

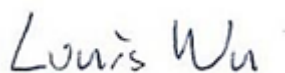


FCC RADIO TEST REPORT

FCC ID : RI7FN990A40
Equipment : 5G NR Module
Brand Name : 
Model Name : FN990A40
Marketing Name : FN990A40
Applicant : Telit Communications S.p.A.
Viale Stazione di Prosecco 5/b, Trieste 34010, Italy
Manufacturer : Telit Communications S.p.A.
Viale Stazione di Prosecco 5/b, Trieste 34010, Italy
Standard : FCC 47 CFR Part 2, 27

The product was received on Jul. 07, 2022 and testing was performed from Aug. 01, 2022 to Nov. 24, 2022. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in 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 Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Modification of EUT	5
1.3 Testing Location	5
1.4 Applicable Standards.....	6
2 Test Configuration of Equipment Under Test	7
2.1 Test Mode.....	7
2.2 Connection Diagram of Test System.....	8
2.3 Support Unit used in test configuration and system	8
2.4 Measurement Results Explanation Example.....	8
2.5 Frequency List of Low/Middle/High Channels	9
3 Conducted Test Items.....	11
3.1 Measuring Instruments	11
3.2 Conducted Output Power and EIRP	12
3.3 Peak-to-Average Ratio	13
3.4 Occupied Bandwidth.....	14
3.5 Conducted Band Edge	15
3.6 Conducted Spurious Emission	16
3.7 Frequency Stability	17
4 Radiated Test Items	18
4.1 Measuring Instruments	18
4.2 Radiated Spurious Emission Measurement	20
5 List of Measuring Equipment.....	21
6 Uncertainty of Evaluation.....	23
Appendix A. Test Results of Conducted Test	
Appendix B. Test Results of Radiated Test	
Appendix C. Test Setup Photographs	



History of this test report

Report No.	Version	Description	Issue Date
FG270608H	01	Initial issue of report	Dec. 15, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§27.50 (k)(3)	Equivalent Isotropic Radiated Power (n77) (n78)	Pass	
3.3	§27.50 (k)(4)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §27.53 (n)(2)	Conducted Band Edge Measurement (n77) (n78)	Pass	-
3.6	§2.1051 §27.53 (n)(2)	Conducted Spurious Emission (n77) (n78)	Pass	-
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §27.53 (n)(2)	Radiated Spurious Emission (n77) (n78)	Pass	16.15 dB under the limit at 13805.000 MHz

Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- The measurement uncertainty please refer to this report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Avis Chuang

Report Producer: Ruby Zou



1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA/LTE/5G NR, and GNSS

Product Feature	
Antenna Type	WWAN: Monopole Antenna GPS/Glonass/BDS/Galileo/SBAS: Monopole Antenna
Antenna Gain	5G NR n77: 2.5 dBi 5G NR n78: 2.5 dBi

Remark: The above EUT's information is declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH03-HY
Test Engineer	Luffy Lin
Temperature (°C)	23.5~24.1
Relative Humidity (%)	48~52

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. 03CH12-HY (TAF Code: 3786)
Test Engineer	Jack Cheng, Tim Lee and Wilson Wu
Temperature (°C)	20~25
Relative Humidity (%)	50~60
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786



1.4 Applicable Standards

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

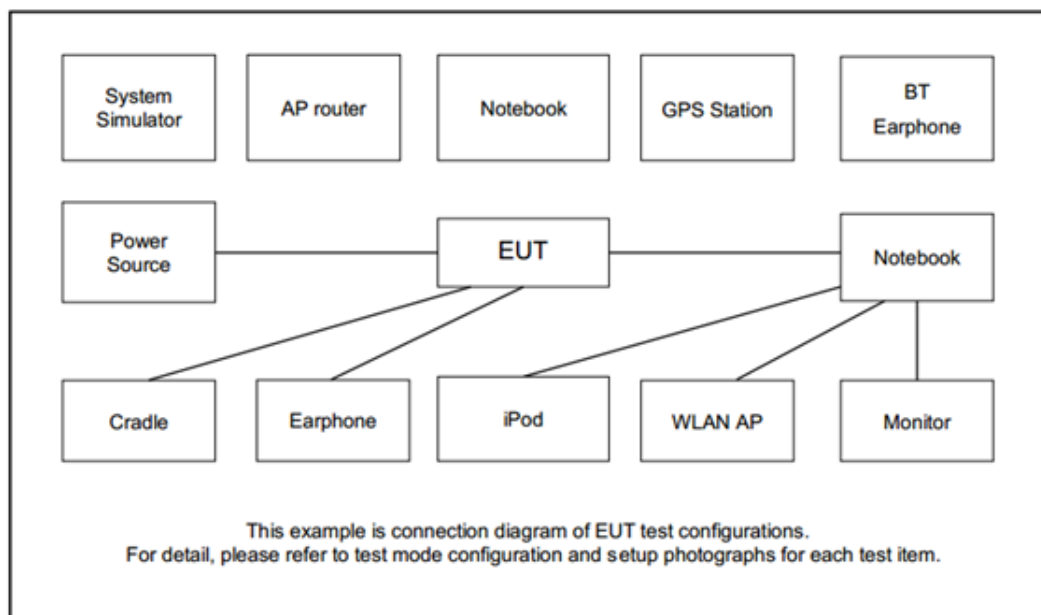
2.1 Test Mode

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

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in two config (Horizontal and Vertical), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

Test Items	NR Band	Bandwidth (MHz)									Modulation					RB #			Test Channel			
		20	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H	
Max. Output Power	n77	v	v	v	-	v	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
Peak-to-Average Ratio	n77	Covered by n78																				
	n78	v									v	v	v	v	v			v		v		
26dB and 99% Bandwidth	n77	Covered by n78																				
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v			v		v		
Conducted Band Edge	n77	Covered by n78																				
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		v	v		v	
Conducted Spurious Emission	n77	Covered by n78																				
	n78	v										v				v			v	v	v	
Frequency Stability	n77	Covered by n78																				
	n78	v									v	v						v		v		
E.I.R.P	n77	v	v	v	-	v	-	v	-	v	v	v	v	v	v	Max. Power						
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v							
Radiated Spurious Emission	n77	Worst Case																	v	v	v	
	n78	Covered by n77																				
Remark	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. For radiated measurement, pre-scanned in two modes, DFT-s OFDM and CP OFDM. The worst cases (DFT-s OFDM) were recorded in this report, and the worst modes of FR1 and LTE for simultaneous transmission were verified and compliant.																					
	5. Test combination are EN-DC 66A_n77A, 5A_n77A, 71A_n77A.																					
	6. Wider operating range bandwidth covers narrower one when the power is higher or the same.																					
	7. One representative bandwidth is selected to perform PAR and Frequency Stability																					

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	Power Supply	GW Instek	PSS-2005	N/A	N/A	Unshielded, 1.8m

2.4 Measurement Results Explanation Example

For all conducted test items:

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 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$



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	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540



5G NR n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540

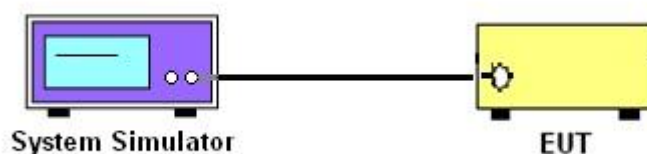
3 Conducted Test Items

3.1 Measuring Instruments

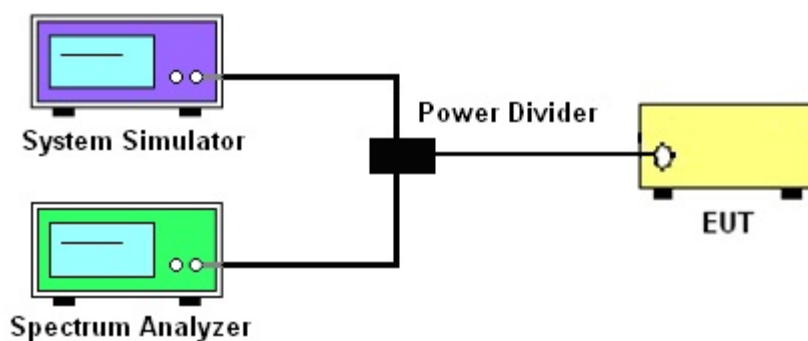
See list of measuring instruments of this test report.

3.1.1 Test Setup

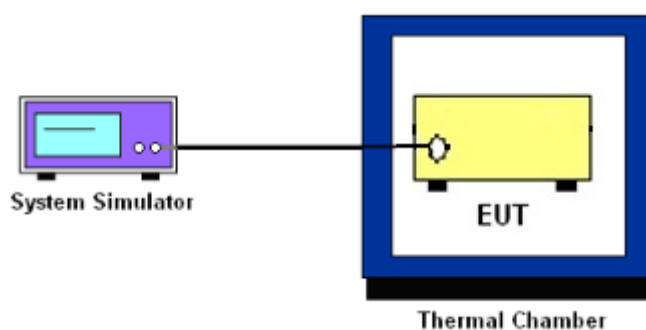
3.1.2 Conducted Output Power



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



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and EIRP

3.2.1 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.

The EIRP of mobile transmitters must not exceed 1 Watts for 5G NR n77 and n78

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

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.
5. The MIMO mode is completely uncorrelated, so the directional gain is selected the maximum gain among all antennas.



3.3 Peak-to-Average Ratio

3.3.1 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.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.



3.4 Occupied Bandwidth

3.4.1 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.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. 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.
3. 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.
4. Set the detection mode to peak, and the trace mode to max hold.
5. 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)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. 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.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

27.53 (n)(2)

(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) 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, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For $EBW < 20\text{MHz}$, set $RBW \geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. For $EBW \geq 20\text{MHz}$, set $RBW = 200\text{kHz}$ in the 1MHz band immediately outside and adjacent to the band edge.
5. Between 1 ~5 MHz from the band edge, $RBW=500$ kHz 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.
The limit line is derived from $43 + 10\log(P)\text{dB}$ below the transmitter power $P(\text{Watts})$
9. For MIMO mode, add additional MIMO factor $10\log(NTX=2) = 3.01\text{dB}$ into the spectrum analyzer offset.



3.6 Conducted Spurious Emission

3.6.1 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 10th harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. 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.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
10. For MIMO mode, add additional MIMO factor $10\log(NTX=2) = 3.01$ dB into the spectrum analyzer offset.



3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

27.54

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

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. 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.
3. 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.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

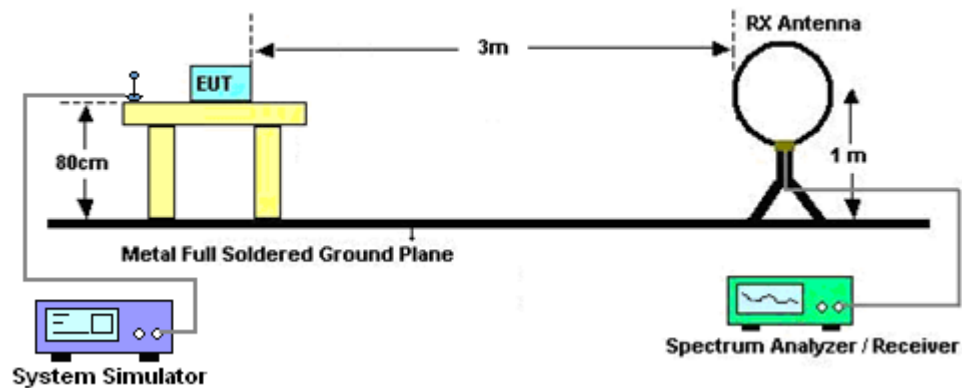
4 Radiated Test Items

4.1 Measuring Instruments

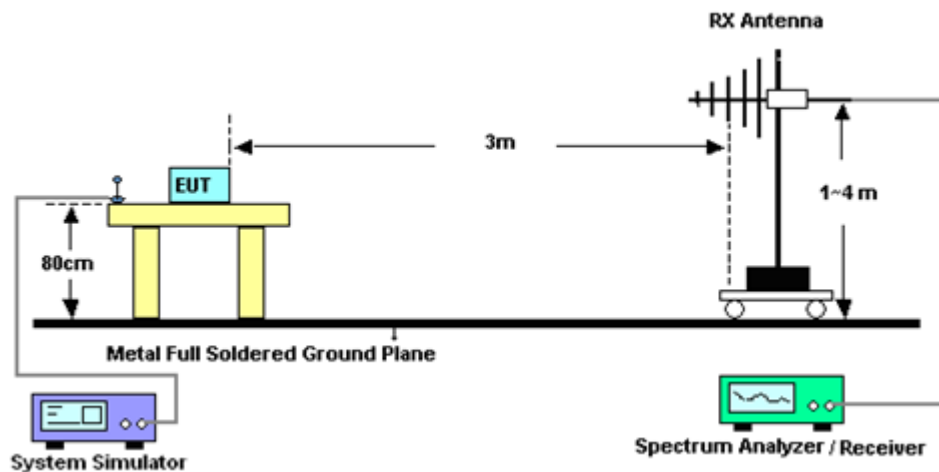
See list of measuring instruments of this test report.

4.1.1 Test Setup

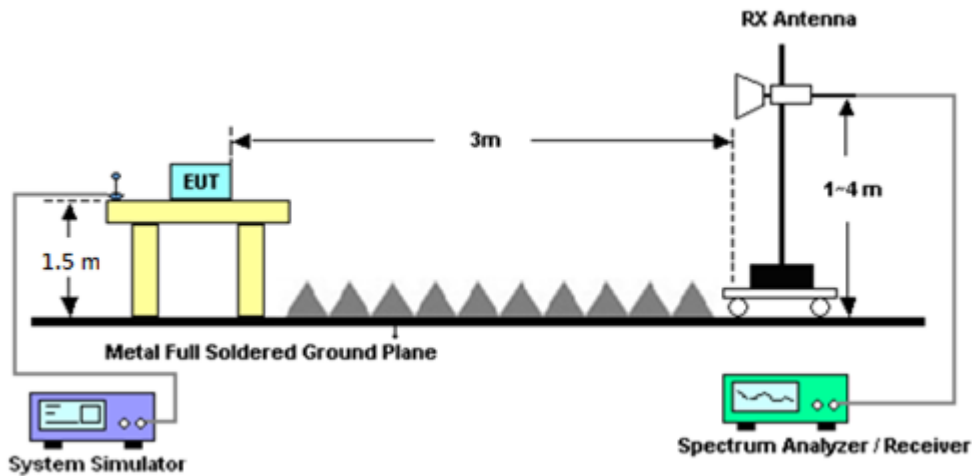
For radiated test below 30MHz



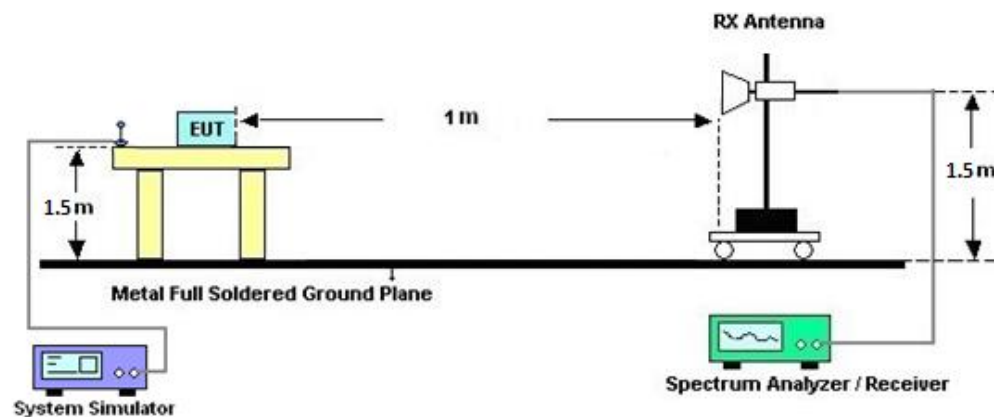
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



4.2 Radiated Spurious Emission Measurement

4.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. 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.

