FCC RF Test Report

APPLICANT	**: Fibocom Wireless Inc.**
EQUIPMENT	**: 5G Module**
BRAND NAME	**: Fibocom**
MODEL NAME	**: FM150-NA**
FCC ID	**: ZMOFM150NA**
STANDARD	**: 47 CFR Part 2, 27(O)**
CLASSIFICATION	**: PCS Licensed Transmitter (PCB)**

The product was received on Feb. 04, 2021 and completely tested on Feb. 27, 2021. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

Approved by: James Huang / Manager

ACCREDITED Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG051416-03G	Rev. 01	Initial issue of report	Mar. 12, 2021

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(j)(2)	Equivalent Isotropic Radiated Power (5G NR n77)	EIRP < 1640 Watt		
3.5	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(l)(1)	Conducted Band Edge Measurement (5G NR n77)	< $43+10\log_{10}$(P[Watts])	PASS	-
3.8	§2.1051 §27.53(l)(1)	Conducted Spurious Emission (5G NR n77)	< $43+10\log_{10}$(P[Watts])	PASS	-
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(l)(1)	Radiated Spurious Emission (5G NR n77)	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 44.99 dB at 15180.000 MHz

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Fibocom Wireless Inc.

1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.

1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G Module
Brand Name	Fibocom
Model Name	FM150-NA
FCC ID	ZMOFM150NA
EUT supports Radios application	WCDMA/LTE/5G NR/GNSS
IMEI Code	Conducted : 867654040329944 Radiation : N/A
HW Version	V1.0.1
SW Version	89601.1000.00.03.04.33
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This module is limited to installation in fixed applications.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Rx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Bandwidth	n77: 20/40/50/60/80/90/100MHz n78: 20/30/40/50/60/70/80/90/100MHz
SCS	n77/n78: 30kHz
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: QPSK / 16QAM / 64QAM / 256QAM

WWAN ANTENNA GAIN (dBi)		
Frequency Band	**ANT.1： GHT-019A**	**ANT.2： AN0750-64S01BSM**
5G NR n77	**3.69**	-2.30

Remark: Between the two type of antennas, only the worst antenna gain evaluated test is shown in bold.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum Conducted Power, Frequency Tolerance, and Emission Designator

5G NR n77		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	**Frequency Range (MHz)**	**Emission Designator (99%OBW)**	**Maximum Conducted power (W)**	**Emission Designator (99%OBW)**	**Maximum Conducted power (W)**
100	3750.0 ~ 3930.0	97M3G7D	0.4571	97M9W7D	0.4355
Frequency Tolerance (ppm)		0.0044			

Note: 5G NR n77 overlaps the entire frequency range of 5G NR n78. Therefore, the test results provided in this report covers n77 as well n78.

1.7 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-KS TH01-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

1.9 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 27O
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

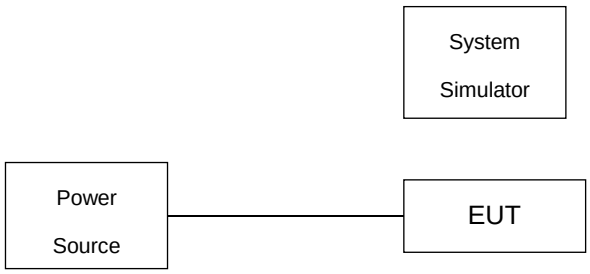
The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)						Modulation					RB #		Test Channel		
		20	40	50	60	80-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Full	L	M	H
Max. Output Power	n77	v	v	v	v	v	v	-	v	v	v	v	v	v	v	v	v
Max. Output Power	n78						v	-	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n77	v				-	-	-	v	v	v	v		v		v	
26dB and 99% Bandwidth	n77					-	v	-	v	v				v		v	
Conducted Band Edge	n77	v	v	v	v	v	v	-	v	v	v	v	v	v	v		v
Conducted Spurious Emission	n77	v	v		v	v	v	-	v				v	v	v	v	v
Frequency Stability	n77					-	v	-	v					v		v	
E.R.P / E.I.R.P	n77	v	v	v	v	v	v	-	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n77	Worst Case														v	
Note	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. This module is limited to installation in fixed applications. 5. 5G NR n77 supports HPUE. 5G NR n77 overlaps the entire frequency range of 5G NR n78. Therefore, the test results provided in this report covers n77 as well n78, n78 only verify max BW conducted power.															

	6. 5G NR supports SA and NSA mode (refer to the Operation Description), according to the maximum power, only show the worst mode in the report. 7. For modulation of CP-OFDM and DFT-s-OFDM , according to engineering evaluation, we chose the DFT-s-OFDM modulation to perform all tests and show in the report.

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
4.	Antenna	N/A	N/A	N/A	N/A	N/A
5.	Adapter	N/A	N/A	N/A	N/A	N/A
6.	Test jig	N/A	N/A	N/A	N/A	N/A

2.4 Measurement Results Explanation Example

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 3.24 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 3.24 + 10 = 13.24 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n77 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930
90	Channel	649668	656000	662334
	Frequency	3745.02	3840	3935.01
80	Channel	649334	656000	662668
	Frequency	3740.01	3840	3940.02
60	Channel	648668	656000	663334
	Frequency	3730.02	3840	3950.01
50	Channel	648334	656000	663668
	Frequency	3725.01	3840	3955.02
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
20	Channel	647334	656000	664668
	Frequency	3710.01	3840	3970.02

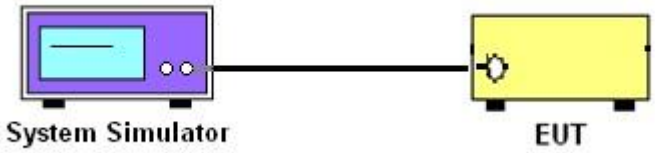
3 Conducted Test Items

3.1 Measuring Instruments

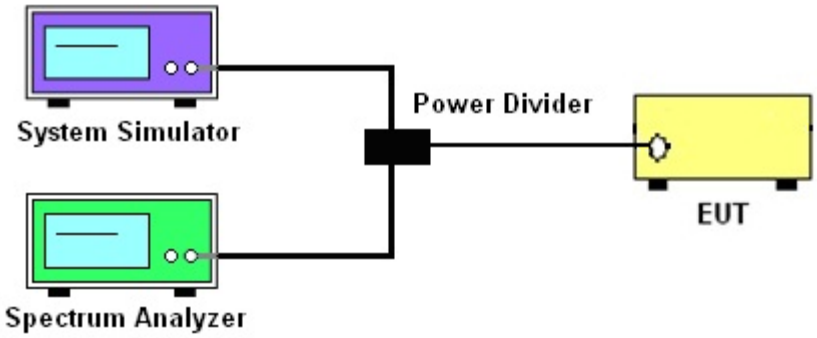
See list of measuring instruments of this test report.

3.2 Test Setup

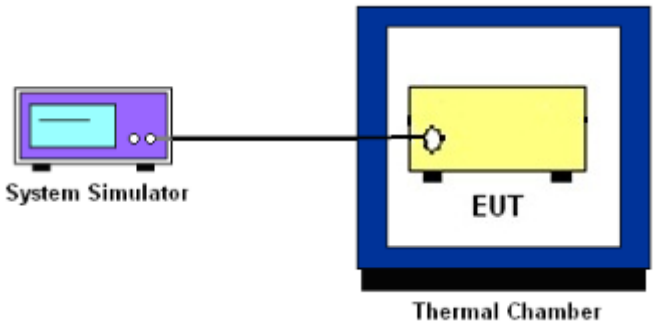
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and EIRP

3.4.1 Description of the Conducted Output Power Measurement and EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

(1) The power of each fixed or base station transmitting in the 3700-3980 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to an equivalent isotropically radiated power (EIRP) of 3280 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(2) The power of each fixed or base station transmitting in the 3700-3980 MHz band and situated in any geographic location other than that described in paragraph (j)(1) of this section is limited to an EIRP of 1640 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

3.5.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2.6 (PAPR).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set EUT in maximum power output.
4. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Set span ≥ 2 × OBW in spectrum analyzer.
5. Set the RBW = 1MHz, VBW = 3MHz, Detector = power averaging, Trace mode = max hold, Set span ≥ 2 × OBW in spectrum analyzer.
6. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission.
7. PAPR (dB) = P_{Pk} (dBm) − P_{Avg} (dBm)
   where
   PAPR peak-to-average power ratio, in dB
   P_{Pk} measured peak power level, in dBm
   P_{Avg} measured average power level, in dBm
8. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

27.53(l)(1)

For base station operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(1) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10^{th} harmonic.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

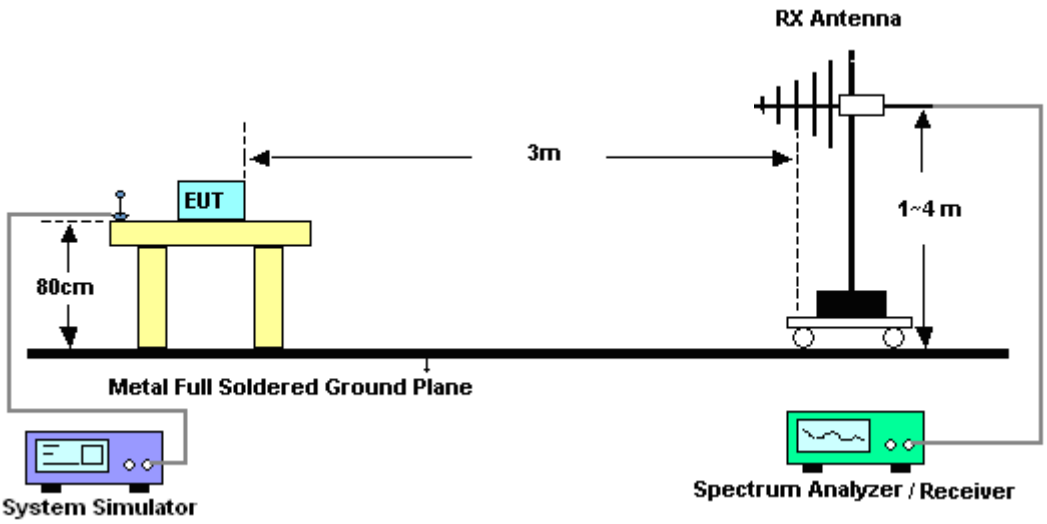
4 Radiated Test Items

4.1 Measuring Instruments

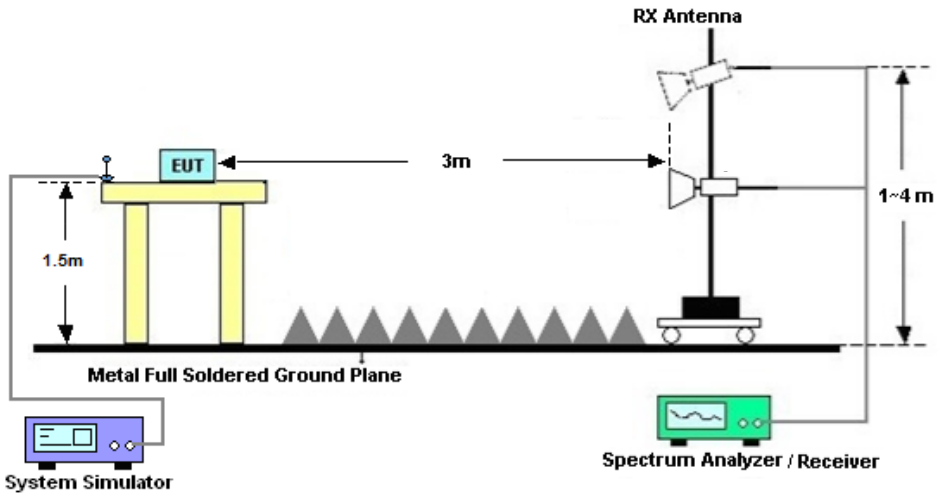
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 01, 2020	Feb. 25, 2021~ Feb. 27, 2021	Oct. 31, 2021	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 03, 2020	Feb. 25, 2021~ Feb. 27, 2021	Jul. 02, 2021	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 15, 2020	Feb. 19, 2021	Apr. 14, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 08, 2020	Feb. 19, 2021	Jun. 07, 2021	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 20, 2020	Feb. 19, 2021	Apr. 19, 2021	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Jan. 06, 2021	Feb. 19, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	Feb. 19, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 07, 2021	Feb. 19, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Jan. 06, 2021	Feb. 19, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	Feb. 19, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Feb. 19, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Feb. 19, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Feb. 19, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power and EIRP)

5G NR n77 SA

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				650000	656000	662000		L	M	H
Frequency (MHz)				3750	3840	3930				
100	QPSK	1	1	26.53	26.56	26.60	3.69	1.0520	1.0593	1.0691
100	QPSK	1	137	26.01	26.03	26.09	3.69	0.9333	0.9376	0.9506
100	QPSK	1	271	25.95	25.88	25.83	3.69	0.9204	0.9057	0.8954
100	QPSK	135	0	25.72	25.75	25.82	3.69	0.8730	0.8790	0.8933
100	QPSK	135	69	26.12	26.03	26.11	3.69	0.9572	0.9376	0.9550
100	QPSK	135	138	25.35	25.15	25.22	3.69	0.8017	0.7656	0.7780
100	QPSK	270	0	25.56	25.87	25.77	3.69	0.8414	0.9036	0.8831
100	16QAM	1	1	26.39	26.35	26.37	3.69	1.0186	1.0093	1.0139
100	64QAM	1	1	23.90	23.82	23.77	3.69	0.5741	0.5636	0.5572
100	256QAM	1	1	21.98	21.78	21.83	3.69	0.3690	0.3524	0.3565
Channel				649668	656000	662334	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3745.02	3840	3935.01				
90	QPSK	1	1	26.49	26.45	26.43	3.69	1.0423	1.0328	1.0280
90	16QAM	1	1	26.15	26.18	26.20	3.69	0.9638	0.9705	0.9750
Channel				649334	656000	662668	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3740.01	3840	3940.02				
80	QPSK	1	1	26.41	26.35	26.39	3.69	1.0233	1.0093	1.0186
80	16QAM	1	1	26.17	26.14	26.11	3.69	0.9683	0.9616	0.9550
Channel				648668	656000	663334	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3730.02	3840	3950.01				
60	QPSK	1	1	26.44	26.33	26.44	3.69	1.0304	1.0046	1.0304
60	16QAM	1	1	26.12	26.16	26.18	3.69	0.9572	0.9661	0.9705
Channel				648334	656000	663668	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3725.01	3840	3955.02				
50	QPSK	1	1	26.45	26.47	26.50	3.69	1.0328	1.0375	1.0447
50	16QAM	1	1	26.19	26.22	26.23	3.69	0.9727	0.9795	0.9817
Channel				648000	656000	664000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3720	3840	3960				
40	QPSK	1	1	26.42	26.44	26.39	3.69	1.0257	1.0304	1.0186
40	16QAM	1	1	26.25	26.19	26.25	3.69	0.9863	0.9727	0.9863
Channel				647334	656000	664668	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				3710.01	3840	3970.02				
20	QPSK	1	1	26.46	26.49	26.40	3.69	1.0351	1.0423	1.0209
20	16QAM	1	1	26.13	26.17	26.20	3.69	0.9594	0.9683	0.9750

