

FCC 5G mmWave REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: December 23, 2021
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Report No.: HCT-RF-2110-FC080-R3	

FCC ID: A3LSMX808U**APPLICANT:** SAMSUNG Electronics Co., Ltd.

Model:	SM-X808U
EUT Type:	Tablet
Frequency Range:	27.5 GHz ~ 28.35 GHz, 37 GHz ~ 40 GHz
Modulation type:	PI/2 BPSK(DFT-s Only), QPSK, 16QAM, 64QAM
FCC Classification:	Part 30 Mobile Transmitter (5GM)
FCC Rule Part(s):	Part 30
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 842590 D01 V01r02

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

Report No.: HCT-RF-2110-FC080-R3

REVIEWED BY



Report prepared by : Beom Jin Cho
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2110-FC080	November 24, 2021	- First Approval Report
HCT-RF-2110-FC080-R1	December 07, 2021	- Section 1.1, 5.1 and page 84, 103 were revised. - Correction factors were added on page 104. - Calibration reports were added on page 151.
HCT-RF-2110-FC080-R2	December 09, 2021	- Section 5.2 was revised. - Section 3 was revised.
HCT-RF-2110-FC080-R3	December 23, 2021	- Revised the Antenna designation and specification.

Table of Contents

REVIEWED BY	2
1. EUT DESCRIPTION	5
1.1 MAXIMUM EIRP POWER	6
2. FACILITIES AND ACCREDITATIONS.....	12
2.1. FACILITIES.....	12
2.2. EQUIPMENT.....	12
3. TEST SPECIFICATIONS	13
3.1. STANDARDS & TEST SUMMARY	14
3.2. HIGHEST E.I.R.P POSITION	15
3.3. MAXIMUM MEASUREMENT UNCERTAINTY	17
3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS	17
3.5. TEST DIAGRAMS	18
3.6. ADDITIONAL DESCRIPTIONS ABOUT TEST	19
4. TEST EQUIPMENTS	20
5. TEST RESULT	21
5.1. OCCUPIED BANDWIDTH.....	21
5.2. EQUIVALENT ISOTROPIC RADIATED POWER	41
5.3. BAND EDGE	83
5.4. RADIATED SPURIOUS EMISSIONS.....	105
5.5. FREQUENCY STABILTY	137
6. MIXER VERIFICATION CERTIFICATE & CHECK	144
7. Annex A_EUT AND TEST SETUP PHOTO	162

1. EUT DESCRIPTION

Model	SM-X808U
Additional Model	-
EUT Type	Tablet
Power Supply	DC 3.86 V
Date(s) of Tests	September 28, 2021 ~ November 19, 2021
Band	n261: 27,500 MHz ~ 28,350 MHz(TDD) n260: 37,000 MHz ~ 40,000 MHz(TDD)
Channel Bandwidths	50 MHz/100 MHz
Carrier Specification	1CC, 2CC
Multiple transmit	SISO, SISO Dual, MIMO
Channel	Low, Mid, High
SCS	120 kHz
OFDM	CP-OFDM, DFT-s-OFDM
RB size	1 RB(Offset: low, mid, high), half RB, Full RB
Modulation	PI/2 BPSK(DFT-s Only), QPSK, 16QAM, 64QAM
Antenna Specification	Antenna Designation - K patch: module 0 - L patch: module 1 Antenna Size - 23.8 mm x 3.5 mm x 2.14 mm Antenna Gain - K Patch antennas are 1x5 dual-polarized element array patch antennas with a maximum array gain of 11.07 dBi on n261. - L Patch antennas are 1x5 dual-polarized element array patch antennas with a maximum array gain of 12.35 dBi on n261. - K Patch antennas are 1x5 dual-polarized element array patch antennas with a maximum array gain of 11.87 dBi on n260. - L Patch antennas are 1x5 dual-polarized element array patch antennas with a maximum array gain of 10.88 dBi on n260.

1.1 MAXIMUM EIRP POWER

n261 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	K patch: module 0	50	1	27500 - 28350	0.505	27.03	46M0G7D	BPSK
SISO	K patch: module 0	50	1	27500 - 28350	0.573	27.58	46M0G7D	QPSK
SISO	K patch: module 0	50	1	27500 - 28350	0.314	24.97	46M1W7D	16QAM
SISO	K patch: module 0	50	1	27500 - 28350	0.201	23.04	46M0W7D	64QAM
SISO Dual	K patch: module 0	50	1	27500 - 28350	0.556	27.45	46M0G7D	BPSK
SISO Dual	K patch: module 0	50	1	27500 - 28350	0.607	27.83	46M0G7D	QPSK
SISO Dual	K patch: module 0	50	1	27500 - 28350	0.343	25.35	46M0W7D	16QAM
SISO Dual	K patch: module 0	50	1	27500 - 28350	0.218	23.39	46M1W7D	64QAM
SISO	K patch: module 0	50	2	27500 - 28350	0.209	23.20	95M4G7D	BPSK
SISO	K patch: module 0	50	2	27500 - 28350	0.192	22.83	95M0G7D	QPSK
SISO	K patch: module 0	50	2	27500 - 28350	0.116	20.65	95M0W7D	16QAM
SISO	K patch: module 0	50	2	27500 - 28350	0.074	18.67	95M2W7D	64QAM
SISO Dual	K patch: module 0	50	2	27500 - 28350	0.214	23.30	95M4G7D	BPSK
SISO Dual	K patch: module 0	50	2	27500 - 28350	0.241	23.82	95M3G7D	QPSK
SISO Dual	K patch: module 0	50	2	27500 - 28350	0.142	21.51	94M6W7D	16QAM
SISO Dual	K patch: module 0	50	2	27500 - 28350	0.088	19.45	94M6W7D	64QAM
SISO	K patch: module 0	100	1	27500 - 28350	0.526	27.21	91M5G7D	BPSK
SISO	K patch: module 0	100	1	27500 - 28350	0.708	28.50	91M7G7D	QPSK
SISO	K patch: module 0	100	1	27500 - 28350	0.328	25.16	91M5W7D	16QAM
SISO	K patch: module 0	100	1	27500 - 28350	0.205	23.12	91M3W7D	64QAM
SISO Dual	K patch: module 0	100	1	27500 - 28350	0.562	27.50	91M4G7D	BPSK
SISO Dual	K patch: module 0	100	1	27500 - 28350	0.638	28.05	91M3G7D	QPSK
SISO Dual	K patch: module 0	100	1	27500 - 28350	0.342	25.34	91M4W7D	16QAM
SISO Dual	K patch: module 0	100	1	27500 - 28350	0.228	23.58	91M3W7D	64QAM
SISO	K patch: module 0	100	2	27500 - 28350	0.203	23.08	190MG7D	BPSK
SISO	K patch: module 0	100	2	27500 - 28350	0.199	22.98	190MG7D	QPSK
SISO	K patch: module 0	100	2	27500 - 28350	0.122	20.87	191MW7D	16QAM
SISO	K patch: module 0	100	2	27500 - 28350	0.077	18.85	191MW7D	64QAM
SISO Dual	K patch: module 0	100	2	27500 - 28350	0.199	22.99	190MG7D	BPSK

n261 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	K patch: module 0	100	2	27500 - 28350	0.232	23.65	190MG7D	QPSK
SISO Dual	K patch: module 0	100	2	27500 - 28350	0.123	20.89	191MW7D	16QAM
SISO Dual	K patch: module 0	100	2	27500 - 28350	0.077	18.86	191MW7D	64QAM
SISO	L patch: module 1	50	1	27500 - 28350	0.582	27.65	46M1G7D	BPSK
SISO	L patch: module 1	50	1	27500 - 28350	0.569	27.55	45M9G7D	QPSK
SISO	L patch: module 1	50	1	27500 - 28350	0.340	25.32	46M2W7D	16QAM
SISO	L patch: module 1	50	1	27500 - 28350	0.217	23.37	45M7W7D	64QAM
SISO Dual	L patch: module 1	50	1	27500 - 28350	0.603	27.80	46M1G7D	BPSK
SISO Dual	L patch: module 1	50	1	27500 - 28350	0.590	27.71	46M0G7D	QPSK
SISO Dual	L patch: module 1	50	1	27500 - 28350	0.364	25.61	46M0W7D	16QAM
SISO Dual	L patch: module 1	50	1	27500 - 28350	0.230	23.62	46M1W7D	64QAM
SISO	L patch: module 1	50	2	27500 - 28350	0.234	23.70	95M7G7D	BPSK
SISO	L patch: module 1	50	2	27500 - 28350	0.235	23.71	94M9G7D	QPSK
SISO	L patch: module 1	50	2	27500 - 28350	0.143	21.55	95M3W7D	16QAM
SISO	L patch: module 1	50	2	27500 - 28350	0.094	19.75	95M2W7D	64QAM
SISO Dual	L patch: module 1	50	2	27500 - 28350	0.239	23.78	95M4G7D	BPSK
SISO Dual	L patch: module 1	50	2	27500 - 28350	0.239	23.79	95M2G7D	QPSK
SISO Dual	L patch: module 1	50	2	27500 - 28350	0.150	21.77	95M2W7D	16QAM
SISO Dual	L patch: module 1	50	2	27500 - 28350	0.098	19.93	95M1W7D	64QAM
SISO	L patch: module 1	100	1	27500 - 28350	0.542	27.34	91M5G7D	BPSK
SISO	L patch: module 1	100	1	27500 - 28350	0.634	28.02	91M6G7D	QPSK
SISO	L patch: module 1	100	1	27500 - 28350	0.337	25.27	91M7W7D	16QAM
SISO	L patch: module 1	100	1	27500 - 28350	0.197	22.95	91M2W7D	64QAM
SISO Dual	L patch: module 1	100	1	27500 - 28350	0.675	28.29	91M6G7D	BPSK
SISO Dual	L patch: module 1	100	1	27500 - 28350	0.668	28.25	91M3G7D	QPSK
SISO Dual	L patch: module 1	100	1	27500 - 28350	0.412	26.15	91M3W7D	16QAM
SISO Dual	L patch: module 1	100	1	27500 - 28350	0.256	24.08	91M3W7D	64QAM
SISO	L patch: module 1	100	2	27500 - 28350	0.210	23.22	191MG7D	BPSK
SISO	L patch: module 1	100	2	27500 - 28350	0.147	21.68	191MG7D	QPSK
SISO	L patch: module 1	100	2	27500 - 28350	0.091	19.57	191MW7D	16QAM

n261 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	L patch: module 1	100	2	27500 - 28350	0.060	17.80	191MW7D	64QAM
SISO Dual	L patch: module 1	100	2	27500 - 28350	0.247	23.93	190MG7D	BPSK
SISO Dual	L patch: module 1	100	2	27500 - 28350	0.252	24.02	191MG7D	QPSK
SISO Dual	L patch: module 1	100	2	27500 - 28350	0.152	21.81	191MW7D	16QAM
SISO Dual	L patch: module 1	100	2	27500 - 28350	0.097	19.85	190MW7D	64QAM

n260 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	K patch: module 0	50	1	37000 - 40000	0.451	26.54	46M1G7D	BPSK
SISO	K patch: module 0	50	1	37000 - 40000	0.359	25.55	45M9G7D	QPSK
SISO	K patch: module 0	50	1	37000 - 40000	0.217	23.37	46M1W7D	16QAM
SISO	K patch: module 0	50	1	37000 - 40000	0.135	21.30	45M9W7D	64QAM
SISO Dual	K patch: module 0	50	1	37000 - 40000	0.250	23.98	46M0G7D	BPSK
SISO Dual	K patch: module 0	50	1	37000 - 40000	0.555	27.44	45M9G7D	QPSK
SISO Dual	K patch: module 0	50	1	37000 - 40000	0.147	21.68	46M0W7D	16QAM
SISO Dual	K patch: module 0	50	1	37000 - 40000	0.091	19.57	46M0W7D	64QAM
SISO	K patch: module 0	50	2	37000 - 40000	0.137	21.37	96M1G7D	BPSK
SISO	K patch: module 0	50	2	37000 - 40000	0.103	20.11	96M1G7D	QPSK
SISO	K patch: module 0	50	2	37000 - 40000	0.075	18.76	95M9W7D	16QAM
SISO	K patch: module 0	50	2	37000 - 40000	0.046	16.65	96M6W7D	64QAM
SISO Dual	K patch: module 0	50	2	37000 - 40000	0.126	20.99	94M3G7D	BPSK
SISO Dual	K patch: module 0	50	2	37000 - 40000	0.141	21.50	94M7G7D	QPSK
SISO Dual	K patch: module 0	50	2	37000 - 40000	0.043	16.30	95M3W7D	16QAM
SISO Dual	K patch: module 0	50	2	37000 - 40000	0.028	14.45	95M2W7D	64QAM
SISO	K patch: module 0	100	1	37000 - 40000	0.394	25.96	91M5G7D	BPSK
SISO	K patch: module 0	100	1	37000 - 40000	0.348	25.41	91M4G7D	QPSK
SISO	K patch: module 0	100	1	37000 - 40000	0.214	23.31	91M6W7D	16QAM
SISO	K patch: module 0	100	1	37000 - 40000	0.131	21.16	91M5W7D	64QAM
SISO Dual	K patch: module 0	100	1	37000 - 40000	0.148	21.69	91M2G7D	BPSK
SISO Dual	K patch: module 0	100	1	37000 - 40000	0.361	25.57	91M1G7D	QPSK
SISO Dual	K patch: module 0	100	1	37000 - 40000	0.108	20.34	91M4W7D	16QAM
SISO Dual	K patch: module 0	100	1	37000 - 40000	0.052	17.12	92M9W7D	64QAM
SISO	K patch: module 0	100	2	37000 - 40000	0.124	20.94	191MG7D	BPSK
SISO	K patch: module 0	100	2	37000 - 40000	0.081	19.07	191MG7D	QPSK
SISO	K patch: module 0	100	2	37000 - 40000	0.056	17.52	191MW7D	16QAM
SISO	K patch: module 0	100	2	37000 - 40000	0.036	15.54	191MW7D	64QAM
SISO Dual	K patch: module 0	100	2	37000 - 40000	0.160	22.04	190MG7D	BPSK
SISO Dual	K patch: module 0	100	2	37000 - 40000	0.061	17.87	190MG7D	QPSK

n260 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	K patch: module 0	100	2	37000 - 40000	0.049	16.88	191MW7D	16QAM
SISO Dual	K patch: module 0	100	2	37000 - 40000	0.029	14.64	191MW7D	64QAM
SISO	L patch: module 1	50	1	37000 - 40000	0.272	24.35	46M1G7D	BPSK
SISO	L patch: module 1	50	1	37000 - 40000	0.188	22.75	46M0G7D	QPSK
SISO	L patch: module 1	50	1	37000 - 40000	0.116	20.65	45M8W7D	16QAM
SISO	L patch: module 1	50	1	37000 - 40000	0.071	18.51	46M0W7D	64QAM
SISO Dual	L patch: module 1	50	1	37000 - 40000	0.220	23.42	45M9G7D	BPSK
SISO Dual	L patch: module 1	50	1	37000 - 40000	0.274	24.37	46M0G7D	QPSK
SISO Dual	L patch: module 1	50	1	37000 - 40000	0.134	21.28	46M1W7D	16QAM
SISO Dual	L patch: module 1	50	1	37000 - 40000	0.084	19.22	45M8W7D	64QAM
SISO	L patch: module 1	50	2	37000 - 40000	0.074	18.68	95M6G7D	BPSK
SISO	L patch: module 1	50	2	37000 - 40000	0.068	18.31	95M2G7D	QPSK
SISO	L patch: module 1	50	2	37000 - 40000	0.049	16.87	95M2W7D	16QAM
SISO	L patch: module 1	50	2	37000 - 40000	0.032	15.08	95M3W7D	64QAM
SISO Dual	L patch: module 1	50	2	37000 - 40000	0.070	18.47	93M5G7D	BPSK
SISO Dual	L patch: module 1	50	2	37000 - 40000	0.072	18.58	96M9G7D	QPSK
SISO Dual	L patch: module 1	50	2	37000 - 40000	0.048	16.80	91M2W7D	16QAM
SISO Dual	L patch: module 1	50	2	37000 - 40000	0.036	15.56	93M4W7D	64QAM
SISO	L patch: module 1	100	1	37000 - 40000	0.230	23.61	91M6G7D	BPSK
SISO	L patch: module 1	100	1	37000 - 40000	0.217	23.37	91M5G7D	QPSK
SISO	L patch: module 1	100	1	37000 - 40000	0.118	20.73	91M8W7D	16QAM
SISO	L patch: module 1	100	1	37000 - 40000	0.074	18.72	91M6W7D	64QAM
SISO Dual	L patch: module 1	100	1	37000 - 40000	0.195	22.89	90M6G7D	BPSK
SISO Dual	L patch: module 1	100	1	37000 - 40000	0.192	22.83	91M0G7D	QPSK
SISO Dual	L patch: module 1	100	1	37000 - 40000	0.117	20.68	90M5W7D	16QAM
SISO Dual	L patch: module 1	100	1	37000 - 40000	0.077	18.87	89M8W7D	64QAM
SISO	L patch: module 1	100	2	37000 - 40000	0.055	17.42	191MG7D	BPSK
SISO	L patch: module 1	100	2	37000 - 40000	0.070	18.44	191MG7D	QPSK
SISO	L patch: module 1	100	2	37000 - 40000	0.040	16.04	191MW7D	16QAM
SISO	L patch: module 1	100	2	37000 - 40000	0.026	14.19	191MW7D	64QAM

n260 Band								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	L patch: module 1	100	2	37000 - 40000	0.072	18.58	191MG7D	BPSK
SISO Dual	L patch: module 1	100	2	37000 - 40000	0.058	17.65	190MG7D	QPSK
SISO Dual	L patch: module 1	100	2	37000 - 40000	0.040	16.04	191MW7D	16QAM
SISO Dual	L patch: module 1	100	2	37000 - 40000	0.028	14.53	192MW7D	64QAM

2. FACILITIES AND ACCREDITATIONS

2.1. FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 (Version: 2014) and CISPR Publication 22.

Seoicheon-ro
☒ Semi Chamber 1
☐ Semi Chamber 2
☐ Semi Chamber 3
☒ mmWave Chamber

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary for radiated emissions measurements in the spurious domain. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the table to bring the total table height to 1.5m for measurements above 1GHz.

Radiated spurious emission measurements from 30MHz - 18GHz were performed in a semi anechoic chamber (SAC) conforming to the site validation requirements.

Radiated power (EIRP) measurements were performed according to ANSI C63.26_2015 in a full anechoic chamber (FAC).

The test facility has been recognised by the FCC under registration number KR0032. The full scope of recognition can be viewed at

https://apps.fcc.gov/oetcf/eas/reports/ViewTestFirmAccredScopes.cfm?calledFromFrame=N&RequestTimeout=500®num_specified=N&test_firm_id=5749.

2.2. EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

3. TEST SPECIFICATIONS

FCC Rule Parts	47 CFR FCC Part2, Part 30
Measurement standards	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 662911 D01 v02r01, KDB 662911 D02 v01, KDB 842590 D01 v01r02

Note:

The EUT was tested per the guidance of ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 842590 D01 v01r02

EIRP Simulation data for all Beam IDs was used to determine the worst case Beam ID for SISO operation and Beam ID pair for SISO Dual operation. These Beam ID's was used for final measurements.

All testing was performed using FTM software at continuous Tx operation(100 % duty cycle).

In case of RSE for EN-DC mode, we used 5G NR call simulator.

Each of the patch antennas is comprised of two separate antenna feeds(H/V).

Patch K patch: module 0 does not radiate when patch L patch: module 1 radiates.

All modulations, RB size, CP-OFDM, DFT-s-OFDM and SCS were investigated and the worst case configuration results are reported.

In cases of SISO, SISO Dual, MIMO, CP-OFDM is supported.

In cases of SISO, SISO Dual, DFT-s-OFDM mode is supported.

Both CP-OFDM and DFT-s-OFDM were invetgited for the Occupied Bandwidth, EIRP, Band Edge, RSE and the DFT-s-OFDM was worst case of NR Modulations in all test cases.

Per 2.1057(a)(2), spurious emissions were investigated up to 200 GHz.(up to 100 GHz for n261 band)

The radiated RF output power, band edge and all out-of-band emissions in the spurious domain are evaluated to the EIRP limits.

In case of band edge, if the band edge results does not comply the EIRP limit, the band edge results are converted to an equivalent conductive power by subtracting the known antenna gain from the EIRP measured at each frequency of interest. These emissions are compared to the 30.203 spurious emission limits as conductive power levels.

Beam IDs were selected based on which Beam ID produces the highest EIRP during EIRP simulation.

The radiated spurious emission was investigated in three orthogonal orientation x, y and z.

(worst case: y for n261, x for n260)

3.1. STANDARDS & TEST SUMMARY

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 2, Part 30

Description	Test Limit	Reference	Results
Occupied Bandwidth	N/A	§2.1049	Compliant
Equivalent Isotropic Radiated Power	43 dBm	§30.202 §30.202	Compliant
Out-of-Band Emissions at the Band Edge	-13 dBm/MHz for all out-of-band emissions, -5 dBm/MHz from the band edge up to 10 % of the channel BW	§2.1051, §30.203	Compliant
Radiated Spurious Emissions	-13 dBm/MHz for all out-of-band emissions	§2.1051, §30.203	Compliant
Frequency Stability	Fundamental emissions stay within authorized frequency block	§2.1055	Compliant

3.2. HIGHEST E.I.R.P POSITION

K patch: module 0 SISO

Band	CH	Beam ID	SISO – H	Beam ID	SISO - V
n261	Low	153	H / Azi : 32 Roll : 106	36	V / Azi : 12 Roll : 273
	Mid	164	H / Azi : 16 Roll : 272	36	V / Azi : 18 Roll : 254
	High	164	V / Azi : 31 Roll : 197	35	V / Azi : 17 Roll : 92
n260	Low	26	V / Azi : 3 Roll : 192	154	V / Azi : 2 Roll : 76
	Mid	26	V / Azi : 6 Roll : 193	163	V / Azi : 16 Roll : 61
	High	26	V / Azi : 2 Roll : 164	163	V / Azi : 18 Roll : 78

K patch: module 0 SISO Dual, MIMO

Band	CH	Beam ID	SISO Dual - H	Beam ID	SISO Dual - V
n261	Low	25/153	H / Azi : 34 Roll : 93	25/153	V / Azi : 31 Roll : 118
	Mid	25/153	H / Azi : 38 Roll : 91	25/153	V / Azi : 49 Roll : 132
	High	25/153	H / Azi : 33 Roll : 97	25/153	V / Azi : 27 Roll : 121
n260	Low	27/155	H / Azi : 29 Roll : 226	27/155	V / Azi : 24 Roll : 248
	Mid	27/155	H / Azi : 27 Roll : 237	27/155	V / Azi : 28 Roll : 304
	High	36/164	H / Azi : 17 Roll : 243	36/164	V / Azi : 14 Roll : 313

L patch: module 1 SISO

Band	CH	Beam ID	SISO - H	Beam ID	SISO - V
n261	Low	160	V / Azi : 3 Roll : 191	41	V / Azi : 29 Roll : 253
	Mid	160	H / Azi : 13 Roll : 313	40	V / Azi : 6 Roll : 264
	High	160	V / Azi : 2 Roll : 178	41	V / Azi : 31 Roll : 252
n260	Low	33	H / Azi : 48 Roll : 91	167	H / Azi : 41 Roll : 176
	Mid	33	H / Azi : 62 Roll : 267	157	H / Azi : 53 Roll : 131
	High	40	V / Azi : 42 Roll : 328	157	V / Azi : 47 Roll : 41

L patch: module 1 SISO Dual, MIMO

Band	CH	Beam ID	SISO Dual - H	Beam ID	SISO Dual - V
n261	Low	32/160	H / Azi : 8 Roll : 72	32/160	V / Azi : 32 Roll : 317
	Mid	41/169	H / Azi : 31 Roll : 271	41/169	V / Azi : 36 Roll : 313
	High	32/160	H / Azi : 1 Roll : 276	32/160	V / Azi : 7 Roll : 339
n260	Low	32/160	H / Azi : 71 Roll : 332	32/160	V / Azi : 41 Roll : 299
	Mid	33/157	H / Azi : 63 Roll : 132	33/157	V / Azi : 56 Roll : 41
	High	29/157	H / Azi : 67 Roll : 153	29/157	V / Azi : 46 Roll : 133

3.3. MAXIMUM MEASUREMENT UNCERTAINTY

The value of the measurement uncertainty for the measurement of each parameter.

