

FCC 5G mmWave REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: October 16, 2023
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	Report No.: HCT-RF-2309-FC040

FCC ID:	A3LSMS926U
APPLICANT:	SAMSUNG Electronics Co., Ltd.

Model:	SM-S926U
Additional Model:	SM-S926U1
EUT Type:	Mobile Phone
Frequency Range:	24.25 GHz ~ 24.45 GHz, 24.75 GHz ~ 25.25 GHz, 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-2309-FC040

REVIEWED BY



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

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

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
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-2309-FC040	October 16, 2023	- First Approval Report

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1. EUT DESCRIPTION

Model	SM-S926U
Additional Model	SM-S926U1
EUT Type	Mobile Phone
Power Supply	DC 3.88 V
Date(s) of Tests	September 06, 2023 ~ October 14, 2023
Band	n258a: 24,250 MHz ~ 24,450 MHz(TDD) n258b: 24,750 MHz ~ 25,250 MHz(TDD) 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, 3CC, 4CC (EUT doesn't support 2cc, 3cc, 4cc, for 50MHz)
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 <ul style="list-style-type: none"> - M patch: module 0 - N patch: module 1 Antenna Size <ul style="list-style-type: none"> - 23.3 mm x 3.2 mm x 2.1 mm

1.1 MAXIMUM EIRP POWER

n258a Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	M patch	50	1	24250 - 24450	0.352	25.47	46M0G7D	BPSK
SISO	M patch	50	1	24250 - 24450	0.324	25.11	45M9G7D	QPSK
SISO	M patch	50	1	24250 - 24450	0.320	25.05	45M9W7D	16QAM
SISO	M patch	50	1	24250 - 24450	0.158	22.00	45M9W7D	64QAM
SISO Dual	M patch	50	1	24250 - 24450	0.736	28.67	46M1G7D	BPSK
SISO Dual	M patch	50	1	24250 - 24450	0.708	28.50	46M2G7D	QPSK
SISO Dual	M patch	50	1	24250 - 24450	0.729	28.63	46M3W7D	16QAM
SISO Dual	M patch	50	1	24250 - 24450	0.370	25.68	46M1W7D	64QAM
SISO	M patch	100	1	24250 - 24450	0.361	25.57	91M6G7D	BPSK
SISO	M patch	100	1	24250 - 24450	0.361	25.57	94M2G7D	QPSK
SISO	M patch	100	1	24250 - 24450	0.308	24.88	94M3W7D	16QAM
SISO	M patch	100	1	24250 - 24450	0.157	21.95	94M2W7D	64QAM
SISO Dual	M patch	100	1	24250 - 24450	0.684	28.35	88M9G7D	BPSK
SISO Dual	M patch	100	1	24250 - 24450	0.729	28.63	93M5G7D	QPSK
SISO Dual	M patch	100	1	24250 - 24450	0.703	28.47	93M5W7D	16QAM
SISO Dual	M patch	100	1	24250 - 24450	0.372	25.71	93M4W7D	64QAM
SISO	M patch	100	2	24250 - 24450	0.283	24.52	190MG7D	BPSK
SISO	M patch	100	2	24250 - 24450	0.284	24.54	193MG7D	QPSK
SISO	M patch	100	2	24250 - 24450	0.254	24.04	193MW7D	16QAM
SISO	M patch	100	2	24250 - 24450	0.113	20.52	193MW7D	64QAM
SISO Dual	M patch	100	2	24250 - 24450	0.385	25.86	190MG7D	BPSK
SISO Dual	M patch	100	2	24250 - 24450	0.384	25.84	194MG7D	QPSK
SISO Dual	M patch	100	2	24250 - 24450	0.347	25.40	194MW7D	16QAM
SISO Dual	M patch	100	2	24250 - 24450	0.148	21.69	194MW7D	64QAM

n258a Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	N patch	50	1	24250 - 24450	0.506	27.04	46M0G7D	BPSK
SISO	N patch	50	1	24250 - 24450	0.491	26.91	46M0G7D	QPSK
SISO	N patch	50	1	24250 - 24450	0.507	27.05	46M0W7D	16QAM
SISO	N patch	50	1	24250 - 24450	0.246	23.91	45M9W7D	64QAM
SISO Dual	N patch	50	1	24250 - 24450	0.400	26.02	45M8G7D	BPSK
SISO Dual	N patch	50	1	24250 - 24450	0.407	26.10	46M0G7D	QPSK
SISO Dual	N patch	50	1	24250 - 24450	0.354	25.49	46M0W7D	16QAM
SISO Dual	N patch	50	1	24250 - 24450	0.173	22.38	45M8W7D	64QAM
SISO	N patch	100	1	24250 - 24450	0.532	27.26	91M3G7D	BPSK
SISO	N patch	100	1	24250 - 24450	0.537	27.30	94M4G7D	QPSK
SISO	N patch	100	1	24250 - 24450	0.480	26.81	94M3W7D	16QAM
SISO	N patch	100	1	24250 - 24450	0.238	23.77	94M3W7D	64QAM
SISO Dual	N patch	100	1	24250 - 24450	0.406	26.09	91M5G7D	BPSK
SISO Dual	N patch	100	1	24250 - 24450	0.406	26.08	94M5G7D	QPSK
SISO Dual	N patch	100	1	24250 - 24450	0.357	25.53	94M4W7D	16QAM
SISO Dual	N patch	100	1	24250 - 24450	0.175	22.42	94M1W7D	64QAM
SISO	N patch	100	2	24250 - 24450	0.400	26.02	190MG7D	BPSK
SISO	N patch	100	2	24250 - 24450	0.404	26.06	193MG7D	QPSK
SISO	N patch	100	2	24250 - 24450	0.367	25.65	193MW7D	16QAM
SISO	N patch	100	2	24250 - 24450	0.182	22.61	192MW7D	64QAM
SISO Dual	N patch	100	2	24250 - 24450	0.312	24.94	190MG7D	BPSK
SISO Dual	N patch	100	2	24250 - 24450	0.305	24.84	193MG7D	QPSK
SISO Dual	N patch	100	2	24250 - 24450	0.272	24.34	193MW7D	16QAM
SISO Dual	N patch	100	2	24250 - 24450	0.119	20.75	193MW7D	64QAM

n258b Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	M patch	50	1	24750 - 25250	0.583	27.66	46M0G7D	BPSK
SISO	M patch	50	1	24750 - 25250	0.603	27.80	45M9G7D	QPSK
SISO	M patch	50	1	24750 - 25250	0.603	27.80	45M9W7D	16QAM
SISO	M patch	50	1	24750 - 25250	0.305	24.84	45M9W7D	64QAM
SISO Dual	M patch	50	1	24750 - 25250	1.033	30.14	46M4G7D	BPSK
SISO Dual	M patch	50	1	24750 - 25250	1.042	30.18	46M4G7D	QPSK
SISO Dual	M patch	50	1	24750 - 25250	0.778	28.91	46M0W7D	16QAM
SISO Dual	M patch	50	1	24750 - 25250	0.386	25.87	46M3W7D	64QAM
SISO	M patch	100	1	24750 - 25250	0.624	27.95	91M5G7D	BPSK
SISO	M patch	100	1	24750 - 25250	0.621	27.93	94M3G7D	QPSK
SISO	M patch	100	1	24750 - 25250	0.561	27.49	94M2W7D	16QAM
SISO	M patch	100	1	24750 - 25250	0.276	24.41	94M2W7D	64QAM
SISO Dual	M patch	100	1	24750 - 25250	1.047	30.20	90M4G7D	BPSK
SISO Dual	M patch	100	1	24750 - 25250	1.096	30.40	93M7G7D	QPSK
SISO Dual	M patch	100	1	24750 - 25250	1.014	30.06	93M6W7D	16QAM
SISO Dual	M patch	100	1	24750 - 25250	0.545	27.36	93M5W7D	64QAM
SISO	M patch	100	2	24750 - 25250	0.565	27.52	190MG7D	BPSK
SISO	M patch	100	2	24750 - 25250	0.568	27.54	193MG7D	QPSK
SISO	M patch	100	2	24750 - 25250	0.504	27.02	193MW7D	16QAM
SISO	M patch	100	2	24750 - 25250	0.224	23.50	193MW7D	64QAM
SISO Dual	M patch	100	2	24750 - 25250	0.408	26.11	190MG7D	BPSK
SISO Dual	M patch	100	2	24750 - 25250	0.412	26.15	194MG7D	QPSK
SISO Dual	M patch	100	2	24750 - 25250	0.375	25.74	194MW7D	16QAM
SISO Dual	M patch	100	2	24750 - 25250	0.167	22.22	194MW7D	64QAM
SISO	M patch	100	3	24750 - 25250	0.291	24.64	290MG7D	BPSK
SISO	M patch	100	3	24750 - 25250	0.294	24.68	292MG7D	QPSK
SISO	M patch	100	3	24750 - 25250	0.230	23.62	292MW7D	16QAM
SISO	M patch	100	3	24750 - 25250	0.146	21.63	292MW7D	64QAM
SISO Dual	M patch	100	3	24750 - 25250	0.290	24.62	290MG7D	BPSK
SISO Dual	M patch	100	3	24750 - 25250	0.291	24.64	291MG7D	QPSK

n258b Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	M patch	100	3	24750 - 25250	0.221	23.44	293MW7D	16QAM
SISO Dual	M patch	100	3	24750 - 25250	0.154	21.88	291MW7D	64QAM
SISO	M patch	100	4	24750 - 25250	0.287	24.58	389MG7D	BPSK
SISO	M patch	100	4	24750 - 25250	0.289	24.61	390MG7D	QPSK
SISO	M patch	100	4	24750 - 25250	0.232	23.66	390MW7D	16QAM
SISO	M patch	100	4	24750 - 25250	0.141	21.50	390MW7D	64QAM
SISO Dual	M patch	100	4	24750 - 25250	0.282	24.50	390MG7D	BPSK
SISO Dual	M patch	100	4	24750 - 25250	0.286	24.57	392MG7D	QPSK
SISO Dual	M patch	100	4	24750 - 25250	0.228	23.58	392MW7D	16QAM
SISO Dual	M patch	100	4	24750 - 25250	0.144	21.59	391MW7D	64QAM

n258b Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	N patch	50	1	24750 - 25250	0.345	25.38	46M0G7D	BPSK
SISO	N patch	50	1	24750 - 25250	0.340	25.32	45M9G7D	QPSK
SISO	N patch	50	1	24750 - 25250	0.328	25.16	45M9W7D	16QAM
SISO	N patch	50	1	24750 - 25250	0.157	21.97	45M9W7D	64QAM
SISO Dual	N patch	50	1	24750 - 25250	0.361	25.57	46M0G7D	BPSK
SISO Dual	N patch	50	1	24750 - 25250	0.355	25.50	46M0G7D	QPSK
SISO Dual	N patch	50	1	24750 - 25250	0.326	25.13	45M8W7D	16QAM
SISO Dual	N patch	50	1	24750 - 25250	0.168	22.26	45M8W7D	64QAM
SISO	N patch	100	1	24750 - 25250	0.354	25.49	91M4G7D	BPSK
SISO	N patch	100	1	24750 - 25250	0.358	25.54	94M4G7D	QPSK
SISO	N patch	100	1	24750 - 25250	0.342	25.34	94M3W7D	16QAM
SISO	N patch	100	1	24750 - 25250	0.181	22.57	94M1W7D	64QAM
SISO Dual	N patch	100	1	24750 - 25250	0.446	26.49	91M2G7D	BPSK
SISO Dual	N patch	100	1	24750 - 25250	0.424	26.27	94M1G7D	QPSK
SISO Dual	N patch	100	1	24750 - 25250	0.443	26.46	94M1W7D	16QAM
SISO Dual	N patch	100	1	24750 - 25250	0.214	23.30	94M0W7D	64QAM
SISO	N patch	100	2	24750 - 25250	0.258	24.12	190MG7D	BPSK
SISO	N patch	100	2	24750 - 25250	0.269	24.29	193MG7D	QPSK
SISO	N patch	100	2	24750 - 25250	0.240	23.81	194MW7D	16QAM
SISO	N patch	100	2	24750 - 25250	0.104	20.15	193MW7D	64QAM
SISO Dual	N patch	100	2	24750 - 25250	0.279	24.45	191MG7D	BPSK
SISO Dual	N patch	100	2	24750 - 25250	0.281	24.49	193MG7D	QPSK
SISO Dual	N patch	100	2	24750 - 25250	0.253	24.03	193MW7D	16QAM
SISO Dual	N patch	100	2	24750 - 25250	0.112	20.49	193MW7D	64QAM
SISO	N patch	100	3	24750 - 25250	0.155	21.89	290MG7D	BPSK
SISO	N patch	100	3	24750 - 25250	0.156	21.93	293MG7D	QPSK
SISO	N patch	100	3	24750 - 25250	0.120	20.79	293MW7D	16QAM
SISO	N patch	100	3	24750 - 25250	0.077	18.89	293MW7D	64QAM
SISO Dual	N patch	100	3	24750 - 25250	0.179	22.54	290MG7D	BPSK
SISO Dual	N patch	100	3	24750 - 25250	0.179	22.54	293MG7D	QPSK

n258b Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	N patch	100	3	24750 - 25250	0.140	21.45	293MW7D	16QAM
SISO Dual	N patch	100	3	24750 - 25250	0.090	19.52	292MW7D	64QAM
SISO	N patch	100	4	24750 - 25250	0.151	21.80	390MG7D	BPSK
SISO	N patch	100	4	24750 - 25250	0.151	21.78	392MG7D	QPSK
SISO	N patch	100	4	24750 - 25250	0.118	20.73	391MW7D	16QAM
SISO	N patch	100	4	24750 - 25250	0.075	18.75	392MW7D	64QAM
SISO Dual	N patch	100	4	24750 - 25250	0.169	22.28	390MG7D	BPSK
SISO Dual	N patch	100	4	24750 - 25250	0.165	22.18	393MG7D	QPSK
SISO Dual	N patch	100	4	24750 - 25250	0.132	21.21	392MW7D	16QAM
SISO Dual	N patch	100	4	24750 - 25250	0.084	19.26	392MW7D	64QAM

n260 Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	M patch	50	1	37000 - 40000	0.617	27.90	46M3G7D	BPSK
SISO	M patch	50	1	37000 - 40000	0.650	28.13	46M2G7D	QPSK
SISO	M patch	50	1	37000 - 40000	0.631	28.00	46M2W7D	16QAM
SISO	M patch	50	1	37000 - 40000	0.292	24.65	46M3W7D	64QAM
SISO Dual	M patch	50	1	37000 - 40000	0.659	28.19	46M6G7D	BPSK
SISO Dual	M patch	50	1	37000 - 40000	0.713	28.53	46M7G7D	QPSK
SISO Dual	M patch	50	1	37000 - 40000	0.718	28.56	46M2W7D	16QAM
SISO Dual	M patch	50	1	37000 - 40000	0.355	25.50	46M8W7D	64QAM
SISO	M patch	100	1	37000 - 40000	0.638	28.05	92M7G7D	BPSK
SISO	M patch	100	1	37000 - 40000	0.638	28.05	94M5G7D	QPSK
SISO	M patch	100	1	37000 - 40000	0.568	27.54	94M5W7D	16QAM
SISO	M patch	100	1	37000 - 40000	0.282	24.51	94M5W7D	64QAM
SISO Dual	M patch	100	1	37000 - 40000	0.736	28.67	91M7G7D	BPSK
SISO Dual	M patch	100	1	37000 - 40000	0.759	28.80	93M9G7D	QPSK
SISO Dual	M patch	100	1	37000 - 40000	0.785	28.95	94M1W7D	16QAM
SISO Dual	M patch	100	1	37000 - 40000	0.397	25.99	94M0W7D	64QAM
SISO	M patch	100	2	37000 - 40000	0.494	26.94	191MG7D	BPSK
SISO	M patch	100	2	37000 - 40000	0.498	26.97	194MG7D	QPSK
SISO	M patch	100	2	37000 - 40000	0.434	26.37	194MW7D	16QAM
SISO	M patch	100	2	37000 - 40000	0.194	22.87	194MW7D	64QAM
SISO Dual	M patch	100	2	37000 - 40000	0.279	24.45	191MG7D	BPSK
SISO Dual	M patch	100	2	37000 - 40000	0.340	25.31	194MG7D	QPSK
SISO Dual	M patch	100	2	37000 - 40000	0.313	24.96	194MW7D	16QAM
SISO Dual	M patch	100	2	37000 - 40000	0.145	21.62	195MW7D	64QAM
SISO	M patch	100	3	37000 - 40000	0.253	24.03	294MG7D	BPSK
SISO	M patch	100	3	37000 - 40000	0.254	24.04	295MG7D	QPSK
SISO	M patch	100	3	37000 - 40000	0.201	23.04	296MW7D	16QAM
SISO	M patch	100	3	37000 - 40000	0.126	21.01	296MW7D	64QAM
SISO Dual	M patch	100	3	37000 - 40000	0.186	22.69	292MG7D	BPSK
SISO Dual	M patch	100	3	37000 - 40000	0.184	22.64	296MG7D	QPSK

n260 Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	M patch	100	3	37000 - 40000	0.149	21.74	294MW7D	16QAM
SISO Dual	M patch	100	3	37000 - 40000	0.095	19.76	296MW7D	64QAM
SISO	M patch	100	4	37000 - 40000	0.245	23.89	393MG7D	BPSK
SISO	M patch	100	4	37000 - 40000	0.251	23.99	394MG7D	QPSK
SISO	M patch	100	4	37000 - 40000	0.199	22.99	394MW7D	16QAM
SISO	M patch	100	4	37000 - 40000	0.124	20.95	395MW7D	64QAM
SISO Dual	M patch	100	4	37000 - 40000	0.202	23.06	392MG7D	BPSK
SISO Dual	M patch	100	4	37000 - 40000	0.203	23.07	395MG7D	QPSK
SISO Dual	M patch	100	4	37000 - 40000	0.160	22.05	393MW7D	16QAM
SISO Dual	M patch	100	4	37000 - 40000	0.102	20.07	395MW7D	64QAM