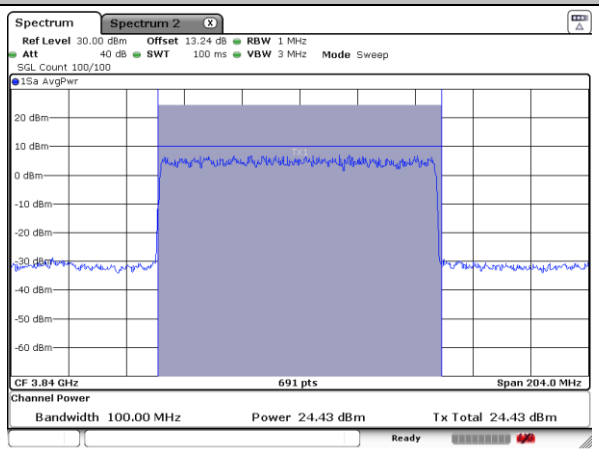
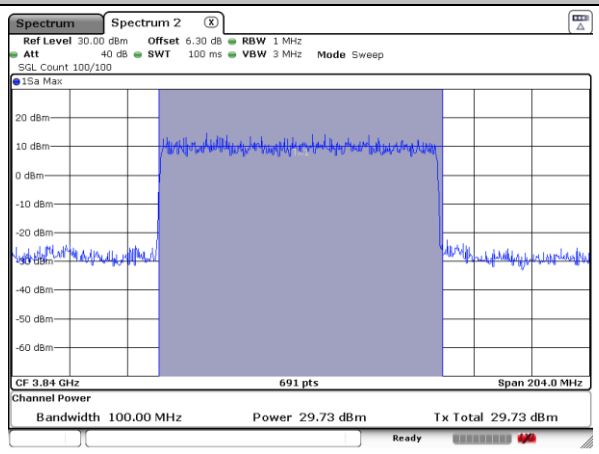
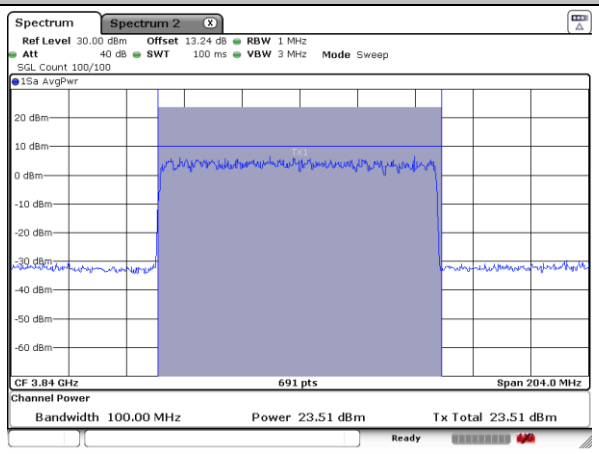
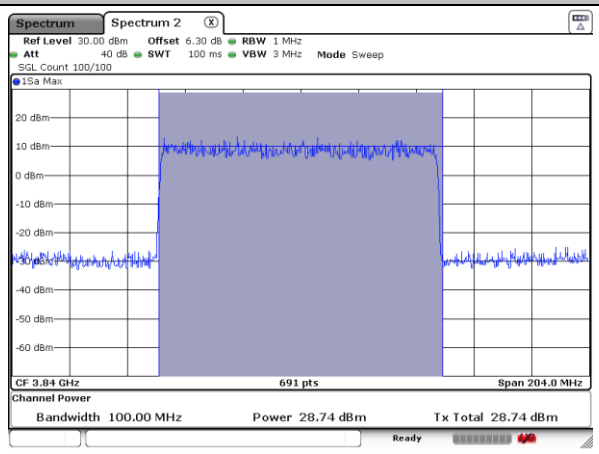
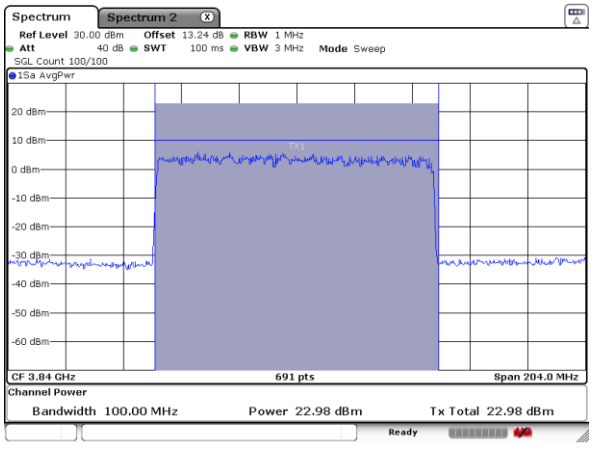
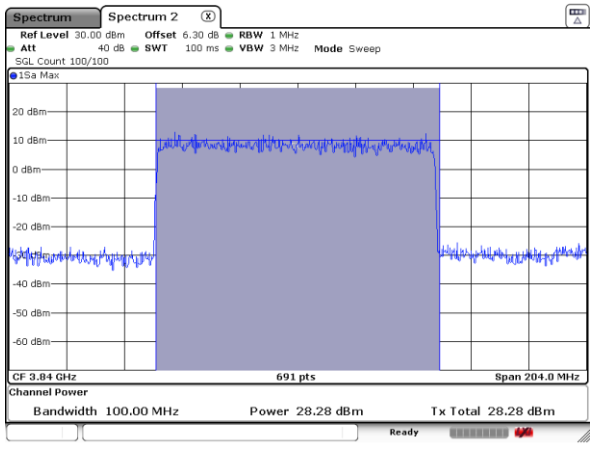
5G NR n78 SA (only verify Max BW conducted power)

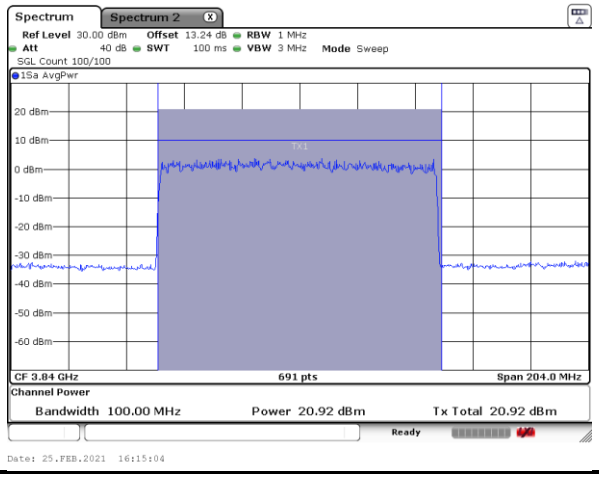
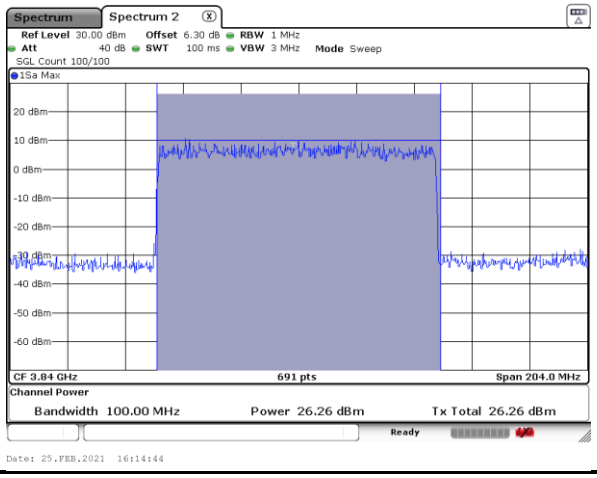
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel					650000	
Frequency (MHz)					3750	
100	QPSK	1	1		21.71	
100	QPSK	1	271		21.02	
100	QPSK	135	67		21.22	
100	QPSK	1	0		20.37	
100	QPSK	1	272		20.02	
100	QPSK	270	0		20.19	
100	16QAM	1	1		20.44	
100	64QAM	1	1		18.79	
100	256QAM	1	1		16.66	

5G NR n77 SA

Peak-to-Average Ratio

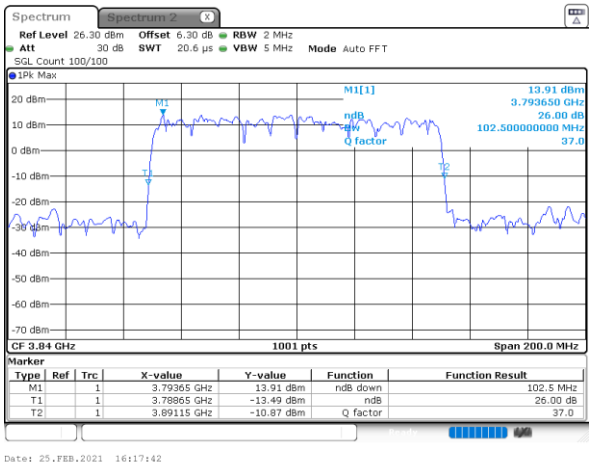
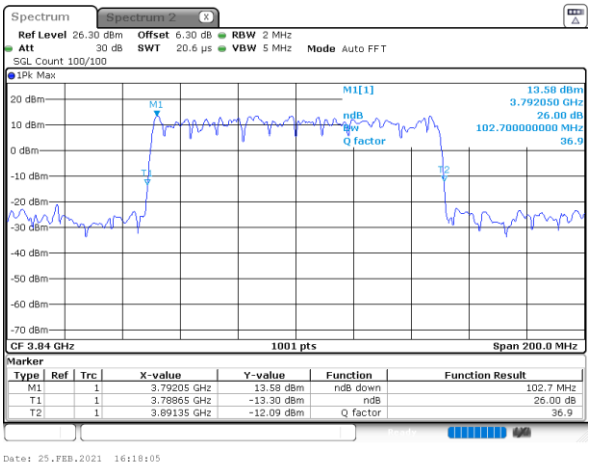
Mode	FR1 n77 / 20MHz / DFT-S OFDM				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	5.30	5.23	5.30	5.34	PASS

QPSK-A	QPSK-P
	
16QAM-A	**16QAM-P**
	
64QAM-A	**64QAM-P**
	

256QAM-A	256QAM-P
	

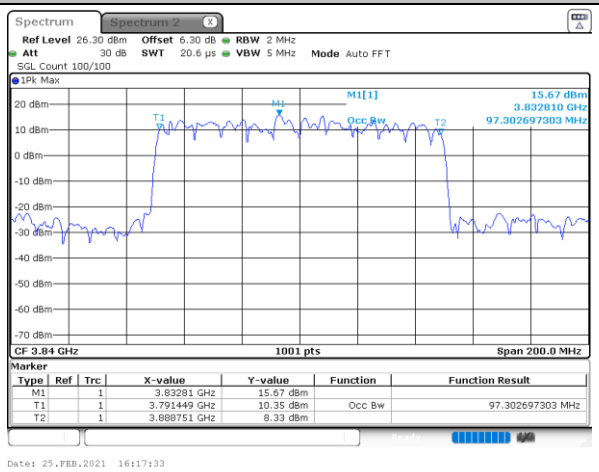
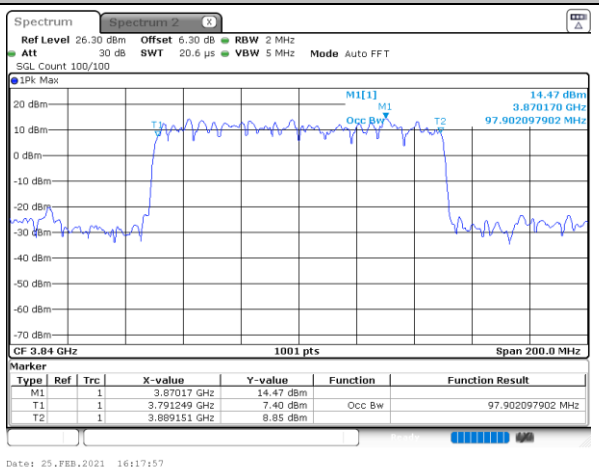
26dB Bandwidth

Mode	FR1 n77 : 26dB BW(MHz) / DFT-S OFDM							
BW	100M							
Mod.	QPSK	16QAM						
Middle CH	102.5	102.7						

QPSK	16QAM
	

Occupied Bandwidth

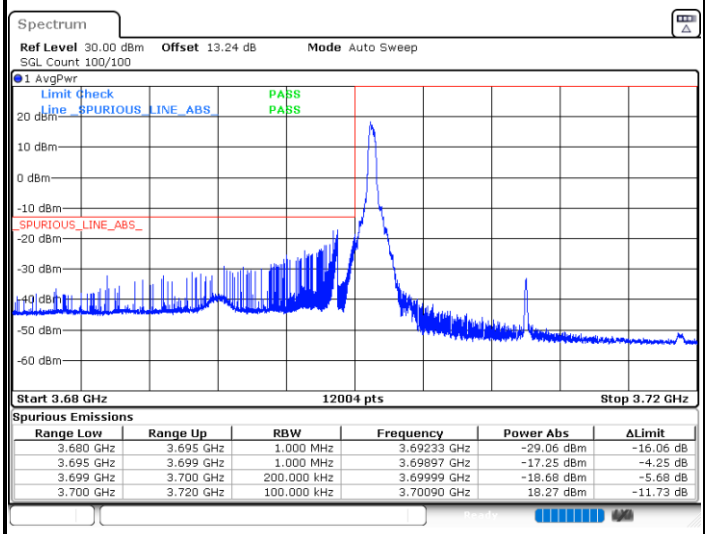
Mode	FR1 n77 : OB BW(MHz) / DFT-S OFDM							
BW	100M							
Mod.	QPSK	16QAM						
Middle CH	97.30	97.90						

QPSK	16QAM
	

Conducted Band Edge

FR1 n77 / 20MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69233 GHz	-29.06 dBm	-16.06 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69897 GHz	-17.25 dBm	-4.25 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.69999 GHz	-18.68 dBm	-5.68 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.70090 GHz	18.27 dBm	-11.73 dB

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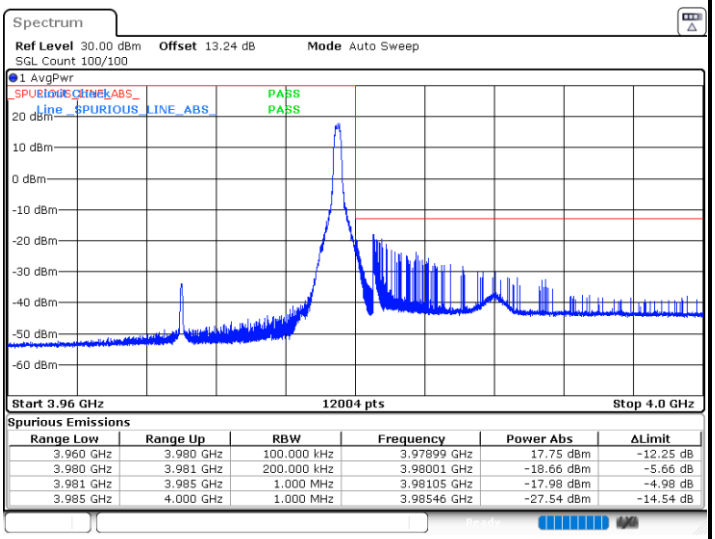
Highest Band Edge / 1RBmax



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.97899 GHz	17.75 dBm	-12.25 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.98001 GHz	-18.66 dBm	-5.66 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98105 GHz	-17.98 dBm	-4.98 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98546 GHz	-27.54 dBm	-14.54 dB

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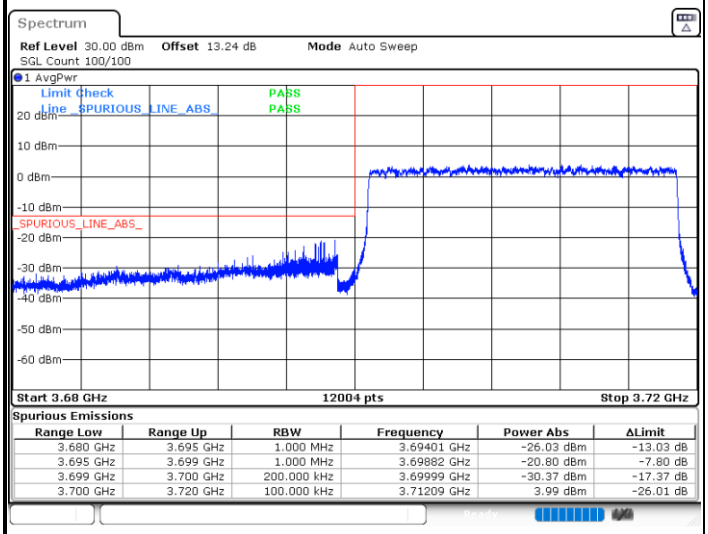
Lowest Band Edge / Full RB

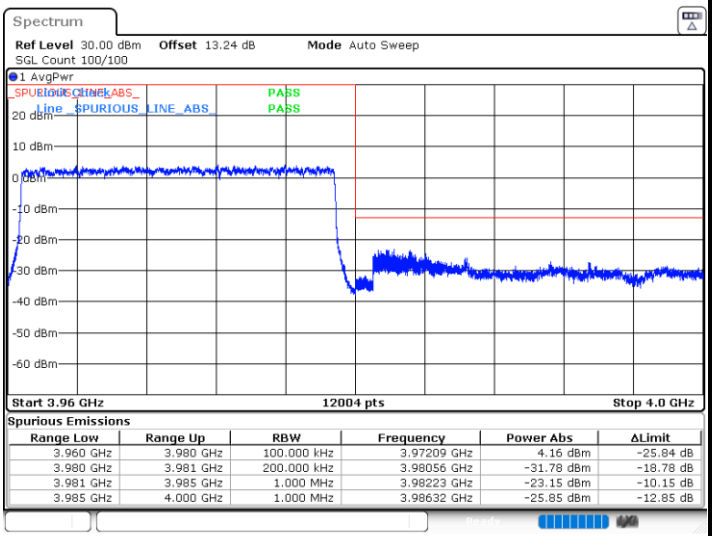


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69401 GHz	-26.03 dBm	-13.03 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69882 GHz	-20.80 dBm	-7.80 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.69999 GHz	-30.37 dBm	-17.37 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.71209 GHz	3.99 dBm	-26.01 dB

