

TEST REPORT

Report Number: R16238088-E5A

Applicant : Samsung Electronics Co Ltd
129, SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, REP. OF KOREA

Model : SM-F976U, SM-F976U1

FCC ID : A3LSMF976U

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

Test Standard(s) : FCC 47 CFR PART 2, PART 27, PART 25
ISED RSS-GEN ISSUE 5 + A1 + A2, RSS-130 ISSUE 2

Date Of Issue:
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Revision History

Rev.	Issue Date	Revisions	Revised By
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TABLE OF CONTENTS

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

2. SUMMARY OF TEST RESULTS6

3. TEST METHODOLOGY7

4. FACILITIES AND ACCREDITATION7

5. DECISION RULES AND MEASUREMENT UNCERTAINTY.....8

5.1. METROLOGICAL TRACEABILITY8

5.2. DECISION RULES8

5.3. MEASUREMENT UNCERTAINTY8

5.4. SAMPLE CALCULATION8

6. EQUIPMENT UNDER TEST9

6.1. DESCRIPTION OF EUT9

6.2. MAXIMUM OUTPUT POWER9

6.3. WORST-CASE CONFIGURATION AND MODE11

6.4. DESCRIPTION OF TEST SETUP12

7. TEST AND MEASUREMENT EQUIPMENT.....13

8. CONDUCTED TEST RESULTS16

8.1. OCCUPIED BANDWIDTH16

8.1.2. LTE BAND 12.....19

8.1.3. 5G NR n1220

8.1.4. LTE BAND 13.....21

8.1.5. LTE BAND 71.....22

8.1.6. 5G NR n7123

8.2. EMISSION MASK AND ADJACENT CHANNEL POWER.....25

8.2.1. LTE BAND 12.....27

8.2.2. 5G NR n1231

8.2.3. LTE BAND 13.....34

8.2.4. LTE BAND 71.....36

8.2.5. 5G NR n7140

8.3. OUT OF BAND EMISSIONS47

8.3.1. LTE BAND 12.....48

8.3.2. 5G NR n1249

8.3.3.	LTE BAND 13.....	50
8.3.4.	LTE BAND 71.....	51
8.3.5.	5G NR n71	52
8.4.	FREQUENCY STABILITY	53
8.4.1.	LTE BAND 12 (QPSK 10MHz BANDWIDTH).....	54
8.4.2.	5G NR n12 (BPSK 15MHz BANDWIDTH).....	54
8.4.3.	LTE BAND 13 (QPSK 10MHz BANDWIDTH).....	55
8.4.4.	LTE BAND 71 QPSK (20MHz BANDWIDTH).....	56
8.4.5.	5G NR n71 (BPSK 35MHz BANDWIDTH).....	57
8.5.	PEAK-TO-AVERAGE POWER RATIO	58
8.5.1.	LTE BAND 12.....	59
8.5.2.	5G NR n12	59
8.5.3.	LTE BAND 13.....	59
8.5.4.	LTE BAND 71.....	60
8.5.5.	5G NR n71	60
9.	RADIATED TEST RESULTS	61
9.1.	EFFECTIVE RADIATED POWER ERP/EIRP.....	62
9.1.1.	LTE BAND 12.....	63
9.1.2.	5G NR n12	65
9.1.3.	LTE BAND 13.....	66
9.1.4.	LTE BAND 71.....	68
9.1.5.	5G NR n71	71
9.2.	FIELD STRENGTH OF SPURIOUS RADIATION,	74
9.2.1.	LTE BAND 12.....	78
9.2.2.	5G NR n12	80
9.2.3.	LTE BAND 13.....	82
9.2.4.	LTE Band 71	84
9.2.5.	5G NR n71	87
10.	SETUP PHOTOS.....	88

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Samsung Electronics Co Ltd
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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,
UWB, WPT and NFC

SERIAL NUMBERS: ZAQ0548M, ZB30741M, ZBK0208M, ZBK0213M, ZBK0219M

SAMPLE RECEIVE DATE: 2026-03-09

DATE TESTED: 2026-03-09 to 2026-03-31

APPLICABLE STANDARDS STANDARD	TEST RESULTS
FCC 47 CFR PART 2, PART 22H, PART 24E, PART 27, PART 25 ISED RSS-GEN ISSUE 5 + A1 + A2, RSS132 ISSUE 4, RSS-133 ISSUE 7, RSS- 139 ISSUE 4	Complies

