



FCC RADIO TEST REPORT

FCC ID : HFS-IRONRAN-RU4MO
Equipment : Remote Radio Unit
Brand Name : Quanta Computer Inc.
Model Name : IronRAN-RU4 MO GenA
Applicant : Quanta Computer Inc.
188, WEN HUA 2ND RD., GUISHAN DIST., TAO
YUAN CITY 33377, TAIWAN
Manufacturer : Quanta Computer Inc.
188, WEN HUA 2ND RD., GUISHAN DIST., TAO
YUAN CITY 33377, TAIWAN
Standard : FCC 47 CFR Part 2, 96

The product was received on Aug. 10, 2022 and testing was performed from Aug. 17, 2022 to Nov. 09, 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 from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

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.)



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History of this test report

Report No.	Version	Description	Issue Date
FG272811A	01	Initial issue of report	Nov. 10, 2022
FG272811A	02	Revise EIRP and Power Density, Connection Diagram of Test System and Appendix A2~A4	Nov. 14, 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	-
3.3	§96.41	Peak-to-Average Ratio	Pass	
3.4	§96.41	Effective Isotropic Radiated Power	Pass	-
		Power Density	Pass	-
3.5	§2.1049 §96.41	Occupied Bandwidth	Reporting only	-
3.6	§2.1051 §96.41	Conducted Band Edge Measurement	Pass	-
3.7	§2.1051 §96.41	Conducted Spurious Emission	Pass	
3.8	§2.1055	Frequency Stability for Temperature & Voltage	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	3.44 dB under the limit at 7200.000 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 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: Steve Chen

Report Producer: Ruby Zou



1 General Description

1.1 Product Feature of Equipment Under Test

5G NR

Product Feature	
Antenna Type	<Ant. 1>: Sector Antenna <Ant. 2>: Sector Antenna <Ant. 3>: Sector Antenna <Ant. 4>: Sector Antenna
Antenna Gain	<Ant. 1>: 18 dBi <Ant. 2>: 18 dBi <Ant. 3>: 18 dBi <Ant. 4>: 18 dBi

Remark:

1. The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. The device is a 5G NR CBSD operation in the 3.55-3.7GHz CBRS band.
The device support 4T4R MIMO configuration and the antenna is completely uncorrelated.

1.2 Modification of EUT

No modifications made to the EUT during the testing.



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	HAO SYU
Temperature (°C)	21.5~24.9
Relative Humidity (%)	46~53

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 and Jesse Fan
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 Applied 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, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v01
- ♦ 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. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. 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.

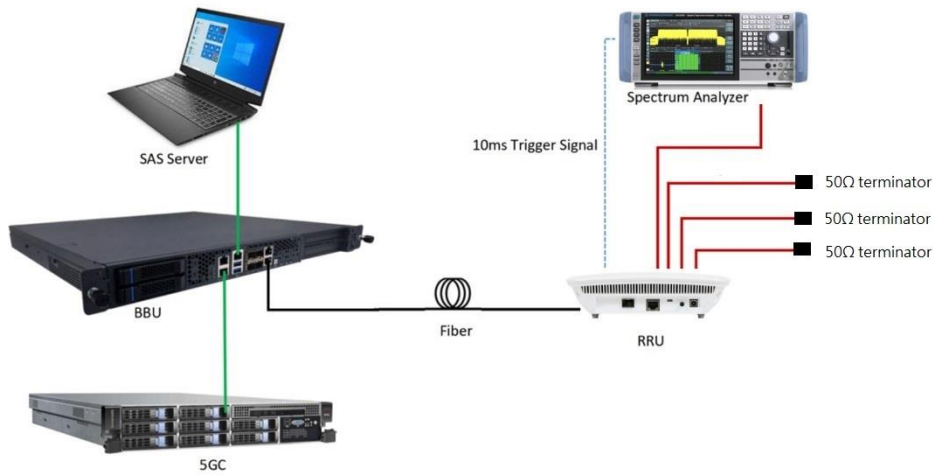
For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in two antenna polarization (Horizontal and Vertical), and adjusting the measurement antenna orientation, following C63.26 exploratory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

The conducted power for signal antenna would not exceed the conducted power for 4T4R MIMO configuration, so only MIMO configuration data is tested and reported.

The NR band n48, n77, n78 are all supported and have equal RF performance, hence only n48 is selected for testing and reported.

Test Items	Band	Bandwidth (MHz)								Modulation				Test Channel		
		10	20	40	50	60	80	90	100	QPSK	16QAM	64QAM	256QAM	L	M	H
Max. Output Power	n48	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
E.I.R.P and EIRP PSD	n48	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	n48	v	v	v	v	v	v	v	v	v	v	v	v		v	
Conducted Band Edge	n48	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Conducted Spurious Emission	n48	v	v	v	v	v	v	v	v	v				v	v	v
Peak-to-Average Ratio	n48		v							v	v	v	v		v	
Frequency Stability	n48	v								v					v	
Radiated Spurious Emission	n48	Worst Case												v	v	v
Remark	1. The mark "v " means that this configuration is chosen for testing 2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test. 3. One representative bandwidth is selected to perform PAR and frequency stability.															

2.2 Connection Diagram of Test System



E2E test signal config: power setting 32 dBm/port, 38 dBm/4 ports

2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	BBU	Quanta	S5Y	N/A	N/A	N/A

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

NR Band n48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	640000	641667	643333
	Frequency	3600.0	3625.0	3650.0
90	Channel	639668	641666	643666
	Frequency	3595.0	3625.0	3655.0
80	Channel	639334	641666	644000
	Frequency	3590.0	3625.0	3660.0
60	Channel	638668	641666	644666
	Frequency	3580.0	3625.0	3670.0
50	Channel	638334	641666	645000
	Frequency	3575.0	3625.0	3675.0
40	Channel	638000	641666	645332
	Frequency	3570.0	3625.0	3680.0
20	Channel	637334	641666	646000
	Frequency	3560.0	3625.0	3690.0
10	Channel	637000	641666	646332
	Frequency	3555.0	3625.0	3695.0

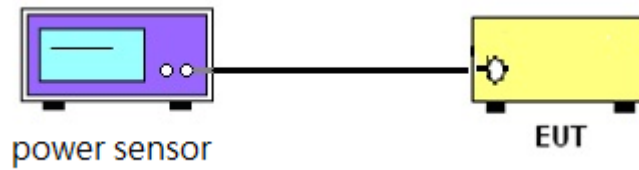
3 Conducted Test Items

3.1 Measuring Instruments

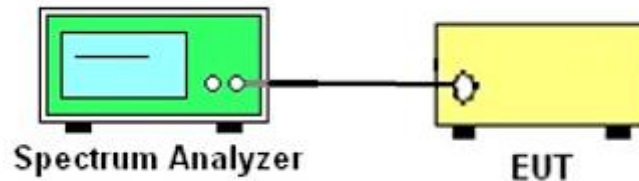
See list of measuring instruments of this test report.

3.1.1 Test Setup

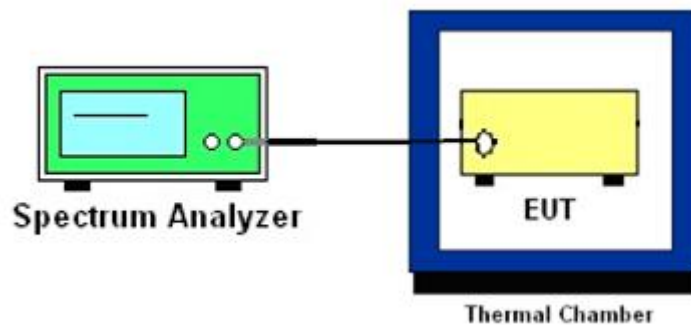
3.1.2 Conducted Output Power



3.1.3 EIRP, Power Density, 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

3.2.1 Description of the Conducted Output Power Measurement

A power sensor 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.

3.2.2 Test Procedures

1. The transmitter output port was connected to the power sensor.
2. Set EUT at maximum power.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the power sensor
5. The measure-and-sum technique is used for measuring in-band transmit power of a device.
Total power is the sum of the conducted power levels measured at the various output ports.



3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

96.41(g)

The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB. PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities or another Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum.
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 EIRP and Power Density

3.4.1 Description of the EIRP and Power Density Measurement

The EIRP of category B CBSD must not exceed 47 dBm / 10 megahertz.

The EIRP PSD of category B CBSD must not exceed 37 dBm / 1 megahertz.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - LC$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
Category B CBSD	47	37

3.4.2 Test Procedures

1. The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2) and 3.2(b)(3)
2. Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.
3. For MIMO measurement, the KDB 662911 E)2)c) is used as following:
Measure and add $10 \log(NANT)$ dB, where NANT is the number of outputs. With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(NANT)$ dB is added to each spectrum value before comparing to the emission limit.



3.5 Occupied Bandwidth

3.5.1 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.

3.5.2 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.
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.



3.6 Conducted Band Edge

3.6.1 Description of Conducted Band Edge Measurement

96.41(e)(1)

The conducted power of any CBSD emission outside the fundamental emission bandwidth shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed -25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

96.41(e)(2)

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW \geq 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. For MIMO measurement, the KDB 662911 E)2)c) is used as following:
Measure and add $10 \log(\text{NANT})$ dB, where NANT is the number of outputs. With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(\text{NANT})$ dB is added to each spectrum value before comparing to the emission limit.



3.7 Conducted Spurious Emission

3.7.1 Description of Conducted Spurious Emission Measurement

96.41 (e)(2)

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

3.7.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer.
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 -40dBm/MHz.
10. For MIMO measurement, the KDB 662911 E)2)c) is used as following:
Measure and add $10 \log(\text{NANT})$ dB, where NANT is the number of outputs. With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(\text{NANT})$ dB is added to each spectrum value before comparing to the emission limit.



3.8 Frequency Stability

3.8.1 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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency

3.8.2 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.

3.8.3 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 $25\pm 5^{\circ}\text{C}$ 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.

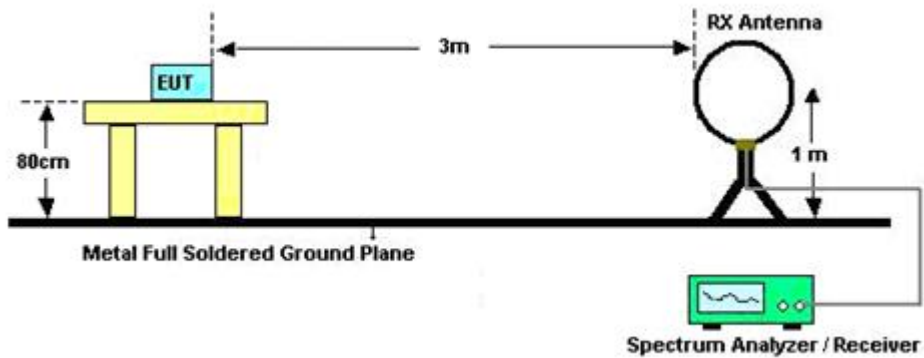
4 Radiated Test Items

4.1 Measuring Instruments

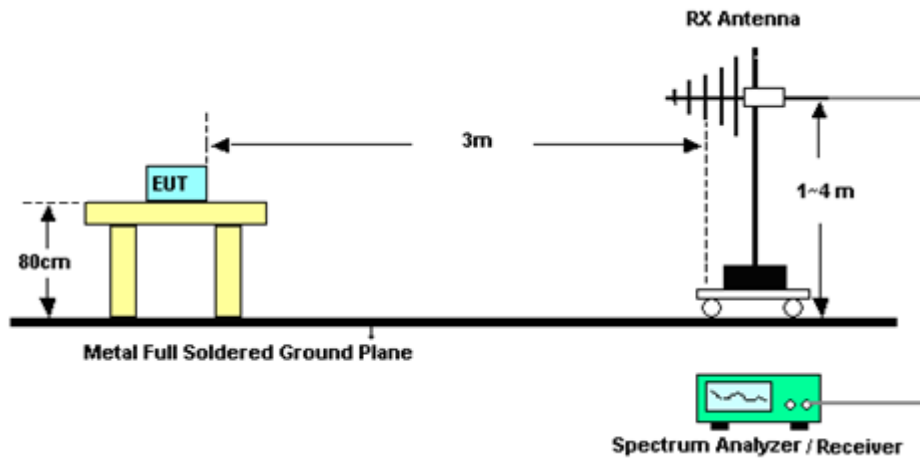
See list of measuring instruments of this test report.

4.2 Test Setup

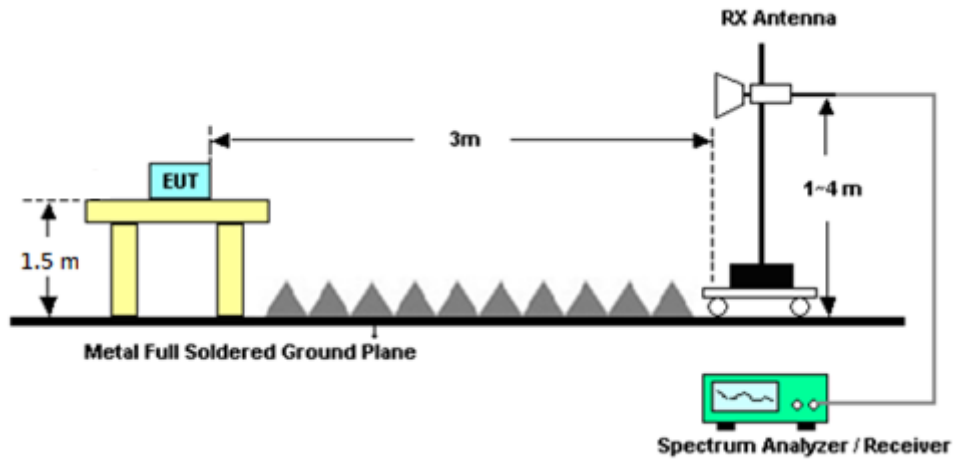
For radiated emissions below 30MHz



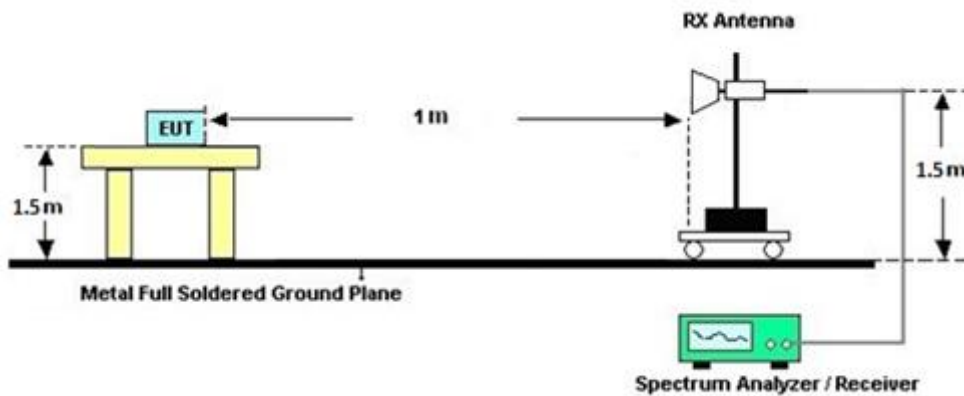
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz



4.3 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.