Date: 27.FEB.2021 15:09:47

Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.97209 GHz	4.16 dBm	-25.84 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.98056 GHz	-31.78 dBm	-18.78 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98223 GHz	-23.15 dBm	-10.15 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98632 GHz	-25.85 dBm	-12.85 dB

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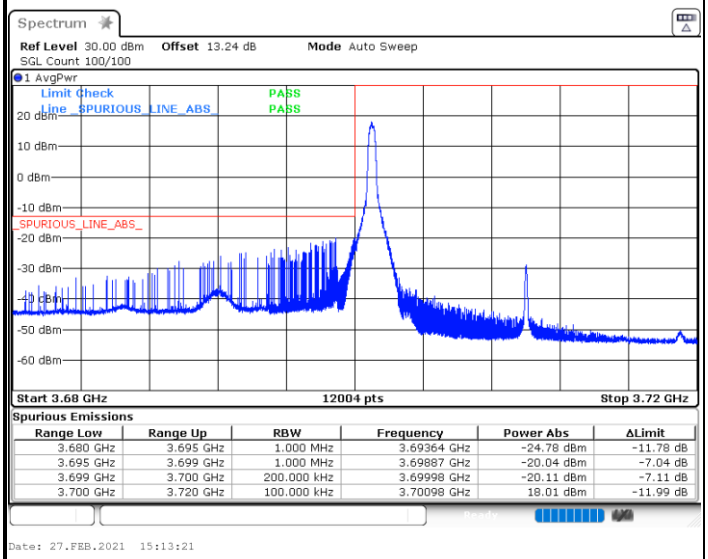
FR1 n77 / 20MHz / DFT-S OFDM / 16QAM

Lowest Band Edge / 1RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69364 GHz	-24.78 dBm	-11.78 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69887 GHz	-20.04 dBm	-7.04 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.69998 GHz	-20.11 dBm	-7.11 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.70098 GHz	18.01 dBm	-11.99 dB

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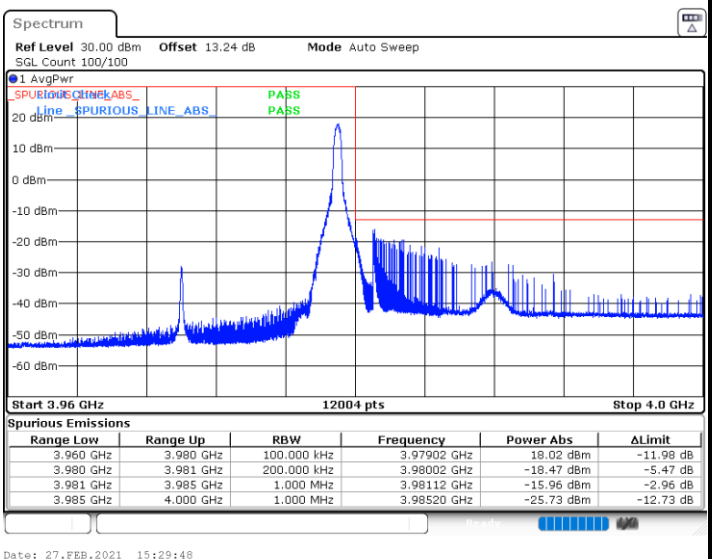
Highest Band Edge / 1RBmax



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.97902 GHz	18.02 dBm	-11.98 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.98002 GHz	-18.47 dBm	-5.47 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98112 GHz	-15.96 dBm	-2.96 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98520 GHz	-25.73 dBm	-12.73 dB

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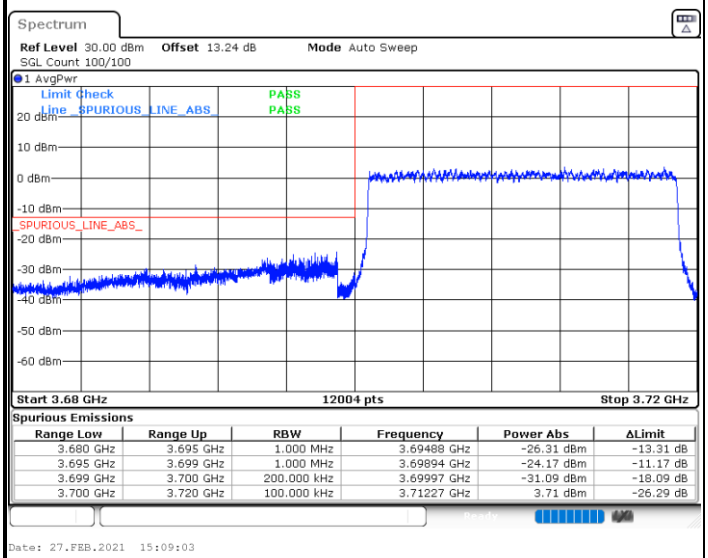
Lowest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69488 GHz	-26.31 dBm	-13.31 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69894 GHz	-24.17 dBm	-11.17 dB
3.699 GHz	3.700 GHz	200.000 kHz	3.69997 GHz	-31.09 dBm	-18.09 dB
3.700 GHz	3.720 GHz	100.000 kHz	3.71227 GHz	3.71 dBm	-26.29 dB

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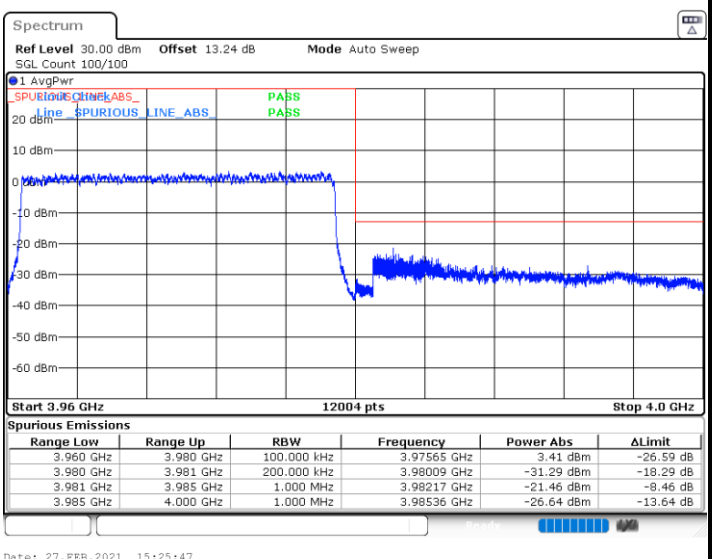
Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.960 GHz	3.980 GHz	100.000 kHz	3.97565 GHz	3.41 dBm	-26.59 dB
3.980 GHz	3.981 GHz	200.000 kHz	3.98009 GHz	-31.29 dBm	-18.29 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98217 GHz	-21.46 dBm	-8.46 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98536 GHz	-26.64 dBm	-13.64 dB

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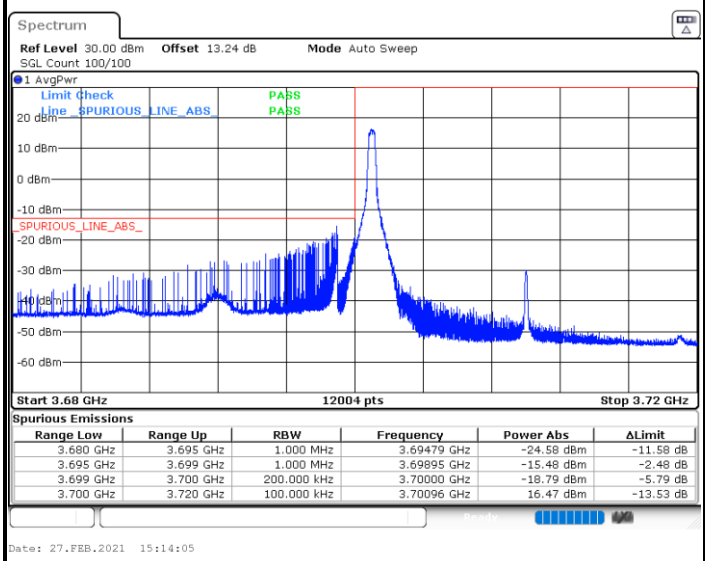
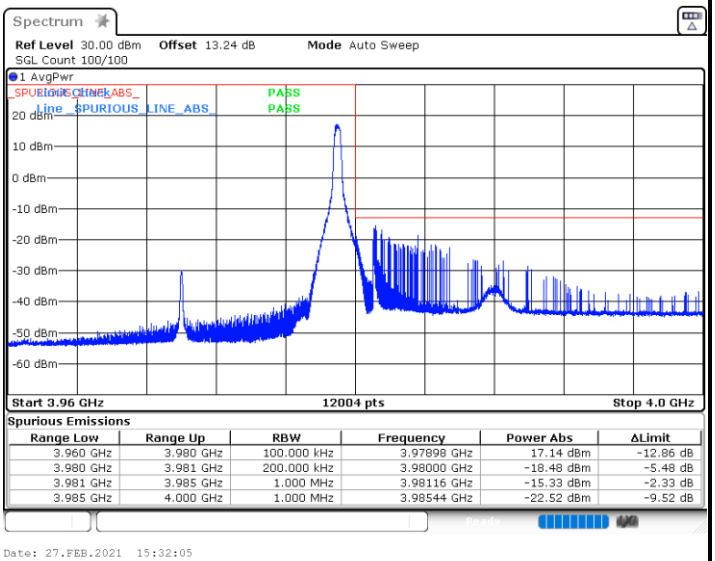
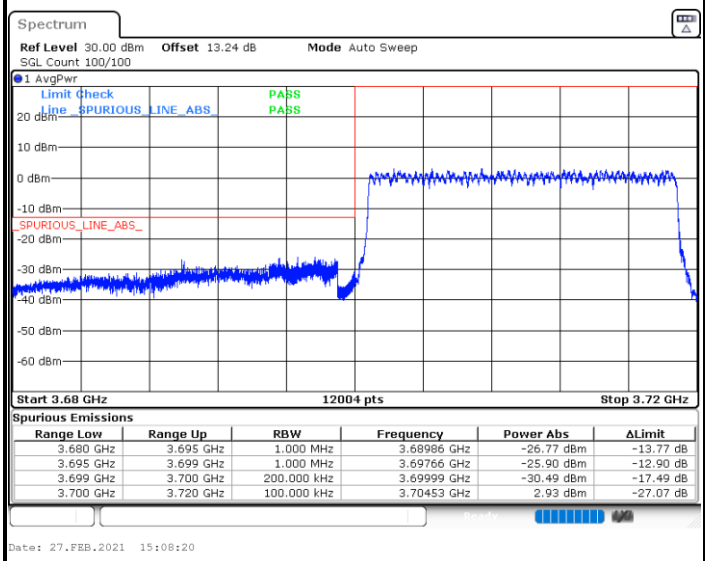
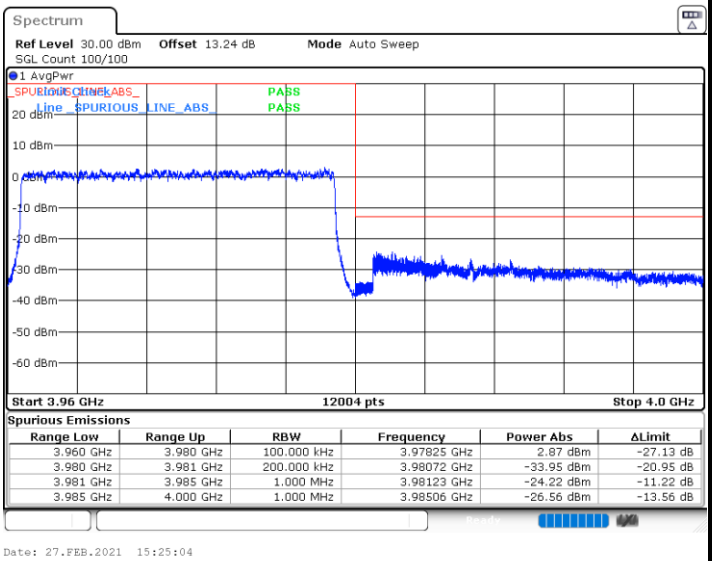
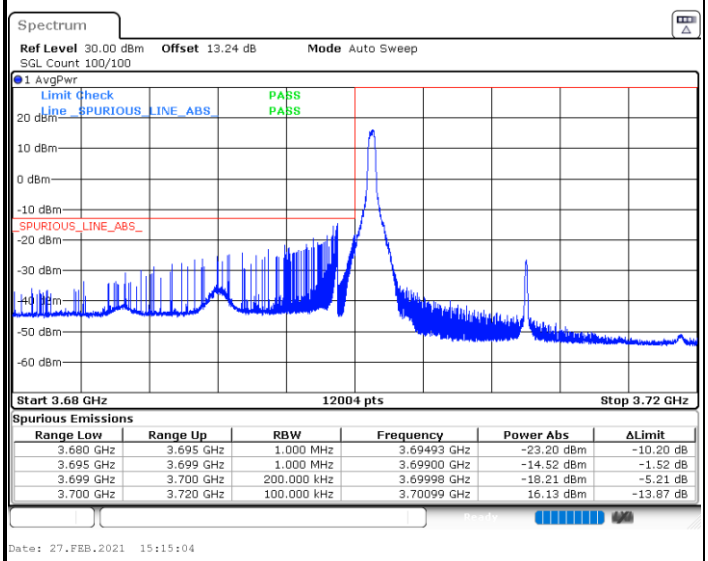
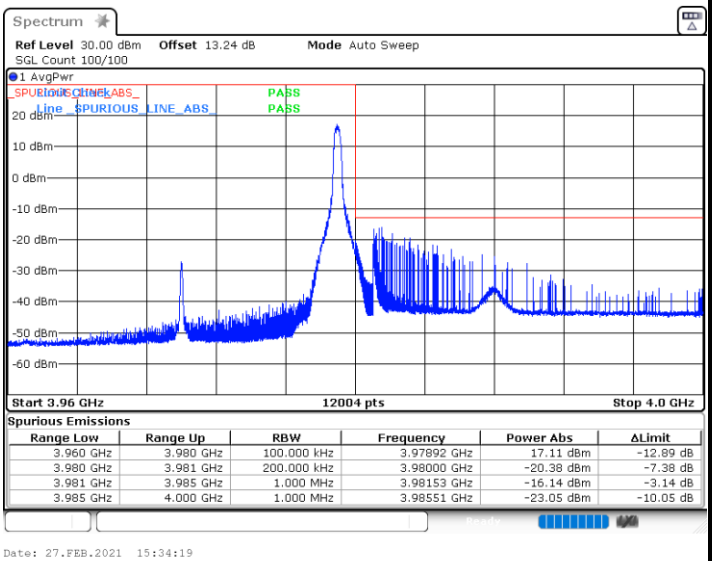
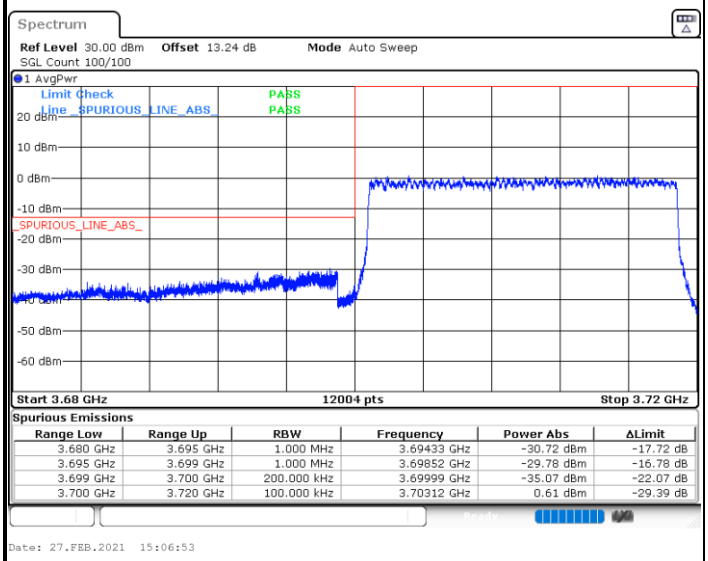
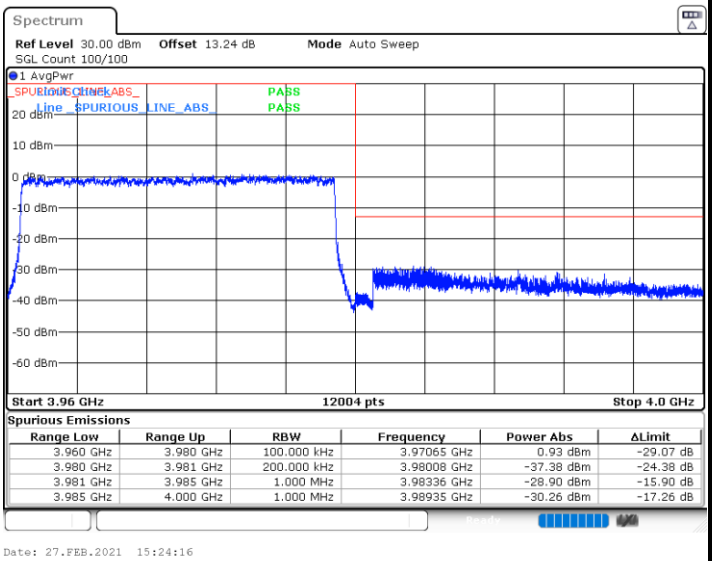
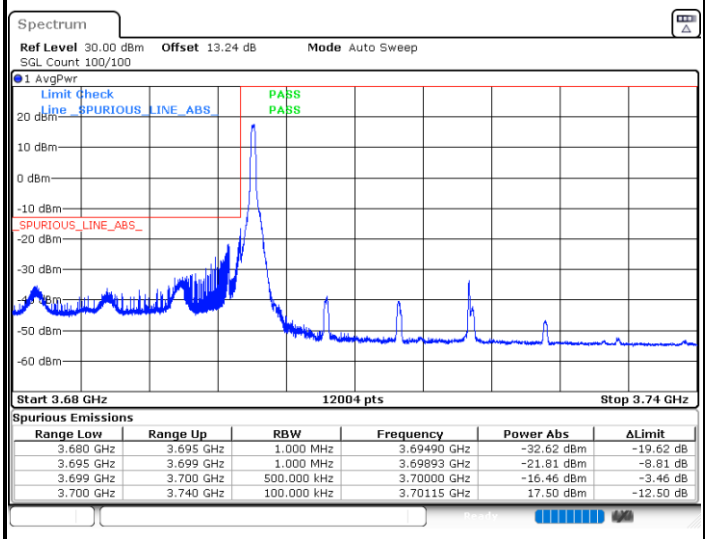
FR1 n77 / 20MHz / DFT-S OFDM / 64QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 20MHz / DFT-S OFDM / 256QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 40MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69490 GHz	-32.62 dBm	-19.62 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69893 GHz	-21.81 dBm	-8.81 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.70000 GHz	-16.46 dBm	-3.46 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.70115 GHz	17.50 dBm	-12.50 dB

