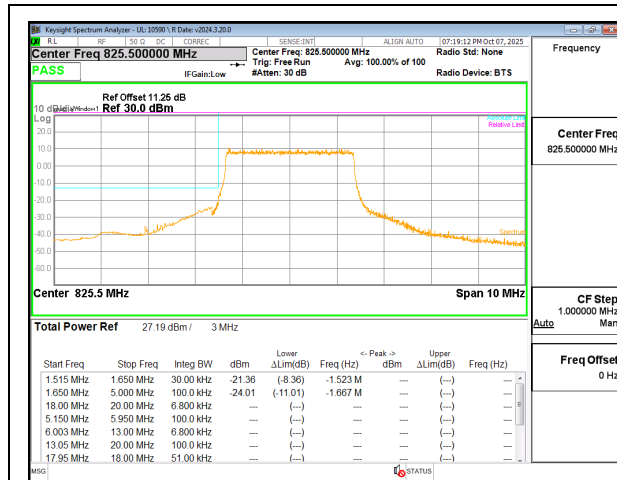
LTE B26 1.4MHz QPSK High Channel RB6-0



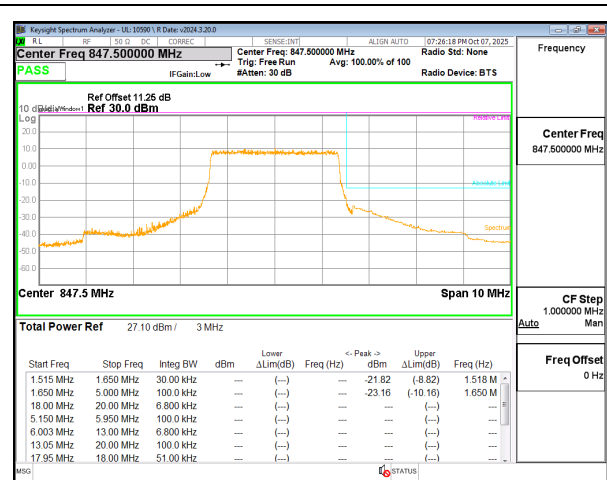
LTE B26 3MHz QPSK Low Channel RB1-0



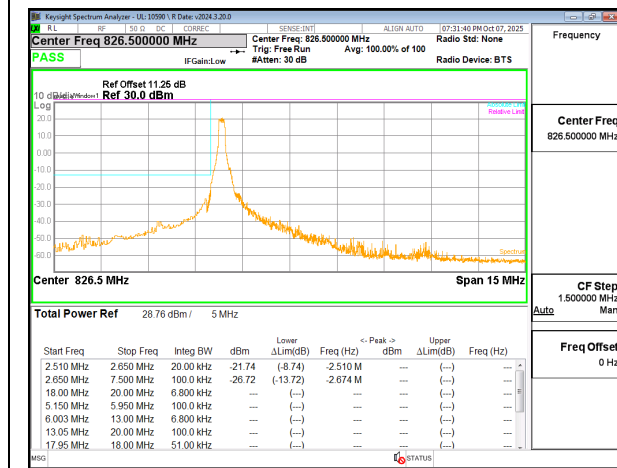
LTE B26 3MHz QPSK High Channel RB1-14



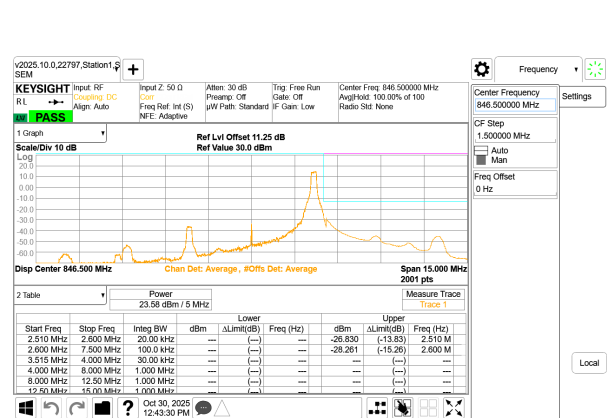
LTE B26 3MHz QPSK Low Channel RB15-0



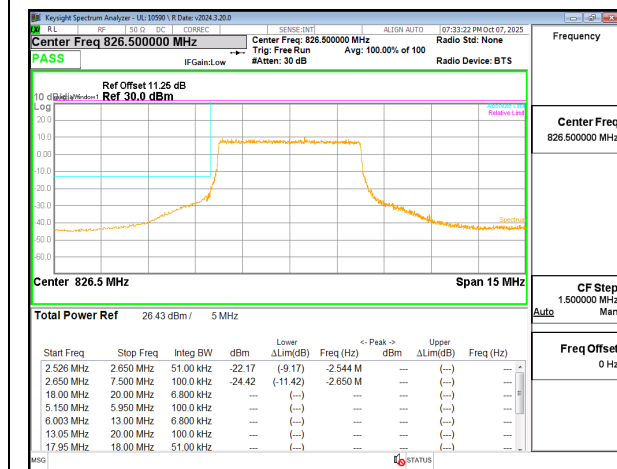
LTE B26 3MHz QPSK High Channel RB15-0