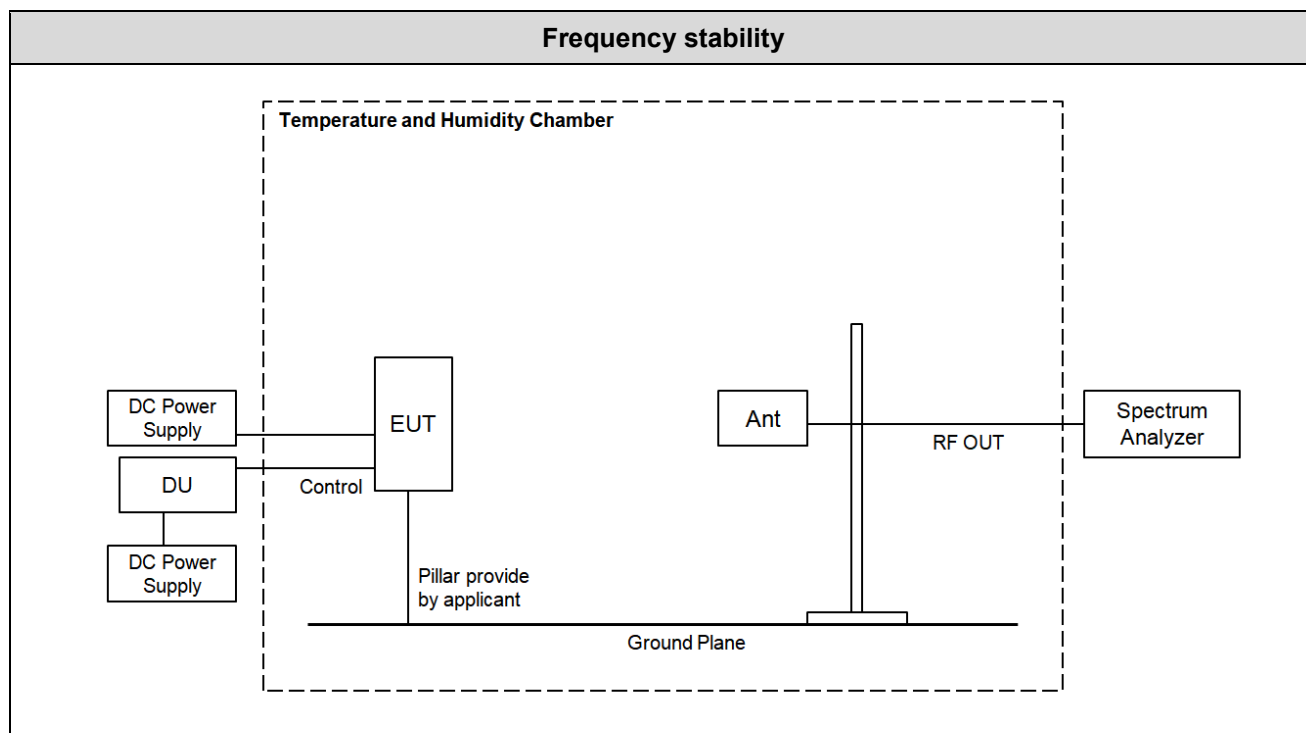
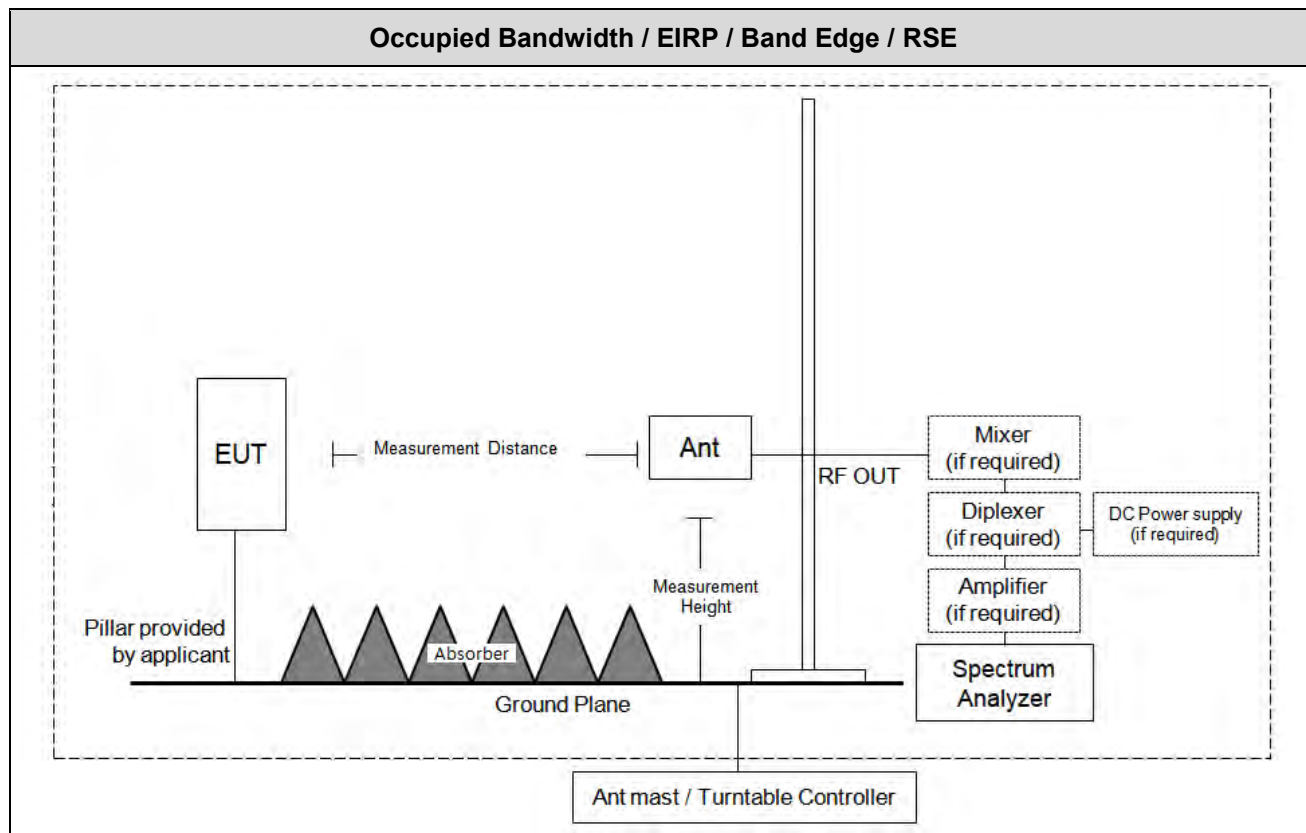
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Condition	Uncertainty
Occupied Bandwidth	-	± 0.31 MHz
Equivalent Isotropic Radiated Power	27.48 GHz ~ 28.37 GHz, 36.98 GHz ~ 40.02 GHz	± 5.05 dB
Band Edge		
Radiated Spurious Emissions	9 kHz ~ 30 MHz	± 3.40 dB
	30 MHz ~ 1 GHz	± 4.80 dB
	1 GHz ~ 18 GHz	± 5.70 dB
	18 GHz ~ 40 GHz	± 5.05 dB
	40 GHz ~ 200 GHz	± 4.59 dB
Frequency Stability	-	69.61 kHz

3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

Temperature :	+15 °C to +35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

3.5. TEST DIAGRAMS



3.6. ADDITIONAL DESCRIPTIONS ABOUT TEST

- All tests is performed by radiated measurement and applied below conditions.

: Used measurement distance with far field of test such as EIRP, OBW and Band edge are as follow.

$$\text{Wavelength} = \text{Speed of light} / \text{Measurement frequency} = 30 / 4\,000 = 0.0075$$

$$(2 \times (\text{Max measured antenna dimension})^2) / \text{Wavelength} = (2 \times (0.09604686)^2) / 0.0075 = 2.46 \text{ m}$$

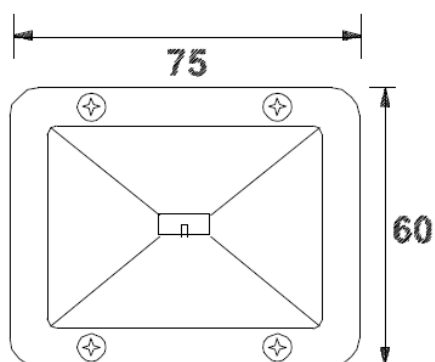
: Spurious emissions measurement distance is shown in table below(Reference : Measurement Antenna Dimension).

Frequency Rage (GHz)	Wavelength (cm)	Far Field Distance (m)	Measurement Distance(m)
18 ~ 40	0.75	2.46	3.00
40 ~ 60	0.50	1.354	3.00
60 ~90	0.33	0.856	1
90 ~ 140	0.214	0.572	1
140 ~ 200	0.15	0.332	0.5

- Unwanted radiated emissions test was performed on state of all EUT antenna path is operated with a maximum output power level.

- In case of far-field distance for fundamental, we applied the measured antenna dimension because the measured antenna is bigger than the antenna of EUT.

- Dimension of measured(BBHA 9170) antenna: 0.096046 m



- Dimension of EUT antenna : 0.024151 m

- Below 18 GHz, measurement distance is 3.00 m.

4. TEST EQUIPMENTS

Manufacturer	Model / Equipment	Due to Calibration	Calibration Interval	Serial No.
Agilent	N9030B / PXA Signal Analyzer	06/02/2022	Annual	MY55480167
Schwarzbeck	BBHA 9170 / Horn Antenna	11/16/2022	Biennial	BBHA9170541
KIKUSUI	PWR800L / DC Power Supply	07/13/2022	Annual	RE002047
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Rohde&Schwarz	FSW / Spectrum Analyzer	11/11/2022	Annual	101256
Rohde&Schwarz	FSP / Spectrum Analyzer	09/13/2022	Annual	836650/016
Schwarzbeck	Loop Antenna	06/04/2023	Biennial	1513-175
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Schwarzbeck	VULB 9168 / Hybrid Antenna	09/04/2022	Biennial	9168-0895
Schwarzbeck	BBHA 9120D / Horn Antenna	06/23/2022	Biennial	9120D-1300
OML INC.	WR-19 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M19RH-160419-2
OML INC.	WR-19 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M19RH-160419-1
OML INC.	WR-12 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M12RH-160419-1
OML INC.	WR-12 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M12RH-160419-2
OML INC.	WR-08 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M08RH-160419-2
OML INC.	WR-08 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M08RH-160419-1
OML INC.	WR-05 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M05RH-160419-1
OML INC.	WR-05 Horn Antenna / Horn Antenna	04/23/2022	Biennial	M05RH-160419-2
OML INC.	OML WR19 / Harmonic Mixer	11/18/2022	Annual	M19HWD
OML INC.	OML WR12 / Harmonic Mixer	11/18/2022	Annual	M12HWD
OML INC.	OML WR08 / Harmonic Mixer	11/18/2022	Annual	M08HWD
OML INC.	OML WR05 / Harmonic Mixer	09/09/2022	Annual	M05HWD
OML INC.	WR-19 / Source Module	09/02/2022	Annual	S19MS-A-160516-1
OML INC.	WR-12 / Source Module	09/02/2022	Annual	S12MS-A-160419-1
OML INC.	WR-08 / Source Module	09/02/2022	Annual	S08MS-A-160419-1
OML INC.	WR-05 / Source Module	09/07/2022	Annual	S05MS-A-160419-1
NANGYEUL CO., LTD.	NY-THR18750 / Temperature and Humidity Chamber	01/14/2022	Annual	NY-200912201A
Rohde & Schwarz	SMV100A / Signal Generator	07/05/2022	Annual	177633
Keysight	E7515B / UXM 5G Wireless Test Platform	01/07/2022	Annual	MY58300756
T&M SYSTEM	FBSR-04C / LNA1 thru(100M-18G)	09/16/2022	Annual	NONE

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

5. TEST RESULT

5.1. OCCUPIED BANDWIDTH

FCC Rules

Test Requirements:

§ 2.1049 Measurements required: Occupied bandwidth.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049 (a) through (i) as applicable. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedures:

The measurement is performed in accordance with Section 5.4.3 and 5.4.4 of ANSI C63.26.

5.4.3 Occupied bandwidth—Relative measurement procedure

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.
- d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- f) Determine the reference value by either of the following:
 - 1) 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).
 - 2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.
- g) Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
- h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).
- i) 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 amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. The spectral envelope can cross the “-X dB amplitude” at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the “-X dB amplitude.”
- j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.4.4 Occupied bandwidth—Power bandwidth (99%) measurement procedure

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The

frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient).

b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.

d) Set the detection mode to peak, and the trace mode to max-hold.

e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.

f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

Test Results:

Tabular Data of Occupied Bandwidth

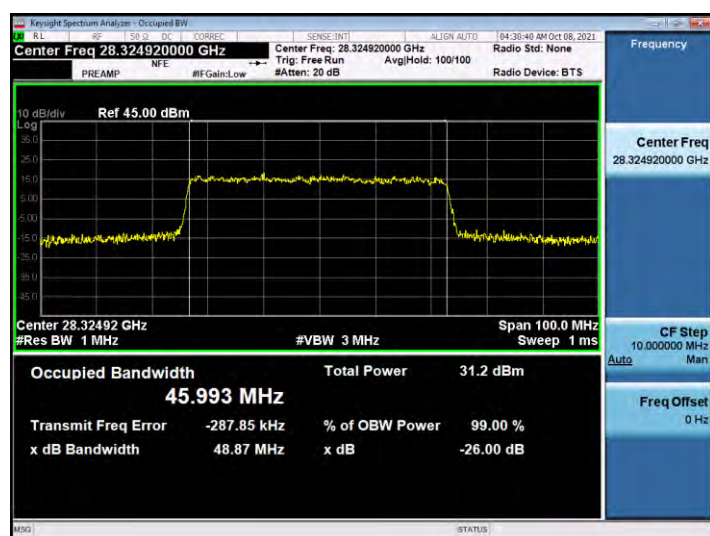
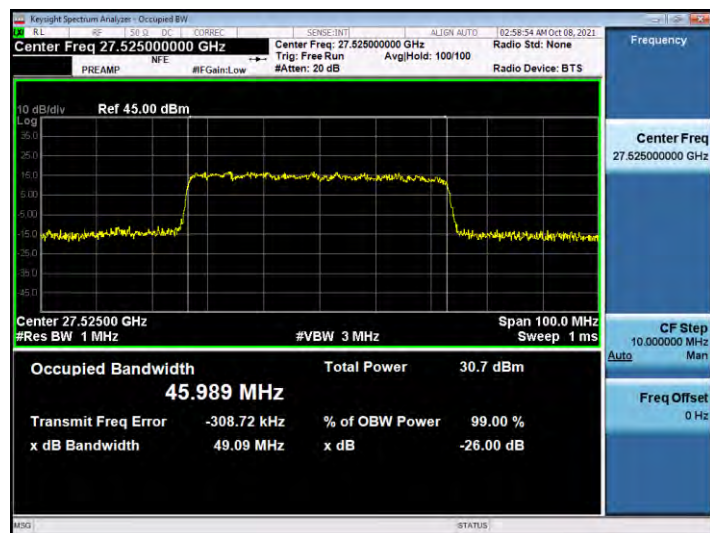
Band	Antenna	CCs Active	Bandwidth	Modulation	Channel	Frequency [MHz]	OBW [MHz]
n261	K patch: module 0	1	50 MHz	BPSK	Low	27525.00	45.989
					Mid	27924.96	46.006
					High	28324.92	45.993
			100 MHz	QPSK	Low	27550.08	91.347
					Mid	27924.96	91.404
					High	28299.96	91.498
		2	50 MHz	BPSK	Low	27550.00	95.382
					Mid	27924.96	95.725
					High	28299.92	95.127
			100 MHz	QPSK	Low	27600.08	190.89
					Mid	27924.96	190.86
					High	28249.96	191.08
	L patch: module 1	1	50 MHz	BPSK	Low	27525.00	46.037
					Mid	27924.96	46.075
					High	28324.92	46.009
			100 MHz	QPSK	Low	27550.08	91.300
					Mid	27924.96	91.186
					High	28299.96	91.556
		2	50 MHz	BPSK	Low	27550.00	95.222
					Mid	27924.96	94.338
					High	28299.92	94.862
			100 MHz	QPSK	Low	27600.08	191.35
					Mid	27924.96	191.27
					High	28249.96	191.52

Band	Antenna	CCs Active	Bandwidth	Modulation	Channel	Frequency [MHz]	OBW [MHz]
n260	K patch: module 0	1	50 MHz	BPSK	Low	37025.04	45.936
					Mid	38499.96	45.786
					High	39975.00	45.934
			100 MHz		Low	37050.00	91.222
					Mid	38499.96	91.042
					High	39949.92	91.031
		2	50 MHz		Low	37050.04	94.690
					Mid	38499.96	95.059
					High	39950.00	94.735
			100 MHz		Low	37100.00	191.04
					Mid	38499.96	191.10
					High	39899.92	191.15
	L patch: module 1	1	50 MHz		Low	37025.04	45.963
					Mid	38499.96	46.016
					High	39975.00	45.986
			100 MHz		Low	37050.00	90.580
					Mid	38499.96	90.914
					High	39949.92	91.527
		2	50 MHz		Low	37050.04	96.873
					Mid	38499.96	94.919
					High	39950.00	96.017
			100 MHz		Low	37100.00	191.29
					Mid	38499.96	191.63
					High	39899.92	190.34

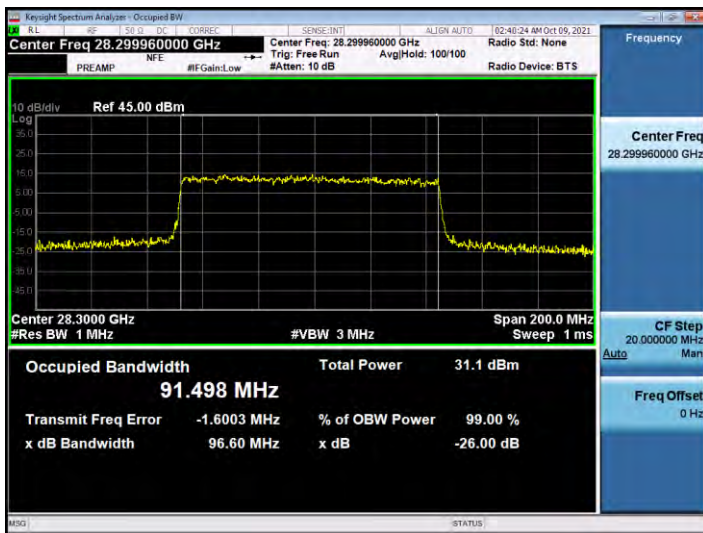
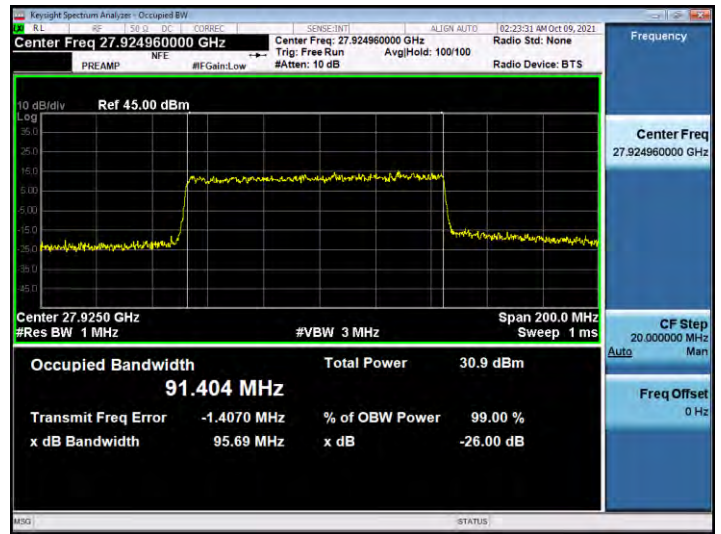
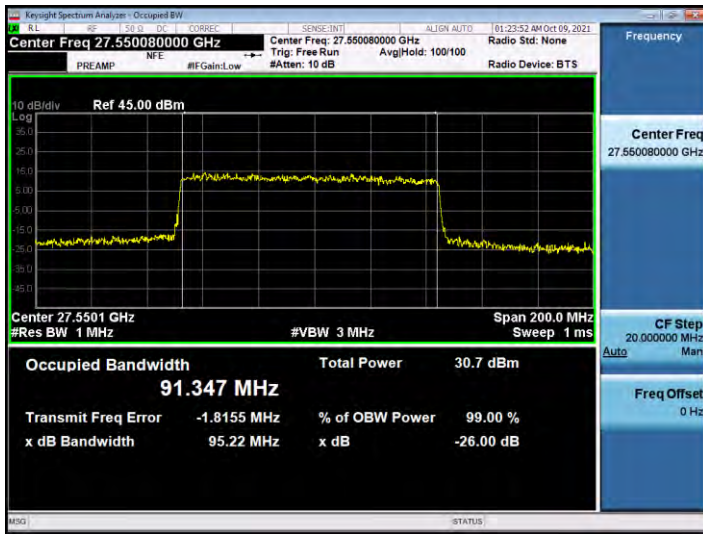
Plot Data of RF Occupied Bandwidth