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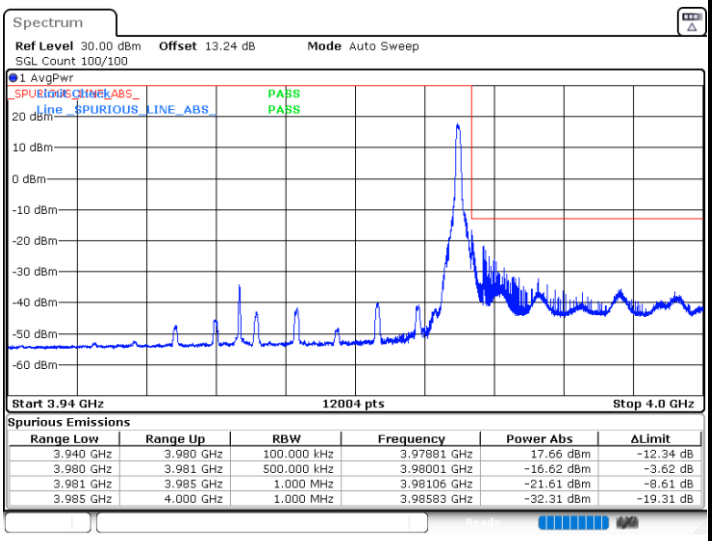
Highest Band Edge / 1RBmax

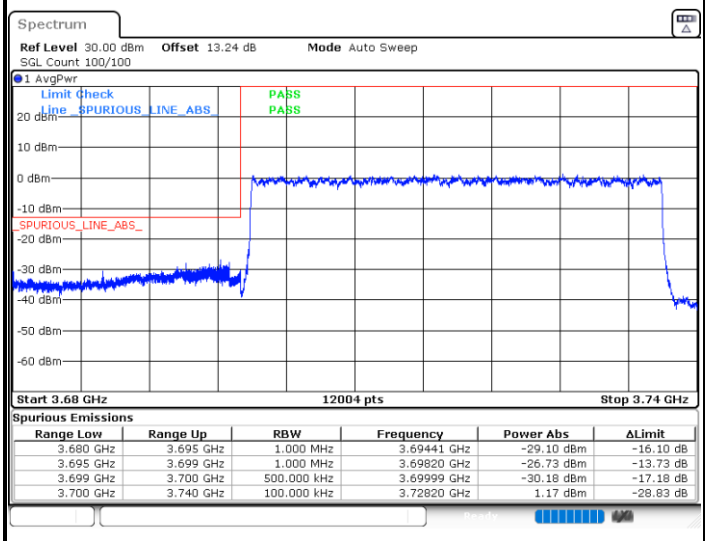


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.97881 GHz	17.66 dBm	-12.34 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98001 GHz	-16.62 dBm	-3.62 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98106 GHz	-21.61 dBm	-8.61 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98583 GHz	-32.31 dBm	-19.31 dB

Date: 27.FEB.2021 15:51:13

Lowest Band Edge / Full RB

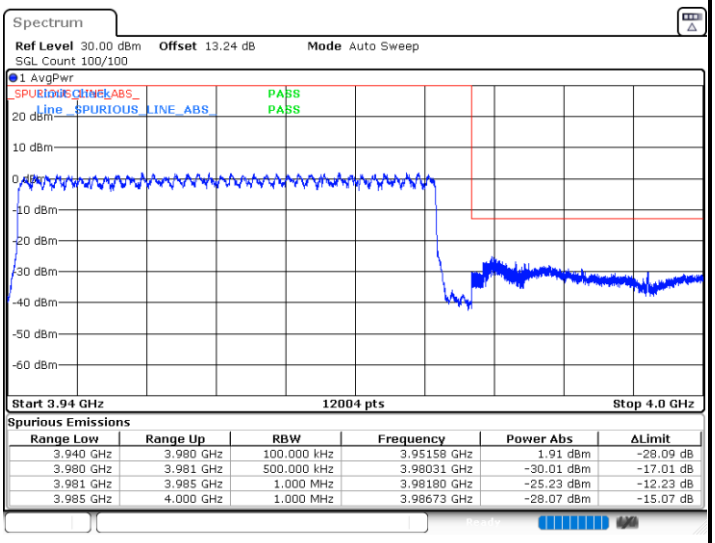


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69441 GHz	-29.10 dBm	-16.10 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69820 GHz	-26.73 dBm	-13.73 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69999 GHz	-30.18 dBm	-17.18 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.72820 GHz	1.17 dBm	-28.83 dB

Date: 27.FEB.2021 15:37:43

Highest Band Edge / Full RB



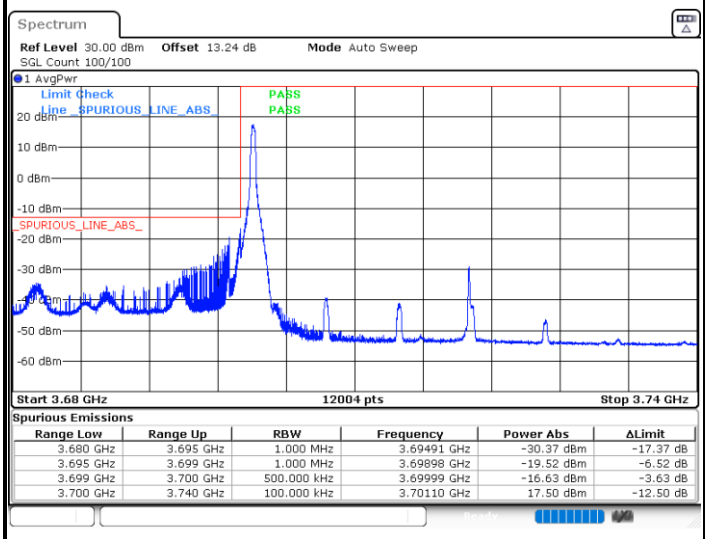
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.95158 GHz	1.91 dBm	-28.09 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98031 GHz	-30.01 dBm	-17.01 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98180 GHz	-25.23 dBm	-12.23 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98673 GHz	-28.07 dBm	-15.07 dB

Date: 27.FEB.2021 15:48:37

FR1 n77 / 40MHz / DFT-S OFDM / 16QAM

Lowest Band Edge / 1RB0

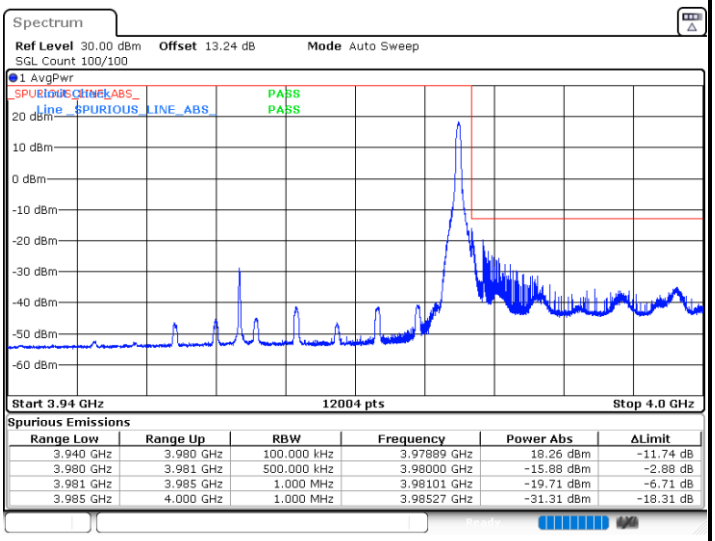


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69491 GHz	-30.37 dBm	-17.37 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69898 GHz	-19.52 dBm	-6.52 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69999 GHz	-16.63 dBm	-3.63 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.70110 GHz	17.50 dBm	-12.50 dB

Date: 27.FEB.2021 15:41:03

Highest Band Edge / 1RBmax

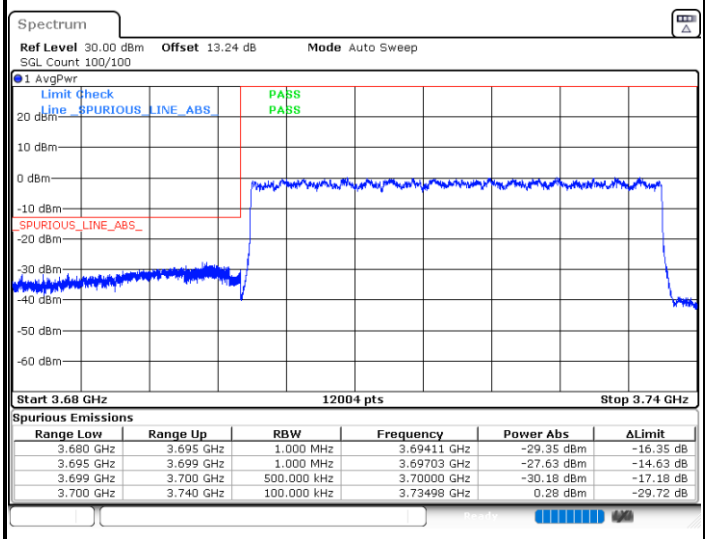


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.97889 GHz	18.26 dBm	-11.74 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98000 GHz	-15.88 dBm	-2.88 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98101 GHz	-19.71 dBm	-6.71 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98527 GHz	-31.31 dBm	-18.31 dB

Date: 27.FEB.2021 15:51:55

Lowest Band Edge / Full RB

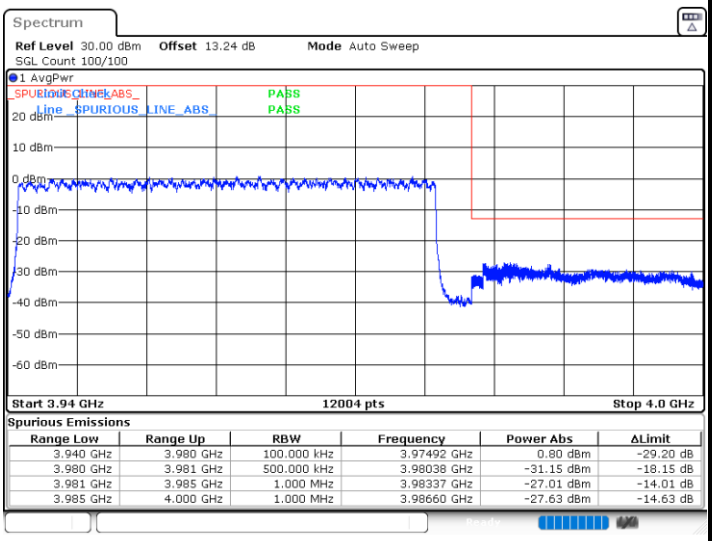


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69411 GHz	-29.35 dBm	-16.35 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69703 GHz	-27.63 dBm	-14.63 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.70000 GHz	-30.18 dBm	-17.18 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.73498 GHz	0.28 dBm	-29.72 dB

Date: 27.FEB.2021 15:37:01

Highest Band Edge / Full RB



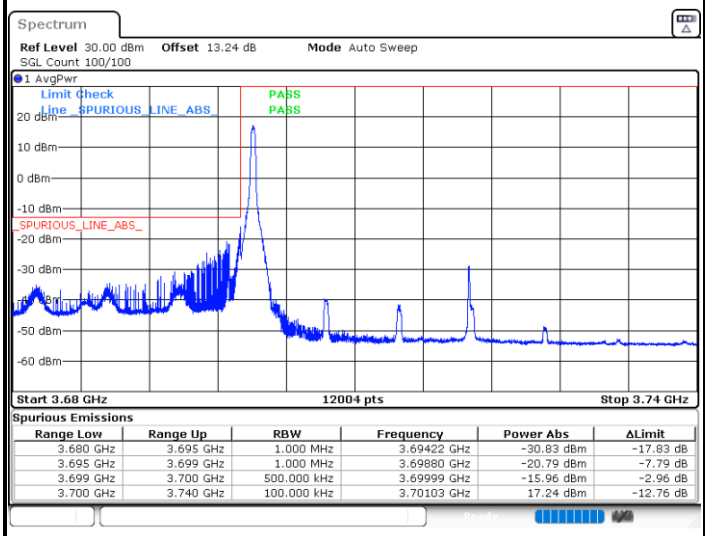
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.97492 GHz	0.80 dBm	-29.20 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98038 GHz	-31.15 dBm	-18.15 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98337 GHz	-27.01 dBm	-14.01 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98660 GHz	-27.63 dBm	-14.63 dB

Date: 27.FEB.2021 15:47:54

FR1 n77 / 40MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / 1RB0

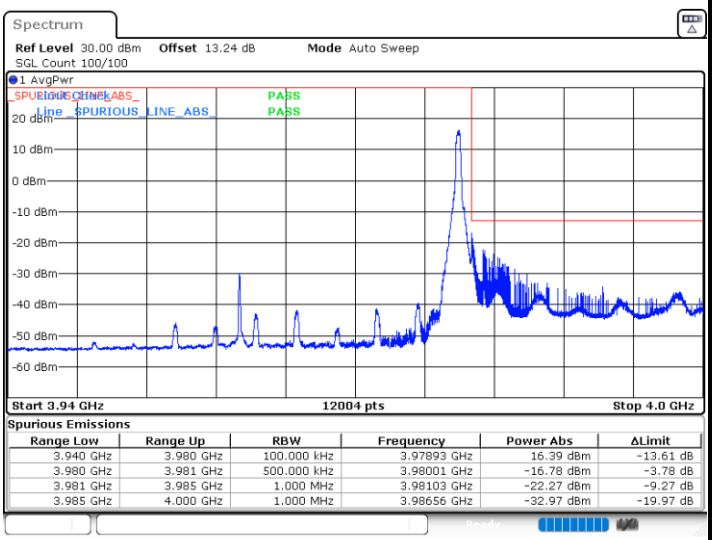


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69422 GHz	-30.83 dBm	-17.83 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69880 GHz	-20.79 dBm	-7.79 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69999 GHz	-15.96 dBm	-2.96 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.70103 GHz	17.24 dBm	-12.76 dB