4.4 Radiated Spurious Emission

4.4.1 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 -40dBm / MHz .
The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 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 height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna 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 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



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	May 13, 2022	Aug. 22, 2022~ Sep. 15, 2022	May 12, 2023	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N- 06	40103 & 07	30MHz~1GHz	Apr. 24, 2022	Aug. 22, 2022~ Sep. 15, 2022	Apr. 23, 2023	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 09, 2021	Aug. 22, 2022~ Sep. 15, 2022	Oct. 08, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Dec. 03, 2021	Aug. 22, 2022~ Sep. 15, 2022	Dec. 02, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 10, 2022	Aug. 22, 2022~ Sep. 15, 2022	Mar. 09, 2023	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 30, 2021	Aug. 22, 2022~ Sep. 15, 2022	Nov. 29, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 14, 2022	Aug. 22, 2022~ Sep. 15, 2022	May 13, 2023	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 23, 2022	Aug. 22, 2022~ Sep. 15, 2022	Mar. 22, 2023	Radiation (03CH12-HY)
Preamplifier	Aglient	8449B	3008A02375	1GHz~26.5GHz	May 24, 2022	Aug. 22, 2022~ Sep. 15, 2022	May 23, 2023	Radiation (03CH12-HY)
Preamplifier	E-INSTRUME NT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900249	1GHz-18GHz	Dec. 22, 2021	Aug. 22, 2022~ Sep. 15, 2022	Dec. 21, 2022	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Aug. 22, 2022~ Sep. 15, 2022	Dec. 23, 2022	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY53470118	10Hz~44GHz	Jan. 12, 2022	Aug. 22, 2022~ Sep. 15, 2022	Jan. 11, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Aug. 22, 2022~ Sep. 15, 2022	Mar. 09, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	Aug. 22, 2022~ Sep. 15, 2022	Dec. 09, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Aug. 22, 2022~ Sep. 15, 2022	Feb. 20, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Mar. 08, 2022	Aug. 22, 2022~ Sep. 15, 2022	Mar. 07, 2023	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872.5 -6750-18000-4 0ST	SN2	6.75GHz High Pass Filter	Mar. 16, 2022	Aug. 22, 2022~ Sep. 15, 2022	Mar. 15, 2023	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140349	N/A	Sep. 30, 2021	Aug. 22, 2022~ Sep. 15, 2022	Sep. 29, 2022	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 22, 2022~ Sep. 15, 2022	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Aug. 22, 2022~ Sep. 15, 2022	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 22, 2022~ Sep. 15, 2022	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Aug. 22, 2022~ Sep. 15, 2022	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Signal Analyzer	Rohde & Schwarz	FSV3044	101103	10Hz~44GHz	Jan. 25, 2022	Aug. 17, 2022~ Nov. 09, 2022	Jan. 24, 2023	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-241	92003713	-30℃ ~95℃	May 19, 2022	Aug. 17, 2022~ Nov. 09, 2022	May 18, 2023	Conducted (TH03-HY)
USB Power Sensor	DARE	RPR3006W	13I00030SNO 32 (NO:43)	9kHz~6GHz	Dec. 09, 2021	Aug. 17, 2022~ Nov. 09, 2022	Dec. 08, 2022	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
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.25 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.81 dB
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Appendix A. Test Results of Conducted Test

QPSK	Average Burst Power (dBm)																	
	Low Channel						Middle Channel						High Channel					
	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP
10MHz	21.60	21.50	21.50	21.60	27.57	45.57	21.40	21.50	21.60	21.60	27.55	45.55	21.50	21.40	21.20	21.30	27.37	45.37
20MHz	24.60	24.60	25.40	24.40	30.79	48.79	24.30	24.40	24.30	24.20	30.32	48.32	24.20	24.30	24.30	24.10	30.25	48.25
40MHz	27.80	27.80	28.40	27.60	33.93	51.93	27.80	27.70	27.60	27.50	33.67	51.67	27.10	27.10	27.10	27.10	33.12	51.12
50MHz	28.70	28.70	29.20	28.60	34.83	52.83	28.30	28.30	28.20	28.30	34.30	52.30	28.10	28.20	28.10	28.10	34.15	52.15
60MHz	29.80	29.80	30.30	29.70	35.93	53.93	29.20	29.30	29.10	29.10	35.20	53.20	29.00	29.20	29.00	29.20	35.12	53.12
80MHz	30.90	30.90	31.40	30.80	37.03	55.03	30.20	30.30	30.10	30.10	36.20	54.20	30.40	30.50	30.30	30.30	36.40	54.40
90MHz	31.10	31.10	31.90	31.00	37.31	55.31	30.90	30.90	30.60	30.80	36.82	54.82	30.40	30.50	30.20	30.40	36.40	54.40
100MHz	31.90	31.80	32.30	31.70	37.95	55.95	31.90	31.90	31.70	32.00	37.90	55.90	31.70	31.90	31.70	31.90	37.82	55.82

16QAM	Average Burst Power (dBm)																	
	Low Channel						Middle Channel						High Channel					
	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP
10MHz	21.10	21.10	21.30	21.10	27.17	45.17	20.90	20.90	21.10	21.20	27.05	45.05	21.30	21.40	21.40	21.30	27.37	45.37
20MHz	23.30	23.50	23.70	23.70	29.57	47.57	23.80	24.00	24.00	24.00	29.97	47.97	23.30	23.50	23.50	23.50	29.47	47.47
40MHz	26.50	26.40	26.60	26.70	32.57	50.57	26.60	26.50	26.50	26.50	32.55	50.55	26.10	26.20	26.10	26.20	32.17	50.17
50MHz	27.20	27.30	27.50	27.50	33.40	51.40	27.40	27.20	27.30	27.40	33.35	51.35	27.20	27.40	27.20	27.20	33.27	51.27
60MHz	28.50	28.20	28.10	28.20	34.27	52.27	28.10	28.20	28.10	28.30	34.20	52.20	27.80	27.70	27.80	27.70	33.77	51.77
80MHz	29.50	29.70	29.30	29.30	35.47	53.47	29.20	29.20	29.00	29.20	35.17	53.17	29.00	28.90	28.80	29.00	34.95	52.95
90MHz	29.90	30.00	29.90	29.80	35.92	53.92	29.80	29.80	29.70	29.80	35.80	53.80	29.70	29.70	29.50	29.60	35.65	53.65
100MHz	30.20	30.20	30.00	30.20	36.17	54.17	30.00	30.00	29.90	30.00	36.00	54.00	30.20	29.90	29.70	30.00	35.97	53.97

64QAM	Average Burst Power (dBm)																	
	Low Channel						Middle Channel						High Channel					
	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP
10MHz	21.40	21.40	21.30	21.30	27.37	45.37	21.20	21.20	21.20	21.20	27.22	45.22	21.10	21.10	21.10	21.00	27.10	45.10
20MHz	24.40	24.40	24.40	24.40	30.42	48.42	24.40	24.30	24.20	24.30	30.32	48.32	24.10	24.10	24.00	24.00	30.07	48.07
40MHz	28.20	27.90	28.20	28.20	34.15	52.15	28.20	28.20	28.10	28.20	34.20	52.20	28.00	28.00	27.90	28.00	34.00	52.00
50MHz	29.00	29.00	29.40	29.40	35.23	53.23	29.00	29.20	28.90	29.20	35.10	53.10	29.00	28.80	28.80	28.80	34.87	52.87
60MHz	30.10	30.00	29.80	29.90	35.97	53.97	29.80	29.80	29.30	29.70	35.68	53.68	29.60	29.70	29.70	29.70	35.70	53.70
80MHz	31.00	30.90	31.00	31.10	37.02	55.02	31.00	31.20	31.00	30.90	37.05	55.05	30.90	30.90	30.90	31.00	36.95	54.95
90MHz	31.70	31.70	31.70	31.60	37.70	55.70	31.70	31.70	31.40	31.60	37.62	55.62	31.50	31.60	31.50	31.70	37.60	55.60
100MHz	31.90	32.00	31.80	32.00	37.95	55.95	31.50	31.70	31.40	31.70	37.60	55.60	31.30	31.50	31.20	31.30	37.35	55.35

256QAM	Average Burst Power (dBm)																	
	Low Channel						Middle Channel						High Channel					
	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP	ANT1	ANT2	ANT3	ANT4	SUM	EIRP
10MHz	21.30	21.30	21.20	21.20	27.27	45.27	21.30	21.40	21.20	21.30	27.32	45.32	21.00	21.00	20.90	20.90	26.97	44.97
20MHz	24.40	24.40	24.30	24.40	30.40	48.40	24.30	24.40	24.30	24.30	30.35	48.35	24.10	24.10	24.00	24.00	30.07	48.07
40MHz	28.00	27.90	27.80	27.90	33.92	51.92	28.30	28.30	28.20	28.20	34.27	52.27	28.00	28.00	27.90	27.90	33.97	51.97
50MHz	28.90	29.00	29.10	29.00	35.02	53.02	28.90	28.80	28.80	28.80	34.85	52.85	28.70	28.60	28.50	28.60	34.62	52.62
60MHz	29.80	29.60	29.90	29.80	35.80	53.80	29.70	29.80	29.60	29.80	35.75	53.75	29.40	29.60	29.60	29.60	35.57	53.57
80MHz	31.00	31.20	31.00	31.20	37.12	55.12	31.00	31.00	31.00	31.00	37.02	55.02	31.00	30.90	30.90	30.90	36.95	54.95
90MHz	31.60	31.50	31.60	31.50	37.57	55.57	31.60	31.60	31.50	31.60	37.60	55.60	31.50	31.70	31.50	31.70	37.62	55.62
100MHz	31.80	31.80	31.40	31.40	37.63	55.63	31.70	31.80	31.60	31.70	37.72	55.72	31.70	31.80	31.70	31.60	37.72	55.72



FR1 n48 Conducted Test Items

<MIMO ANT 1>

Maximum EIRP (dBm/10MHz)

Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	20.98	20.59	21.69	20.32	21.72	20.16	21.70	20.03
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	21.08	21.13	21.48	21.37	22.20	22.07	22.17	22.00
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	21.78	20.44	21.65	20.76	21.51	20.74	21.49	20.70
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	22.26	22.05	22.25	21.98	22.33	22.02	22.33	22.36

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 4TX> Lowest Channel							
	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	45.00	44.61	45.71	44.34	45.74	44.18	45.72	44.05
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	45.10	45.15	45.50	45.39	46.22	46.09	46.19	46.02
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	45.80	44.46	45.67	44.78	45.53	44.76	45.51	44.72
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	46.28	46.07	46.27	46.00	46.35	46.04	46.35	46.38
Limit	47dBm/10MHz							
Result	PASS							

Note

1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 6.02dB (4TX) + 18dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	20.85	20.71	21.46	20.51	21.64	20.61	21.62	20.65
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	20.96	20.90	21.35	21.37	21.93	22.47	22.32	22.17
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	21.60	20.81	21.55	20.81	21.47	20.62	21.61	20.65
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	22.70	22.09	22.20	22.19	22.36	22.27	21.93	22.44

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 4TX> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	44.87	44.73	45.48	44.53	45.66	44.63	45.64	44.67
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	44.98	44.92	45.37	45.39	45.95	46.49	46.34	46.19
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	45.62	44.83	45.57	44.83	45.49	44.64	45.63	44.67
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	46.72	46.11	46.22	46.21	46.38	46.29	45.95	46.46
Limit	47dBm/10MHz							
Result	PASS							

Note

1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 6.02dB (4TX) + 18dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted (dBm/10MHz) <SISO> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	20.72	20.83	21.35	20.54	21.47	20.63	21.54	20.62
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	20.78	20.81	21.51	21.45	22.30	22.21	22.27	22.17
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	21.53	20.21	21.41	20.30	21.37	20.20	21.28	20.28
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	22.44	22.12	22.18	22.27	22.09	22.16	22.24	22.42

Mode	FR1 n48 : Maximum EIRP (dBm/10MHz) <MIMO 4TX> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	44.74	44.85	45.37	44.56	45.49	44.65	45.56	44.64
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	44.80	44.83	45.53	45.47	46.32	46.23	46.29	46.19
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	45.55	44.23	45.43	44.32	45.39	44.22	45.30	44.30
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	46.46	46.14	46.20	46.29	46.11	46.18	46.26	46.44
Limit	47dBm/10MHz							
Result	PASS							

Note

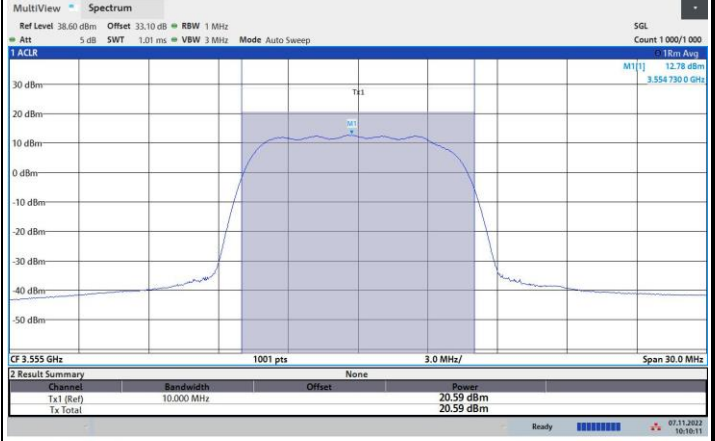
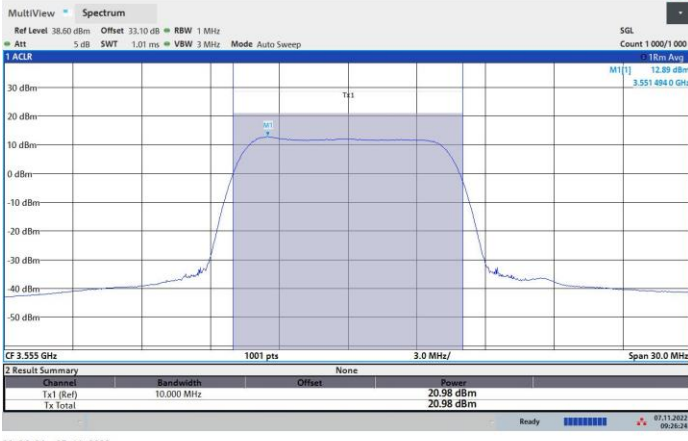
1. The measured conducted result has included duty cycle offset factor.
2. The Maximum EIRP = conducted result + 6.02dB (4TX) + 18dBi MIMO antenna gain.