1. K patch: module 0, n261

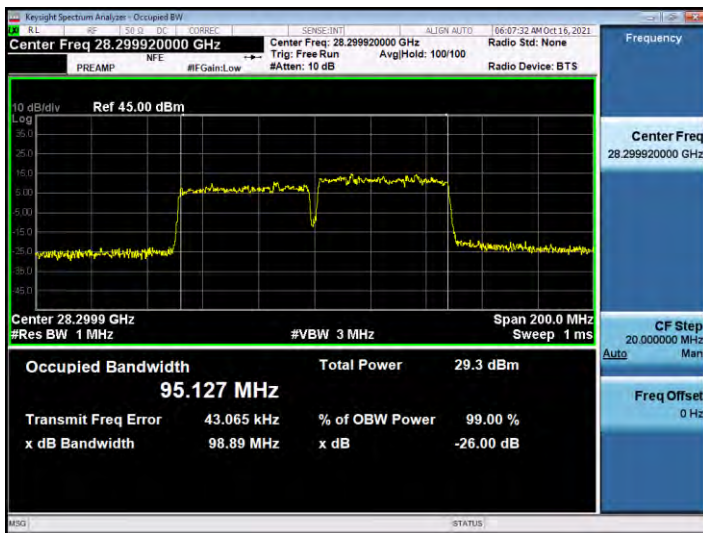
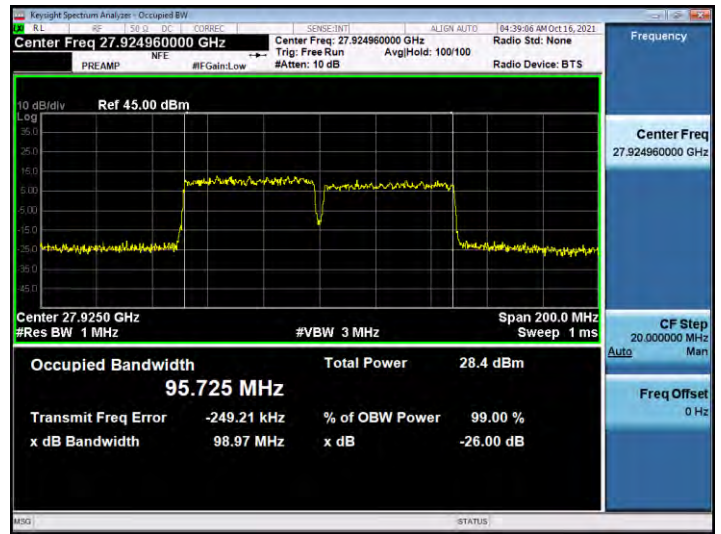
50 MHz, 1CC



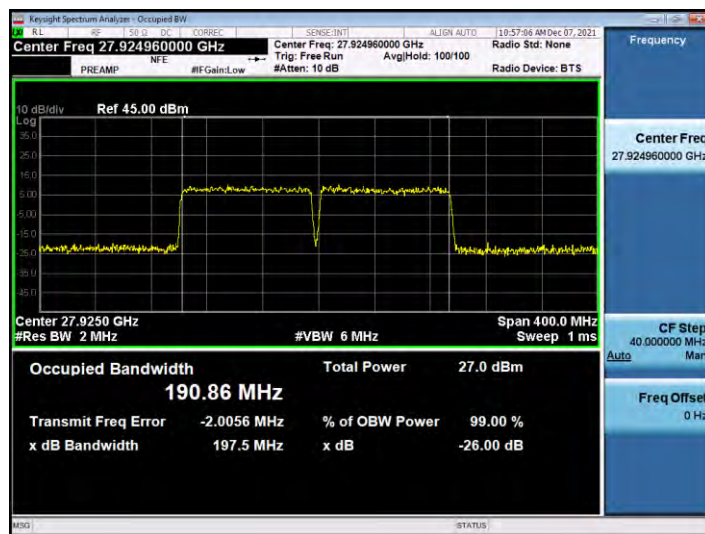
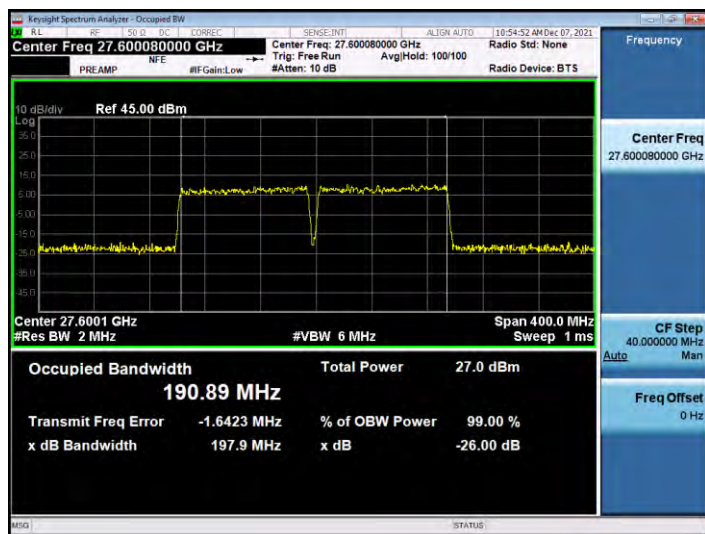
100 MHz, 1CC



50 MHz, 2CC



100 MHz, 2CC



2. L patch: module 1, n261

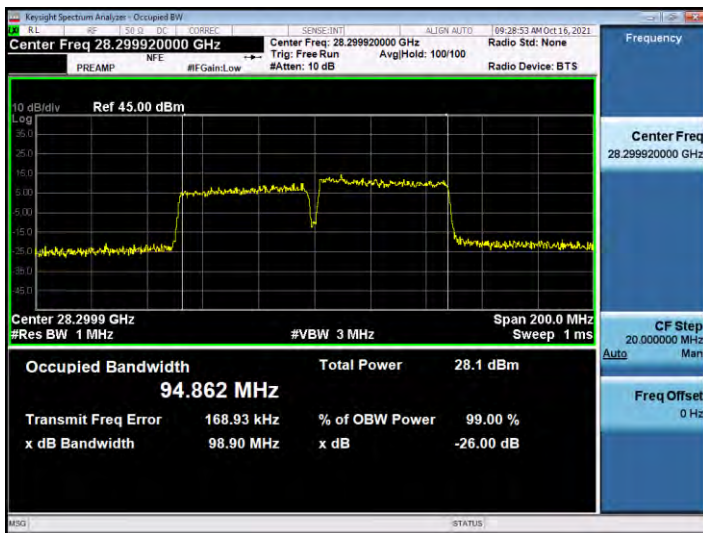
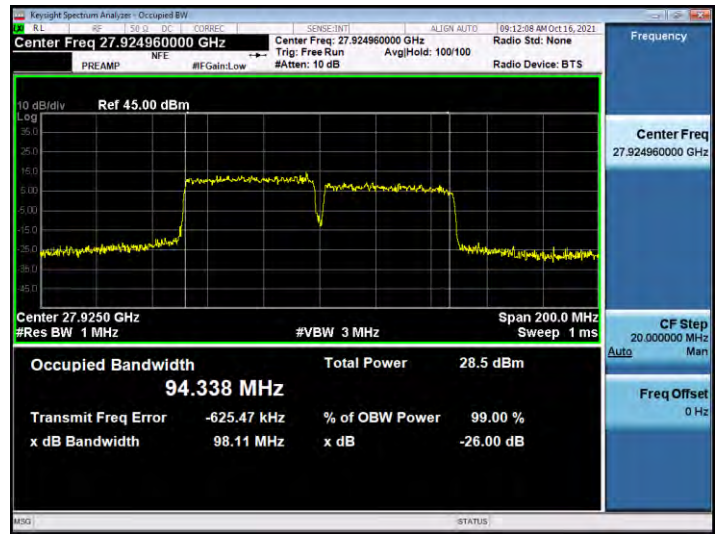
50 MHz, 1CC



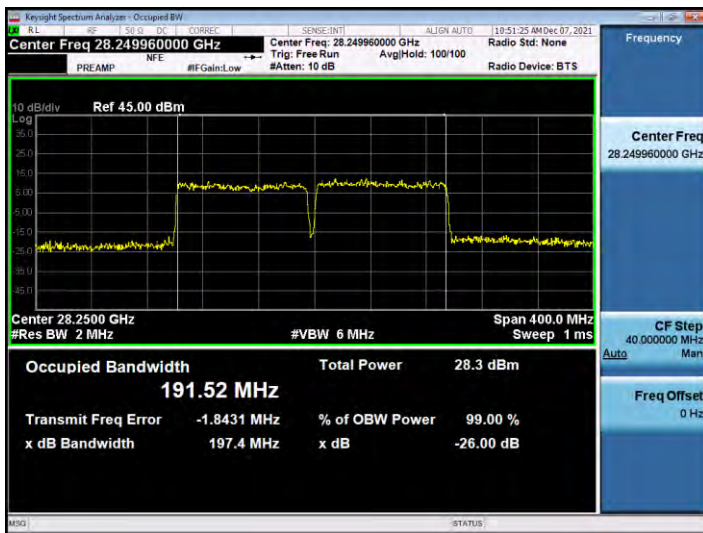
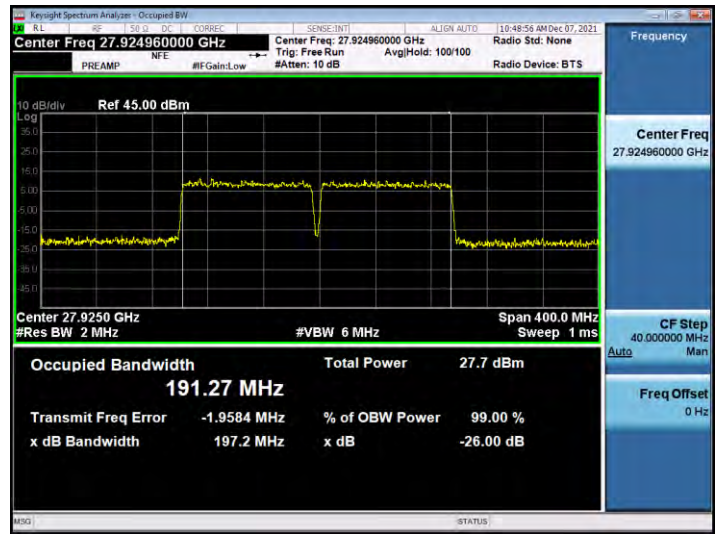
100 MHz, 1CC



50 MHz, 2CC



100 MHz, 2CC

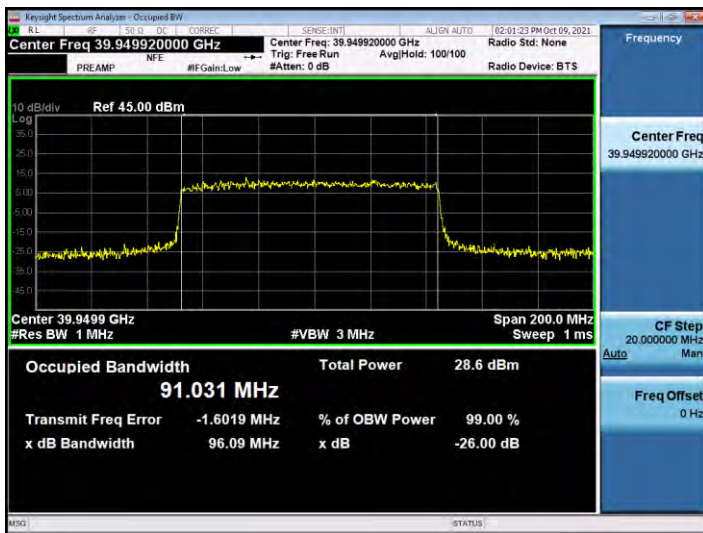
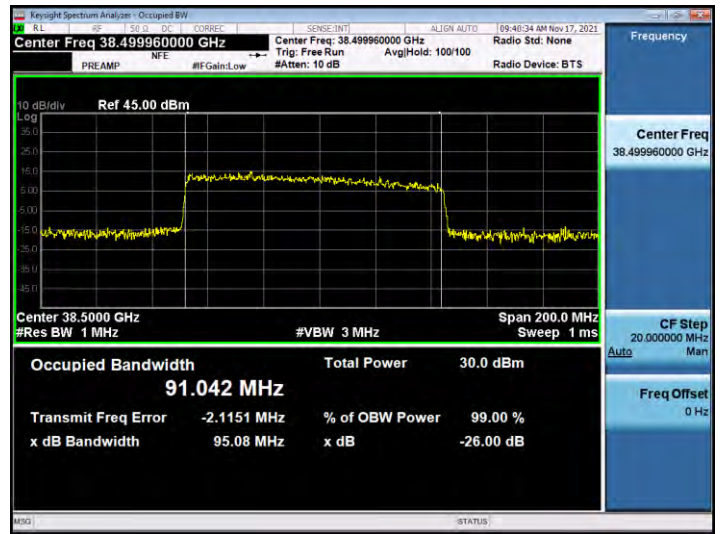
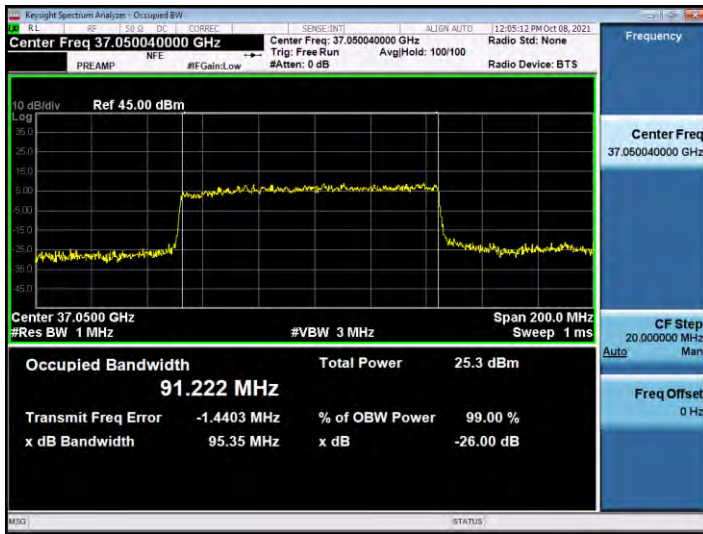


3. K patch: module 0, n260

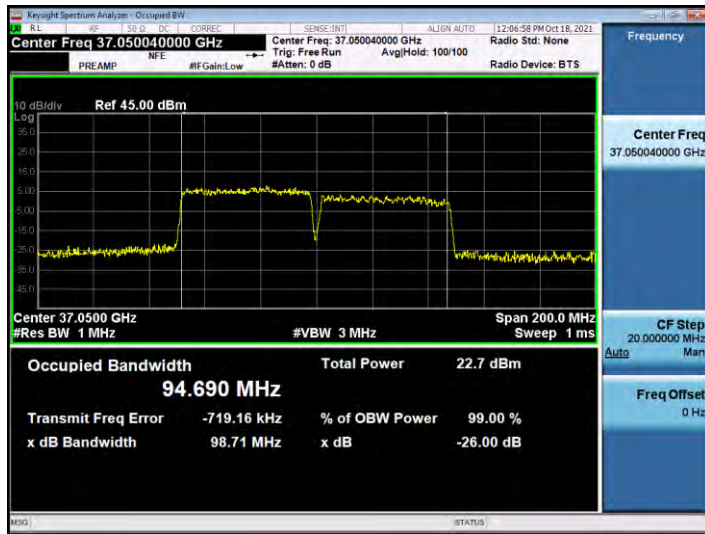
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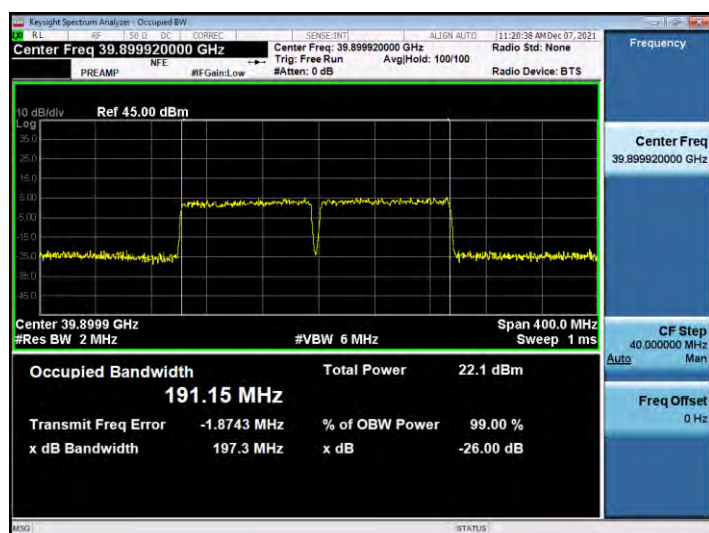
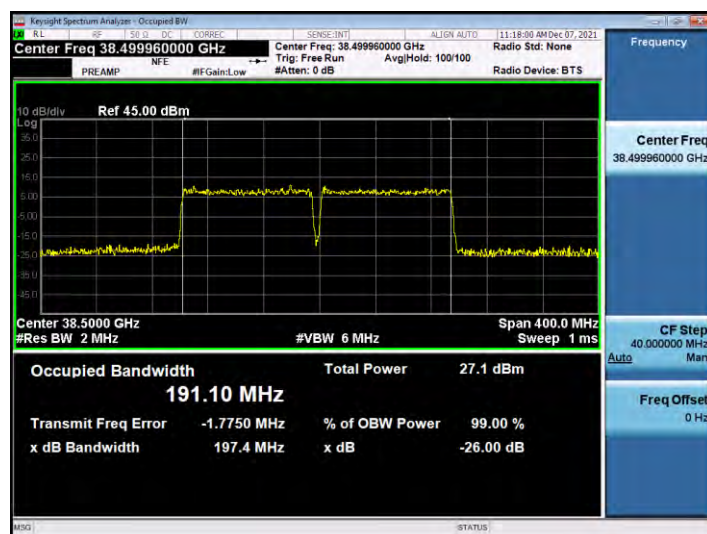
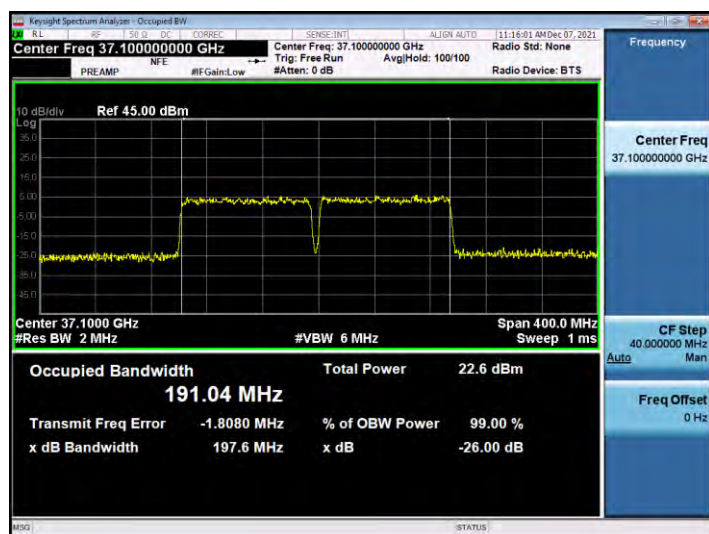
100 MHz, 1CC



50 MHz, 2CC



100 MHz, 2CC

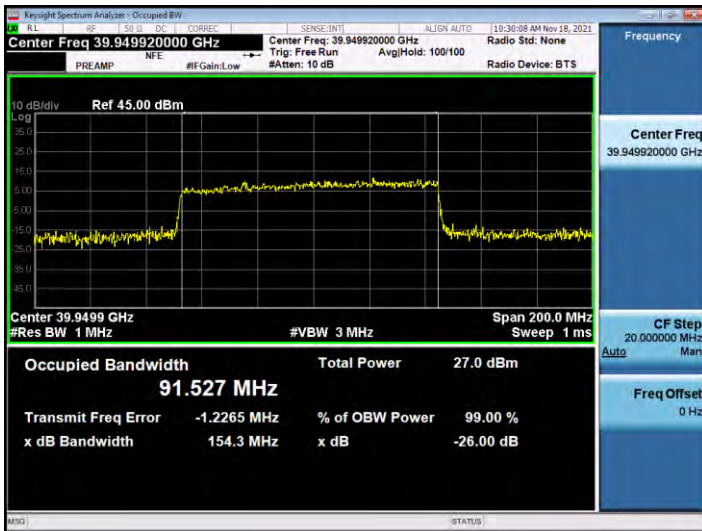
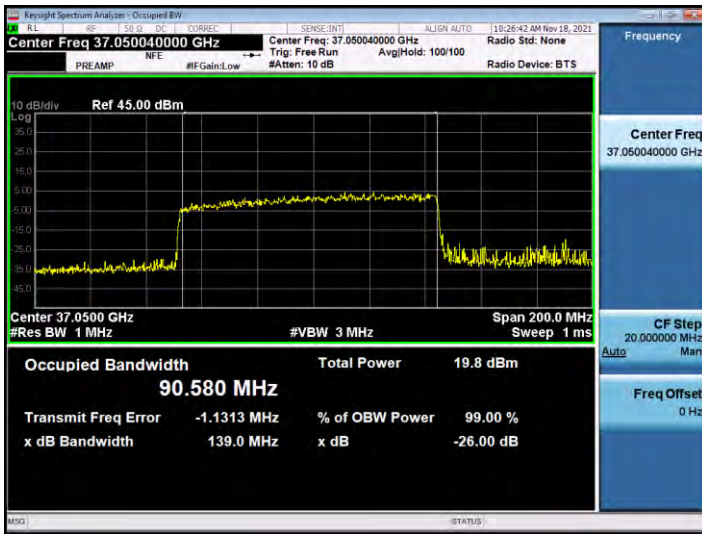