Date: 27.FEB.2021 15:41:47

Highest Band Edge / 1RBmax

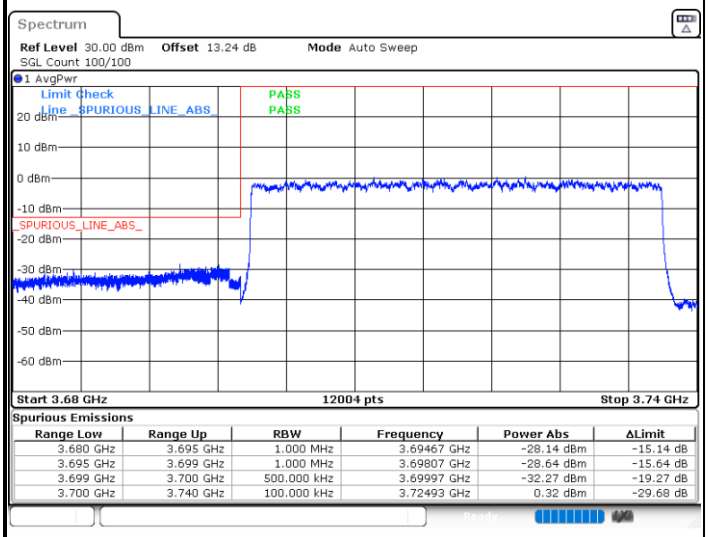


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.97893 GHz	16.39 dBm	-13.61 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98001 GHz	-16.78 dBm	-3.78 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98103 GHz	-22.27 dBm	-9.27 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98656 GHz	-32.97 dBm	-19.97 dB

Date: 27.FEB.2021 15:52:37

Lowest Band Edge / Full RB

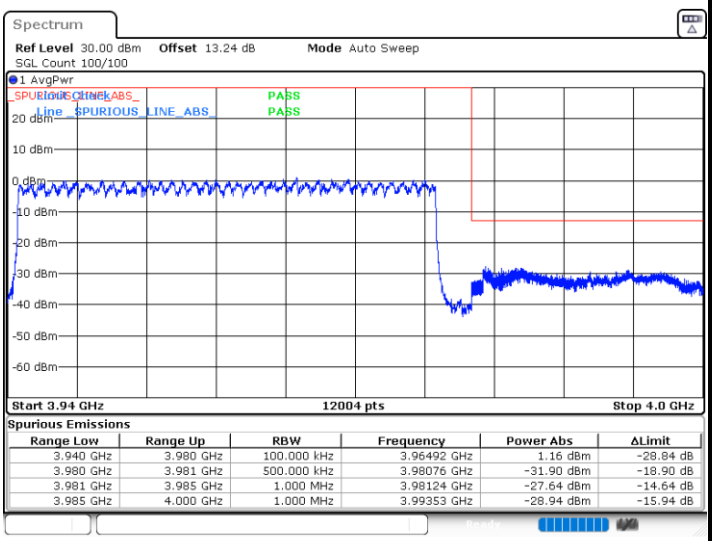


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69467 GHz	-28.14 dBm	-15.14 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69807 GHz	-28.64 dBm	-15.64 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69997 GHz	-32.27 dBm	-19.27 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.72493 GHz	0.32 dBm	-29.68 dB

Date: 27.FEB.2021 15:36:20

Highest Band Edge / Full RB



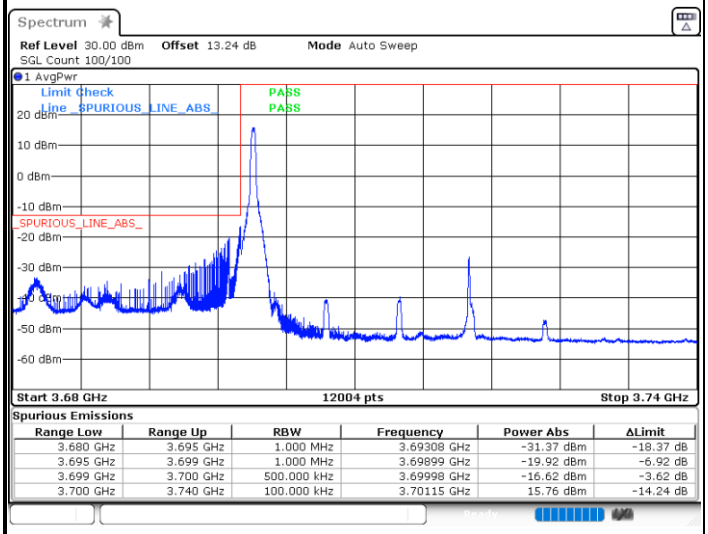
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.96492 GHz	1.16 dBm	-28.84 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98076 GHz	-31.90 dBm	-18.90 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98124 GHz	-27.64 dBm	-14.64 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.99353 GHz	-28.94 dBm	-15.94 dB

Date: 27.FEB.2021 15:47:14

FR1 n77 / 40MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / 1RB0

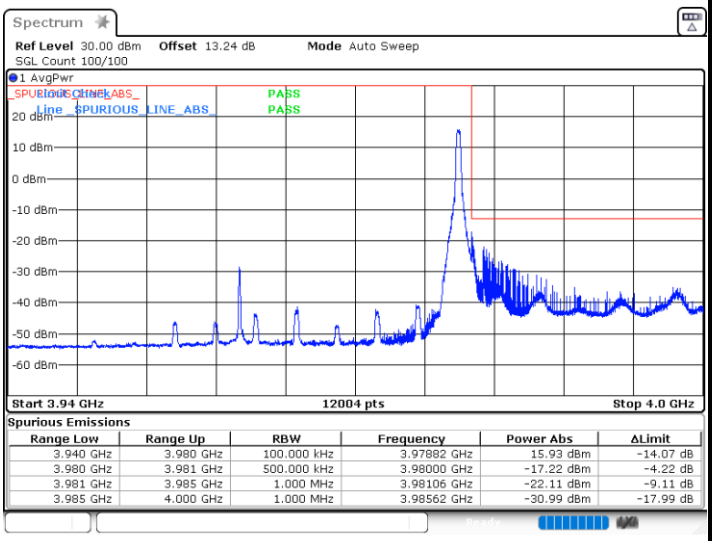


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69308 GHz	-31.37 dBm	-18.37 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69899 GHz	-19.92 dBm	-6.92 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69998 GHz	-16.62 dBm	-3.62 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.70115 GHz	15.76 dBm	-14.24 dB

Date: 27.FEB.2021 15:43:38

Highest Band Edge / 1RBmax

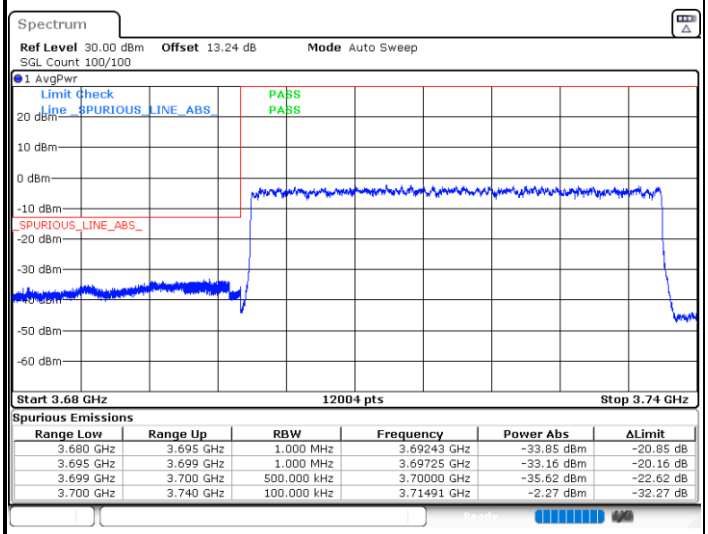


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.97882 GHz	15.93 dBm	-14.07 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98000 GHz	-17.22 dBm	-4.22 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98106 GHz	-22.11 dBm	-9.11 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98562 GHz	-30.99 dBm	-17.99 dB

Date: 27.FEB.2021 15:54:21

Lowest Band Edge / Full RB

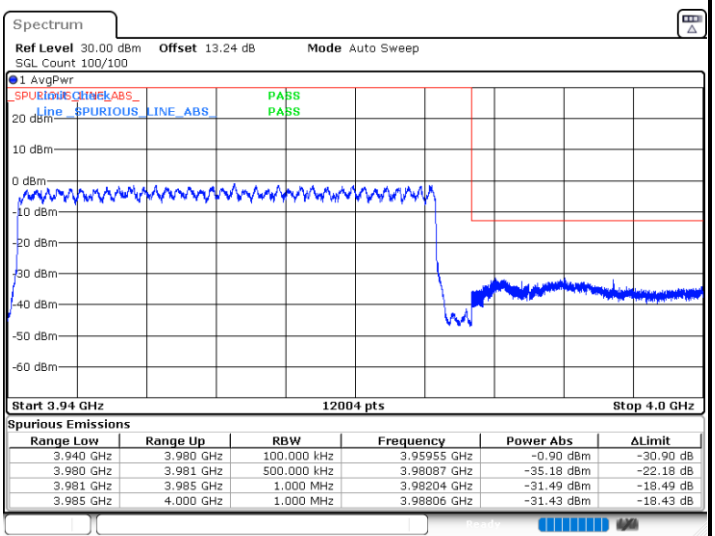


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69243 GHz	-33.85 dBm	-20.85 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69725 GHz	-33.16 dBm	-20.16 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.70000 GHz	-35.62 dBm	-22.62 dB
3.700 GHz	3.740 GHz	100.000 kHz	3.71491 GHz	-2.27 dBm	-32.27 dB

Date: 27.FEB.2021 15:35:40

Highest Band Edge / Full RB



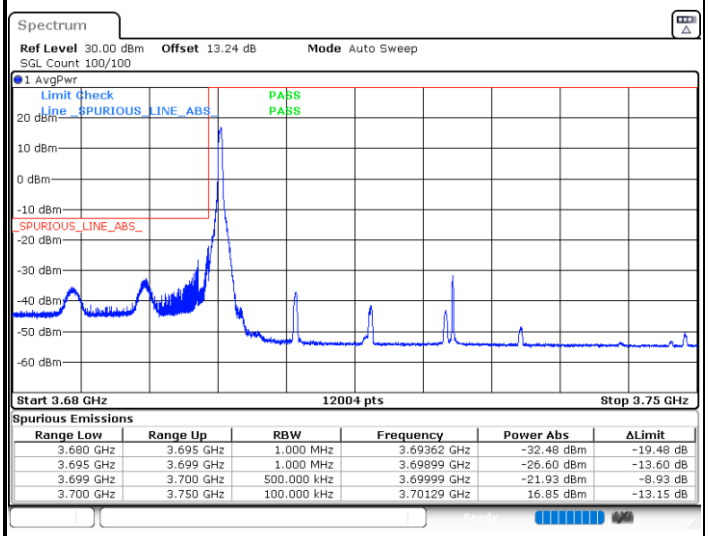
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.940 GHz	3.980 GHz	100.000 kHz	3.95955 GHz	-0.90 dBm	-30.90 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98087 GHz	-35.18 dBm	-22.18 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98204 GHz	-31.49 dBm	-18.49 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98806 GHz	-31.43 dBm	-18.43 dB

Date: 27.FEB.2021 15:46:32

FR1 n77 / 50MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0

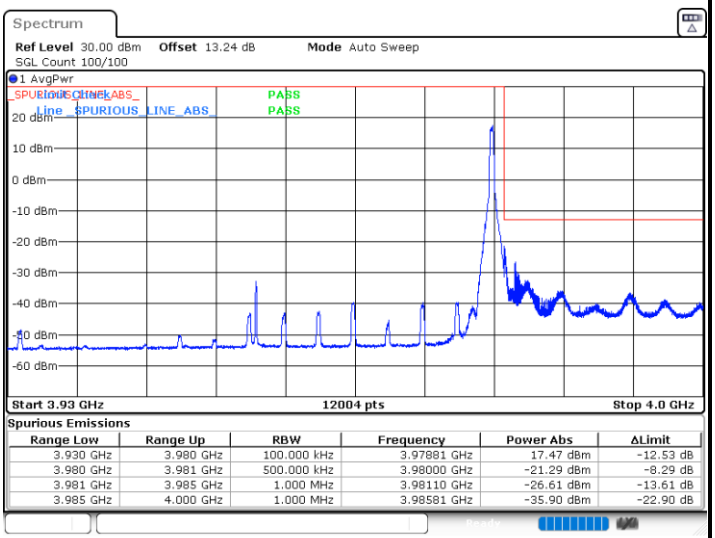


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69362 GHz	-32.48 dBm	-19.48 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69899 GHz	-26.60 dBm	-13.60 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69999 GHz	-21.93 dBm	-8.93 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.70129 GHz	16.85 dBm	-13.15 dB

Date: 27.FEB.2021 16:15:20

Highest Band Edge / 1RBmax

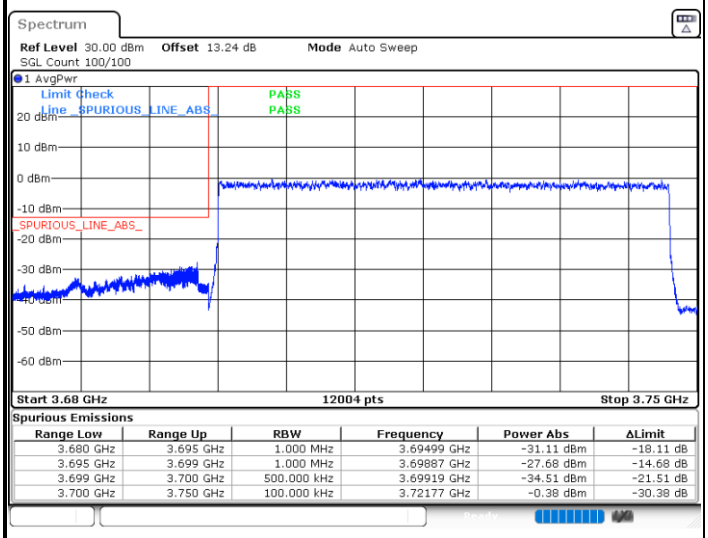


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.97881 GHz	17.47 dBm	-12.53 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98000 GHz	-21.29 dBm	-8.29 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98110 GHz	-26.61 dBm	-13.61 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98581 GHz	-35.90 dBm	-22.90 dB

Date: 27.FEB.2021 17:06:06

Lowest Band Edge / Full RB

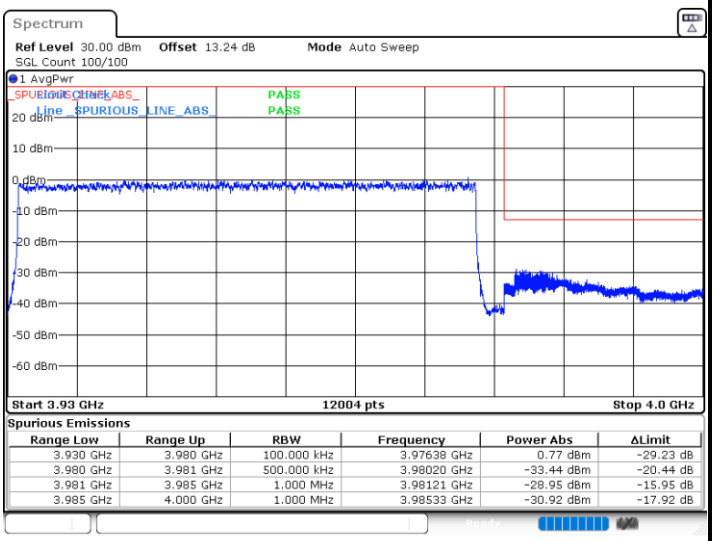


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69499 GHz	-31.11 dBm	-18.11 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69887 GHz	-27.68 dBm	-14.68 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69919 GHz	-34.51 dBm	-21.51 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.72177 GHz	-0.38 dBm	-30.38 dB