4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 07, 2021	Aug. 03, 2022~ Aug. 25, 2022	Sep. 06, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Oct. 09, 2021	Aug. 03, 2022~ Aug. 25, 2022	Oct. 08, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 09, 2021	Aug. 03, 2022~ Aug. 25, 2022	Oct. 08, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Dec. 03, 2021	Aug. 03, 2022~ Aug. 25, 2022	Dec. 02, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 10, 2022	Aug. 03, 2022~ Aug. 25, 2022	Mar. 09, 2023	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 30, 2021	Aug. 03, 2022~ Aug. 25, 2022	Nov. 29, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 14, 2022	Aug. 03, 2022~ Aug. 25, 2022	May 13, 2023	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 23, 2022	Aug. 03, 2022~ Aug. 25, 2022	Mar. 22, 2023	Radiation (03CH12-HY)
Preamplifier	Aglient	8449B	3008A02375	1GHz~26.5GHz	May 24, 2022	Aug. 03, 2022~ Aug. 25, 2022	May 23, 2023	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900270	1GHz-18GHz	Dec. 27, 2021	Aug. 03, 2022~ Aug. 25, 2022	Dec. 26, 2022	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Aug. 03, 2022~ Aug. 25, 2022	Dec. 23, 2022	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY53470118	10Hz~44GHz	Jan. 12, 2022	Aug. 03, 2022~ Aug. 25, 2022	Jan. 11, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Aug. 03, 2022~ Aug. 25, 2022	Mar. 09, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	Aug. 03, 2022~ Aug. 25, 2022	Dec. 09, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Aug. 03, 2022~ Aug. 25, 2022	Feb. 20, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Mar. 08, 2022	Aug. 03, 2022~ Aug. 25, 2022	Mar. 07, 2023	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 16, 2022	Aug. 03, 2022~ Aug. 25, 2022	Mar. 15, 2023	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140349	N/A	Sep. 30, 2021	Aug. 03, 2022~ Aug. 25, 2022	Sep. 29, 2022	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 03, 2022~ Aug. 25, 2022	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Aug. 03, 2022~ Aug. 25, 2022	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 03, 2022~ Aug. 25, 2022	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Aug. 03, 2022~ Aug. 25, 2022	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Programmable Power Supply	GW Instek	PSS-2005	EL883644	50Hz~60Hz	Dec. 03, 2021	Aug. 01, 2022~ Nov. 24, 2022	Dec. 02, 2023	Conducted (TH03-HY)
Hygrometer	Testo	608-H11	34893241	NA	Mar. 18, 2022	Aug. 01, 2022~ Nov. 24, 2022	Mar. 17, 2023	Conducted (TH03-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101048	10Hz~44GHz	May 05, 2022	Aug. 01, 2022~ Nov. 24, 2022	May 04, 2023	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 09, 2021	Aug. 01, 2022~ Sep. 07, 2022	Sep. 08, 2022	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 07, 2022	Sep. 08, 2022~ Nov. 24, 2022	Sep. 06, 2023	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8821C	6262116730	LTE	Jun. 15, 2021	Aug. 01, 2022~ Nov. 24, 2022	Jun. 14, 2023	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8000A	6262134933	FR1	Jun. 13, 2022	Aug. 01, 2022~ Nov. 24, 2022	Jun. 12, 2023	Conducted (TH03-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.31 dB
---	---------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.25 dB
---	---------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.81 dB
---	---------



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and EIRP

NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
20	1	1	PI/2 BPSK	26.44	26.53	26.36	29.04	0.8017		
20	1	49		26.49	26.35	26.46				
20	25	12		26.43	26.52	26.35				
20	1	0		22.96	23.04	22.75				
20	1	50		23.06	22.96	22.95				
20	50	0		25.98	26.04	25.88				
20	1	1	QPSK	26.45	26.54	26.34				
20	1	49		26.52	26.38	26.51				
20	25	12		26.44	26.47	26.34				
20	1	0		23.01	23.05	22.78				
20	1	50		23.02	22.95	22.98				
20	50	0		25.44	25.56	25.42				
20	1	1	16-QAM	25.39	25.54	25.45	28.04	0.6368		
20	1	1	64-QAM	23.95	24.10	23.98				
20	1	1	256-QAM	21.74	21.85	21.75				
Limit	EIRP < 1W			Result			Pass			

NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
30	1	1	PI/2 BPSK	26.92	26.76	26.45	29.45	0.8810		
30	1	76		26.68	26.88	26.54				
30	36	18		26.74	26.95	26.46				
30	1	0		23.29	23.52	23.07				
30	1	77		23.42	23.37	23.01				
30	75	0		26.35	26.50	26.05				
30	1	1	QPSK	26.91	26.54	26.48				
30	1	76		26.91	26.85	26.49				
30	36	18		26.73	26.92	26.48				
30	1	0		23.28	23.48	22.98				
30	1	77		23.45	23.25	23.98				
30	75	0		25.83	26.01	25.54				
30	1	1	16-QAM	25.81	25.95	25.45	28.45	0.6998		
30	1	1	64-QAM	24.37	24.43	23.98				
30	1	1	256-QAM	22.04	22.30	21.73				
Limit	EIRP < 1W			Result			Pass			



NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
40	1	1	PI/2 BPSK	26.96	26.97	26.96	29.47	0.8851		
40	1	104		26.96	26.84	26.94				
40	50	25		26.91	26.94	26.86				
40	1	0		23.46	23.50	23.34				
40	1	105		23.56	23.38	23.47				
40	100	0		26.48	26.43	26.39				
40	1	1	QPSK	26.95	26.93	26.94				
40	1	104		26.96	26.87	26.96				
40	50	25		26.84	26.95	26.78				
40	1	0		23.54	23.48	23.38				
40	1	105		23.56	23.36	23.48				
40	100	0		26.03	25.93	25.83				
40	1	1	16-QAM	25.92	25.88	25.85	28.42	0.6950		
40	1	1	64-QAM	24.54	24.51	24.49				
40	1	1	256-QAM	22.53	22.15	22.16				
Limit	EIRP < 1W			Result			Pass			

NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
60	1	1	PI/2 BPSK	26.85	26.68	26.75	29.39	0.8690		
60	1	160		26.75	26.64	26.79				
60	81	40		26.89	26.89	26.73				
60	1	0		23.25	23.13	23.19				
60	1	161		23.24	23.08	23.24				
60	162	0		26.35	26.25	26.27				
60	1	1	QPSK	26.82	26.71	26.75				
60	1	160		26.76	26.57	26.75				
60	81	40		26.84	26.81	26.74				
60	1	0		23.25	23.12	23.17				
60	1	161		23.26	23.08	23.29				
60	162	0		25.81	25.77	25.86				
60	1	1	16-QAM	25.76	25.61	25.69	28.26	0.6699		
60	1	1	64-QAM	24.36	24.19	24.23				
60	1	1	256-QAM	22.12	21.98	22.04				
Limit	EIRP < 1W			Result			Pass			



NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
80	1	1	PI/2 BPSK	26.69	26.52	26.49	29.22	0.8356		
80	1	215		26.45	26.53	26.68				
80	108	54		26.72	26.61	26.61				
80	1	0		23.03	22.94	22.96				
80	1	216		22.98	23.05	23.21				
80	216	0		26.15	26.10	26.07				
80	1	1	QPSK	26.65	26.61	26.53				
80	1	215		26.45	26.54	26.59				
80	108	54		26.67	26.63	26.57				
80	1	0		23.05	22.93	22.98				
80	1	216		22.97	23.04	23.13				
80	216	0		25.70	25.58	25.53				
80	1	1	16-QAM	25.58	25.54	25.48	28.08	0.6427		
80	1	1	64-QAM	24.15	24.06	24.08				
80	1	1	256-QAM	21.89	21.93	21.82				
Limit	EIRP < 1W			Result			Pass			

NR n77 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
100	1	1	PI/2 BPSK	-	26.65	-	29.25	0.8414		
100	1	271		-	26.68	-				
100	135	67		-	26.61	-				
100	1	0		-	22.96	-				
100	1	272		-	23.25	-				
100	270	0		-	26.10	-				
100	1	1	QPSK	-	26.69	-				
100	1	271		-	26.75	-				
100	135	67		-	26.59	-				
100	1	0		-	22.97	-				
100	1	272		-	23.24	-				
100	270	0		-	25.61	-				
100	1	1	16-QAM	-	25.67	-	28.17	0.6561		
100	1	1	64-QAM	-	24.24	-				
100	1	1	256-QAM	-	21.95	-				
Limit	EIRP < 1W			Result			Pass			



NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
20	1	1	PI/2 BPSK	26.50	26.57	26.40	29.07	0.8072		
20	1	49		26.53	26.44	26.41				
20	25	12		26.47	26.53	26.36				
20	1	0		23.02	23.09	22.85				
20	1	50		22.98	22.92	22.94				
20	50	0		25.94	26.06	25.85				
20	1	1	QPSK	26.45	26.53	26.42				
20	1	49		26.52	26.44	26.48				
20	25	12		26.43	26.49	26.38				
20	1	0		22.96	23.05	22.77				
20	1	50		22.96	22.90	22.98				
20	50	0		25.46	25.48	25.33				
20	1	1	16-QAM	25.42	25.51	25.26	28.01	0.6324		
20	1	1	64-QAM	23.94	24.05	23.85				
20	1	1	256-QAM	21.82	21.84	21.62				
Limit	EIRP < 1W			Result			Pass			

NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
30	1	1	PI/2 BPSK	26.85	26.77	26.43	29.35	0.8610		
30	1	76		26.45	26.67	26.46				
30	36	18		26.38	26.35	26.54				
30	1	0		22.87	23.02	22.96				
30	1	77		22.94	22.82	23.03				
30	75	0		25.89	26.04	26.03				
30	1	1	QPSK	26.39	26.54	26.40				
30	1	76		26.38	26.34	26.45				
30	36	18		26.35	26.55	26.52				
30	1	0		22.90	23.02	22.94				
30	1	77		22.90	22.86	23.04				
30	75	0		25.37	25.54	25.49				
30	1	1	16-QAM	25.23	25.54	25.47	28.04	0.6368		
30	1	1	64-QAM	23.90	23.91	23.92				
30	1	1	256-QAM	21.68	21.80	21.75				
Limit	EIRP < 1W			Result			Pass			



NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
40	1	1	PI/2 BPSK	26.98	26.85	26.83	29.48	0.8872		
40	1	104		26.88	26.83	26.92				
40	50	25		26.69	26.65	26.65				
40	1	0		23.01	22.94	22.98				
40	1	105		23.01	23.03	23.07				
40	100	0		25.93	25.90	25.89				
40	1	1	QPSK	26.42	26.44	26.48				
40	1	104		26.49	26.54	26.53				
40	50	25		26.37	26.33	26.36				
40	1	0		22.98	22.94	23.05				
40	1	105		23.05	23.04	23.01				
40	100	0		25.39	25.43	25.46				
40	1	1	16-QAM	25.31	25.28	25.37	27.87	0.6124		
40	1	1	64-QAM	23.95	23.94	23.91				
40	1	1	256-QAM	22.05	21.69	21.65				
Limit	EIRP < 1W			Result			Pass			

NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
50	1	1	PI/2 BPSK	26.24	26.34	26.20	28.88	0.7727		
50	1	131		26.38	26.07	26.21				
50	64	32		26.25	26.36	26.17				
50	1	0		22.67	22.70	22.64				
50	1	132		22.86	22.67	22.77				
50	128	0		25.79	25.86	25.68				
50	1	1	QPSK	26.28	26.29	26.19				
50	1	131		26.35	26.24	26.21				
50	64	32		26.30	26.32	26.08				
50	1	0		22.74	22.69	22.60				
50	1	132		22.85	22.61	22.73				
50	128	0		25.27	25.34	25.17				
50	1	1	16-QAM	25.20	25.27	25.19	27.77	0.5984		
50	1	1	64-QAM	23.70	23.78	23.73				
50	1	1	256-QAM	21.54	21.54	21.45				
Limit	EIRP < 1W			Result			Pass			



NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
60	1	1	PI/2 BPSK	26.43	26.28	26.35	29.04	0.8017		
60	1	160		26.35	26.18	26.24				
60	81	40		26.54	26.28	26.15				
60	1	0		22.84	22.75	22.74				
60	1	161		22.82	22.64	22.73				
60	162	0		25.63	25.86	25.79				
60	1	1	QPSK	26.33	26.25	26.32				
60	1	160		26.31	26.17	26.22				
60	81	40		26.42	26.31	26.20				
60	1	0		22.82	22.69	22.74				
60	1	161		22.79	22.72	22.73				
60	162	0		25.43	25.30	25.25				
60	1	1	16-QAM	25.32	25.19	25.21	27.82	0.6053		
60	1	1	64-QAM	23.86	23.75	23.79				
60	1	1	256-QAM	21.75	21.49	21.63				
Limit	EIRP < 1W			Result			Pass			

NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
70	1	1	PI/2 BPSK	26.27	26.17	26.25	28.82	0.7621		
70	1	187		26.01	26.07	26.03				
70	90	45		26.15	26.18	26.26				
70	1	0		22.58	22.56	22.73				
70	1	188		22.57	22.51	22.51				
70	180	0		25.67	25.68	25.79				
70	1	1	QPSK	26.25	26.17	26.32				
70	1	187		26.03	26.24	26.08				
70	90	45		26.12	26.17	26.24				
70	1	0		22.65	22.59	22.73				
70	1	188		22.54	22.57	22.53				
70	180	0		25.18	25.18	25.29				
70	1	1	16-QAM	25.16	25.11	25.28	27.78	0.5998		
70	1	1	64-QAM	23.64	23.57	23.82				
70	1	1	256-QAM	21.45	21.44	21.63				
Limit	EIRP < 1W			Result			Pass			



NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
80	1	1	PI/2 BPSK	26.23	26.09	26.13	28.73	0.7464		
80	1	215		26.03	26.18	26.08				
80	108	54		26.22	26.15	26.16				
80	1	0		22.54	22.56	22.58				
80	1	216		22.62	22.67	22.64				
80	216	0		25.54	25.68	25.67				
80	1	1	QPSK	26.22	26.09	26.08				
80	1	215		26.05	26.08	26.08				
80	108	54		26.19	26.17	26.21				
80	1	0		22.53	22.51	22.49				
80	1	216		22.57	22.54	22.69				
80	216	0		25.25	25.14	25.14				
80	1	1	16-QAM	25.11	25.01	24.99	27.61	0.5768		
80	1	1	64-QAM	23.69	23.55	23.61				
80	1	1	256-QAM	21.51	21.30	21.39				
Limit	EIRP < 1W			Result			Pass			

NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
90	1	1	PI/2 BPSK	26.12	26.18	26.12	28.78	0.7551		
90	1	243		26.28	26.21	26.08				
90	120	60		26.06	26.19	26.24				
90	1	0		22.48	22.44	22.48				
90	1	244		22.72	22.66	22.52				
90	243	0		25.62	25.65	25.72				
90	1	1	QPSK	26.16	26.13	26.07				
90	1	243		26.23	26.21	26.04				
90	120	60		26.05	26.14	26.25				
90	1	0		22.46	22.49	22.51				
90	1	244		22.69	22.68	22.53				
90	243	0		25.09	25.14	25.23				
90	1	1	16-QAM	25.09	25.13	25.07	27.63	0.5794		
90	1	1	64-QAM	23.68	23.73	23.67				
90	1	1	256-QAM	21.38	21.46	21.40				
Limit	EIRP < 1W			Result			Pass			



NR n78 HPUE Maximum Average Power [dBm] (GT - LC = 2.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
100	1	1	PI/2 BPSK	-	26.15	-	28.72	0.7447		
100	1	271		-	26.19	-				
100	135	67		-	26.21	-				
100	1	0		-	22.54	-				
100	1	272		-	22.71	-				
100	270	0		-	25.66	-				
100	1	1	QPSK	-	26.22	-				
100	1	271		-	26.19	-				
100	135	67		-	26.21	-				
100	1	0		-	22.53	-				
100	1	272		-	22.69	-				
100	270	0		-	25.17	-				
100	1	1	16-QAM	-	25.13	-	27.63	0.5794		
100	1	1	64-QAM	-	23.64	-				
100	1	1	256-QAM	-	21.45	-				
Limit	EIRP < 1W			Result			Pass			