FR1 n48 / 10MHz / Lowest Channel / Conducted (dBm/10MHz)

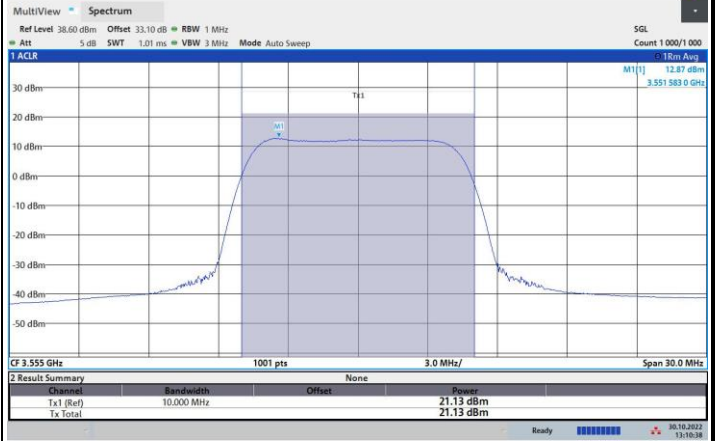
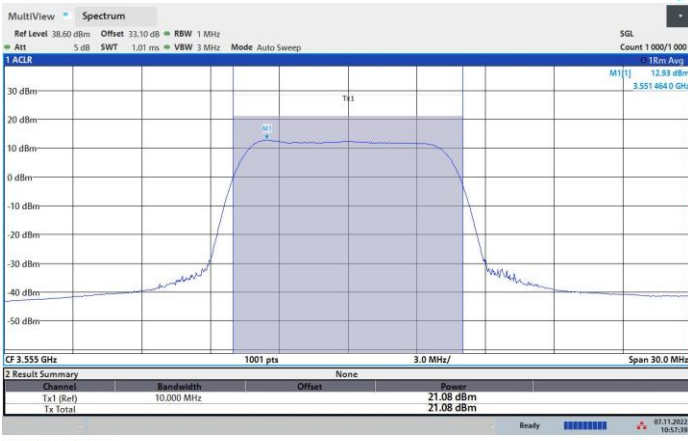
QPSK

16QAM



64QAM

256QAM

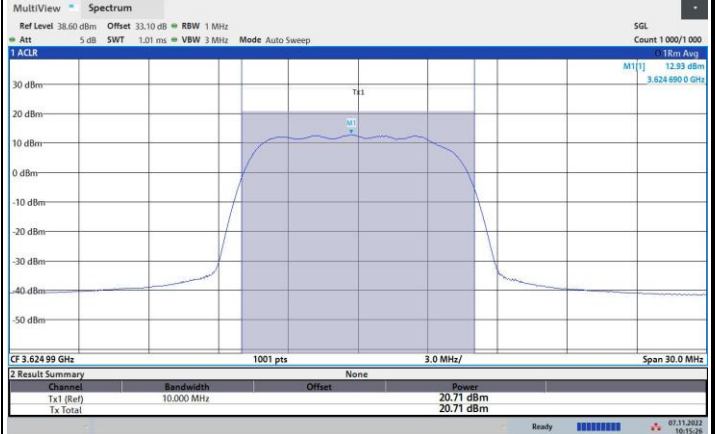
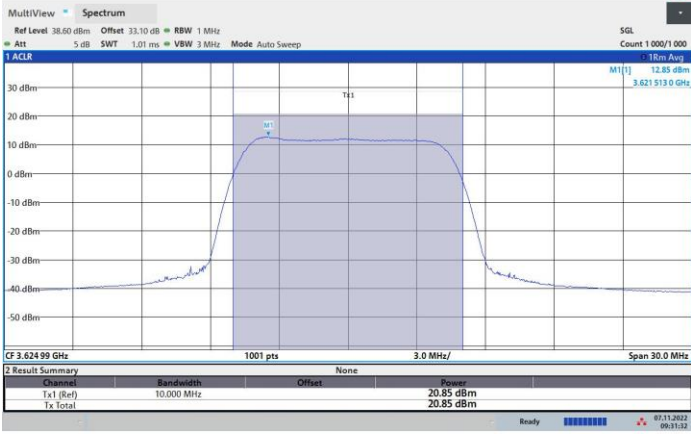




FR1 n48 / 10MHz / Middle Channel / Conducted (dBm/10MHz)

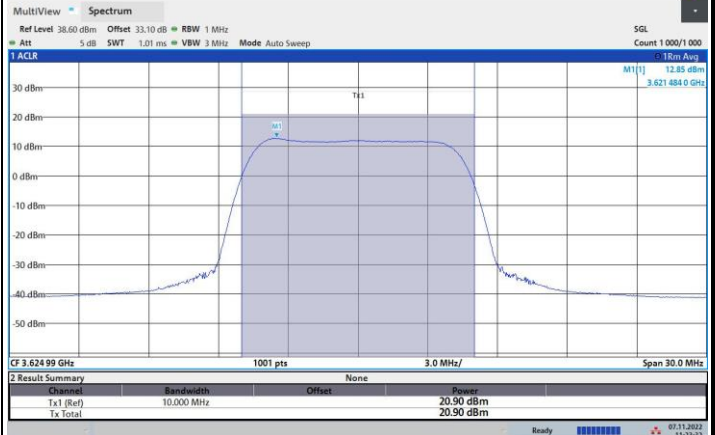
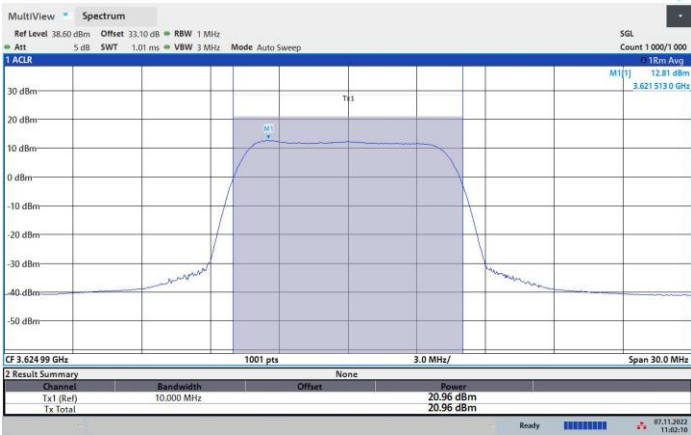
QPSK

16QAM



64QAM

256QAM

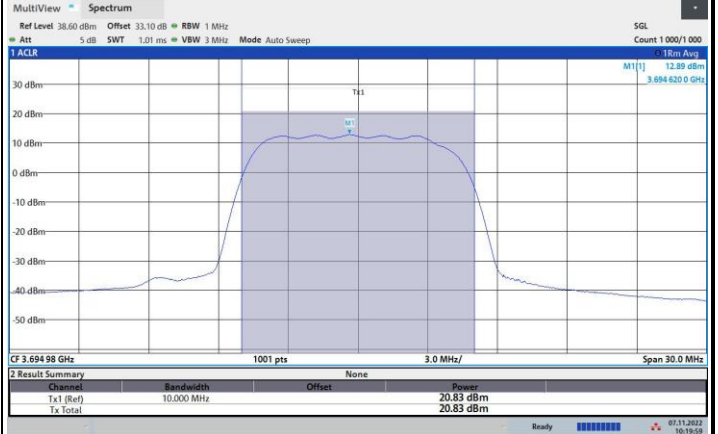
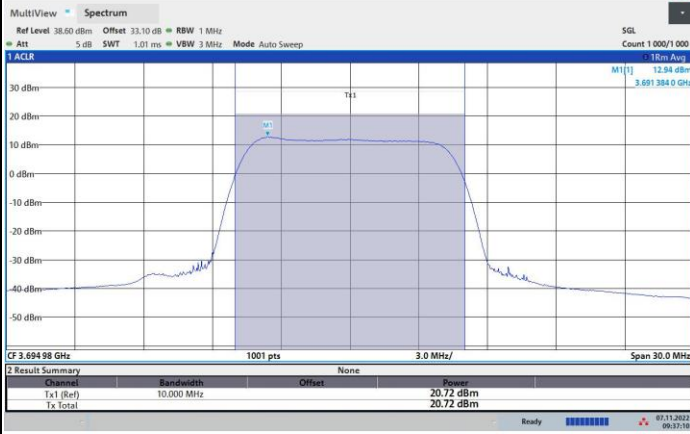




FR1 n48 / 10MHz / Highest Channel / Conducted (dBm/10MHz)

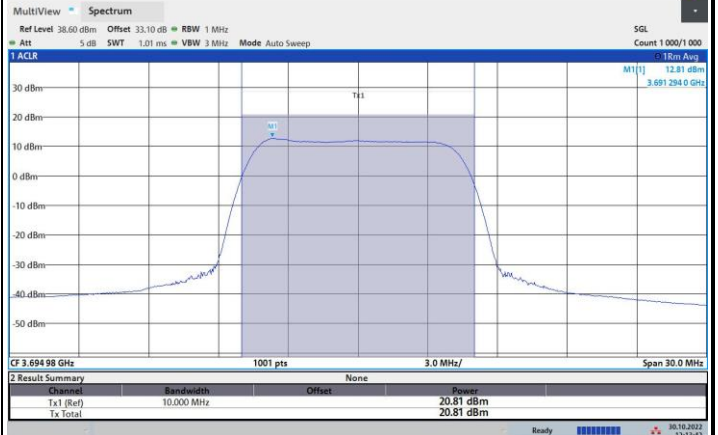
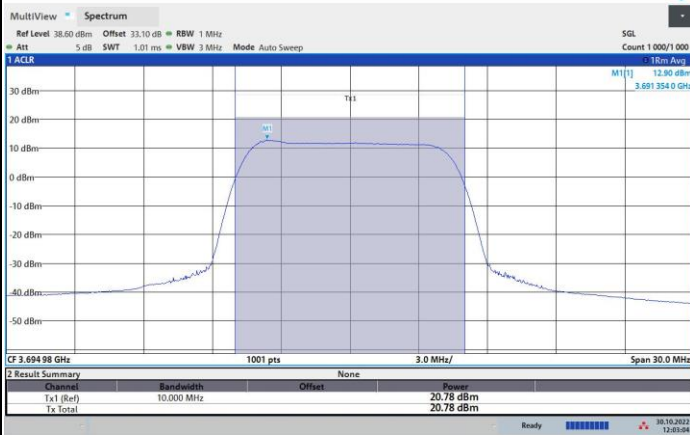
QPSK

16QAM



64QAM

256QAM

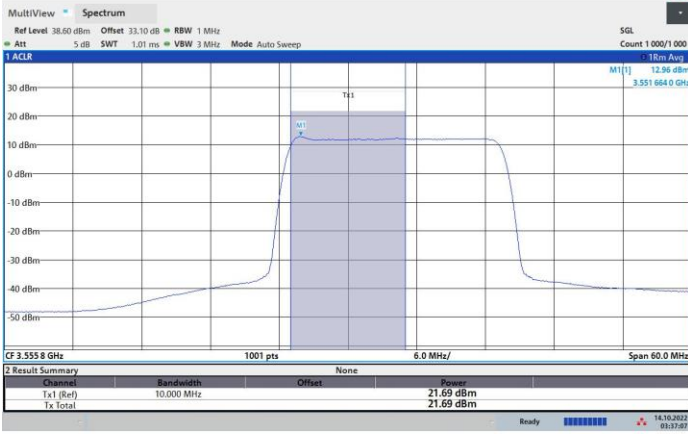




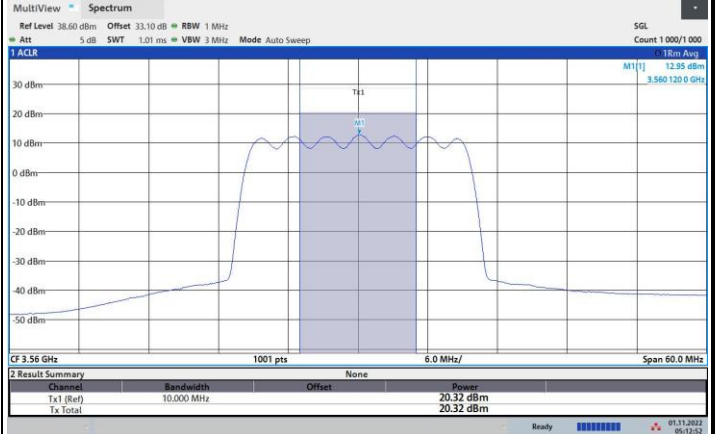
FR1 n48 / 20MHz / Lowest Channel / Conducted (dBm/10MHz)

QPSK

16QAM



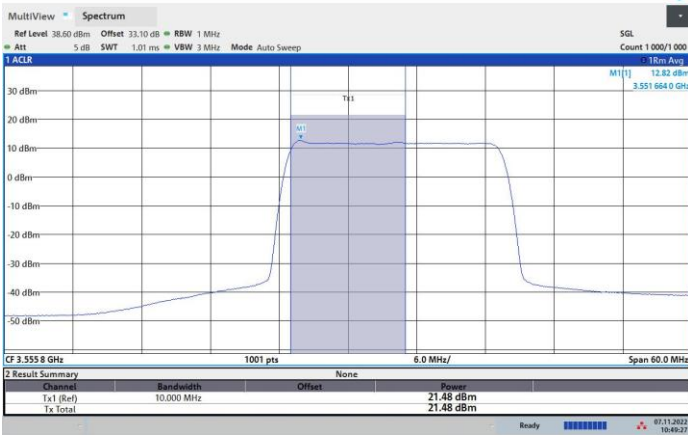
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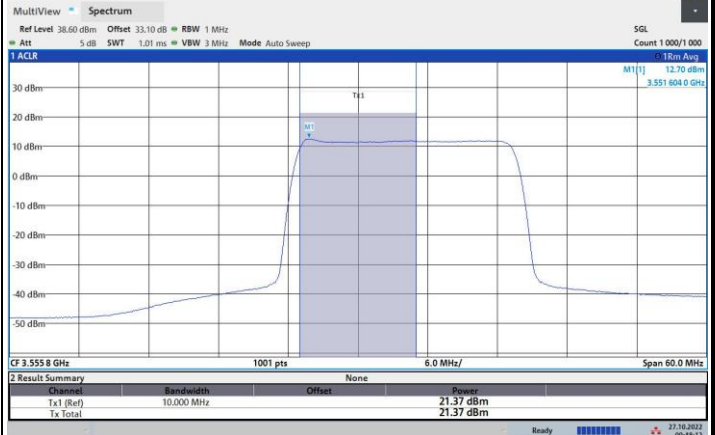
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64QAM

256QAM



10:49:27 07.11.2022



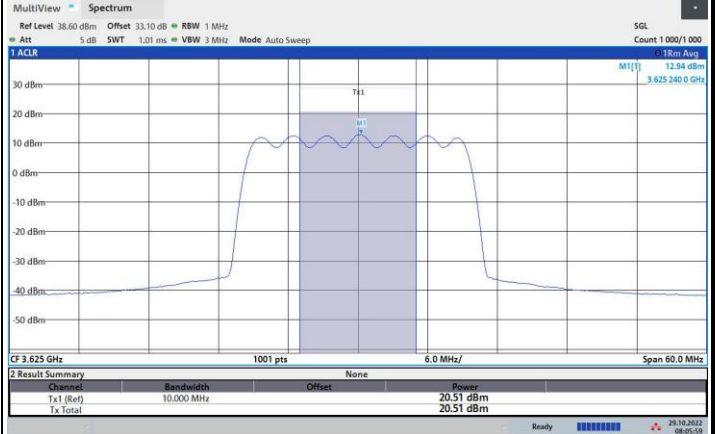
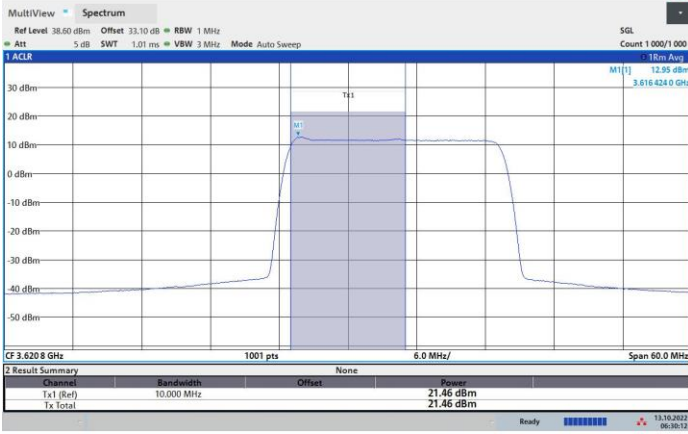
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FR1 n48 / 20MHz / Middle Channel / Conducted (dBm/10MHz)