Date: 27.FEB.2021 16:12:33

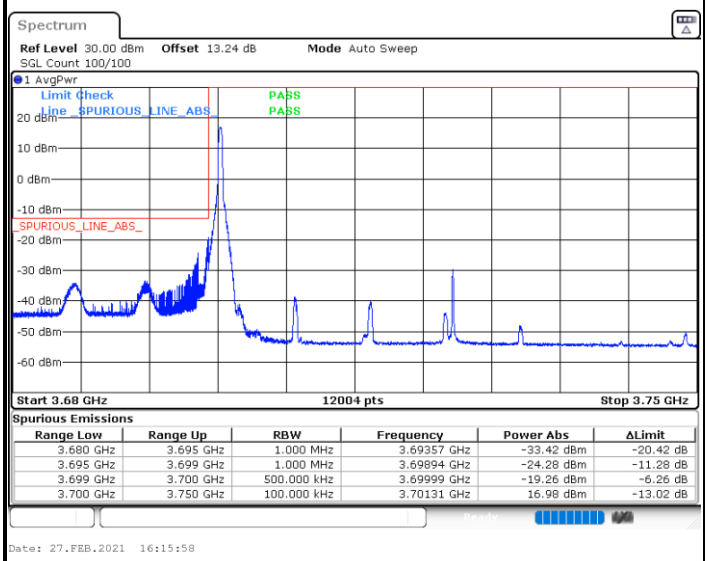
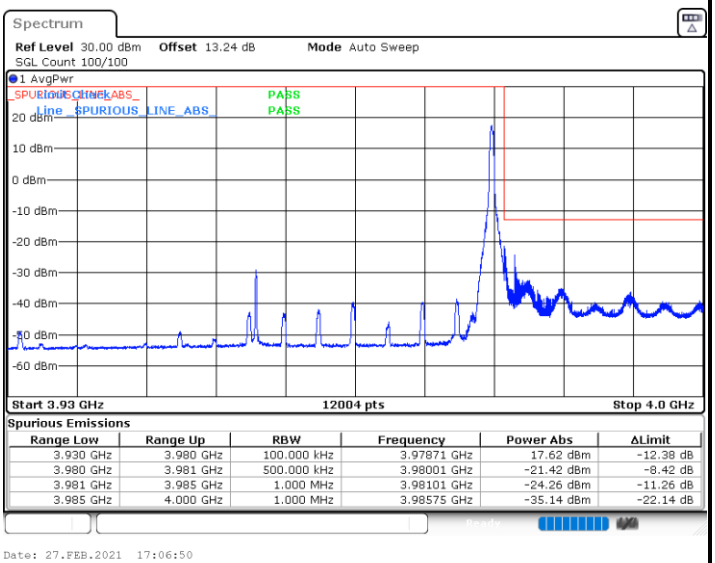
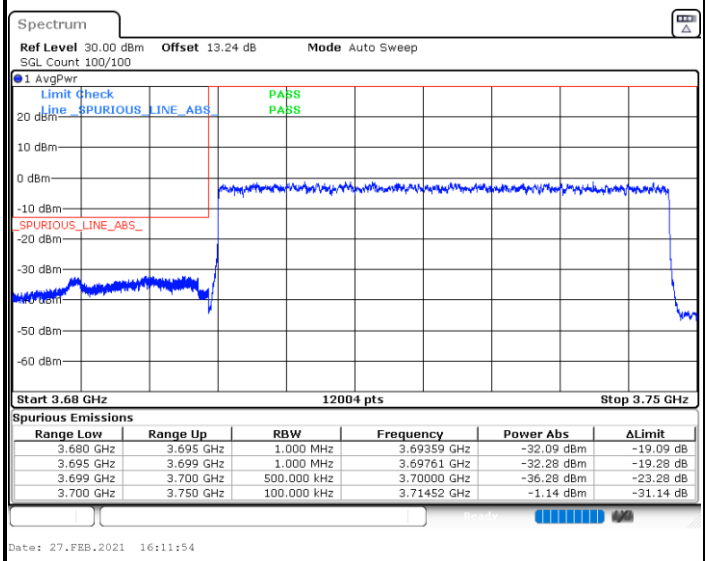
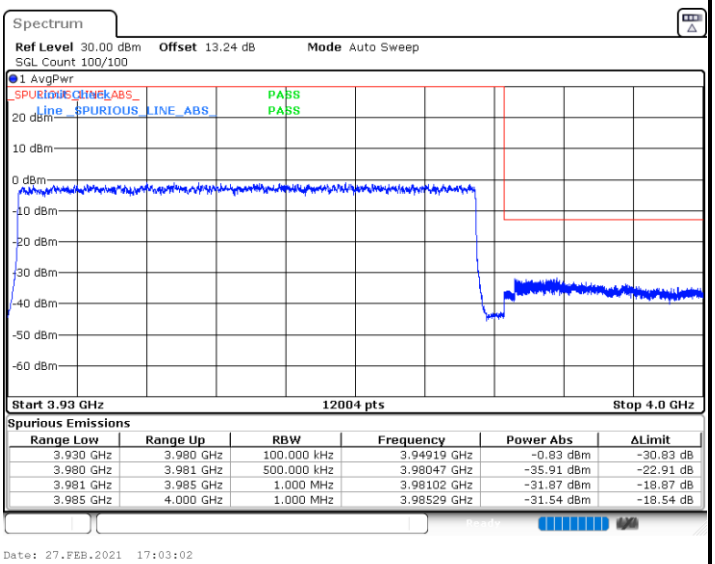
Highest Band Edge / Full RB



Spurious Emissions

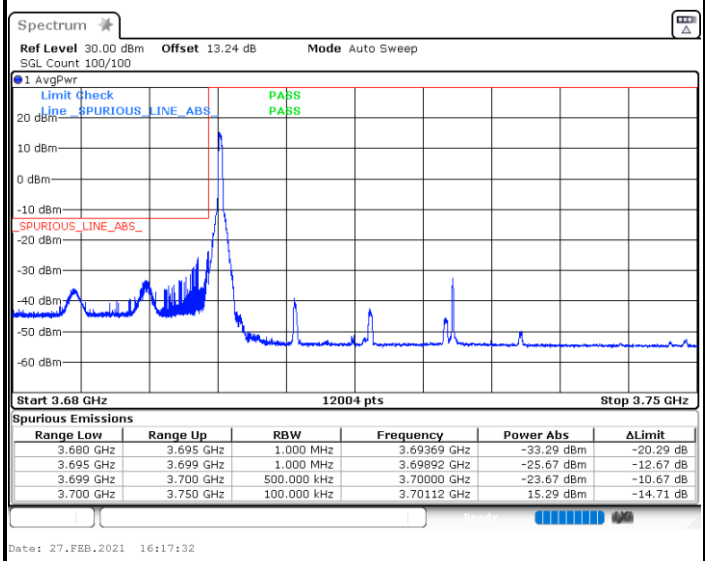
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.97638 GHz	0.77 dBm	-29.23 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98020 GHz	-33.44 dBm	-20.44 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98121 GHz	-28.95 dBm	-15.95 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98533 GHz	-30.92 dBm	-17.92 dB

Date: 27.FEB.2021 17:03:40

FR1 n77 / 50MHz / DFT-S OFDM / 16QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**
	

FR1 n77 / 50MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / 1RB0

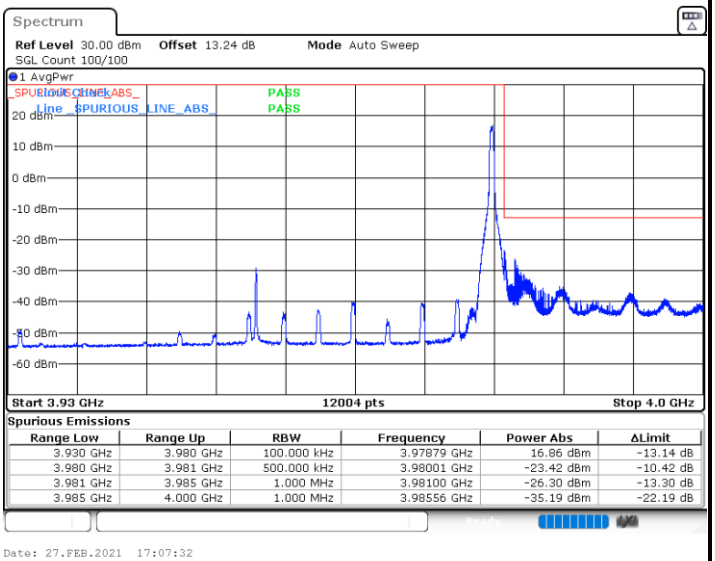


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.69369 GHz	-33.29 dBm	-20.29 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69892 GHz	-25.67 dBm	-12.67 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.70000 GHz	-23.67 dBm	-10.67 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.70112 GHz	15.29 dBm	-14.71 dB

Date: 27.FEB.2021 16:17:32

Highest Band Edge / 1RBmax

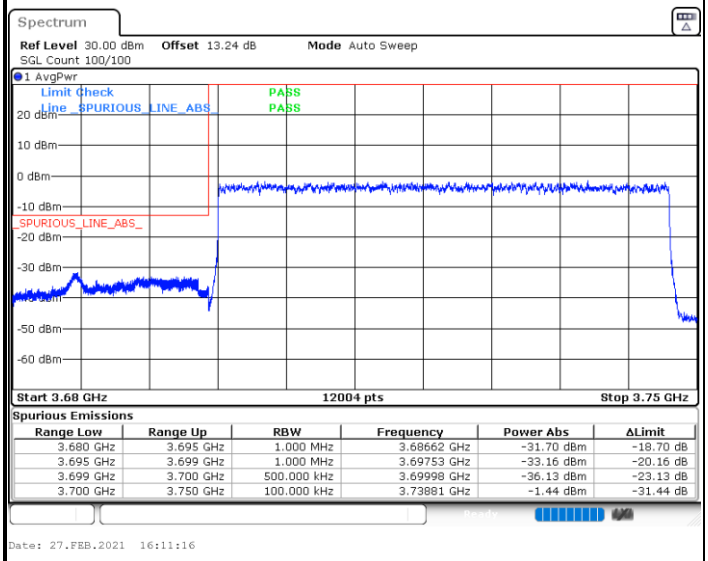


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.97879 GHz	16.86 dBm	-13.14 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98001 GHz	-23.42 dBm	-10.42 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98100 GHz	-26.30 dBm	-13.30 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98556 GHz	-35.19 dBm	-22.19 dB

Date: 27.FEB.2021 17:07:32

Lowest Band Edge / Full RB

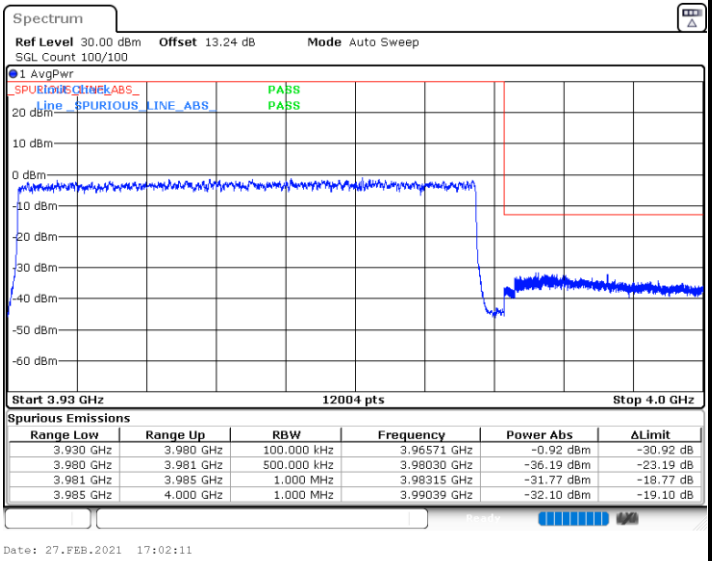


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.68662 GHz	-31.70 dBm	-18.70 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69753 GHz	-33.16 dBm	-20.16 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69998 GHz	-36.13 dBm	-23.13 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.73881 GHz	-1.44 dBm	-31.44 dB

Date: 27.FEB.2021 16:11:16

Highest Band Edge / Full RB



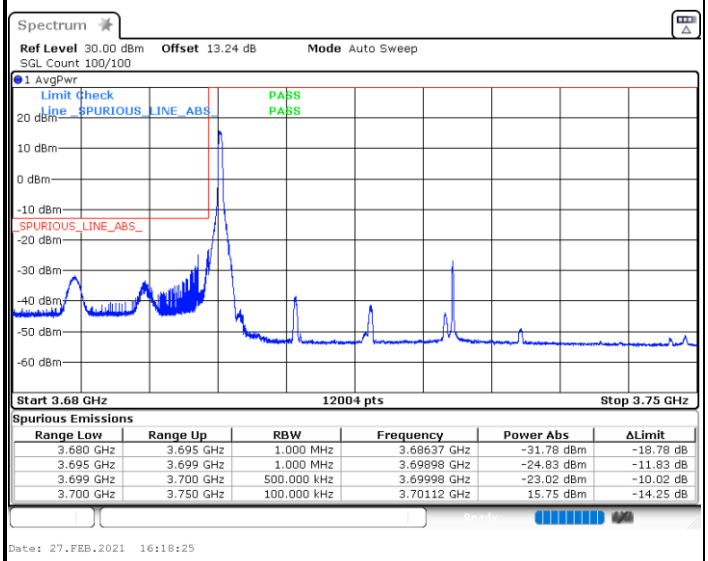
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.96571 GHz	-0.92 dBm	-30.92 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98030 GHz	-36.19 dBm	-23.19 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98315 GHz	-31.77 dBm	-18.77 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.99039 GHz	-32.10 dBm	-19.10 dB

Date: 27.FEB.2021 17:02:11

FR1 n77 / 50MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / 1RB0

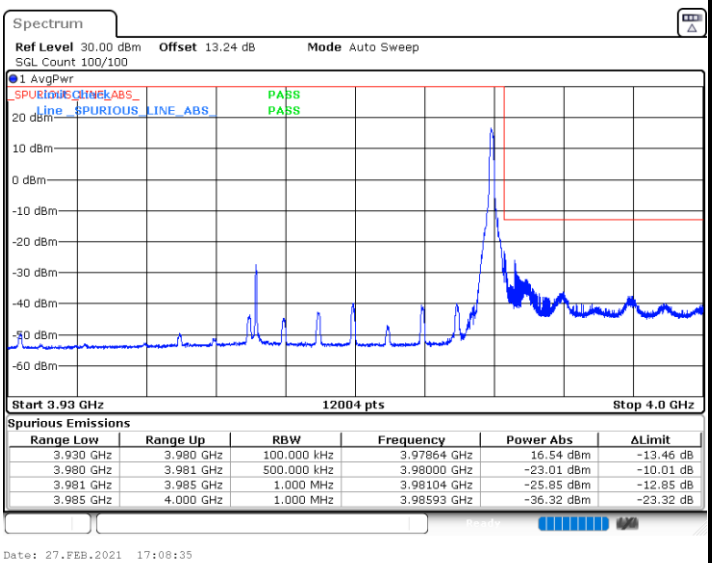


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.68637 GHz	-31.78 dBm	-18.78 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69898 GHz	-24.83 dBm	-11.83 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.69998 GHz	-23.02 dBm	-10.02 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.70112 GHz	15.75 dBm	-14.25 dB

Date: 27.FEB.2021 16:18:25

Highest Band Edge / 1RBmax

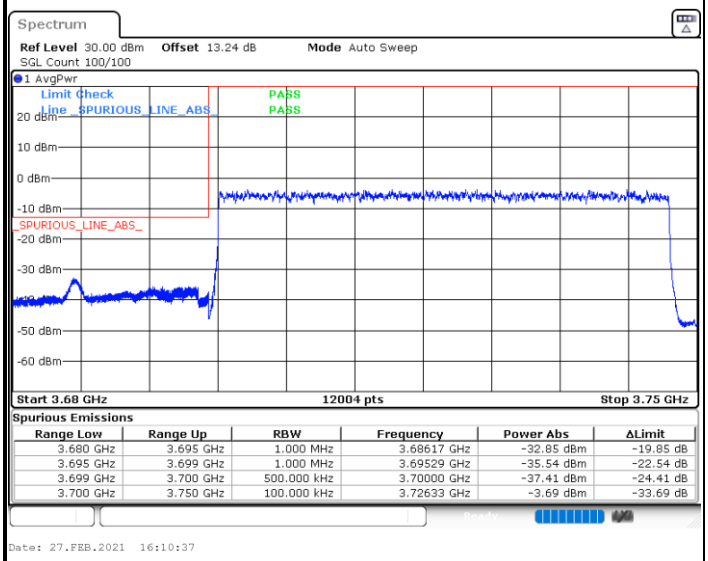


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.97864 GHz	16.54 dBm	-13.46 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98000 GHz	-23.01 dBm	-10.01 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98104 GHz	-25.85 dBm	-12.85 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98593 GHz	-36.32 dBm	-23.32 dB