4. L patch: module 1, n260

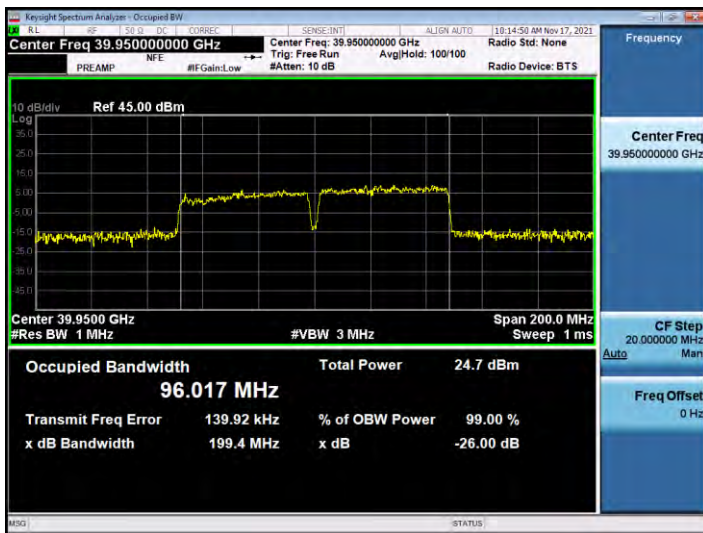
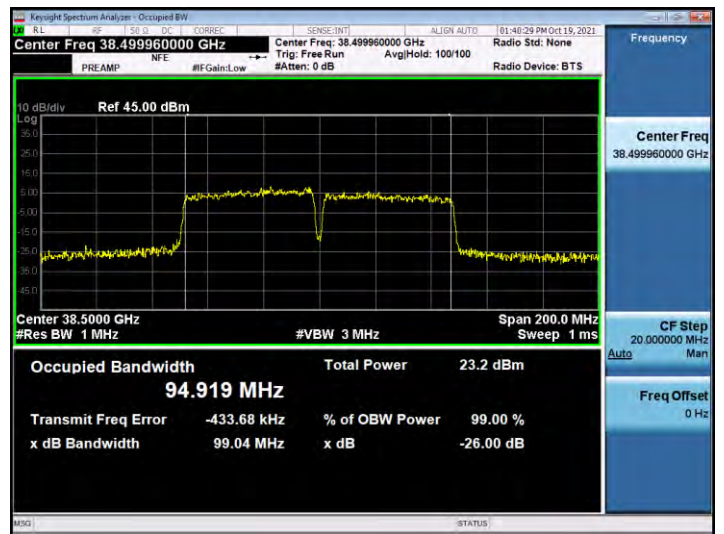
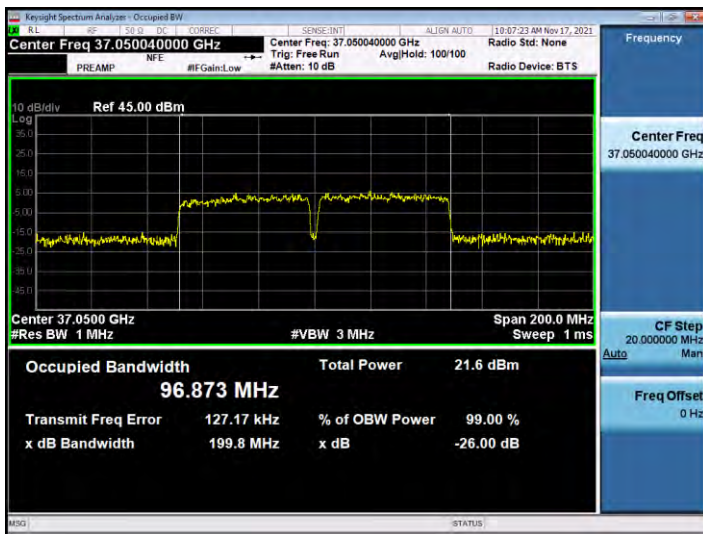
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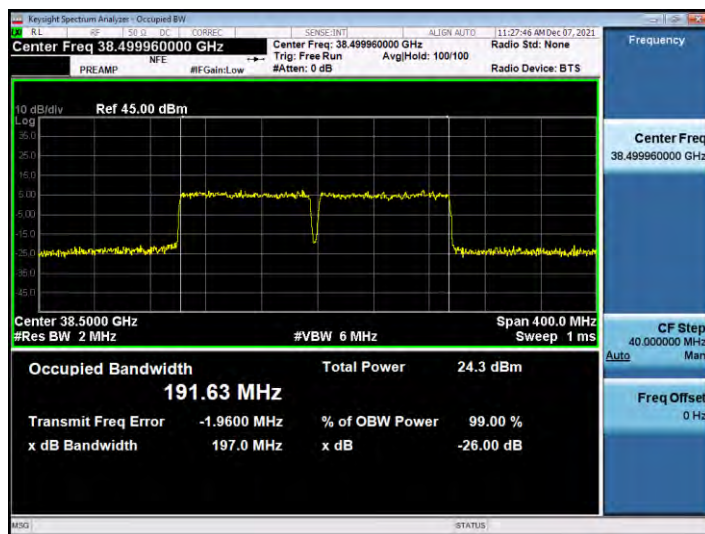
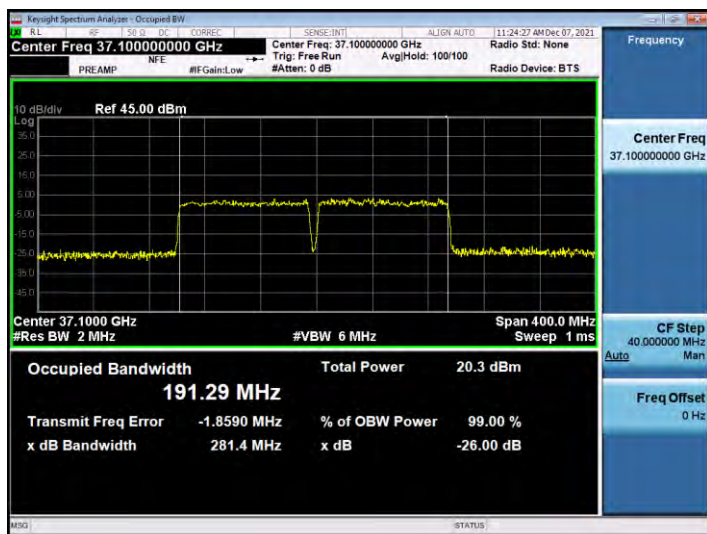
100 MHz, 1CC



50 MHz, 2CC



100 MHz, 2CC



5.2. EQUIVALENT ISOTROPIC RADIATED POWER

Test Overview

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

The average power of the sum of all antenna elements is limited to a maximum EIRP of +43 dBm.

FCC Rules

Test Requirements:

§ 30.202 Power limits.

- (b) For mobile stations, the average power of the sum of all antenna elements is limited to a maximum EIRP of +43 dBm.

Test Procedures:

The measurement is performed in accordance with Section 5.2.4.4.2 of ANSI C63.26.

- a) Set span to $2 \times$ to $3 \times$ the OBW.
- b) Set RBW = 1% to 5% of the OBW.
- c) Set VBW $\geq 3 \times$ RBW.
- d) Set number of measurement points in sweep $\geq 2 \times$ span / RBW.
- e) Sweep time:
 - 1) Set = auto-couple, or
 - 2) Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ for single sweep (automation-compatible) measurement.
- f) Detector = power averaging (rms).
- g) Set sweep trigger to "free run."
- h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function with band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- j) Add $10 \log (1/\text{duty cycle})$ to the measured power level to compute the average power during continuous transmission.

Note:

1. The EUT was tested under rotating conditions and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
2. Elements within the same antenna array are correlated to produce beamforming array gain. Antenna arrays cannot be correlated with another antenna array. During testing, only one antenna array was active.
3. Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst case polarization/positioning. It was determined that H=0 degree and V=90 degree are the worst case positions when the EUT was transmitting horizontally and vertically polarized beams, respectively.

Test Results:
K patch: module 0, n261
SISO

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	27525.00	Low	H	BPSK	H	10/11	27.03
		27924.96	Mid	H	QPSK	H	10/11	26.73
		28324.92	High	H	QPSK	V	10/11	27.58
		27525.00	Low	H	QPSK	H	1/16	27.01
		27525.00	Low	H	16QAM	H	10/11	24.97
		27525.00	Low	H	64QAM	H	1/16	23.04
	100 MHz	27550.08	Low	H	QPSK	H	1/33	27.22
		27924.96	Mid	H	QPSK	H	20/22	26.66
		28299.96	High	H	QPSK	V	1/33	28.50
		27550.08	Low	H	BPSK	H	1/33	27.21
		27550.08	Low	H	16QAM	H	20/22	25.16
		27550.08	Low	H	64QAM	H	1/33	23.12
2	50 MHz	27550.00	Low	H	BPSK	H	32/0	22.84
		27924.96	Mid	H	BPSK	H	10/11	22.64
		28299.92	High	H	BPSK	V	10/11	23.20
		27550.00	Low	H	QPSK	H	32/0	22.83
		27550.00	Low	H	16QAM	H	32/0	20.65
		27550.00	Low	H	64QAM	H	32/0	18.67
	100 MHz	27600.08	Low	H	BPSK	H	20/22	23.08
		27924.96	Mid	H	BPSK	H	20/22	22.85
		28249.96	High	H	BPSK	V	20/22	22.45
		27600.08	Low	H	QPSK	H	20/22	22.98
		27600.08	Low	H	16QAM	H	20/22	20.87
		27600.08	Low	H	64QAM	H	20/22	18.85

SISO Dual

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	27525.00	Low	H+V	QPSK	H	10/11	27.50
		27924.96	Mid	H+V	QPSK	H	1/16	27.65
		28324.92	High	H+V	QPSK	H	1/16	27.83
		27525.00	Low	H+V	BPSK	H	10/11	27.45
		27525.00	Low	H+V	16QAM	H	10/11	25.35
		27525.00	Low	H+V	64QAM	H	1/16	23.39
	100 MHz	27550.08	Low	H+V	QPSK	H	20/22	27.58
		27924.96	Mid	H+V	QPSK	H	20/22	27.57
		28299.96	High	H+V	QPSK	H	20/22	28.05
		27550.08	Low	H+V	BPSK	H	20/22	27.50
		27550.08	Low	H+V	16QAM	H	1/33	25.34
		27550.08	Low	H+V	64QAM	H	1/33	23.58
2	50 MHz	27550.00	Low	H+V	QPSK	H	10/11	23.39
		27924.96	Mid	H+V	QPSK	H	10/11	23.17
		28299.92	High	H+V	QPSK	H	10/11	23.82
		27550.00	Low	H+V	BPSK	H	10/11	23.30
		27550.00	Low	H+V	16QAM	H	32/0	21.51
		27550.00	Low	H+V	64QAM	H	32/0	19.45
	100 MHz	27600.08	Low	H+V	QPSK	H	64/0	23.11
		27924.96	Mid	H+V	QPSK	H	20/22	23.65
		28249.96	High	H+V	QPSK	H	20/22	22.88
		27600.08	Low	H+V	BPSK	H	64/0	22.99
		27600.08	Low	H+V	16QAM	H	64/0	20.89
		27600.08	Low	H+V	64QAM	H	64/0	18.86

L patch: module 1, n261
SISO

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	27525.00	Low	H	BPSK	V	10/11	27.65
		27924.96	Mid	H	QPSK	H	1/16	26.51
		28324.92	High	H	QPSK	V	10/11	27.55
		27525.00	Low	H	QPSK	V	1/16	27.54
		27525.00	Low	H	16QAM	V	1/16	25.32
		27525.00	Low	H	64QAM	V	1/16	23.37
	100 MHz	27550.08	Low	H	QPSK	V	1/33	27.35
		27924.96	Mid	H	QPSK	H	1/33	26.56
		28299.96	High	H	QPSK	V	1/33	28.02
		27550.08	Low	H	BPSK	V	1/33	27.34
		27550.08	Low	H	16QAM	V	1/33	25.27
		27550.08	Low	H	64QAM	V	1/33	22.95
2	50 MHz	27550.00	Low	H	QPSK	V	10/11	23.71
		27924.96	Mid	V	BPSK	V	32/0	20.82
		28299.92	High	H	BPSK	V	32/0	23.30
		27550.00	Low	H	BPSK	V	32/0	23.70
		27550.00	Low	H	16QAM	V	10/11	21.55
		27550.00	Low	H	64QAM	V	32/0	19.75
	100 MHz	27600.08	Low	H	BPSK	V	64/0	21.64
		27924.96	Mid	H	BPSK	H	20/22	22.89
		28249.96	High	H	BPSK	V	20/22	23.22
		27600.08	Low	H	QPSK	V	64/0	21.68
		27600.08	Low	H	16QAM	V	64/0	19.57
		27600.08	Low	H	64QAM	V	64/0	17.80

SISO Dual

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	27525.00	Low	H+V	BPSK	H	10/11	27.80
		27924.96	Mid	H+V	BPSK	H	10/11	27.47
		28324.92	High	H+V	BPSK	H	10/11	27.10
		27525.00	Low	H+V	QPSK	H	10/11	27.71
		27525.00	Low	H+V	16QAM	H	1/16	25.61
		27525.00	Low	H+V	64QAM	H	1/16	23.62
	100 MHz	27550.08	Low	H+V	BPSK	H	1/33	28.29
		27924.96	Mid	H+V	BPSK	V	20/22	27.54
		28299.96	High	H+V	BPSK	H	20/22	26.80
		27550.08	Low	H+V	QPSK	H	1/33	28.25
		27550.08	Low	H+V	16QAM	H	1/33	26.15
		27550.08	Low	H+V	64QAM	H	1/33	24.08
2	50 MHz	27550.00	Low	H+V	QPSK	H	32/0	23.79
		27924.96	Mid	H+V	QPSK	V	10/11	23.35
		28299.92	High	H+V	QPSK	H	32/0	22.74
		27550.00	Low	H+V	BPSK	H	32/0	23.78
		27550.00	Low	H+V	16QAM	H	32/0	21.77
		27550.00	Low	H+V	64QAM	H	32/0	19.93
	100 MHz	27600.08	Low	H+V	QPSK	H	64/0	23.95
		27924.96	Mid	H+V	QPSK	V	20/22	24.02
		28249.96	High	H+V	QPSK	H	20/22	23.45
		27924.96	Mid	H+V	BPSK	H	20/22	23.93
		27924.96	Mid	H+V	16QAM	H	20/22	21.81
		27924.96	Mid	H+V	64QAM	H	64/0	19.85

K patch: module 0, n260
SISO

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	37025.04	Low	H	BPSK	V	10/11	25.83
		38499.96	Mid	H	BPSK	V	10/11	26.54
		39975.00	High	H	BPSK	V	1/16	22.58
		37025.04	Low	H	QPSK	V	10/11	25.55
		37025.04	Low	H	16QAM	V	10/11	23.37
		37025.04	Low	H	64QAM	V	10/11	21.30
	100 MHz	37050.00	Low	H	BPSK	V	1/22	25.41
		38499.96	Mid	H	BPSK	V	1/22	25.96
		39949.92	High	H	BPSK	V	1/22	23.71
		37050.00	Low	H	QPSK	V	1/33	25.41
		37050.00	Low	H	16QAM	V	1/22	23.31
		37050.00	Low	H	64QAM	V	20/22	21.16
2	50 MHz	37050.04	Low	H	BPSK	V	10/11	20.88
		38499.96	Mid	H	BPSK	V	10/11	21.37
		39950.00	High	H	BPSK	V	10/11	19.08
		37050.04	Low	H	QPSK	V	10/11	20.11
		37050.04	Low	H	16QAM	V	32/0	18.76
		37050.04	Low	H	64QAM	V	32/0	16.65
	100 MHz	37100.00	Low	V	BPSK	V	64/0	19.43
		38499.96	Mid	H	BPSK	V	20/22	20.94
		39899.92	High	H	BPSK	V	20/22	18.82
		37100.00	Low	V	QPSK	V	64/0	19.07
		37100.00	Low	V	16QAM	V	64/0	17.52
		37100.00	Low	V	64QAM	V	64/0	15.54

SISO Dual

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	37025.04	Low	H+V	QPSK	H	10/11	23.99
		38499.96	Mid	H+V	QPSK	H	1/16	27.44
		39975.00	High	H+V	QPSK	H	10/11	25.65
		37025.04	Low	H+V	BPSK	H	1/11	23.98
		37025.04	Low	H+V	16QAM	H	10/11	21.68
		37025.04	Low	H+V	64QAM	H	10/11	19.57
	100 MHz	37050.00	Low	H+V	QPSK	H	20/22	22.54
		38499.96	Mid	H+V	QPSK	H	20/22	25.33
		39949.92	High	H+V	QPSK	H	20/22	25.57
		37050.00	Low	H+V	BPSK	H	1/0	21.69
		37050.00	Low	H+V	16QAM	H	20/22	20.34
		37050.00	Low	H+V	64QAM	H	20/22	17.12
2	50 MHz	37050.04	Low	H+V	BPSK	H	10/11	17.70
		38499.96	Mid	H+V	QPSK	H	32/0	21.50
		39950.00	High	H+V	BPSK	H	10/11	20.99
		37050.04	Low	H+V	QPSK	H	10/11	17.58
		37050.04	Low	H+V	16QAM	H	10/11	16.30
		37050.04	Low	H+V	64QAM	H	10/11	14.45
	100 MHz	37100.00	Low	H+V	BPSK	H	64/0	17.98
		38499.96	Mid	H+V	BPSK	H	20/22	22.04
		39899.92	High	H+V	BPSK	H	20/22	21.36
		37100.00	Low	H+V	QPSK	H	64/0	17.87
		37100.00	Low	H+V	16QAM	H	20/22	16.88
		37100.00	Low	H+V	64QAM	H	20/22	14.64

L patch: module 1, n260
SISO

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	37025.04	Low	H	QPSK	H	1/16	22.75
		38499.96	Mid	H	BPSK	H	10/11	24.35
		39975.00	High	H	BPSK	V	10/11	23.24
		37025.04	Low	H	BPSK	H	10/11	22.69
		37025.04	Low	H	16QAM	H	10/11	20.65
		37025.04	Low	H	64QAM	H	1/16	18.51
	100 MHz	37050.00	Low	V	BPSK	H	1/33	22.84
		38499.96	Mid	H	QPSK	H	1/22	23.37
		39949.92	High	H	BPSK	V	1/33	23.61
		37050.00	Low	V	QPSK	H	1/22	22.69
		37050.00	Low	V	16QAM	H	1/22	20.73
		37050.00	Low	V	64QAM	H	1/22	18.72
2	50 MHz	37050.04	Low	V	BPSK	H	32/0	18.39
		38499.96	Mid	H	BPSK	H	10/11	18.68
		39950.00	High	H	BPSK	V	32/0	18.55
		37050.04	Low	V	QPSK	H	32/0	18.31
		37050.04	Low	V	16QAM	H	32/0	16.87
		37050.04	Low	H	64QAM	H	10/11	15.08
	100 MHz	37100.00	Low	V	QPSK	H	20/22	17.44
		38499.96	Mid	H	QPSK	H	20/22	17.54
		39899.92	High	H	QPSK	V	20/22	18.44
		37100.00	Low	V	BPSK	H	20/22	17.42
		37100.00	Low	H	16QAM	H	64/0	16.04
		37100.00	Low	H	64QAM	H	64/0	14.19

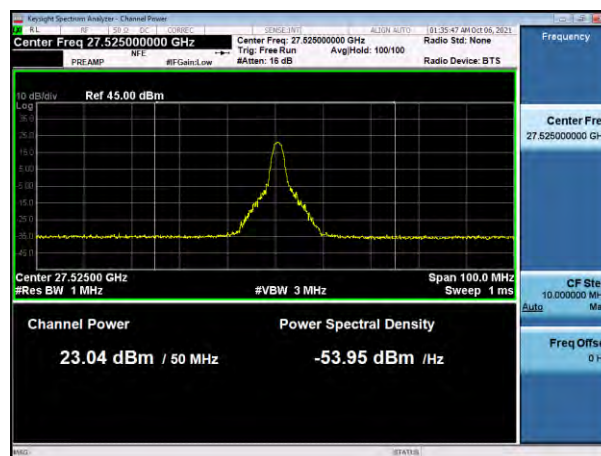
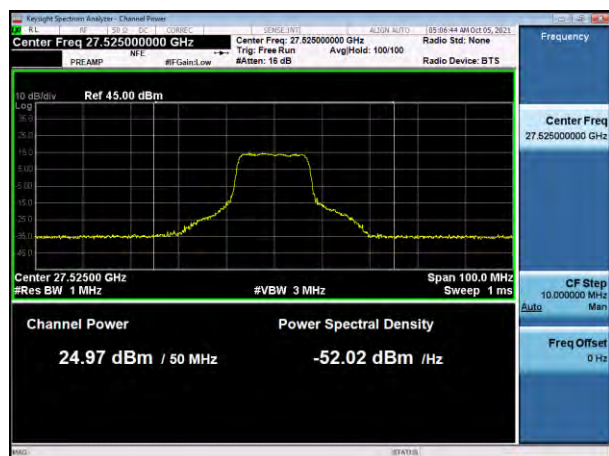
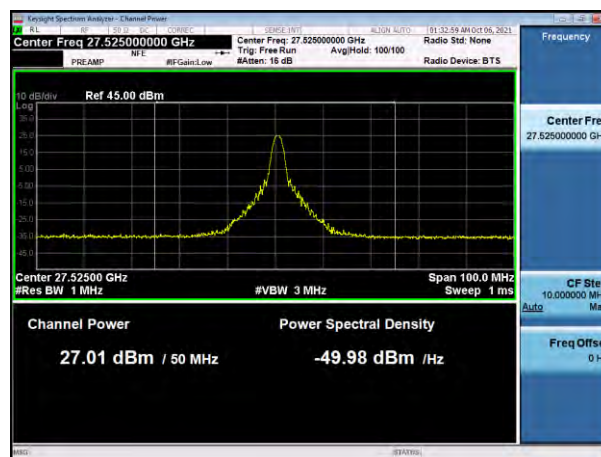
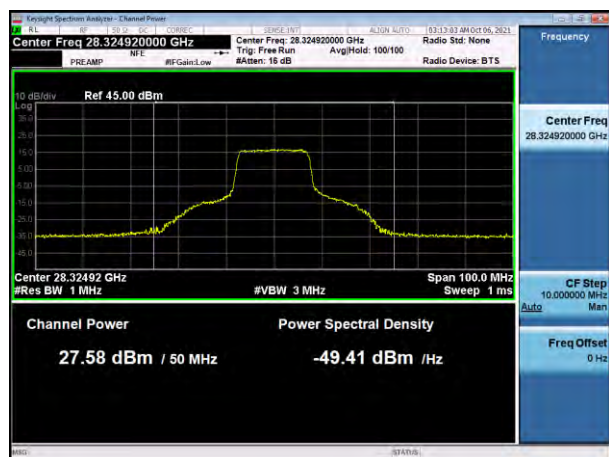
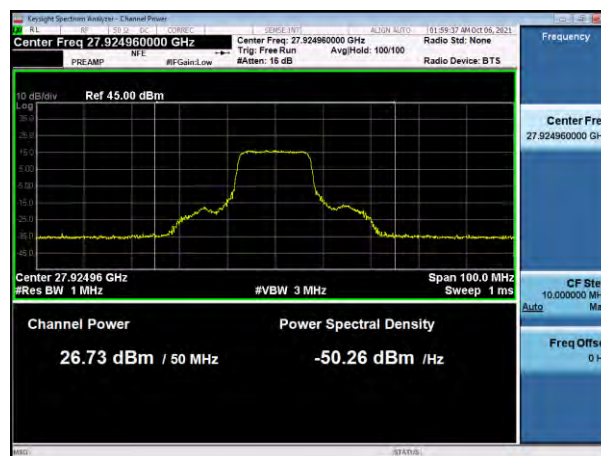
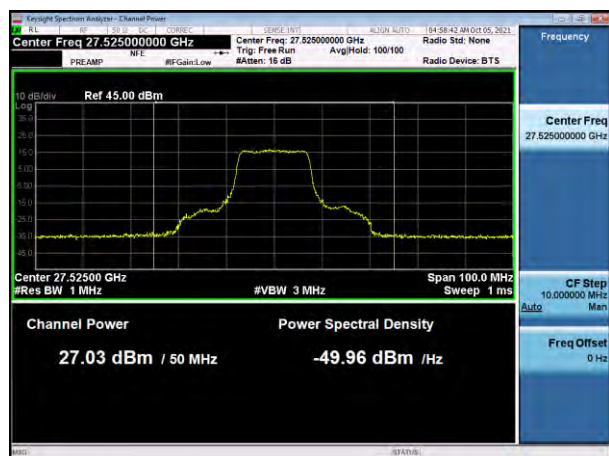
SISO Dual

