

TEST REPORT

Report Number: R15980274-E13aV1

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 24E, PART 25
ISED RSS-GEN ISSUE 5 + A1 + A2, RSS-133 ISSUE 7

Date Of Issue:
2025-12-12

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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 Resolved. Added 16QAM EIRP data.	Noah Bennett

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....5

2. SUMMARY OF TEST RESULTS6

3. TEST METHODOLOGY8

4. FACILITIES AND ACCREDITATION8

5. DECISION RULES AND MEASUREMENT UNCERTAINTY.....9

5.1. METROLOGICAL TRACEABILITY9

5.2. DECISION RULES9

5.3. MEASUREMENT UNCERTAINTY9

5.4. SAMPLE CALCULATION9

6. EQUIPMENT UNDER TEST10

6.1. DESCRIPTION OF EUT10

6.2. MAXIMUM OUTPUT POWER10

6.3. WORST-CASE CONFIGURATION AND MODE12

6.4. DESCRIPTION OF TEST SETUP13

7. TEST AND MEASUREMENT EQUIPMENT14

8. CONDUCTED TEST RESULTS18

8.1. OCCUPIED BANDWIDTH18

8.1.1. LTE BAND 25.....20

8.1.2. 5G NR n2522

8.2. EMISSION MASK AND ADJACENT CHANNEL POWER.....24

8.2.1. LTE Band 225

8.2.2. LTE BAND 25.....28

8.2.3. 5G NR n232

8.2.4. 5G NR n2534

8.3. OUT OF BAND EMISSIONS40

8.3.1. LTE BAND 25.....41

8.3.2. 5G NR n2542

8.4. FREQUENCY STABILITY43

8.4.1. LTE BAND 25 (QPSK 20MHz BANDWIDTH)44

8.4.2. 5G NR n25 (BPSK 40MHz BANDWIDTH)44

8.5. PEAK-TO-AVERAGE POWER RATIO45

8.5.1.	LTE BAND 25.....	46
8.5.2.	5G NR n25	46
9.	RADIATED TEST RESULTS	47
9.1.	EFFECTIVE RADIATED POWER ERP/EIRP	48
9.1.1.	LTE BAND 25.....	49
9.1.2.	5G NR n25	51
9.2.	FIELD STRENGTH OF SPURIOUS RADIATION	53
9.2.1.	LTE BAND 25.....	56
9.2.2.	5G NR n25	58
10.	SETUP PHOTOS.....	60

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 2025-12-01

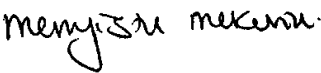
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR PART 2, PART 24E, PART 25	Complies
ISED RSS-GEN ISSUE 5 + A1 + A2, RSS-133 ISSUE 7	

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
UL LLC By: Prepared By:



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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	Requirement Clause Number (FCC)	Requirement Clause Number (ISED)	Result	Remarks
Equivalent Isotropic Radiated Power	24.232 (c)	RSS133§5.5	Complies	None.
Occupied Bandwidth	2.1049	RSS-GEN§6.7, RSS133	Complies	None.
Band Edge and Emission Mask	2.1051, 24.238 (a)	RSS133§5.6	Complies	None.
Out of Band Emissions	2.1051, 24.238 (a)	RSS133§5.6	Complies	None.
Frequency Stability	2.1055, 24.235	RSS133§5.4	Complies	None.
Peak-to-Average Ratio	24.232 (d)	RSS133§5.5	Complies	None.
Field Strength of Spurious Radiation	2.1053, 24.238 (a)	RSS133§5.6	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	No
Broadband PCS	1930 – 1995	1850 – 1915	24E	WCDMA 2 2/n2 25/n25	Yes	Yes
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 24E, 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-133 Issue 7

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. 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.	S0067	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 B25 and 5G NR n25 Bands and their antenna configurations:

LTE & 5G NR Bands	Config 0	Config 1
LTE B25 & 5G NR n25	ANT A	ANT F

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 EIRP output powers as follows:

LTE BAND 25, CONFIG 0

Part 24 / RSS 133								
EIRP Limit (W)		2.00						
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
20.0	QPSK	1860.0	1900.0	21.72	0.149	17.954	17954	18M0G7W
	16QAM			22.22	0.167	17.930	17930	17M9D7W

5G NR n25, CONFIG 0

Part 24/ RSS 133								
EIRP Limit (W)		2.00						
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
40.0	BPSK	1870.0	1890.0	21.64	0.146	38.636	38636	38M6G7W
	16QAM			21.25	0.133	38.720	38720	38M7D7W

LTE BAND 25, CONFIG 1

Part 24 / RSS 133								
EIRP Limit (W)		2.00						
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
20.0	QPSK	1860.0	1905.0	22.50	0.178	17.954	17954	18M0G7W
	16QAM			22.43	0.175	17.930	17930	17M9D7W

5G NR n25, CONFIG 1

Part 24/ RSS 133								
EIRP Limit (W)		2.00						
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	EIRP Average (dBm)	EIRP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
40.0	BPSK	1870.0	1895.0	21.79	0.151	38.636	38636	38M6G7W
	16QAM			19.68	0.093	38.720	38720	38M7D7W

6.3. 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.

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

LTE & 5G NR Bands	Worst-Case Antenna Port	Worst-Case Modulation
LTE B25 & 5G NR n25	ANT A	LTE B25 (QPSK) 5G NR n25 (BPSK)

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:

GSM and WCDMA Bands	Config 0 Orientation	Config 1 Orientation
Low Band ($F_c < 1\text{GHz}$)	-	-
Mid Band ($1\text{GHz} < F_c < 3\text{GHz}$)	Z	X
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.

6.4. 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 GSM/WCDMA 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: RSS133

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.

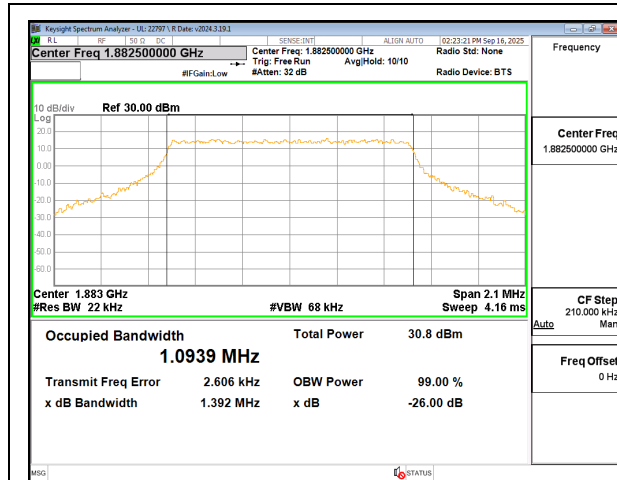
LTE BAND 25

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 25	1.4MHz, QPSK	6/0	1882.5	1.094	1.39
	1.4MHz, 16QAM			1.096	1.38
	3MHz, QPSK	15/0		2.705	3.08
	3MHz, 16QAM			2.704	3.05
	5MHz, QPSK	25/0		4.501	5.10
	5MHz, 16QAM			4.501	5.16
	10MHz, QPSK	50/0		9.004	10.03
	10MHz, 16QAM			8.986	10.01
	15MHz, QPSK	75/0		13.49	14.82
	15MHz, 16QAM			13.47	14.87
	20MHz, QPSK	100/0		17.95	19.74
	20MHz, 16QAM			17.93	19.64
	20MHz, QPSK	1/0		0.274	0.46

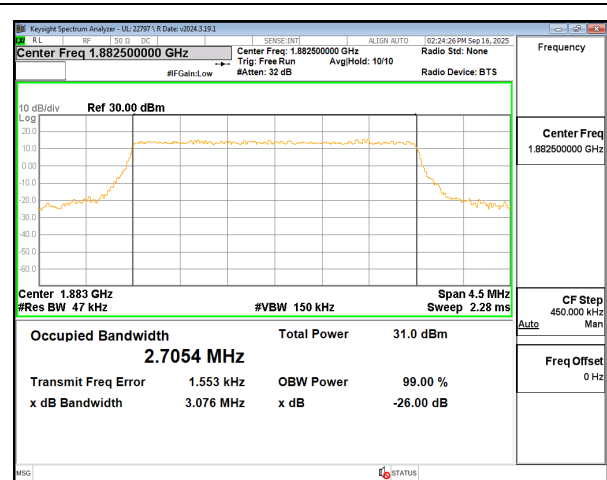
5G NR n25

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
5G NR n25	5MHz, BPSK	25/0	1882.5	4.519	5.22
	5MHz, 16QAM			4.549	5.21
	10MHz, BPSK	50/0		8.968	9.73
	10MHz, 16QAM			9.006	9.84
	15MHz, BPSK	75/0		13.52	14.55
	15MHz, 16QAM			13.54	14.56
	20MHz, BPSK	100/0		17.96	19.19
	20MHz, 16QAM			17.94	19.19
	25MHz, BPSK	128/0		23.01	24.42
	25MHz, 16QAM			22.99	24.44
	30MHz, BPSK	160/0		28.71	30.36
	30MHz, 16QAM			28.67	30.20
	35MHz, BPSK	180/0		32.30	34.02
	35MHz, 16QAM			32.22	33.97
	40MHz, BPSK	216/0		38.64	40.75
	40MHz, 16QAM			38.72	40.83
	40MHz, BPSK	1/0		0.240	0.46

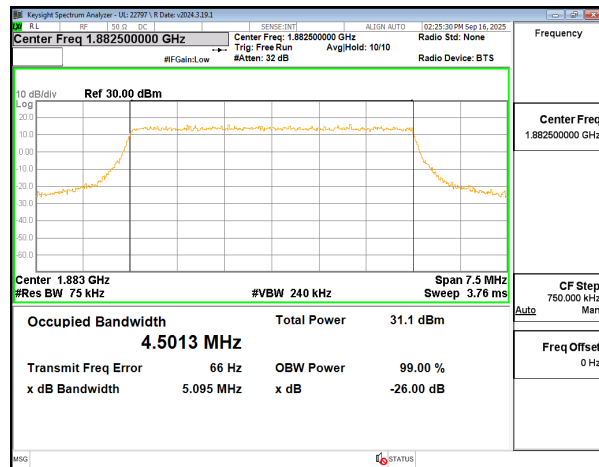
8.1.1. LTE BAND 25



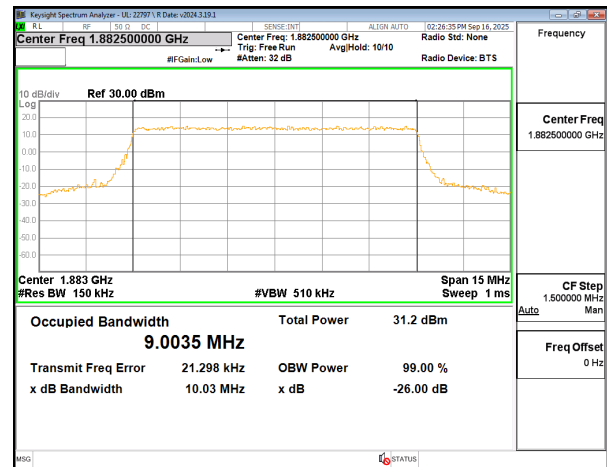
LTE B25 1.4MHz QPSK Middle Channel RB6-0



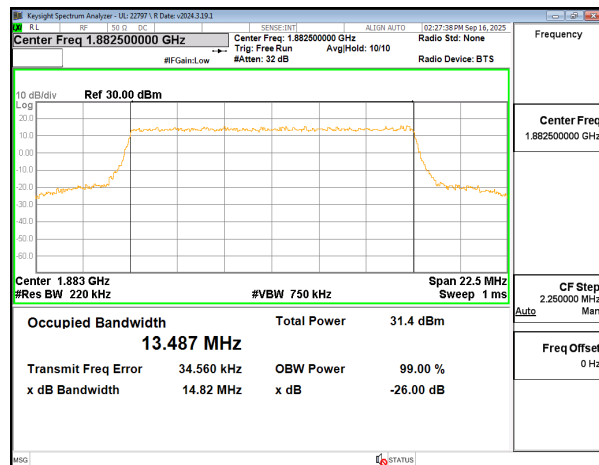
LTE B25 3MHz QPSK Middle Channel RB15-0



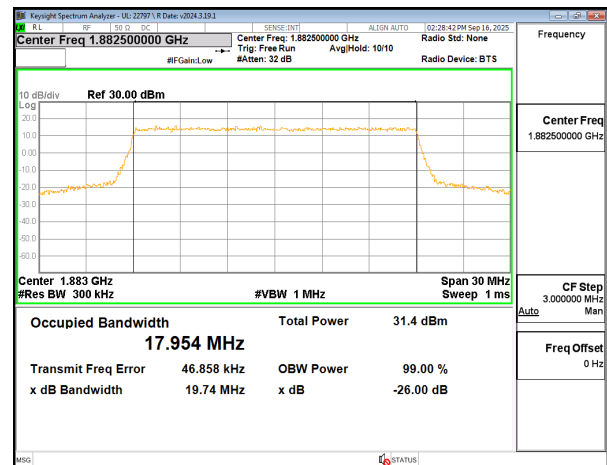
LTE B25 5MHz QPSK Middle Channel RB25-0



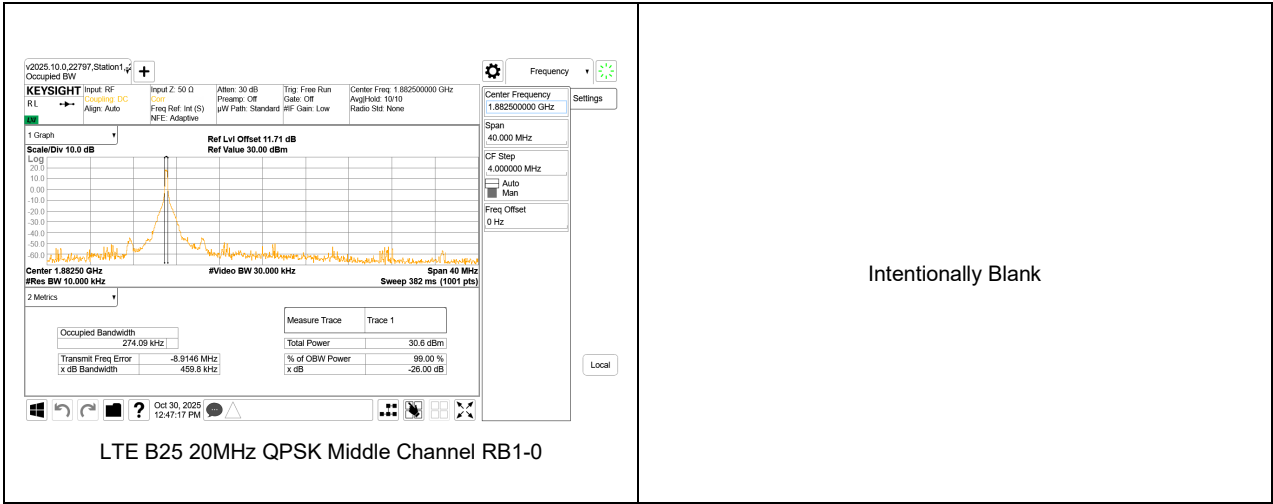
LTE B25 10MHz QPSK Middle Channel RB50-0