MIMO <Ant. 3+1>

Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
20	1	1	QPSK	21.36	21.54	21.16	22.04	21.89	22.13	24.72	24.73	24.68	27.42	0.5521
20	1	49		21.53	21.32	21.30	22.24	21.93	21.99	24.91	24.65	24.67		
20	25	12		21.56	21.72	21.44	22.23	21.98	22.11	24.92	24.86	24.80		
20	1	0		19.42	19.35	19.12	20.07	19.95	20.14	22.77	22.67	22.67		
20	1	50		19.52	19.42	19.37	20.25	20.03	20.09	22.91	22.75	22.76		
20	51	0		20.01	20.15	19.95	20.61	20.45	20.59	23.33	23.31	23.29		
20	1	1	16-QAM	20.99	21.02	20.78	21.78	21.51	21.86	24.41	24.28	24.36	26.91	0.4909
20	1	1	64-QAM	19.41	19.56	19.17	19.87	19.72	19.98	22.66	22.65	22.60		
20	1	1	256-QAM	16.65	16.71	16.35	17.23	17.09	17.22	19.96	19.91	19.82		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
30	1	1	QPSK	21.58	21.52	21.39	22.09	22.01	22.19	24.85	24.78	24.82	27.41	0.5508
30	1	76		21.31	21.59	21.43	22.02	22.05	22.12	24.69	24.84	24.80		
30	39	19		21.38	21.62	21.54	22.01	21.93	22.24	24.72	24.79	24.91		
30	1	0		19.32	19.47	19.25	19.95	20.06	20.21	22.66	22.79	22.77		
30	1	77		19.43	19.30	19.35	20.06	20.14	20.17	22.77	22.75	22.79		
30	78	0		19.92	20.16	19.98	20.54	20.49	20.73	23.25	23.34	23.38		
30	1	1	16-QAM	20.95	21.06	20.82	21.73	21.76	21.95	24.37	24.44	24.43	26.94	0.4943
30	1	1	64-QAM	19.54	19.54	19.28	19.90	19.79	20.07	22.73	22.68	22.71		
30	1	1	256-QAM	16.65	16.71	16.45	17.24	17.14	17.31	19.97	19.94	19.91		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
40	1	1	QPSK	21.57	21.62	21.36	22.04	22.17	22.13	24.82	24.91	24.77	27.41	0.5508
40	1	104		21.72	21.29	21.45	22.08	22.13	22.29	24.91	24.74	24.90		
40	53	26		21.58	21.57	21.30	22.12	21.95	22.09	24.87	24.77	24.72		
40	1	0		19.62	19.52	19.29	20.17	20.13	20.02	22.91	22.85	22.68		
40	1	105		19.68	19.36	19.56	20.10	20.21	20.17	22.91	22.82	22.88		
40	106	0		20.16	20.14	19.89	20.65	20.54	20.62	23.42	23.35	23.28		
40	1	1	16-QAM	21.08	21.03	20.88	21.95	21.85	21.69	24.55	24.47	24.31	27.05	0.5070
40	1	1	64-QAM	19.60	19.54	19.39	20.03	20.03	19.90	22.83	22.80	22.66		
40	1	1	256-QAM	16.75	16.64	16.52	17.35	17.35	17.22	20.07	20.02	19.89		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
60	1	1	QPSK	21.25	21.15	21.28	21.82	22.03	21.48	24.55	24.62	24.39	27.27	0.5333
60	1	160		21.47	20.92	21.51	22.03	21.82	21.53	24.77	24.40	24.53		
60	81	40		21.46	21.54	21.42	21.96	21.86	21.67	24.73	24.71	24.56		
60	1	0		19.23	19.14	19.37	19.86	19.90	19.72	22.57	22.55	22.56		
60	1	161		19.38	19.04	19.56	20.03	20.01	19.64	22.73	22.56	22.61		
60	162	0		19.96	19.87	19.95	20.43	20.43	20.13	23.21	23.17	23.05		
60	1	1	16-QAM	20.72	20.75	20.87	21.53	21.62	21.15	24.15	24.21	24.02	26.71	0.4688
60	1	1	64-QAM	19.15	19.27	19.36	19.65	19.80	19.35	22.42	22.55	22.37		
60	1	1	256-QAM	16.32	16.35	16.45	16.95	17.13	16.63	19.66	19.77	19.55		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
80	1	1	QPSK	21.42	21.02	21.03	21.84	21.87	21.81	24.65	24.48	24.45	27.15	0.5188
80	1	215		20.90	20.94	21.13	21.91	21.88	21.68	24.44	24.45	24.42		
80	109	54		21.31	21.34	21.21	21.80	21.74	21.80	24.57	24.55	24.53		
80	1	0		19.04	19.08	18.92	19.73	19.73	19.75	22.41	22.43	22.37		
80	1	216		19.04	18.96	19.13	19.94	19.82	19.83	22.52	22.42	22.50		
80	217	0		19.84	19.70	19.68	20.31	20.26	20.31	23.09	23.00	23.02		
80	1	1	16-QAM	20.82	20.60	20.57	21.43	21.54	21.57	24.15	24.11	24.11	26.65	0.4624
80	1	1	64-QAM	19.18	19.01	19.14	19.57	19.71	19.68	22.39	22.38	22.43		
80	1	1	256-QAM	16.37	16.16	16.21	16.97	17.03	17.01	19.69	19.63	19.64		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n77 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
100	1	1	QPSK	-	21.24	-	-	21.76	-	-	24.52	-	27.02	0.5035
100	1	271		-	21.13	-	-	21.82	-	-	24.50	-		
100	137	68		-	21.28	-	-	21.69	-	-	24.50	-		
100	1	0		-	19.12	-	-	19.66	-	-	22.41	-		
100	1	272		-	19.22	-	-	19.83	-	-	22.55	-		
100	273	0		-	19.69	-	-	20.22	-	-	22.97	-		
100	1	1	16-QAM	-	20.75	-	-	21.46	-	-	24.13	-	26.63	0.4603
100	1	1	64-QAM	-	19.15	-	-	19.62	-	-	22.40	-		
100	1	1	256-QAM	-	16.62	-	-	16.95	-	-	19.80	-		
Limit	EIRP < 1W			Result									Pass	



FCC RADIO TEST REPORT

Report No. : FG270608H

Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
20	1	1	QPSK	21.33	21.49	21.23	21.72	21.46	21.75	24.54	24.49	24.51	27.13	0.5164
20	1	49		21.26	21.26	21.40	21.87	21.56	21.59	24.59	24.42	24.51		
20	25	12		21.48	21.66	21.38	21.75	21.54	21.71	24.63	24.61	24.56		
20	1	0		19.36	19.39	19.10	19.68	19.56	19.76	22.53	22.49	22.45		
20	1	50		19.38	19.38	19.42	19.78	19.68	19.65	22.59	22.54	22.55		
20	51	0		19.92	20.06	19.85	20.20	19.99	20.15	23.07	23.04	23.01		
20	1	1	16-QAM	21.01	21.03	20.62	21.35	21.14	21.43	24.19	24.10	24.05	26.69	0.4667
20	1	1	64-QAM	19.40	19.53	19.15	19.45	19.36	19.50	22.44	22.46	22.34		
20	1	1	256-QAM	16.53	16.70	16.31	16.80	16.69	16.81	19.68	19.71	19.58		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
30	1	1	QPSK	21.32	21.35	21.34	21.47	21.64	21.72	24.41	24.51	24.54	27.15	0.5188
30	1	76		21.65	21.22	21.32	21.52	21.49	21.53	24.60	24.37	24.44		
30	39	19		21.38	21.53	21.44	21.66	21.54	21.83	24.53	24.55	24.65		
30	1	0		19.31	19.32	19.21	19.54	19.62	19.83	22.44	22.48	22.54		
30	1	77		19.36	19.26	19.42	19.53	19.62	19.68	22.46	22.45	22.56		
30	78	0		20.01	20.09	19.99	20.14	20.00	20.32	23.09	23.06	23.17		
30	1	1	16-QAM	20.98	21.10	20.75	21.22	21.18	21.48	24.11	24.15	24.14	26.65	0.4624
30	1	1	64-QAM	19.29	19.56	19.38	19.37	19.35	19.62	22.34	22.47	22.51		
30	1	1	256-QAM	16.46	16.63	16.50	16.67	16.67	16.92	19.58	19.66	19.73		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
40	1	1	QPSK	21.52	21.46	21.38	21.68	21.75	21.74	24.61	24.62	24.57	27.17	0.5212
40	1	104		21.49	21.36	21.31	21.56	21.68	21.66	24.54	24.53	24.50		
40	53	26		21.54	21.57	21.22	21.78	21.53	21.68	24.67	24.56	24.47		
40	1	0		19.49	19.47	19.31	19.78	19.74	19.63	22.65	22.62	22.48		
40	1	105		19.57	19.26	19.35	19.65	19.71	19.60	22.62	22.50	22.49		
40	106	0		20.09	20.10	19.82	20.28	20.07	20.19	23.20	23.10	23.02		
40	1	1	16-QAM	21.00	20.95	20.83	21.45	21.43	21.16	24.24	24.21	24.01	26.74	0.4721
40	1	1	64-QAM	19.58	19.46	19.35	19.61	19.58	19.54	22.61	22.53	22.46		
40	1	1	256-QAM	16.72	16.68	16.50	16.96	16.89	16.82	19.85	19.80	19.67		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
50	1	1	QPSK	21.13	21.15	21.05	21.48	21.52	21.20	24.32	24.35	24.14	26.99	0.5000
50	1	131		21.19	20.92	21.03	21.35	21.48	21.34	24.28	24.22	24.20		
50	67	33		21.34	21.54	21.09	21.49	21.41	21.38	24.43	24.49	24.25		
50	1	0		19.08	19.15	19.08	19.30	19.49	19.05	22.20	22.33	22.08		
50	1	132		19.22	19.02	19.24	19.27	19.52	19.34	22.26	22.29	22.30		
50	133	0		19.88	19.60	19.67	19.94	19.97	19.84	22.92	22.80	22.77		
50	1	1	16-QAM	20.70	20.82	20.68	21.08	21.18	20.89	23.90	24.01	23.80	26.51	0.4477
50	1	1	64-QAM	19.17	19.27	19.12	19.25	19.33	19.03	22.22	22.31	22.09		
50	1	1	256-QAM	16.25	16.33	16.24	16.57	16.65	16.38	19.42	19.50	19.32		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
60	1	1	QPSK	20.84	21.22	21.32	21.53	21.60	21.57	24.21	24.42	24.46	27.09	0.5117
60	1	160		21.14	20.97	21.37	21.56	21.59	21.55	24.37	24.30	24.47		
60	81	40		21.28	21.47	21.47	21.67	21.41	21.68	24.49	24.45	24.59		
60	1	0		18.94	19.15	19.38	19.49	19.55	19.68	22.23	22.36	22.54		
60	1	161		19.27	19.05	19.61	19.78	19.53	19.68	22.54	22.31	22.66		
60	162	0		19.75	19.78	20.10	20.11	19.94	20.12	22.94	22.87	23.12		
60	1	1	16-QAM	20.43	20.72	20.95	21.09	21.24	21.17	23.78	24.00	24.07	26.57	0.4539
60	1	1	64-QAM	18.86	19.18	19.38	19.23	19.41	19.32	22.06	22.31	22.36		
60	1	1	256-QAM	16.01	16.37	16.51	16.60	16.71	16.68	19.32	19.55	19.61		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
70	1	1	QPSK	21.03	21.01	21.27	21.48	21.54	21.54	24.27	24.29	24.42	26.92	0.4920
70	1	187		20.77	20.75	21.12	21.53	21.52	21.48	24.18	24.16	24.31		
70	95	47		20.47	21.30	21.18	20.75	21.27	21.56	23.62	24.30	24.38		
70	1	0		18.98	18.96	19.11	19.48	19.38	19.43	22.25	22.19	22.28		
70	1	188		18.81	18.84	18.98	19.43	19.41	19.30	22.14	22.14	22.15		
70	189	0		19.71	19.68	19.66	19.88	19.85	19.97	22.81	22.78	22.83		
70	1	1	16-QAM	20.59	20.65	20.84	21.16	21.21	21.18	23.89	23.95	24.02	26.52	0.4487
70	1	1	64-QAM	19.06	19.06	19.32	19.29	19.27	19.33	22.19	22.18	22.34		
70	1	1	256-QAM	16.09	16.24	16.48	16.58	16.54	16.62	19.35	19.40	19.56		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
80	1	1	QPSK	21.10	21.28	20.96	21.41	21.54	21.48	24.27	24.42	24.24	26.92	0.4920
80	1	215		20.80	20.83	20.95	21.32	21.40	21.44	24.08	24.13	24.21		
80	109	54		21.25	21.27	21.13	21.39	21.24	21.29	24.33	24.27	24.22		
80	1	0		18.81	18.94	18.86	19.30	19.35	19.37	22.07	22.16	22.13		
80	1	216		18.89	18.92	19.13	19.47	19.49	19.41	22.20	22.22	22.28		
80	217	0		19.71	19.67	19.62	19.96	19.85	19.84	22.85	22.77	22.74		
80	1	1	16-QAM	20.65	20.52	20.55	21.04	20.97	21.10	23.86	23.76	23.84	26.36	0.4325
80	1	1	64-QAM	19.18	19.25	19.98	19.20	19.38	19.22	22.20	22.33	22.63		
80	1	1	256-QAM	16.23	16.11	16.15	16.52	16.53	16.56	19.39	19.34	19.37		
Limit	EIRP < 1W			Result									Pass	



Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
90	1	1	QPSK	21.07	21.08	20.98	21.38	21.45	21.54	24.24	24.28	24.28	26.86	0.4853
90	1	243		21.23	21.16	20.88	21.35	21.29	21.33	24.30	24.24	24.12		
90	123	61		21.17	21.27	21.35	21.18	21.33	21.35	24.19	24.31	24.36		
90	1	0		18.92	18.93	18.85	19.17	19.23	19.33	22.06	22.09	22.11		
90	1	244		19.08	19.08	19.01	19.41	19.37	19.25	22.26	22.24	22.14		
90	245	0		19.63	19.76	19.73	19.75	19.83	19.96	22.70	22.81	22.86		
90	1	1	16-QAM	20.62	20.42	20.65	20.98	21.08	21.13	23.81	23.77	23.91	26.41	0.4375
90	1	1	64-QAM	19.12	19.13	18.98	19.15	19.24	19.24	22.15	22.20	22.12		
90	1	1	256-QAM	16.21	16.13	16.01	16.49	16.57	16.54	19.36	19.37	19.29		
Limit	EIRP < 1W			Result									Pass	

Part27Q NR n78 UL-MIMO Maximum Average Power [dBm], DG = 2.5 dBi														
BW	RB	RB	Mod	Antenna 3			Antenna 1			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
100	1	1	QPSK	-	21.18	-	-	21.36	-	-	24.28	-	26.78	0.4764
100	1	271		-	21.07	-	-	21.29	-	-	24.19	-		
100	137	68		-	21.22	-	-	21.28	-	-	24.26	-		
100	1	0		-	19.01	-	-	19.18	-	-	22.11	-		
100	1	272		-	19.15	-	-	19.28	-	-	22.23	-		
100	273	0		-	19.73	-	-	19.87	-	-	22.81	-		
100	1	1	16-QAM	-	20.56	-	-	21.08	-	-	23.84	-	26.34	0.4305
100	1	1	64-QAM	-	19.13	-	-	19.15	-	-	22.15	-		
100	1	1	256-QAM	-	16.27	-	-	16.51	-	-	19.40	-		
Limit	EIRP < 1W			Result									Pass	

**FR1 n78 (HPUE)**

<SISO Mode>

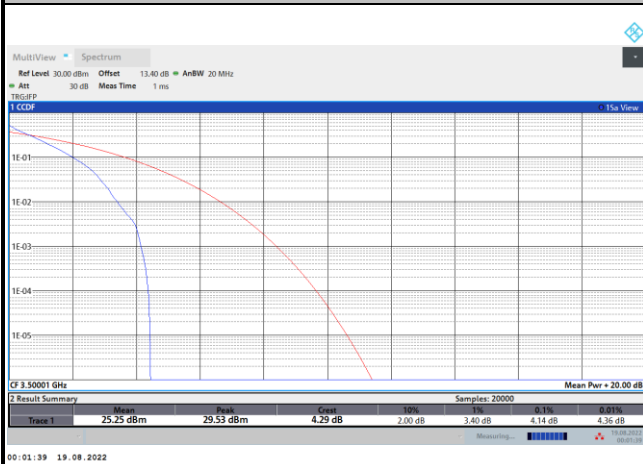
Peak-to-Average Ratio

Mode	FR1 n78 (HPUE) / 20MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.14	4.70	5.74	6.02	PASS
Mode	FR1 n78 (HPUE) / 20MHz / DFT-S OFDM				
Mod.	256QAM				Limit: 13dB
RB Size	Full RB				Result
Middle CH	6.66				PASS