n260 Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	N patch	50	1	37000 - 40000	0.774	28.89	46M1G7D	BPSK
SISO	N patch	50	1	37000 - 40000	0.811	29.09	45M9G7D	QPSK
SISO	N patch	50	1	37000 - 40000	0.818	29.13	46M1W7D	16QAM
SISO	N patch	50	1	37000 - 40000	0.392	25.93	46M2W7D	64QAM
SISO Dual	N patch	50	1	37000 - 40000	0.764	28.83	46M0G7D	BPSK
SISO Dual	N patch	50	1	37000 - 40000	0.764	28.83	46M1G7D	QPSK
SISO Dual	N patch	50	1	37000 - 40000	0.767	28.85	46M2W7D	16QAM
SISO Dual	N patch	50	1	37000 - 40000	0.358	25.54	46M0W7D	64QAM
SISO	N patch	100	1	37000 - 40000	0.773	28.88	91M7G7D	BPSK
SISO	N patch	100	1	37000 - 40000	0.783	28.94	94M4G7D	QPSK
SISO	N patch	100	1	37000 - 40000	0.703	28.47	94M4W7D	16QAM
SISO	N patch	100	1	37000 - 40000	0.364	25.61	94M4W7D	64QAM
SISO Dual	N patch	100	1	37000 - 40000	0.692	28.40	91M9G7D	BPSK
SISO Dual	N patch	100	1	37000 - 40000	0.604	27.81	94M4G7D	QPSK
SISO Dual	N patch	100	1	37000 - 40000	0.552	27.42	94M3W7D	16QAM
SISO Dual	N patch	100	1	37000 - 40000	0.647	28.11	94M2W7D	64QAM
SISO	N patch	100	2	37000 - 40000	0.582	27.65	191MG7D	BPSK
SISO	N patch	100	2	37000 - 40000	0.585	27.67	194MG7D	QPSK
SISO	N patch	100	2	37000 - 40000	0.526	27.21	194MW7D	16QAM
SISO	N patch	100	2	37000 - 40000	0.234	23.69	194MW7D	64QAM
SISO Dual	N patch	100	2	37000 - 40000	0.555	27.44	191MG7D	BPSK
SISO Dual	N patch	100	2	37000 - 40000	0.585	27.67	194MG7D	QPSK
SISO Dual	N patch	100	2	37000 - 40000	0.519	27.15	194MW7D	16QAM
SISO Dual	N patch	100	2	37000 - 40000	0.232	23.66	194MW7D	64QAM
SISO	N patch	100	3	37000 - 40000	0.288	24.59	291MG7D	BPSK
SISO	N patch	100	3	37000 - 40000	0.276	24.41	294MG7D	QPSK
SISO	N patch	100	3	37000 - 40000	0.215	23.33	294MW7D	16QAM
SISO	N patch	100	3	37000 - 40000	0.137	21.36	295MW7D	64QAM
SISO Dual	N patch	100	3	37000 - 40000	0.288	24.60	292MG7D	BPSK
SISO Dual	N patch	100	3	37000 - 40000	0.277	24.43	294MG7D	QPSK

n260 Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	N patch	100	3	37000 - 40000	0.228	23.57	294MW7D	16QAM
SISO Dual	N patch	100	3	37000 - 40000	0.145	21.61	294MW7D	64QAM
SISO	N patch	100	4	37000 - 40000	0.316	24.99	395MG7D	BPSK
SISO	N patch	100	4	37000 - 40000	0.317	25.01	395MG7D	QPSK
SISO	N patch	100	4	37000 - 40000	0.254	24.04	395MW7D	16QAM
SISO	N patch	100	4	37000 - 40000	0.159	22.01	398MW7D	64QAM
SISO Dual	N patch	100	4	37000 - 40000	0.286	24.56	388MG7D	BPSK
SISO Dual	N patch	100	4	37000 - 40000	0.286	24.57	394MG7D	QPSK
SISO Dual	N patch	100	4	37000 - 40000	0.234	23.70	394MW7D	16QAM
SISO Dual	N patch	100	4	37000 - 40000	0.146	21.64	396MW7D	64QAM

n261 Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	M patch	50	1	27500 - 28350	0.729	28.63	46M0G7D	BPSK
SISO	M patch	50	1	27500 - 28350	0.698	28.44	45M9G7D	QPSK
SISO	M patch	50	1	27500 - 28350	0.706	28.49	46M0W7D	16QAM
SISO	M patch	50	1	27500 - 28350	0.348	25.42	45M9W7D	64QAM
SISO Dual	M patch	50	1	27500 - 28350	1.086	30.36	46M3G7D	BPSK
SISO Dual	M patch	50	1	27500 - 28350	1.109	30.45	46M4G7D	QPSK
SISO Dual	M patch	50	1	27500 - 28350	0.977	29.90	46M4W7D	16QAM
SISO Dual	M patch	50	1	27500 - 28350	0.472	26.74	46M3W7D	64QAM
SISO	M patch	100	1	27500 - 28350	0.708	28.50	91M2G7D	BPSK
SISO	M patch	100	1	27500 - 28350	0.708	28.50	94M1G7D	QPSK
SISO	M patch	100	1	27500 - 28350	0.628	27.98	94M1W7D	16QAM
SISO	M patch	100	1	27500 - 28350	0.306	24.86	94M0W7D	64QAM
SISO Dual	M patch	100	1	27500 - 28350	1.040	30.17	88M8G7D	BPSK
SISO Dual	M patch	100	1	27500 - 28350	1.096	30.40	93M3G7D	QPSK
SISO Dual	M patch	100	1	27500 - 28350	0.925	29.66	93M3W7D	16QAM
SISO Dual	M patch	100	1	27500 - 28350	0.481	26.82	93M2W7D	64QAM
SISO	M patch	100	2	27500 - 28350	0.532	27.26	191MG7D	BPSK
SISO	M patch	100	2	27500 - 28350	0.536	27.29	193MG7D	QPSK
SISO	M patch	100	2	27500 - 28350	0.481	26.82	193MW7D	16QAM
SISO	M patch	100	2	27500 - 28350	0.210	23.22	193MW7D	64QAM
SISO Dual	M patch	100	2	27500 - 28350	0.514	27.11	190MG7D	BPSK
SISO Dual	M patch	100	2	27500 - 28350	0.526	27.21	194MG7D	QPSK
SISO Dual	M patch	100	2	27500 - 28350	0.476	26.78	194MW7D	16QAM
SISO Dual	M patch	100	2	27500 - 28350	0.210	23.23	194MW7D	64QAM
SISO	M patch	100	3	27500 - 28350	0.294	24.69	290MG7D	BPSK
SISO	M patch	100	3	27500 - 28350	0.302	24.80	293MG7D	QPSK
SISO	M patch	100	3	27500 - 28350	0.237	23.74	292MW7D	16QAM
SISO	M patch	100	3	27500 - 28350	0.152	21.83	292MW7D	64QAM
SISO Dual	M patch	100	3	27500 - 28350	0.269	24.29	290MG7D	BPSK
SISO Dual	M patch	100	3	27500 - 28350	0.269	24.29	293MG7D	QPSK

n261 Band Antenna 0 (M patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	M patch	100	3	27500 - 28350	0.211	23.24	291MW7D	16QAM
SISO Dual	M patch	100	3	27500 - 28350	0.142	21.52	292MW7D	64QAM
SISO	M patch	100	4	27500 - 28350	0.316	25.00	388MG7D	BPSK
SISO	M patch	100	4	27500 - 28350	0.310	24.92	390MG7D	QPSK
SISO	M patch	100	4	27500 - 28350	0.243	23.86	390MW7D	16QAM
SISO	M patch	100	4	27500 - 28350	0.148	21.71	390MW7D	64QAM
SISO Dual	M patch	100	4	27500 - 28350	0.284	24.54	390MG7D	BPSK
SISO Dual	M patch	100	4	27500 - 28350	0.284	24.54	391MG7D	QPSK
SISO Dual	M patch	100	4	27500 - 28350	0.229	23.59	391MW7D	16QAM
SISO Dual	M patch	100	4	27500 - 28350	0.137	21.38	391MW7D	64QAM

n261 Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO	N patch	50	1	27500 - 28350	0.520	27.16	45M9G7D	BPSK
SISO	N patch	50	1	27500 - 28350	0.516	27.13	46M1G7D	QPSK
SISO	N patch	50	1	27500 - 28350	0.424	26.27	46M0W7D	16QAM
SISO	N patch	50	1	27500 - 28350	0.237	23.74	45M9W7D	64QAM
SISO Dual	N patch	50	1	27500 - 28350	0.615	27.89	46M1G7D	BPSK
SISO Dual	N patch	50	1	27500 - 28350	0.579	27.63	46M2G7D	QPSK
SISO Dual	N patch	50	1	27500 - 28350	0.514	27.11	46M2W7D	16QAM
SISO Dual	N patch	50	1	27500 - 28350	0.237	23.74	45M8W7D	64QAM
SISO	N patch	100	1	27500 - 28350	0.475	26.77	91M3G7D	BPSK
SISO	N patch	100	1	27500 - 28350	0.500	26.99	94M1G7D	QPSK
SISO	N patch	100	1	27500 - 28350	0.409	26.12	94M3W7D	16QAM
SISO	N patch	100	1	27500 - 28350	0.219	23.40	94M0W7D	64QAM
SISO Dual	N patch	100	1	27500 - 28350	0.422	26.25	91M3G7D	BPSK
SISO Dual	N patch	100	1	27500 - 28350	0.432	26.35	94M3G7D	QPSK
SISO Dual	N patch	100	1	27500 - 28350	0.385	25.86	94M2W7D	16QAM
SISO Dual	N patch	100	1	27500 - 28350	0.239	23.79	94M3W7D	64QAM
SISO	N patch	100	2	27500 - 28350	0.396	25.98	191MG7D	BPSK
SISO	N patch	100	2	27500 - 28350	0.400	26.02	193MG7D	QPSK
SISO	N patch	100	2	27500 - 28350	0.359	25.55	193MW7D	16QAM
SISO	N patch	100	2	27500 - 28350	0.159	22.02	193MW7D	64QAM
SISO Dual	N patch	100	2	27500 - 28350	0.359	25.55	192MG7D	BPSK
SISO Dual	N patch	100	2	27500 - 28350	0.350	25.44	194MG7D	QPSK
SISO Dual	N patch	100	2	27500 - 28350	0.315	24.98	194MW7D	16QAM
SISO Dual	N patch	100	2	27500 - 28350	0.139	21.42	193MW7D	64QAM
SISO	N patch	100	3	27500 - 28350	0.220	23.43	290MG7D	BPSK
SISO	N patch	100	3	27500 - 28350	0.216	23.34	292MG7D	QPSK
SISO	N patch	100	3	27500 - 28350	0.168	22.25	292MW7D	16QAM
SISO	N patch	100	3	27500 - 28350	0.107	20.28	292MW7D	64QAM
SISO Dual	N patch	100	3	27500 - 28350	0.204	23.09	290MG7D	BPSK
SISO Dual	N patch	100	3	27500 - 28350	0.203	23.08	293MG7D	QPSK

n261 Band Antenna 1 (N patch)								
Mode	Antenna	Bandwidth (MHz)	CCs Active	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
					(W)	(dBm)		
SISO Dual	N patch	100	3	27500 - 28350	0.157	21.96	293MW7D	16QAM
SISO Dual	N patch	100	3	27500 - 28350	0.102	20.10	292MW7D	64QAM
SISO	N patch	100	4	27500 - 28350	0.200	23.01	390MG7D	BPSK
SISO	N patch	100	4	27500 - 28350	0.199	22.99	392MG7D	QPSK
SISO	N patch	100	4	27500 - 28350	0.163	22.13	391MW7D	16QAM
SISO	N patch	100	4	27500 - 28350	0.102	20.10	391MW7D	64QAM
SISO Dual	N patch	100	4	27500 - 28350	0.195	22.89	389MG7D	BPSK
SISO Dual	N patch	100	4	27500 - 28350	0.199	22.99	392MG7D	QPSK
SISO Dual	N patch	100	4	27500 - 28350	0.157	21.96	392MW7D	16QAM
SISO Dual	N patch	100	4	27500 - 28350	0.098	19.91	392MW7D	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
<input checked="" type="checkbox"/> Semi Chamber 1
<input type="checkbox"/> Semi Chamber 2
<input type="checkbox"/> Semi Chamber 3
<input checked="" type="checkbox"/> mmWave Chamber

The radiated test facilities consisted of an indoor 3 meters 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&reqnum_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/MIMO operation. These Beam ID's was used for final measurements.

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

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

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.

Per 2.1057(a)(2), spurious emissions were investigated up to 200 GHz.(up to 100 GHz for n258, 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 n258a, y for n258b, y for n261, y 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

Antenna 0(M patch) SISO

Band	CH	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)
n258a	Low	293	H	H	44	254	36	V	H	28	209
	Mid	293	H	H	43	269	36	V	H	28	210
	High	293	H	H	47	268	36	V	H	47	209
n258b	Low	293	H	H	44	284	26	V	H	43	196
	Mid	282	H	V	1	179	36	V	H	45	196
	High	293	H	H	43	255	36	V	H	44	194
n261	Low	291	H	V	17	178	36	V	V	17	301
	Mid	292	H	H	13	268	35	V	H	16	178
	High	292	H	H	17	283	35	V	H	13	179
n260	Low	282	V	H	28	182	26	H	V	16	2
	Mid	282	V	H	30	181	27	H	H	31	61
	High	291	V	H	44	194	36	H	H	16	76

Antenna 0(M patch) SISO Dual, MIMO

Band	CH	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)
n258a	Low	36/292	H+V	H	17	254	36/292	H+V	V	2	30
	Mid	36/292	H+V	H	15	242	36/292	H+V	V	1	135
	High	36/292	H+V	H	17	239	36/292	H+V	V	14	332
n258b	Low	37/293	H+V	H	47	270	37/293	H+V	V	43	255
	Mid	36/292	H+V	H	17	240	36/292	H+V	V	0	148
	High	36/292	H+V	H	14	242	36/292	H+V	V	16	328
n261	Low	35/291	H+V	H	1	253	35/291	H+V	V	15	149
	Mid	35/291	H+V	H	2	256	35/291	H+V	V	0	137
	High	26/282	H+V	H	17	238	26/282	H+V	V	16	316
n260	Low	26/282	H+V	H	2	30	26/282	H+V	V	17	346
	Mid	35/291	H+V	H	46	197	35/291	H+V	V	13	300
	High	27/283	H+V	H	29	61	27/283	H+V	V	28	137

Antenna 1(N patch) SISO

Band	CH	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)
n258a	Low	288	H	V	47	136	39	V	H	61	178
	Mid	295	H	V	75	179	39	V	H	62	179
	High	295	H	V	73	178	39	V	H	62	180
n258b	Low	295	H	V	60	180	40	V	H	59	165
	Mid	286	H	V	58	193	31	V	H	61	163
	High	286	H	V	76	193	31	V	H	59	167
n261	Low	296	H	V	89	182	40	V	H	61	180
	Mid	296	H	V	91	178	31	V	H	76	178
	High	296	H	V	91	182	32	V	H	74	165
n260	Low	287	V	H	91	152	39	H	V	74	180
	Mid	286	V	H	61	180	39	H	V	92	178
	High	294	V	H	73	194	39	H	V	77	178

Antenna 1(N patch) SISO Dual, MIMO

Band	CH	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)	Beam ID	Beam Pol.	Ant. Pol.	Azimuth(°)	Roll(°)
n258a	Low	39/295	H+V	H	73	181	39/295	H+V	V	1	43
	Mid	39/295	H+V	H	76	178	39/295	H+V	V	2	47
	High	39/295	H+V	H	45	178	39/295	H+V	V	2	224
n258b	Low	40/296	H+V	H	31	137	40/296	H+V	V	91	165
	Mid	31/287	H+V	H	77	165	31/287	H+V	V	31	14
	High	30/286	H+V	H	73	194	30/286	H+V	V	58	195
n261	Low	41/297	H+V	H	77	151	41/297	H+V	V	90	163
	Mid	32/288	H+V	H	90	166	32/288	H+V	V	92	166
	High	39/295	H+V	H	74	195	39/295	H+V	V	73	197
n260	Low	38/294	H+V	H	88	197	38/294	H+V	V	90	208
	Mid	39/295	H+V	H	74	164	39/295	H+V	V	73	179
	High	40/296	H+V	H	90	150	40/296	H+V	V	76	152