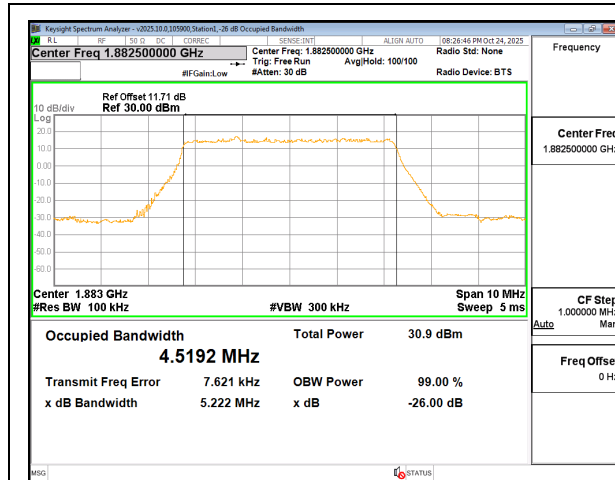
LTE B25 15MHz QPSK Middle Channel RB75-0



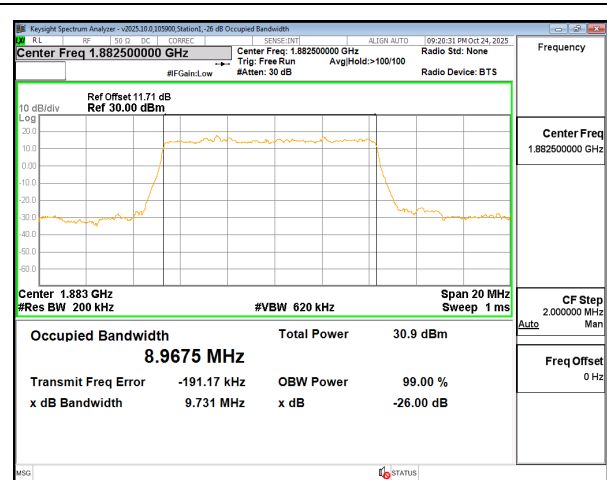
LTE B25 20MHz QPSK Middle Channel RB100-0



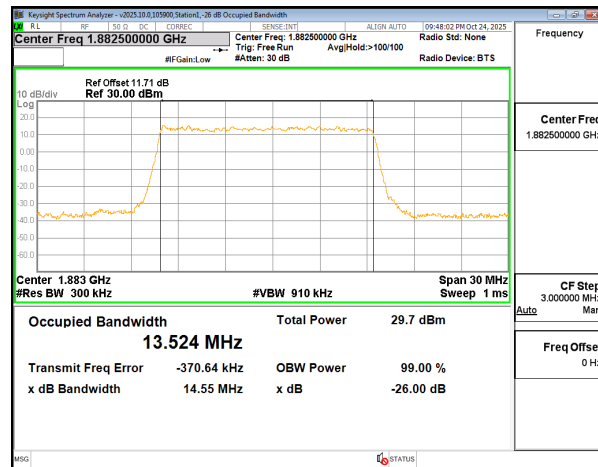
8.1.2. 5G NR n25



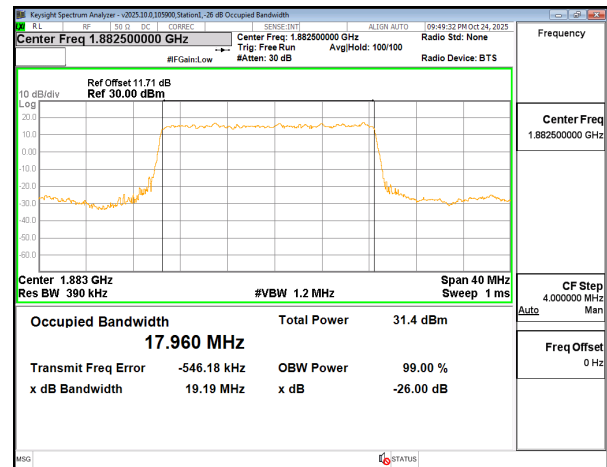
5G NR n25 5MHz BPSK Middle Channel RB25-0



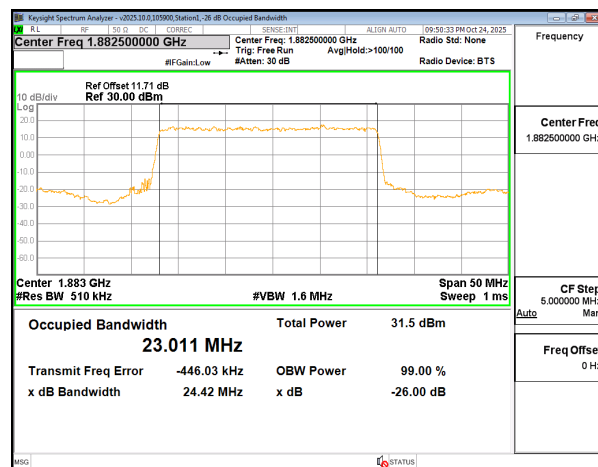
5G NR n25 10MHz BPSK Middle Channel RB50-0



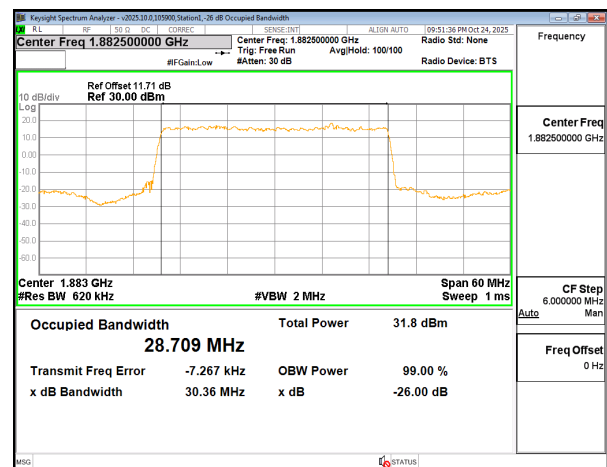
5G NR n25 15MHz BPSK Middle Channel RB75-0



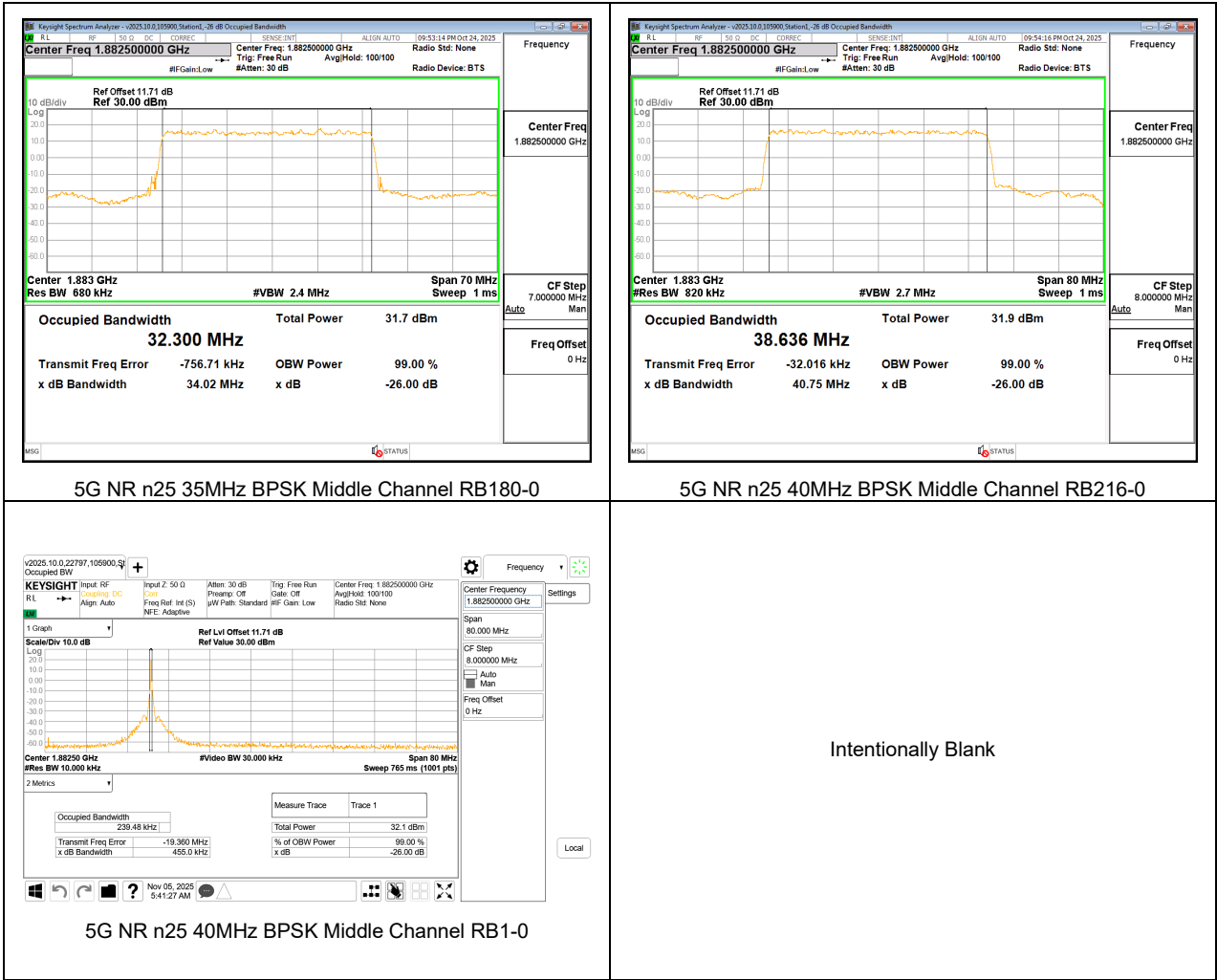
5G NR n25 20MHz BPSK Middle Channel RB100-0



5G NR n25 25MHz BPSK Middle Channel RB128-0



5G NR n25 30MHz BPSK Middle Channel RB160-0



8.2. EMISSION MASK AND ADJACENT CHANNEL POWER

LIMITS

FCC: §24.238 (a)

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

ISED: RSS133§5.6

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the table 3.

Table 3: Unwanted emission limits for all equipment	
Offset frequency from the edge of the frequency block group (MHz)	Unwanted emission limit
≤ 1	-13 dBm/(1% of OBW)
> 1	-13 dBm/MHz

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.

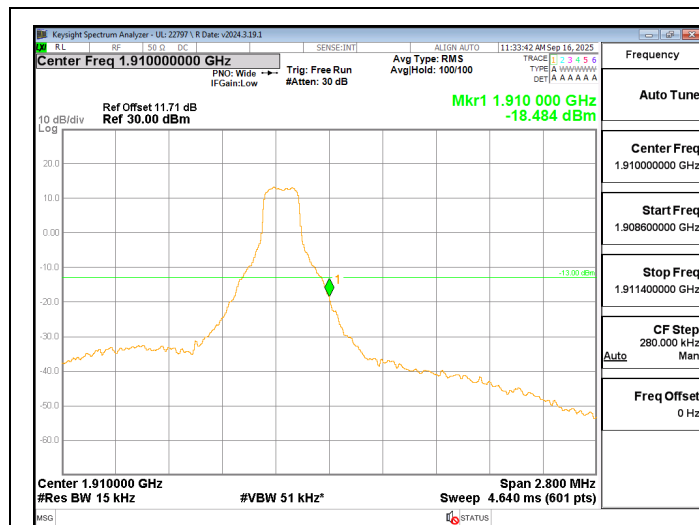
The transmitter output was connected to a base station simulator and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

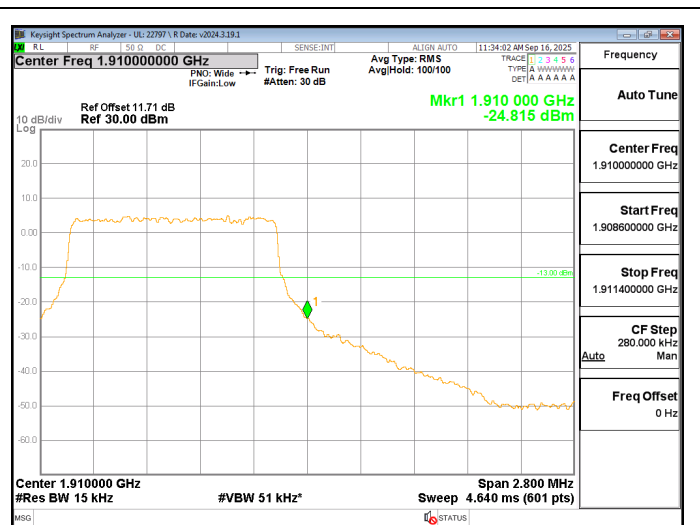
1. Set the spectrum analyzer span to include the block edge frequency.
2. Set a marker to point the corresponding band edge frequency in each test case.
3. Set display line at -13 dBm
4. Set resolution bandwidth to at least 1% of emission bandwidth.