CCs active	BW	Frequency [MHz]	Channel	Beam Pol.	Modulation	Ant. Pol. [H/V]	RB Size/Offset	EIRP [dBm]
1	50 MHz	37025.04	Low	H+V	QPSK	H	1/16	23.53
		38499.96	Mid	H+V	QPSK	H	1/16	24.37
		39975.00	High	H+V	QPSK	H	10/11	21.60
		37025.04	Low	H+V	BPSK	H	1/16	23.42
		37025.04	Low	H+V	16QAM	H	1/16	21.28
		37025.04	Low	H+V	64QAM	H	10/11	19.22
	100 MHz	37050.00	Low	H+V	BPSK	H	1/33	22.86
		38499.96	Mid	H+V	BPSK	H	1/33	24.01
		39949.92	High	H+V	BPSK	H	1/43	22.89
		37050.00	Low	H+V	QPSK	H	20/22	22.83
		37050.00	Low	H+V	16QAM	H	1/33	20.68
		37050.00	Low	H+V	64QAM	H	20/22	18.87
2	50 MHz	37050.04	Low	H+V	QPSK	H	16/0	18.58
		38499.96	Mid	H+V	BPSK	H	10/11	18.25
		39950.00	High	H+V	BPSK	H	10/11	16.96
		37050.04	Low	H+V	BPSK	H	16/0	18.47
		37050.04	Low	H+V	16QAM	H	16/0	16.80
		37050.04	Low	H+V	64QAM	H	16/0	15.56
	100 MHz	37100.00	Low	H+V	BPSK	H	32/0	17.35
		38499.96	Mid	H+V	BPSK	H	32/0	18.58
		39899.92	High	H+V	BPSK	H	32/0	17.67
		37100.00	Low	H+V	QPSK	H	64/0	17.65
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		37100.00	Low	H+V	64QAM	H	32/0	14.53

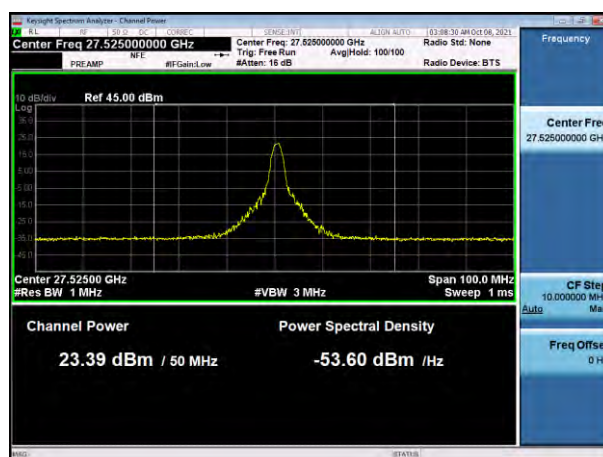
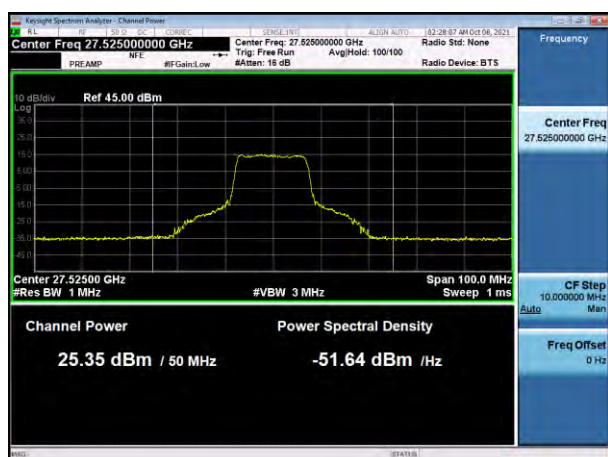
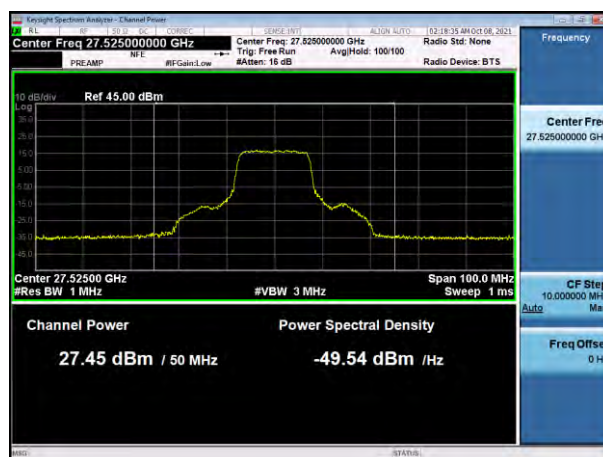
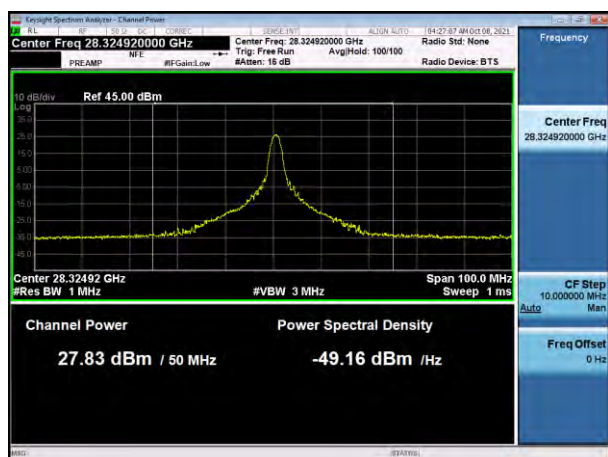
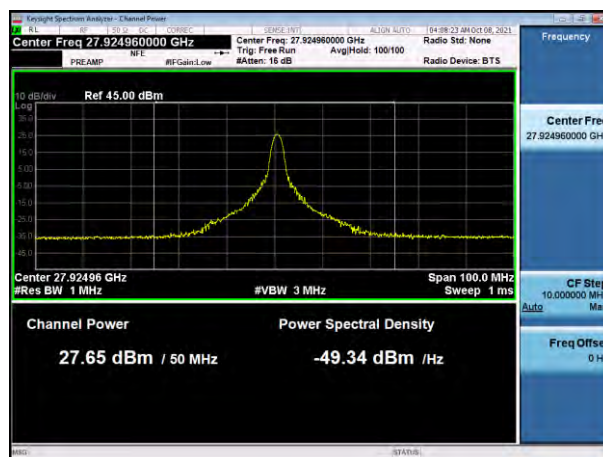
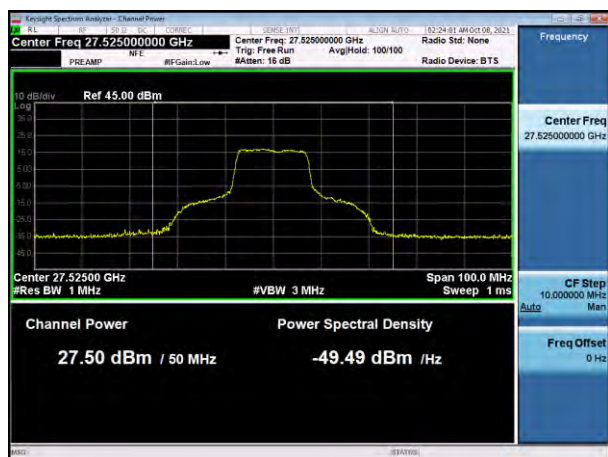
Plot Data of EIRP

1. K patch: module 0, n261

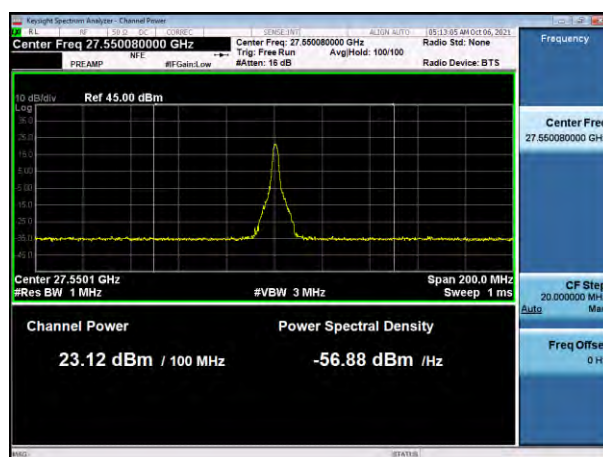
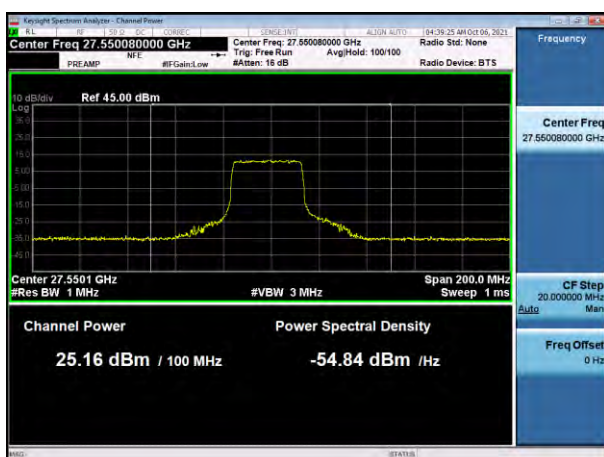
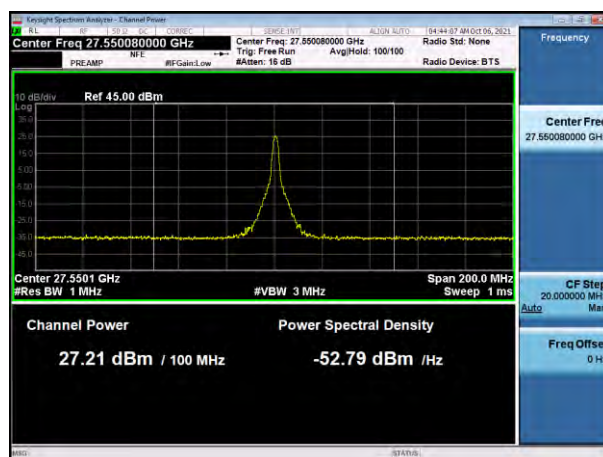
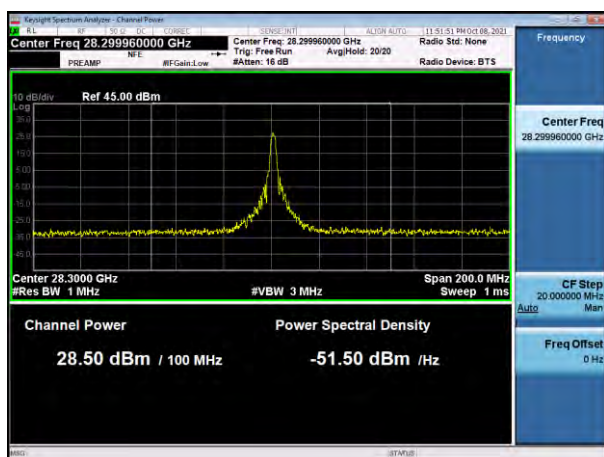
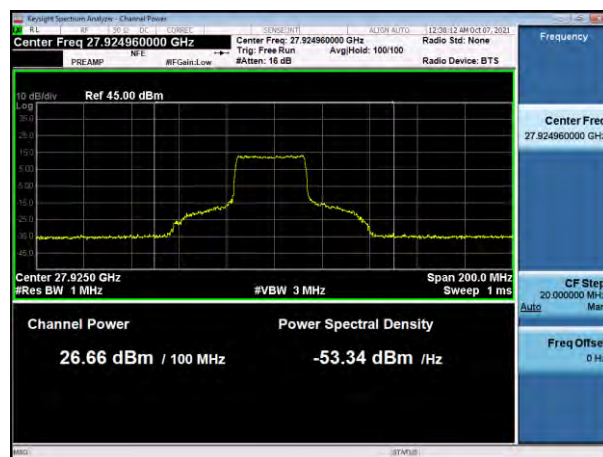
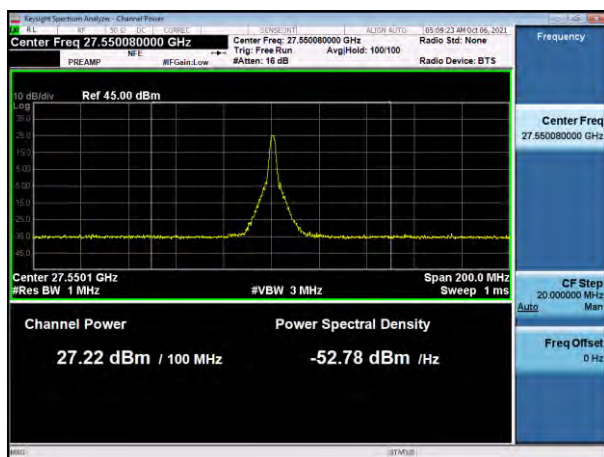
50 MHz, 1CC SISO



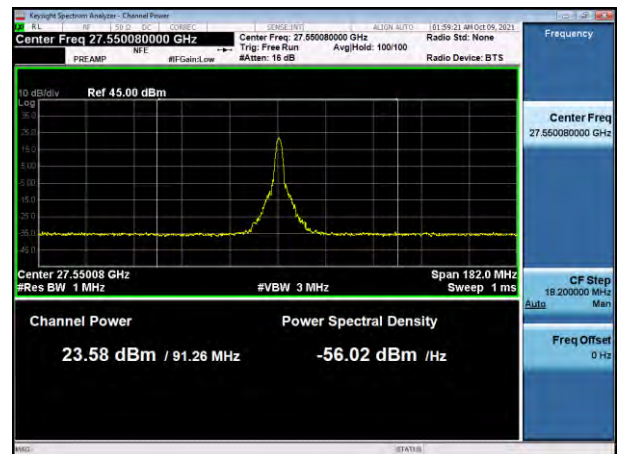
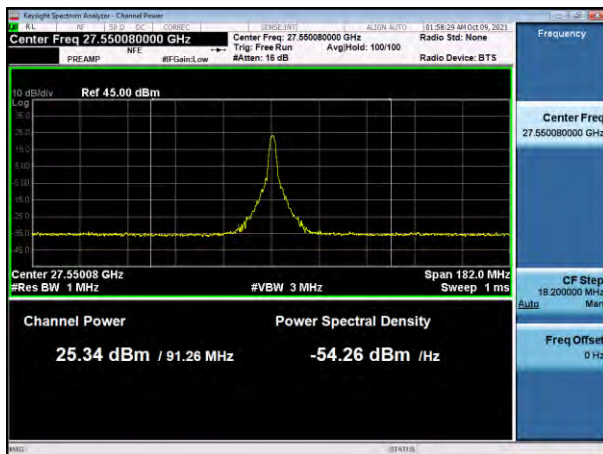
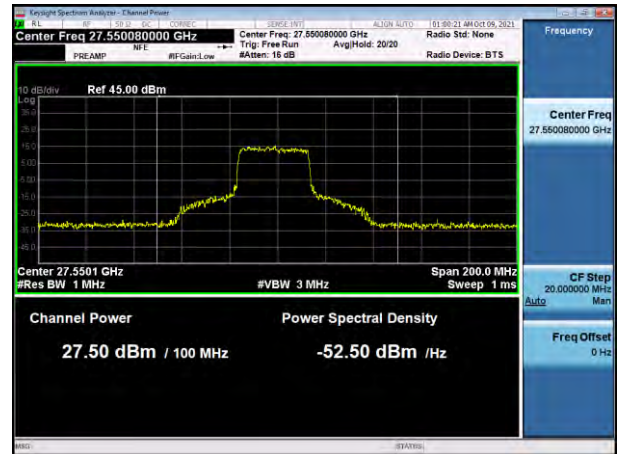
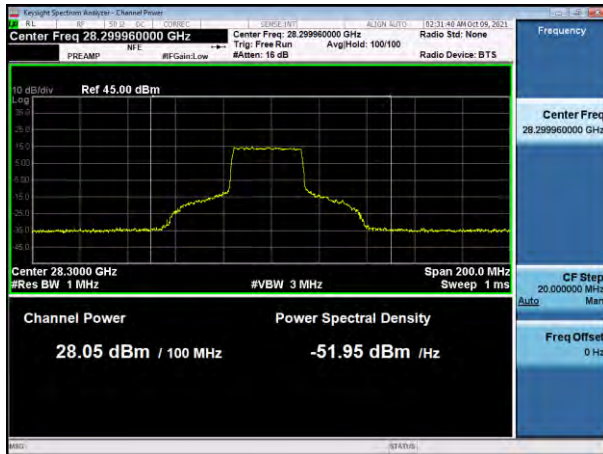
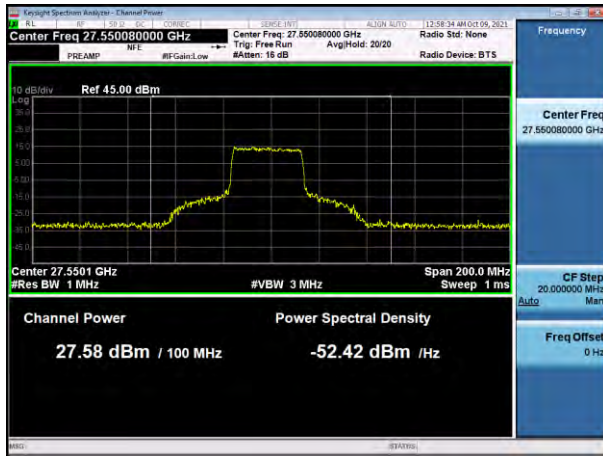
50 MHz, 1CC SISO Dual



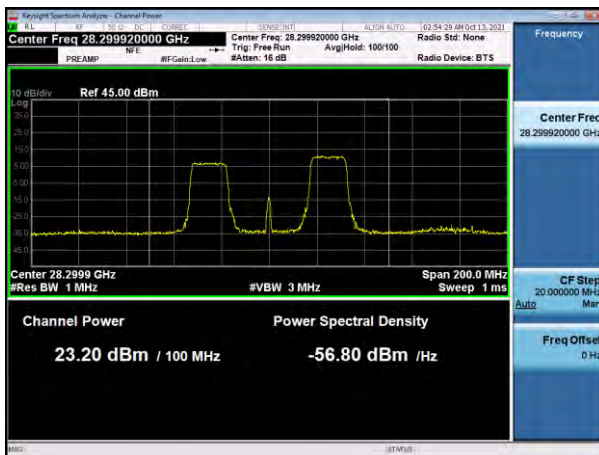
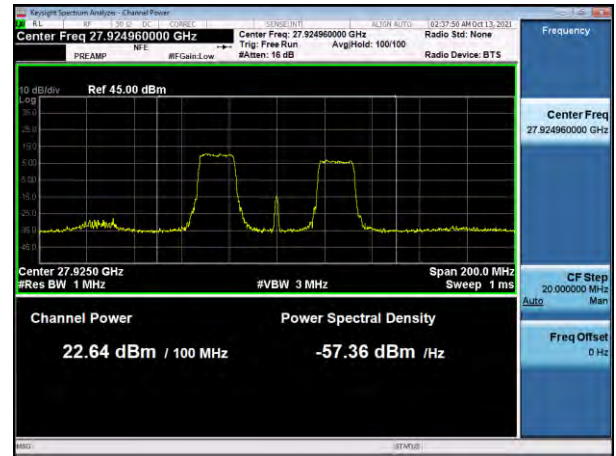
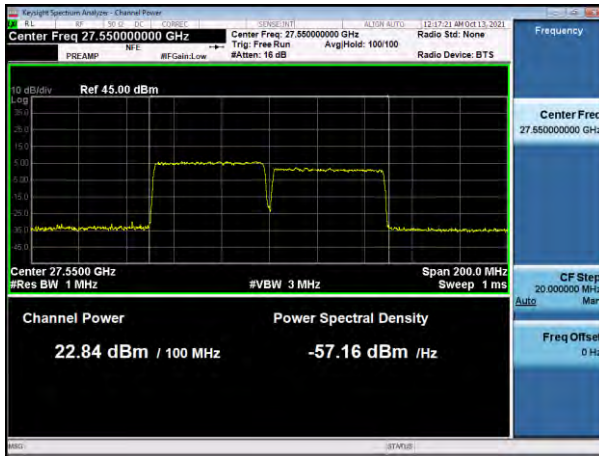
100 MHz, 1CC SISO



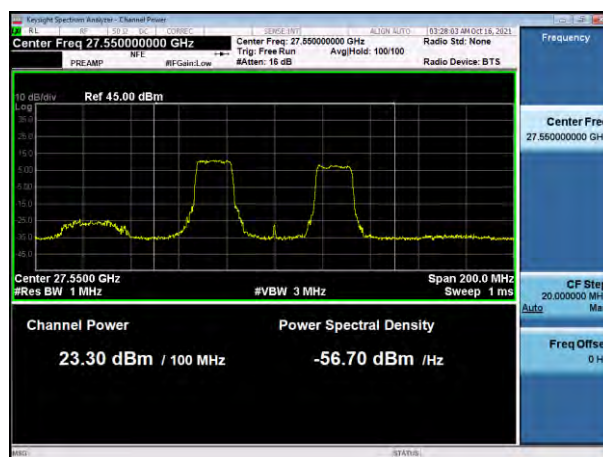
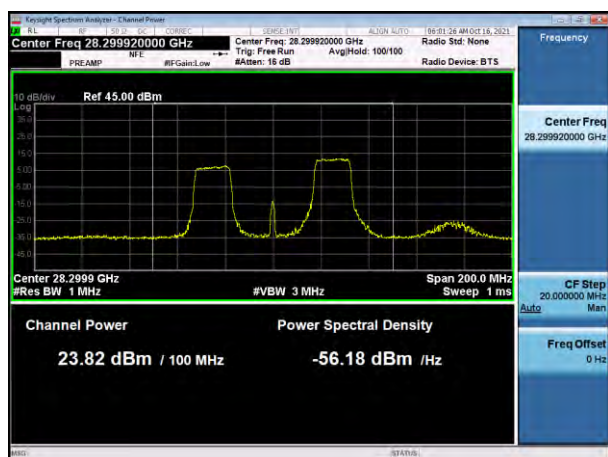
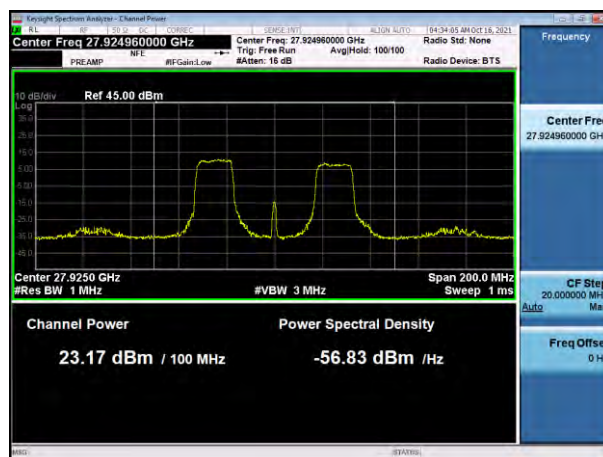
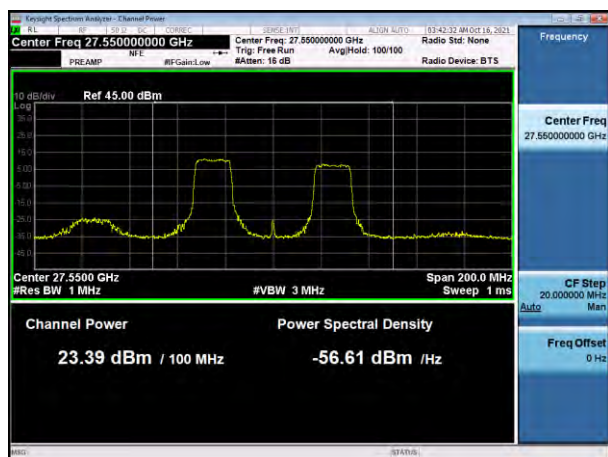
100 MHz, 1CC SISO Dual