3.3. MAXIMUM MEASUREMENT UNCERTAINTY

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

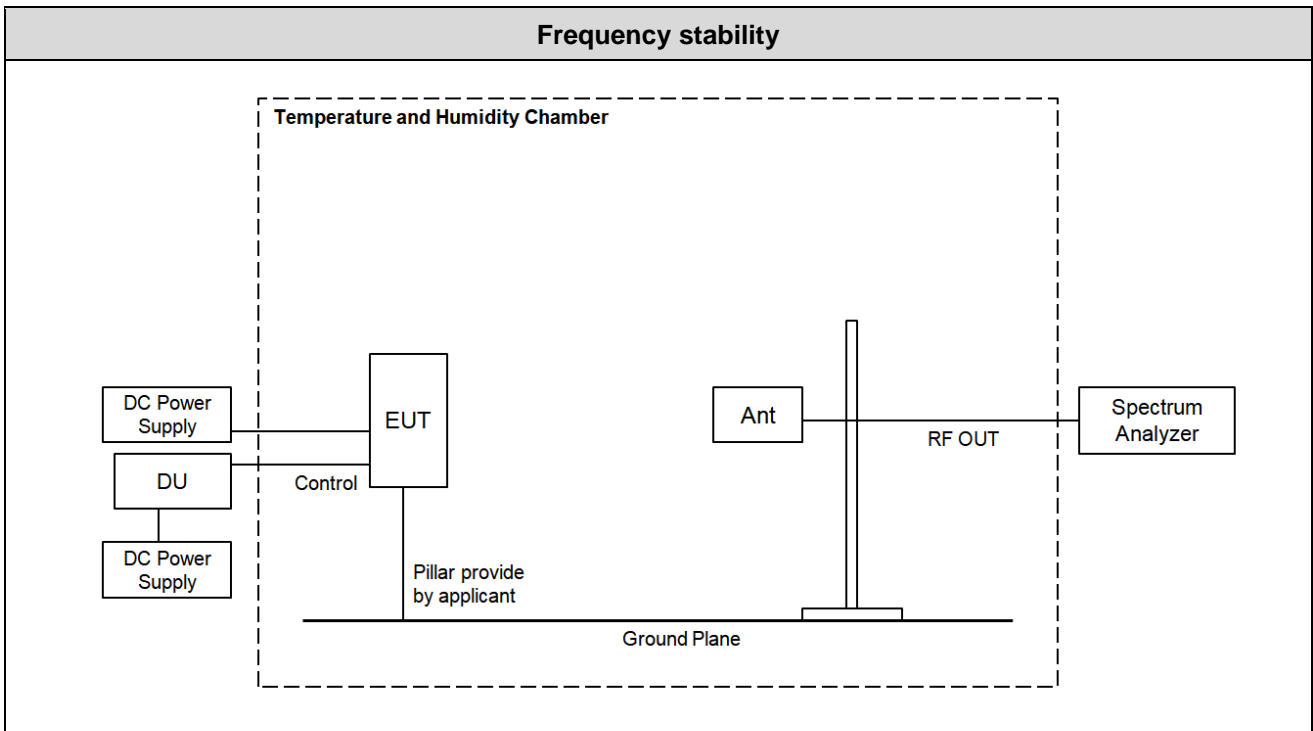
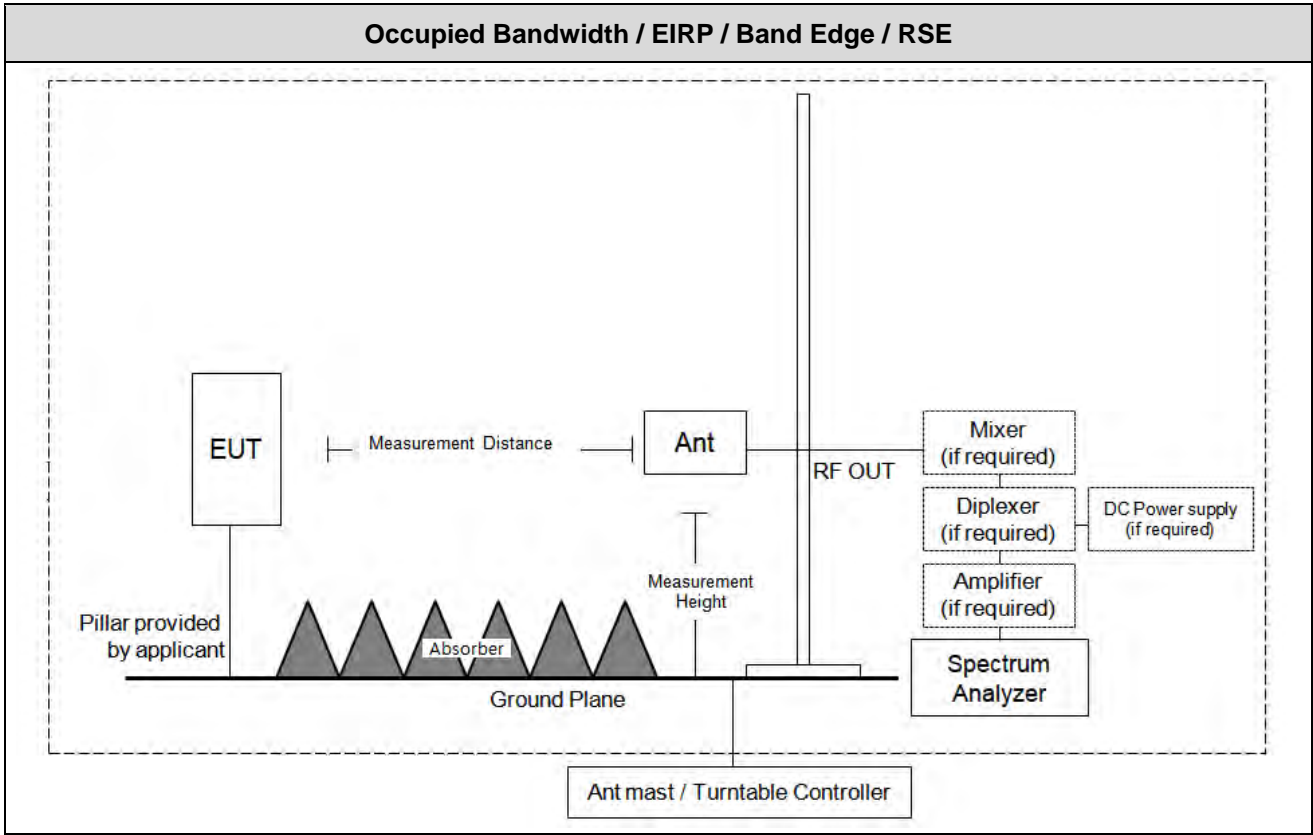
Coverage factor k = 2, Confidence levels of 95 %

Description	Condition	Uncertainty
Occupied Bandwidth	-	± 0.31 MHz
Equivalent Isotropic Radiated Power	23.75 GHz ~ 25.70 GHz	± 5.76 dB
Band Edge	27.00 GHz ~ 28.80 GHz, 36.60 GHz ~ 40.02 GHz	
Radiated Spurious Emissions	9 kHz ~ 30 MHz	± 4.14 dB
	30 MHz ~ 1 GHz	± 5.82 dB
	1 GHz ~ 18 GHz	± 5.74 dB
	18 GHz ~ 40 GHz	± 5.76 dB
	40 GHz ~ 200 GHz	± 5.52 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 are 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.

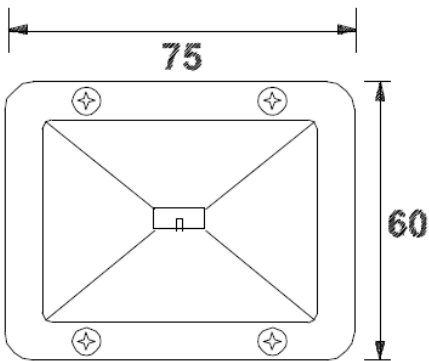
$$\text{Wavelength} = \text{Speed of light} / \text{Measurement frequency} = 30 / 4\ 000 = 0.0075$$

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

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

Frequency Range (GHz)	Wavelength (cm)	Far Field Distance (m)	Measurement Distance(m)
18 ~ 40	0.75	2.46	3.00
40 ~ 60	0.50	1.354	1.50
60 ~90	0.33	0.856	1.00
90 ~ 140	0.214	0.572	1.00
140 ~ 200	0.15	0.332	0.50

- 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: 0.023612 m
- Below 18 GHz, measurement distance is 3.00 m.

4. TEST EQUIPMENTS

Manufacturer	Model / Equipment	Due to Calibration	Calibration Interval	Serial No.
Agilent	N9030A / PXA Signal Analyzer	03/07/2024	Annual	US51350313
Agilent	N9030B / PXA Signal Analyzer	10/19/2023	Annual	MY60070602
Schwarzbeck	BBHA 9170 / Horn Antenna	11/16/2023	Biennial	BBHA9170541
KIKUSUI	PWR800L / DC Power Supply	07/17/2024	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	10/31/2023	Annual	101256
Schwarzbeck	Loop Antenna	01/16/2025	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	08/16/2024	Biennial	9168-0895
Schwarzbeck	BBHA 9120D / Horn Antenna	01/18/2024	Biennial	9120D-1300
OML INC.	WR-19 / Horn Antenna	03/14/2024	Annual	M19RH-180423-1
OML INC.	WR-19 / Horn Antenna	03/14/2024	Annual	M19RH-180423-2
OML INC.	WR-12 / Horn Antenna	03/14/2024	Annual	M12RH-180423-1
OML INC.	WR-12 / Horn Antenna	03/14/2024	Annual	M12RH-180423-2
OML INC.	WR-08 / Horn Antenna	03/15/2024	Annual	M08RH-180501-1
OML INC.	WR-08 / Horn Antenna	03/15/2024	Annual	M08RH-180501-2
OML INC.	WR-05 / Horn Antenna	03/15/2024	Annual	M05RH-180501-1
OML INC.	WR-05 / Horn Antenna	03/15/2024	Annual	M05RH-180501-2
VDI	WR19SAX / Spectrum Analyzer Extension Module	03/14/2024	Annual	SAX771
VDI	WR12SAX / Spectrum Analyzer Extension Module	03/22/2024	Annual	SAX773
VDI	WR8.0SAX / Spectrum Analyzer Extension Module	03/14/2024	Annual	SAX779
VDI	WR5.1SAX / Spectrum Analyzer Extension Module	03/14/2024	Annual	SAX774
OML INC.	WR-19 / Source Module	07/19/2024	Annual	S19MS-A-160516-1
OML INC.	WR-12 / Source Module	07/19/2024	Annual	S12MS-A-160419-1
OML INC.	WR-08 / Source Module	07/19/2024	Annual	S08MS-A-160419-1
OML INC.	WR-05 / Source Module	07/19/2024	Annual	S05MS-A-160419-1
NANGYEUL CO., LTD.	NY-THR18750 / Temperature and Humidity Chamber	01/26/2024	Annual	NY-200912201A
Rohde & Schwarz	SMV100A / Signal Generator	06/22/2024	Annual	177633
Keysight	E7515B / UXM 5G Wireless Test Platform	12/28/2023	Annual	MY58300756
T&M SYSTEM	FBSR-04C / LNA1 thru(100M-18G)	08/18/2024	Annual	S4L4

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. Especially, all antenna(except WR 08, 05) for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

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

n258a Band Antenna 0 (M patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
M patch	50	1	BPSK	46.109
			QPSK	46.207
			16QAM	46.258
			64QAM	46.087
	100	1	BPSK	91.576
			QPSK	94.211
			16QAM	94.295
			64QAM	94.190
	100	2	BPSK	190.47
			QPSK	194.47
			16QAM	194.36
			64QAM	194.13

n258a Band Antenna 1 (N patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
N patch	50	1	BPSK	45.977
			QPSK	46.003
			16QAM	46.039
			64QAM	45.870
	100	1	BPSK	91.491
			QPSK	94.538
			16QAM	94.446
			64QAM	94.267
	100	2	BPSK	190.32
			QPSK	193.21
			16QAM	193.41
			64QAM	192.95

n258b Band Antenna 0 (M patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
M patch	50	1	BPSK	46.372
			QPSK	46.378
			16QAM	46.019
			64QAM	46.266
	100	1	BPSK	91.492
			QPSK	94.286
			16QAM	94.199
			64QAM	94.191
	100	2	BPSK	190.44
			QPSK	193.99
			16QAM	193.77
			64QAM	193.94
	100	3	BPSK	289.93
			QPSK	291.79
			16QAM	293.36
			64QAM	291.77
100	4	BPSK	390.01	
		QPSK	392.18	
		16QAM	392.07	
		64QAM	390.61	

n258b Band Antenna 1 (N patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
N patch	50	1	BPSK	46.037
			QPSK	45.965
			16QAM	45.883
			64QAM	45.914
	100	1	BPSK	91.394
			QPSK	94.417
			16QAM	94.254
			64QAM	94.139
	100	2	BPSK	190.71
			QPSK	193.46
			16QAM	193.59
			64QAM	193.24
	100	3	BPSK	290.07
			QPSK	292.76
			16QAM	292.97
			64QAM	292.68
100	4	BPSK	390.11	
		QPSK	392.55	
		16QAM	392.18	
		64QAM	392.04	

n260 Band Antenna 0 (M patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
M patch	50	1	BPSK	46.640
			QPSK	46.693
			16QAM	46.244
			64QAM	46.845
	100	1	BPSK	92.650
			QPSK	94.482
			16QAM	94.456
			64QAM	94.455
	100	2	BPSK	191.33
			QPSK	194.14
			16QAM	194.09
			64QAM	195.10
	100	3	BPSK	293.79
			QPSK	295.99
			16QAM	296.11
			64QAM	296.00
100	4	BPSK	393.41	
		QPSK	394.53	
		16QAM	393.88	
		64QAM	395.08	

n260 Band Antenna 1 (N patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
N patch	50	1	BPSK	46.050
			QPSK	46.106
			16QAM	46.238
			64QAM	46.214
	100	1	BPSK	91.891
			QPSK	94.399
			16QAM	94.430
			64QAM	94.417
	100	2	BPSK	191.49
			QPSK	193.82
			16QAM	193.84
			64QAM	194.12
	100	3	BPSK	291.51
			QPSK	293.81
			16QAM	294.25
			64QAM	294.58
100	4	BPSK	394.55	
		QPSK	395.26	
		16QAM	395.44	
		64QAM	398.13	

n261 Band Antenna 0 (M patch)

Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
M patch	50	1	BPSK	46.295
			QPSK	46.397
			16QAM	46.379
			64QAM	46.316
	100	1	BPSK	91.212
			QPSK	94.099
			16QAM	94.115
			64QAM	93.993
	100	2	BPSK	190.80
			QPSK	193.98
			16QAM	194.18
			64QAM	193.95
	100	3	BPSK	290.47
			QPSK	292.54
			16QAM	292.15
			64QAM	292.17
100	4	BPSK	389.67	
		QPSK	391.41	
		16QAM	391.06	
		64QAM	390.66	

n261 Band Antenna 1 (N patch)

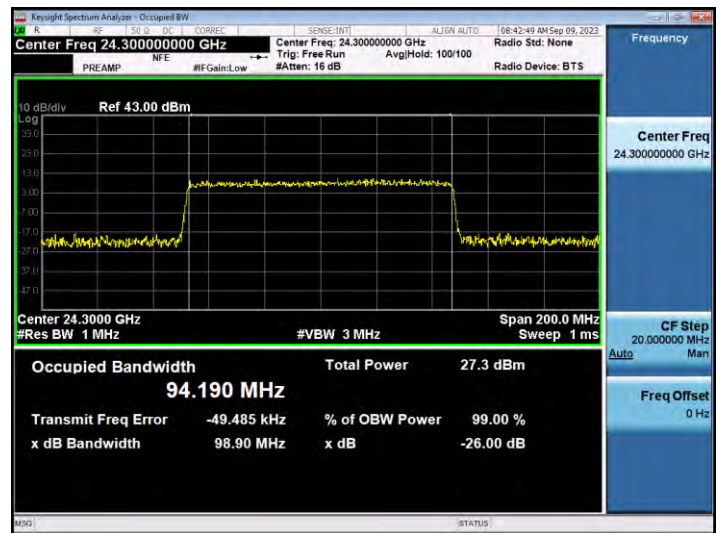
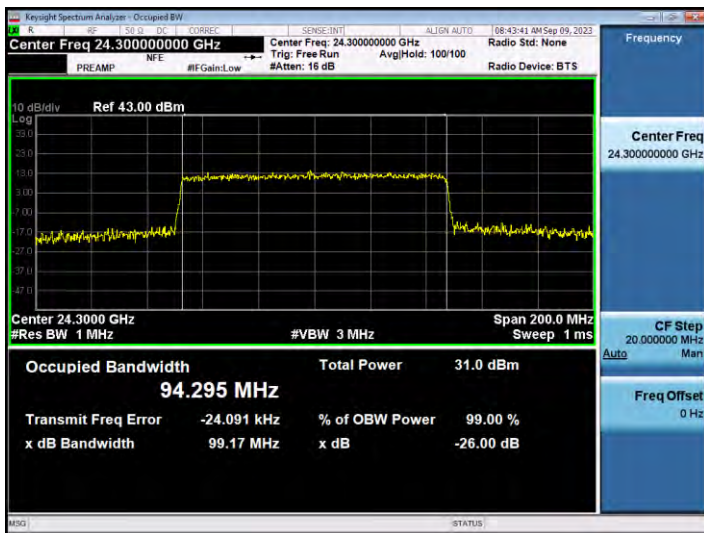
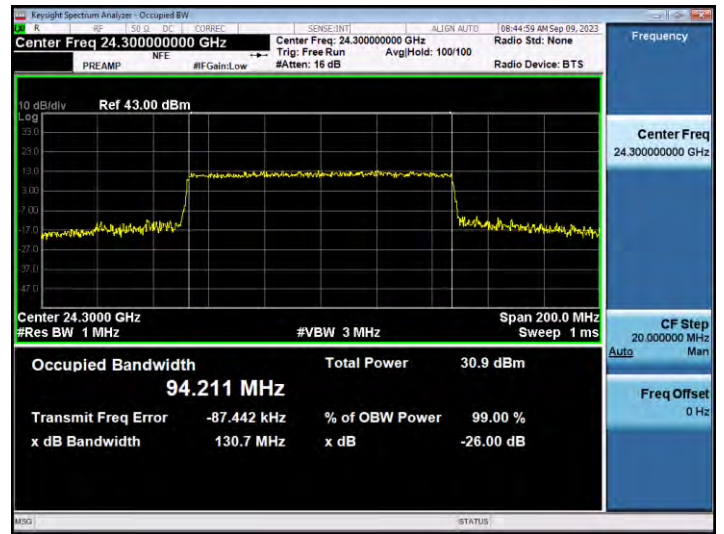
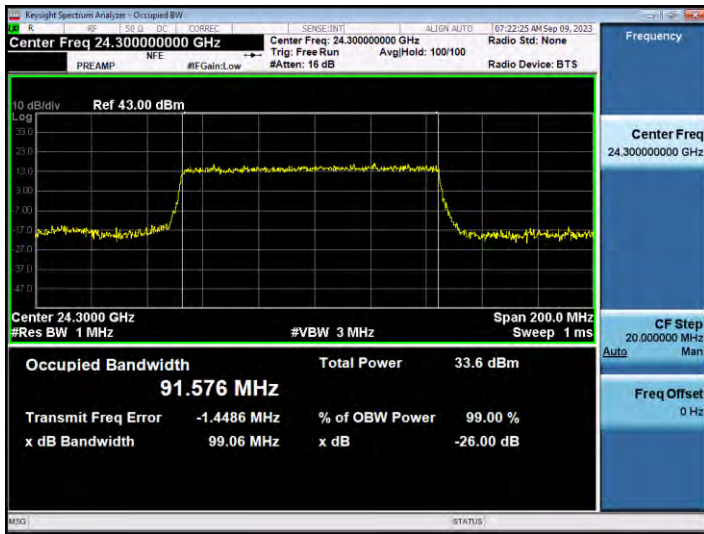
Antenna	Bandwidth [MHz]	CCs active	Modulation	OBW [MHz]
N patch	50	1	BPSK	46.128
			QPSK	46.170
			16QAM	46.217
			64QAM	45.888
	100	1	BPSK	91.328
			QPSK	94.319
			16QAM	94.269
			64QAM	94.266
	100	2	BPSK	192.05
			QPSK	193.81
			16QAM	193.56
			64QAM	193.43
	100	3	BPSK	290.05
			QPSK	293.46
			16QAM	293.48
			64QAM	292.46
100	4	BPSK	390.04	
		QPSK	392.32	
		16QAM	392.42	
		64QAM	391.77	

Plot Data of RF Occupied Bandwidth
n258a Band Antenna 0 (M patch)