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
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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
Effective Radiated Power	12	27.50 (c) (10)	RSS130\$4.6.3	Complies	None.
	13	27.50 (b) (10)	RSS130\$4.6.3	Complies	None.
	71	27.50 (c) (10)	RSS130\$4.6.2	Complies	None.
Occupied Bandwidth	12, 13, 71	2.1049	RSS-GEN\$6.7 RSS130\$4.5	Complies	None.
Band Edge and Emission Mask	12, 13, 71	2.1051, 27.53 (g), 27.53 (c) (f)	RSS130\$4.7	Complies	None.
Out of Band Emissions	12, 13, 71	2.1051, 27.53 (g), 27.53 (c) (f)	RSS130\$4.7	Complies	None.
Frequency Stability	12, 13, 71	2.1055, 27.54	RSS130\$4.5	Complies	None.
Peak-to-Average Ratio	12, 13, 71	-	RSS130\$4.6.1	Complies	None.
Field Strength of Spurious Radiation	12, 13, 71	2.1053, 27.53 (g), 27.53 (c) (f)	RSS130\$4.7	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	Yes
700 MHz	729 – 746	699 – 716	27.5 (c) 27.50 (c) 27.53 (g)	12/n12 17	Yes	Yes
	746 – 756	777 – 787	27.5 (b) 27.50 (b) 27.53 (f)	13/n13	Yes	Yes
	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	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
- FCC 47 CFR Part 2, Part 27, 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-130 Issue 2

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, Certificate Number 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, USA	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, UWB, WPT and NFC.

Model differences:

Representative Model	Difference	Derivative Model
		SM-F976U1
SM-F976U	Hardware	Same as SM-F976U
	Software	Different UI

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

Mode and Bands	Config 0	Config 1
LTE Band12 & 5G NR n12	ANT A+C (ANT A)*	ANT E
LTE Band13		
LTE Band 71 & NR n71		
*AFS applicable to LTE71, n71 only.		

6.2. MAXIMUM OUTPUT POWER

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.2

$$\text{ERP/EIRP} = P_{\text{Meas}} + G_T - L_C$$

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

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.

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

LTE BAND 12

Part 27 / RSS 130								
ERP Limit (W)			3.00					
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
1.4	QPSK	699.7	715.3	16.70	0.047	1.102	1101.5	1M10G7W
3.0	16QAM	700.5	714.5	15.77	0.038	2.718	2717.8	2M72D7W
10.0	QPSK	704.0	711.0	16.48	0.044	8.995	8994.9	8M99G7W
	16QAM			15.68	0.037	8.986	8985.5	8M99D7W

5G NR n12

Part 27 / RSS 130								
ERP Limit (W)			3.00					
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	701.5	713.5	16.60	0.046	4.514	4514.2	4M51G7W
10.0	16QAM	704.0	711.0	15.20	0.033	9.009	9008.7	9M01D7W
15.0	BPSK	706.5	708.5	16.16	0.041	13.440	13440	13M4G7W
	16QAM			15.06	0.032	13.518	13518	13M5D7W

LTE BAND 13

Part 27 / RSS 130								
ERP Limit (W)			3.00					
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	QPSK	779.5	784.5	19.38	0.087	4.527	4526.6	4M53G7W
	16QAM			18.71	0.074	4.515	4514.7	4M51D7W
10.0	QPSK	782.0	782.0	19.28	0.085	9.007	9007	9M01G7W
	16QAM			18.58	0.072	8.999	8999	9M00D7W

LTE BAND 71

Part 27 / RSS 130								
ERP Limit (W)			3.00					
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	ERP Average (dBm)	ERP Average (W)	99% BW (MHz)	99% BW (kHz)	Emission Designator
10.0	QPSK	668.0	693.0	15.97	0.040	9.027	9027.3	9M03G7W
	16QAM			15.14	0.033	9.025	9024.5	9M02D7W
20.0	QPSK	673.0	688.0	15.74	0.037	18.052	18052	18M1G7W
	16QAM			15.00	0.032	18.031	18031	18M0D7W

5G NR n71

Part 27/ RSS 130								
ERP Limit (W)		3.00						
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	16QAM	665.5	695.5	13.64	0.023	4.521	4521.2	4M52D7W
30.0	BPSK	678.0	683.0	14.06	0.025	28.691	28691	28M7G7W
35.0	BPSK	683.0	683.0	13.39	0.022	32.224	32224	32M2G7W
	16QAM			12.72	0.019	32.267	32267	32M3D7W

6.3. WORST-CASE CONFIGURATION AND MODE

This report covers the following technologies:

- LTE Band 12, 5G NR n12
- LTE Band 13
- LTE Band 71, 5G NR n71

The worst-case scenario for all measurements is based upon an engineering evaluation made on conducted average power taken during pre-testing. 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.

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.

LTE & 5G NR Bands	Worst-Case Antenna Port	Worst-Case Modulation
LTE Band 12 / 5G NR n12 699 – 716 MHz	ANT A+C	LTE (QPSK) 5G NR (BPSK)
LTE Band 13 777 – 787 MHz	ANT A+C	
LTE Band 71 / 5G NR n71 663 – 698 MHz	ANT A+C	

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. Additionally, the EUT was investigated between 3 folding positions, Fully Open, Fully Closed, and Half Open. 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 ($F_c < 1\text{GHz}$)	X, Open	X, Open
Mid Band ($1\text{GHz} < F_c < 3\text{GHz}$)	-	-
High Band ($F_c > 3\text{GHz}$)	-	-

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	Sony	XQZ-UC11-010-236-21	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 LTE and 5G NR testing.