RESULTS

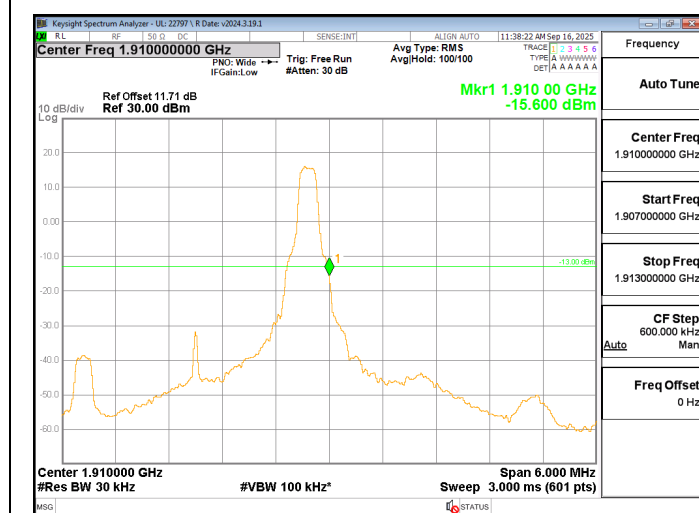
8.2.1. LTE Band 2



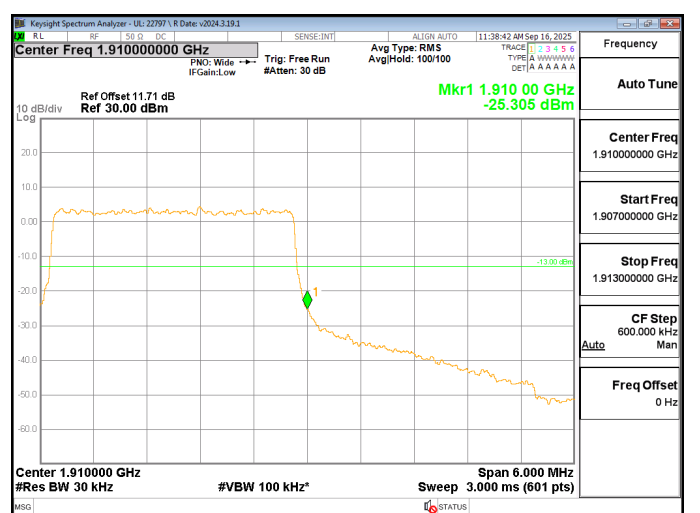
LTE B2 1.4MHz QPSK High Channel RB1-5



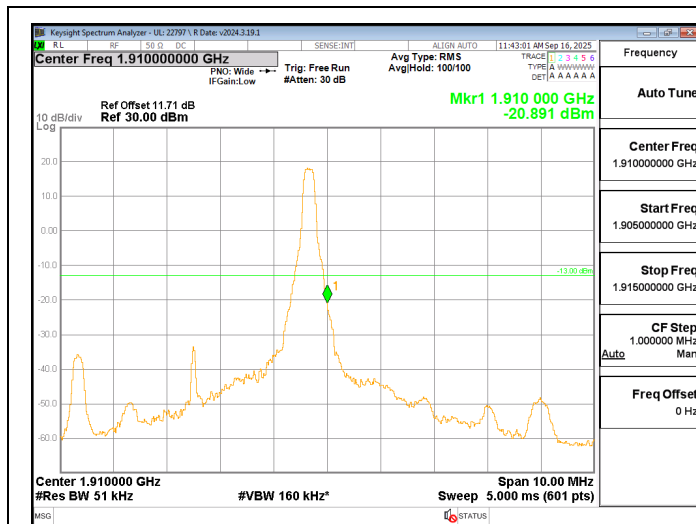
LTE B2 1.4MHz QPSK High Channel RB6-0



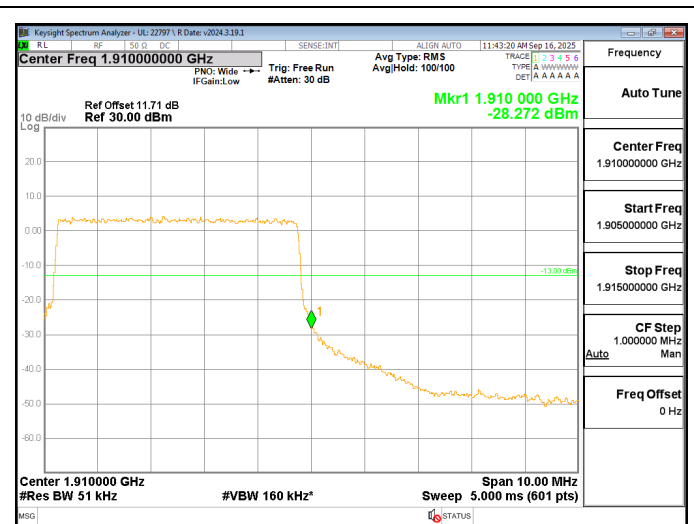
LTE B2 3MHz QPSK High Channel RB1-14



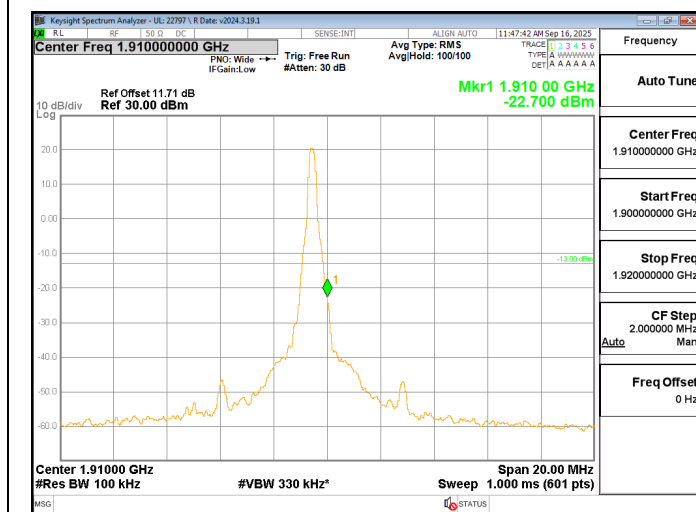
LTE B2 3MHz QPSK High Channel RB15-0



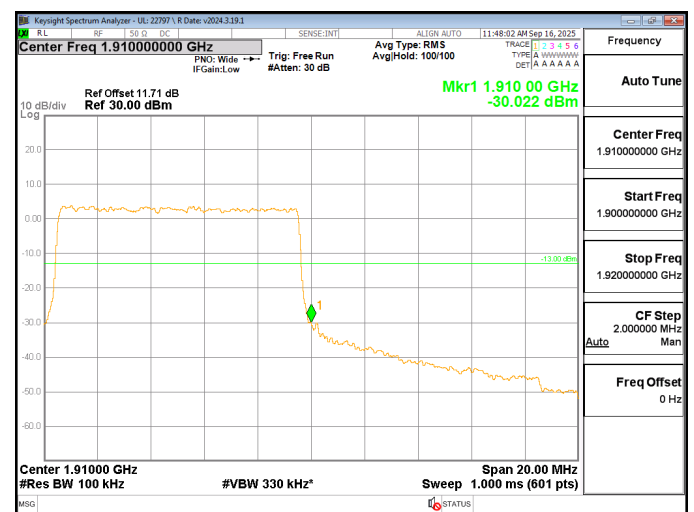
LTE B2 5MHz QPSK High Channel RB1-24



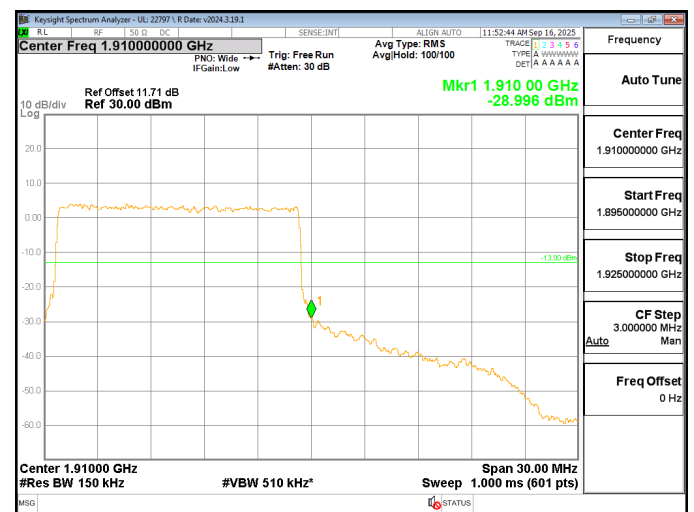
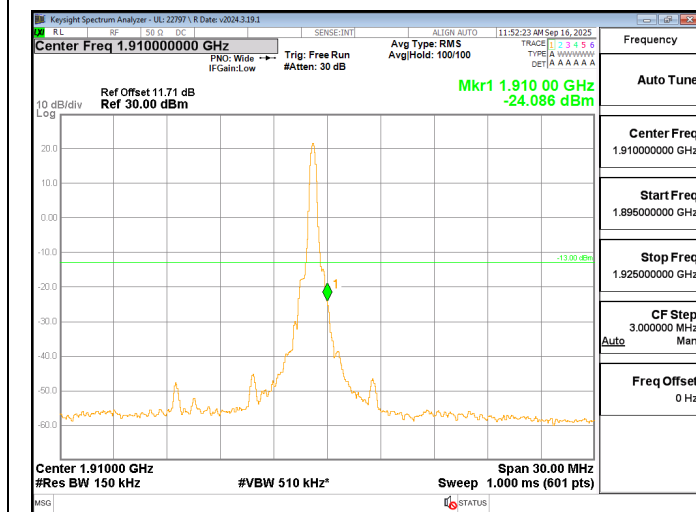
LTE B2 5MHz QPSK High Channel RB25-0