Date: 27.FEB.2021 17:08:35

Lowest Band Edge / Full RB

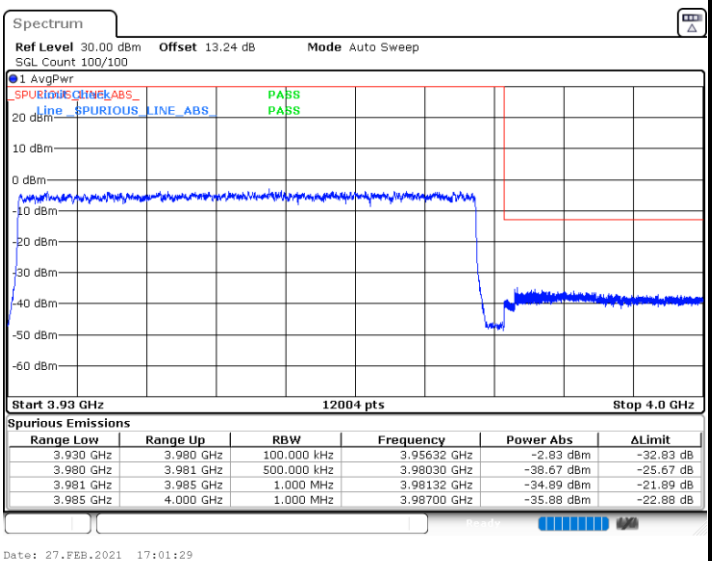


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.680 GHz	3.695 GHz	1.000 MHz	3.68617 GHz	-32.85 dBm	-19.85 dB
3.695 GHz	3.699 GHz	1.000 MHz	3.69529 GHz	-35.54 dBm	-22.54 dB
3.699 GHz	3.700 GHz	500.000 kHz	3.70000 GHz	-37.41 dBm	-24.41 dB
3.700 GHz	3.750 GHz	100.000 kHz	3.72633 GHz	-3.69 dBm	-33.69 dB

Date: 27.FEB.2021 16:10:37

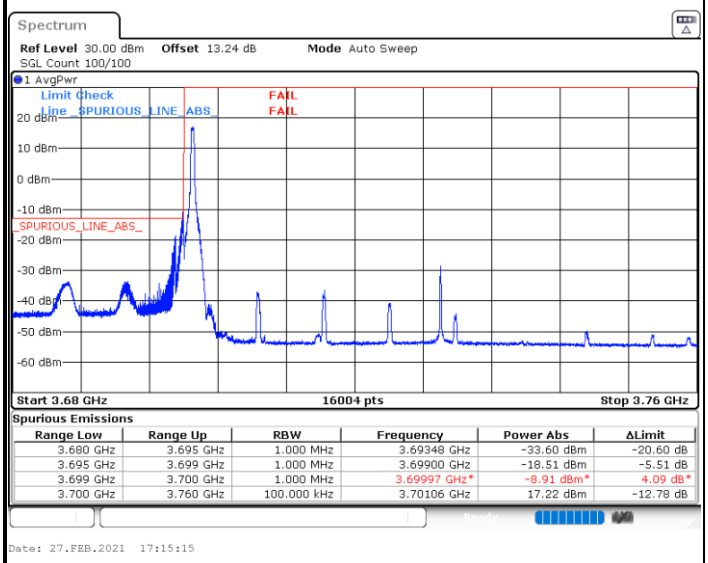
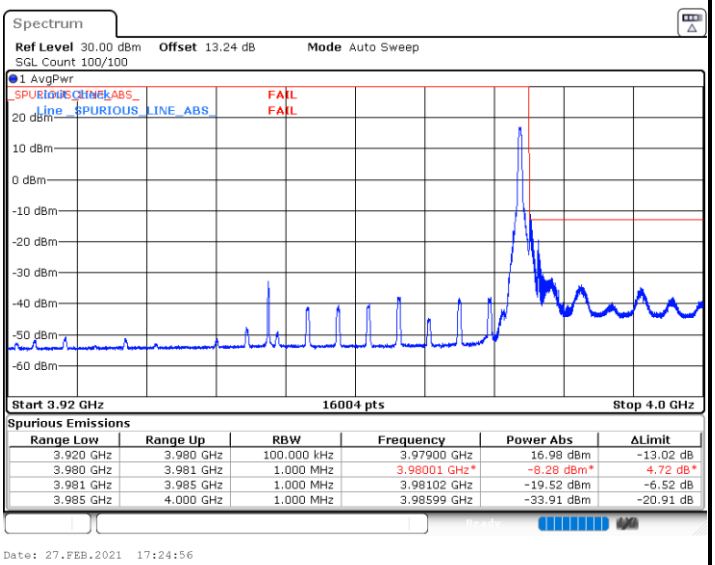
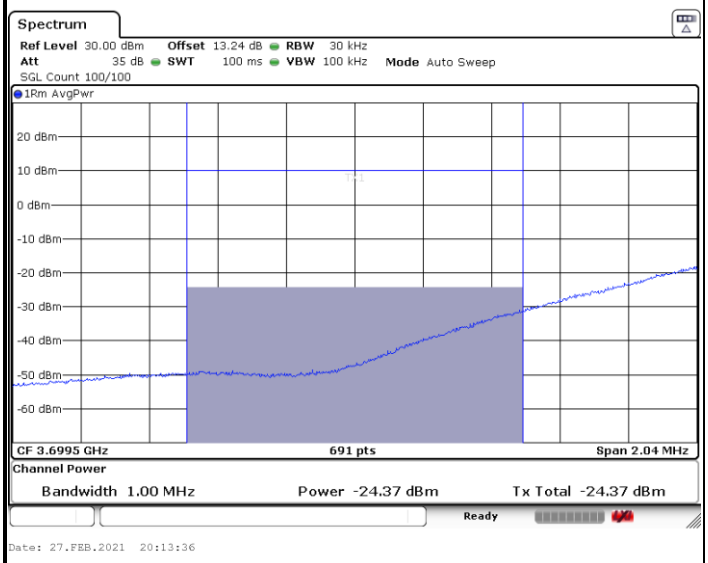
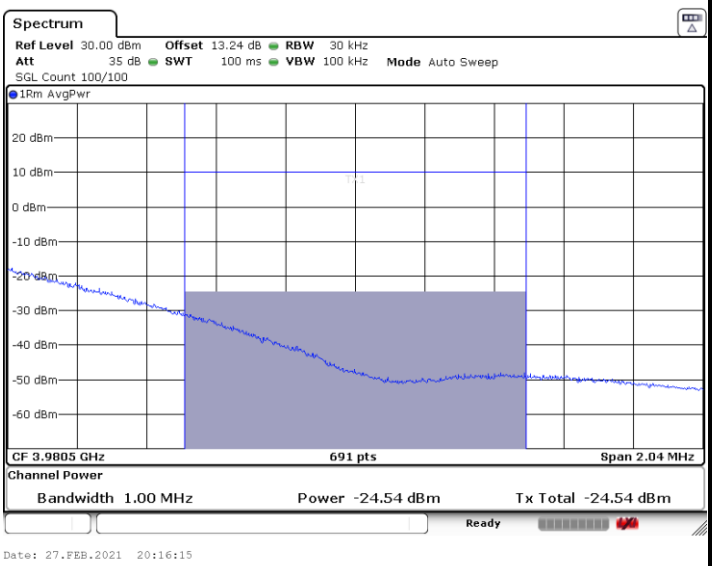
Highest Band Edge / Full RB



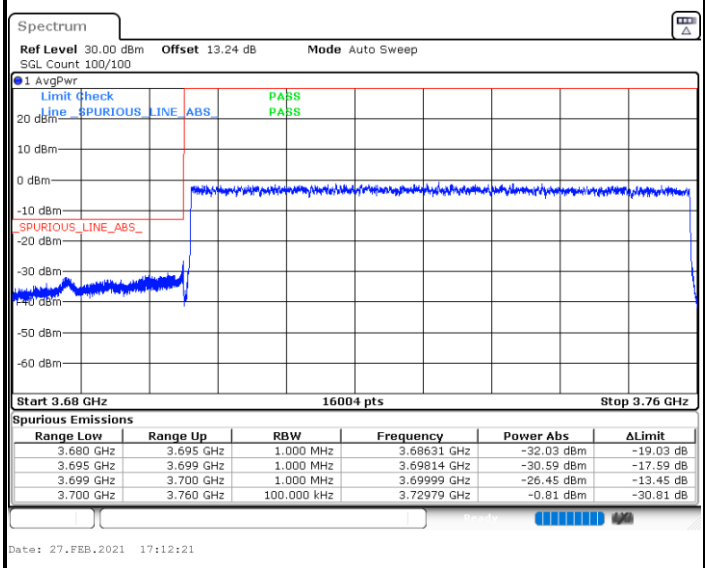
Spurious Emissions

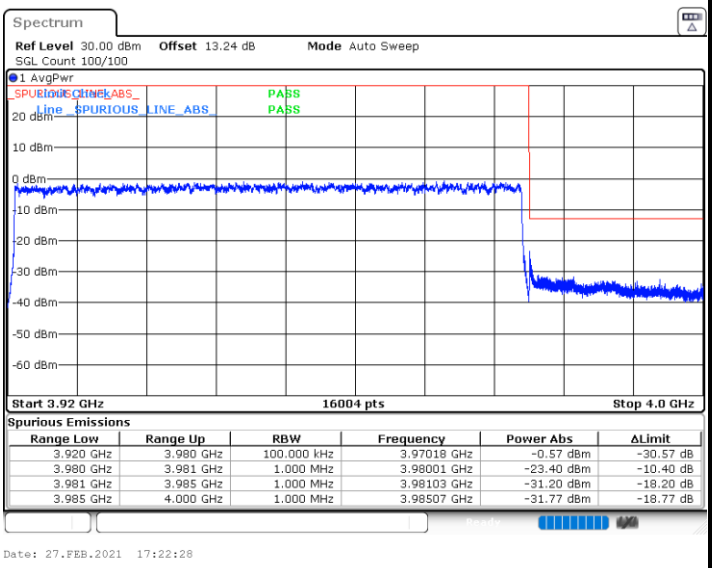
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
3.930 GHz	3.980 GHz	100.000 kHz	3.95632 GHz	-2.83 dBm	-32.83 dB
3.980 GHz	3.981 GHz	500.000 kHz	3.98030 GHz	-38.67 dBm	-25.67 dB
3.981 GHz	3.985 GHz	1.000 MHz	3.98132 GHz	-34.89 dBm	-21.89 dB
3.985 GHz	4.000 GHz	1.000 MHz	3.98700 GHz	-35.88 dBm	-22.88 dB

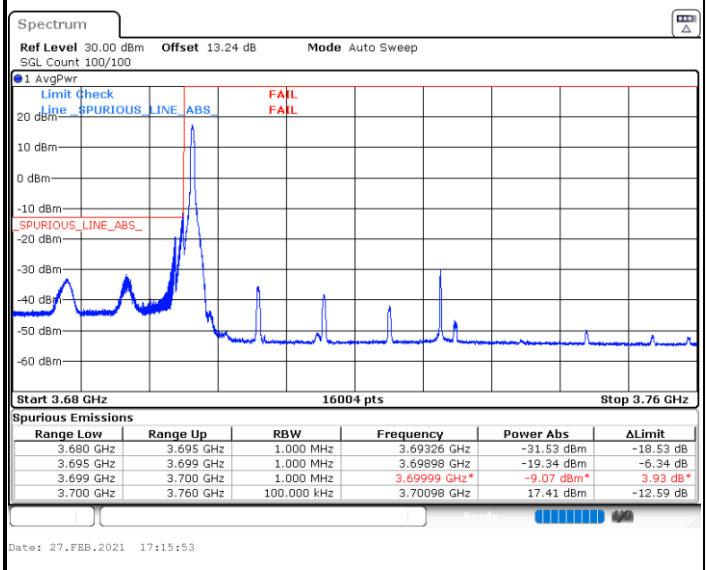
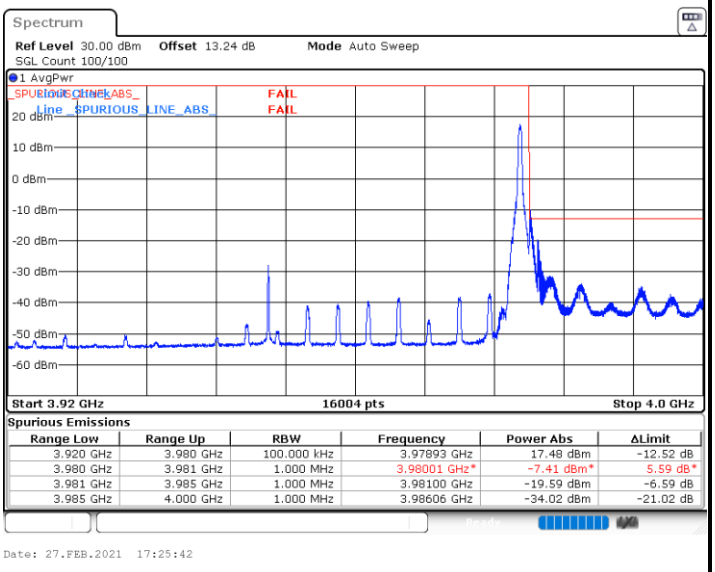
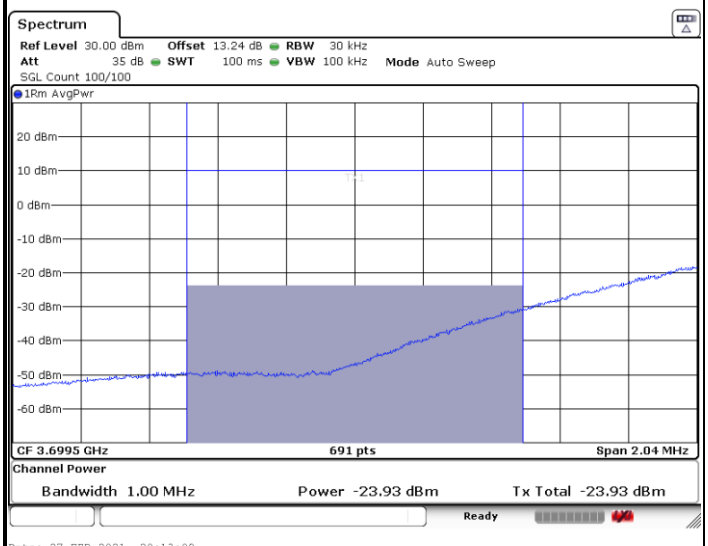
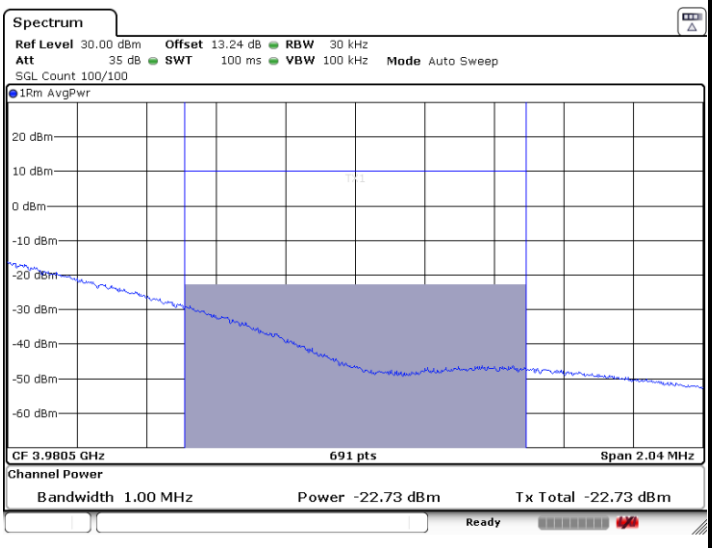
Date: 27.FEB.2021 17:01:29