SETUP DIAGRAM

Please see R16238088-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 - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equip. ID	Description	Manufacturer/Brand	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				
90628	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2026-02-09	2028-02-09
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-04-09	2026-04-30
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com Power	AH-826	2025-07-15	2027-07-15
204705	Horn Antenna, 26-40GHz	Com Power	AH-640	2025-11-19	2027-11-19
	Gain-Loss Chains				
207638	Gain-loss string: 0.009-30MHz	Various	Various	2025-06-13	2026-06-13
207639	Gain-loss string: 25-1000MHz	Various	Various	2025-06-13	2026-06-13
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	2026-04-30
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2025-08-05	2027-08-05
213025	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	N/A	N/A
208720	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	N/A	N/A
21725	Radio Communications Tester	Rohde and Schwarz	CMX500	N/A	N/A
212167	Wideband Radio Communications Tester	Anritsu	MT8821C	N/A	N/A
198917*	1GHz high-pass filter, 2W, Fhigh =18GHz	Micro-Tronics	HPM18129-02	2025-03-13	2026-03-31

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
86408	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2025-07-15	2027-07-15
	Gain-Loss Chains				
91977	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
	Receiver & Software				
197955	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	N/A	N/A
198917*	1GHz high-pass filter, 2W, Fhigh =18GHz	Micro-Tronics	HPM18129-02	2025-03-13	2026-03-31

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
88761	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2025-11-19	2027-11-19
	Gain-Loss Chains				
91979	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				
241205	Environmental Meter	Fisher Scientific	15-077-963	2025-08-05	2027-08-05

Wireless Conducted Measurement Equipment.

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Additional Equipment used					
90411	Spectrum Analyzer MY54490314	Keysight Technologies	N9030A	2026-03-03	2027-03-03
90416	Spectrum Analyzer MY54490254	Keysight Technologies	N9030A	2025-07-31	2026-07-31
212967	Wideband Radio Communications Tester 170733	Rohde and Schwarz	CMW500	2026-02-13	2027-02-13
212166	Wideband Radio Communications Tester	Anritsu	MT8000A	2026-02-23	2027-02-23
262469	Humidity and Temperature Probe	Control Company	15-077-963	2025-04-28	2026-04-30
211055	Real-Time Peak Power Sensor	Boonton	RTP5000	2025-07-30	2026-07-30

Test Equipment Used - Wireless Conducted Attenuators, Cables, and Couplers

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Attenuators					
226569	2.92mm Coaxial 10dB Attenuator 40GHz	Fairview Microwave	SA4014-10	2025-09-02	2026-09-02
226554*	20dB Attenuator	CentricRF	C18S2-20	2025-03-19 2026-04-01	2026-03-31 2027-04-01
226552*	20dB Attenuator	CentricRF	C18S2-20	2025-03-19 2026-04-01	2026-03-31 2027-04-01
Cables					
246257	SMA Cable	Huber + Suhner	104PEA	2025-09-05	2026-09-05
Couplers					
238018*	Ultra-Wideband Directional Coupler 0.5-18GHz	Mini-Circuits	ZUDC10-183+	2025-04-48	2026-04-28

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: RSS130§4.5

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 12

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 12	1.4MHz, QPSK	6/0	707.5	1.1015	1.370
	1.4MHz, 16QAM			1.1070	1.421
	3MHz, QPSK	15/0		2.7081	3.071
	3MHz, 16QAM			2.7178	3.062
	5MHz, QPSK	25/0		4.5131	5.134
	5MHz, 16QAM			4.5118	5.129
	10MHz, QPSK	50/0		8.9949	10.01
	10MHz, 16QAM			8.9855	9.959
	10MHz, QPSK	1/0		0.23176	0.3915

5G NR n12

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
5G NR n12	5MHz, BPSK	25/0	707.5	4.5142	5.184
	5MHz, 16QAM			4.5248	5.223
	10MHz, BPSK	50/0		8.9614	9.775
	10MHz, 16QAM			9.0087	9.779
	15MHz, BPSK	75/0		13.440	14.49
	15MHz, 16QAM			13.518	14.59
	15MHz, BPSK	1/1		0.24172	0.4684

LTE BAND 13

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 13	5MHz, QPSK	25/0	782.0	4.5266	5.134
	5MHz, 16QAM			4.5147	5.173
	10MHz, QPSK	50/0		9.0074	10.01
	10MHz, 16QAM			8.9990	9.999
	10MHz, QPSK	1/0		0.24147	0.3842

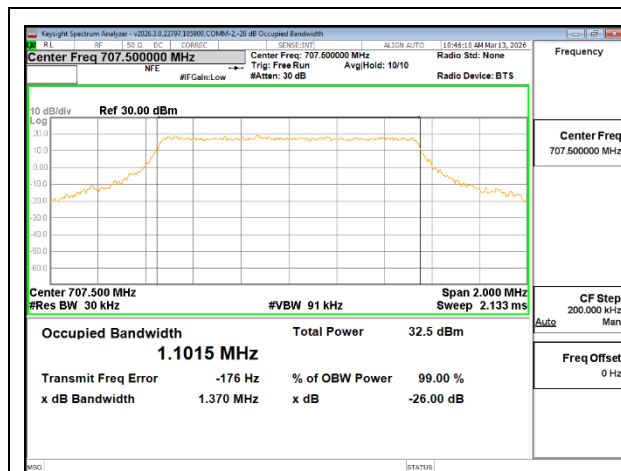
LTE BAND 71

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 71	5MHz, QPSK	25/0	680.5	4.5229	5.191
	5MHz, 16QAM			4.5263	5.188
	10MHz, QPSK	50/0	683.0	9.0273	10.04
	10MHz, 16QAM			9.0245	10.04
	15MHz, QPSK	75/0	680.5	13.564	15.03
	15MHz, 16QAM			13.595	15.03
	20MHz, QPSK	100/0	683.0	18.052	19.86
	20MHz, 16QAM			18.031	19.85
	20MHz, QPSK	1/0		0.28859	0.4758