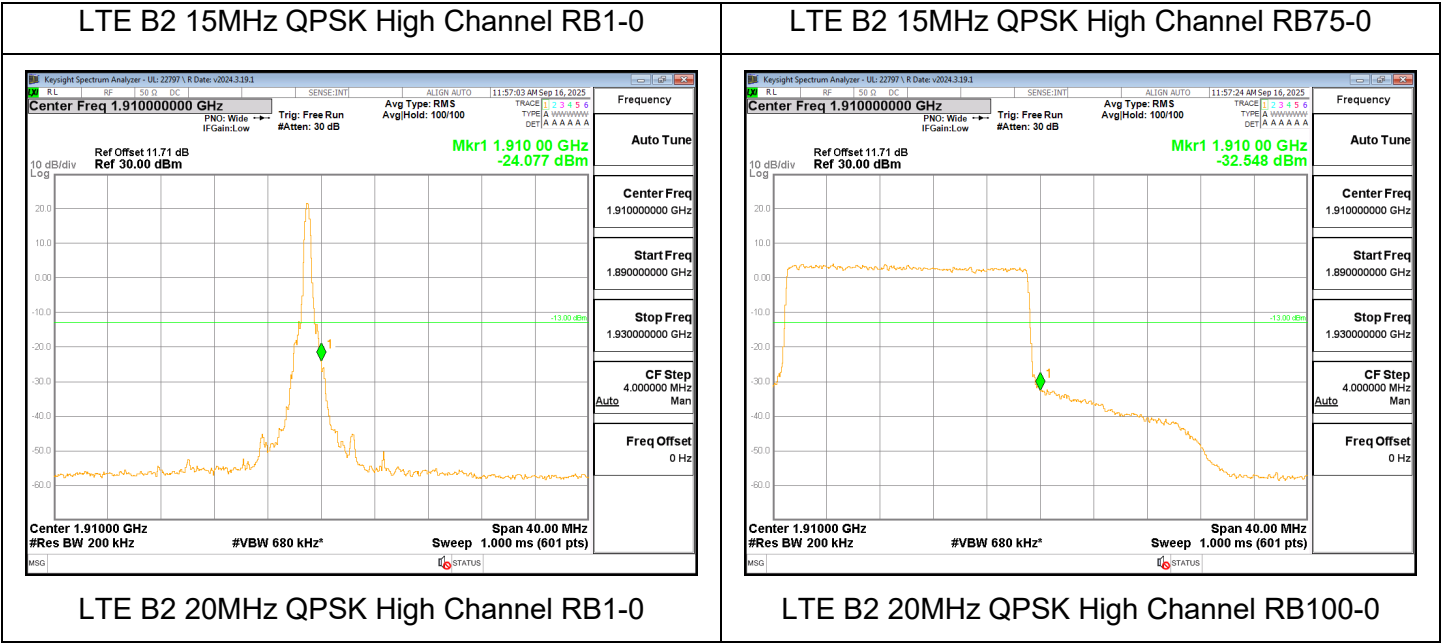


LTE B2 10MHz QPSK High Channel RB1-49



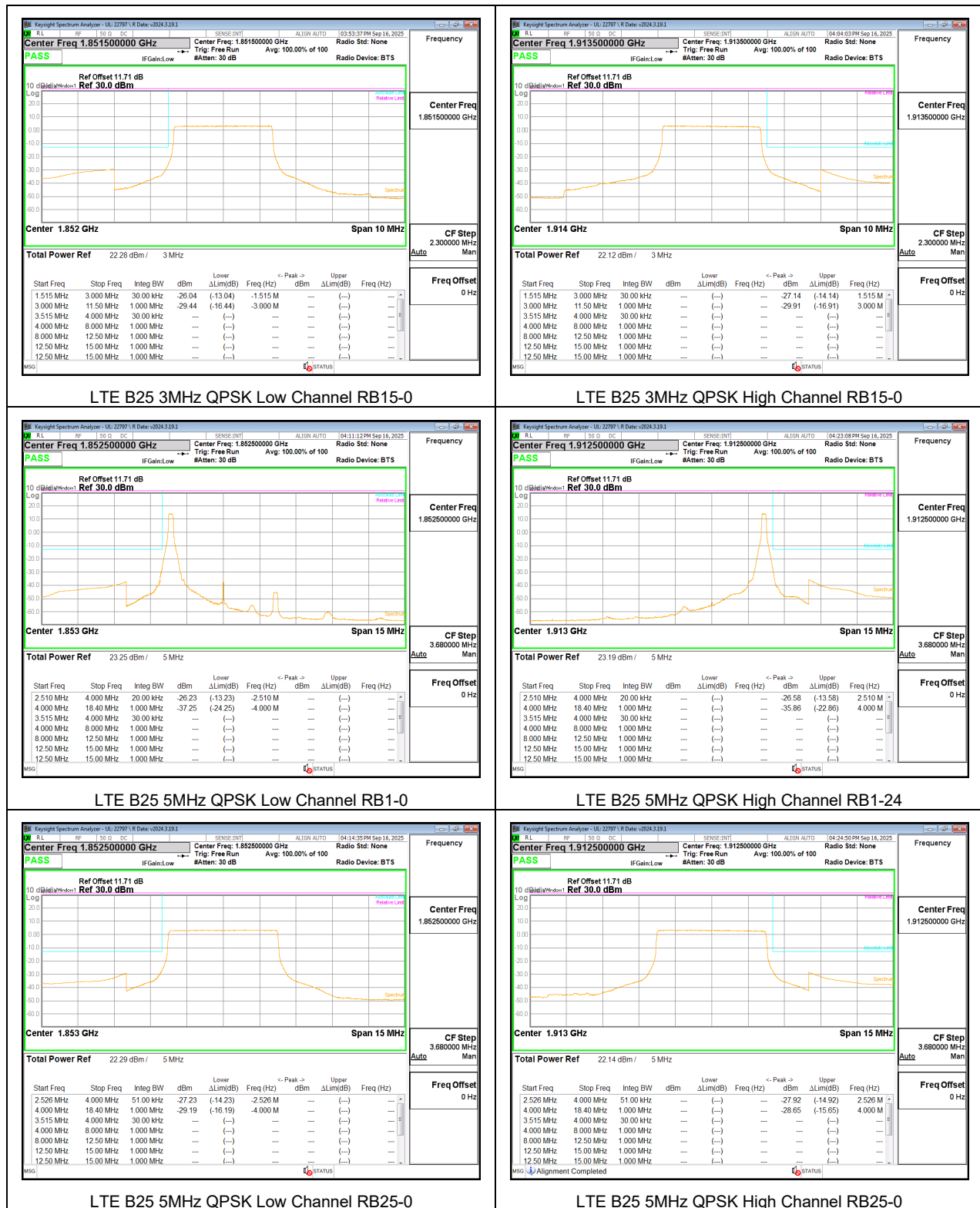
LTE B2 10MHz QPSK High Channel RB50-0



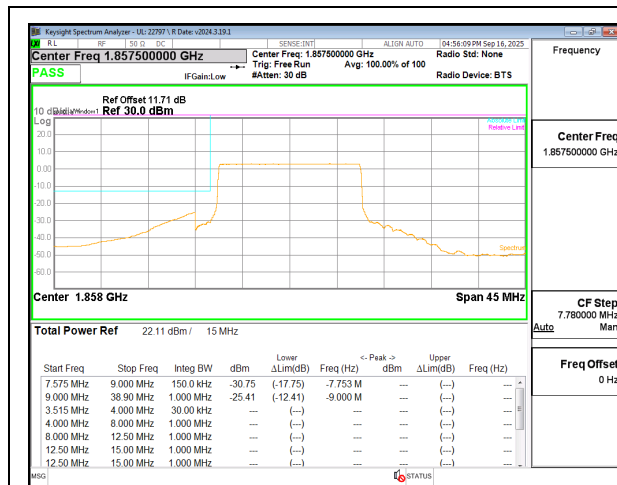


8.2.2. LTE BAND 25

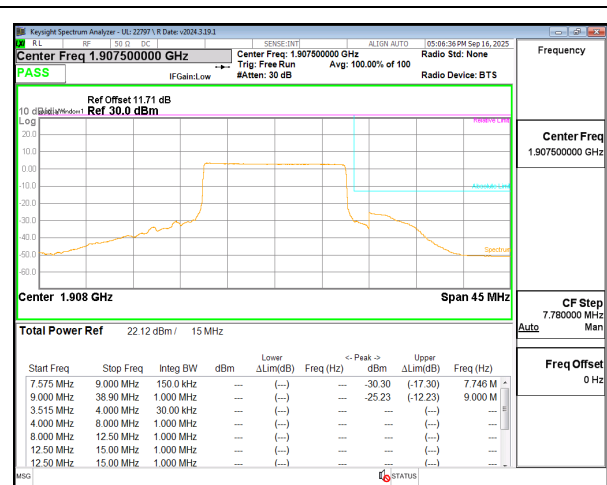




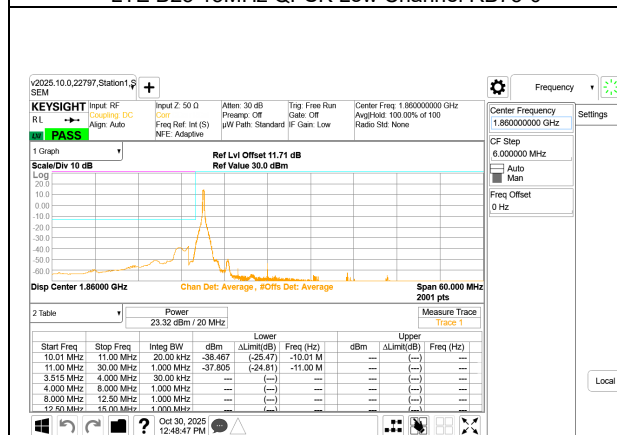




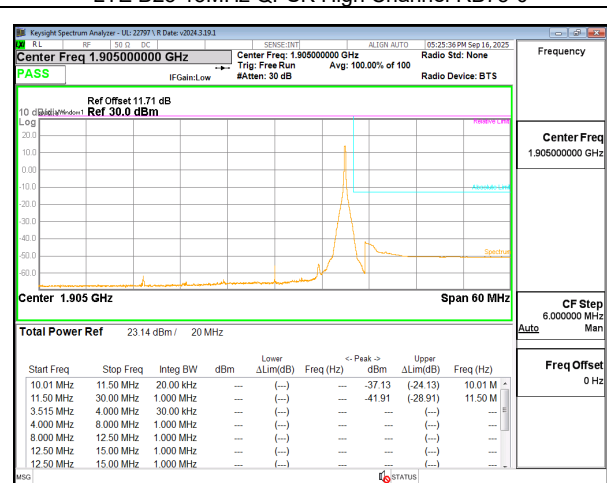
LTE B25 15MHz QPSK Low Channel RB75-0



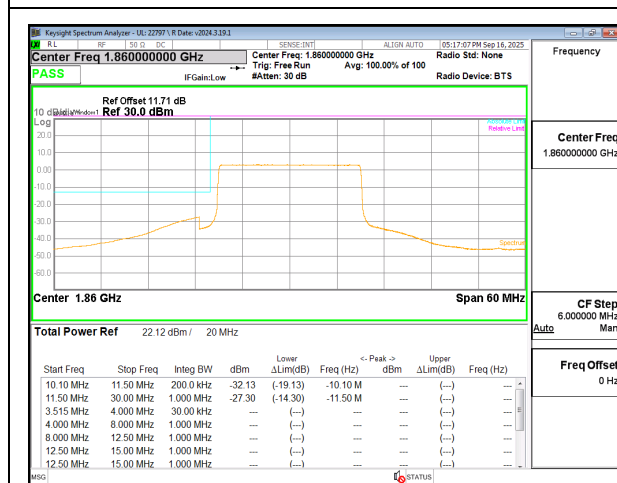
LTE B25 15MHz QPSK High Channel RB75-0



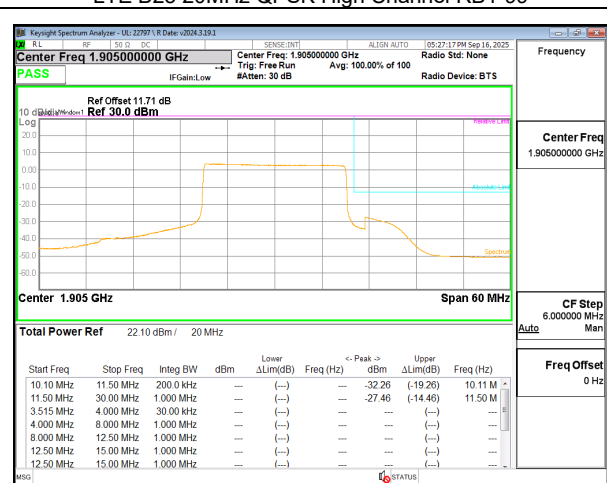
LTE B25 20MHz QPSK Low Channel RB1-0



LTE B25 20MHz QPSK High Channel RB1-99

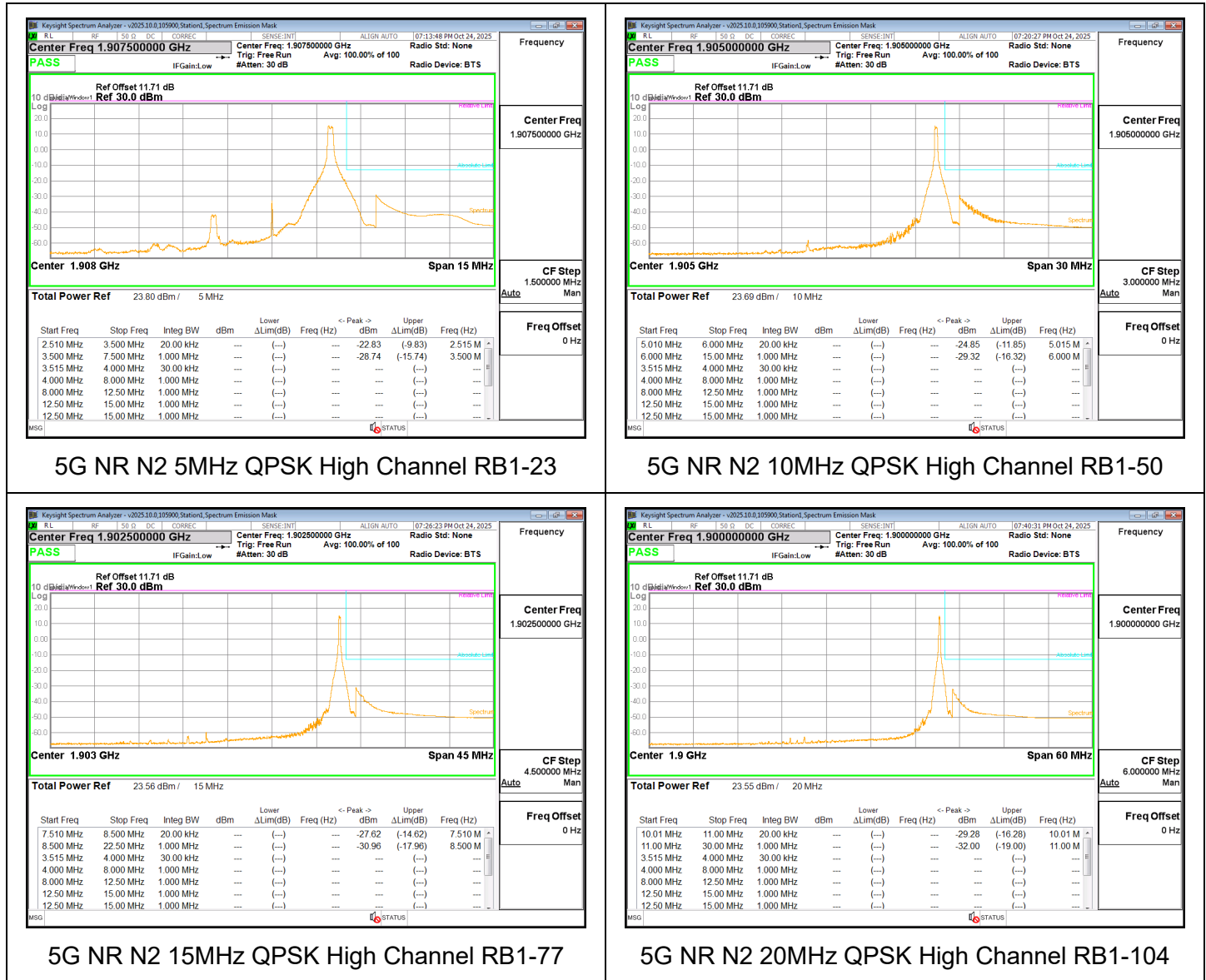


LTE B25 20MHz QPSK Low Channel RB100-0



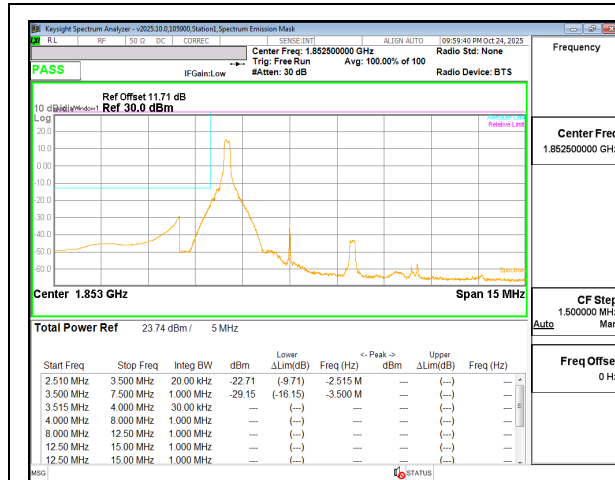
LTE B25 20MHz QPSK High Channel RB100-0

8.2.3. 5G NR n2

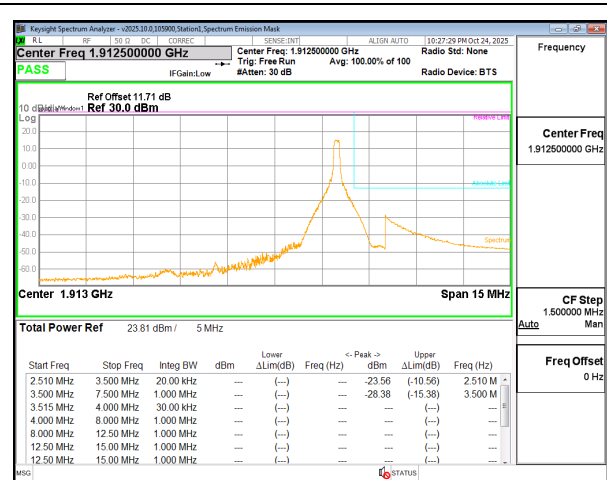




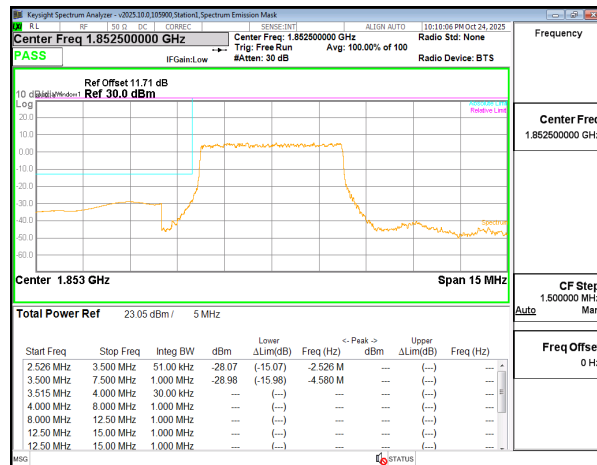