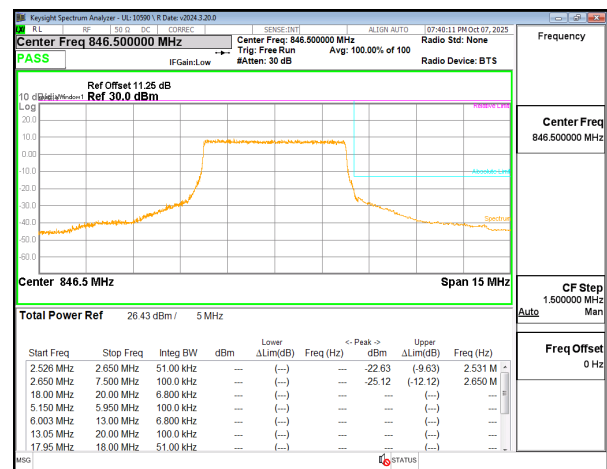
LTE B26 5MHz QPSK Low Channel RB1-0



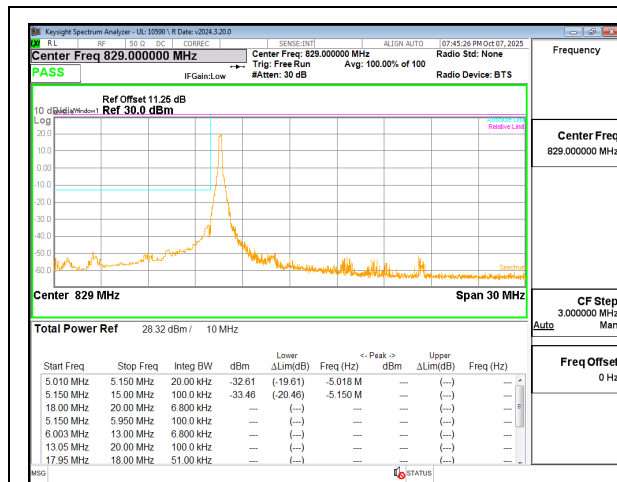
LTE B26 5MHz QPSK High Channel RB1-24



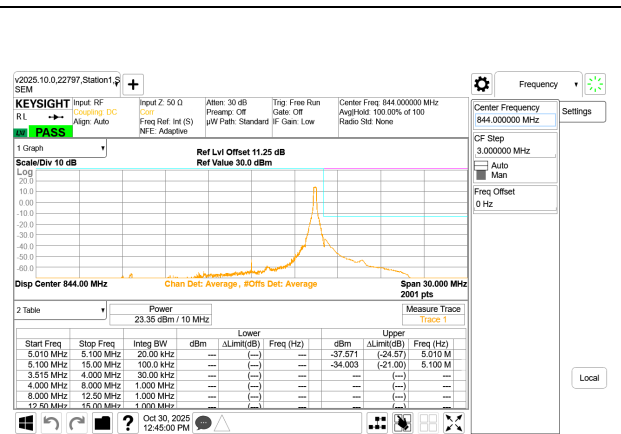
LTE B26 5MHz QPSK Low Channel RB25-0



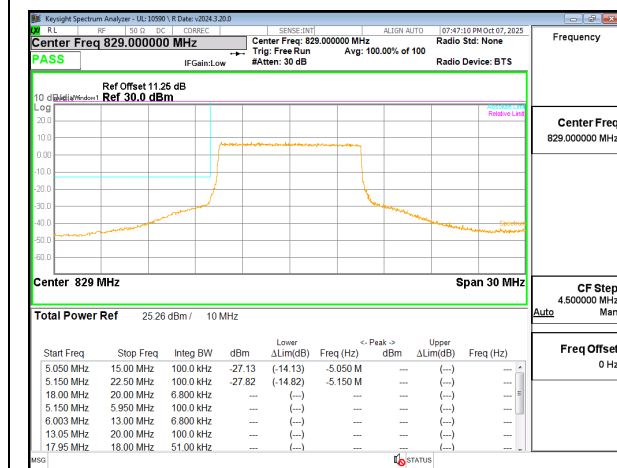
LTE B26 5MHz QPSK High Channel RB25-0



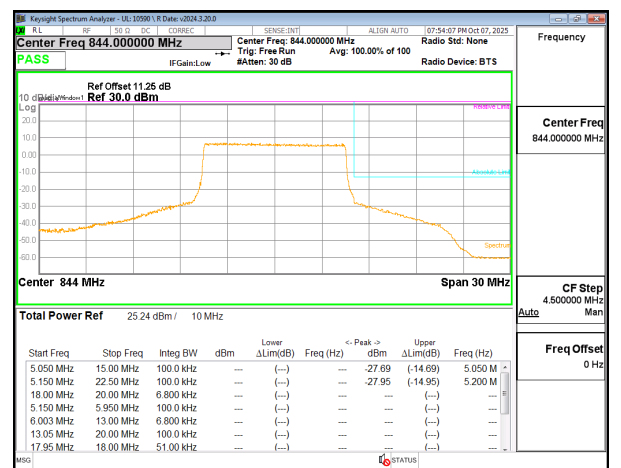
LTE B26 10MHz QPSK Low Channel RB1-0



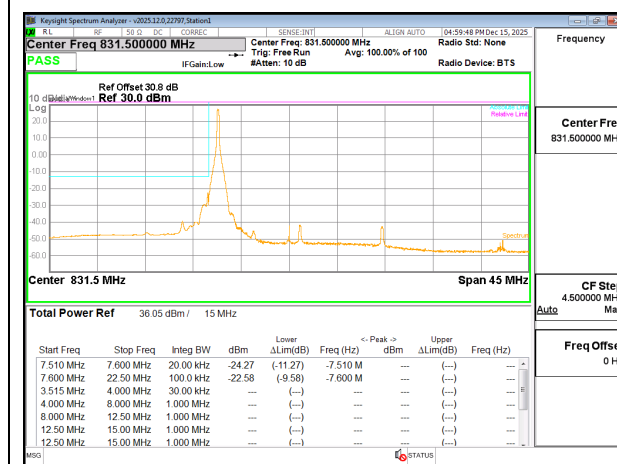