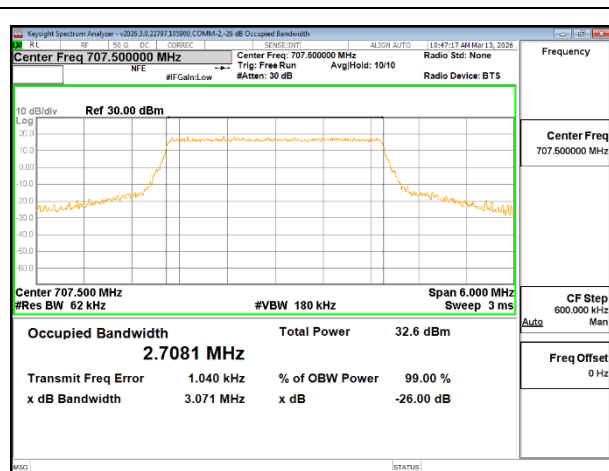
5G NR n71

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
5G NR n71	5MHz, BPSK	25/0	680.5	4.5031	5.094
	5MHz, 16QAM			4.5212	5.163
	10MHz, BPSK	50/0	683.0	8.9822	9.874
	10MHz, 16QAM			9.0133	9.883
	15MHz, BPSK	75/0	680.5	13.506	14.61
	15MHz, 16QAM			13.552	13.56
	20MHz, BPSK	100/0	683.0	17.995	19.29
	20MHz, 16QAM			17.940	19.11
	25MHz, BPSK	128/0	680.5	23.002	24.34
	25MHz, 16QAM			23.011	24.43
	30MHz, BPSK	160/0	683.0	28.691	30.32
	30MHz, 16QAM			28.682	30.24
	35MHz, BPSK	180/0	680.5	32.267	34.02
	35MHz, 16QAM			32.224	33.93
	35MHz, BPSK	1/1		0.27873	0.4580

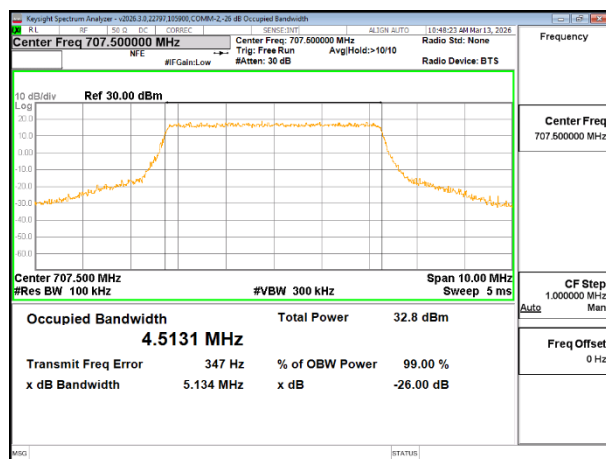
8.1.2. LTE BAND 12



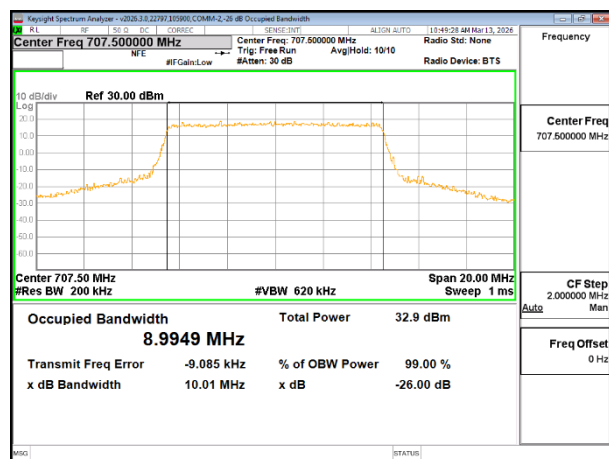
LTE B12 1.4MHz QPSK Middle Channel RB6-0