8.2.4. 5G NR n25



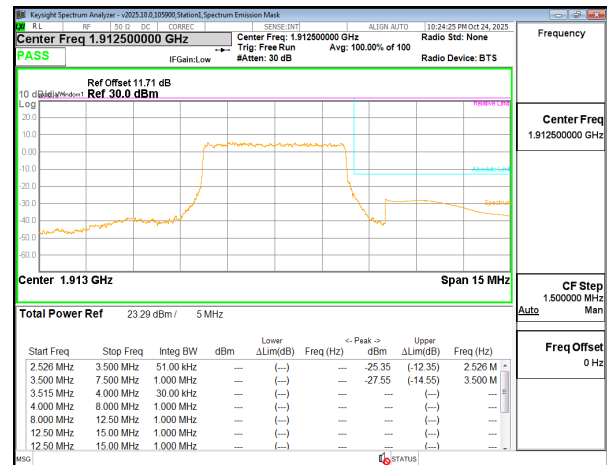
5G NR n25 5MHz BPSK Low Channel RB1-1



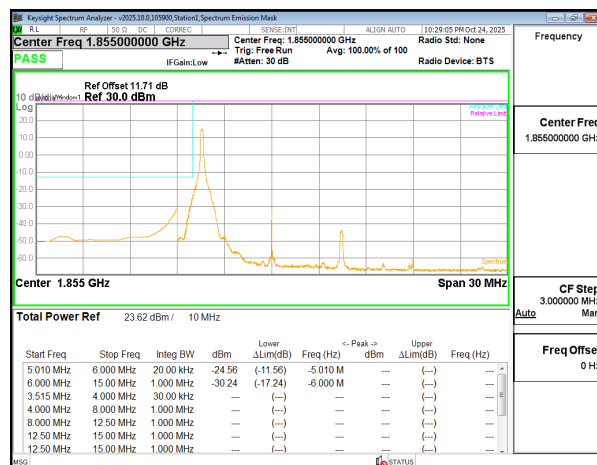
5G NR n25 5MHz BPSK High Channel RB1-23



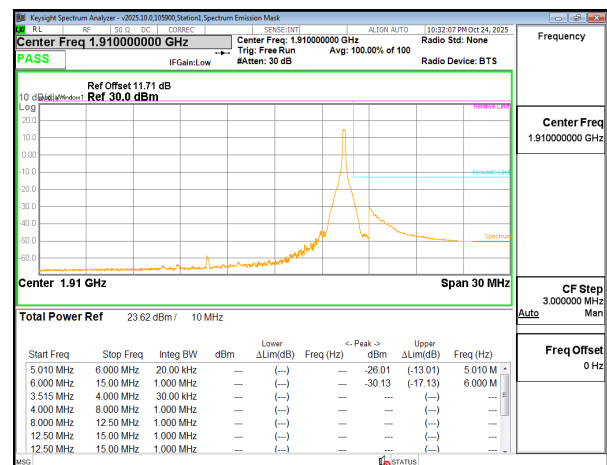
5G NR n25 5MHz BPSK Low Channel RB25-0



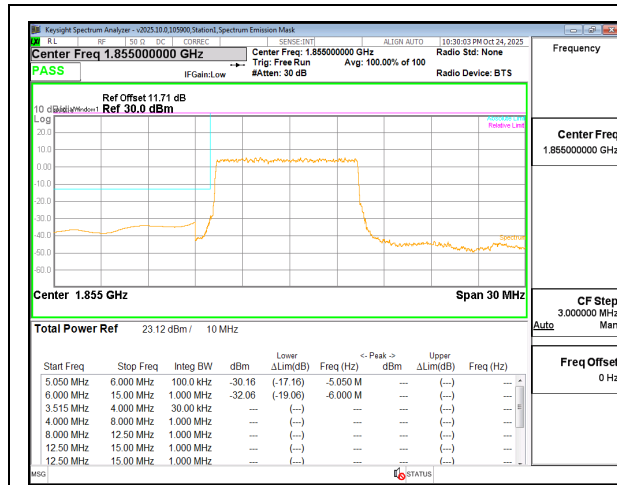
5G NR n25 5MHz BPSK High Channel RB25-0



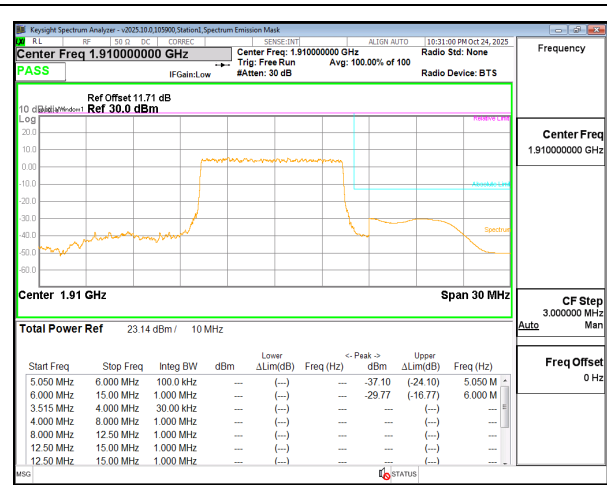
5G NR n25 10MHz BPSK Low Channel RB1-1



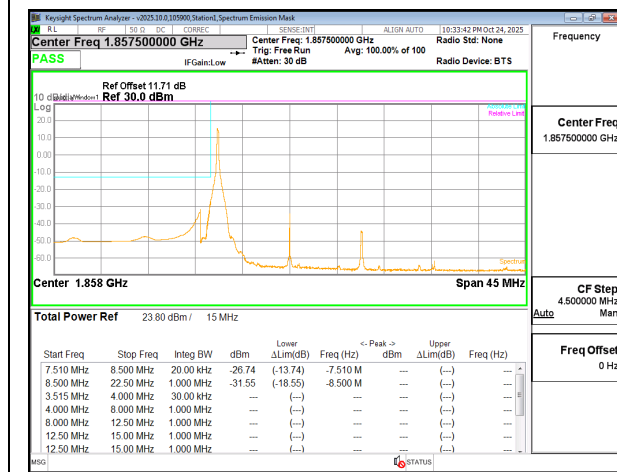
5G NR n25 10MHz BPSK High Channel RB1-50



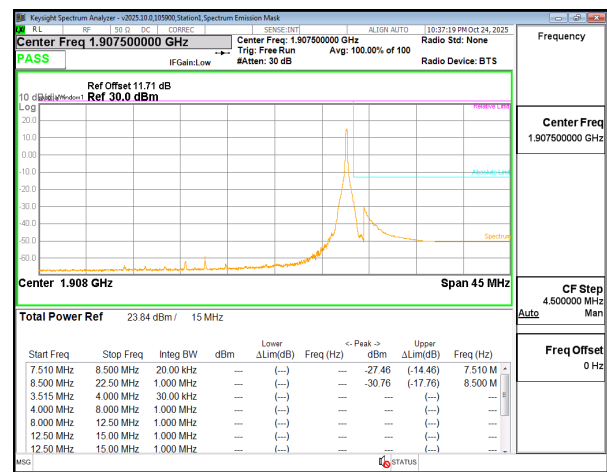
5G NR n25 10MHz BPSK Low Channel RB50-0



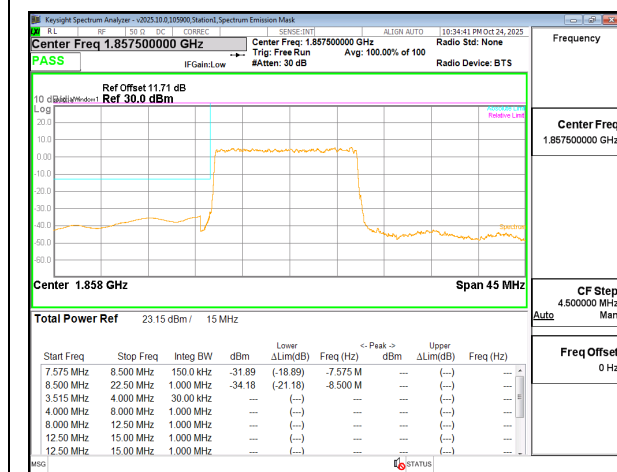
5G NR n25 10MHz BPSK High Channel RB50-0



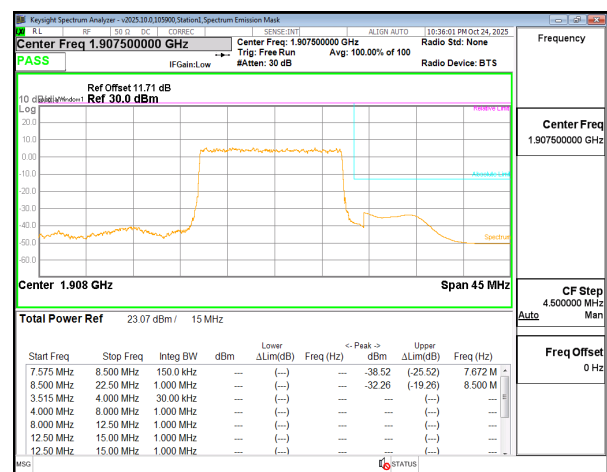
5G NR n25 15MHz BPSK Low Channel RB1-1



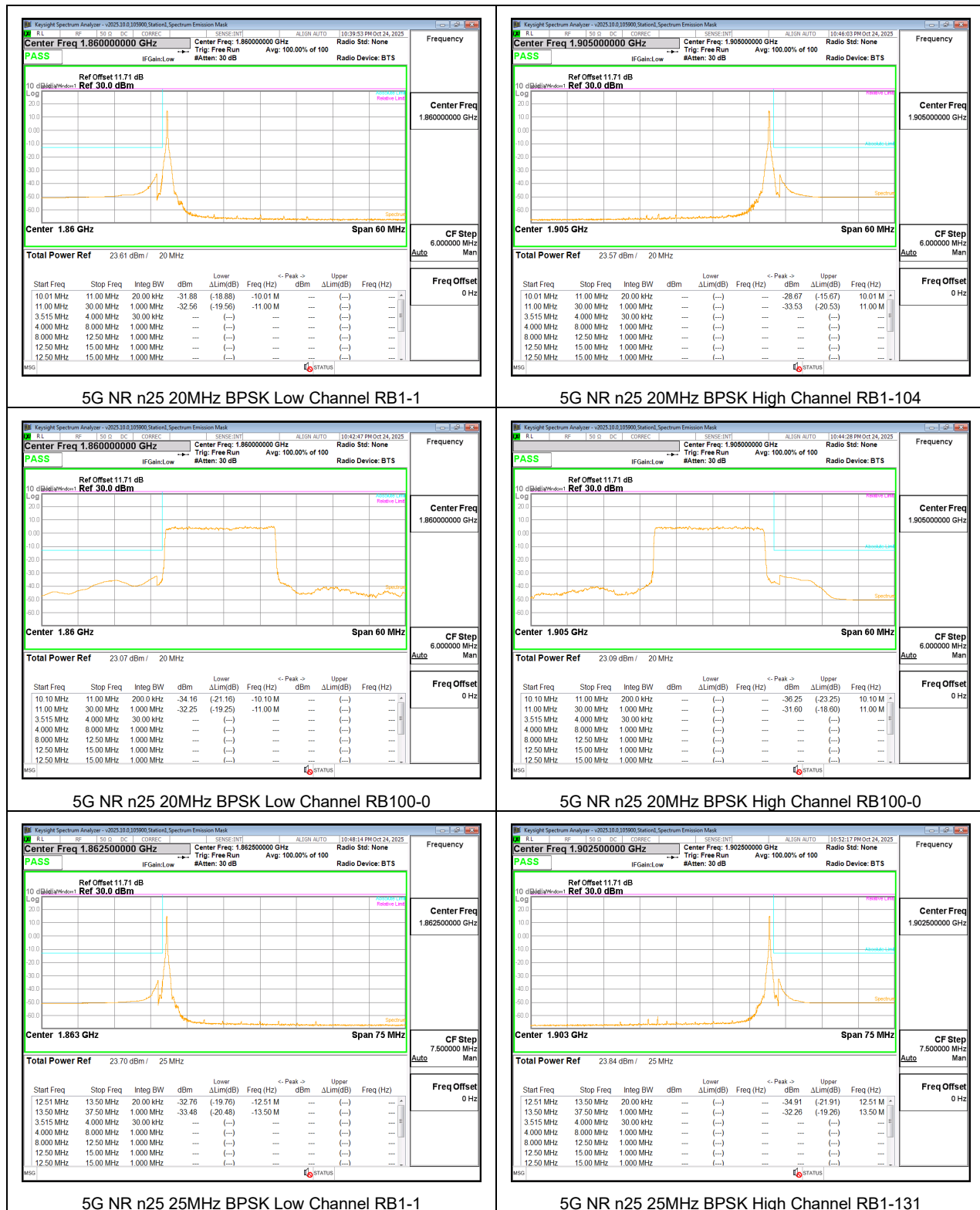
5G NR n25 15MHz BPSK High Channel RB1-77