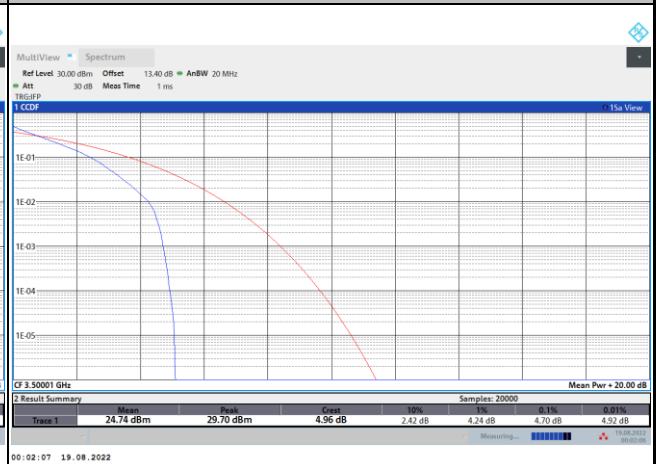


FR1 n78 (HPUE) / 20MHz / DFT-S OFDM / Middle Channel / Full RB

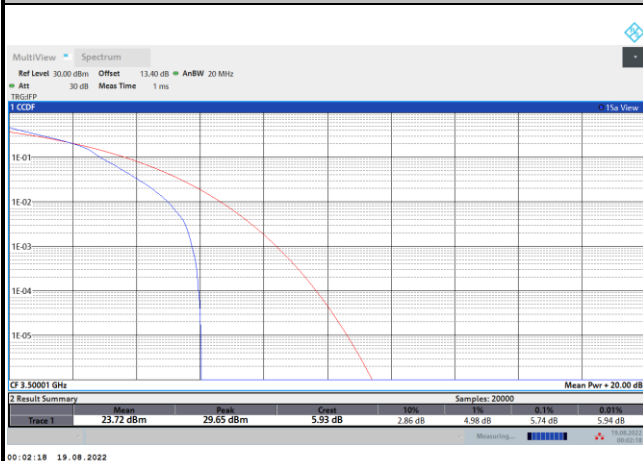
PI/2 BPSK



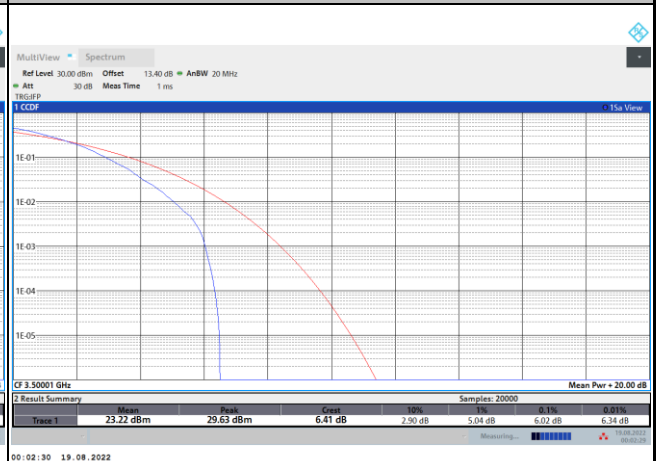
QPSK



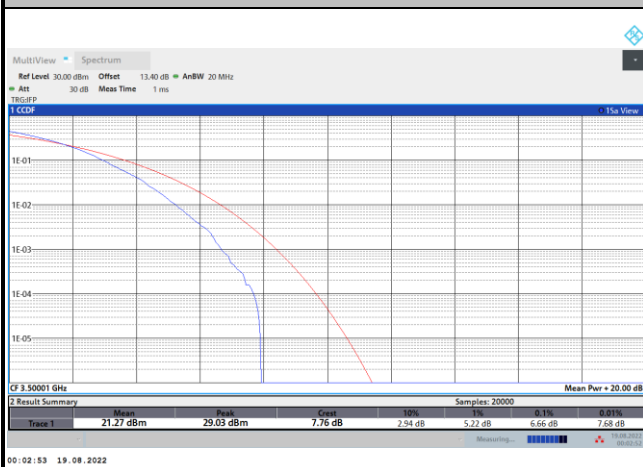
16QAM



64QAM



256QAM



**26dB Bandwidth**

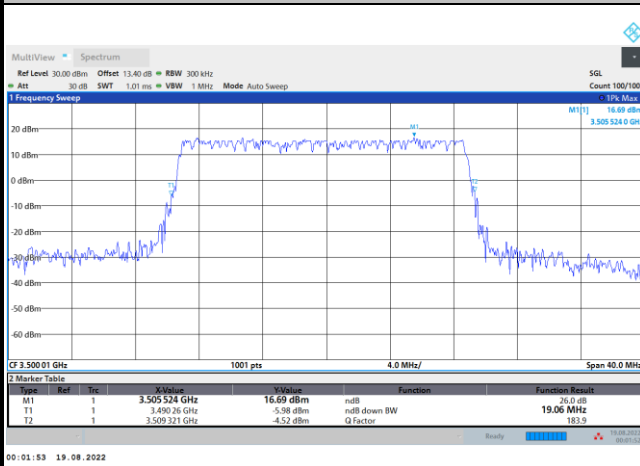
Mode	FR1 n78 (HPUE) : 26dB BW(MHz) / DFT-S OFDM							
BW	20MHz	25MHz	30MHz	40MHz	50MHz	60MHz	70MHz	80MHz
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK
Middle CH	19.06	-	27.69	38.36	48.35	60.66	67.13	79.92
BW	90MHz	100MHz						
Mod.	PI/2 BPSK	PI/2 BPSK						
Middle CH	89.73	99.50						

Mode	FR1 n78 (HPUE) : 26dB BW(MHz) / CP OFDM							
BW	20MHz		25MHz		30MHz		40MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	19.42	19.22	-	-	29.13	29.07	40.44	40.36
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	19.14	19.38	-	-	28.83	28.83	40.28	40.36
BW	50MHz		60MHz		70MHz		80MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	50.15	50.15	60.54	60.54	70.35	70.35	80.40	80.24
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	50.25	50.05	60.42	60.42	70.35	70.49	80.24	80.56
BW	90MHz		100MHz					
Mod.	QPSK	16QAM	QPSK	16QAM				
Middle CH	90.63	90.63	100.50	100.70				
Mod.	64QAM	256QAM	64QAM	256QAM				
Middle CH	90.45	90.27	100.50	100.50				



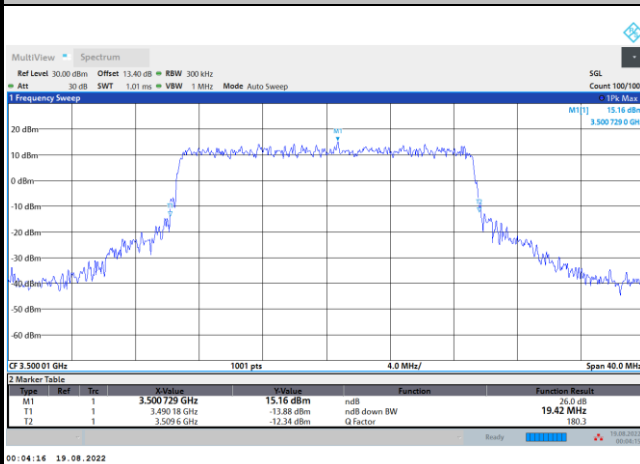
FR1 n78 (HPUE) / 20MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

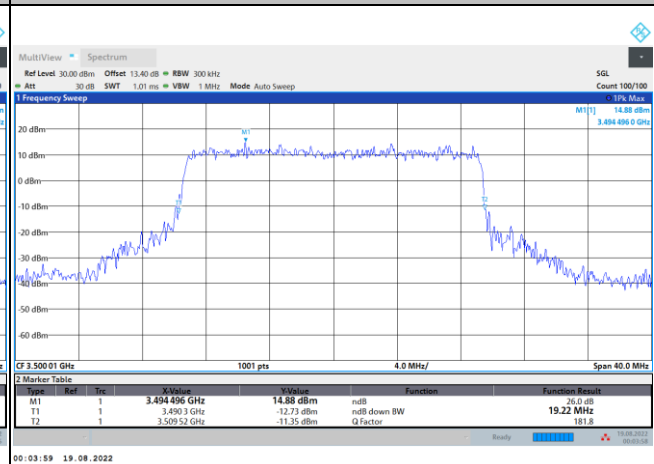


FR1 n78 (HPUE) / 20MHz / CP OFDM / Middle Channel / Full RB

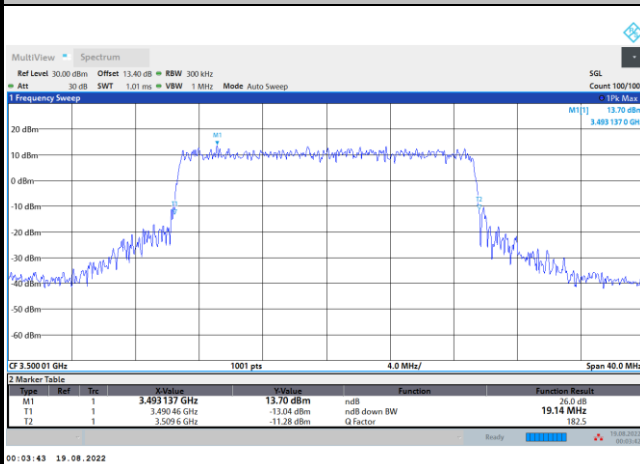
QPSK



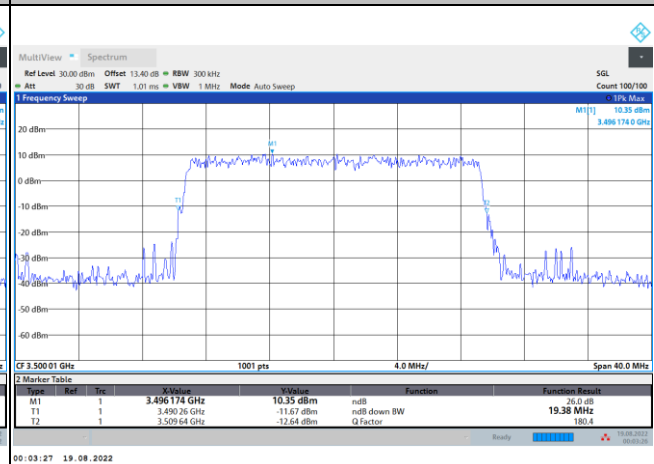
16QAM



64QAM



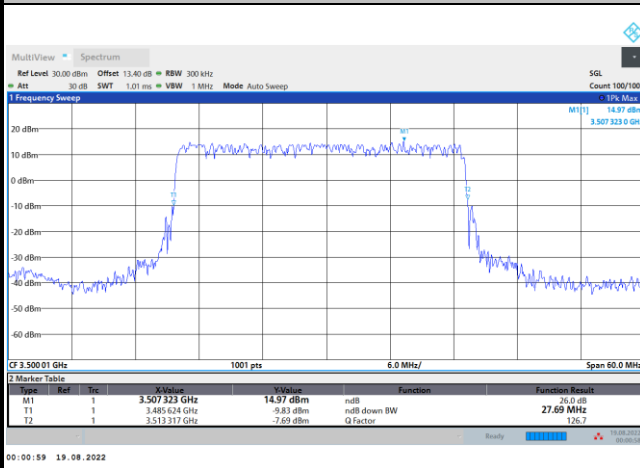
256QAM





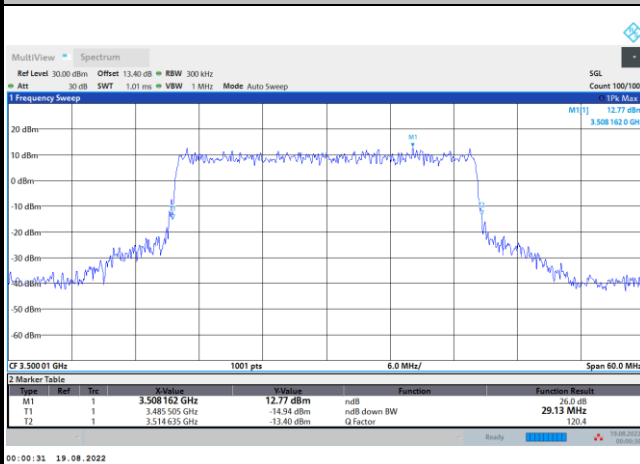
FR1 n78 (HPUE) / 30MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

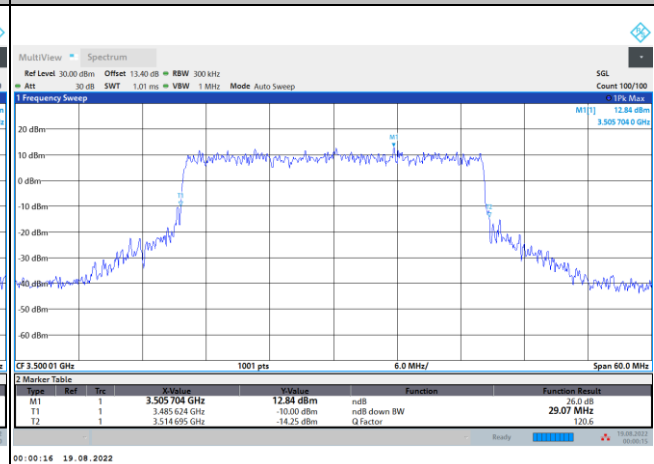


FR1 n78 (HPUE) / 30MHz / CP OFDM / Middle Channel / Full RB

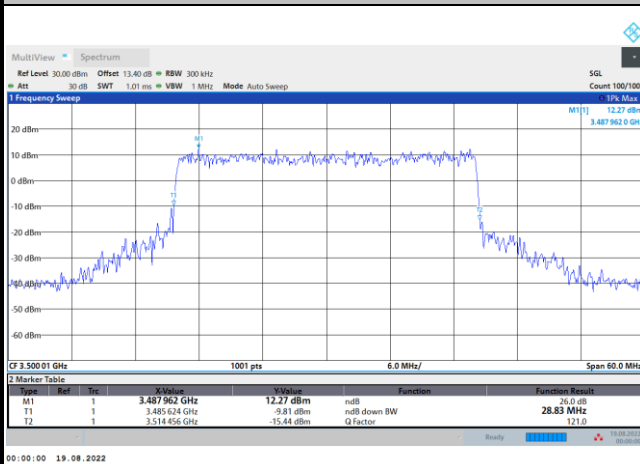
QPSK



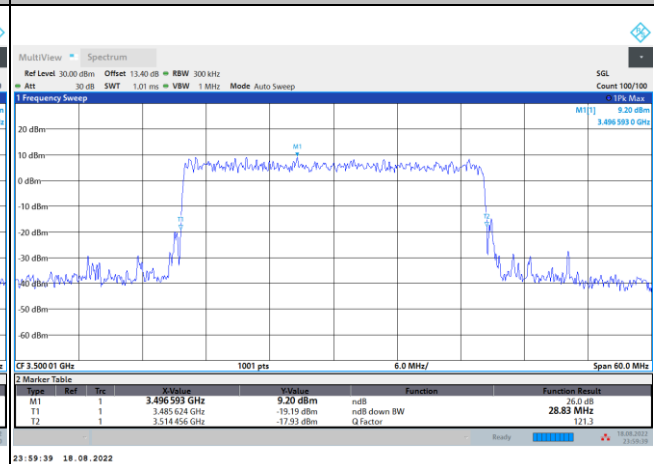
16QAM

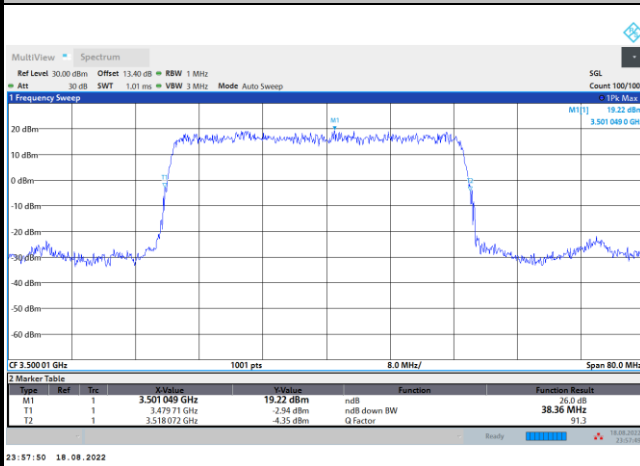
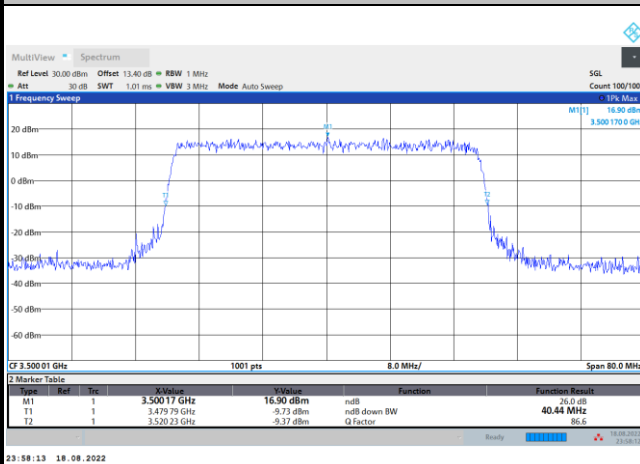
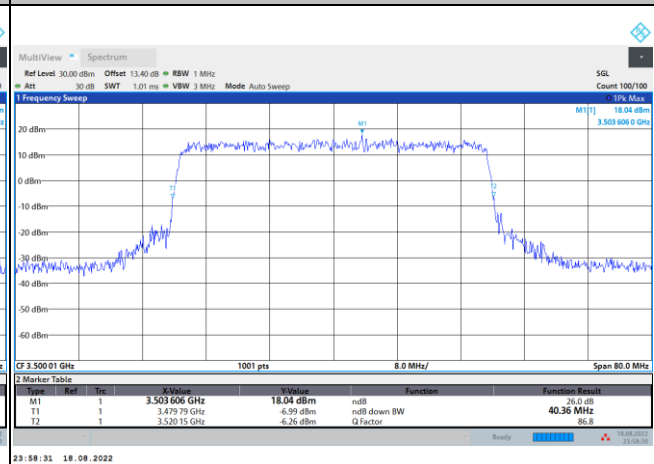
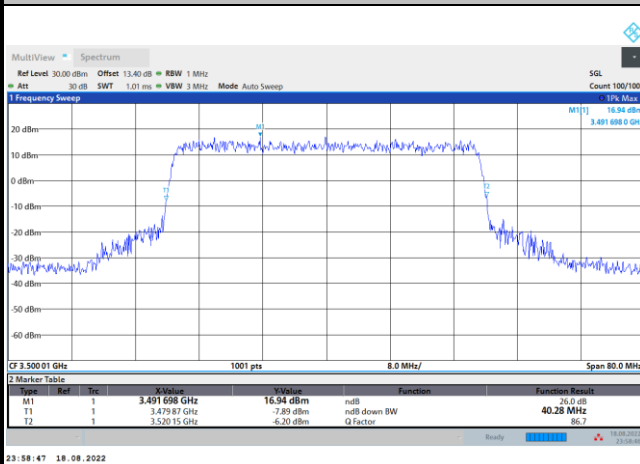
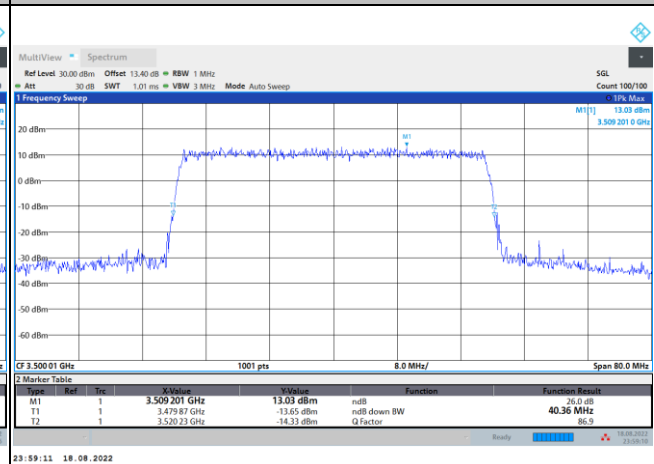