FR1 n77 / 60MHz / DFT-S OFDM / QPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Channel Power <-13dBm Pass	**Channel Power <-13dBm Pass**
	

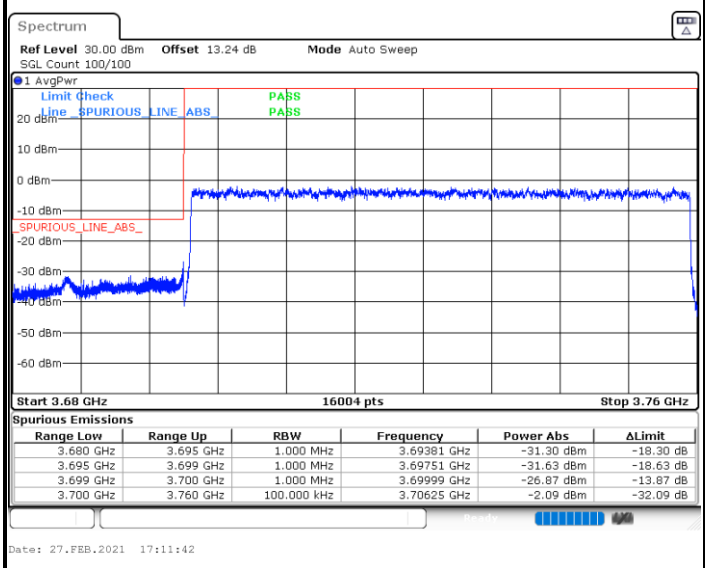
Lowest Band Edge / Full RB	Highest Band Edge / Full RB

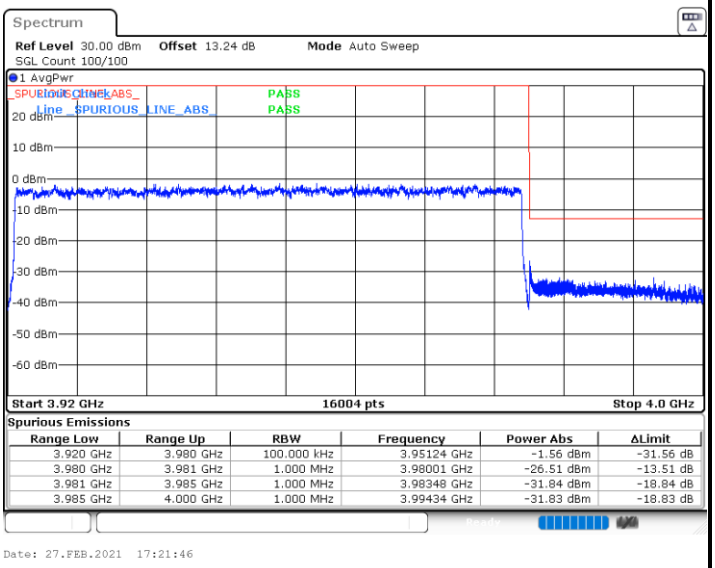


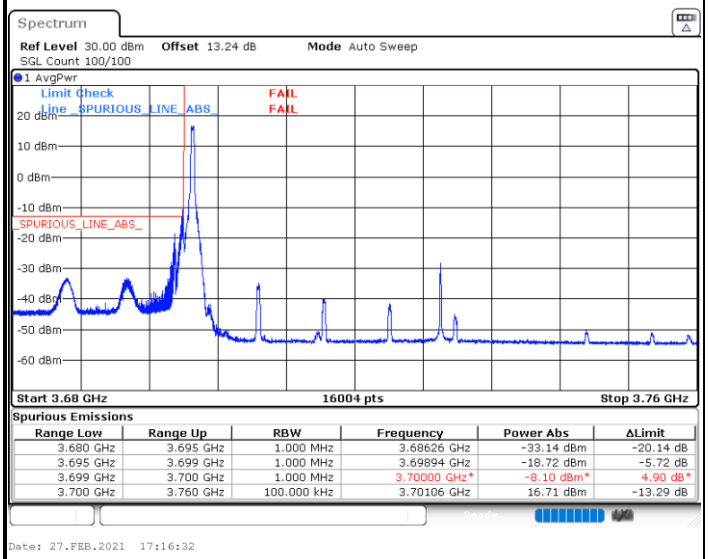
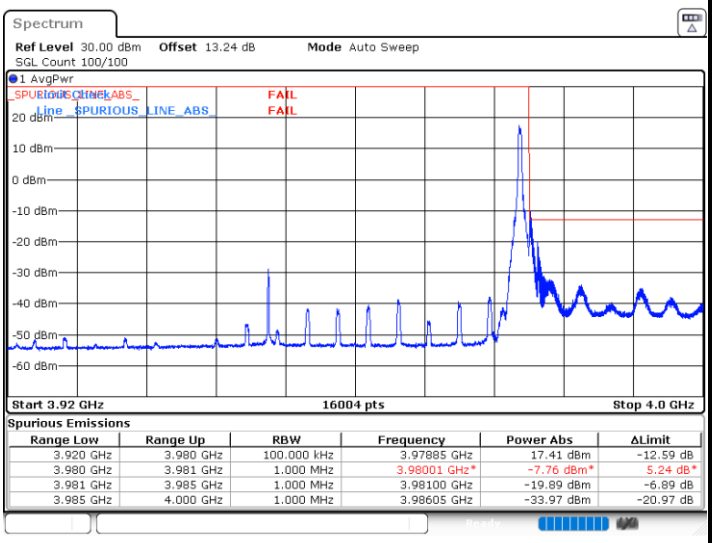
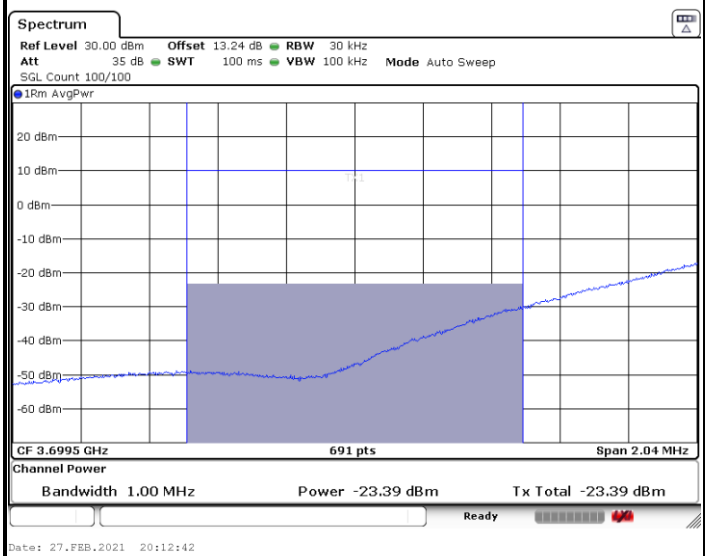
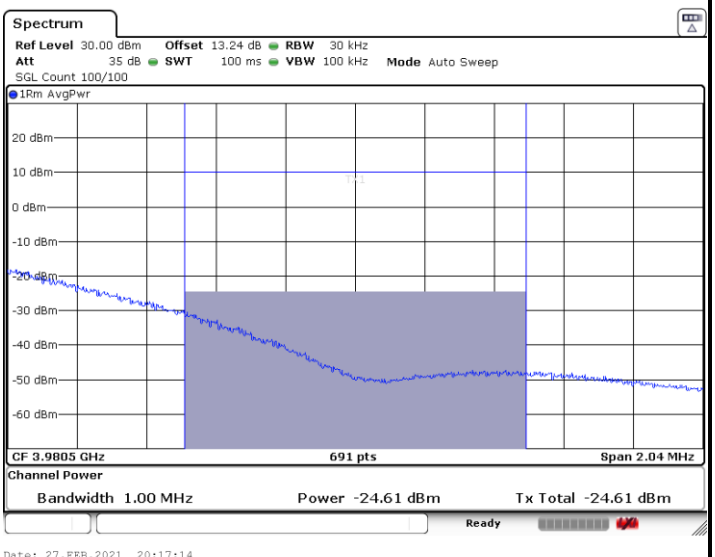


FR1 n77 / 60MHz / DFT-S OFDM / 16QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Channel Power <-13dBm Pass	**Channel Power <-13dBm Pass**
	

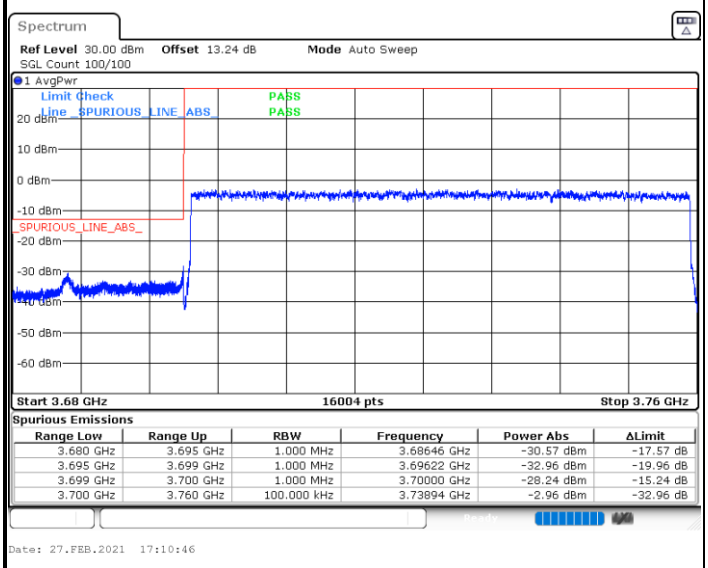
Lowest Band Edge / Full RB	Highest Band Edge / Full RB

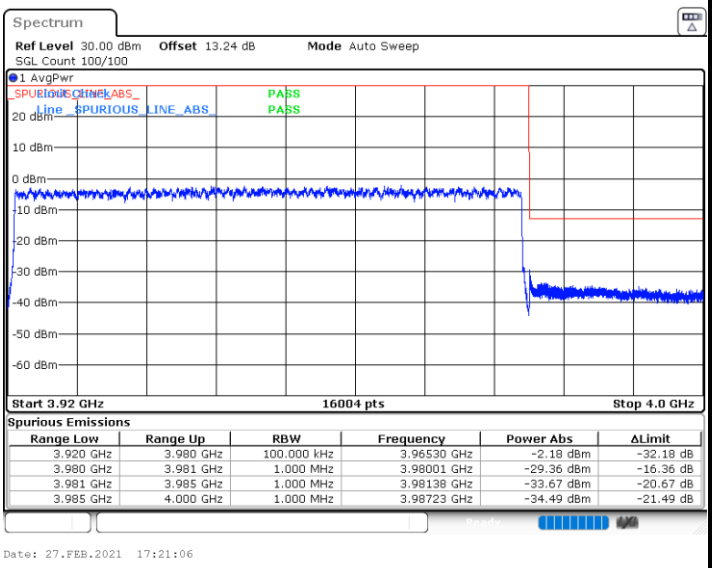


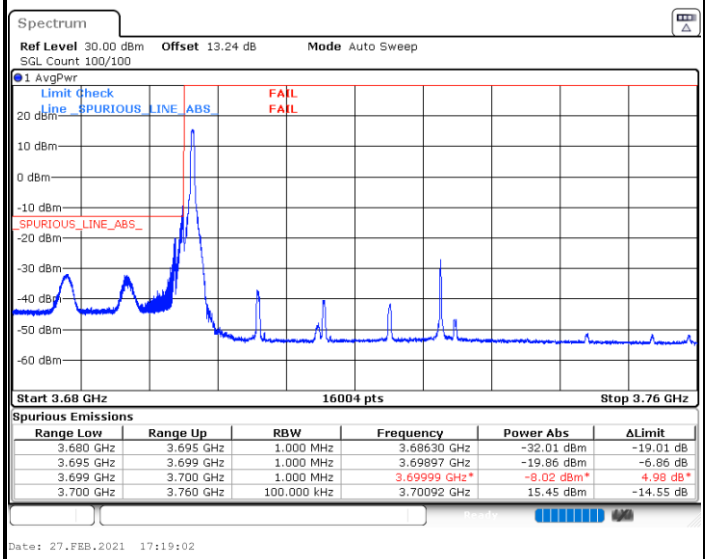
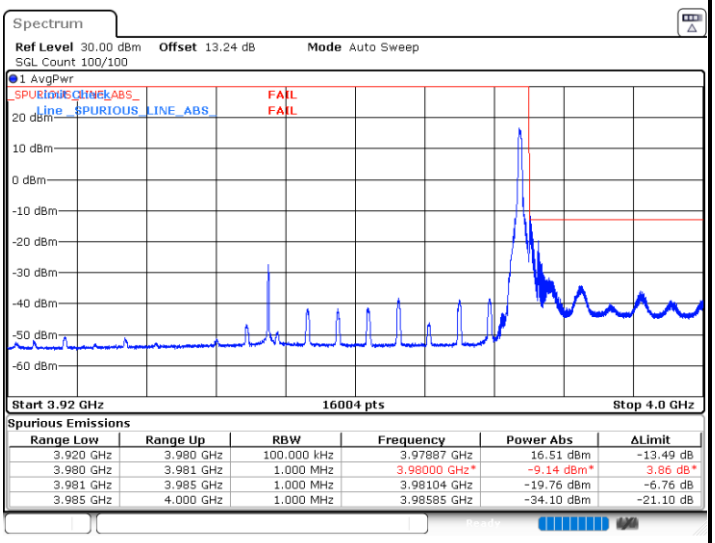
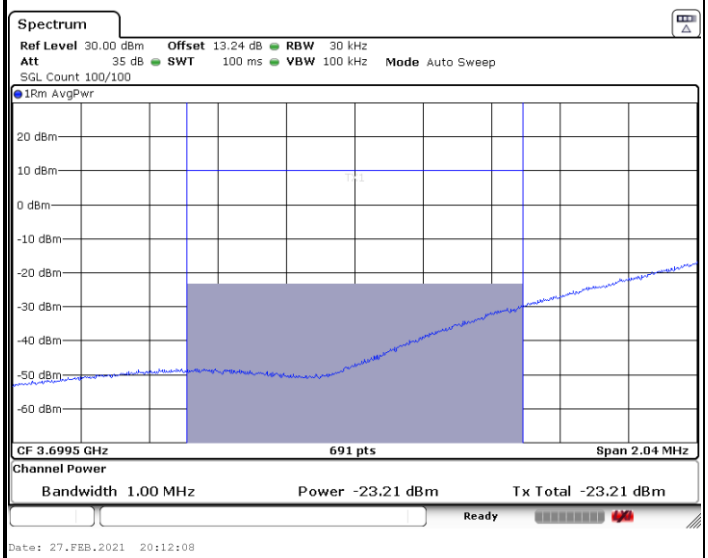
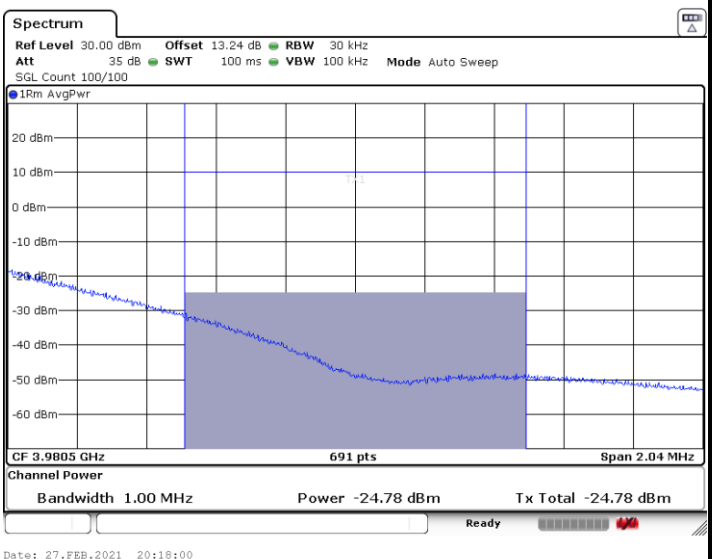


FR1 n77 / 60MHz / DFT-S OFDM / 64QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Channel Power <-13dBm Pass	**Channel Power <-13dBm Pass**
	

Lowest Band Edge / Full RB	Highest Band Edge / Full RB





FR1 n77 / 60MHz / DFT-S OFDM / 256QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RBmax**
	
Channel Power <-13dBm Pass	**Channel Power <-13dBm Pass**
	

Lowest Band Edge / Full RB	Highest Band Edge / Full RB