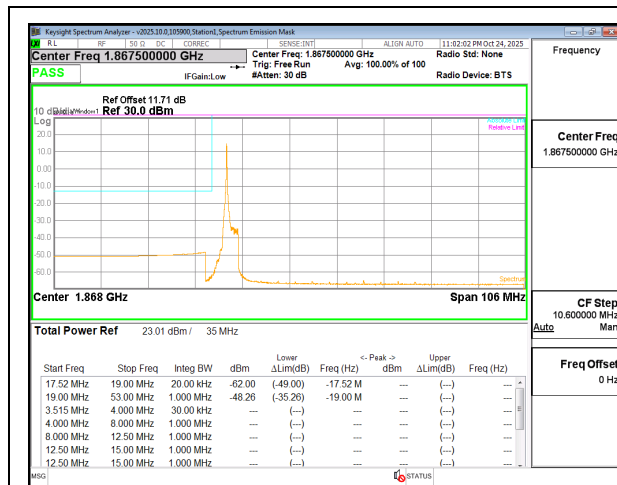
5G NR n25 15MHz BPSK Low Channel RB75-0



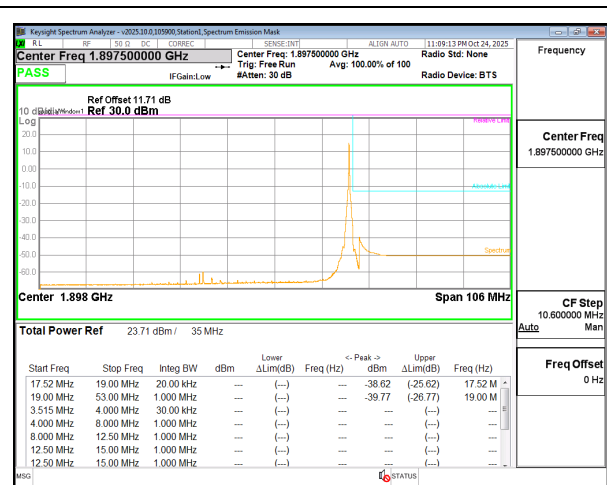
5G NR n25 15MHz BPSK High Channel RB75-0



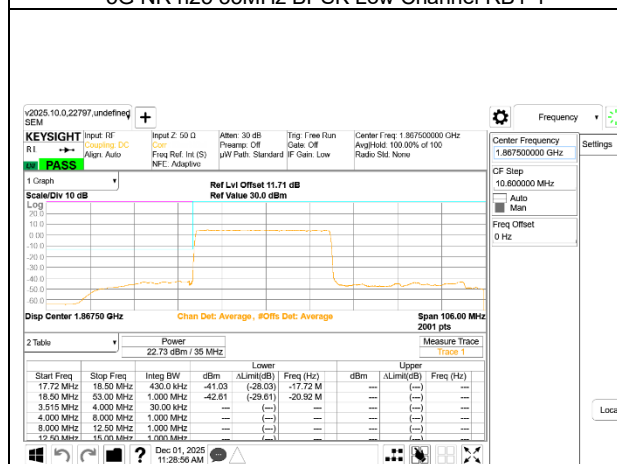




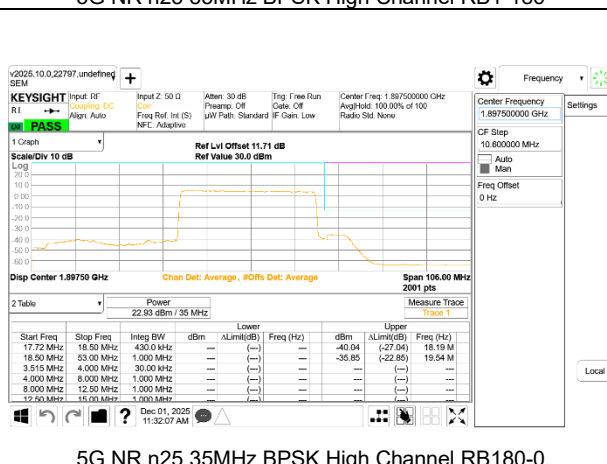
5G NR n25 35MHz BPSK Low Channel RB1-1



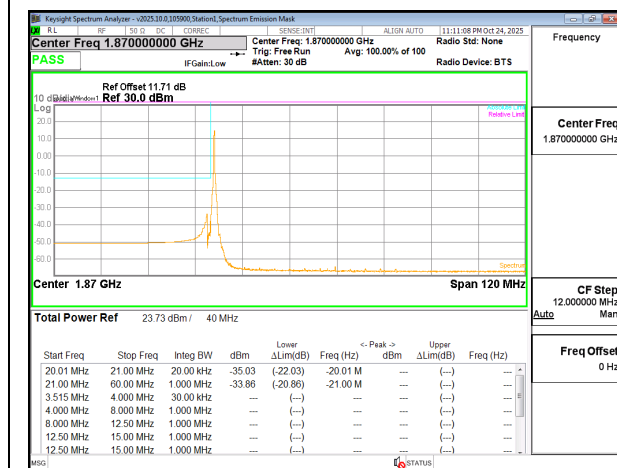
5G NR n25 35MHz BPSK High Channel RB1-186



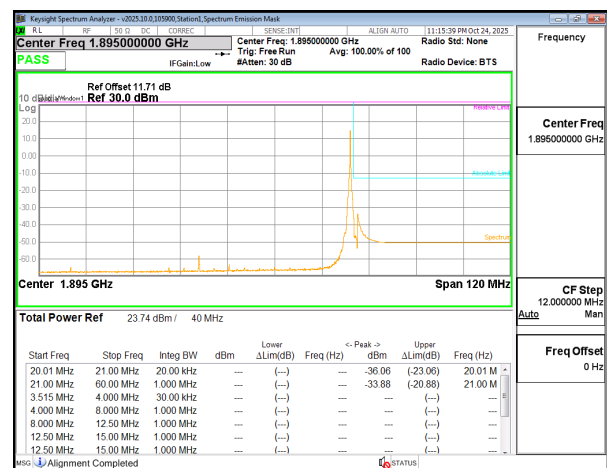
5G NR n25 35MHz BPSK Low Channel RB180-0



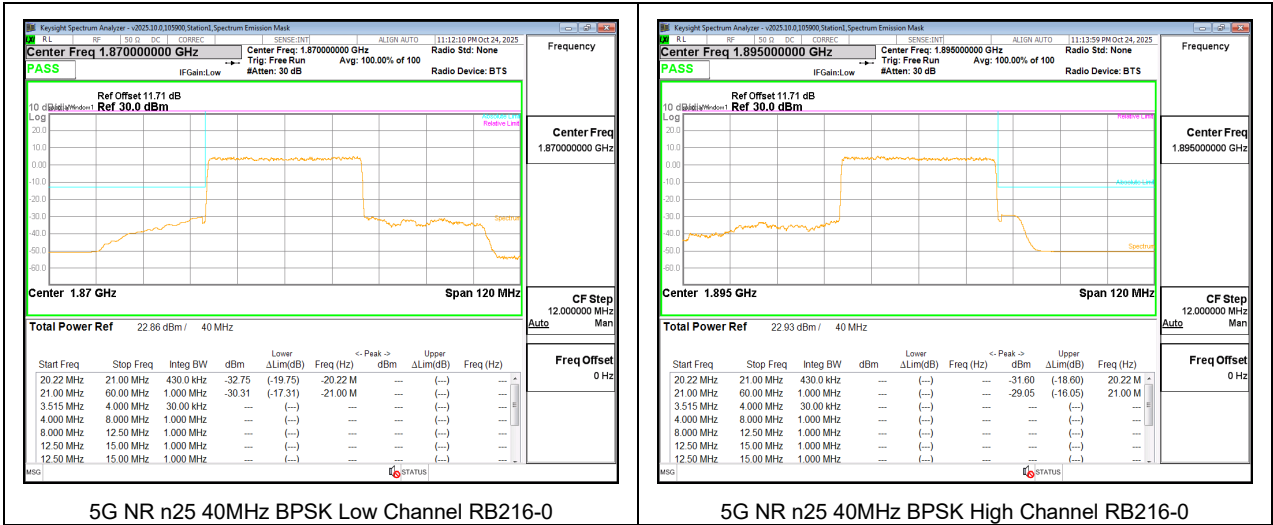
5G NR n25 35MHz BPSK High Channel RB180-0



5G NR n25 40MHz BPSK Low Channel RB1-1



5G NR n25 40MHz BPSK High Channel RB1-214



8.3. OUT OF BAND EMISSIONS

LIMITS

FCC: §24.238 (a)

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

ISED: RSS133§5.6

The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

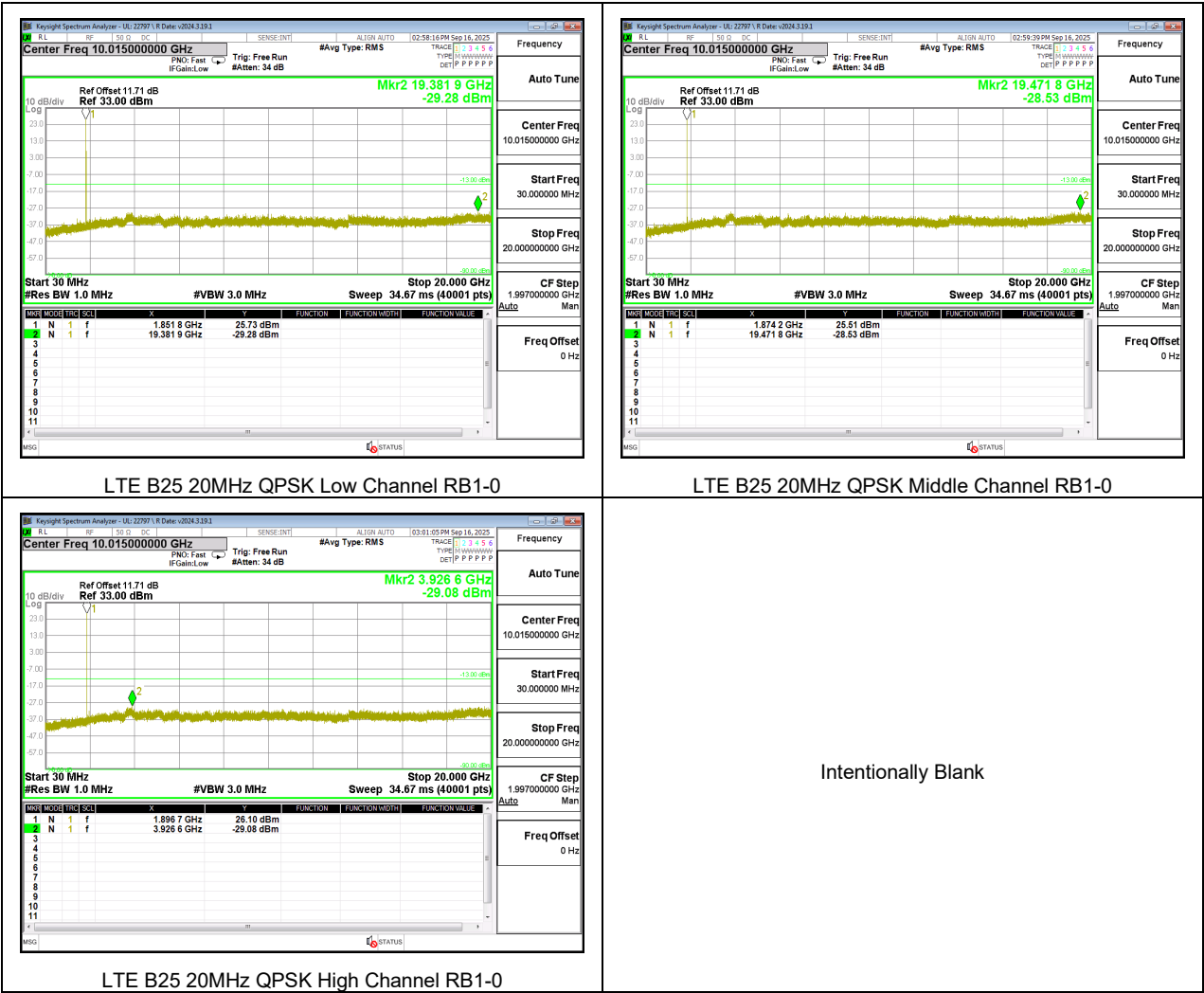
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

QPSK with 1RB is the highest power to all bandwidth. 1RB has the same frequency and power to all bandwidth. Therefore, QPSK with 1RB and wider bandwidths results are reported as worst case for LTE bands.