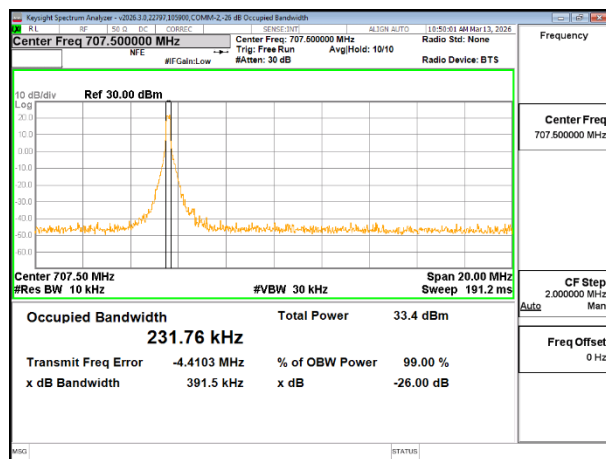
LTE B12 3MHz QPSK Middle Channel RB15-0



LTE B12 5MHz QPSK Middle Channel RB25-0



LTE B12 10MHz QPSK Middle Channel RB50-0



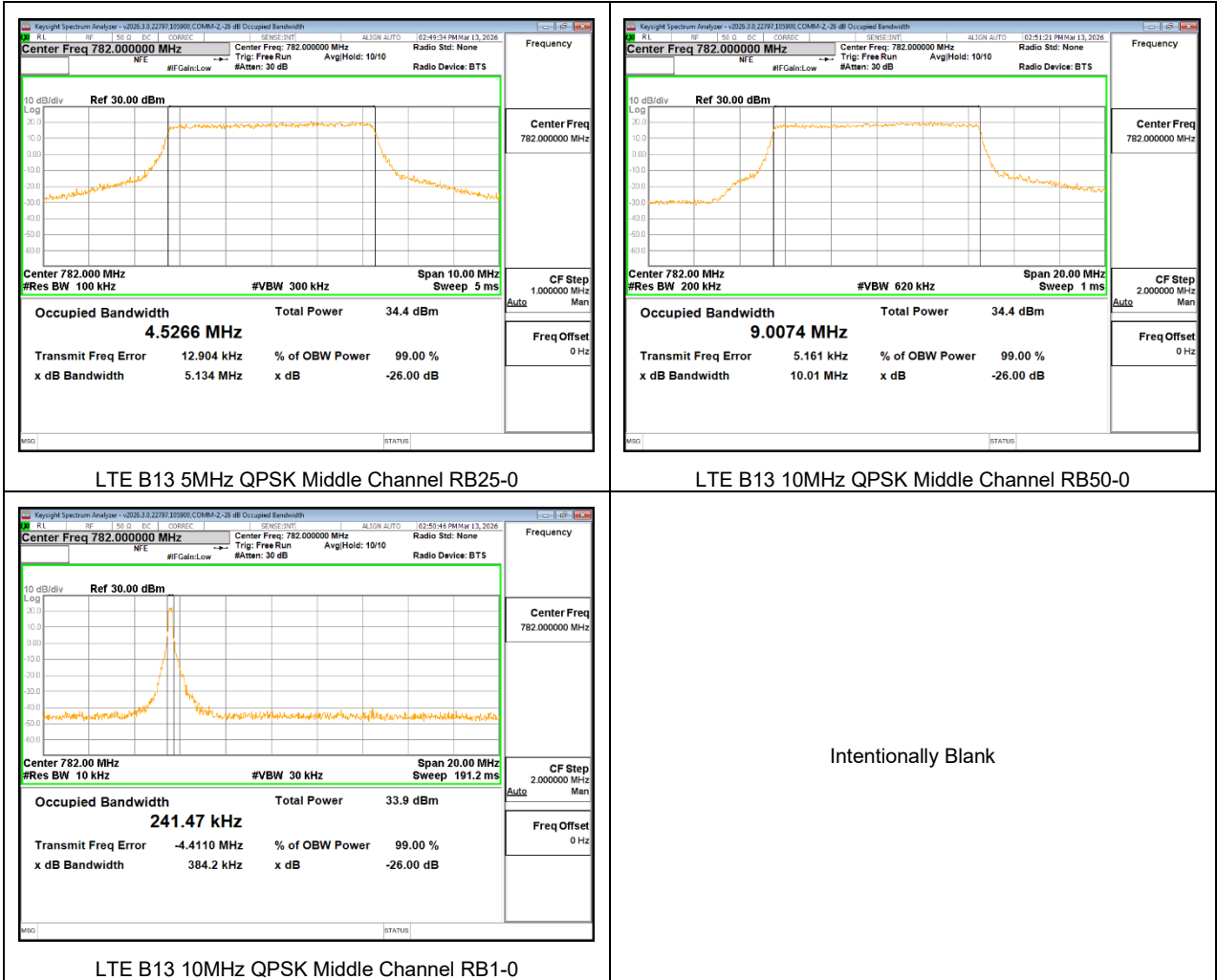
LTE B12 10MHz QPSK Middle Channel RB1-0

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8.1.3. 5G NR n12



8.1.4. LTE BAND 13

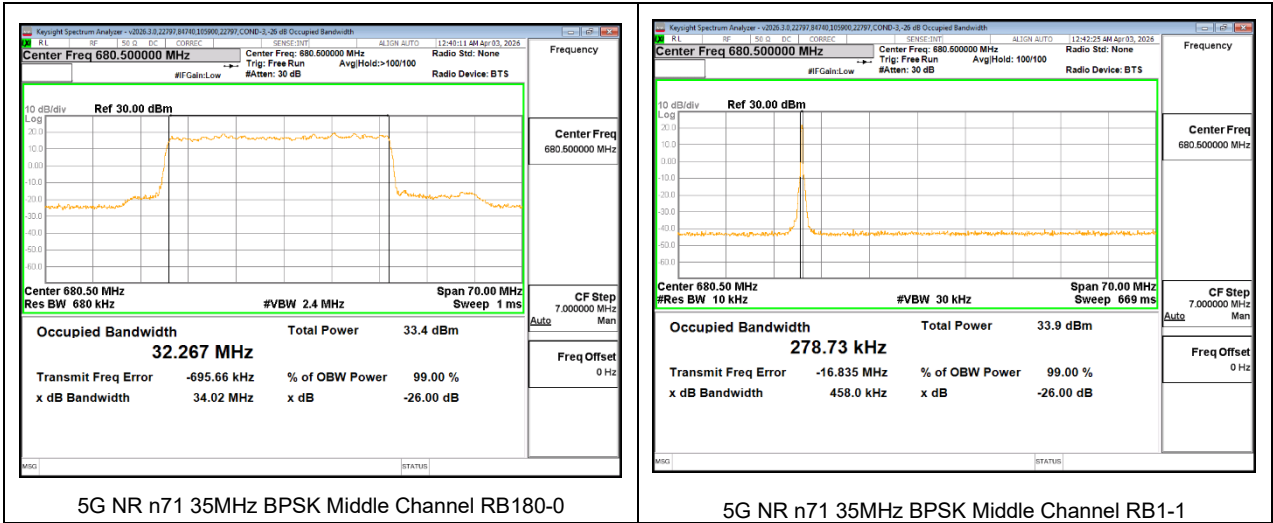


8.1.5. LTE BAND 71



8.1.6. 5G NR n71





8.2. EMISSION MASK AND ADJACENT CHANNEL POWER

LIMITS (BAND 12, 71)

FCC: §27.53

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