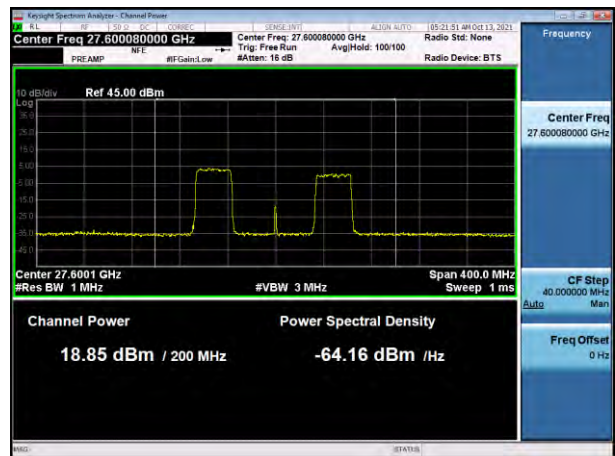
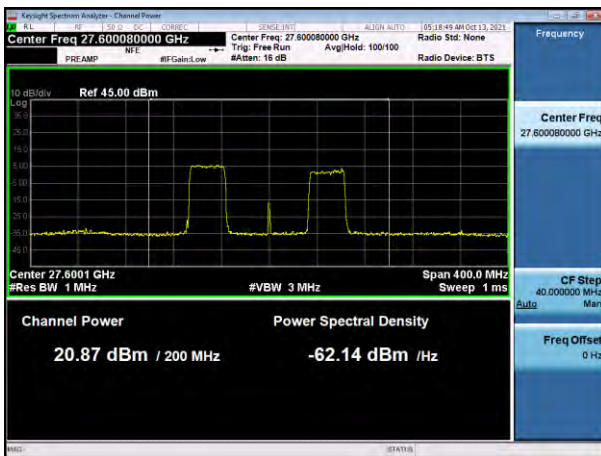
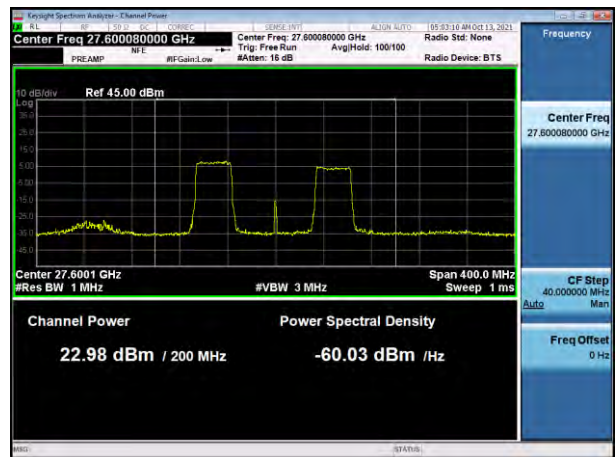
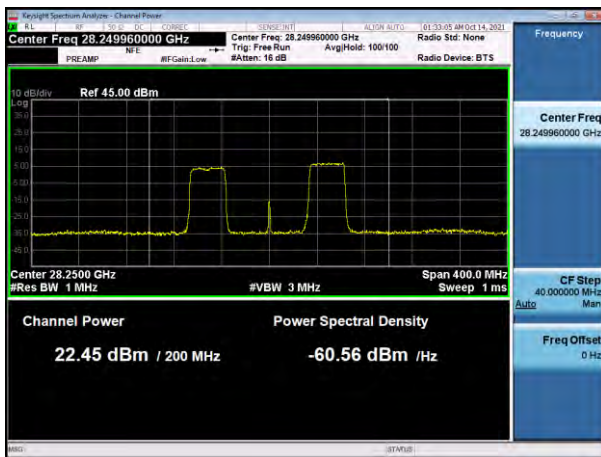
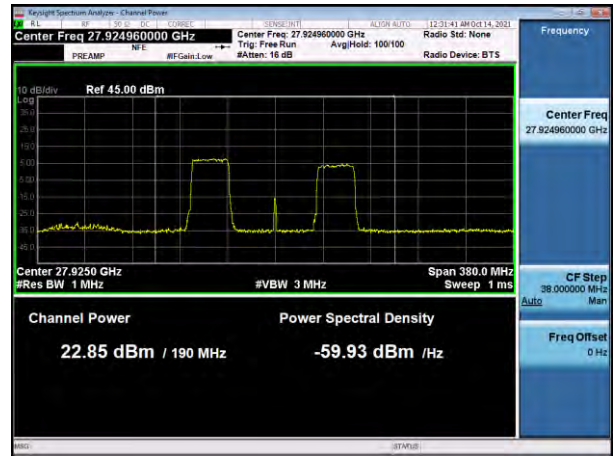
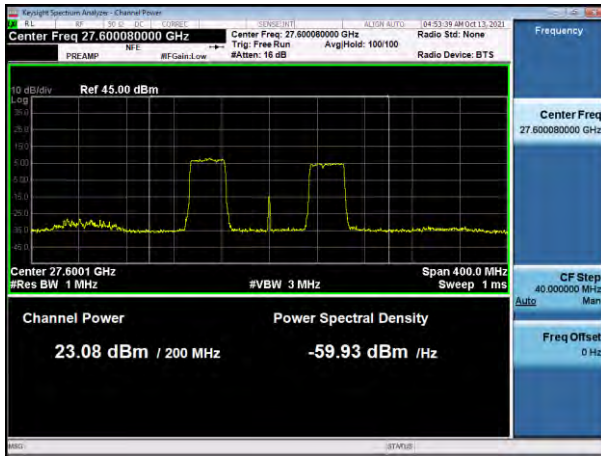
50 MHz, 2CC SISO



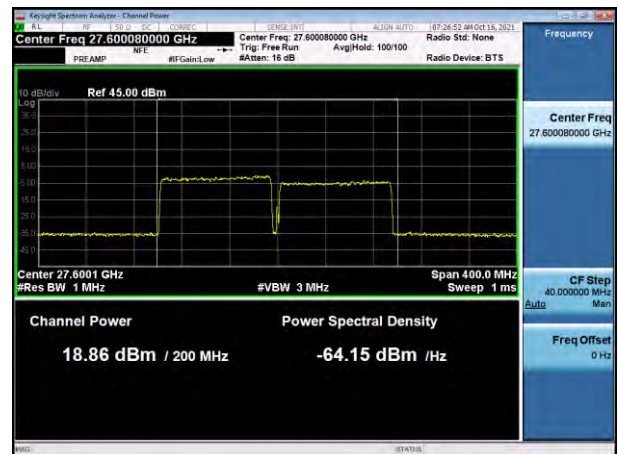
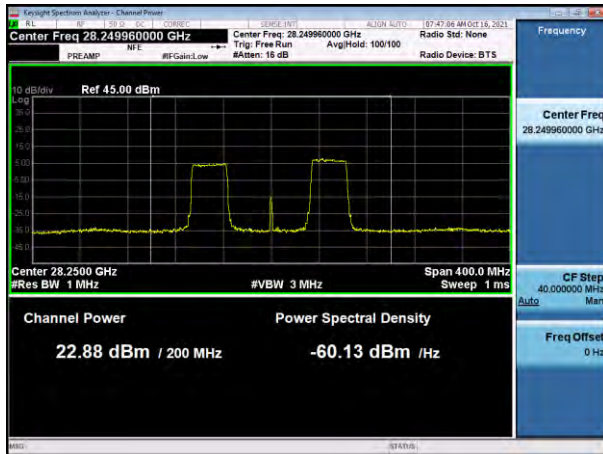
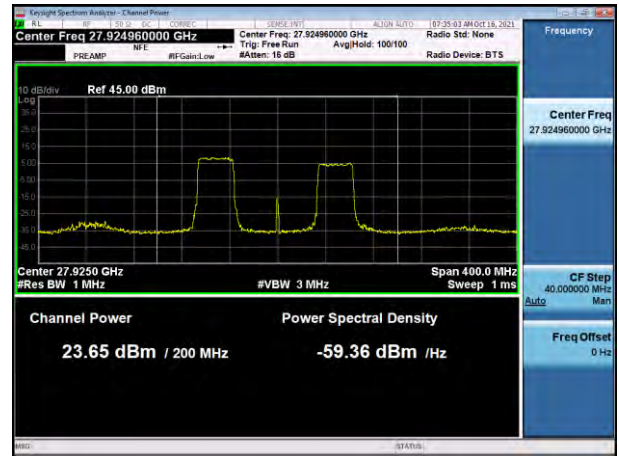
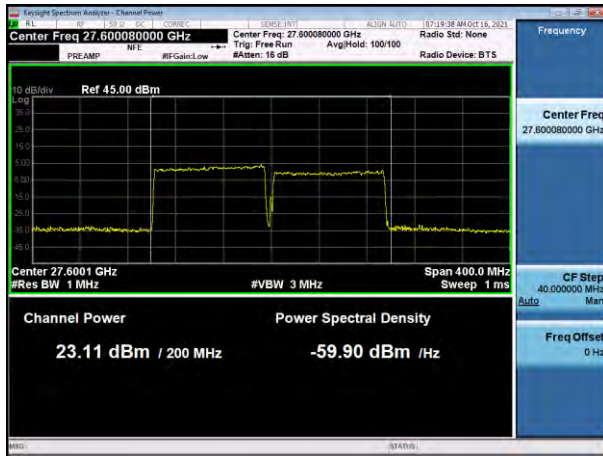
50 MHz, 2CC SISO Dual



100 MHz, 2CC SISO

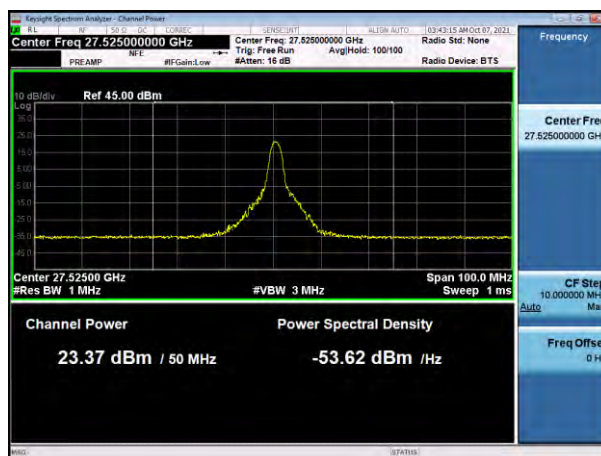
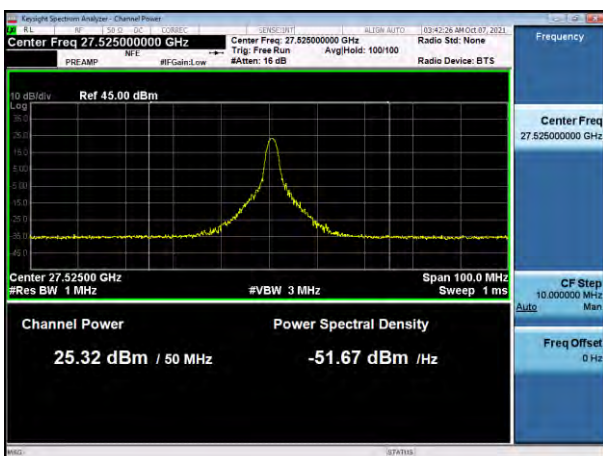
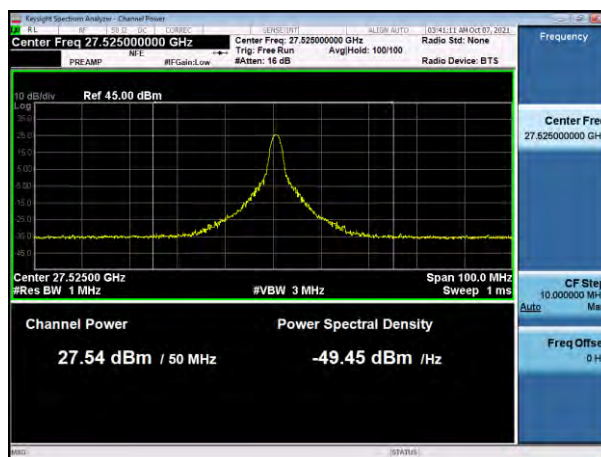
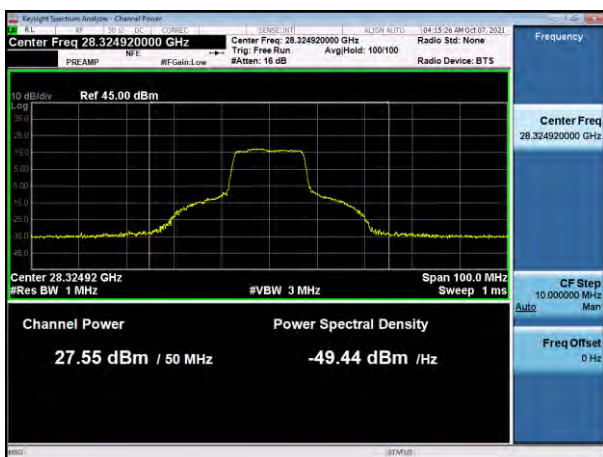
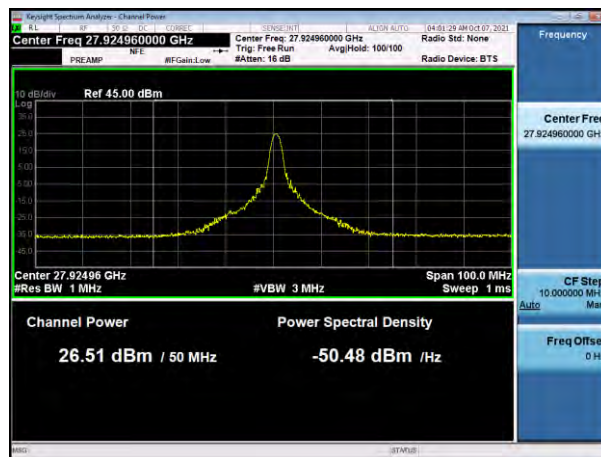
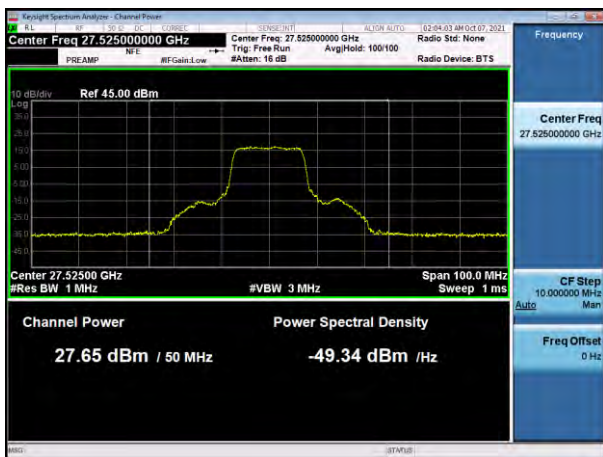


100 MHz, 2CC SISO Dual

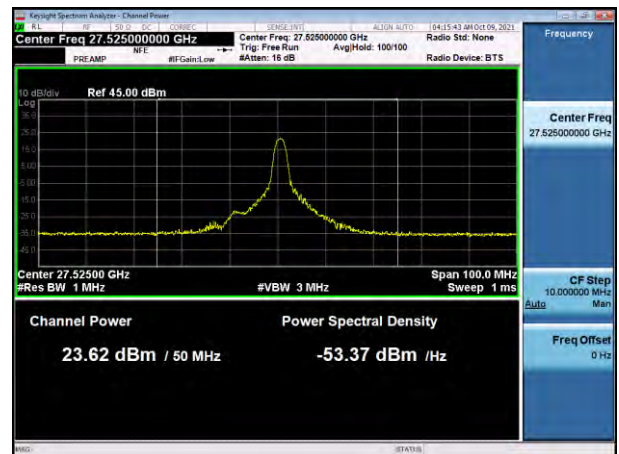
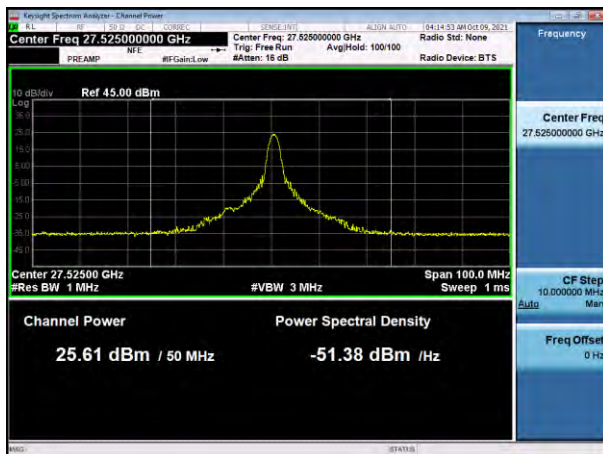
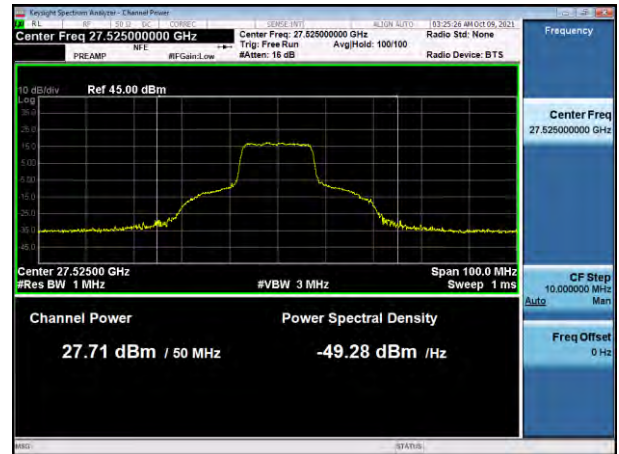
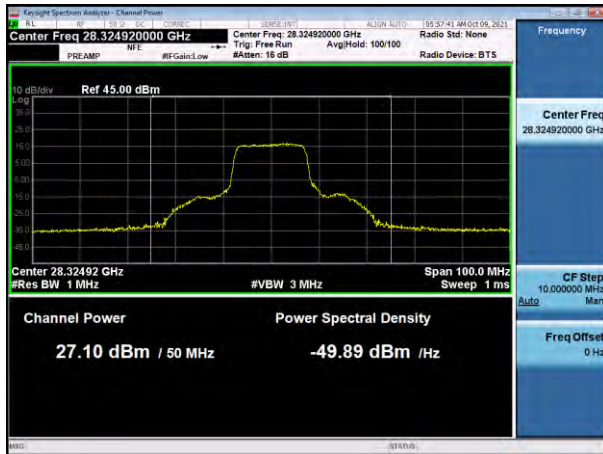
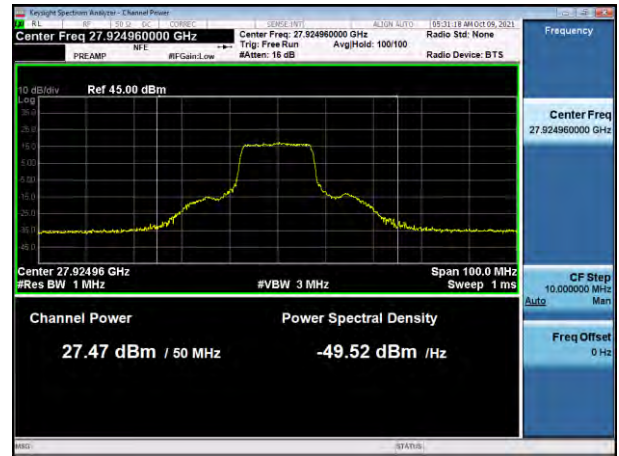
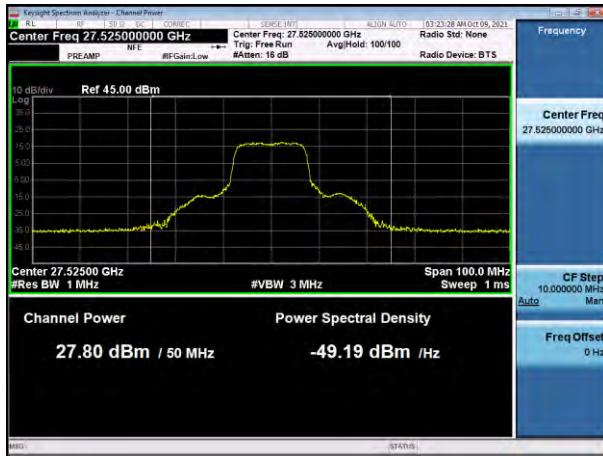