LTE B26 10MHz QPSK High Channel RB1-49



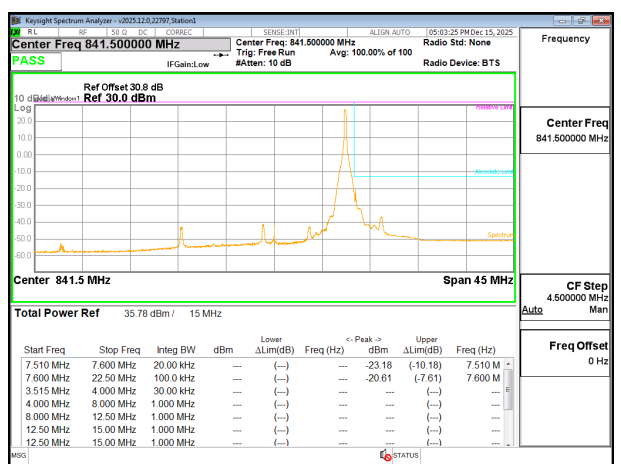
LTE B26 10MHz QPSK Low Channel RB50-0



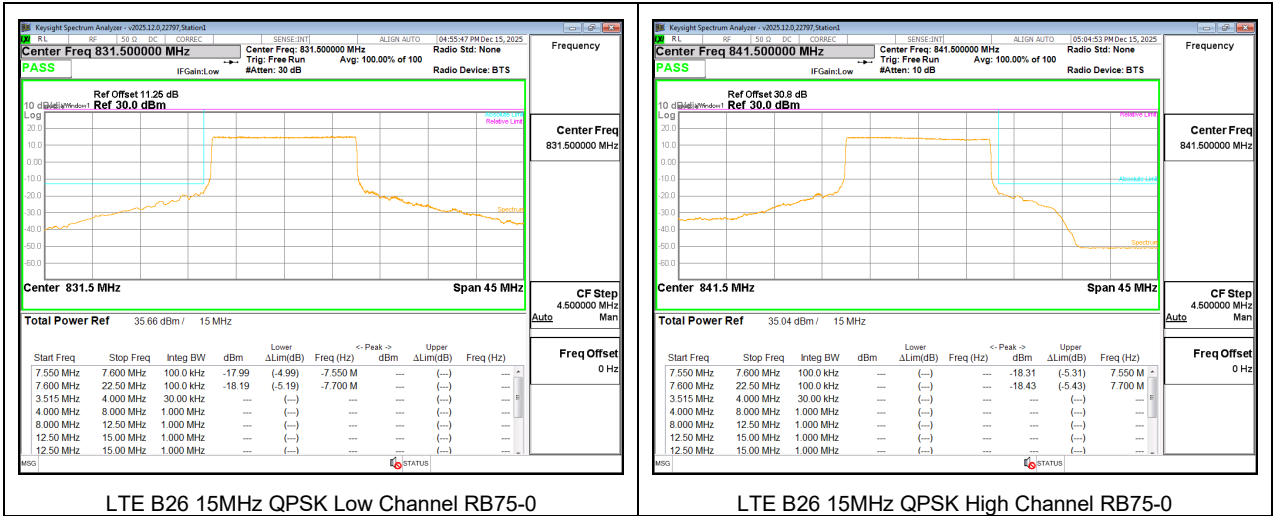
LTE B26 10MHz QPSK High Channel RB50-0



LTE B26 15MHz QPSK Low Channel RB1-0



LTE B26 15MHz QPSK High Channel RB1-74



LTE B26 15MHz QPSK Low Channel RB75-0

LTE B26 15MHz QPSK High Channel RB75-0

8.2.4. 5G NR 5&n26 (FCC PART 22)