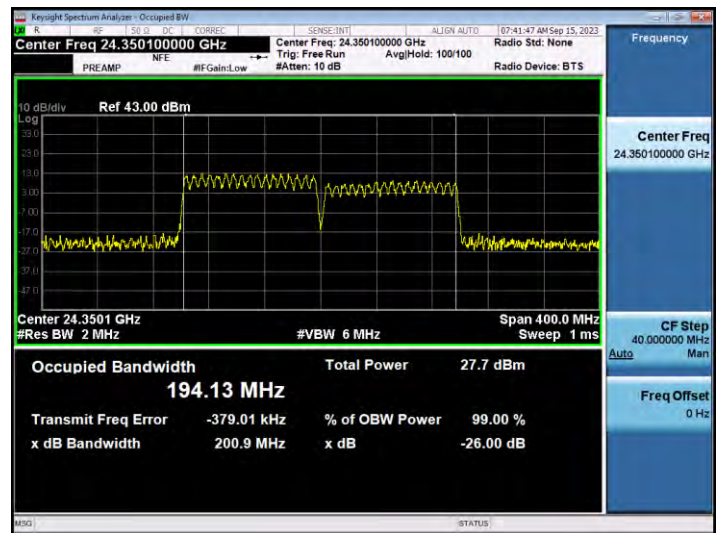
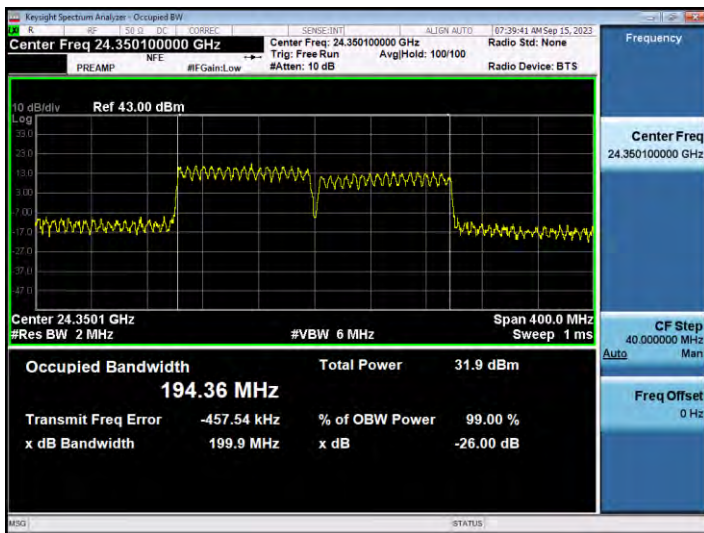
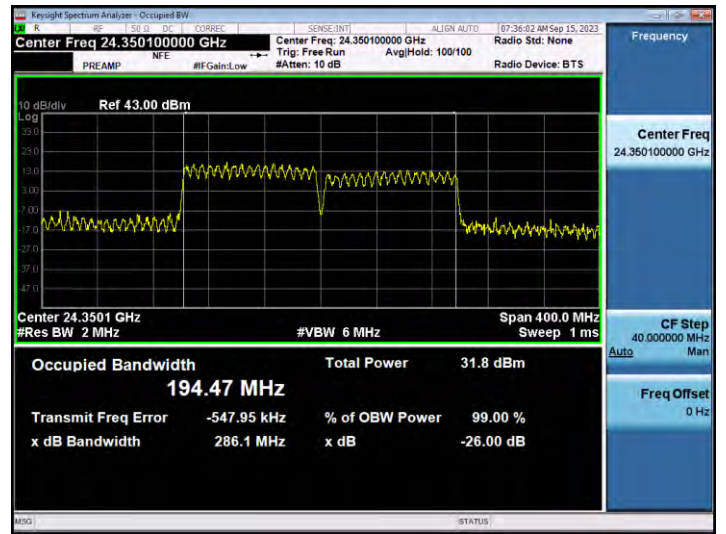
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100 MHz, 1CC

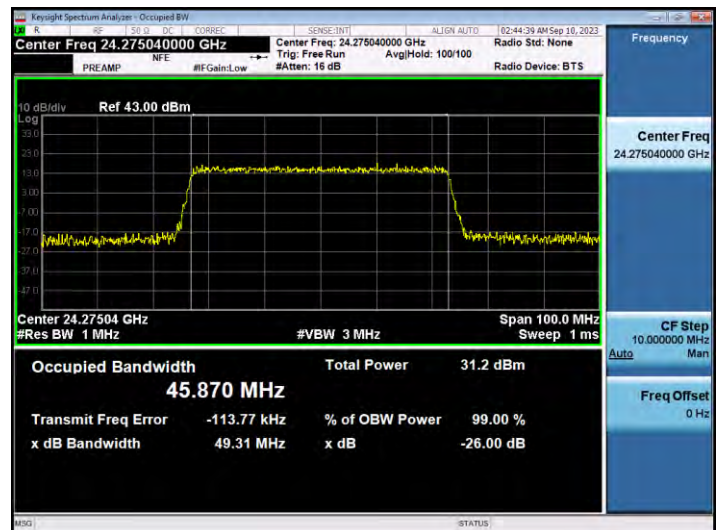
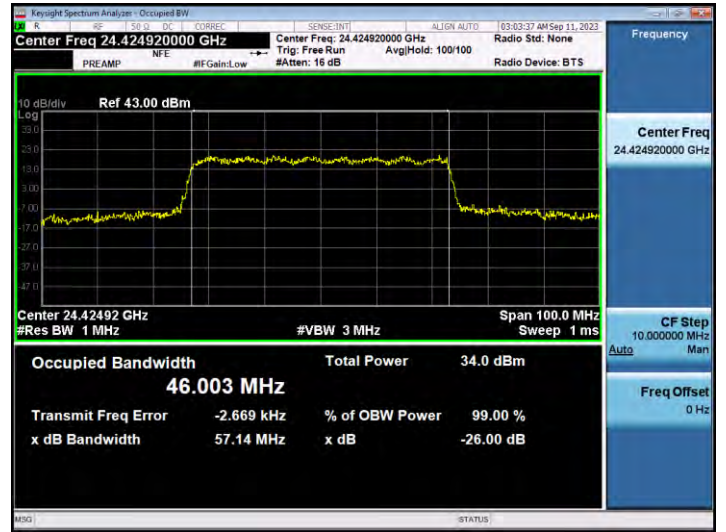
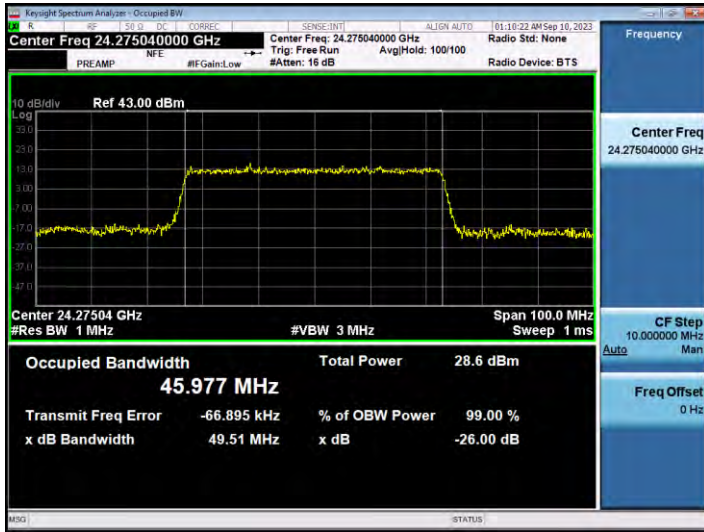


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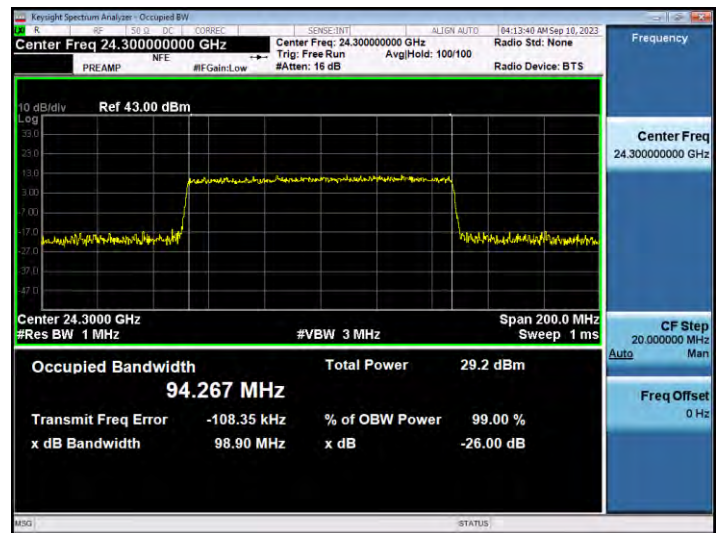
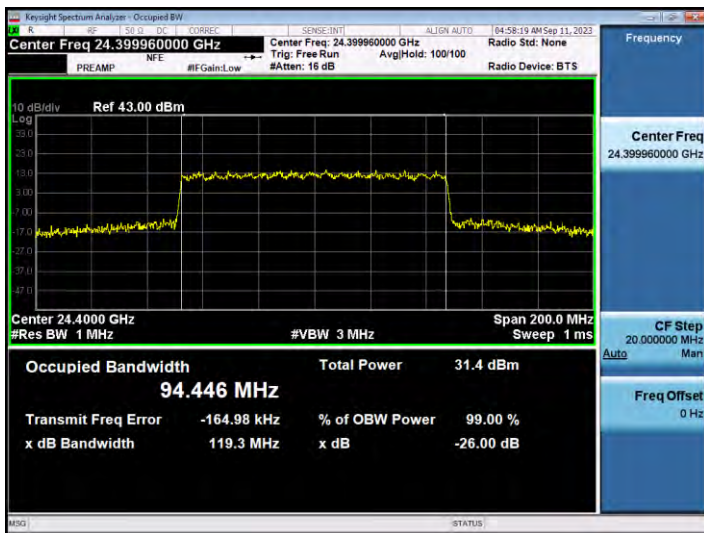
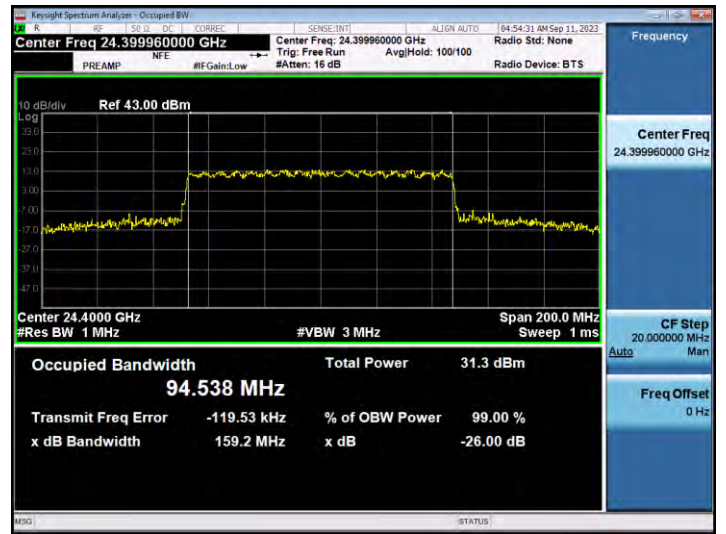
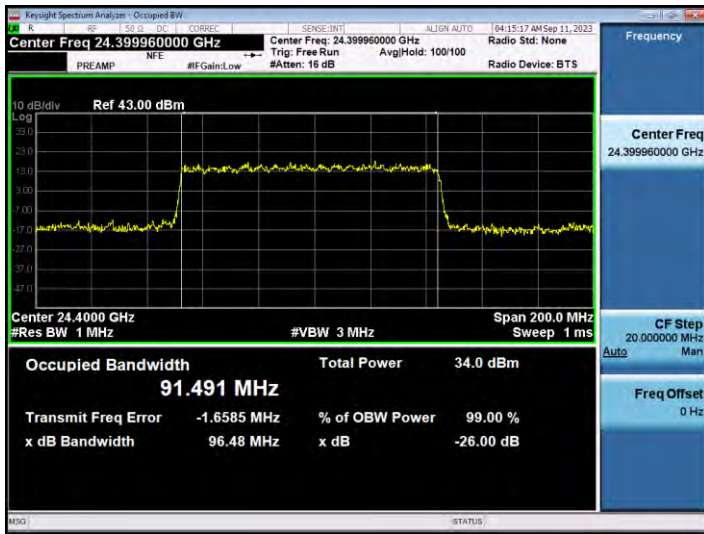


n258a Band Antenna 1 (N patch)

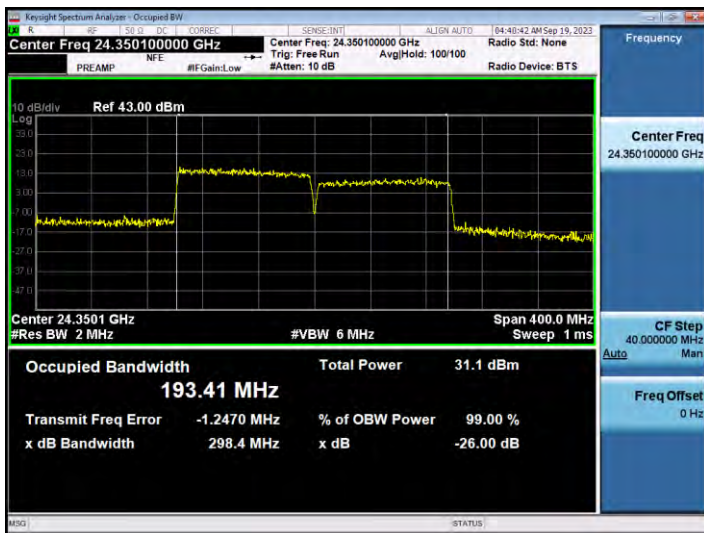
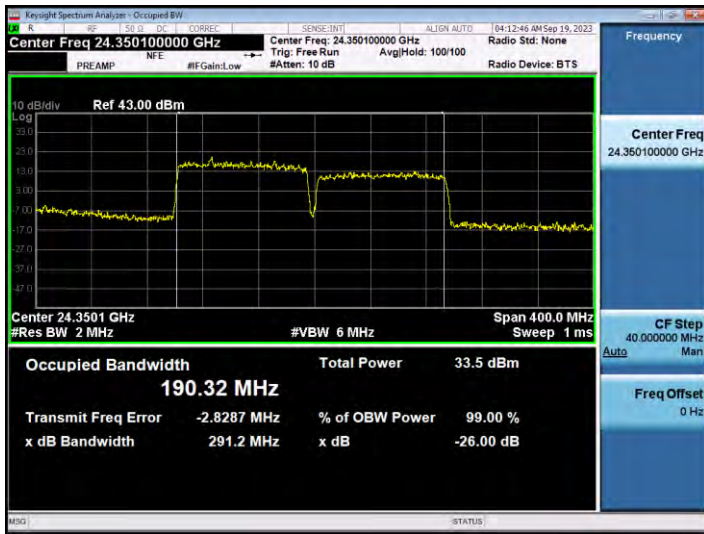
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100 MHz, 1CC

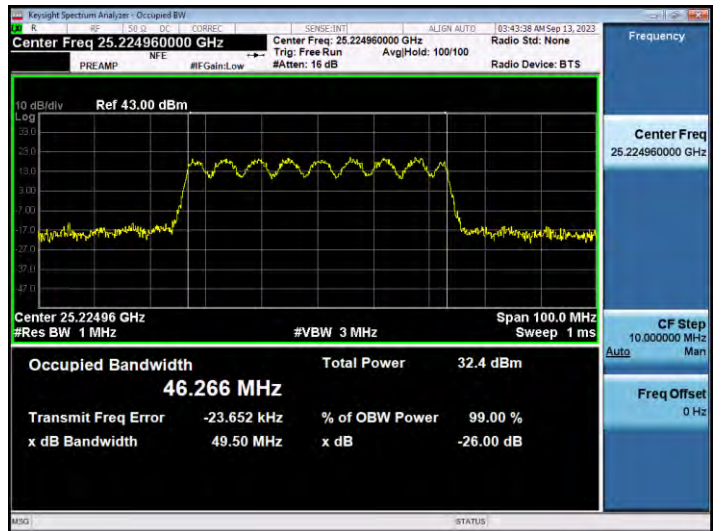
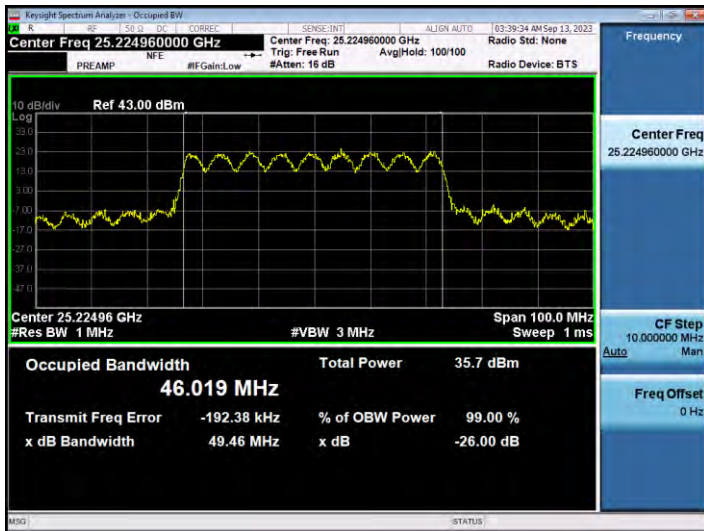
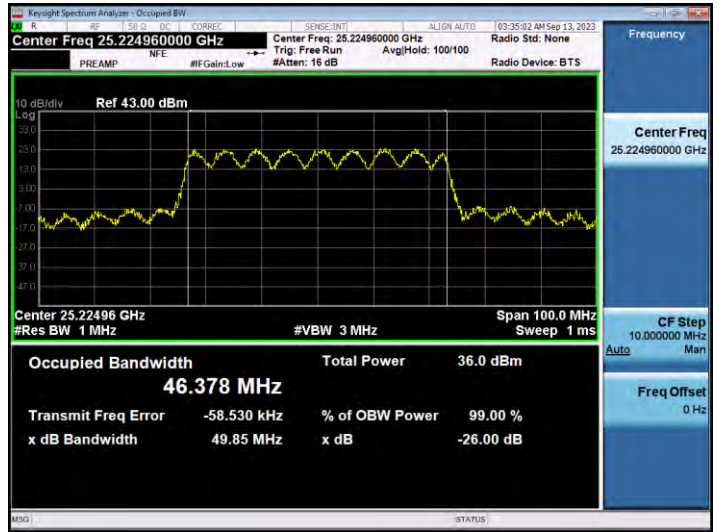
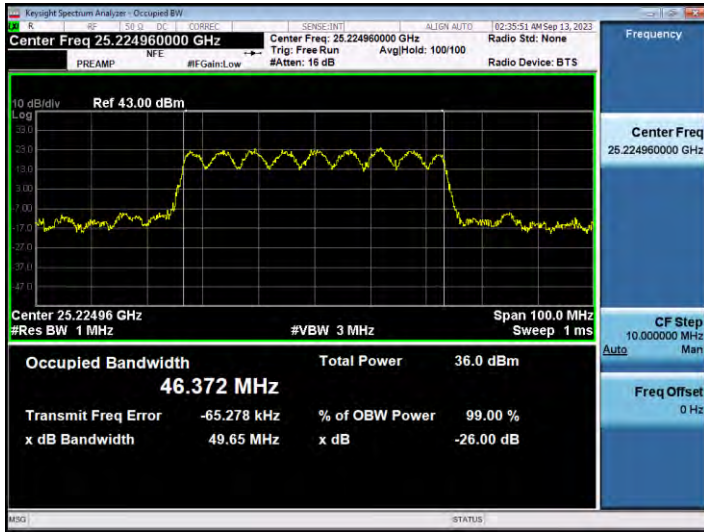