2. L patch: module 1, n261

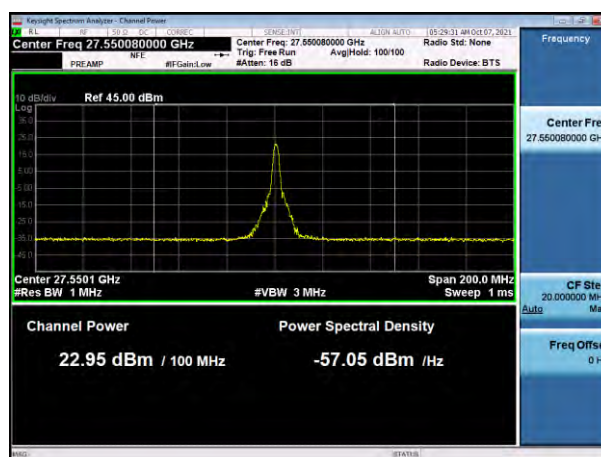
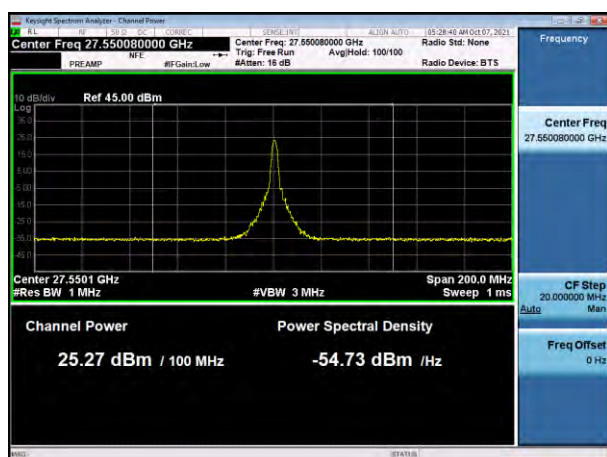
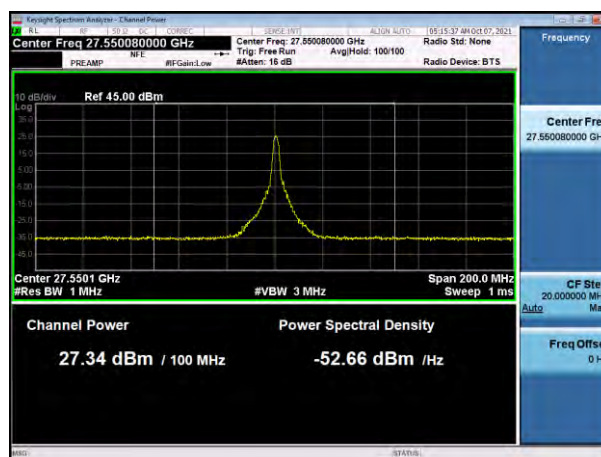
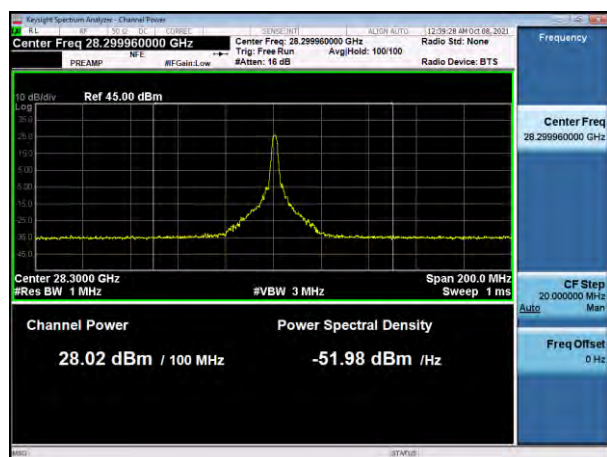
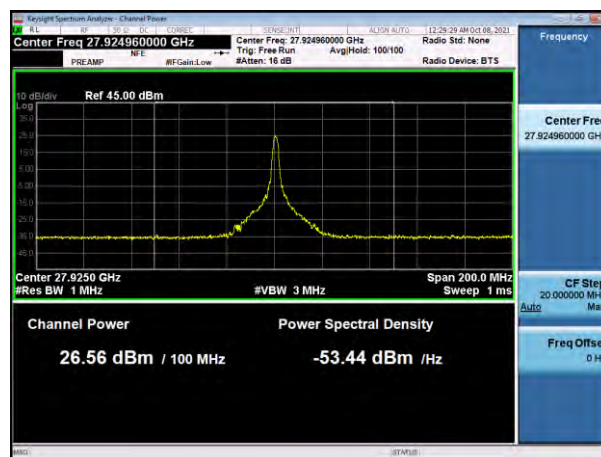
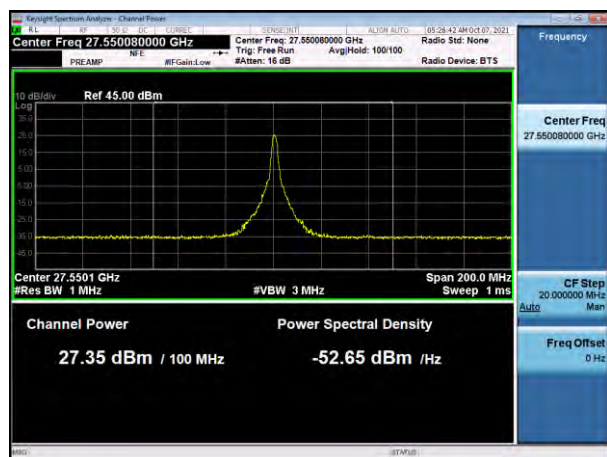
50 MHz, 1CC SISO



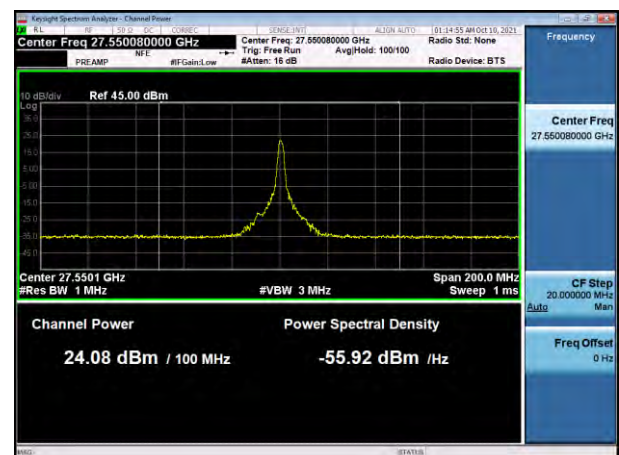
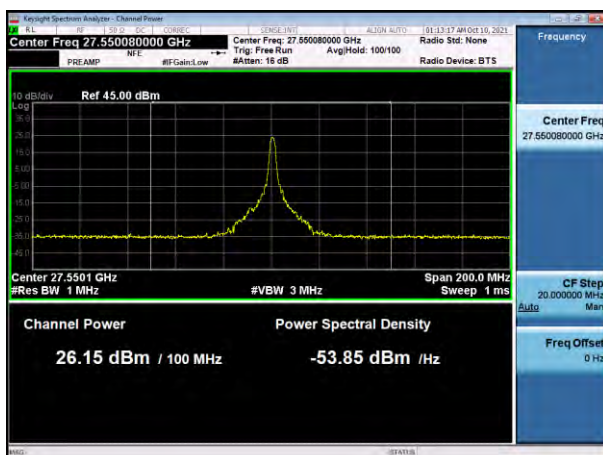
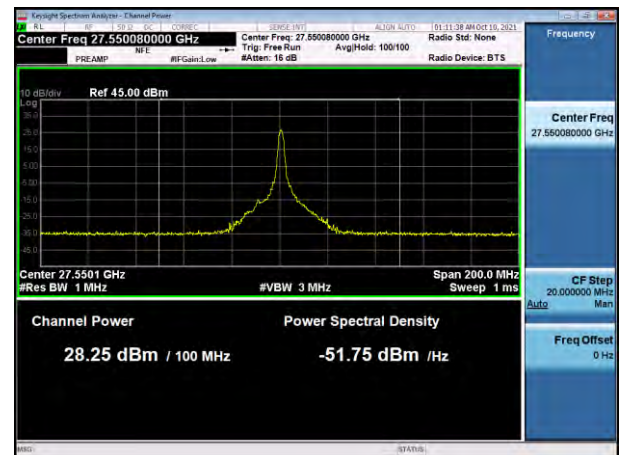
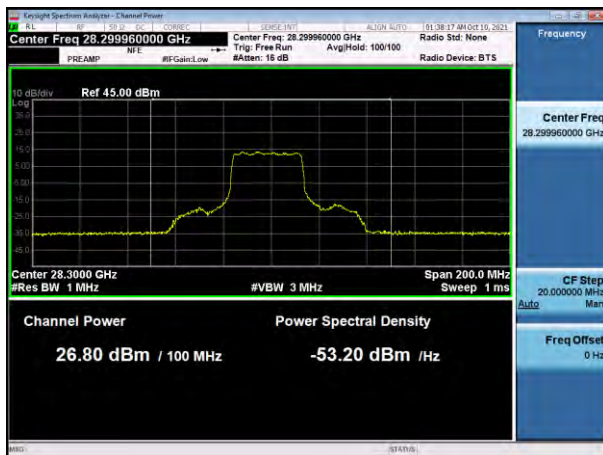
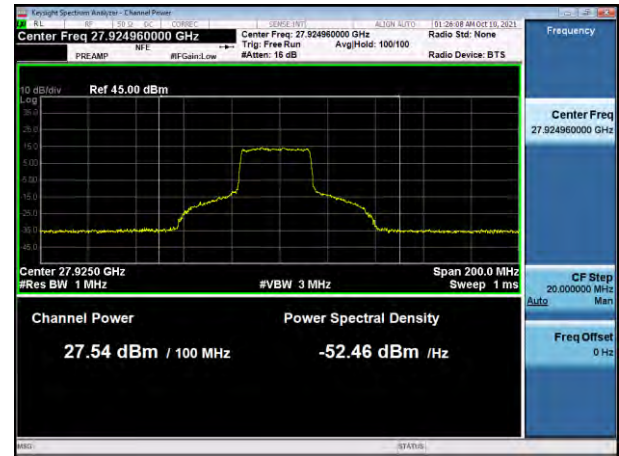
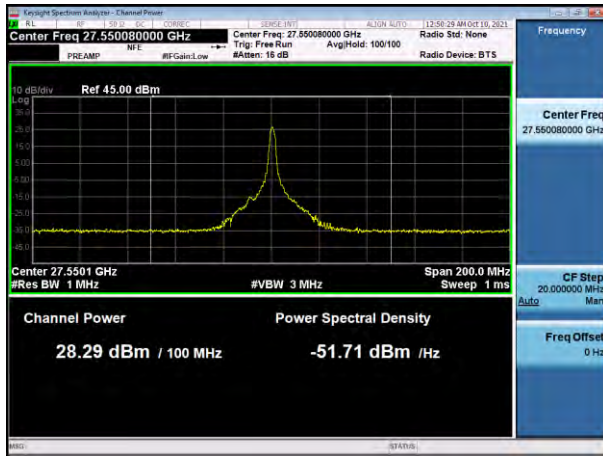
50 MHz, 1CC SISO Dual



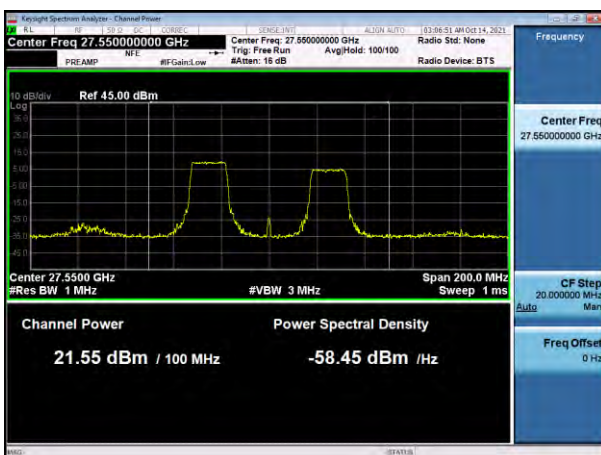
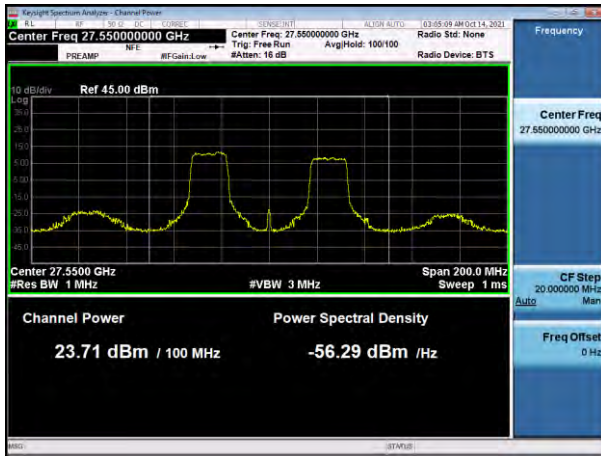
100 MHz, 1CC SISO



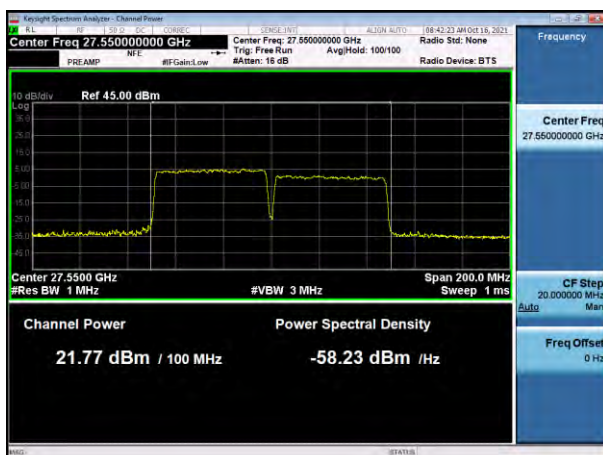
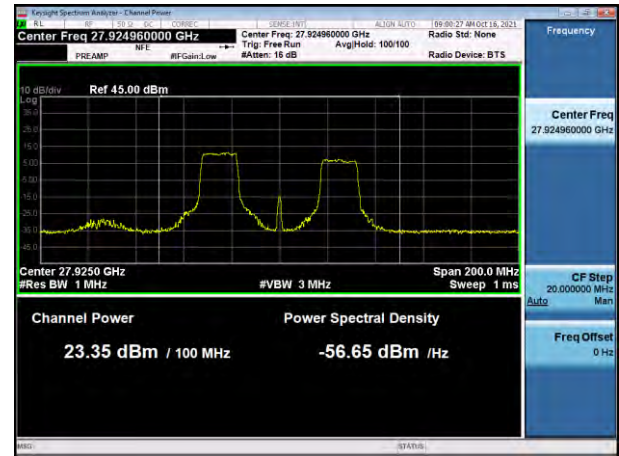
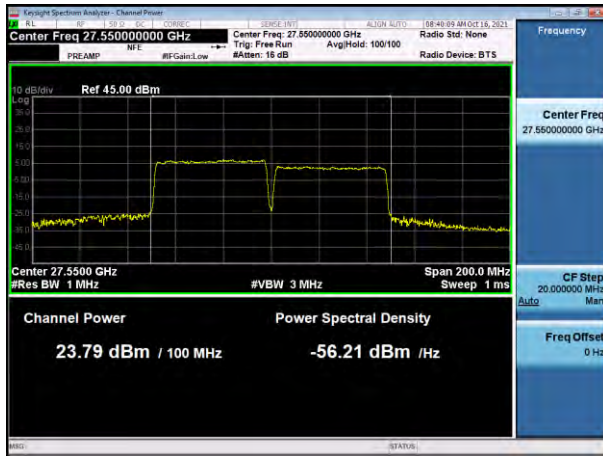
100 MHz, 1CC SISO Dual



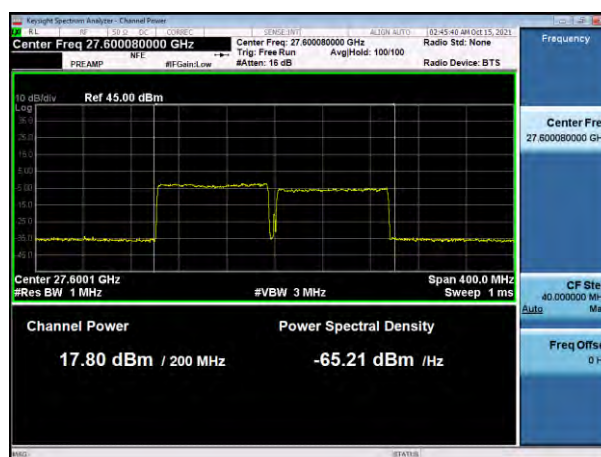
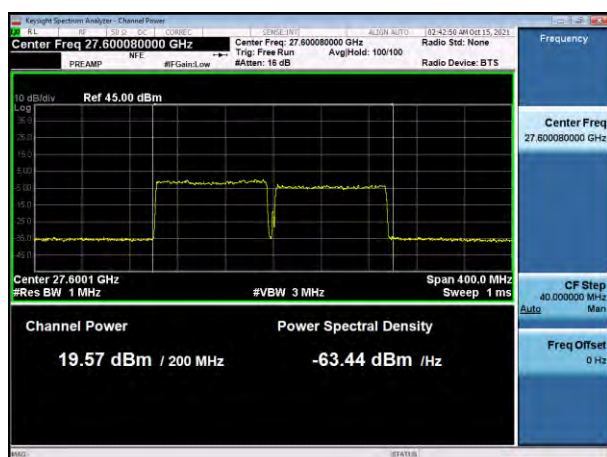
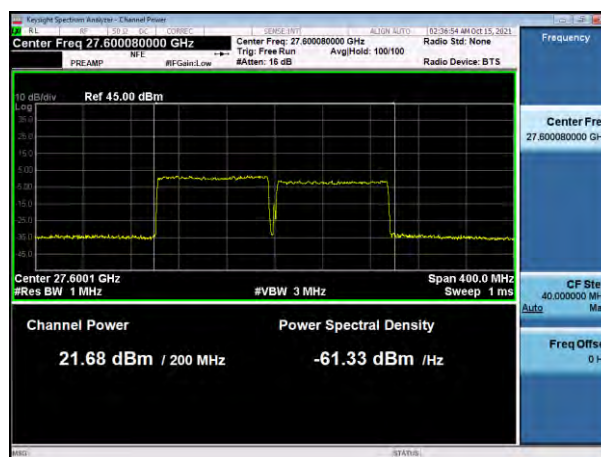
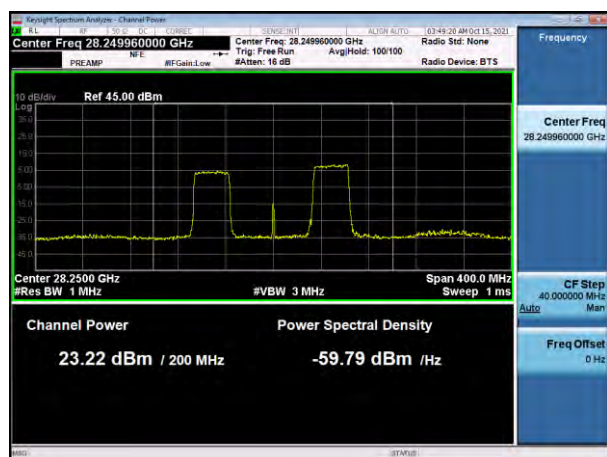
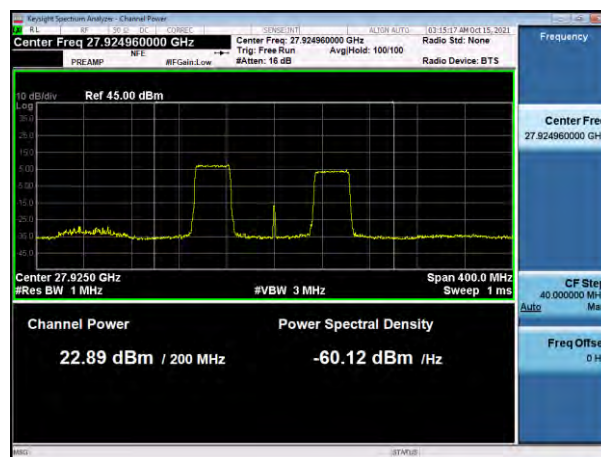
50 MHz, 2CC SISO



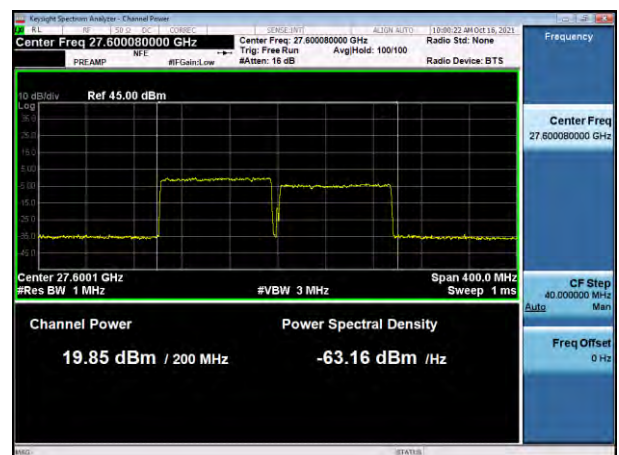
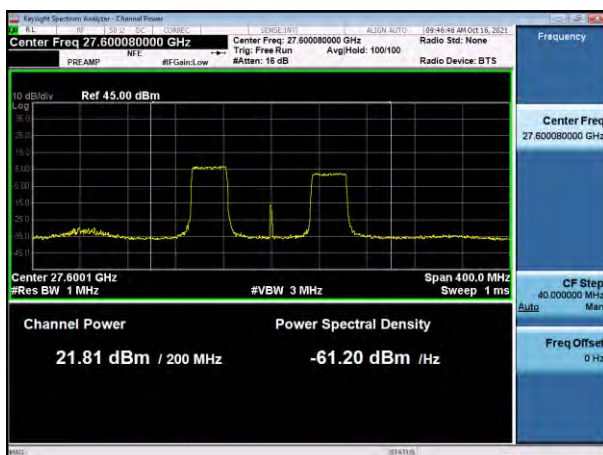
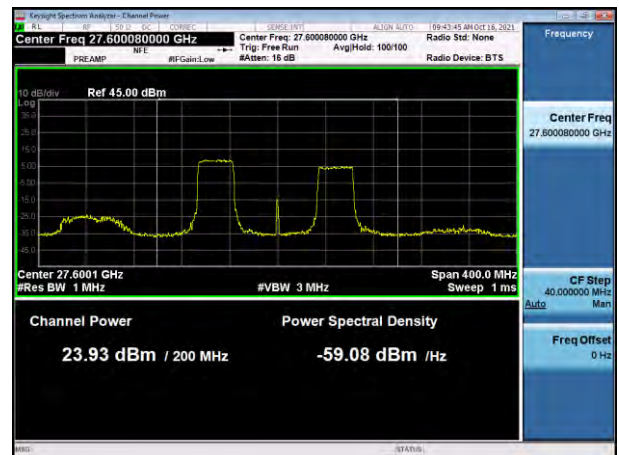
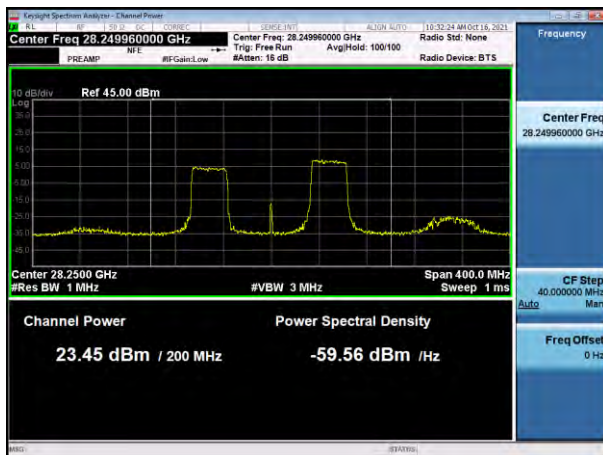
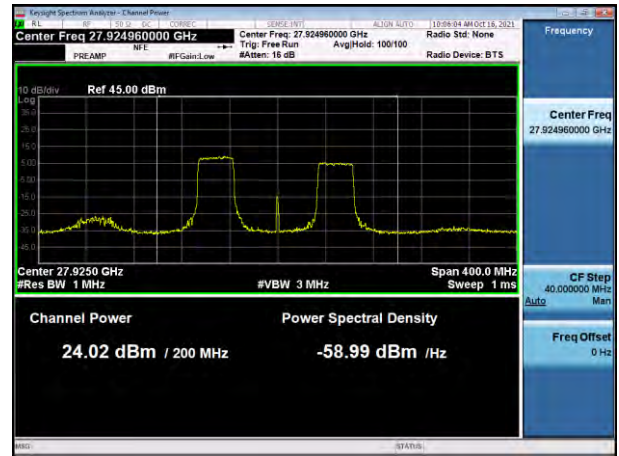
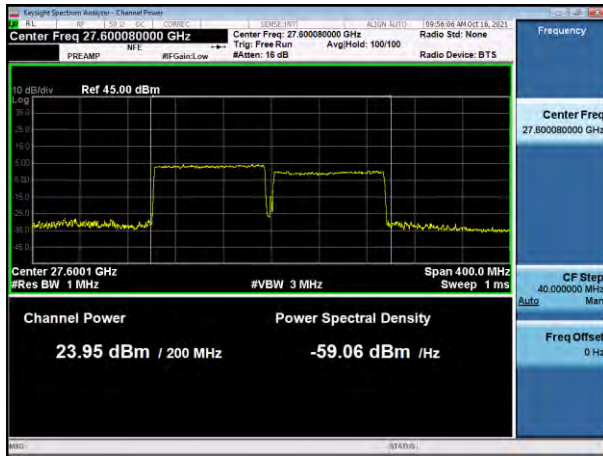
50 MHz, 2CC SISO Dual