BPSK with 1RB is the highest power to all bandwidth. 1RB has the same frequency and power to all bandwidth. Therefore, BPSK with 1RB and wider bandwidths results are reported as worst case for 5G NRs.

8.3.1. LTE BAND 25



8.3.2. 5G NR n25



8.4. FREQUENCY STABILITY

LIMITS

FCC: §24.235

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

ISED: RSS133§5.4

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

TEST PROCEDURE

Use base station simulator with Frequency Error measurement capability.

- Temp. = -30°C to +50°C
- Voltage = (85% - 115%)
Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

8.4.1. LTE BAND 25 (QPSK 20MHz BANDWIDTH)

Test Engineer ID:	105900	Test Date:	2025-10-09
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Band	25	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1915		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	1850.8350	1914.1763			
Extreme (50°C)		1850.8350	1914.1763	4.38	0.002	Yes
Extreme (40°C)		1850.8350	1914.1763	-7.71	-0.004	Yes
Extreme (30°C)		1850.8350	1914.1763	-5.36	-0.003	Yes
Extreme (10°C)		1850.8350	1914.1763	-4.17	-0.002	Yes
Extreme (0°C)		1850.8350	1914.1763	-5.02	-0.003	Yes
Extreme (-10°C)		1850.8350	1914.1763	-3.23	-0.002	Yes
Extreme (-20°C)		1850.8350	1914.1763	-4.26	-0.002	Yes
Extreme (-30°C)		1850.8350	1914.1763	2.02	0.001	Yes
20°C	End Point Voltage	1850.8350	1914.1763	-3.88	-0.002	Yes

8.4.2. 5G NR n25 (BPSK 40MHz BANDWIDTH)

Test Engineer ID:	22797	Test Date:	2025-10-09
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Band	25	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1915		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	1860.0750	1903.8000			
Extreme (50°C)		1860.0750	1903.8000	14.50	0.008	Yes
Extreme (40°C)		1860.0750	1903.8000	10.80	0.006	Yes
Extreme (30°C)		1860.0750	1903.8000	15.70	0.008	Yes
Extreme (10°C)		1860.0750	1903.8000	13.40	0.007	Yes
Extreme (0°C)		1860.0750	1903.8000	13.80	0.007	Yes
Extreme (-10°C)		1860.0750	1903.8000	17.60	0.009	Yes
Extreme (-20°C)		1860.0750	1903.8000	14.20	0.008	Yes
Extreme (-30°C)		1860.0750	1903.8000	11.90	0.006	Yes
20°C	End Point Voltage	1860.0750	1903.8000	11.80	0.006	Yes

8.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

FCC: §24.232 (d)

In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

ISED: RSS133§5.5

In addition, the peak-to-average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

The worst-case antenna port for conducted power shown. Config 0 was used to measure as the worst case; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average power ratio criteria.

Test Procedure

The EUT was connected to a Wideband Power Sensor to measure Peak and Average Conducted output power.

8.5.1. LTE BAND 25

Test Engineer ID:	33499	Test Date:	2025-10-10
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
LTE Band 25	1.4MHz	1882.5	6	0	QPSK	25.94	21.49	4.45
					16QAM	25.90	20.53	5.37
	3MHz		15	0	QPSK	26.09	21.55	4.54
					16QAM	26.14	20.61	5.53
	5MHz		25	0	QPSK	26.20	21.54	4.66
					16QAM	26.30	20.56	5.74
	10MHz		50	0	QPSK	26.01	21.58	4.43
					16QAM	26.04	20.59	5.45
	15MHz		75	0	QPSK	26.13	21.55	4.58
					16QAM	26.28	20.6	5.68
20MHz	100	0	QPSK	26.52	21.57	4.95		
			16QAM	26.44	20.54	5.90		
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

8.5.2. 5G NR n25

Test Engineer ID:	33499	Test Date:	2025-10-10
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
5G NR n25	5MHz	1882.5	25	0	BPSK	26.04	22.08	3.96
					16QAM	25.98	20.35	5.63
	10MHz		50	0	BPSK	26.02	20.43	5.59
					16QAM	26.20	20.38	5.82
	15MHz		75	0	BPSK	26.07	22.04	4.03
					16QAM	25.94	20.5	5.44
	20MHz		100	0	BPSK	26.02	21.99	4.03
					16QAM	26.04	20.41	5.63
	25MHz		128	0	BPSK	26.18	21.99	4.19
					16QAM	26.30	20.37	5.93
	30MHz		160	0	BPSK	26.21	22.04	4.17
					16QAM	20.02	20.34	-0.32
	35MHz		180	0	BPSK	26.35	22	4.35
					16QAM	26.11	20.32	5.79
	40MHz		216	0	BPSK	26.28	22	4.28
					16QAM	26.24	20.41	5.83
Duty Cycle Correction Factor (dB) =			0.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

9. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, the radiated emissions is measured directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement.

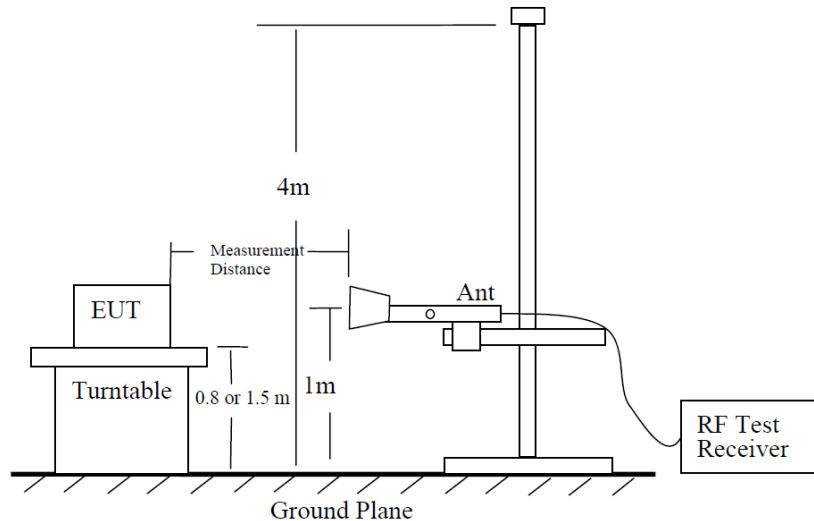


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

Radiated Power Measurement Calculation According to ANSI C63.26-2015

- a) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$
- b) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$
- c) $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$; where D is the measurement distance (in the far field region) in m.
- d) $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

So, from d)

The measuring distance is usually at 3m, then $20 \cdot \log(3) = 9.5424$

Then, $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

9.1. EFFECTIVE RADIATED POWER ERP/EIRP

RULE PART(S)

FCC: §2.1046, §24.232 (c)
RSS133§5.5

LIMITS

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

RSS133§5.5 - The maximum power spectral density of this equipment, measured in terms of average values, shall not exceed 3280 W/MHz e.i.r.p for the purpose of certification and may not apply to all deployment scenarios. Consult SRSP-510 for more deployment details in the band 1930-1995 MHz.

Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603-E (2016), Clause 2.2.17; PSA setting reference to 971168 D01

For average power measurements:

- a) Set span to at least 1.5 times the OBW;
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz;
- c) Set VBW $\geq 3 \times$ RBW;
- d) Set number of points in sweep $\geq 2 \times$ span / RBW;
- e) Sweep time = auto-couple;
- f) Detector = RMS (power averaging);
- g) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- h) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

TEST RESULTS

9.1.1. LTE BAND 25

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 09/10/25
Test Engineer: 112113/11993
Configuration: EUT Only
Mode: 1TX, LTE25, 1882.5MHz, 20M, **QPSK**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	24.32	H	8.63	4.83		20.52	33.01	-12.49	RB1-0
1882.50	23.42	V	8.63	4.83		19.62	33.01	-13.39	RB1-0
1882.50	25.52	H	8.63	4.83		21.72	33.01	-11.29	RB1-50
1882.50	23.36	V	8.63	4.83		19.56	33.01	-13.45	RB1-50
1882.50	24.08	H	8.63	4.83		20.28	33.01	-12.73	RB1-99
1882.50	22.55	V	8.63	4.83		18.75	33.01	-14.26	RB1-99

Rev. 10.17.25

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 09/10/25
Test Engineer: 112113/11993
Configuration: EUT Only
Mode: 1TX, LTE25, 1882.5MHz, 20M, **16QAM**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	24.40	H	8.63	4.83		20.60	33.01	-12.41	RB1-0
1882.50	22.51	V	8.63	4.83		18.71	33.01	-14.30	RB1-0
1882.50	26.02	H	8.63	4.83		22.22	33.01	-10.79	RB1-50
1882.50	22.35	V	8.63	4.83		18.55	33.01	-14.46	RB1-50
1882.50	21.57	H	8.63	4.83		17.77	33.01	-15.24	RB1-99
1882.50	22.81	V	8.63	4.83		19.01	33.01	-14.00	RB1-99

Rev. 10.17.25

CONFIG 0

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 09/15/25
Test Engineer: 33271/11993
Configuration: EUT Only
Mode: 1TX, LTE25, 1882.5MHz, 20M, **QPSK**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	26.30	H	8.63	4.83		22.50	33.01	-10.51	RB1-0
1882.50	20.71	V	8.63	4.83		16.91	33.01	-16.10	RB1-0
1882.50	26.23	H	8.63	4.83		22.43	33.01	-10.58	RB1-50
1882.50	20.43	V	8.63	4.83		16.63	33.01	-16.38	RB1-50
1882.50	24.71	H	8.63	4.83		20.91	33.01	-12.10	RB1-99
1882.50	19.84	V	8.63	4.83		16.04	33.01	-16.97	RB1-99

Rev. 10.17.25

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 09/15/25
Test Engineer: 33271/11993
Configuration: EUT Only
Mode: 1TX, LTE25, 1882.5MHz, 20M, **16QAM**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	25.75	H	8.63	4.83		21.95	33.01	-11.06	RB1-0
1882.50	20.64	V	8.63	4.83		16.84	33.01	-16.17	RB1-0
1882.50	26.23	H	8.63	4.83		22.43	33.01	-10.58	RB1-50
1882.50	20.29	V	8.63	4.83		16.49	33.01	-16.52	RB1-50
1882.50	25.14	H	8.63	4.83		21.34	33.01	-11.67	RB1-99
1882.50	19.38	V	8.63	4.83		15.58	33.01	-17.43	RB1-99

Rev. 10.17.25

CONFIG 1

9.1.2. 5G NR n25

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 10/7/2025 - 12/09/25
Test Engineer: 84740/11993
Configuration: EUT Only
Mode: 1TX, 5G n25, 1882.5MHz, 40M, BPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	25.33	H	8.63	4.83		21.53	33.01	-11.48	RB1-1
1882.50	22.11	V	8.63	4.83		18.31	33.01	-14.70	RB1-1
1882.50	25.27	H	8.63	4.83		21.47	33.01	-11.54	RB1-108
1882.50	20.80	V	8.63	4.83		17.00	33.01	-16.01	RB1-108
1882.50	25.44	H	8.63	4.83		21.64	33.01	-11.37	RB1-214
1882.50	20.50	V	8.63	4.83		16.70	33.01	-16.31	RB1-214

Rev. 10.17.25

High Frequency Substitution Measurement UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 10/07/25
Test Engineer: 84740/11993
Configuration: EUT Only
Mode: 1TX, 5G n25, 1882.5MHz, 40M, 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	DCCF (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	25.05	H	8.63	4.83		21.25	33.01	-11.76	RB1-1
1882.50	20.87	V	8.63	4.83		17.07	33.01	-15.94	RB1-1
1882.50	24.55	H	8.63	4.83		20.75	33.01	-12.26	RB1-108
1882.50	19.64	V	8.63	4.83		15.84	33.01	-17.17	RB1-108
1882.50	24.89	H	8.63	4.83		21.09	33.01	-11.92	RB1-214
1882.50	19.28	V	8.63	4.83		15.48	33.01	-17.53	RB1-214

Rev. 10.17.25

CONFIG 0

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 10/27/25
Test Engineer: 19289.0
Configuration: EUT Only
Mode: 1TX, 5G n25, 1882.5MHz, 40M, **BPSK**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	20.56	H	8.63	4.83		16.76	33.01	-16.25	RB1-1
1882.50	25.59	V	8.63	4.83		21.79	33.01	-11.22	RB1-1
1882.50	20.46	H	8.63	4.83		16.66	33.01	-16.35	RB1-108
1882.50	23.88	V	8.63	4.83		20.08	33.01	-12.93	RB1-108
1882.50	22.14	H	8.63	4.83		18.34	33.01	-14.67	RB1-214
1882.50	23.94	V	8.63	4.83		20.14	33.01	-12.87	RB1-214

Rev. 10.17.25

High Frequency Substitution Measurement
UL Morrisville Chamber 4

Company: Samsung Electronics Co., Ltd.
Project #: 15980274
Date: 10/27/25
Test Engineer: 19289.0
Configuration: EUT Only
Mode: 1TX, 5G n25, 1882.5MHz, 40M, **16QAM**

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	DCCF (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
1882.50	20.17	H	8.63	4.83		16.37	33.01	-16.64	RB1-1
1882.50	22.98	V	8.63	4.83		19.18	33.01	-13.83	RB1-1
1882.50	19.30	H	8.63	4.83		15.50	33.01	-17.51	RB1-108
1882.50	23.48	V	8.63	4.83		19.68	33.01	-13.33	RB1-108
1882.50	21.04	H	8.63	4.83		17.24	33.01	-15.77	RB1-214
1882.50	23.22	V	8.63	4.83		19.42	33.01	-13.59	RB1-214