ISED: RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

LIMITS (BAND 13)

FCC: §27.53

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40dBm/MHz).

ISED: RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- (a) the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
 - i. $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment and
 - ii. $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment
- (b) the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

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.

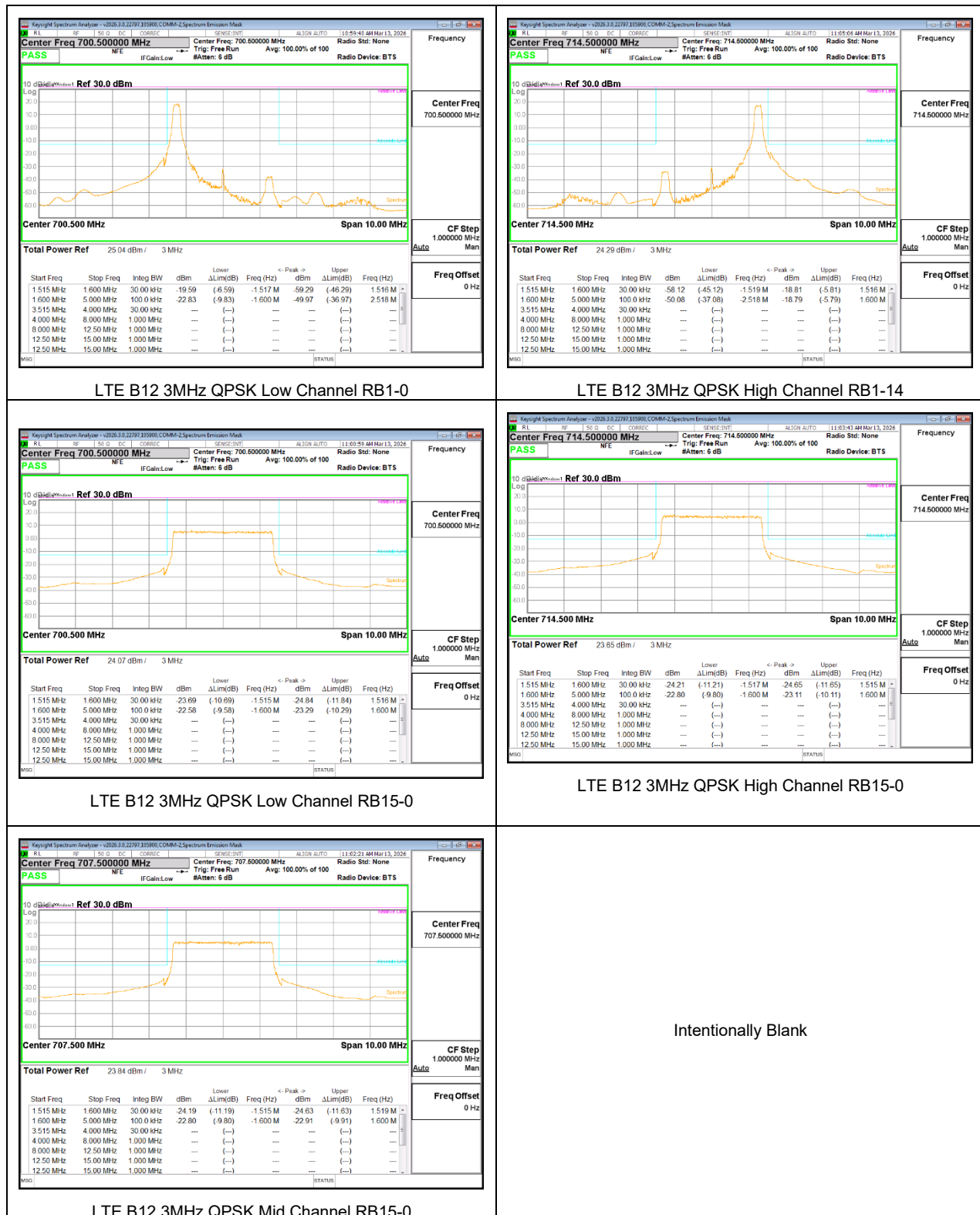
For each band edge measurement:

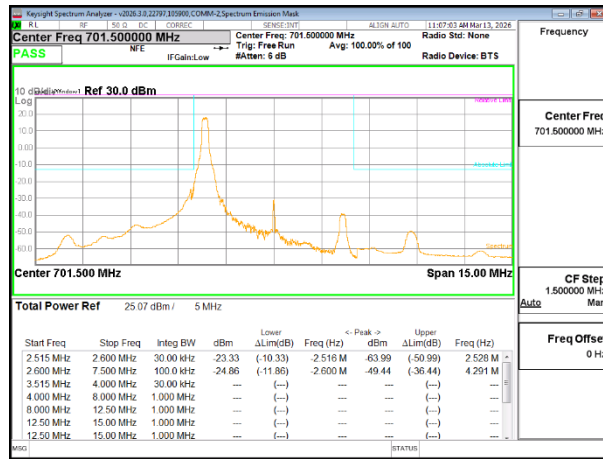
1. Set the spectrum analyzer span to include the block edge frequency.
2. Set a marker to point the corresponding band edge frequency in each test case.
3. Set display line at each different band's requirement limits
4. Set resolution bandwidth to at least 1% of emission bandwidth.

RESULTS

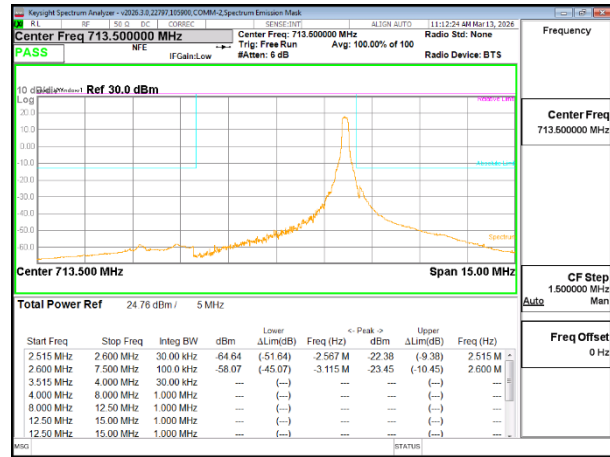
8.2.1. LTE BAND 12