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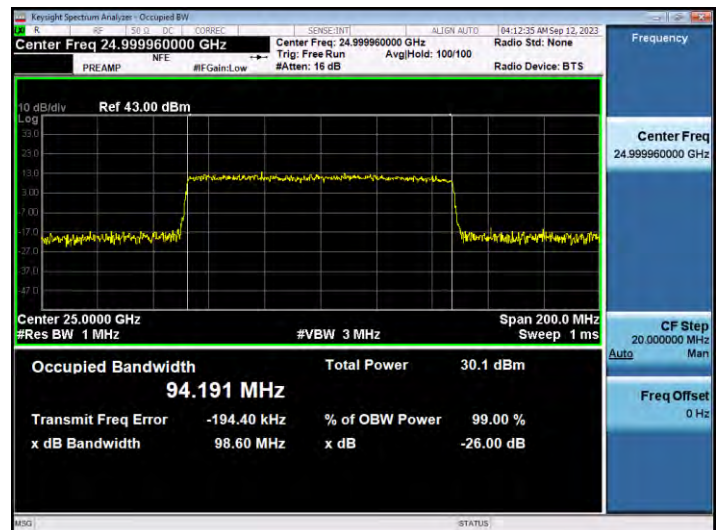
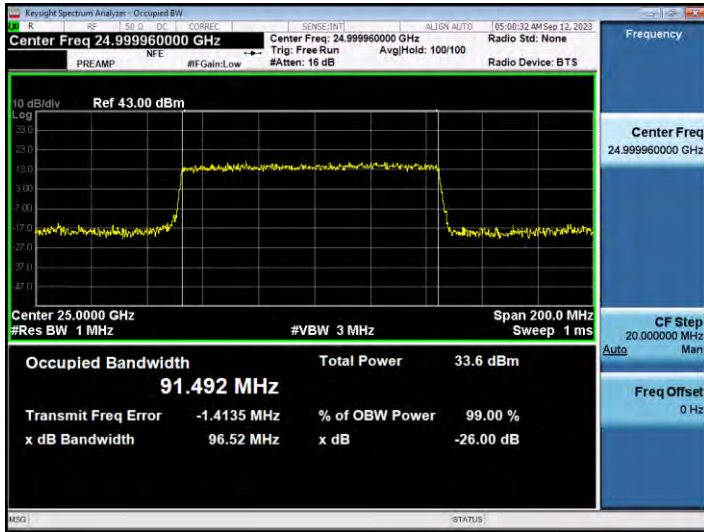


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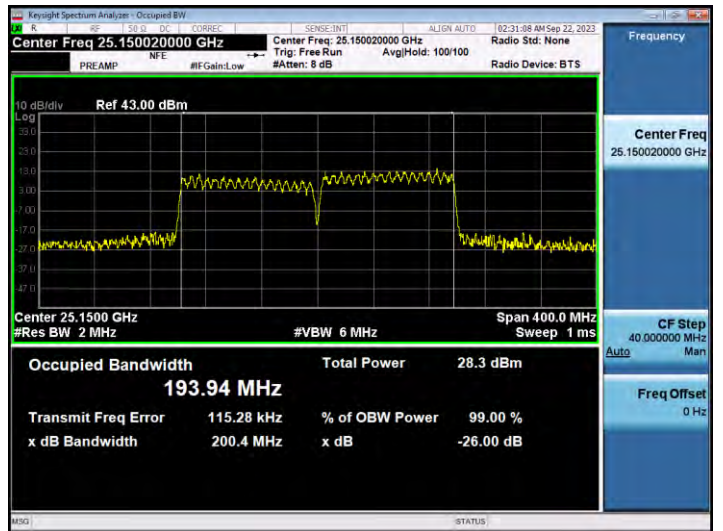
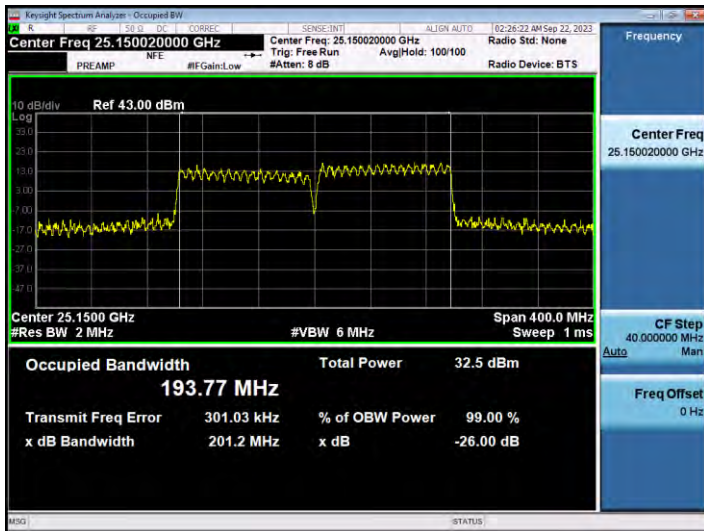
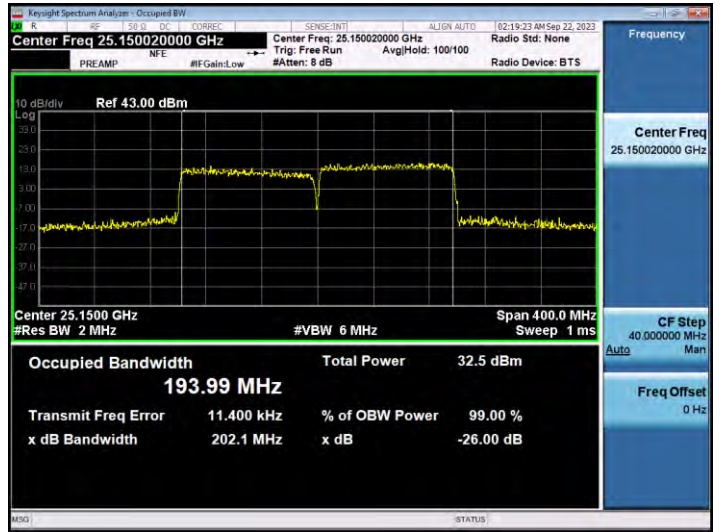
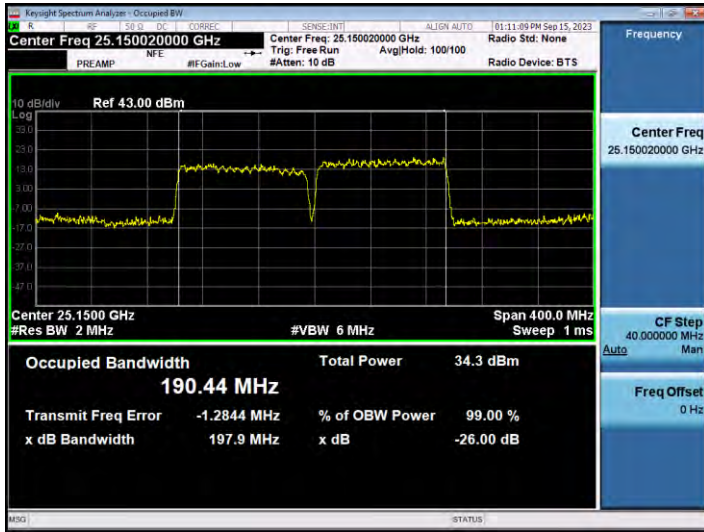
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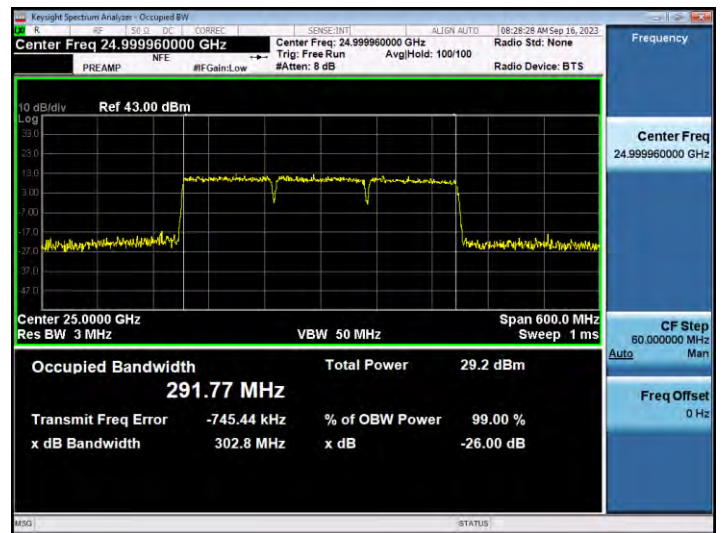
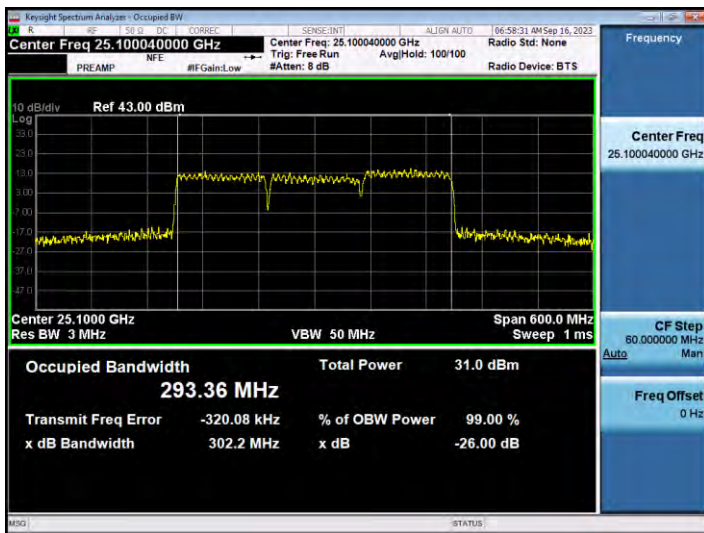
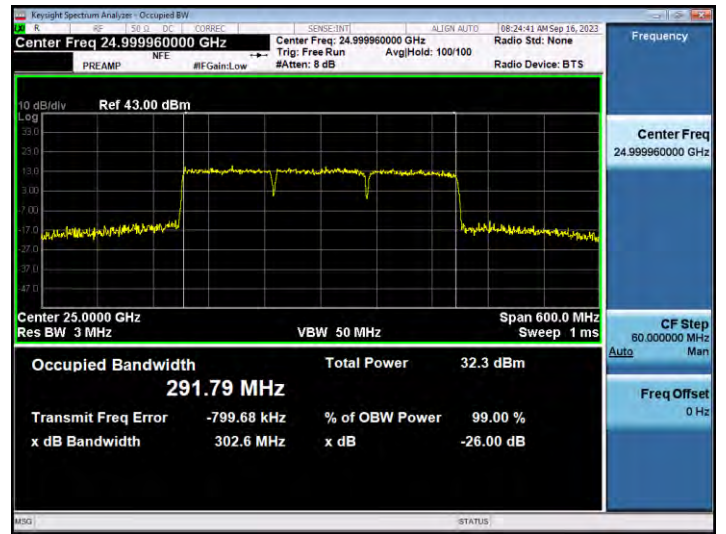
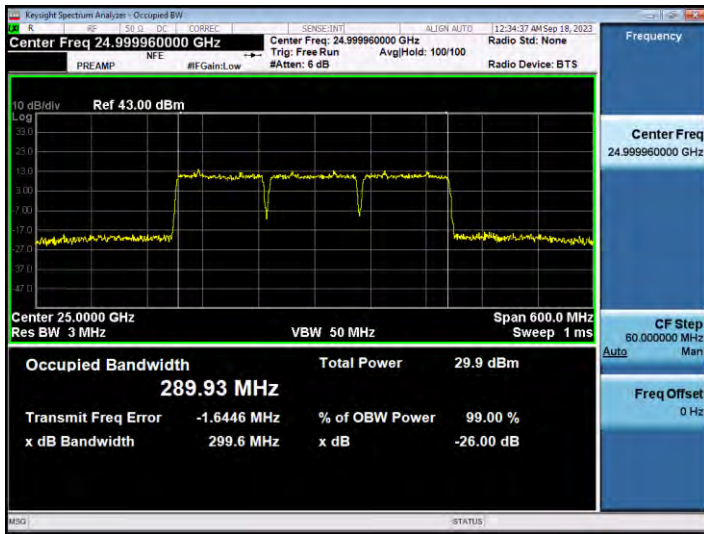
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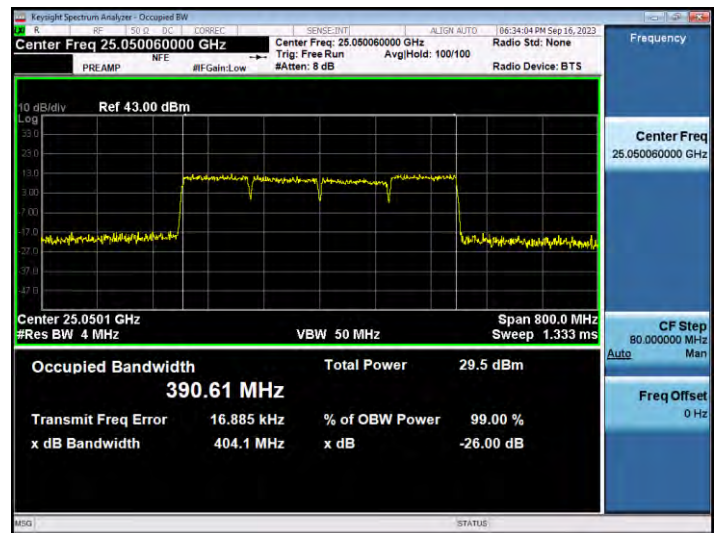
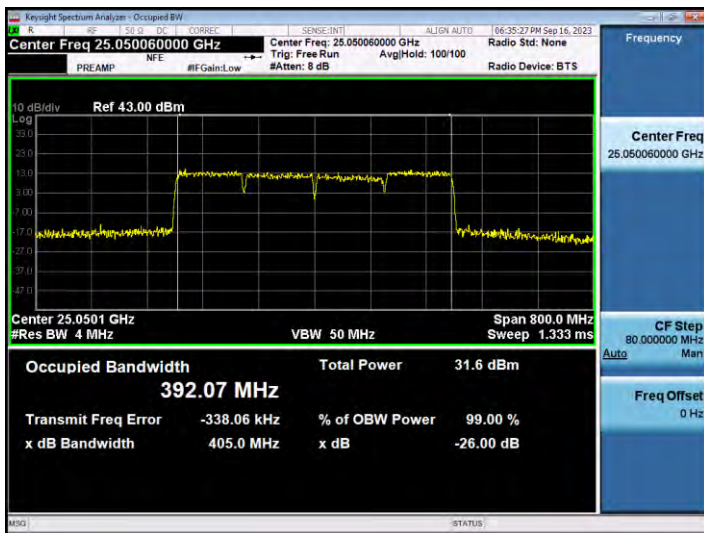
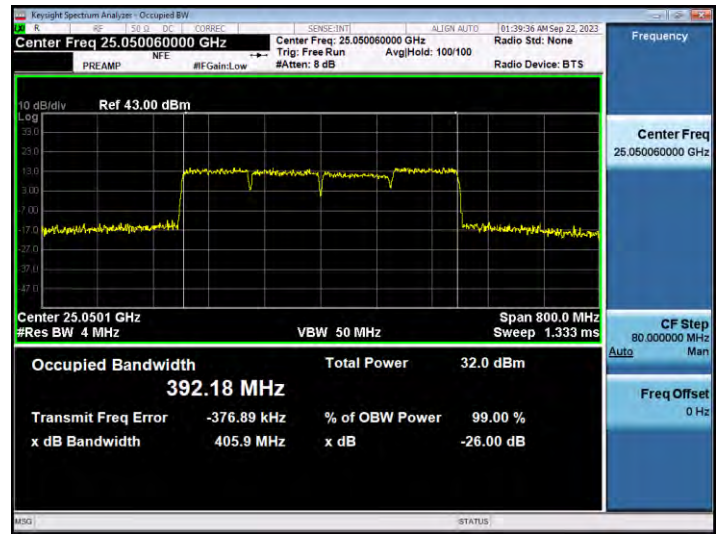
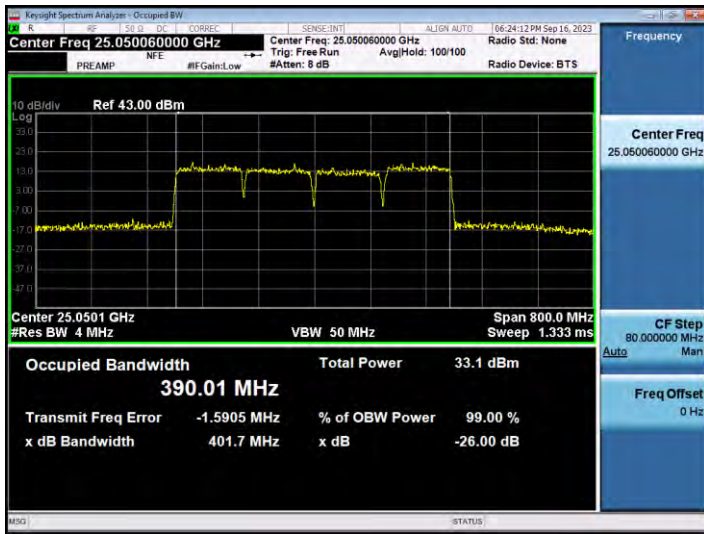
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100 MHz, 3CC