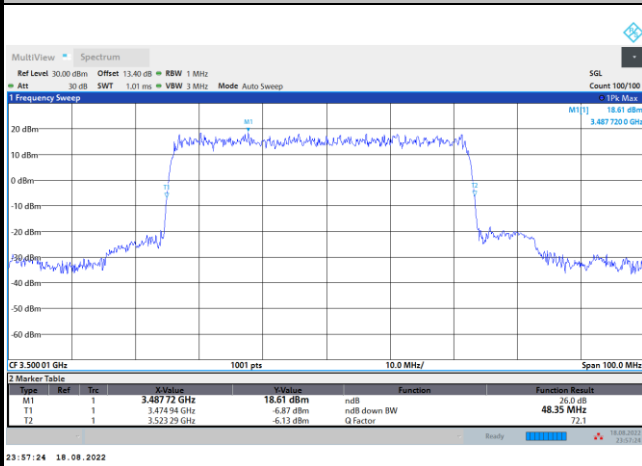
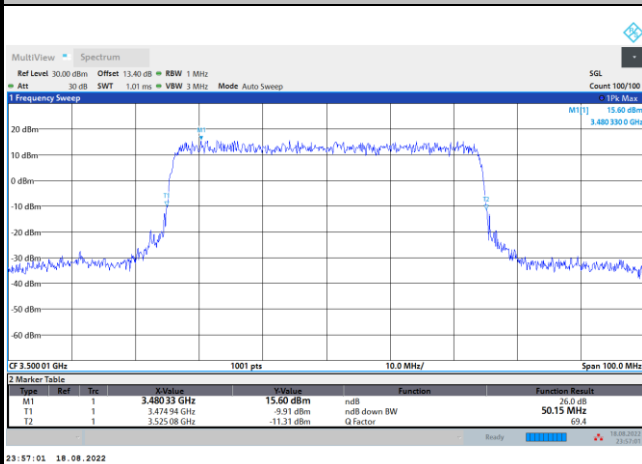
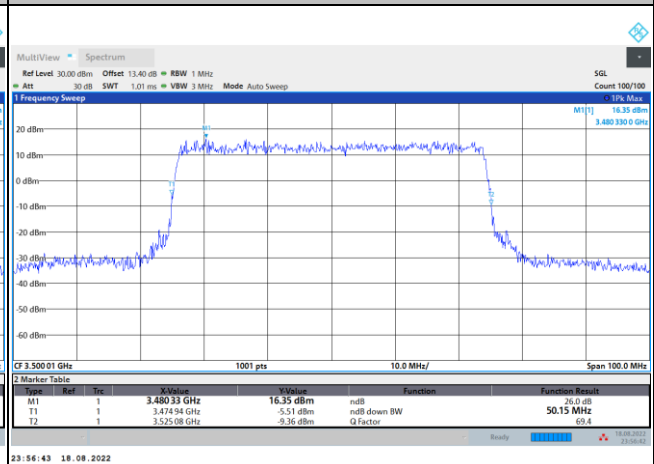
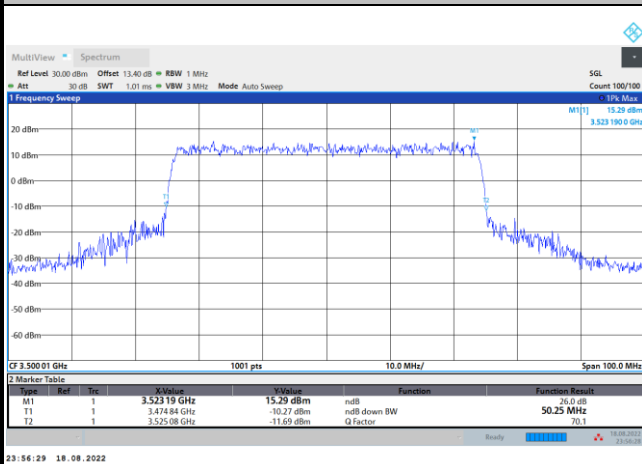
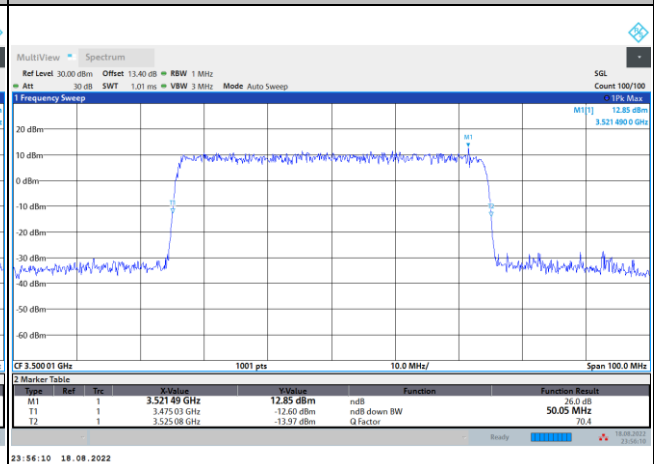
64QAM



256QAM



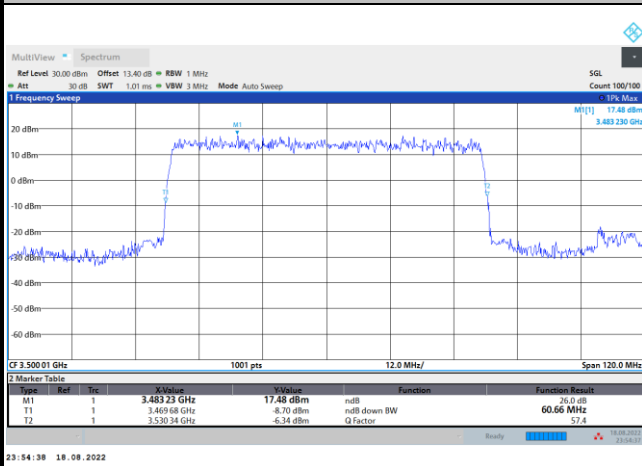
FR1 n78 (HPUE) / 40MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 40MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


FR1 n78 (HPUE) / 50MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 50MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM




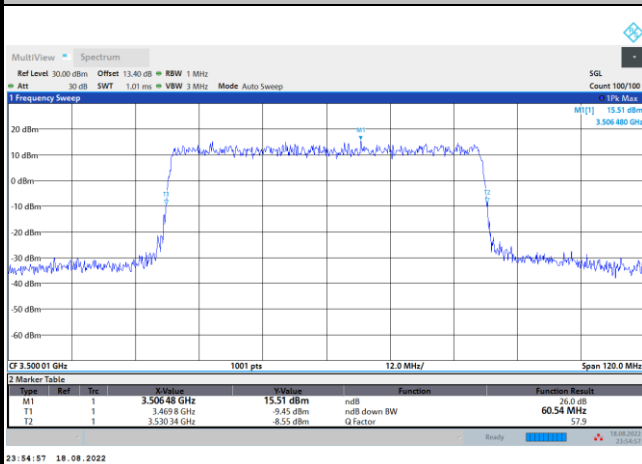
FR1 n78 (HPUE) / 60MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

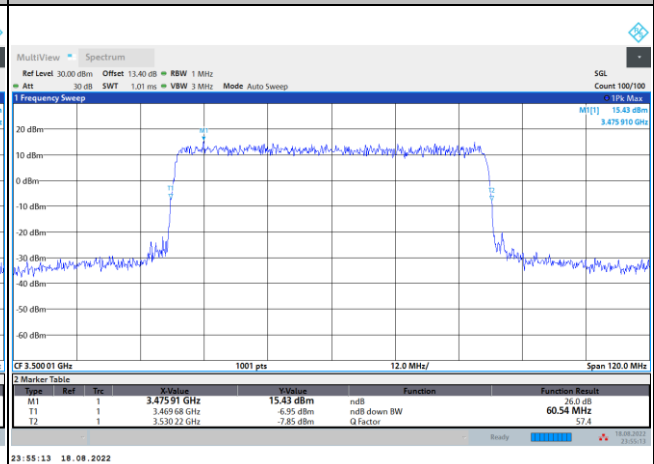


FR1 n78 (HPUE) / 60MHz / CP OFDM / Middle Channel / Full RB

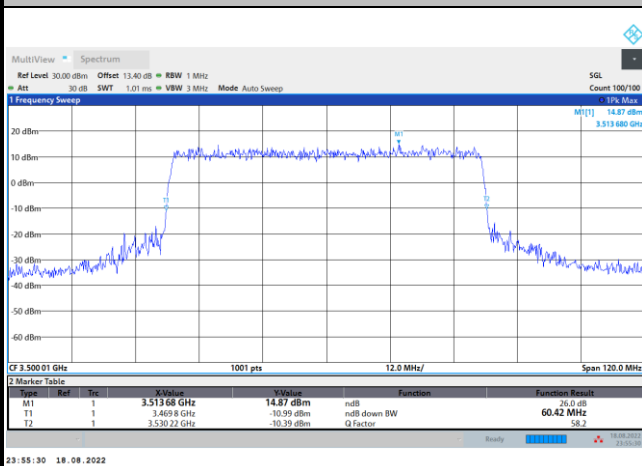
QPSK



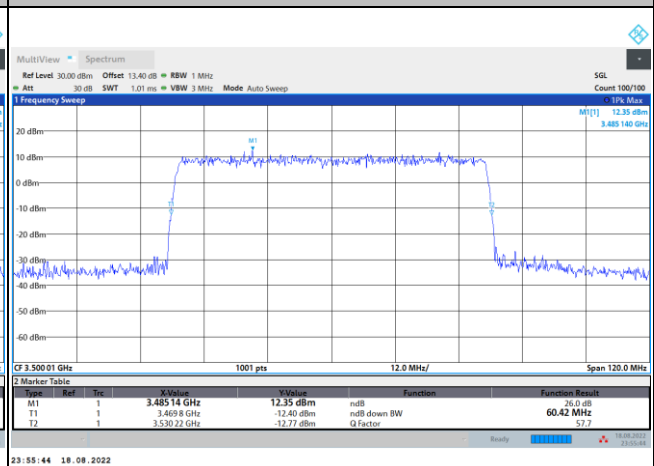
16QAM



64QAM



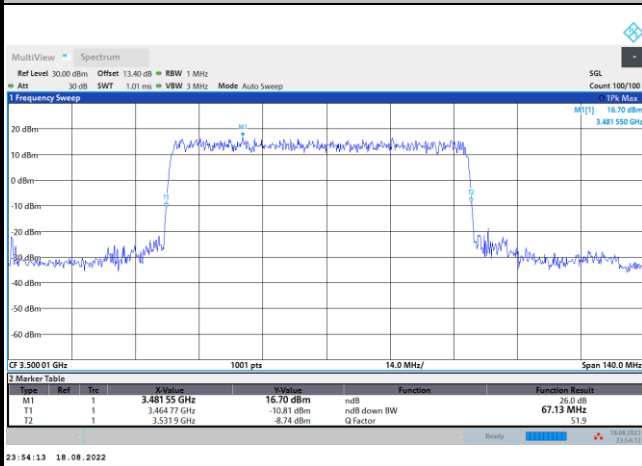
256QAM





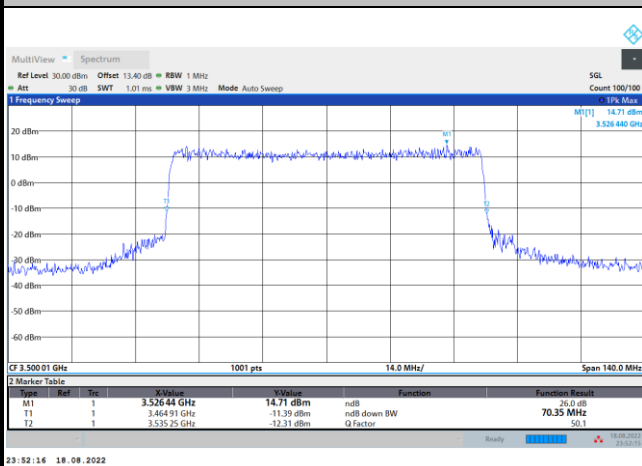
FR1 n78 (HPUE) / 70MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

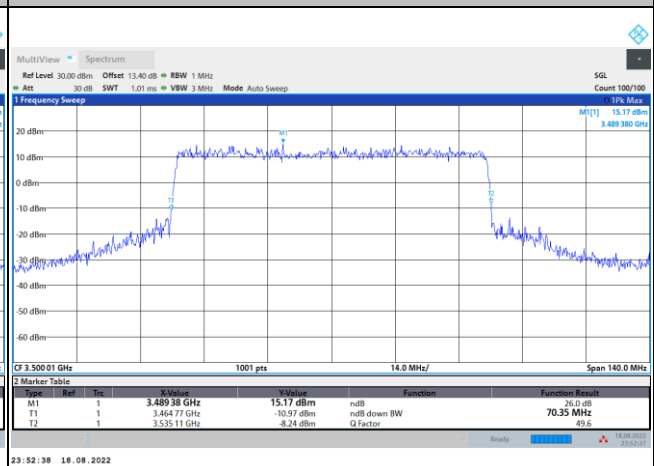


FR1 n78 (HPUE) / 70MHz / CP OFDM / Middle Channel / Full RB

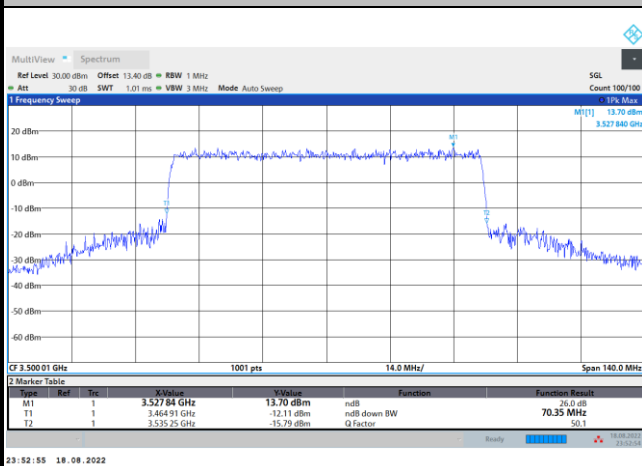
QPSK



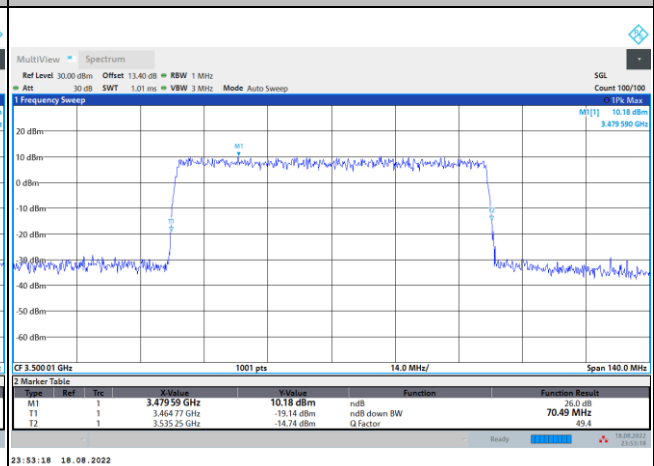
16QAM



64QAM



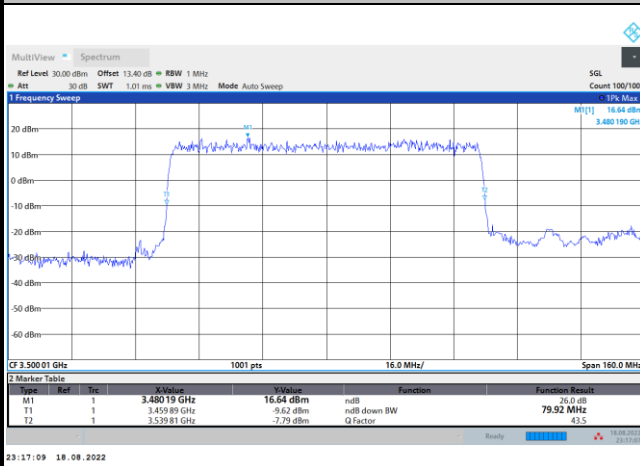
256QAM





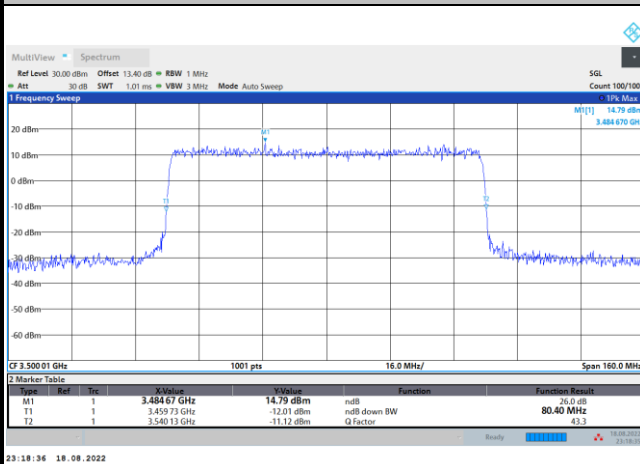
FR1 n78 (HPUE) / 80MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