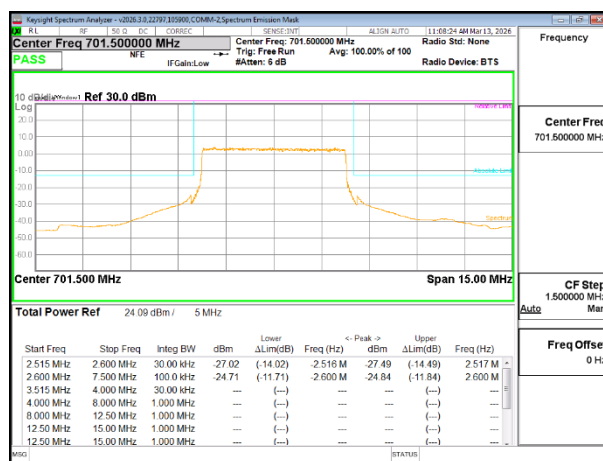




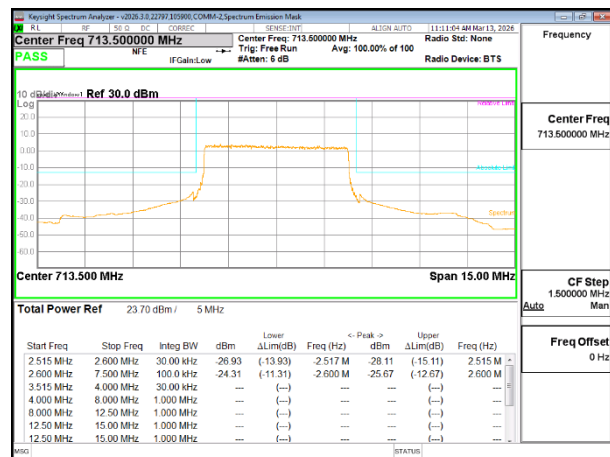
LTE B12 5MHz QPSK Low Channel RB1-0



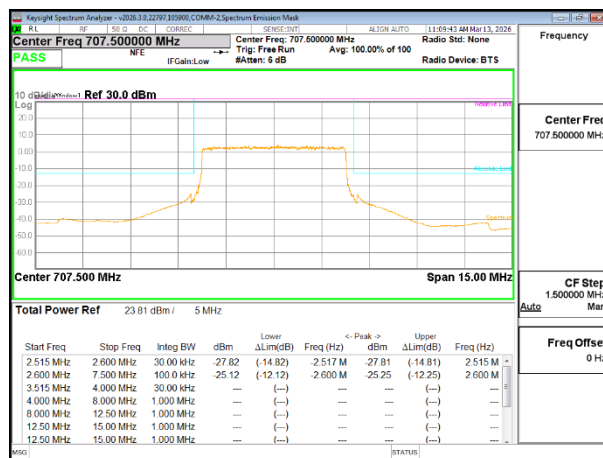
LTE B12 5MHz QPSK High Channel RB1-24



LTE B12 5MHz QPSK Low Channel RB25-0

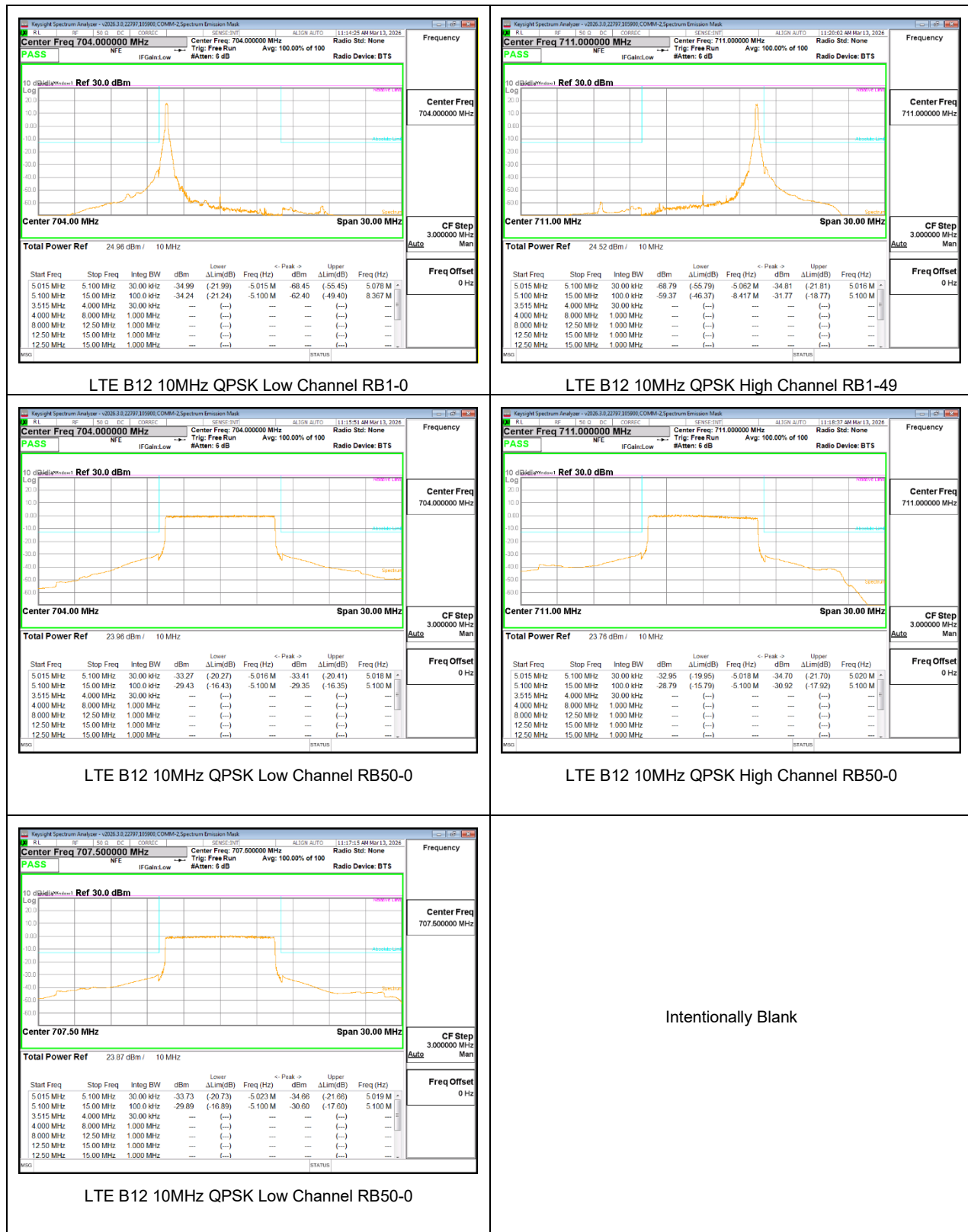


LTE B12 5MHz QPSK High Channel RB25-0



LTE B12 5MHz QPSK Low Channel RB25-0

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8.2.2. 5G NR n12