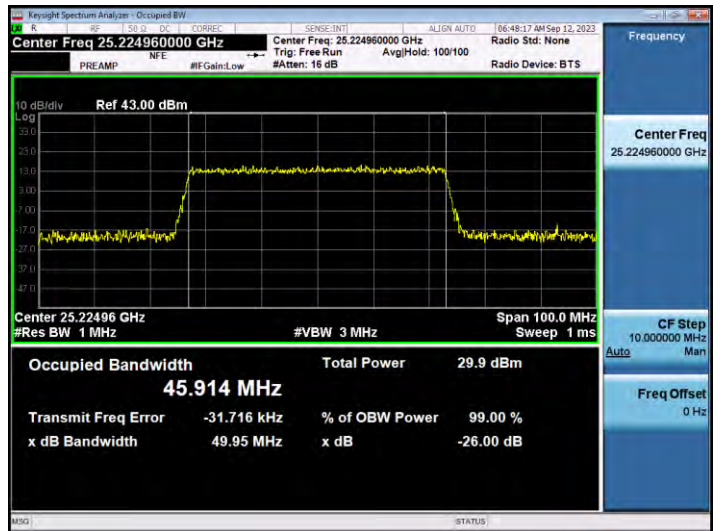
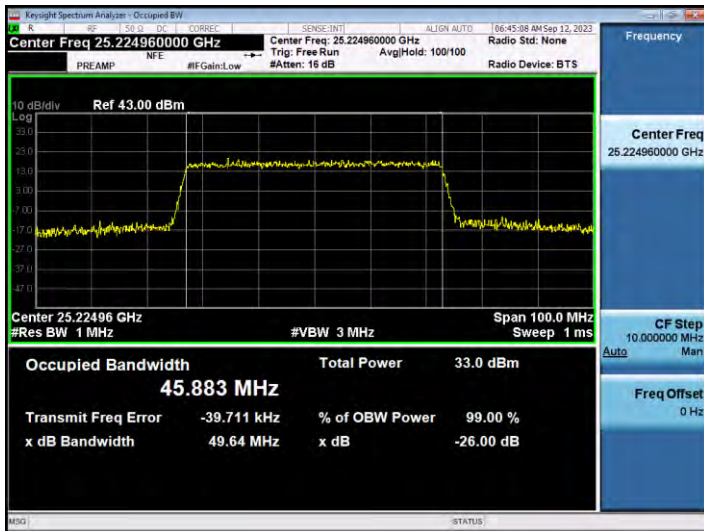
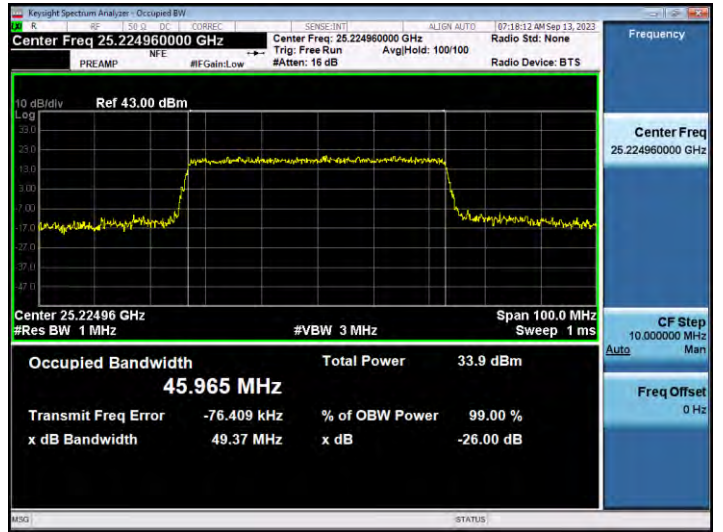
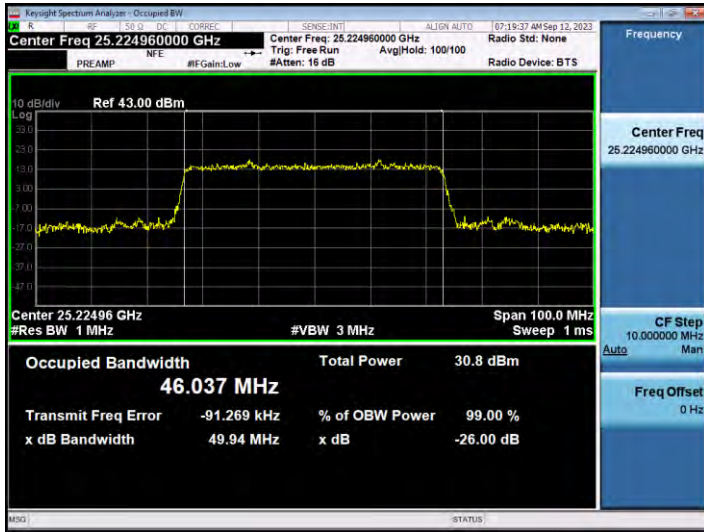


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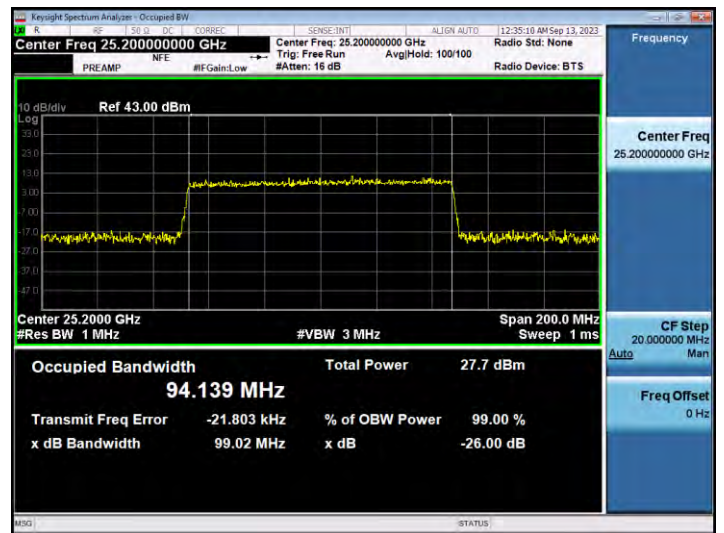
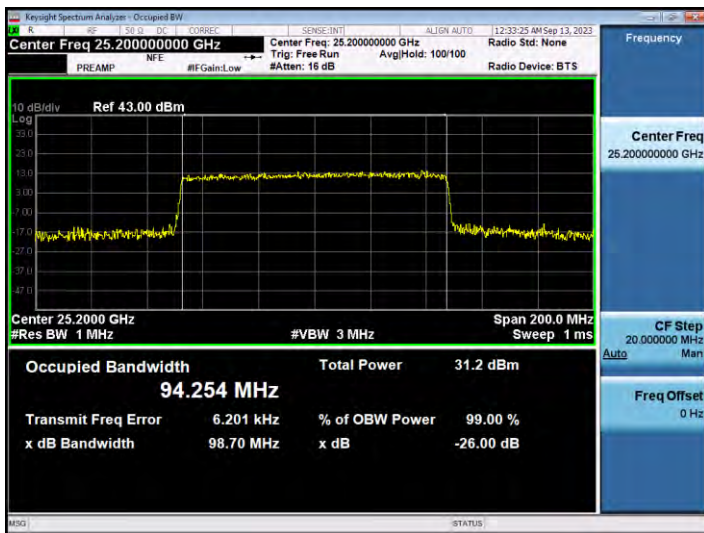
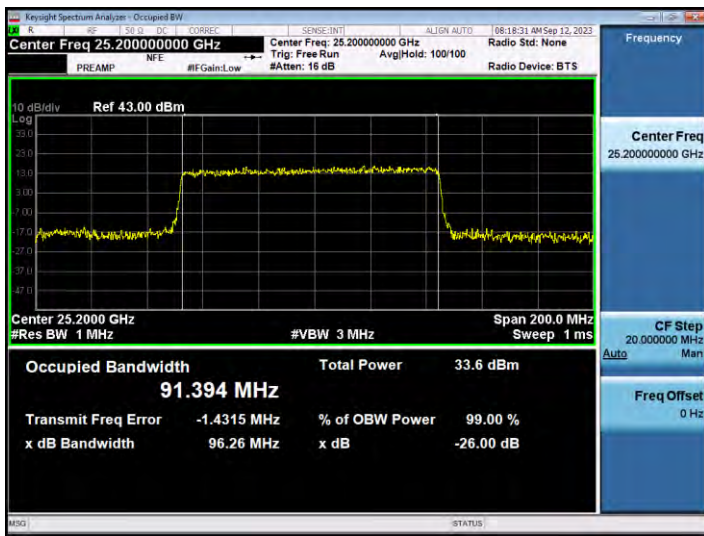


n258b Band Antenna 1 (N patch)

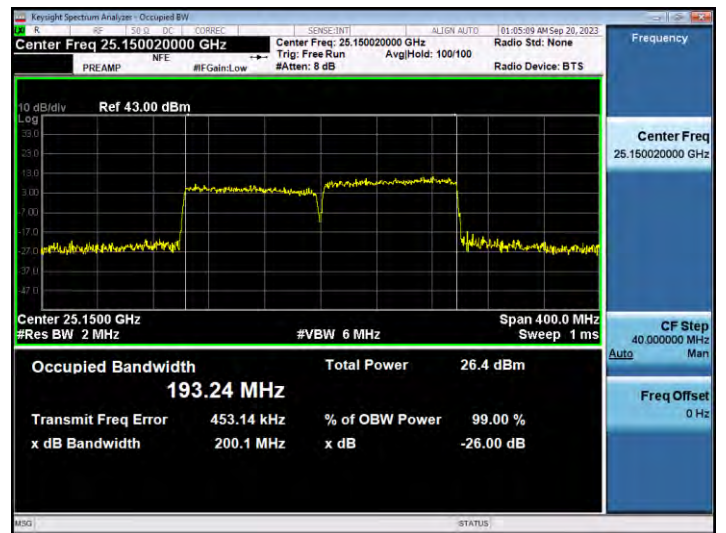
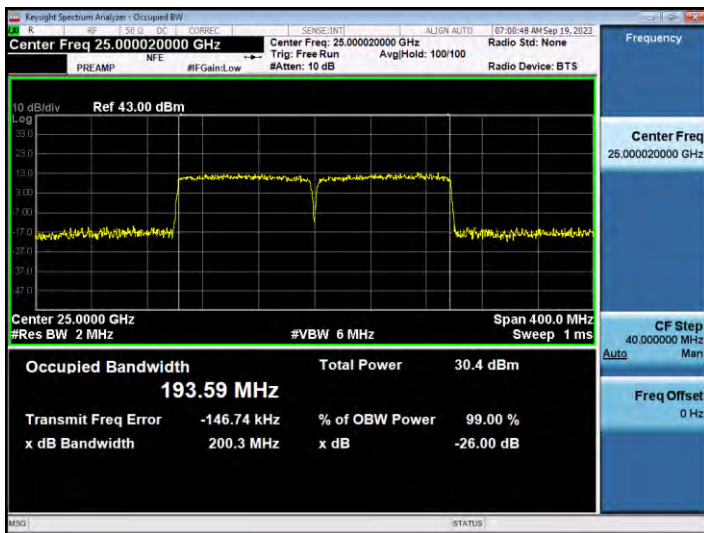
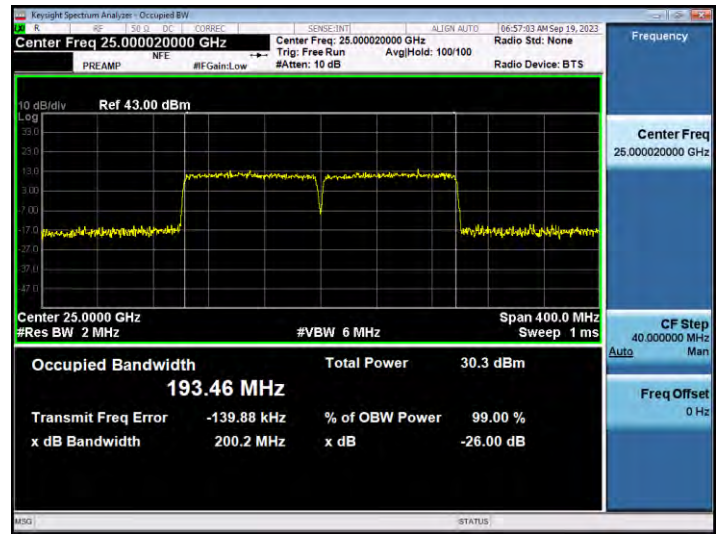
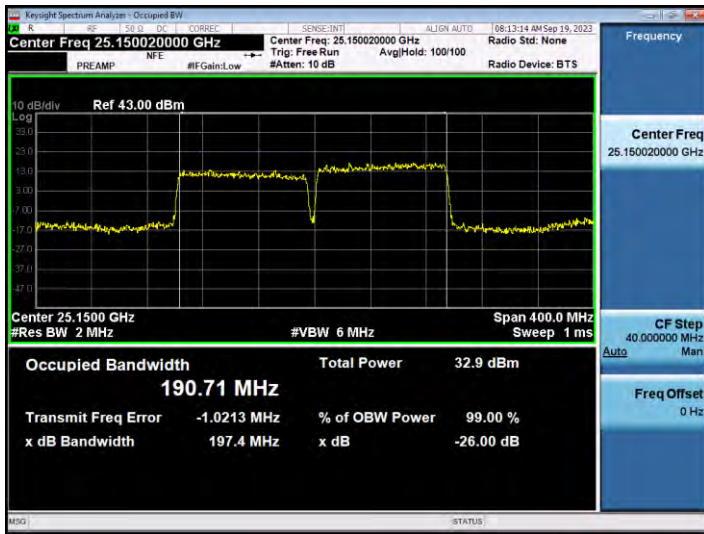
50 MHz, 1CC



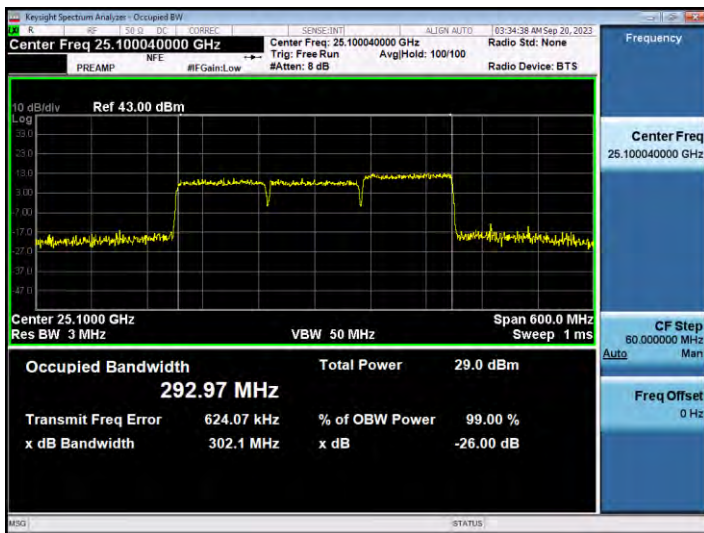
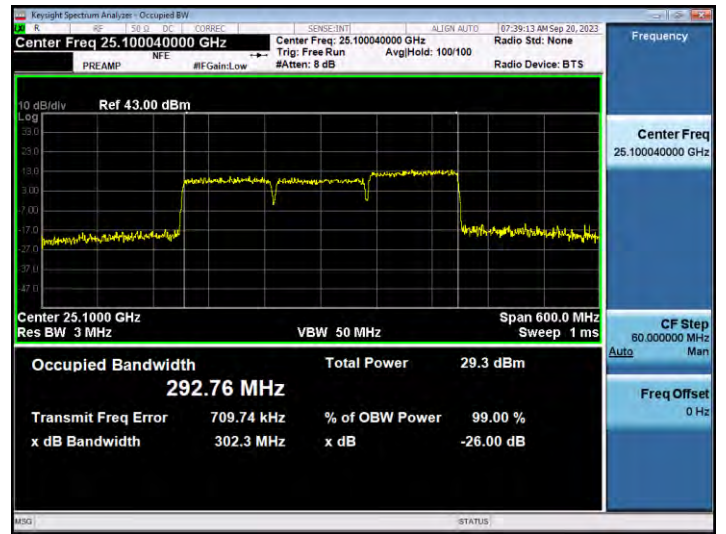
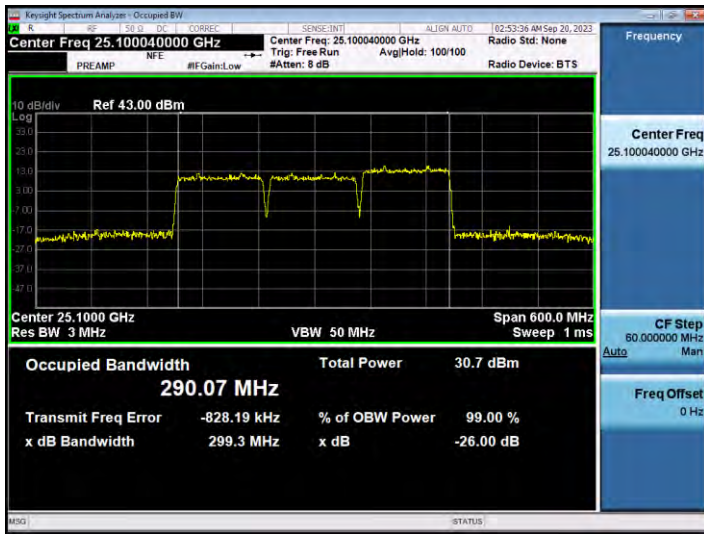
100 MHz, 1CC



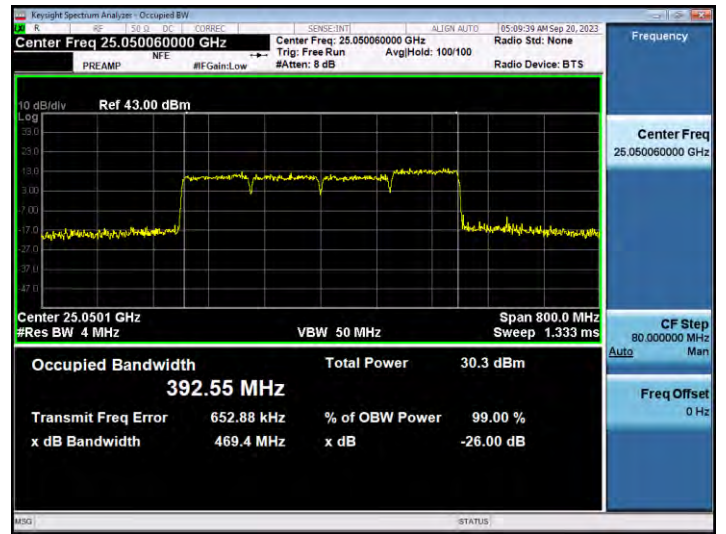
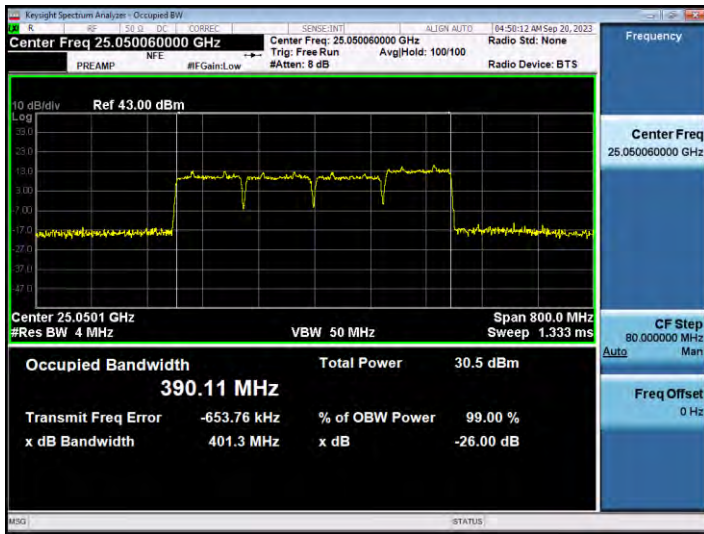
100 MHz, 2CC