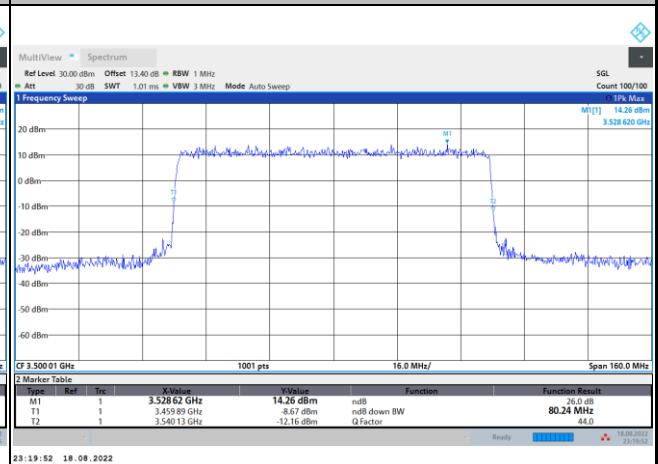


FR1 n78 (HPUE) / 80MHz / CP OFDM / Middle Channel / Full RB

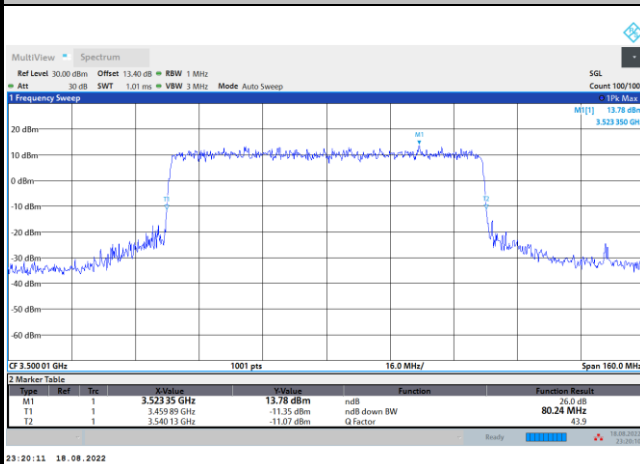
QPSK



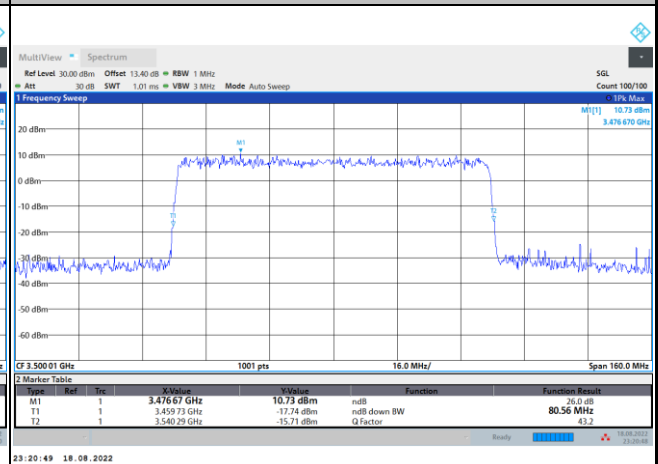
16QAM



64QAM



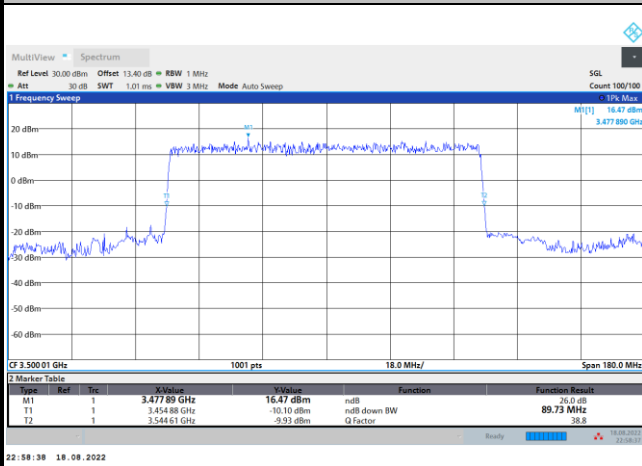
256QAM





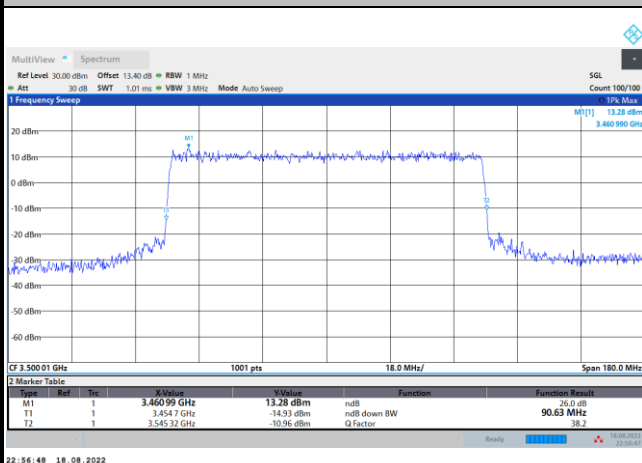
FR1 n78 (HPUE) / 90MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

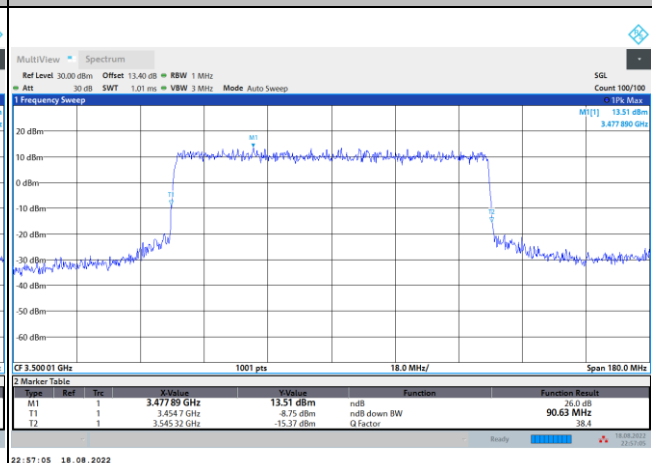


FR1 n78 (HPUE) / 90MHz / CP OFDM / Middle Channel / Full RB

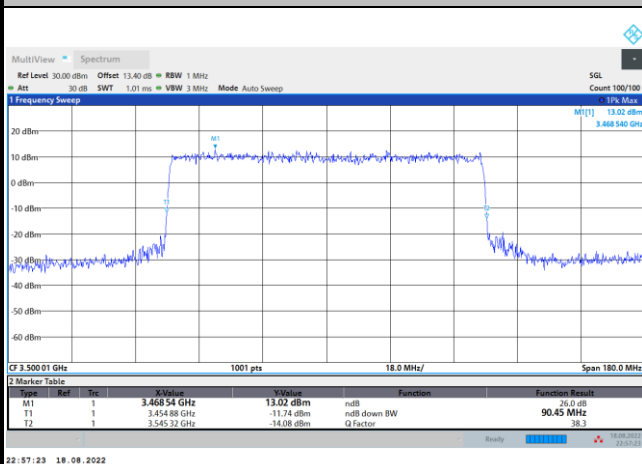
QPSK



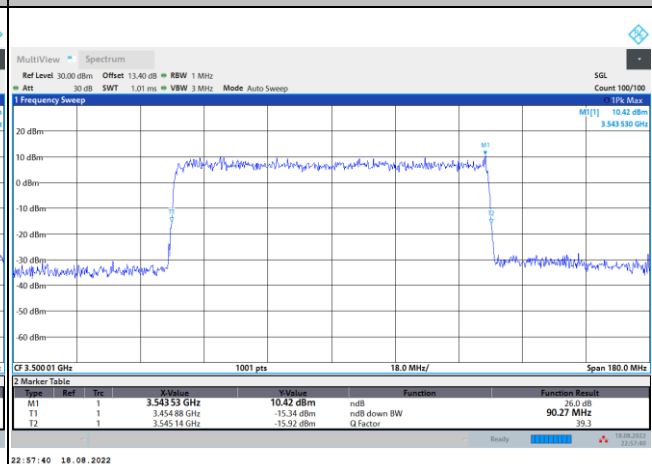
16QAM

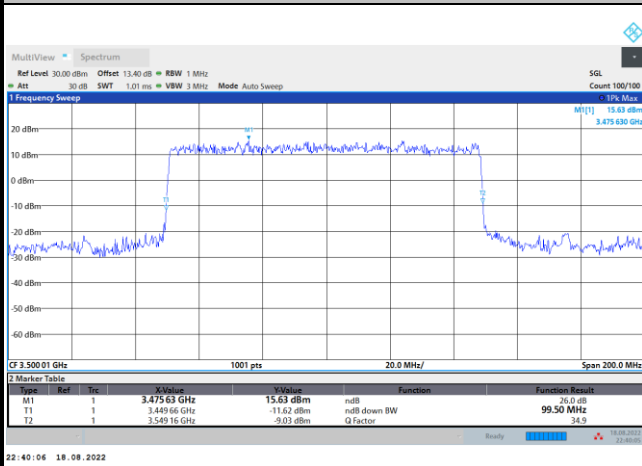
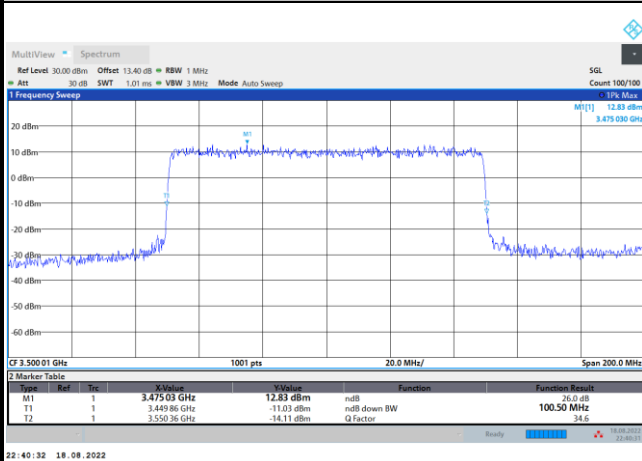
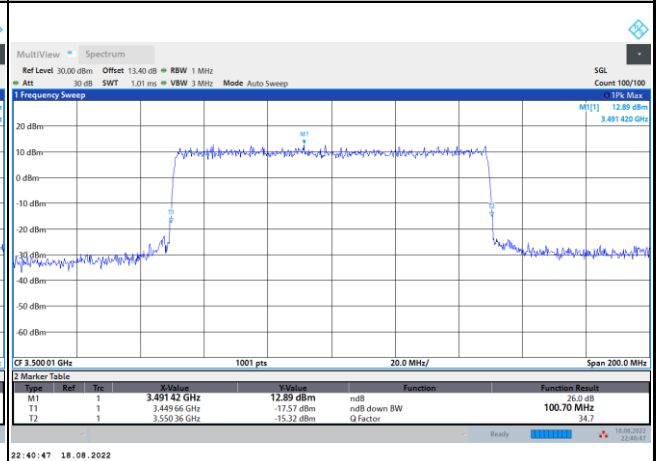
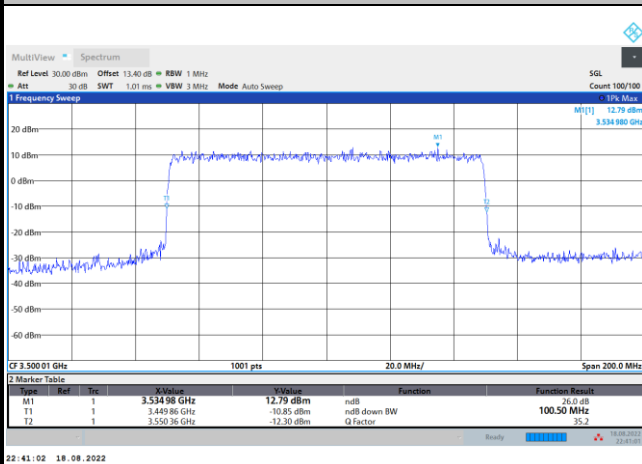
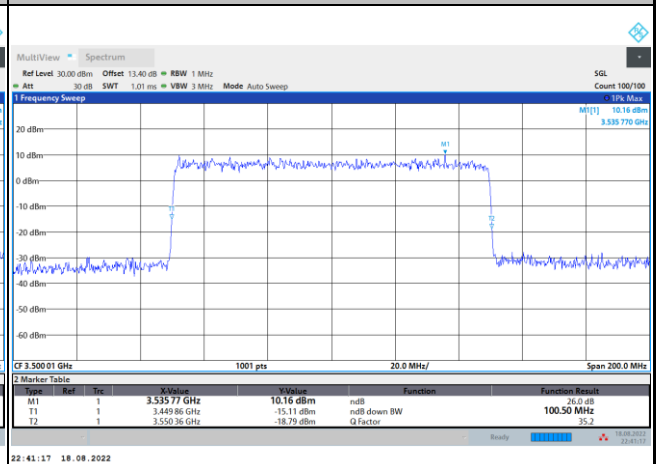