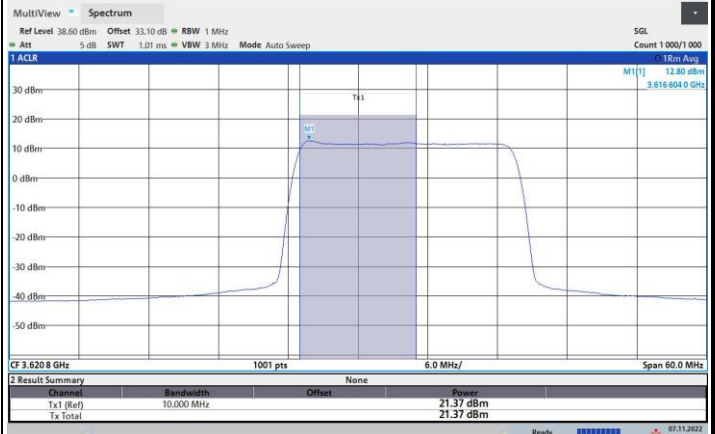
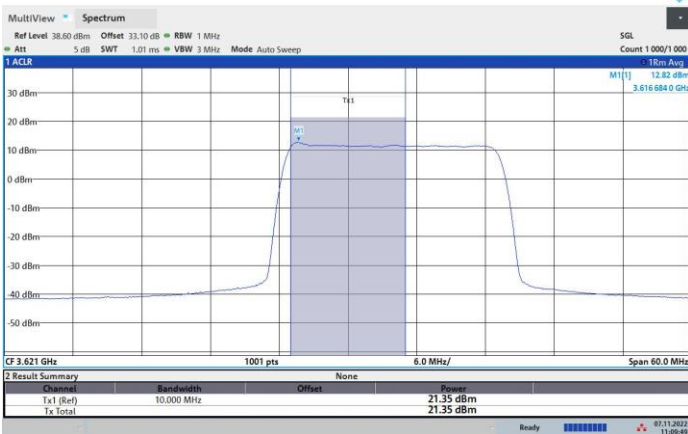
QPSK

16QAM



64QAM

256QAM

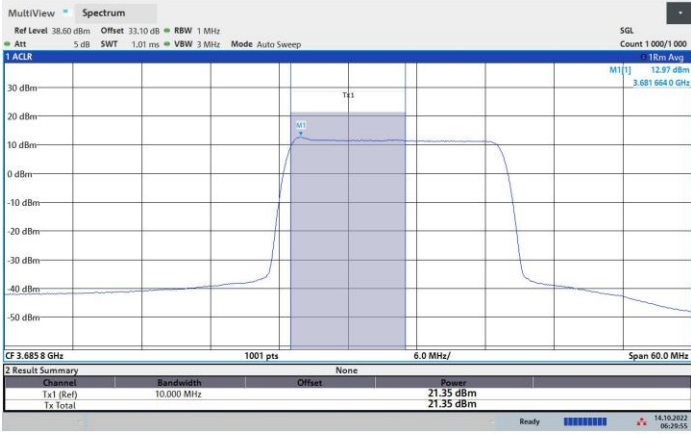




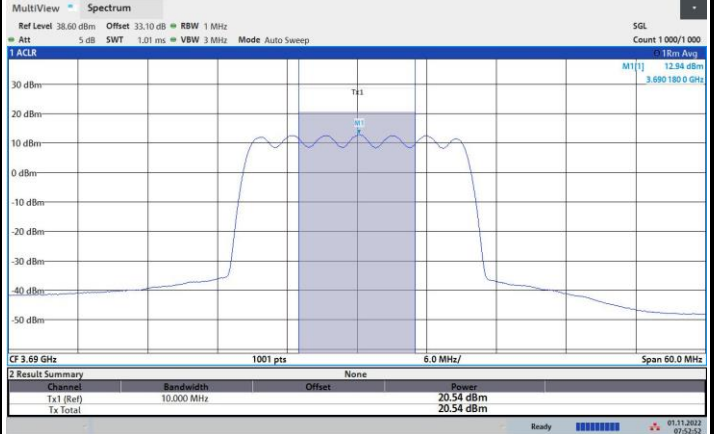
FR1 n48 / 20MHz / Highest Channel / Conducted (dBm/10MHz)

QPSK

16QAM



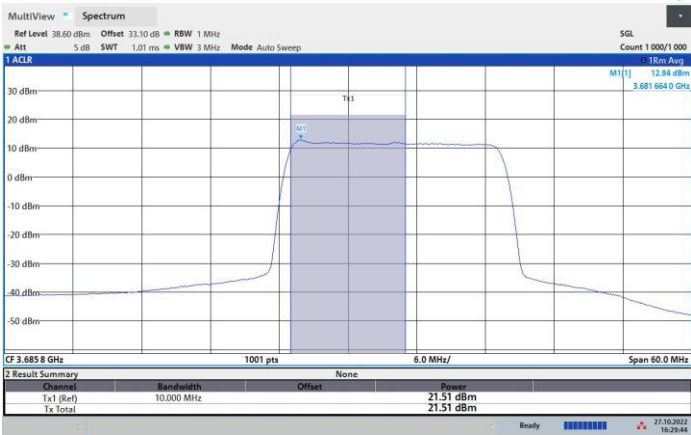
06:29:56 14.10.2022



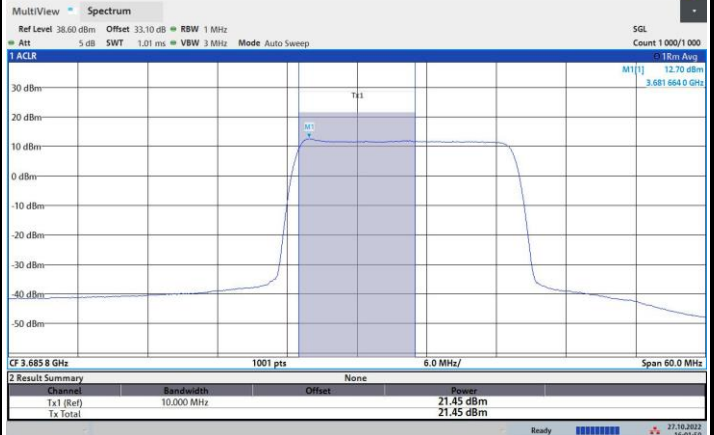
07:52:52 01.11.2022

64QAM

256QAM



16:29:45 27.10.2022



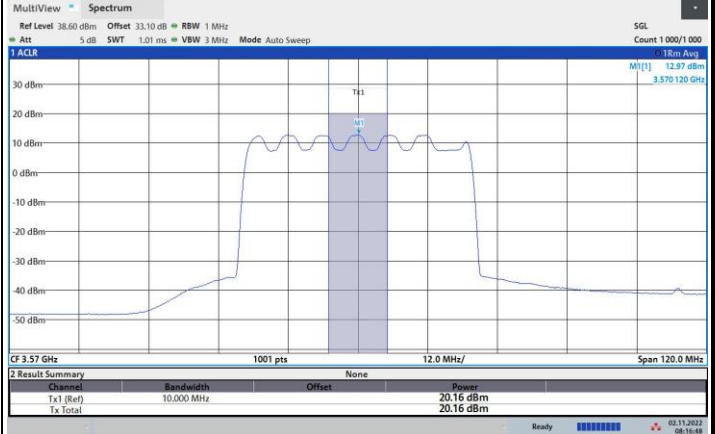
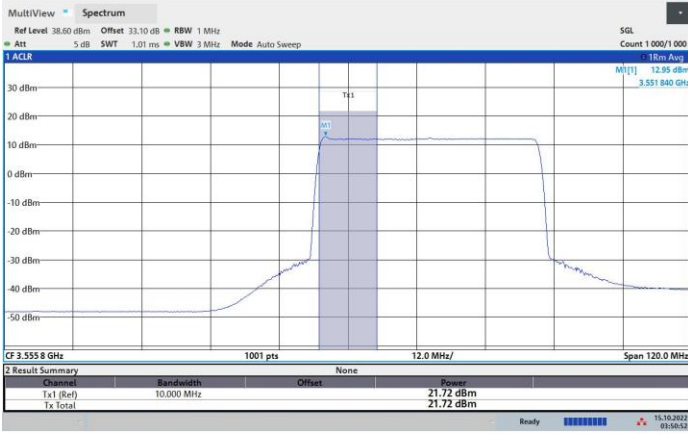
16:01:51 27.10.2022



FR1 n48 / 40MHz / Lowest Channel / Conducted (dBm/10MHz)

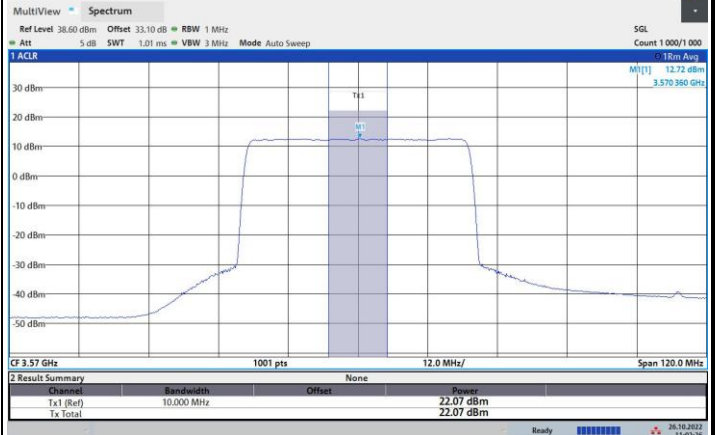
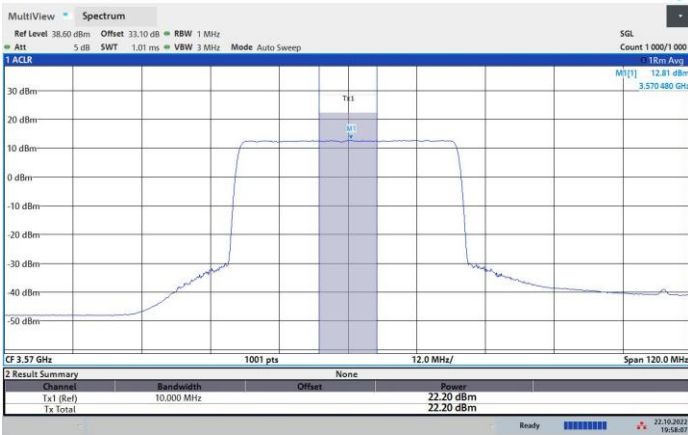
QPSK

16QAM



64QAM

256QAM

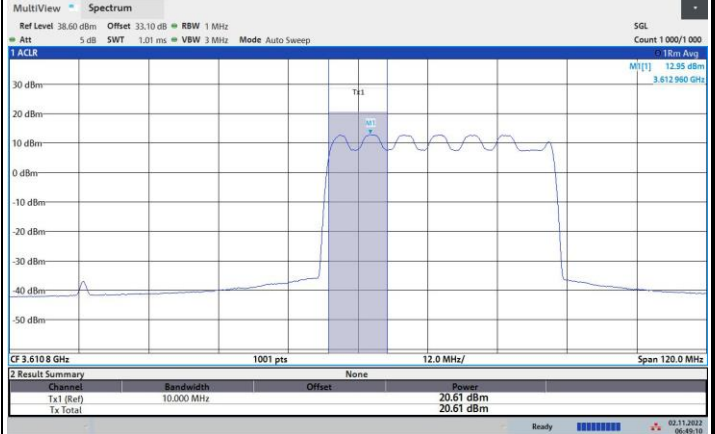
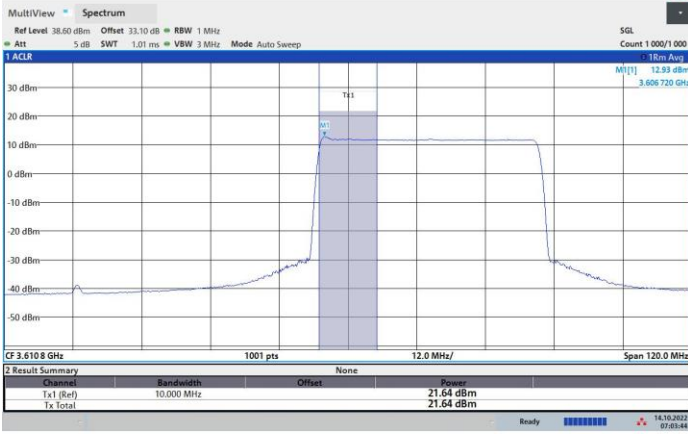




FR1 n48 / 40MHz / Middle Channel / Conducted (dBm/10MHz)

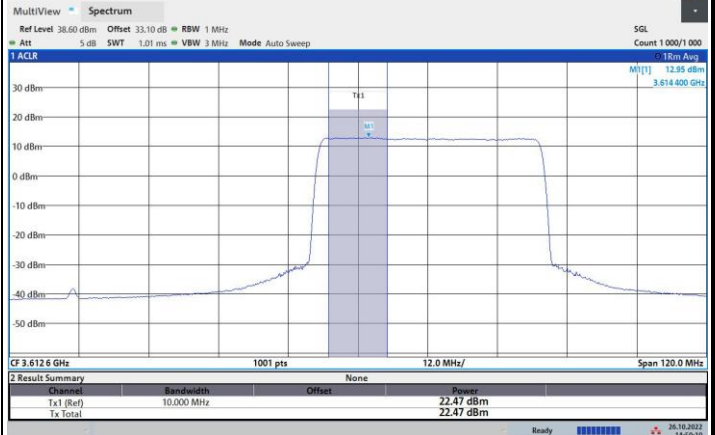
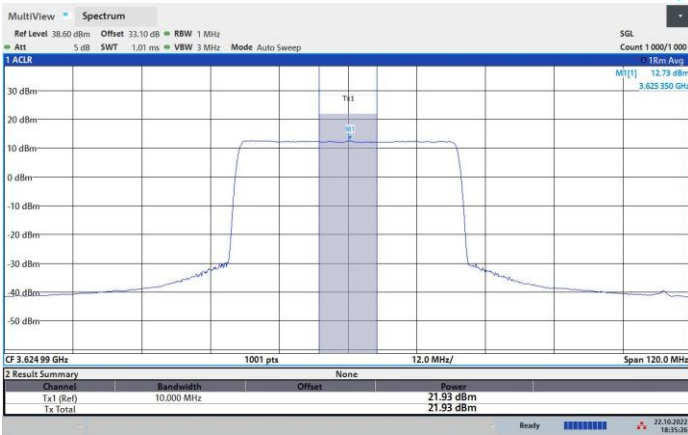
QPSK

16QAM



64QAM

256QAM

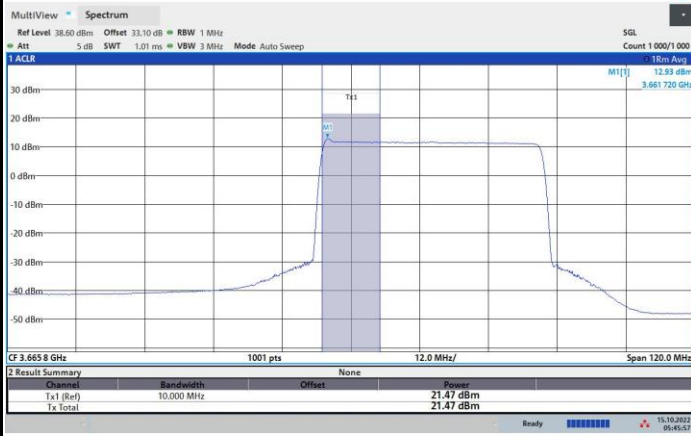




FR1 n48 / 40MHz / Highest Channel / Conducted (dBm/10MHz)