100 MHz, 3CC

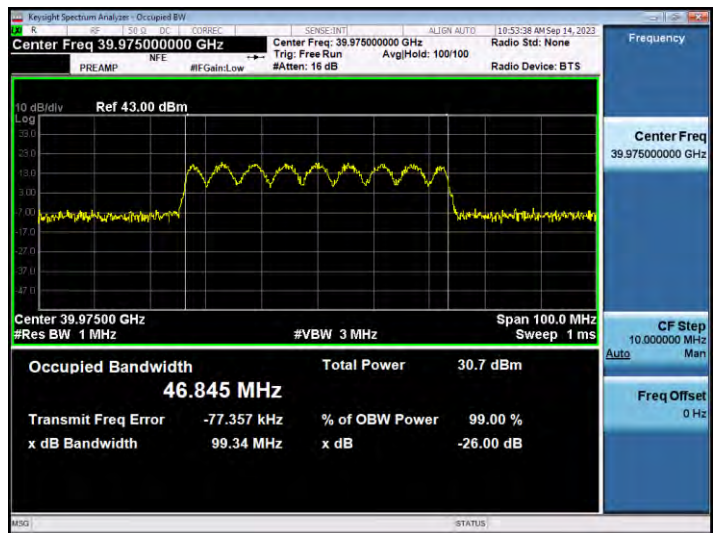
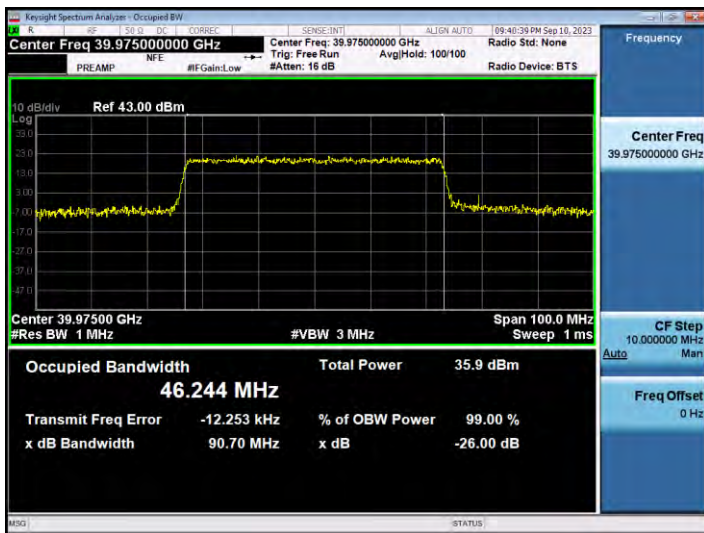
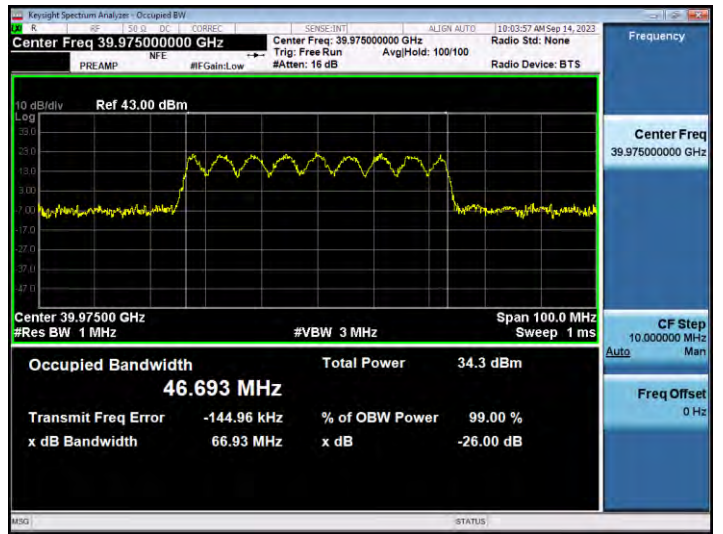
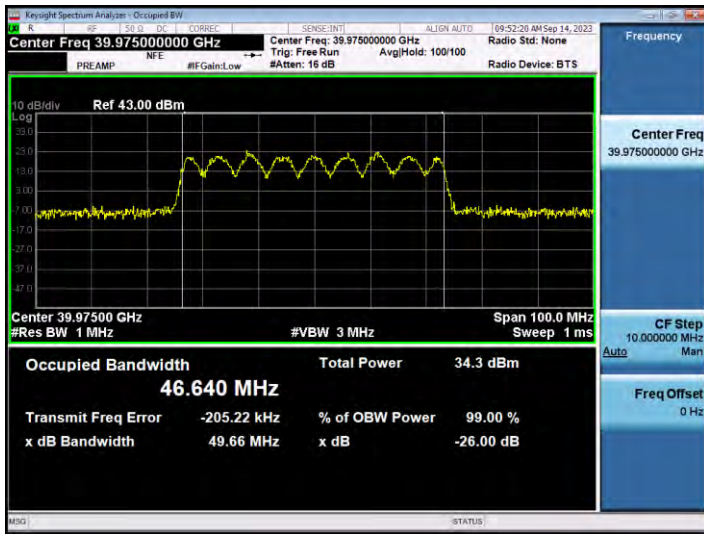


100 MHz, 4CC

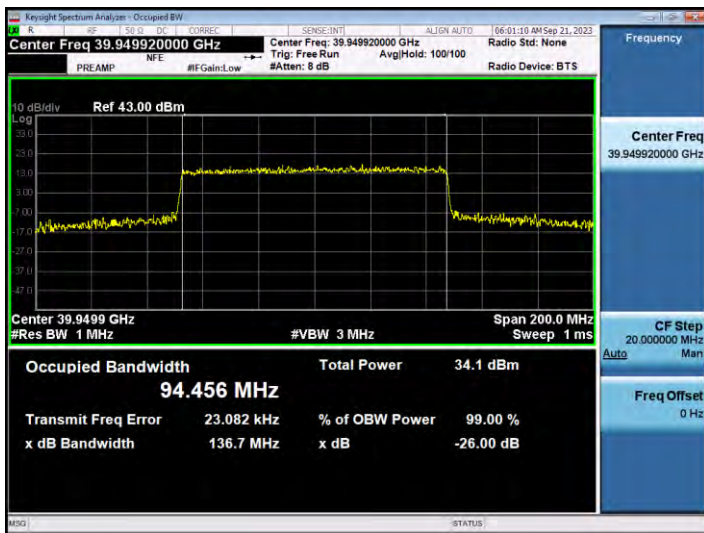
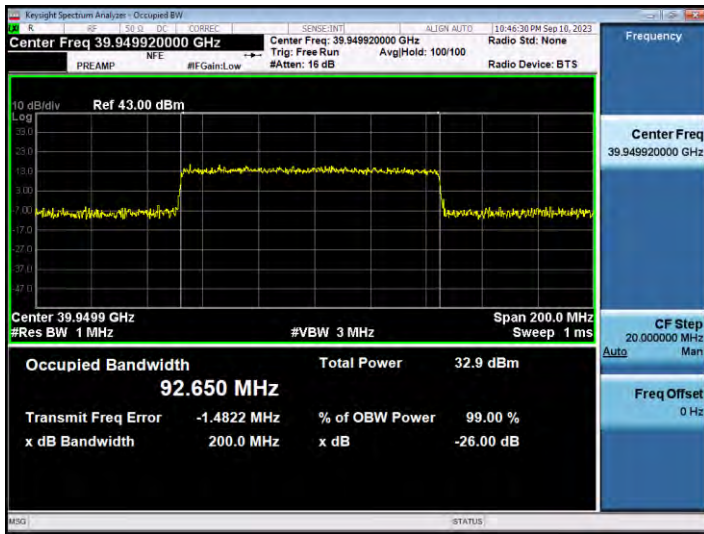


n260 Band Antenna 0 (M patch)

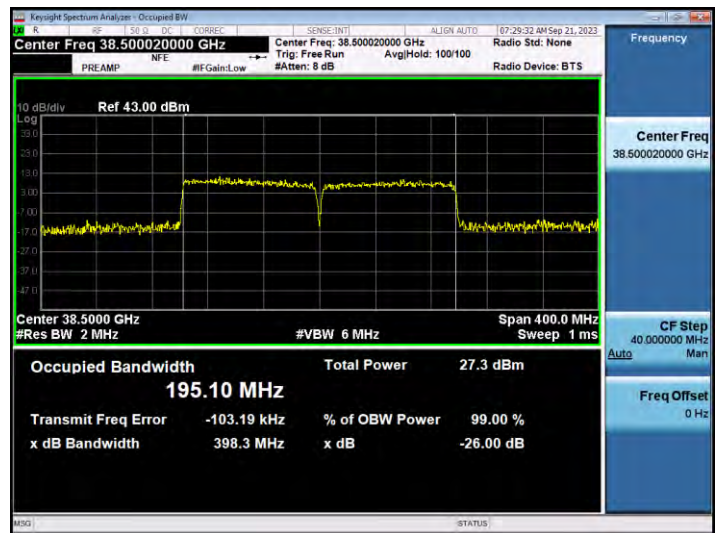
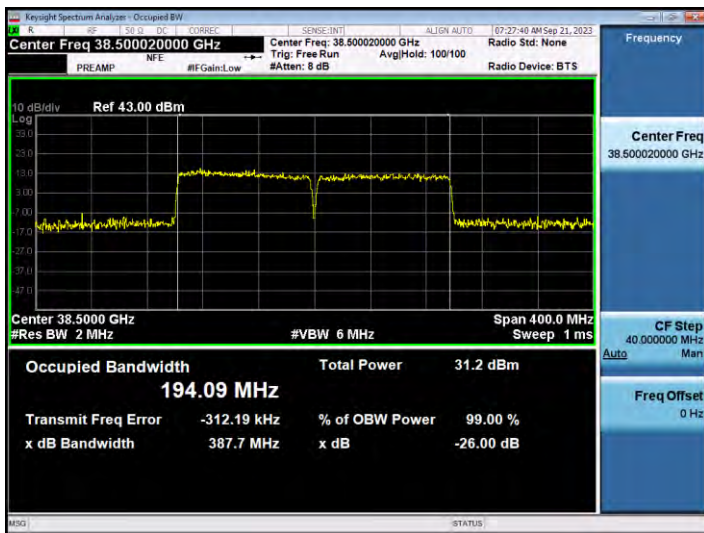
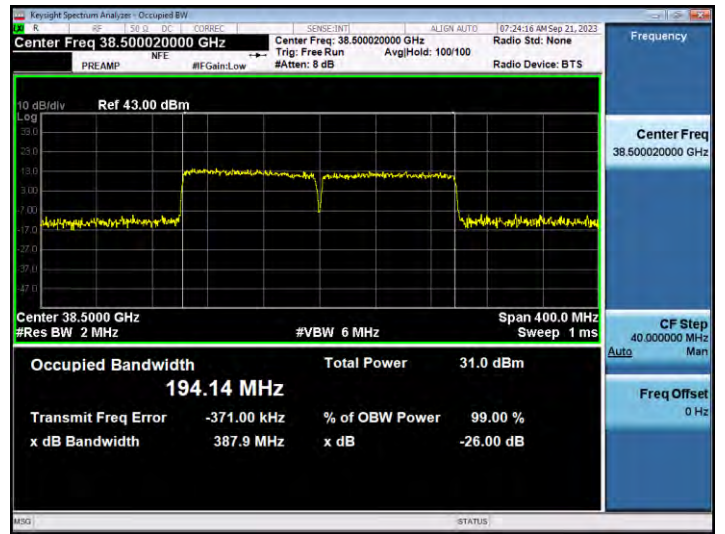
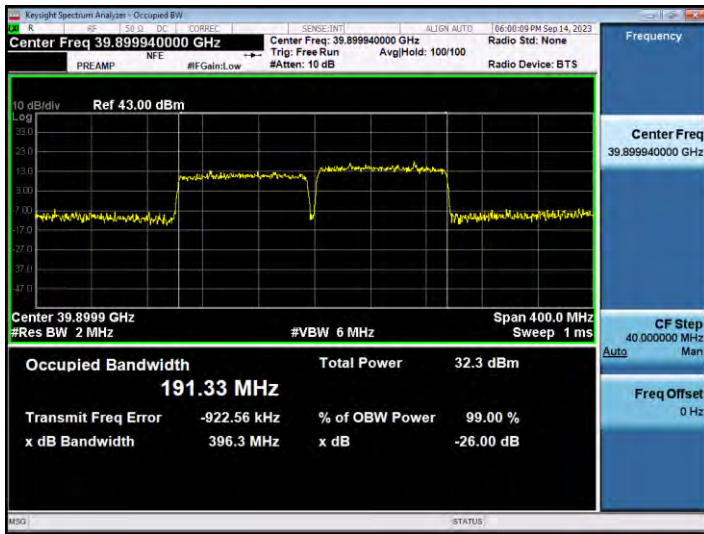
50 MHz, 1CC



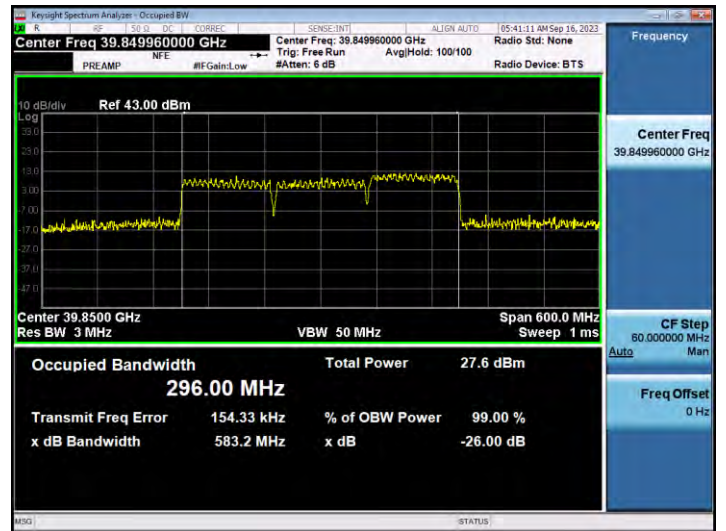
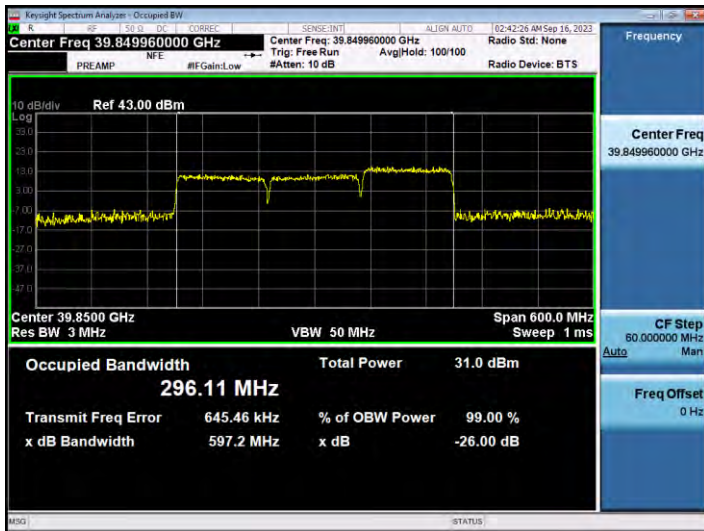
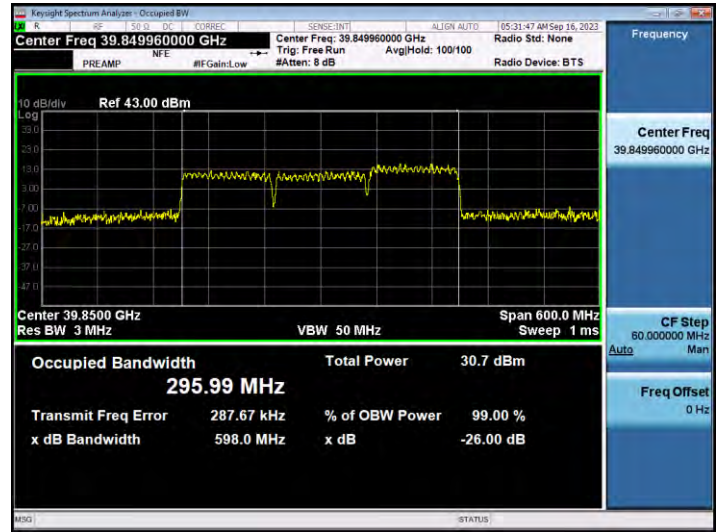
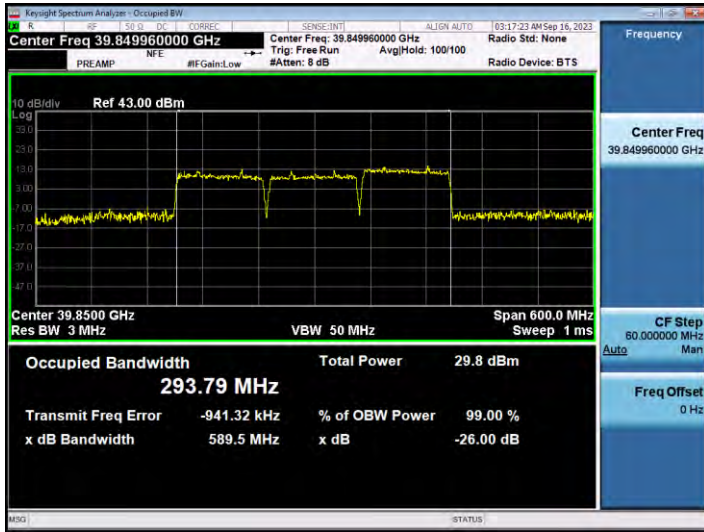
100 MHz, 1CC