64QAM



256QAM

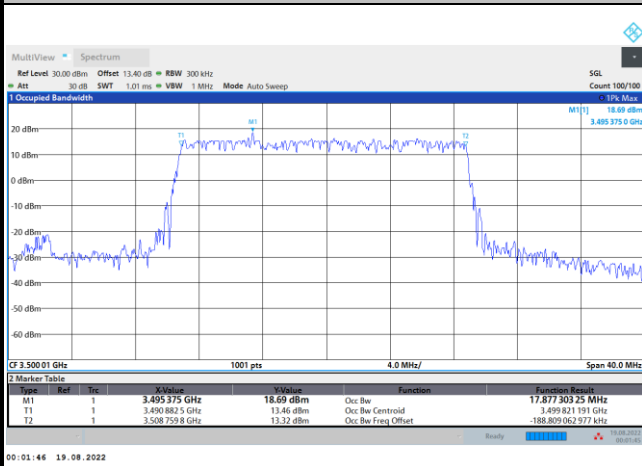
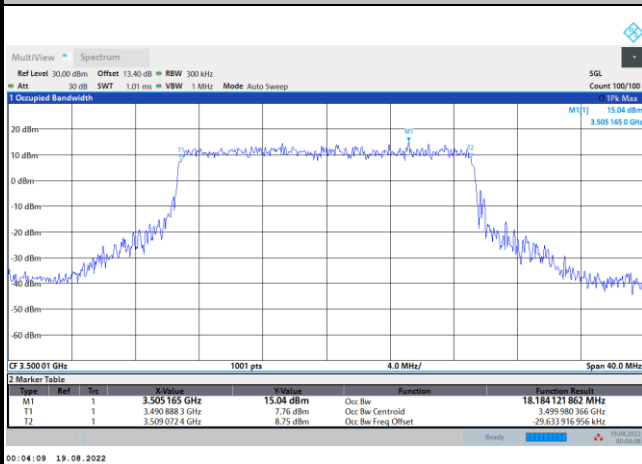
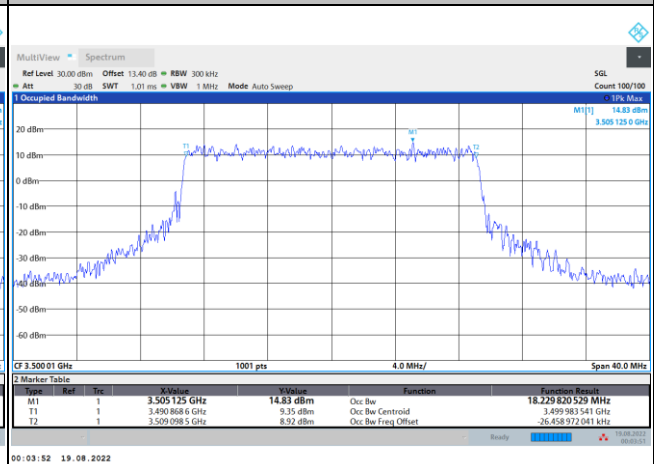
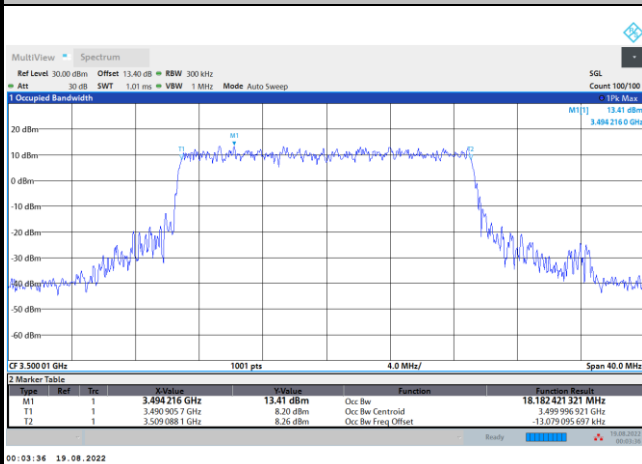
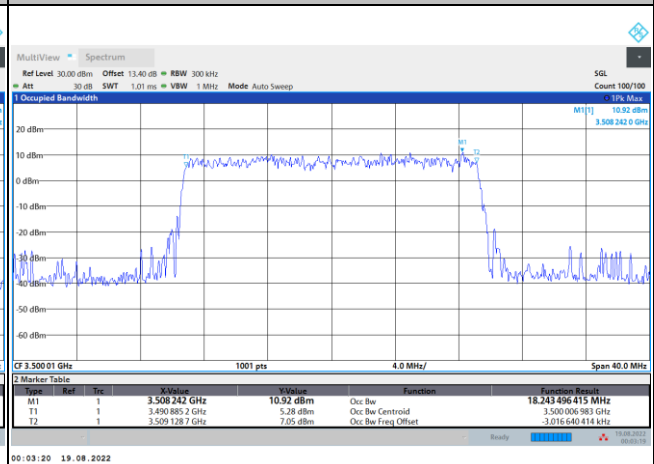


FR1 n78 (HPUE) / 100MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 100MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


**Occupied Bandwidth**

Mode	FR1 n78 (HPUE) : OB BW(MHz) / DFT-S OFDM							
BW	20MHz	25MHz	30MHz	40MHz	50MHz	60MHz	70MHz	80MHz
Mod.	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK	PI/2 BPSK
Middle CH	17.87	-	26.70	35.93	45.91	57.83	64.31	76.86
BW	90MHz	100MHz						
Mod.	PI/2 BPSK	PI/2 BPSK						
Middle CH	86.73	96.16						

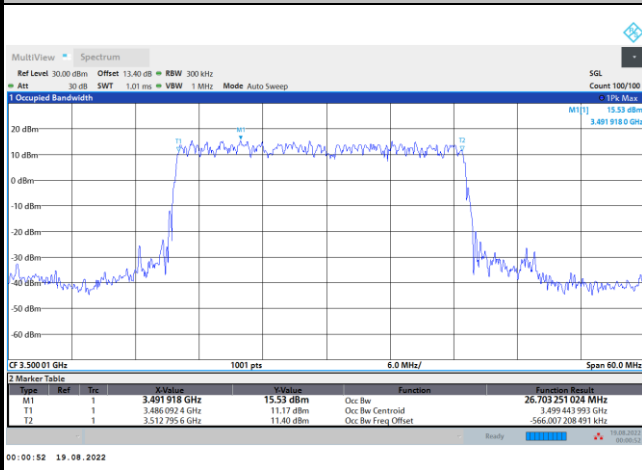
Mode	FR1 n78 (HPUE) : OB BW(MHz) / CP OFDM							
BW	20MHz		25MHz		30MHz		40MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	18.18	18.22	-	-	27.78	27.77	38.04	38.04
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	18.18	18.24	-	-	27.79	27.79	37.98	37.97
BW	50MHz		60MHz		70MHz		80MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	47.59	47.69	57.96	57.76	67.54	67.52	77.42	77.47
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	47.60	47.66	57.78	57.85	67.55	67.34	77.42	77.40
BW	90MHz		100MHz					
Mod.	QPSK	16QAM	QPSK	16QAM				
Middle CH	87.39	87.48	97.11	97.21				
Mod.	64QAM	256QAM	64QAM	256QAM				
Middle CH	87.34	87.54	97.36	97.27				

FR1 n78 (HPUE) / 20MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 20MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM




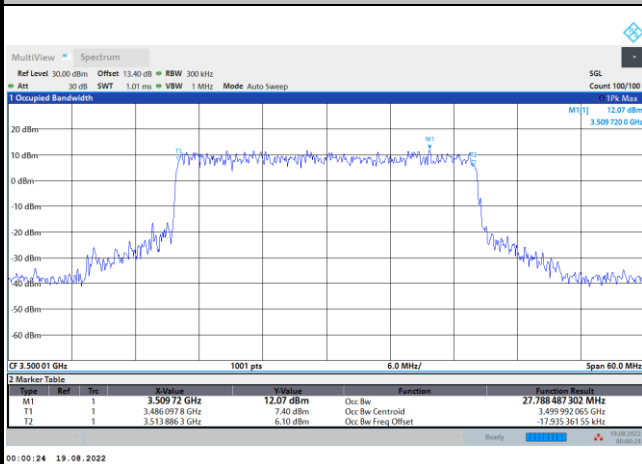
FR1 n78 (HPUE) / 30MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

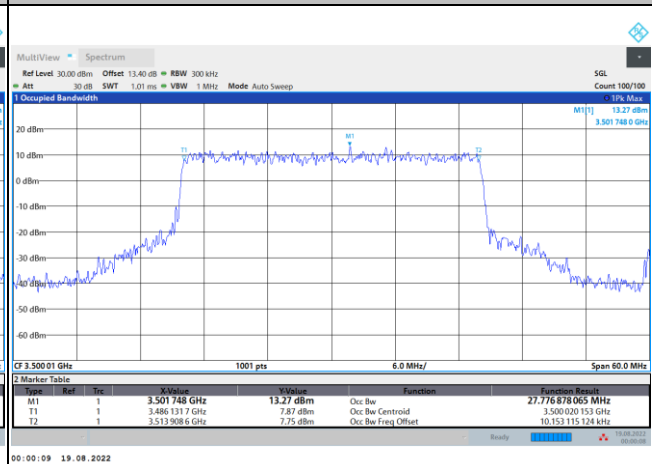


FR1 n78 (HPUE) / 30MHz / CP OFDM / Middle Channel / Full RB

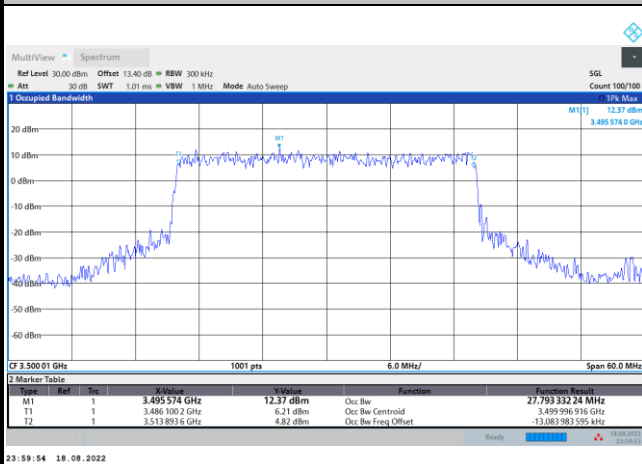
QPSK



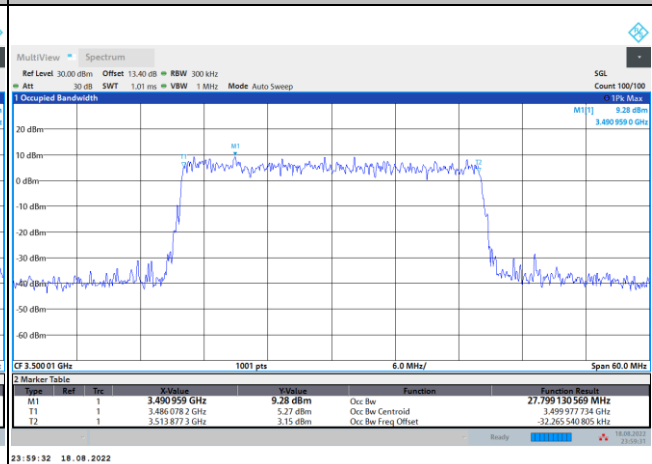
16QAM



64QAM



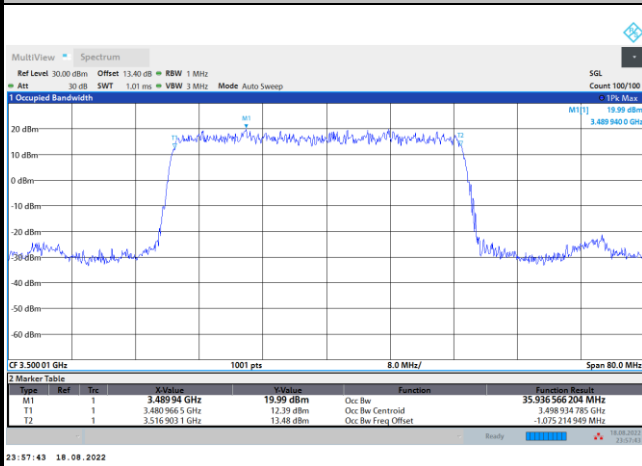
256QAM





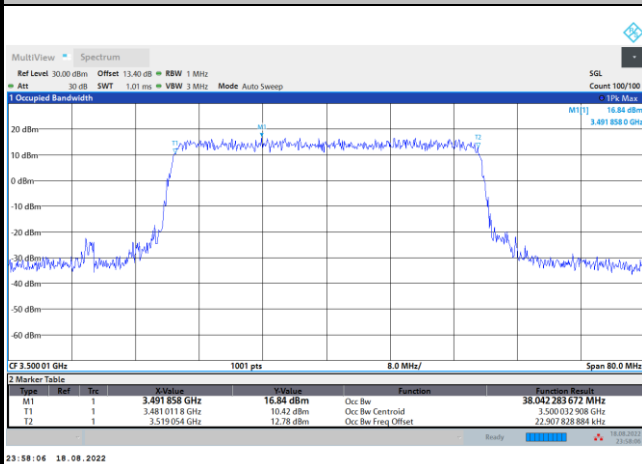
FR1 n78 (HPUE) / 40MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