Rev. 10.17.25

CONFIG 1

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

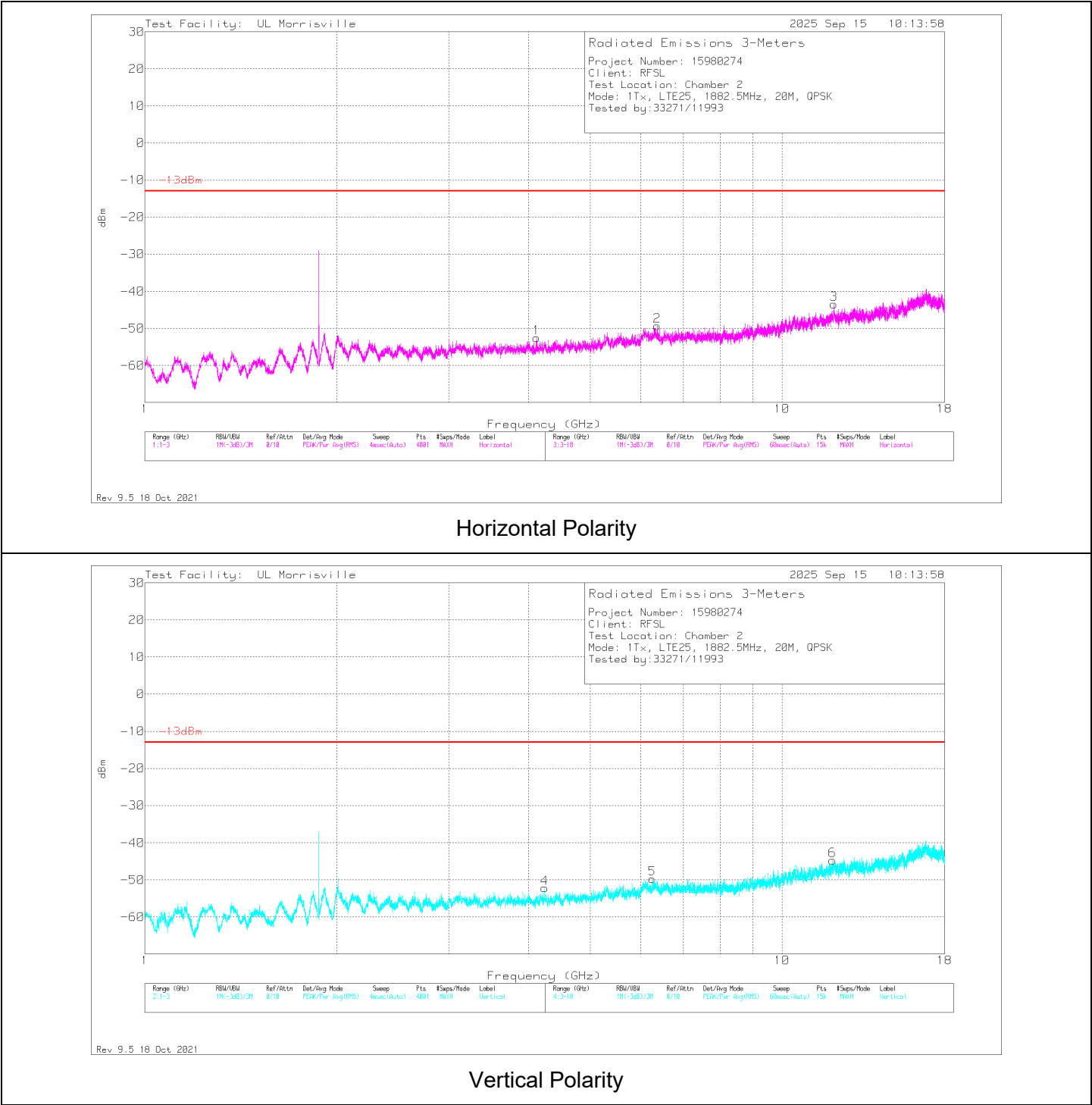
LIMITS

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

ISED: RSS133§5.6
For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the table 3.

Table 3: Unwanted emission limits for all equipment	
Offset frequency from the edge of the frequency block group (MHz)	Unwanted emission limit
≤ 1	-13 dBm/(1% of OBW)
> 1	-13 dBm/MHz

Example Plot



Trace Markers

Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (dB/m)	CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT (dBm)	Margin (dB)	Polarity
4.122000	-51.61	Pk	33.3	11.8	-46.00	-52.51	-13	-39.51	H
4.242000	-51.92	Pk	33.3	11.8	-45.40	-52.22	-13	-39.22	V
6.375000	-54.49	Pk	35.5	11.8	-42.10	-49.29	-13	-36.29	H
6.257000	-54.81	Pk	35.5	11.8	-42.20	-49.71	-13	-36.71	V
12.069000	-56.40	Pk	38.8	11.8	-37.60	-43.40	-13	-30.40	H
12.000000	-55.98	Pk	38.7	11.8	-39.30	-44.78	-13	-31.78	V

TEST PROCEDURE

KDB 971168 D01 /D02

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz

RESULTS

9.2.1. LTE BAND 25

LTE BAND 25 (QPSK 20.0MHZ BANDWIDTH, ANT A (Config 0))

Date:	2025-09-10
Test Engineer:	33271 / 11993
Configuration:	EUT Only
Mode:	LTE 25 QPSK 20MHz
Chamber #:	Chamber 2

Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (dB/m)	CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT (dBm)	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.162000	-53.00	Pk	33.0	11.8	-44.90	-53.10	-13	-40.10	H
3.148000	-53.12	Pk	33.1	11.8	-45.10	-53.32	-13	-40.32	V
5.553000	-51.62	Pk	34.6	11.8	-43.80	-49.02	-13	-36.02	H
5.553000	-53.39	Pk	34.6	11.8	-43.80	-50.79	-13	-37.79	V
10.724000	-55.28	Pk	37.8	11.8	-40.00	-45.68	-13	-32.68	H
10.732000	-55.53	Pk	37.8	11.8	-40.40	-46.33	-13	-33.33	V
Mid Channel, 1882.5MHz									
3.545000	-53.66	Pk	33.1	11.8	-44.90	-53.66	-13	-40.66	H
6.714000	-55.97	Pk	35.5	11.8	-42.50	-51.17	-13	-38.17	V
5.620000	-49.79	Pk	34.7	11.8	-44.40	-47.69	-13	-34.69	H
8.794000	-57.68	Pk	36.0	11.8	-40.70	-50.58	-13	-37.58	V
10.689000	-56.41	Pk	37.8	11.8	-41.20	-48.01	-13	-35.01	H
13.158000	-55.17	Pk	38.9	11.8	-38.50	-42.97	-13	-29.97	V
High Channel, 1905MHz									
2.869000	-52.34	Pk	32.3	11.8	-45.80	-53.74	-13	-40.74	H
3.096000	-52.10	Pk	33.2	11.8	-45.20	-52.30	-13	-39.30	V
6.104000	-54.35	Pk	35.4	11.8	-41.80	-48.95	-13	-35.95	H
6.107000	-55.59	Pk	35.4	11.8	-41.80	-50.19	-13	-37.19	V
10.980000	-55.65	Pk	37.9	11.8	-39.70	-45.65	-13	-32.65	H
10.980000	-56.67	Pk	37.9	11.8	-39.70	-46.67	-13	-33.67	V

LTE BAND 25 (QPSK 20.0MHZ BANDWIDTH, ANT F (Config 1))

Date:	2025-09-10
Test Engineer:	33271 / 11993
Configuration:	EUT Only
Mode:	LTE 25 QPSK 20MHz
Chamber #:	Chamber 2

Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (dB/m)	CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT (dBm)	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.516000	-52.75	Pk	32.9	11.8	-45.80	-53.85	-13	-40.85	H
3.543000	-53.38	Pk	33.1	11.8	-44.80	-53.28	-13	-40.28	V
5.326000	-52.83	Pk	34.3	11.8	-43.80	-50.53	-13	-37.53	H
5.553000	-52.14	Pk	34.6	11.8	-43.80	-49.54	-13	-36.54	V
10.116000	-54.86	Pk	37.3	11.8	-40.40	-46.16	-13	-33.16	H
10.115000	-56.59	Pk	37.3	11.8	-40.40	-47.89	-13	-34.89	V
Mid Channel, 1882.5MHz									
4.122000	-51.61	Pk	33.3	11.8	-46.00	-52.51	-13	-39.51	H
4.242000	-51.92	Pk	33.3	11.8	-45.40	-52.22	-13	-39.22	V
6.375000	-54.49	Pk	35.5	11.8	-42.10	-49.29	-13	-36.29	H
6.257000	-54.81	Pk	35.5	11.8	-42.20	-49.71	-13	-36.71	V
12.069000	-56.40	Pk	38.8	11.8	-37.60	-43.40	-13	-30.40	H
12.000000	-55.98	Pk	38.7	11.8	-39.30	-44.78	-13	-31.78	V
High Channel, 1905MHz									
3.527000	-53.60	Pk	33.0	11.8	-45.50	-54.30	-13	-41.30	H
3.542000	-53.41	Pk	33.1	11.8	-44.80	-53.31	-13	-40.31	V
6.061000	-55.36	Pk	35.3	11.8	-41.70	-49.96	-13	-36.96	H
6.104000	-55.68	Pk	35.4	11.8	-41.80	-50.28	-13	-37.28	V
11.507000	-55.58	Pk	38.3	11.8	-39.00	-44.48	-13	-31.48	H
11.512000	-57.08	Pk	38.3	11.8	-39.10	-46.08	-13	-33.08	V

9.2.2. 5G NR n25

5G NR n25 (BPSK 40.0MHZ BANDWIDTH, ANT A (Config 0))

Date:	2025-10-07
Test Engineer:	84748 / 11993
Configuration:	EUT Only
Mode:	5G NR n25 BPSK 40MHz
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT (dBm)	Margin (dB)	Polarity
Low Channel, 1870MHz									
4.672000	-64.92	Pk	34.2	11.8	-31.50	-50.42	-13	-37.42	H
4.866000	-63.83	Pk	33.9	11.8	-31.50	-49.63	-13	-36.63	V
9.031000	-66.16	Pk	36.0	11.8	-24.70	-43.06	-13	-30.06	H
9.054000	-65.91	Pk	36.0	11.8	-23.50	-41.61	-13	-28.61	V
16.063000	-66.66	Pk	40.7	11.8	-15.60	-29.76	-13	-16.76	H
16.399000	-65.58	Pk	41.1	11.8	-16.60	-29.28	-13	-16.28	V
Mid Channel, 1882.5MHz									
3.675000	-62.72	Pk	33.2	11.8	-34.20	-51.92	-13	-38.92	H
3.710000	-64.00	Pk	33.2	11.8	-33.50	-52.50	-13	-39.50	V
9.072000	-65.51	Pk	36.0	11.8	-24.20	-41.91	-13	-28.91	H
9.099000	-66.84	Pk	36.0	11.8	-24.30	-43.34	-13	-30.34	V
16.353000	-66.61	Pk	40.9	11.8	-15.50	-29.41	-13	-16.41	H
16.353000	-66.60	Pk	40.9	11.8	-15.50	-29.40	-13	-16.40	V
High Channel, 1895MHz									
4.634000	-65.07	Pk	34.2	11.8	-32.30	-51.37	-13	-38.37	H
4.600000	-65.26	Pk	34.2	11.8	-32.40	-51.66	-13	-38.66	V
9.064000	-65.82	Pk	36.0	11.8	-24.30	-42.32	-13	-29.32	H
9.097000	-66.50	Pk	36.0	11.8	-24.50	-43.20	-13	-30.20	V
16.397000	-66.77	Pk	41.1	11.8	-16.30	-30.17	-13	-17.17	H
16.099000	-67.98	Pk	40.8	11.8	-14.70	-30.08	-13	-17.08	V

5G NR n25 (BPSK 40.0MHZ BANDWIDTH, ANT F (Config 1))

Date:	2025-10-29
Test Engineer:	19289
Configuration:	EUT Only
Mode:	5G NR n25 BPSK 40MHz
Chamber #:	Chamber 4

Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT (dBm)	Margin (dB)	Polarity
Low Channel, 1870MHz									
5.551000	-50.02	Pk	34.4	11.8	-31.70	-35.52	-13	-22.52	H
5.552000	-50.45	Pk	34.4	11.8	-31.60	-35.85	-13	-22.85	V
9.047000	-65.97	Pk	36.0	11.8	-24.20	-42.37	-13	-29.37	H
9.566000	-65.81	Pk	36.7	11.8	-24.20	-41.51	-13	-28.51	V
16.133000	-67.47	Pk	40.8	11.8	-15.60	-30.47	-13	-17.47	H
17.002000	-66.38	Pk	41.5	11.8	-16.10	-29.18	-13	-16.18	V
Mid Channel, 1882.5MHz									
5.590000	-43.91	Pk	34.3	11.8	-31.20	-29.01	-13	-16.01	H
5.590000	-46.12	Pk	34.3	11.8	-31.20	-31.22	-13	-18.22	V
11.763000	-66.60	Pk	38.3	11.8	-22.20	-38.70	-13	-25.70	H
11.985000	-66.10	Pk	38.6	11.8	-21.80	-37.50	-13	-24.50	V
15.992000	-67.32	Pk	40.7	11.8	-14.70	-29.52	-13	-16.52	H
15.994000	-67.66	Pk	40.7	11.8	-14.90	-30.06	-13	-17.06	V
High Channel, 1895MHz									
5.627000	-51.54	Pk	34.4	11.8	-31.00	-36.34	-13	-23.34	H
5.627000	-53.00	Pk	34.4	11.8	-31.00	-37.80	-13	-24.80	V
11.842000	-66.26	Pk	38.4	11.8	-22.80	-38.86	-13	-25.86	H
11.973000	-66.49	Pk	38.6	11.8	-21.50	-37.59	-13	-24.59	V
16.074000	-67.57	Pk	40.7	11.8	-15.30	-30.37	-13	-17.37	H
16.425000	-64.82	Pk	41.1	11.8	-17.50	-29.42	-13	-16.42	V

10. SETUP PHOTOS

Refer to R15980274-EP1 for setup photos.

END OF REPORT