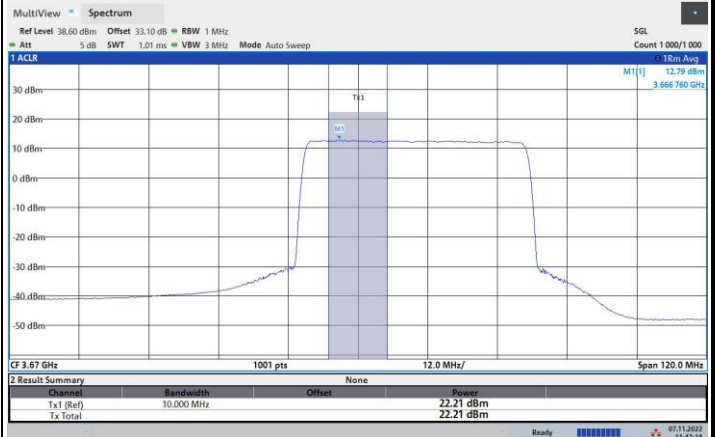
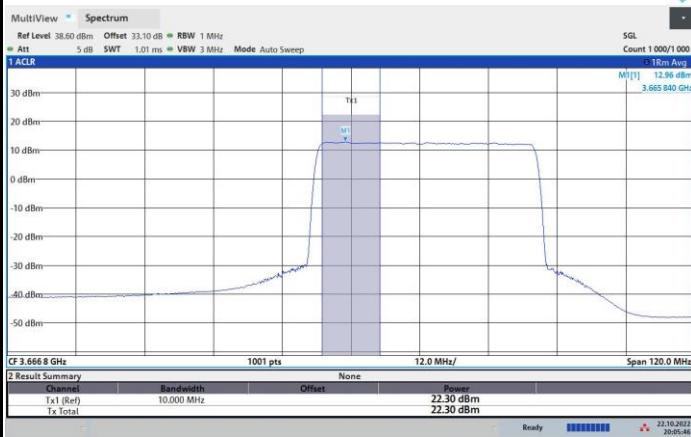
QPSK

16QAM



64QAM

256QAM

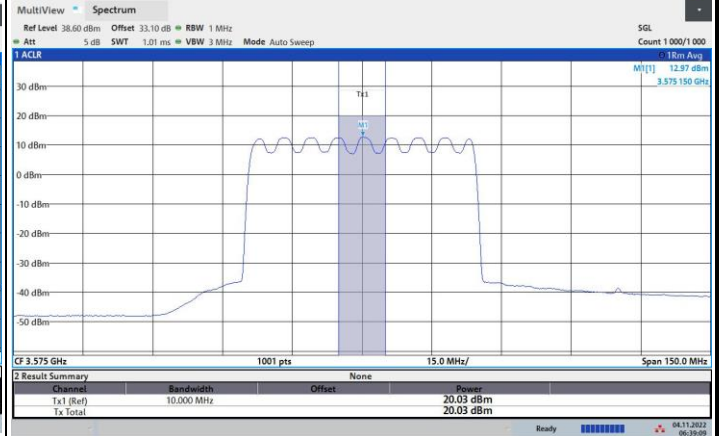
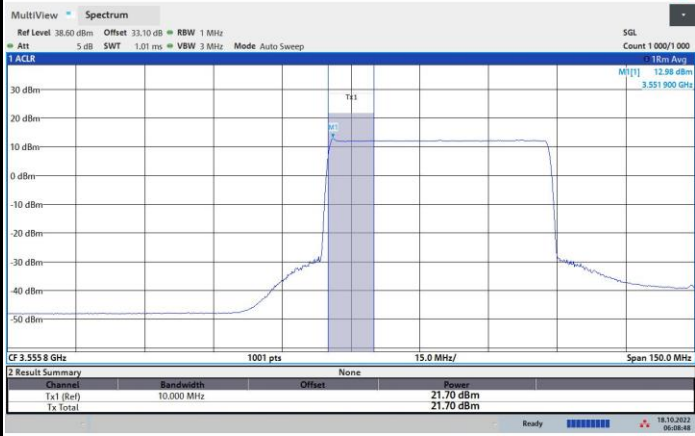




FR1 n48 / 50MHz / Lowest Channel / Conducted (dBm/10MHz)

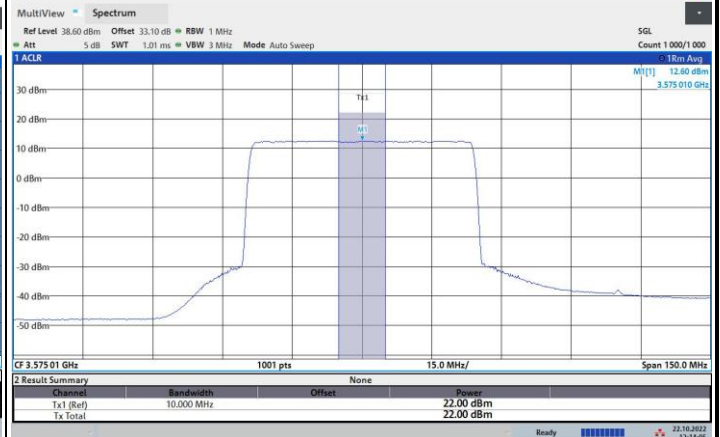
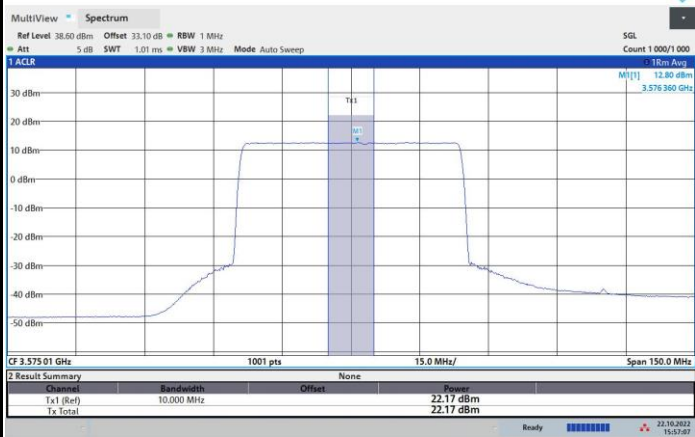
QPSK

16QAM



64QAM

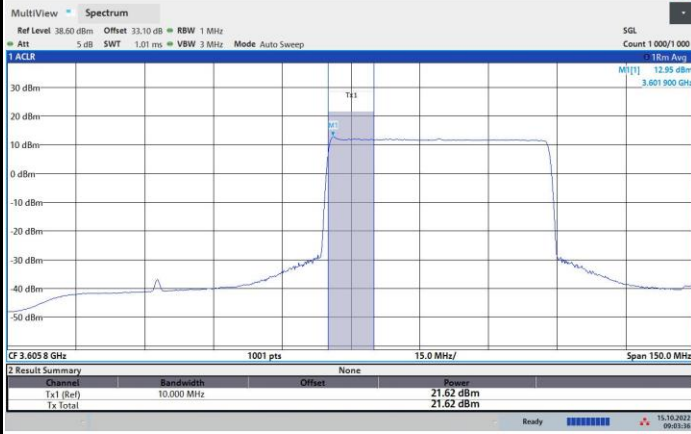
256QAM



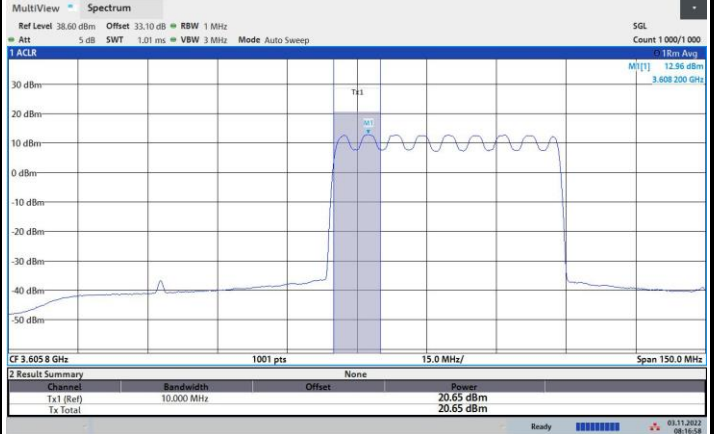


FR1 n48 / 50MHz / Middle Channel / Conducted (dBm/10MHz)

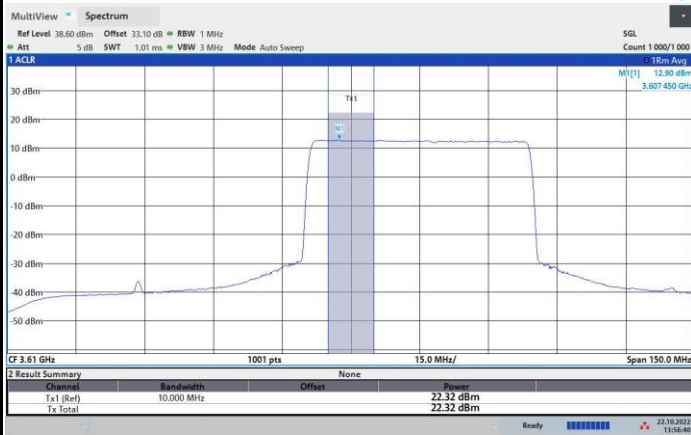
QPSK



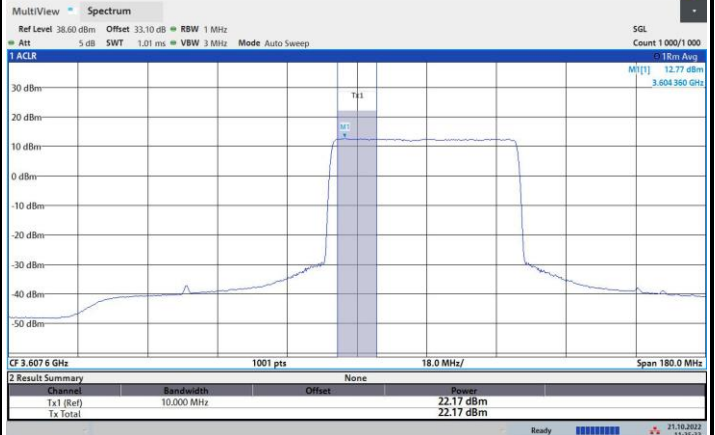
16QAM



64QAM



256QAM

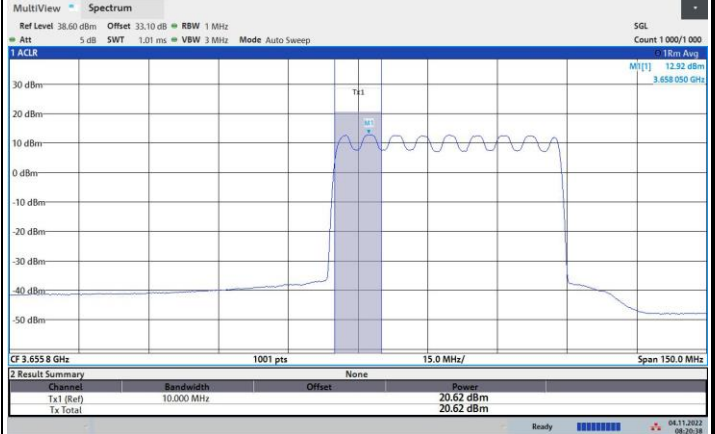
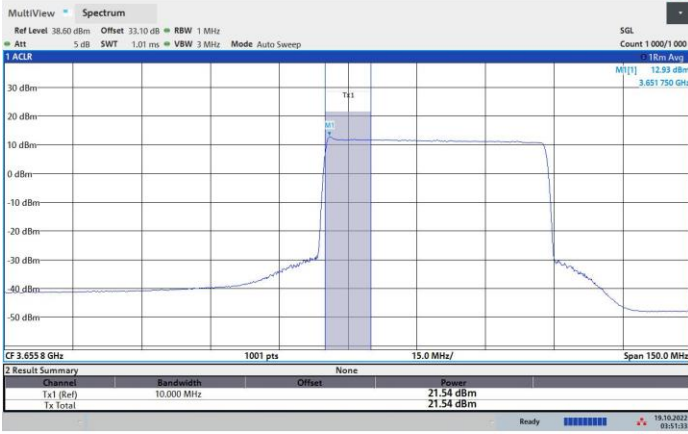




FR1 n48 / 50MHz / Highest Channel / Conducted (dBm/10MHz)

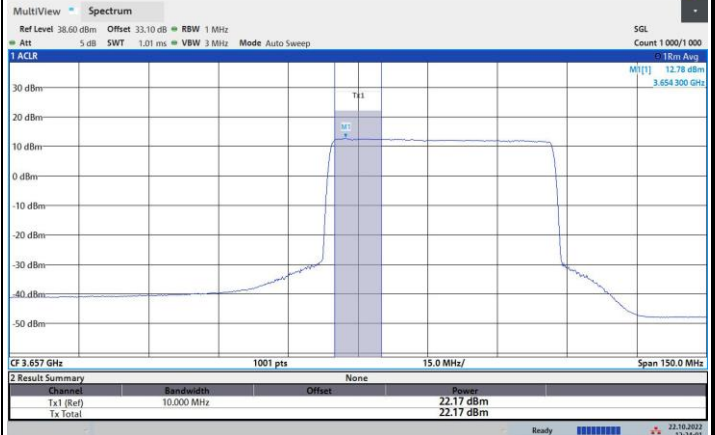
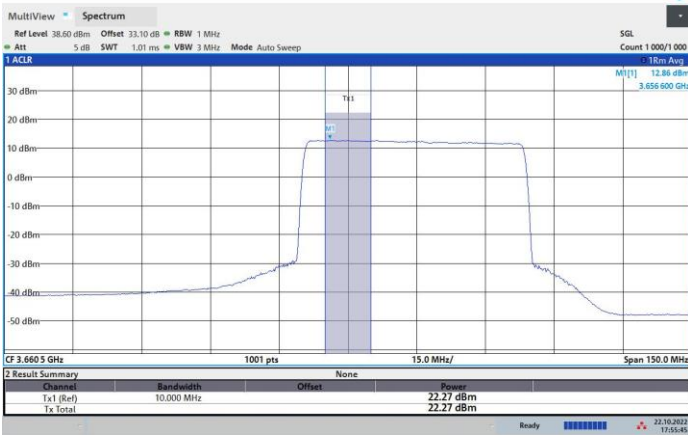
QPSK

16QAM



64QAM

256QAM

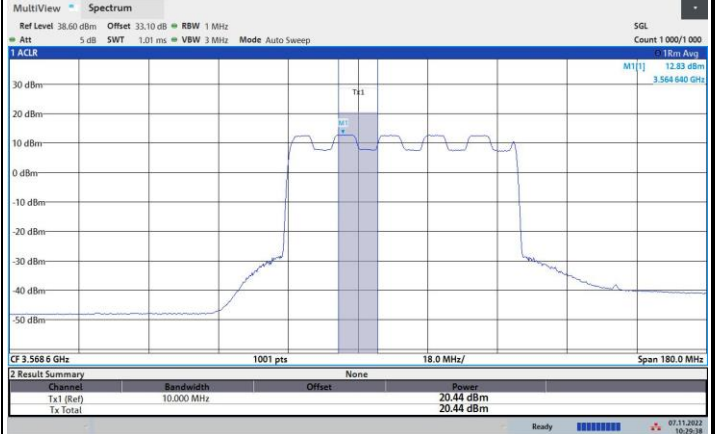
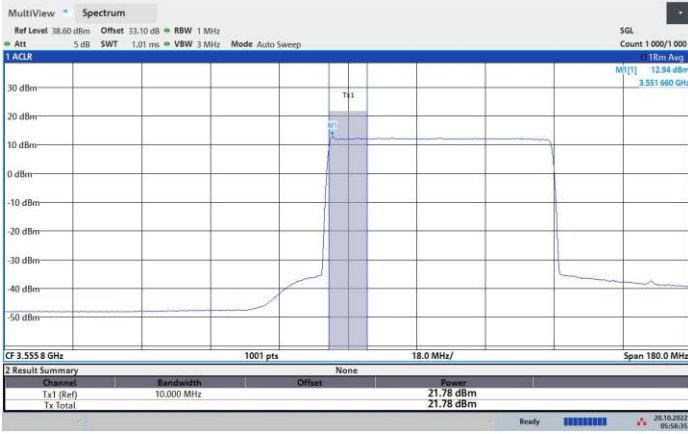




FR1 n48 / 60MHz / Lowest Channel / Conducted (dBm/10MHz)

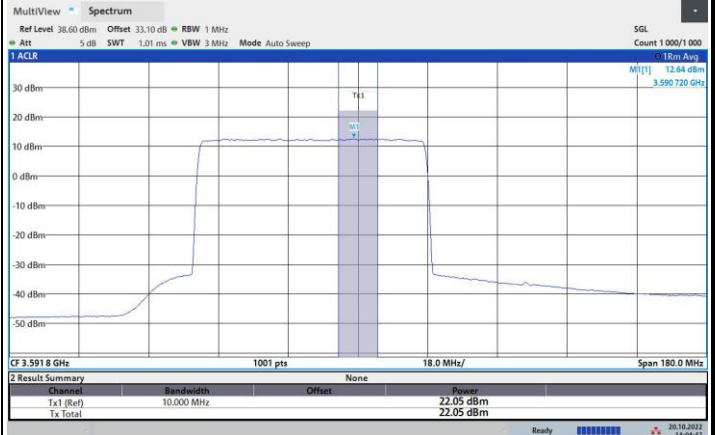
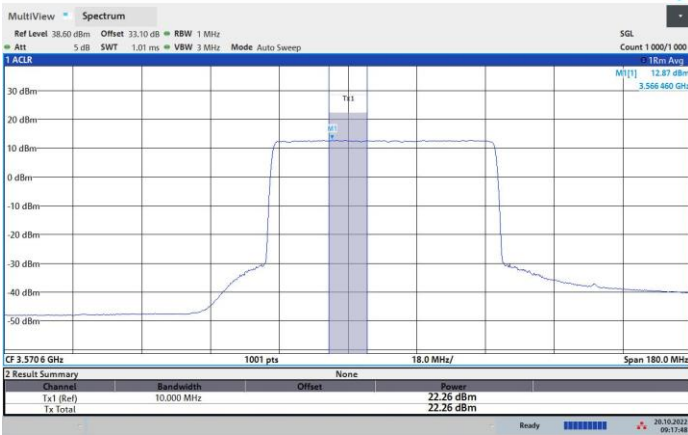
QPSK

16QAM



64QAM

256QAM

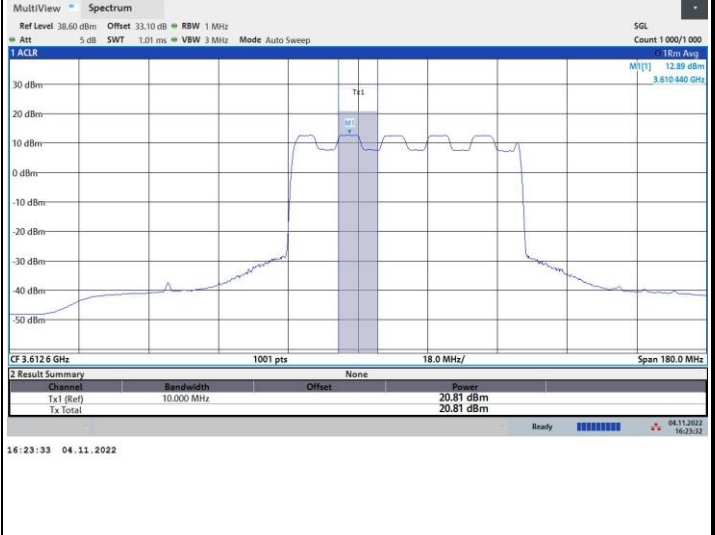
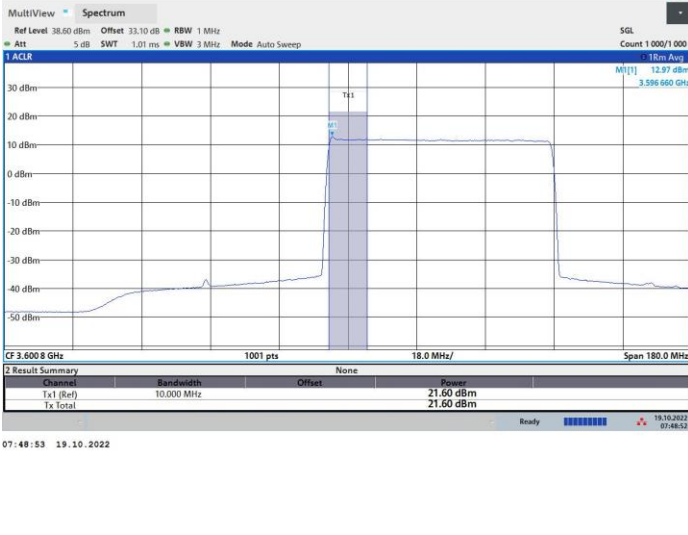




FR1 n48 / 60MHz / Middle Channel / Conducted (dBm/10MHz)

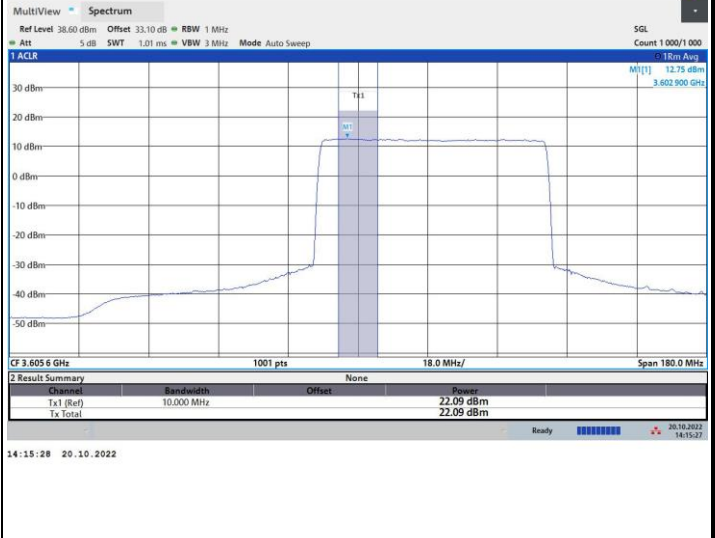
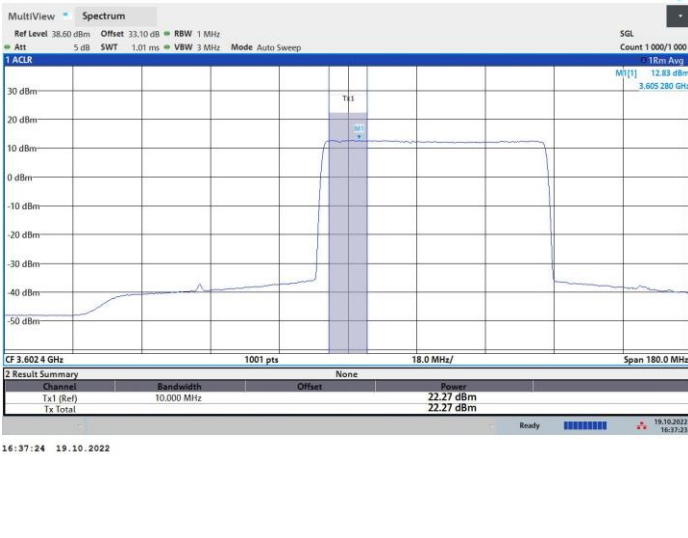
QPSK

16QAM



64QAM

256QAM

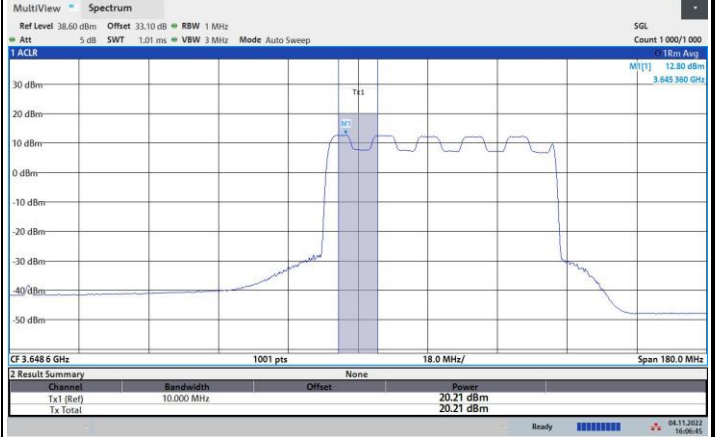
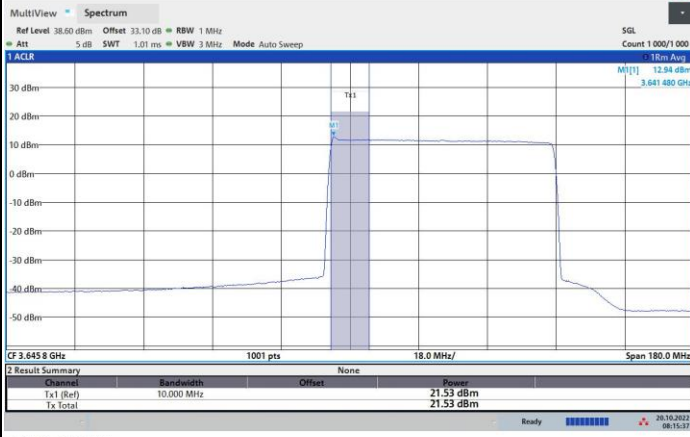




FR1 n48 / 60MHz / Highest Channel / Conducted (dBm/10MHz)

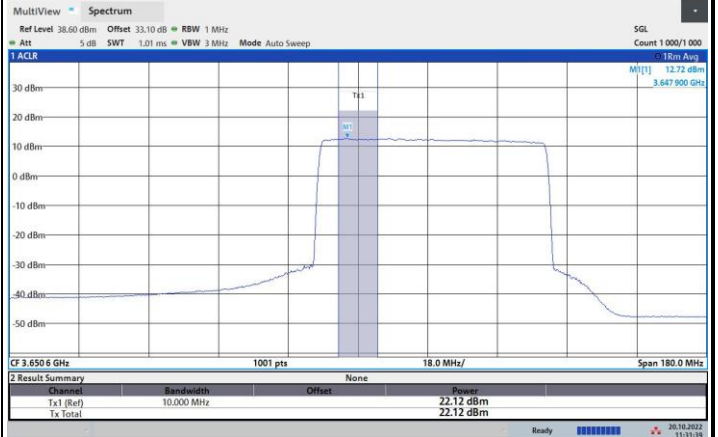
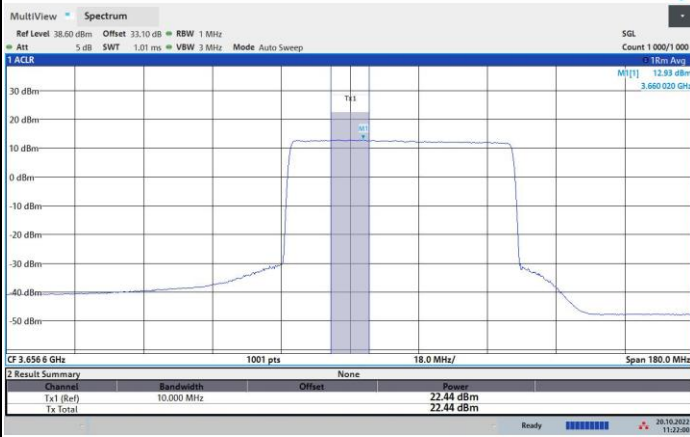
QPSK

16QAM



64QAM

256QAM

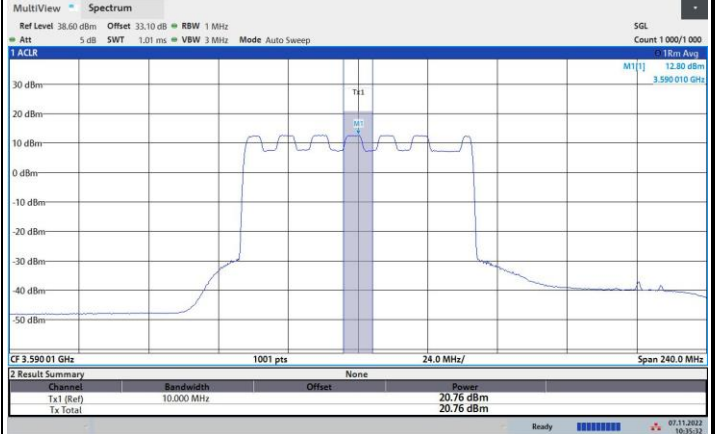
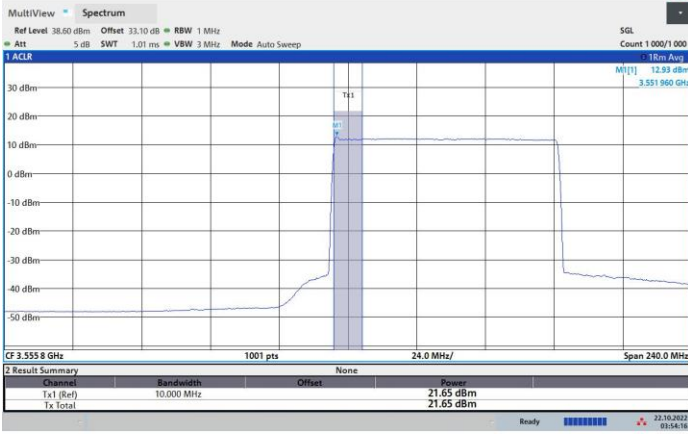




FR1 n48 / 80MHz / Lowest Channel / Conducted (dBm/10MHz)

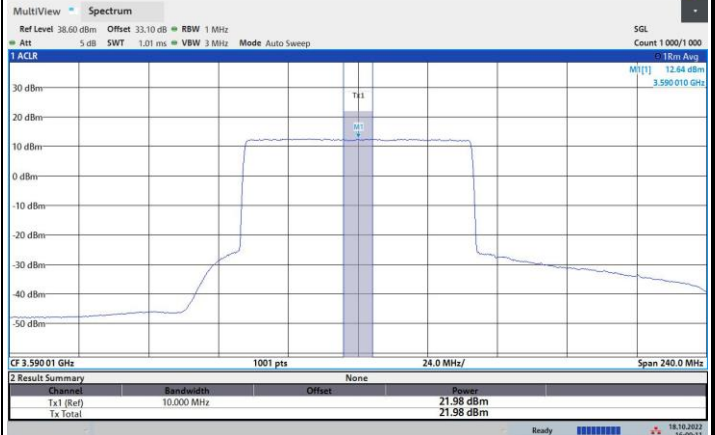
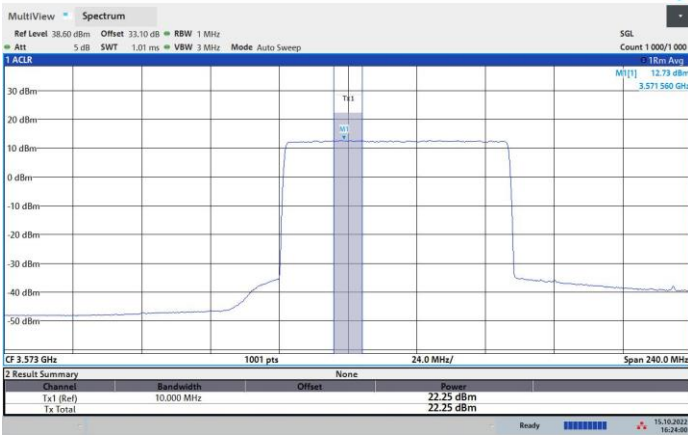
QPSK

16QAM



64QAM

256QAM

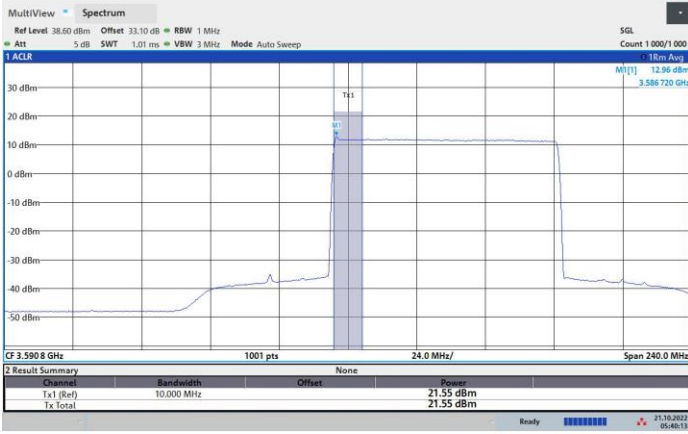




FR1 n48 / 80MHz / Middle Channel / Conducted (dBm/10MHz)

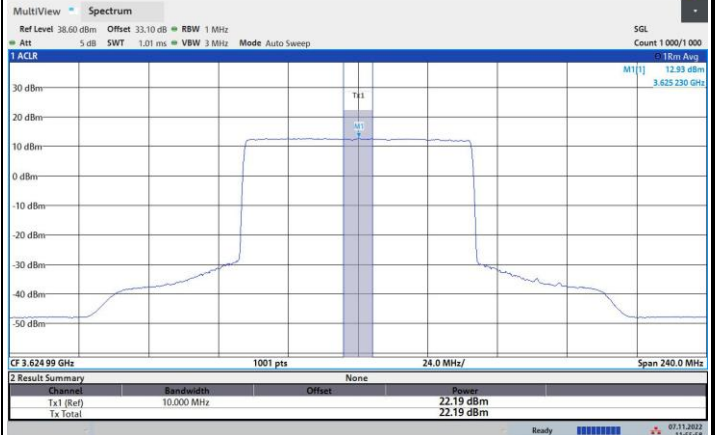
QPSK

16QAM



64QAM

256QAM

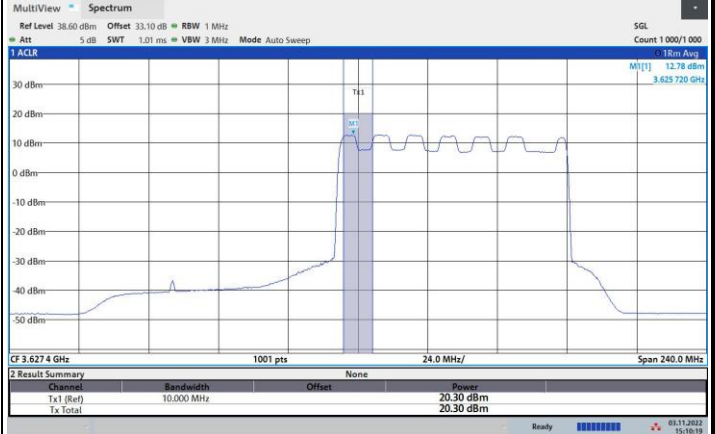
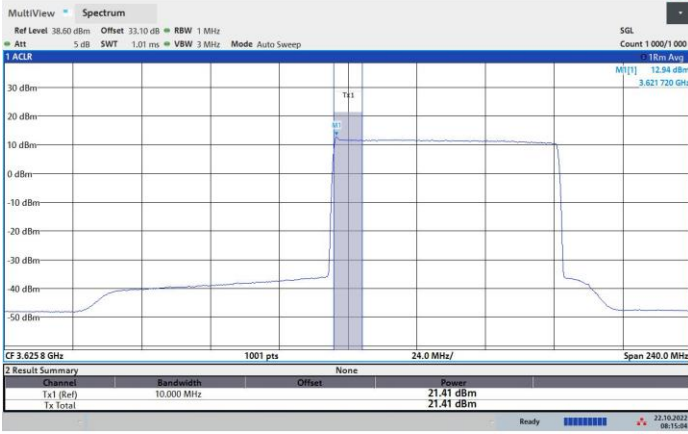




FR1 n48 / 80MHz / Highest Channel / Conducted (dBm/10MHz)

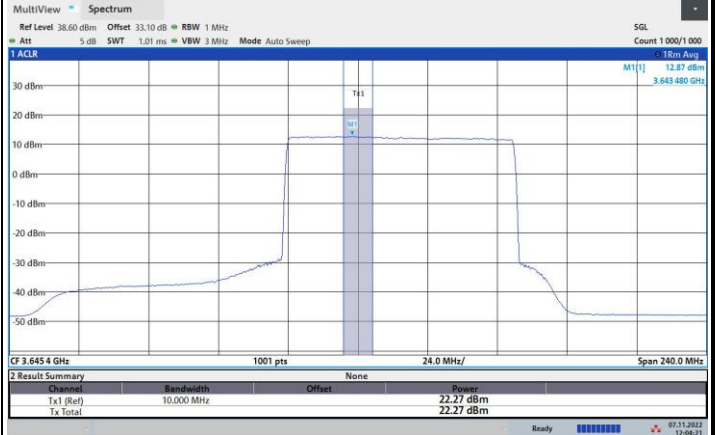
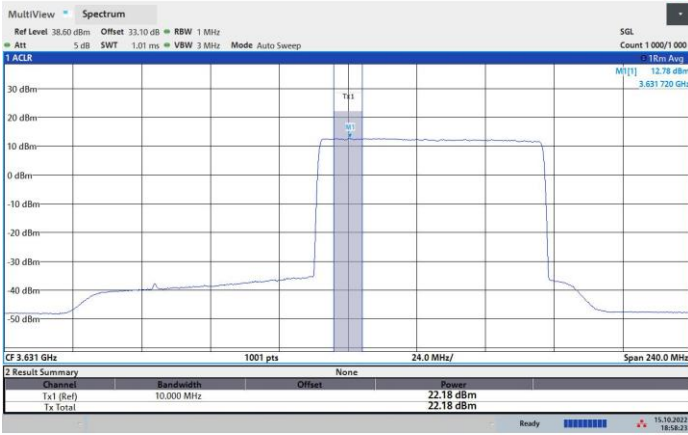
QPSK

16QAM



64QAM

256QAM

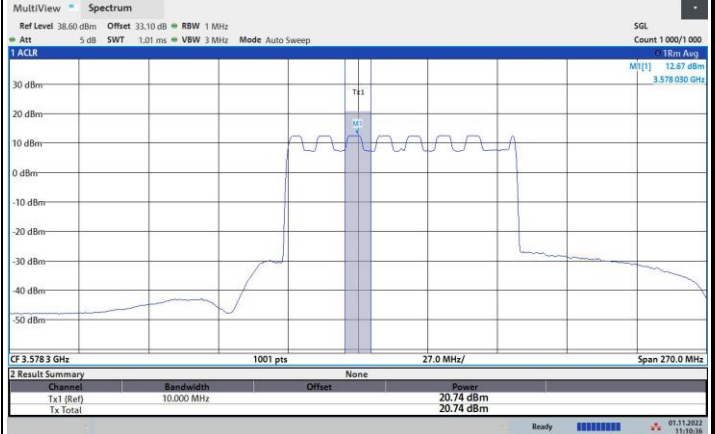
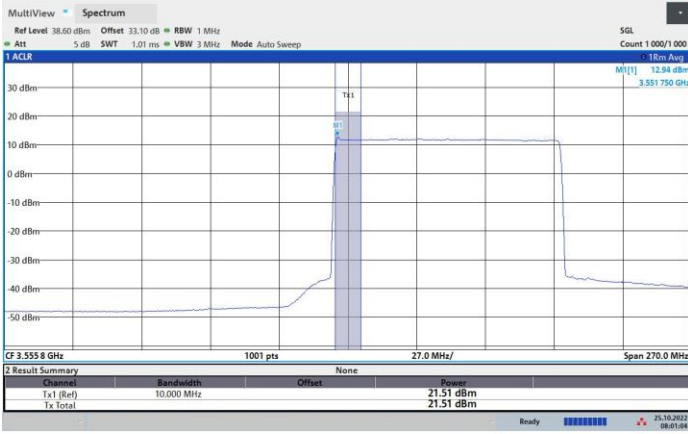




FR1 n48 / 90MHz / Lowest Channel / Conducted (dBm/10MHz)

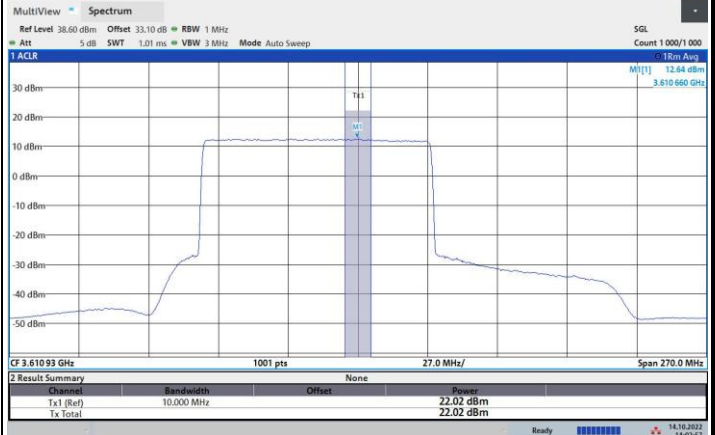
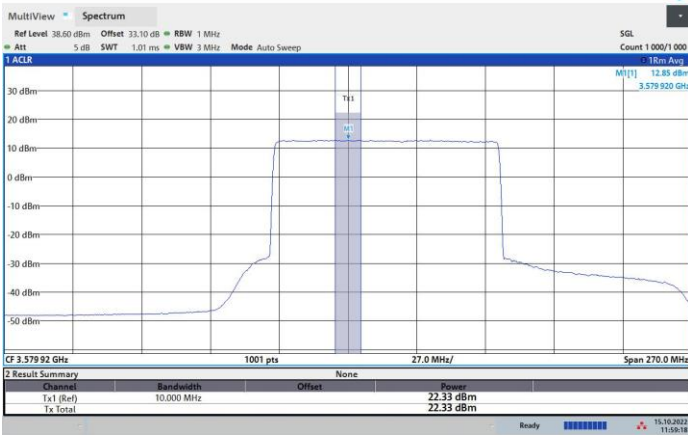
QPSK

16QAM



64QAM

256QAM

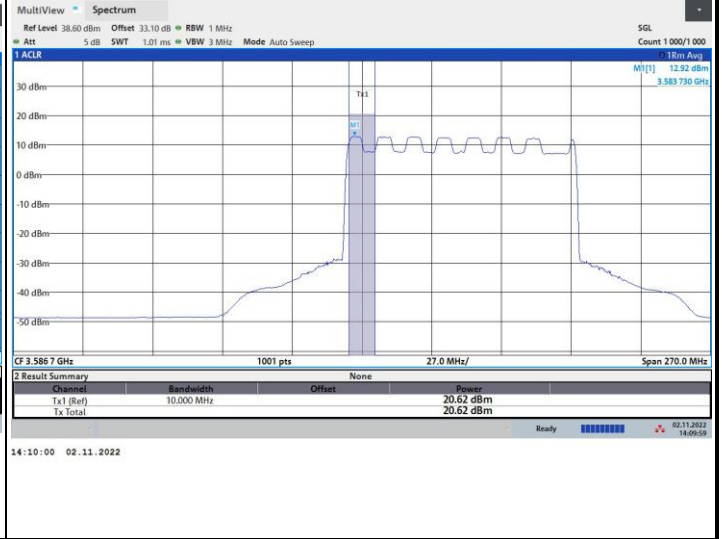
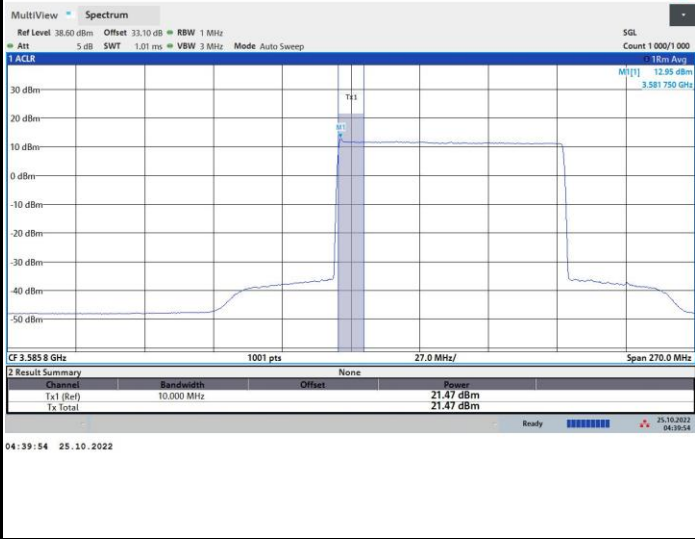




FR1 n48 / 90MHz / Middle Channel / Conducted (dBm/10MHz)

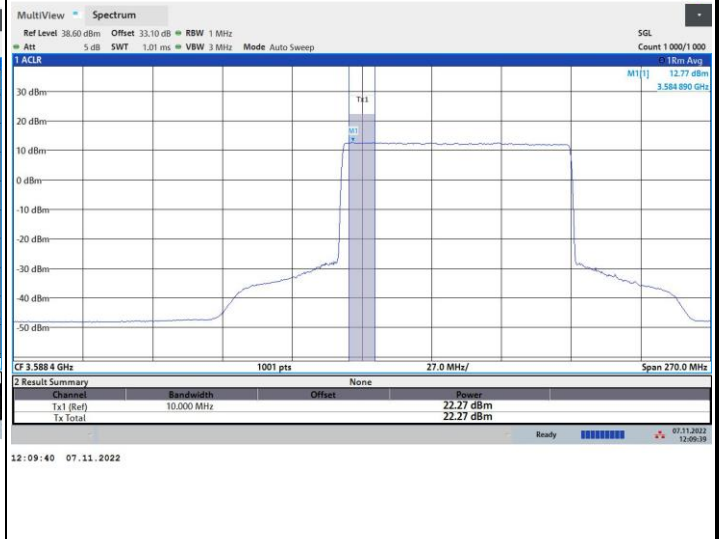
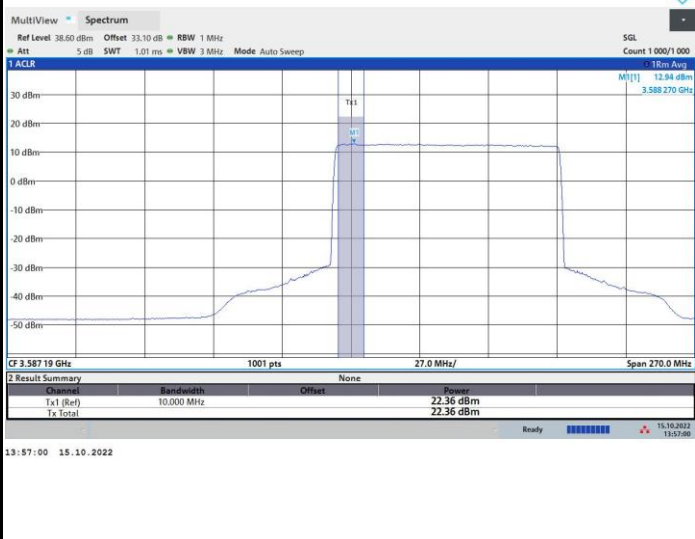
QPSK

16QAM



64QAM

256QAM

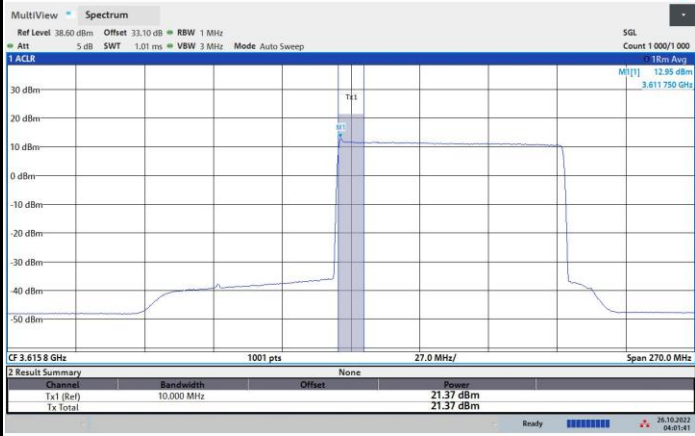




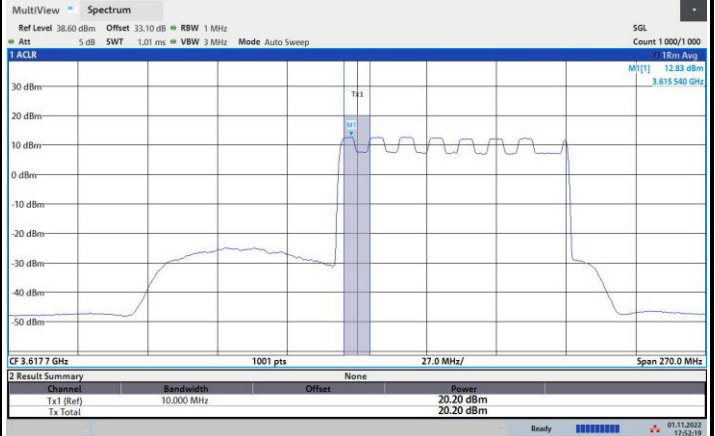
FR1 n48 / 90MHz / Highest Channel / Conducted (dBm/10MHz)

QPSK

16QAM



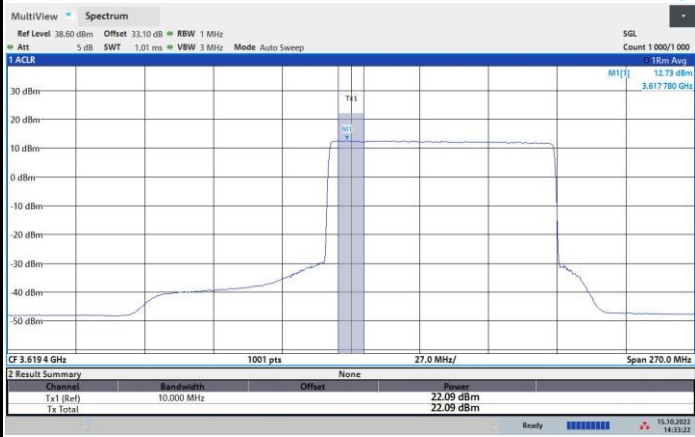
04:01:42 26.10.2022



17:52:20 01.11.2022

64QAM

256QAM



14:33:23 15.10.2022



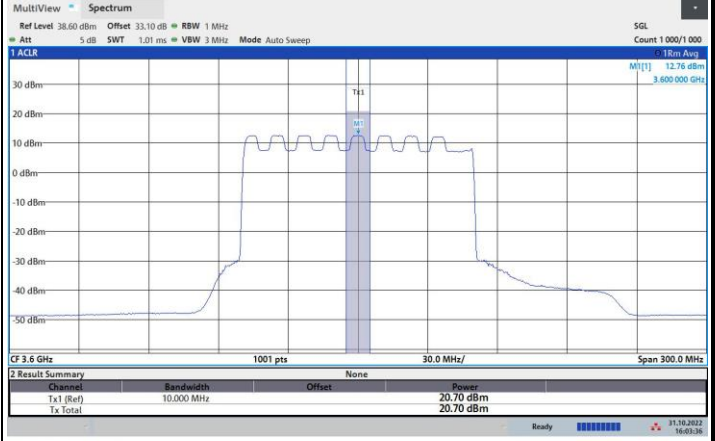
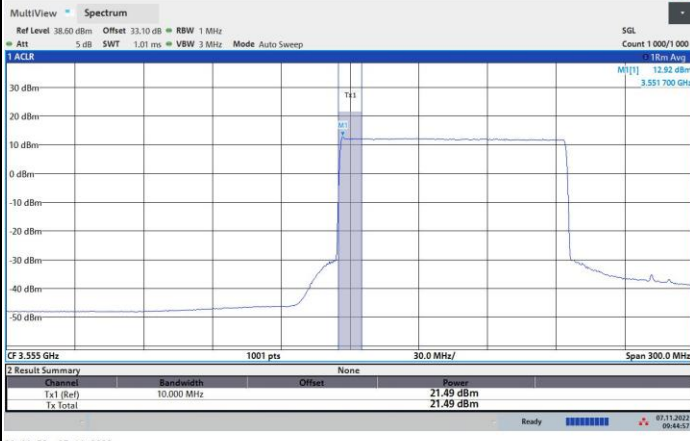
16:38:04 14.10.2022



FR1 n48 / 100MHz / Lowest Channel / Conducted (dBm/10MHz)

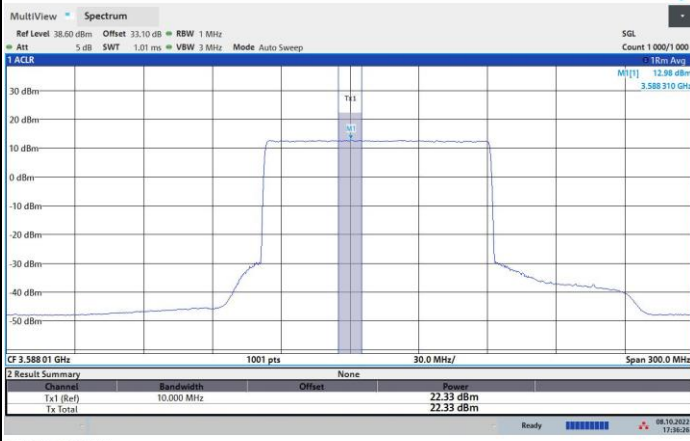
QPSK

16QAM



64QAM

256QAM

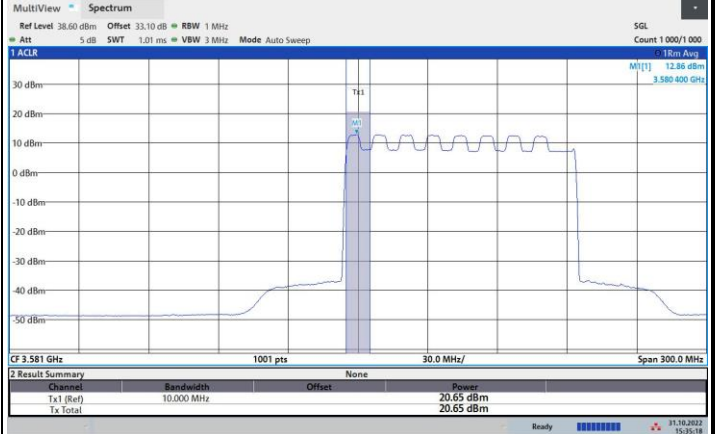
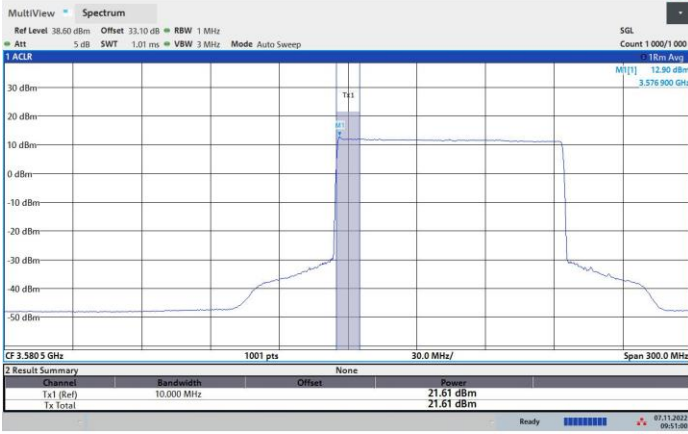




FR1 n48 / 100MHz / Middle Channel / Conducted (dBm/10MHz)

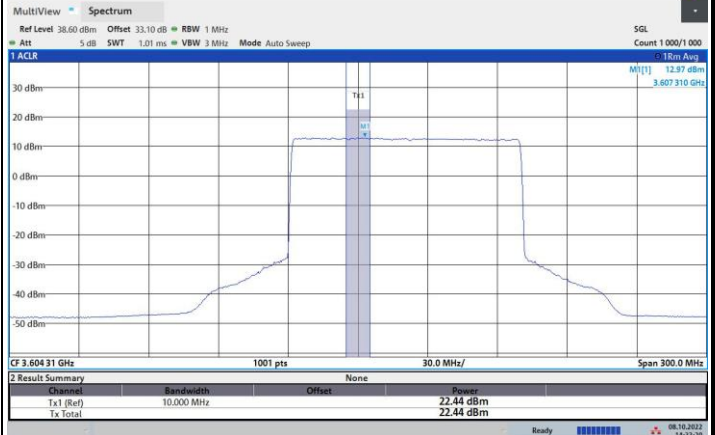
QPSK

16QAM



64QAM

256QAM

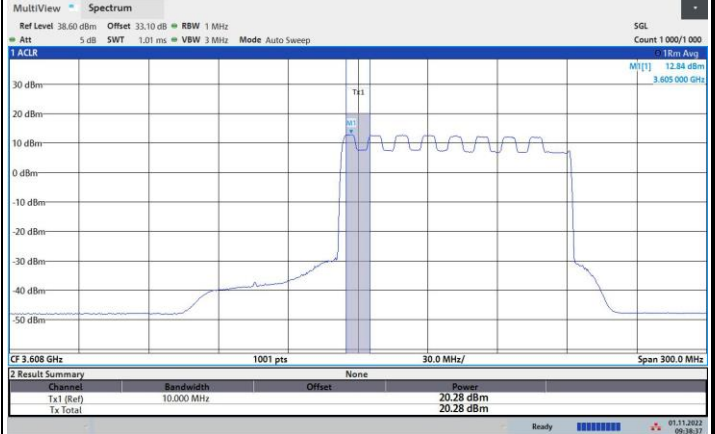




FR1 n48 / 100MHz / Highest Channel / Conducted (dBm/10MHz)

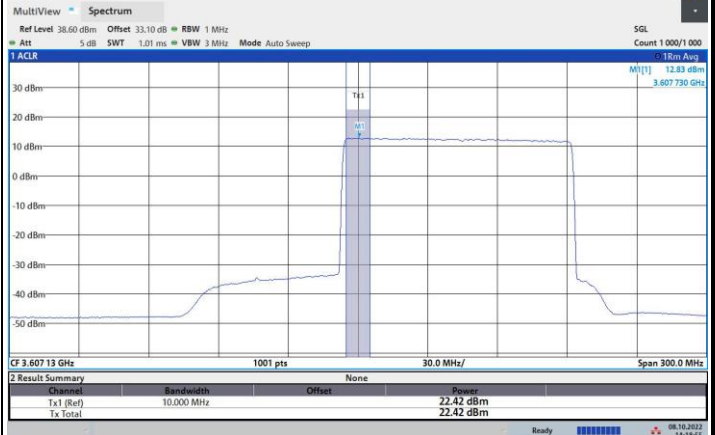
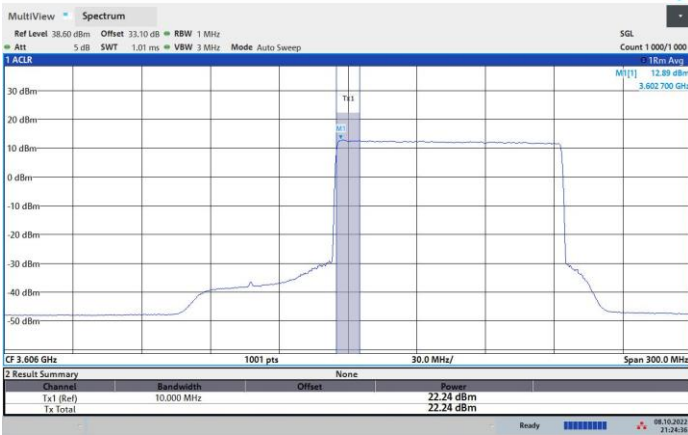
QPSK

16QAM



64QAM

256QAM





Power Spectral Density

Mode	FR1 n48 : Conducted PSD (dBm/MHz)							
	<SISO> Lowest Channel							
BW	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	12.96	12.93	12.98	12.94	12.97	12.98	12.95	12.93
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	12.97	12.97	12.98	12.93	12.97	12.92	12.88	12.94
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	12.93	12.95	12.94	12.85	12.95	12.90	12.95	12.86
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	12.92	12.93	12.93	12.93	12.93	12.94	12.87	12.85

Mode	FR1 n48 : EIRP PSD (dBm/MHz)							
	<MIMO 4TX> Lowest Channel							
BW	10MHz		20MHz		40MHz		50MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	36.98	36.95	37.00	36.96	36.99	37.00	36.97	36.95
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	36.99	36.99	37.00	36.95	36.99	36.94	36.90	36.96
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	36.95	36.97	36.96	36.87	36.97	36.92	36.97	36.88
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Lowest CH	36.94	36.95	36.95	36.95	36.95	36.96	36.89	36.87
Limit	37dBm/MHz							
Result	PASS							

Note

1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 6.02dB (4TX) + 18dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted PSD (dBm/MHz) <SISO> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	12.97	12.95	12.96	12.97	12.94	12.97	12.96	12.97
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	12.95	12.96	12.97	12.96	12.96	12.94	12.90	12.98
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	12.95	12.81	12.95	12.88	12.94	12.84	12.95	12.85
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	12.90	12.87	12.96	12.91	12.92	12.84	12.88	12.86

Mode	FR1 n48 : EIRP PSD (dBm/MHz) <MIMO 4TX> Middle Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	36.99	36.97	36.98	36.99	36.96	36.99	36.98	36.99
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	36.97	36.98	36.99	36.98	36.98	36.96	36.92	37.00
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	36.97	36.83	36.97	36.90	36.96	36.86	36.97	36.87
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Middle CH	36.92	36.89	36.98	36.93	36.94	36.86	36.90	36.88
Limit	37dBm/MHz							
Result	PASS							

Note

1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 6.02dB (4TX) + 18dBi MIMO antenna gain.



Mode	FR1 n48 : Conducted PSD (dBm/MHz) <SISO> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	12.94	12.94	12.93	12.93	12.94	12.94	12.94	12.97
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	12.94	12.98	12.96	12.98	12.95	12.95	12.88	12.89
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	12.93	12.88	12.98	12.87	12.94	12.91	12.97	12.82
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	12.88	12.87	12.91	12.89	12.87	12.90	12.90	12.87

Mode	FR1 n48 : EIRP PSD (dBm/MHz) <MIMO 4TX> Highest Channel							
	10MHz		20MHz		40MHz		50MHz	
BW								
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	36.96	36.96	36.95	36.95	36.96	36.96	36.96	36.99
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	36.96	37.00	36.98	37.00	36.97	36.97	36.90	36.91
BW	60MHz		80MHz		90MHz		100MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Highest CH	36.95	36.90	37.00	36.89	36.96	36.93	36.99	36.84
Mod.	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM	64QAM	256QAM
Highest CH	36.90	36.89	36.93	36.91	36.89	36.92	36.92	36.89
Limit	37dBm/MHz							
Result	PASS							

Note

1. The measured conducted PSD result has included duty cycle offset factor.
2. The EIRP PSD = conducted PSD result + 6.02dB (4TX) + 18dBi MIMO antenna gain.