100 MHz, 2CC SISO

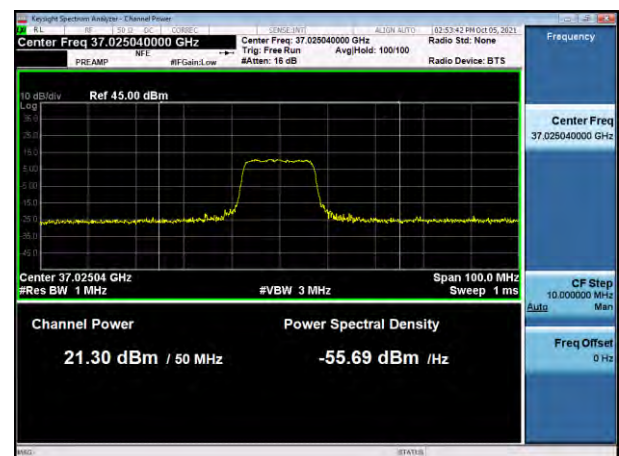
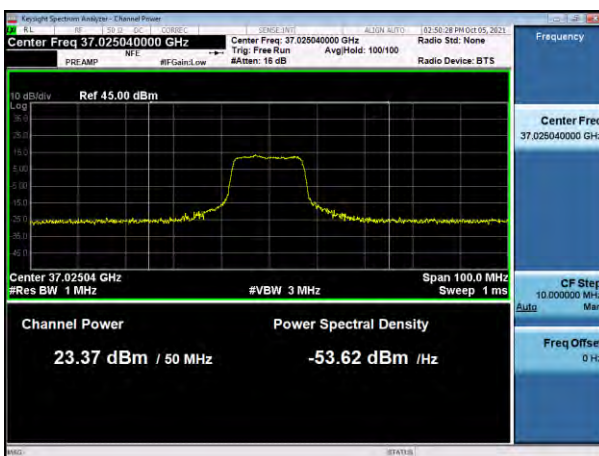
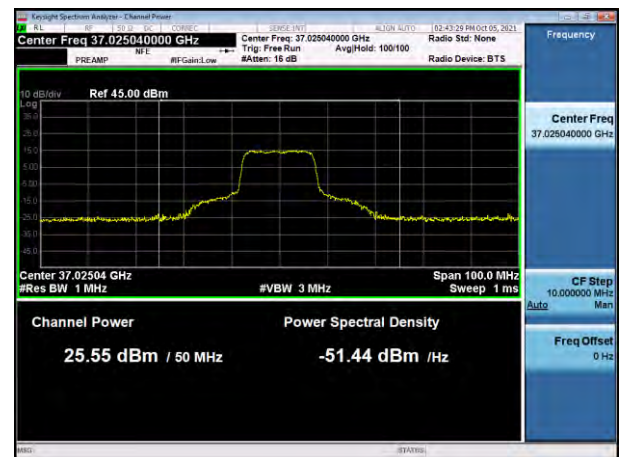
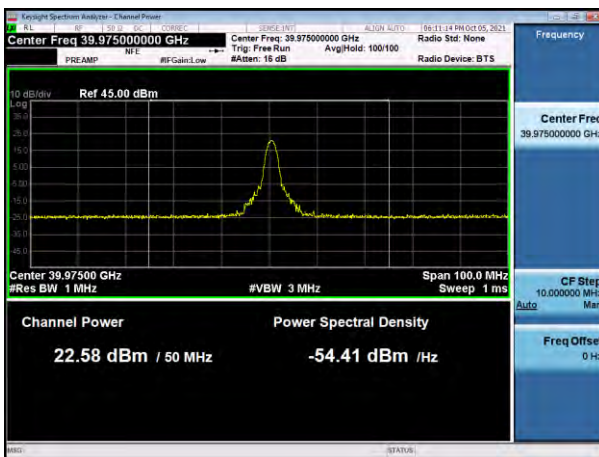
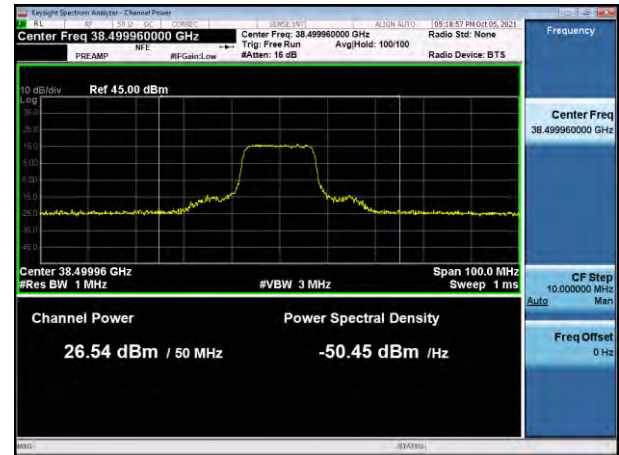
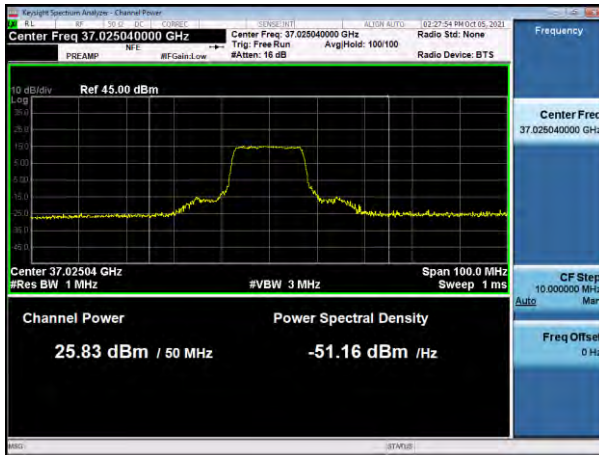


100 MHz, 2CC SISO Dual

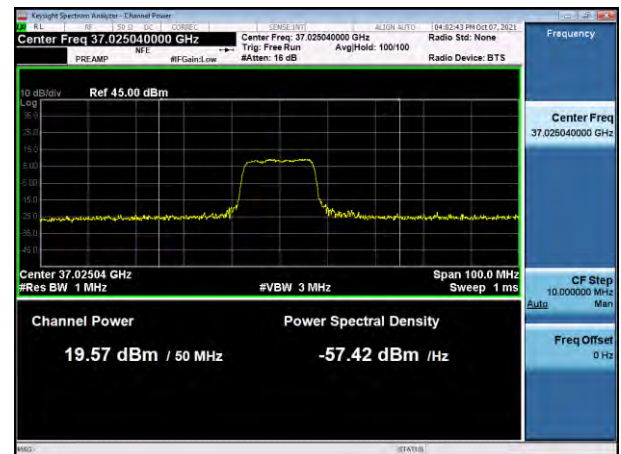
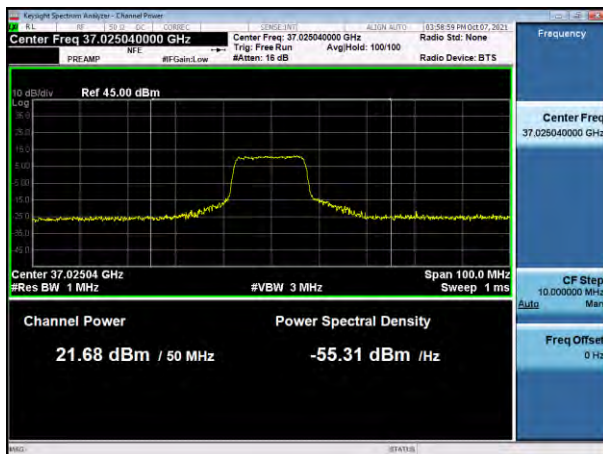
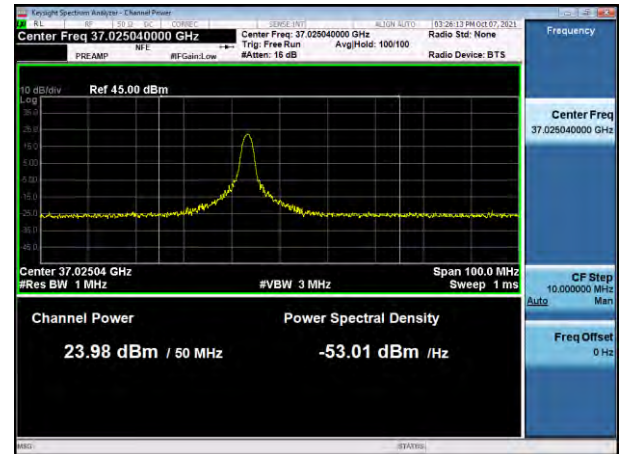
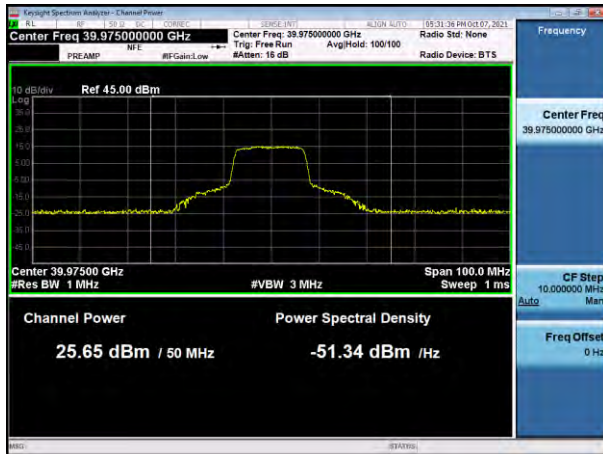
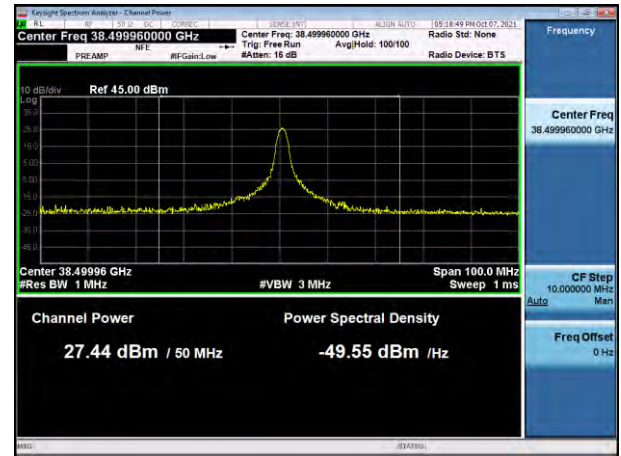
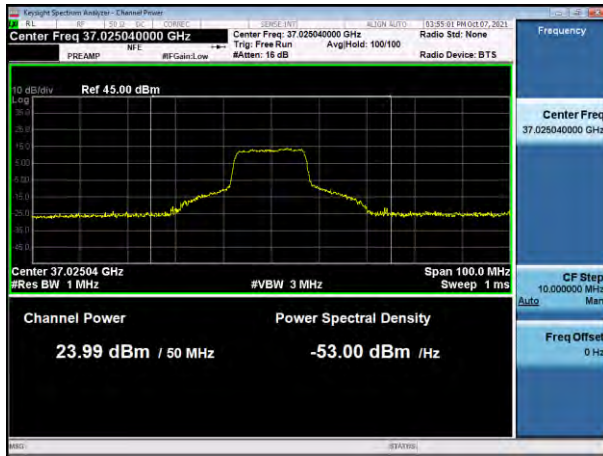


3. K patch: module 0, n260

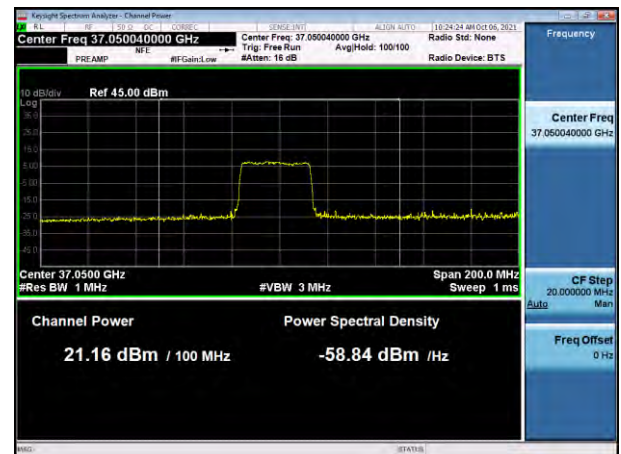
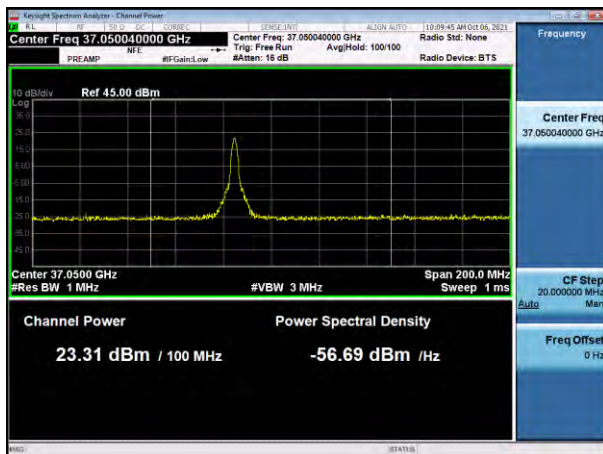
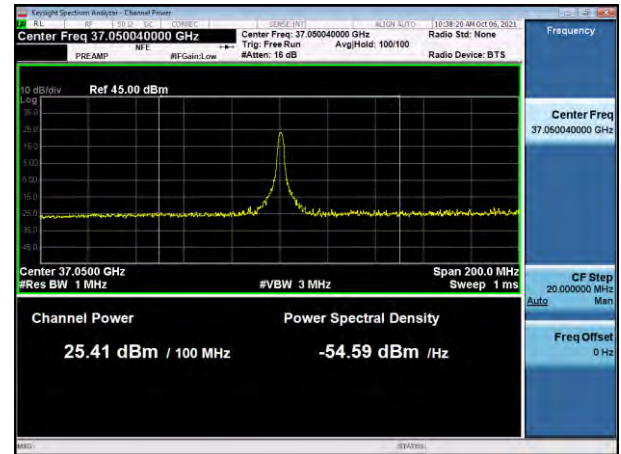
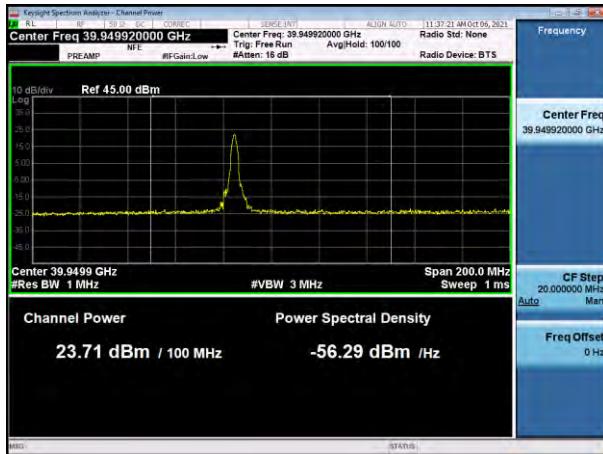
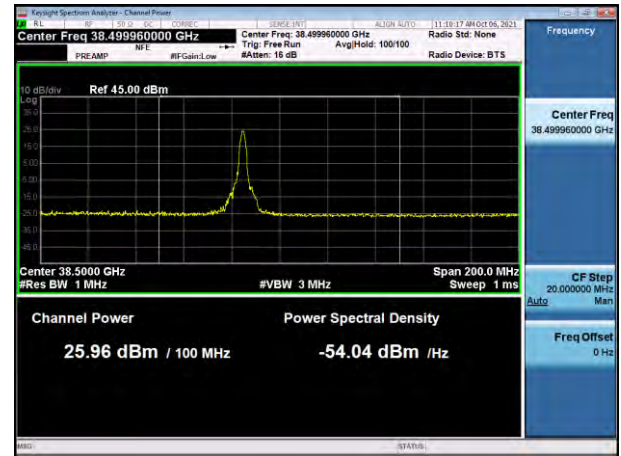
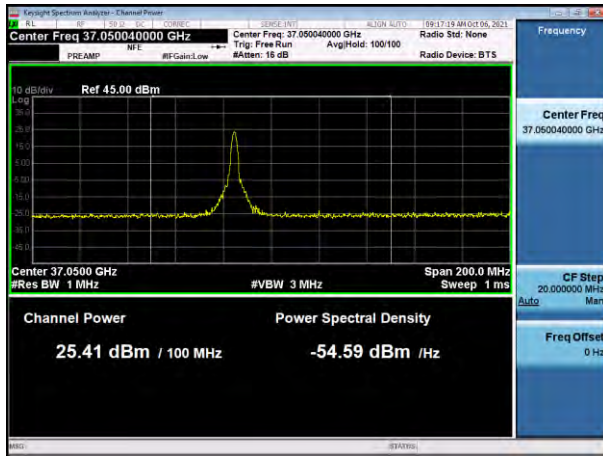
50 MHz, 1CC SISO



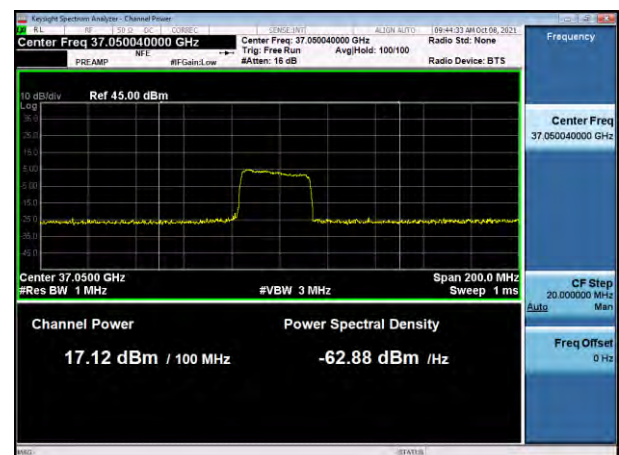
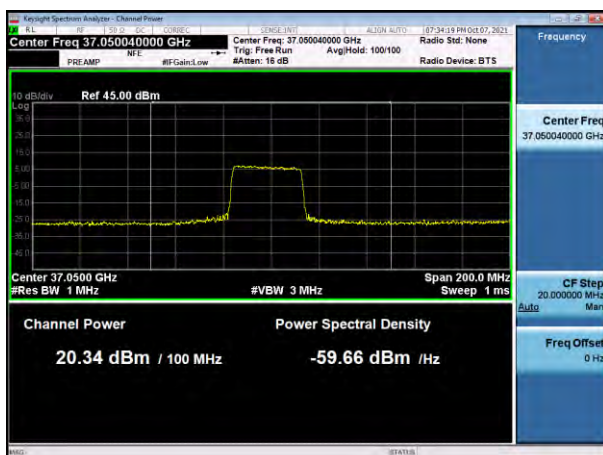
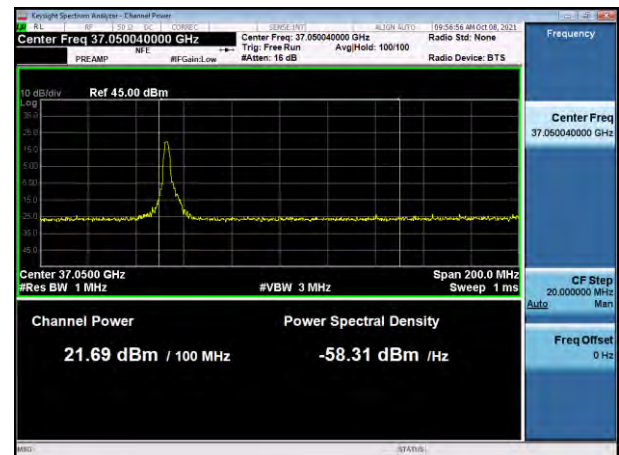
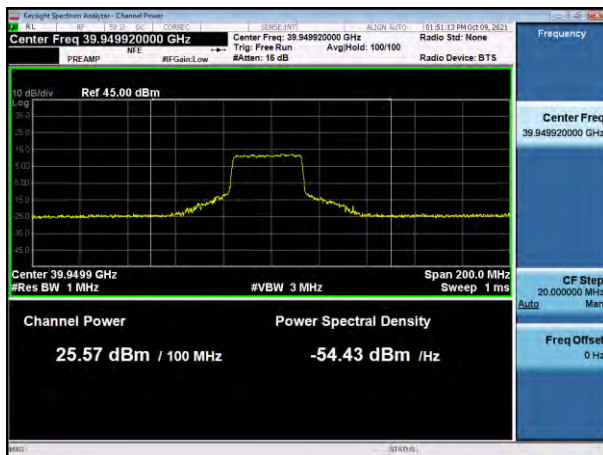
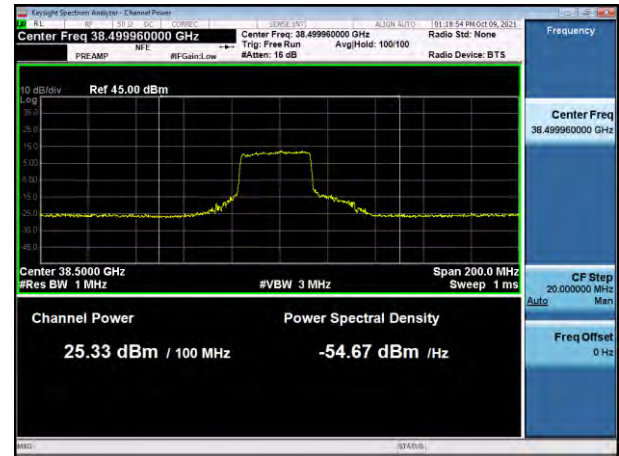
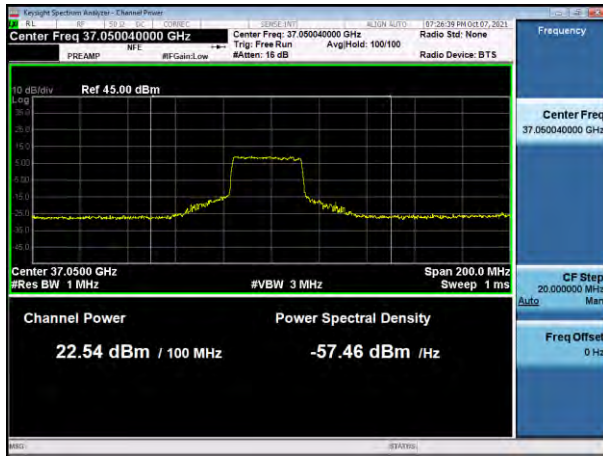
50 MHz, 1CC SISO Dual



100 MHz, 1CC SISO



100 MHz, 1CC SISO Dual



50 MHz, 2CC SISO