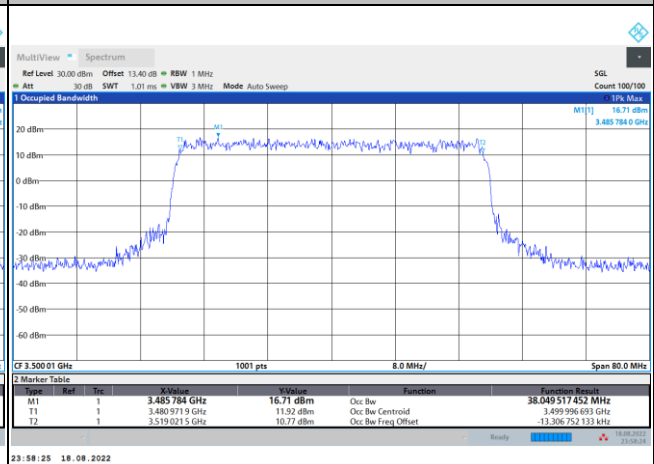


FR1 n78 (HPUE) / 40MHz / CP OFDM / Middle Channel / Full RB

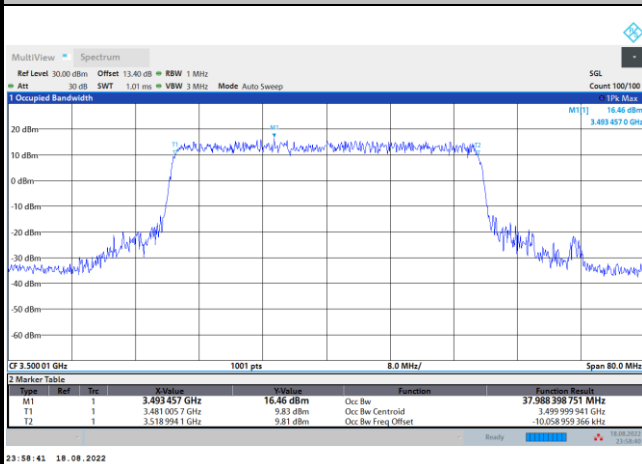
QPSK



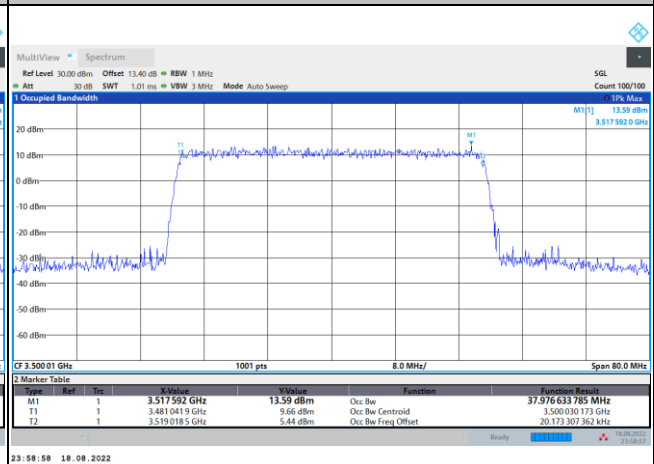
16QAM

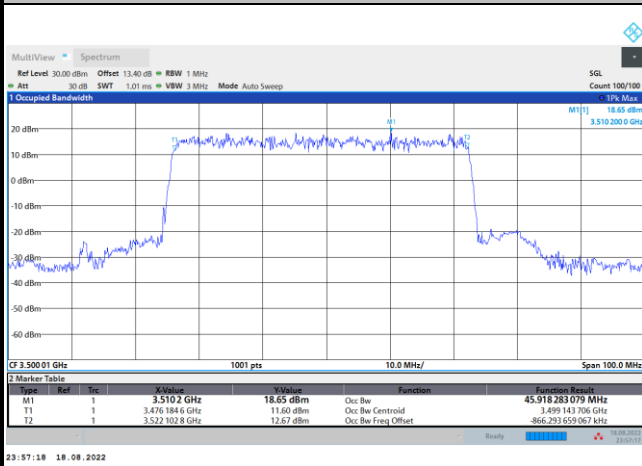
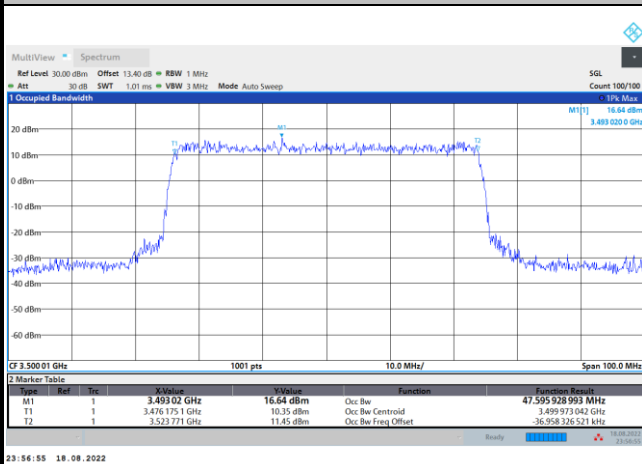
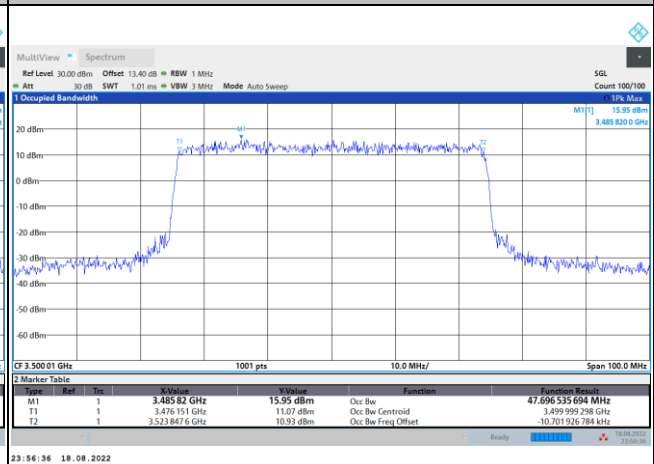
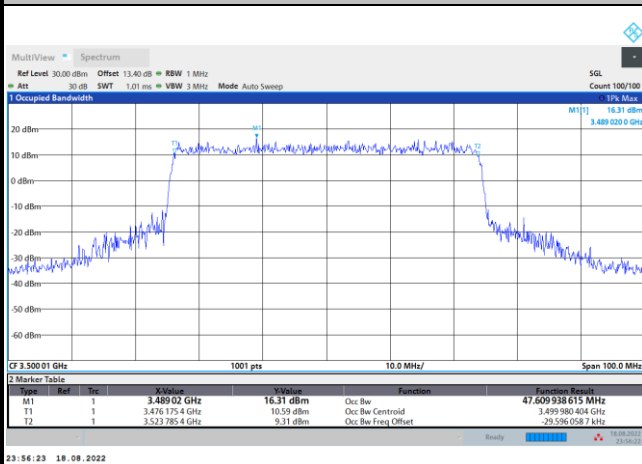
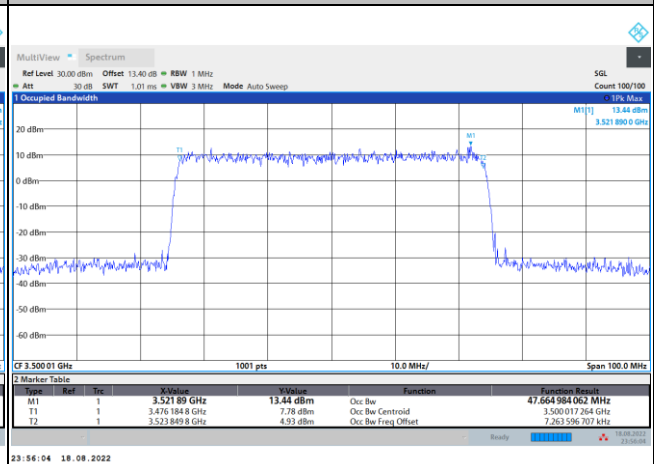


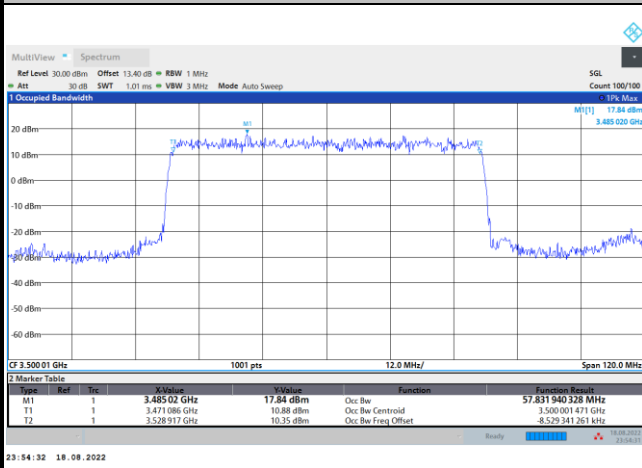
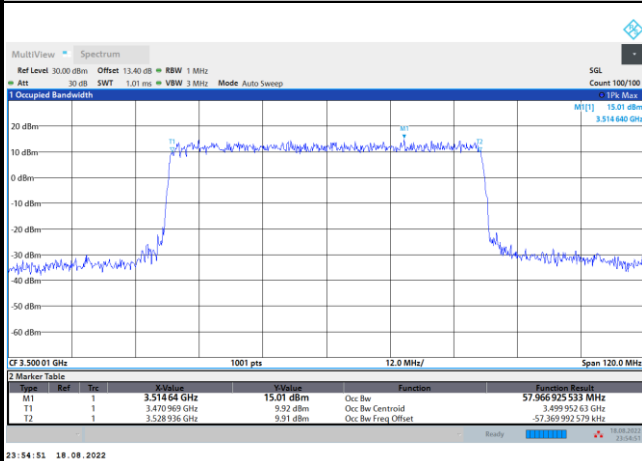
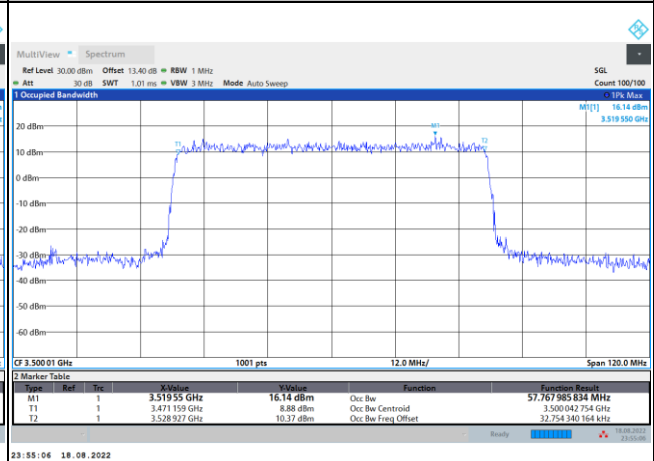
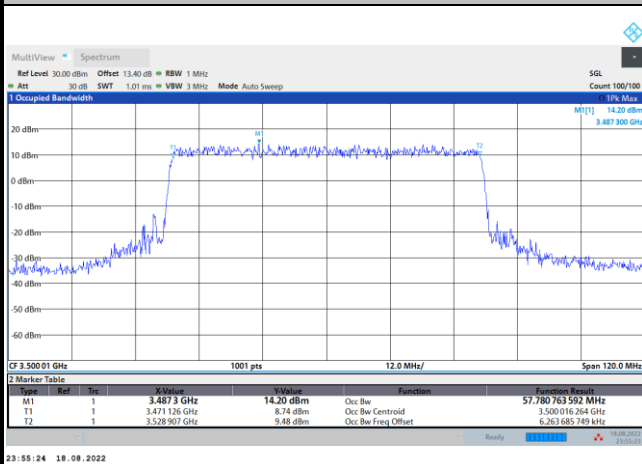
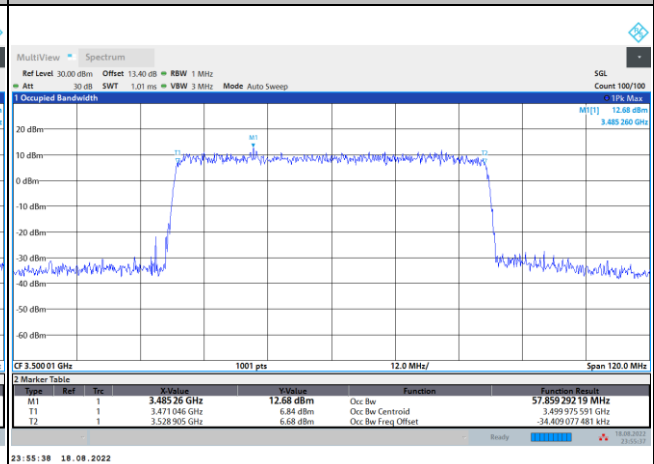
64QAM

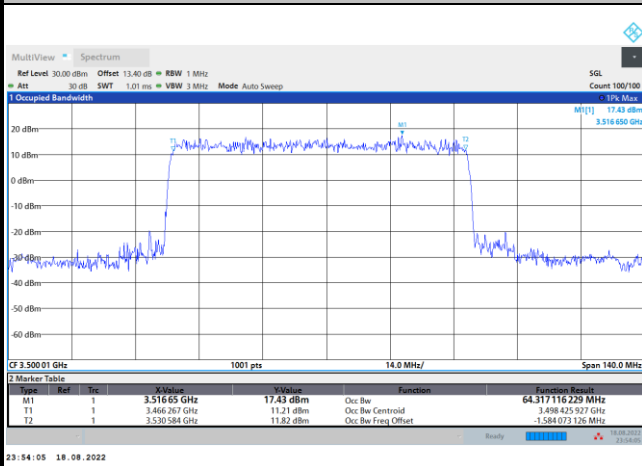
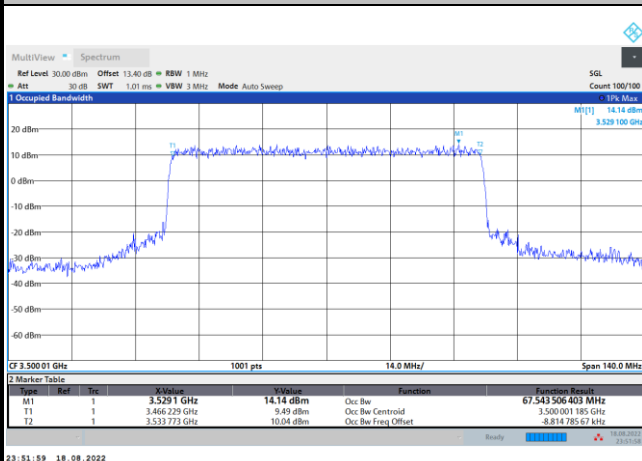
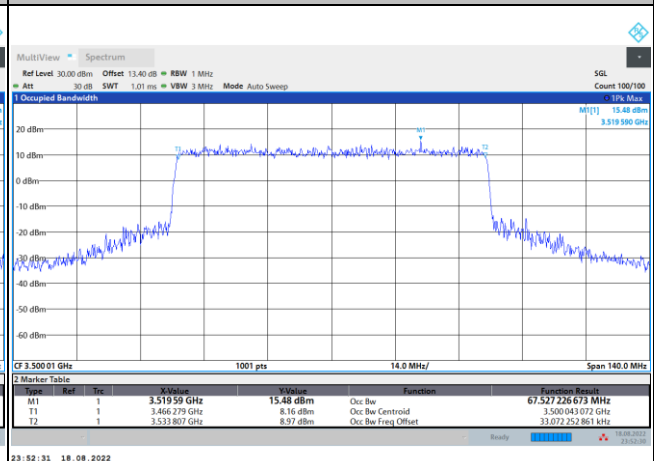
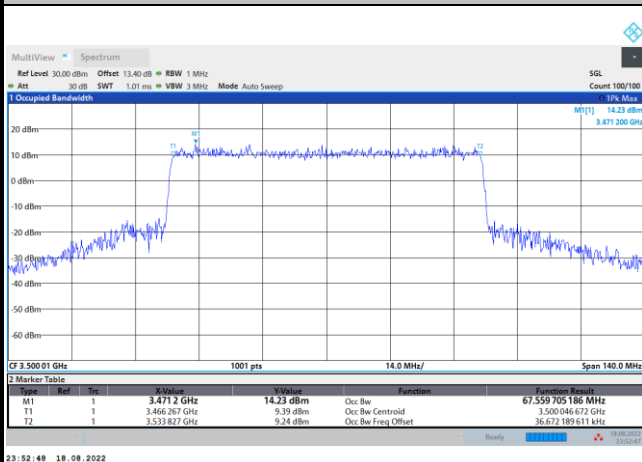
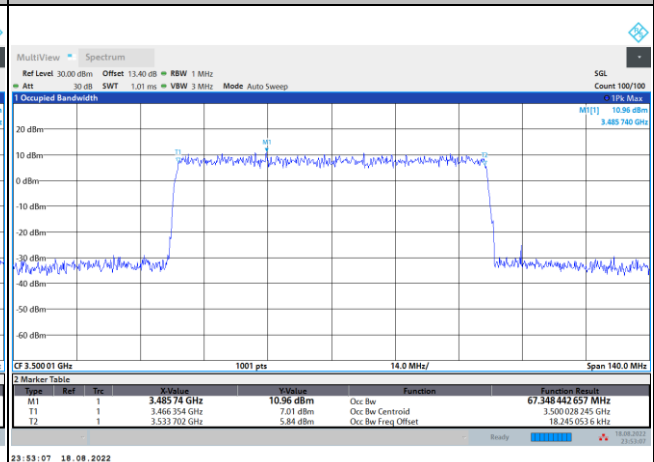


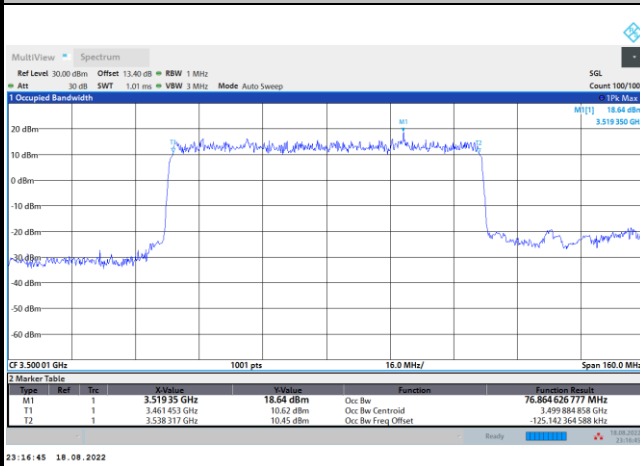
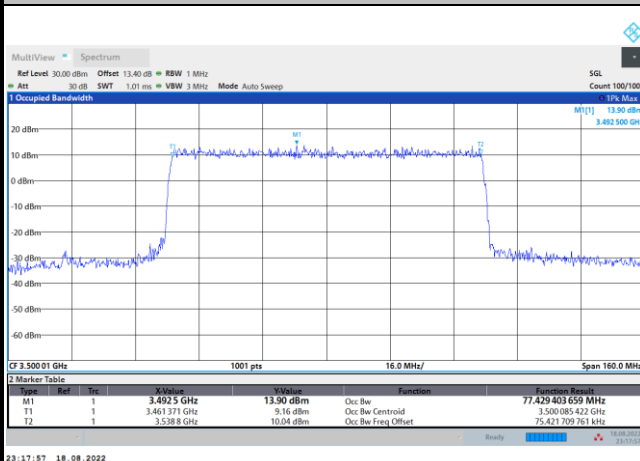
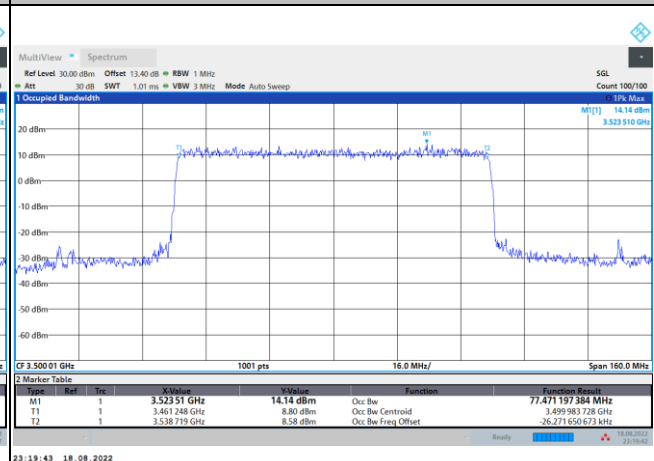
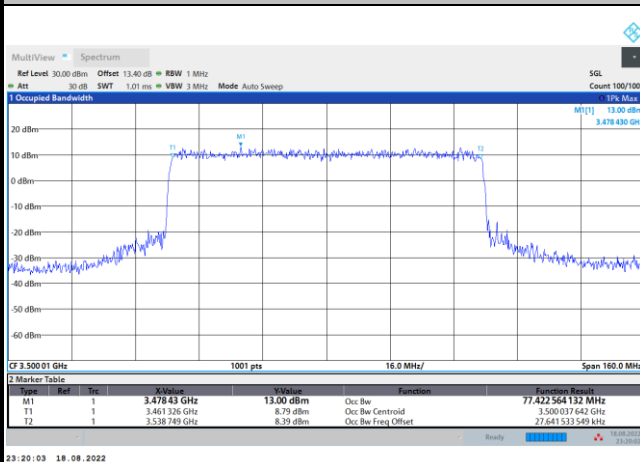
256QAM



FR1 n78 (HPUE) / 50MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 50MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


FR1 n78 (HPUE) / 60MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 60MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


FR1 n78 (HPUE) / 70MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 70MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


FR1 n78 (HPUE) / 80MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n78 (HPUE) / 80MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM