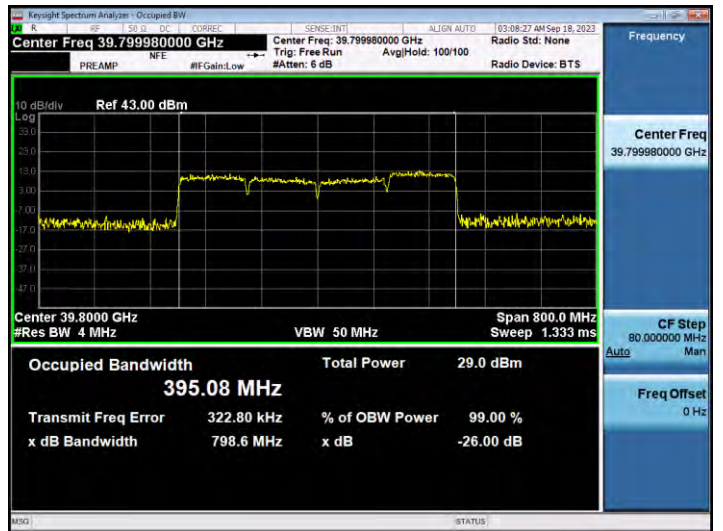
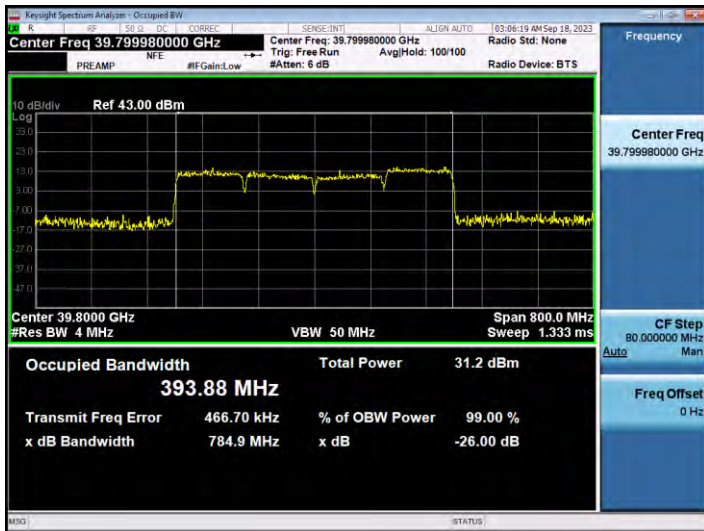
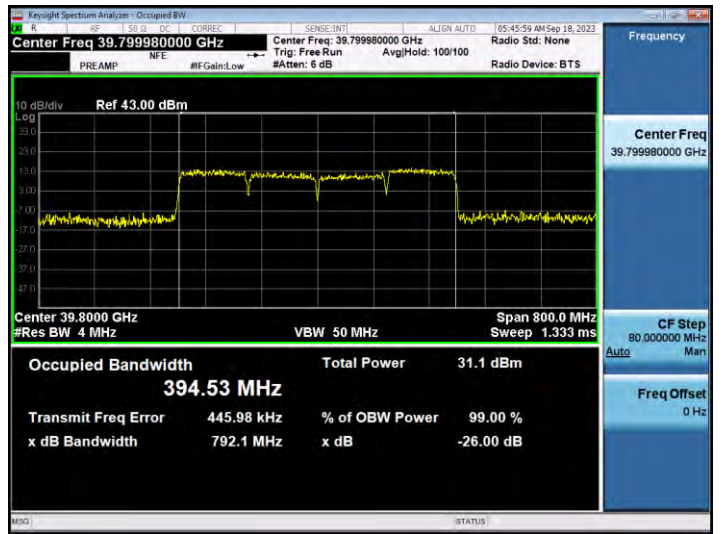
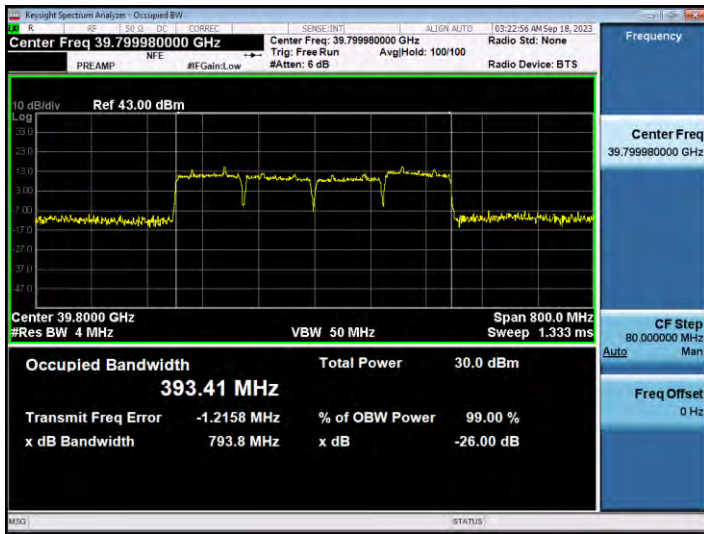
100 MHz, 2CC



100 MHz, 3CC

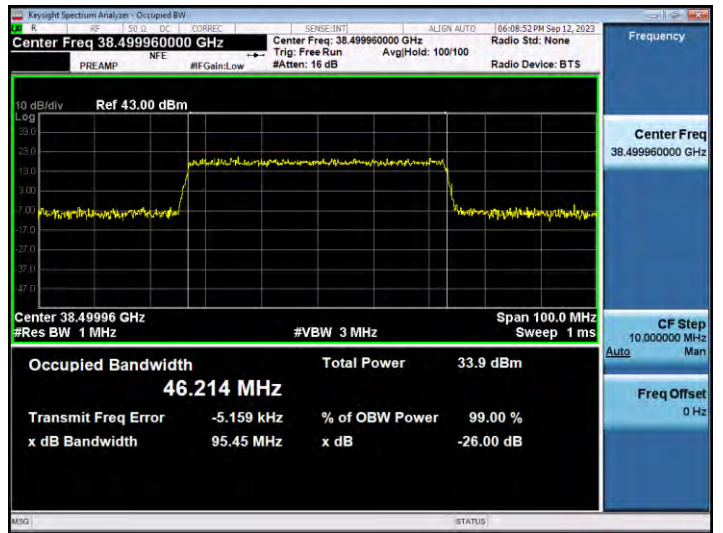
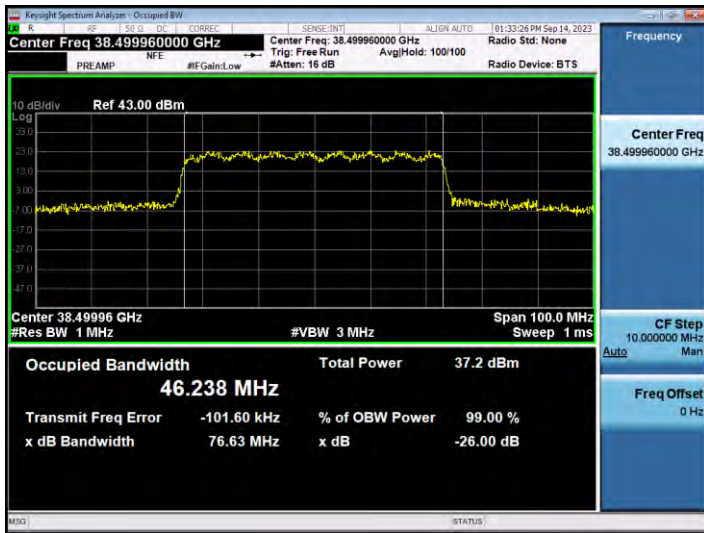
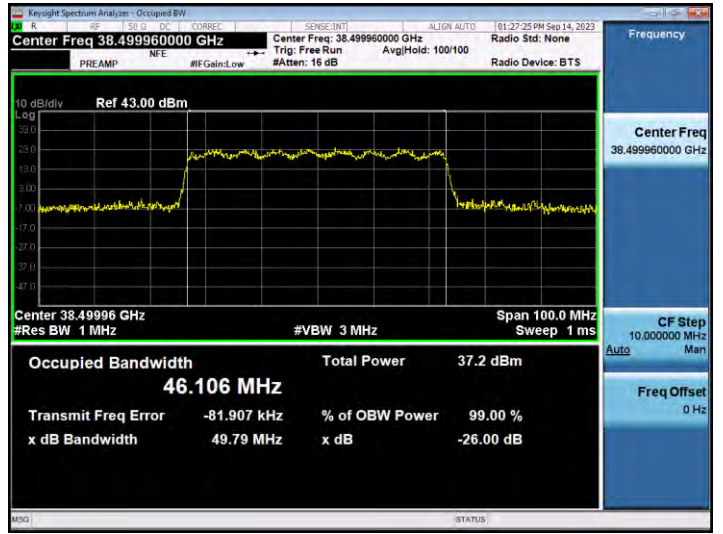
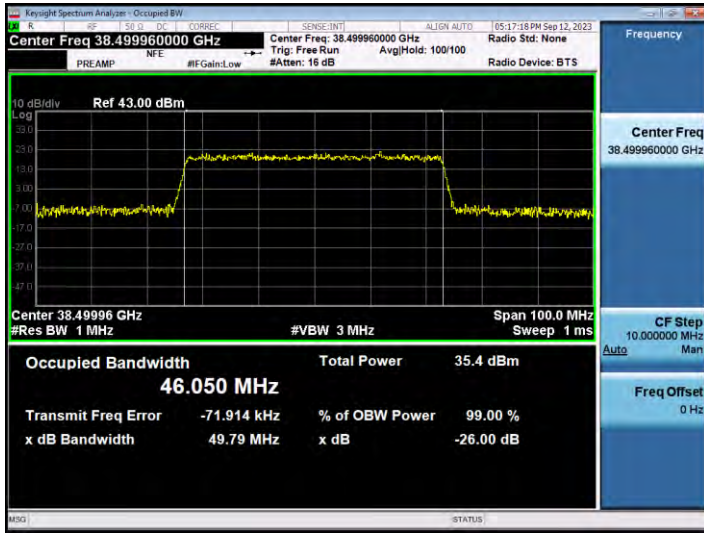


100 MHz, 4CC

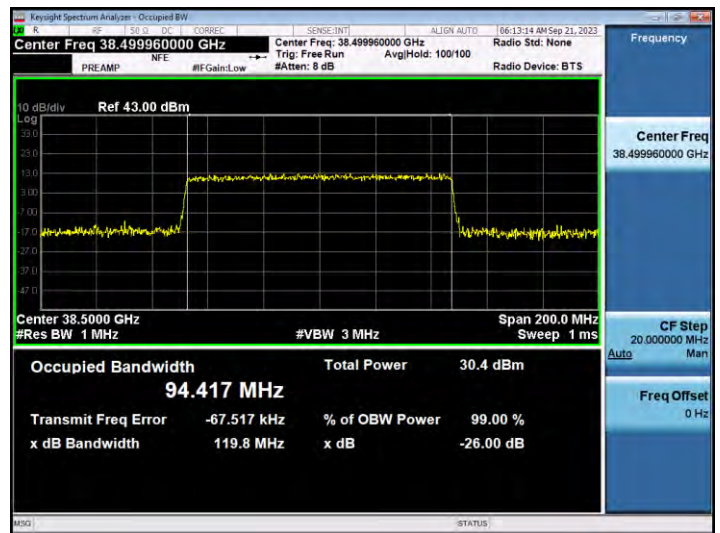
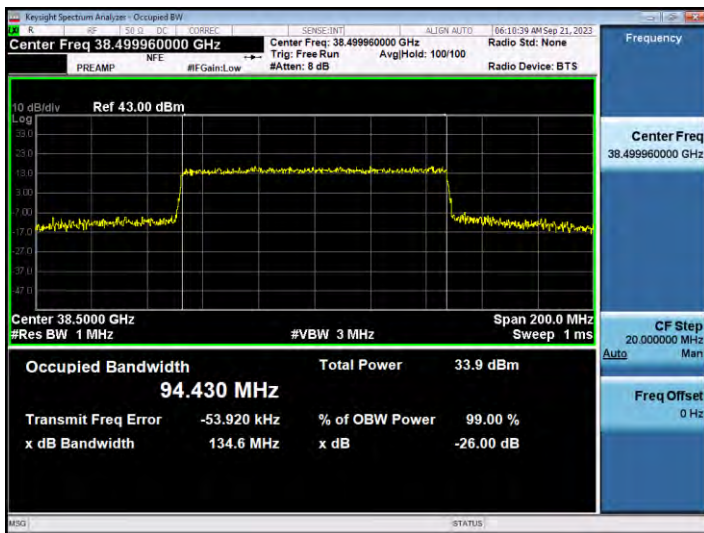
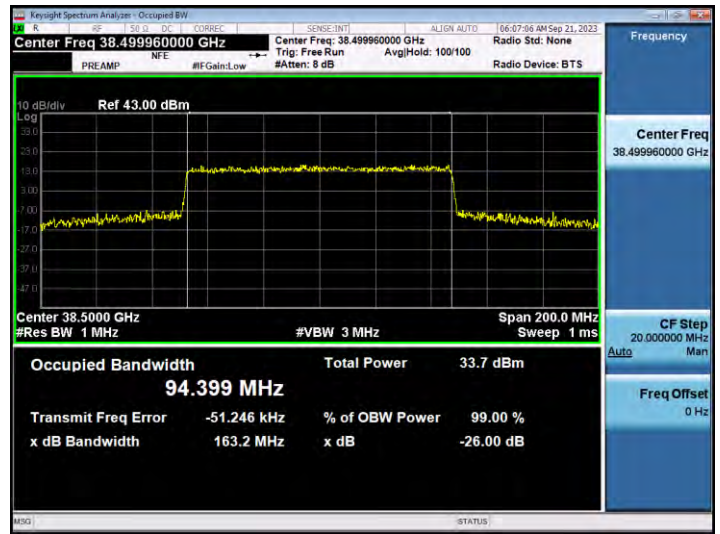
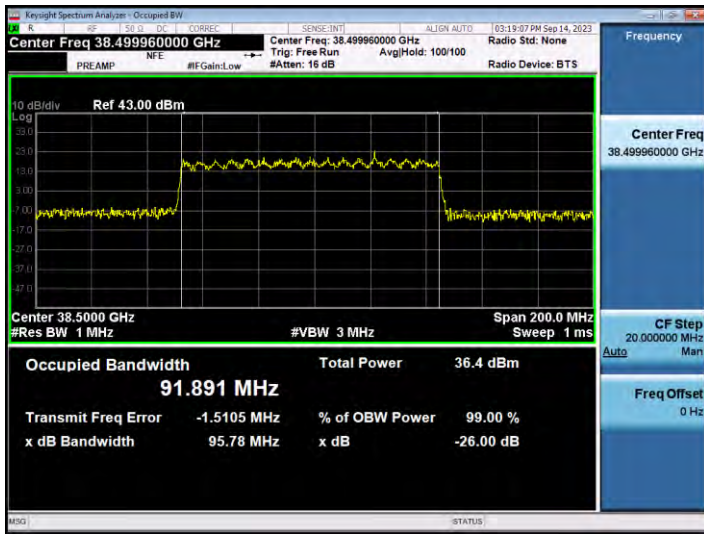


n260 Band Antenna 1 (N patch)

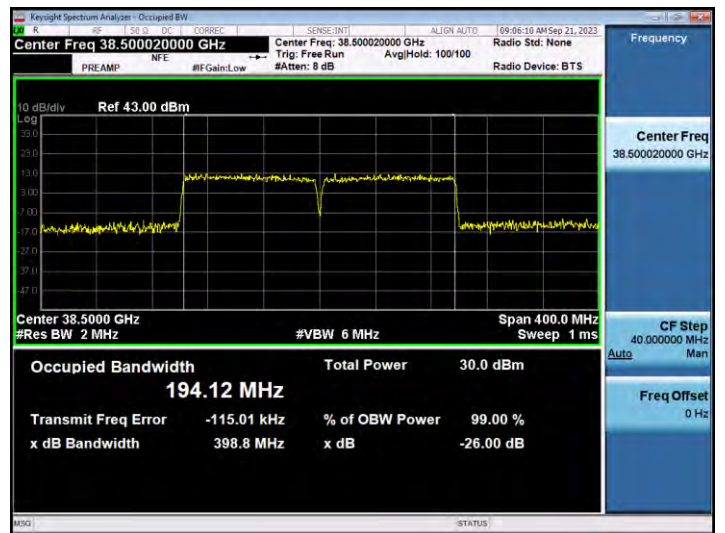
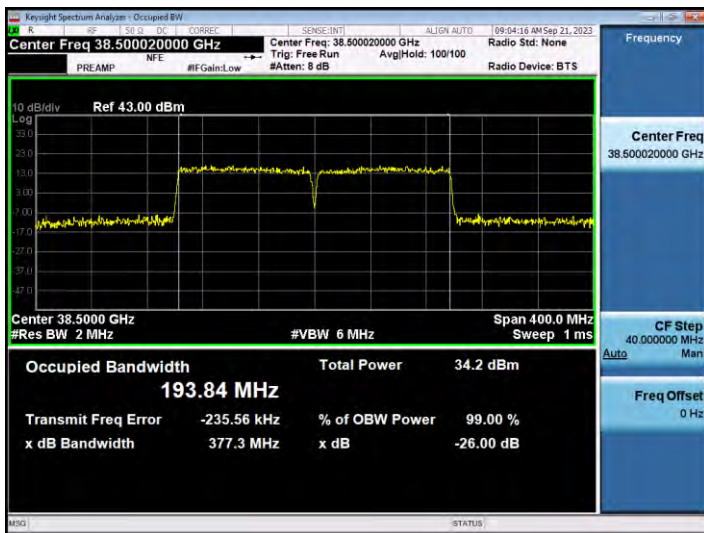
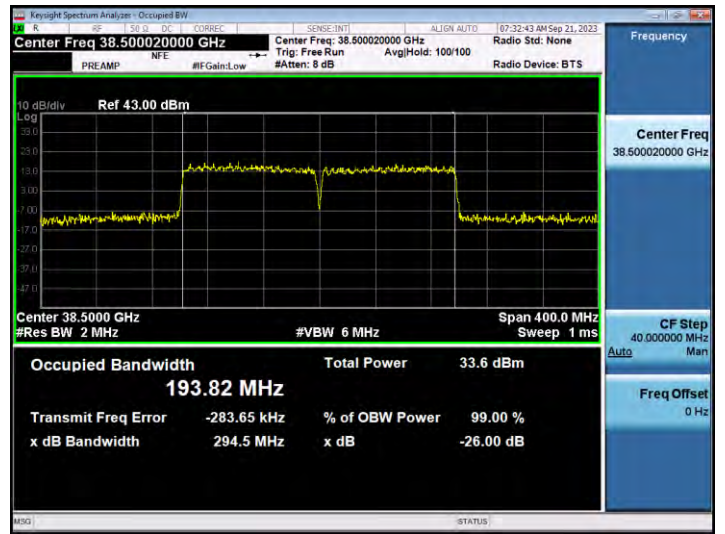
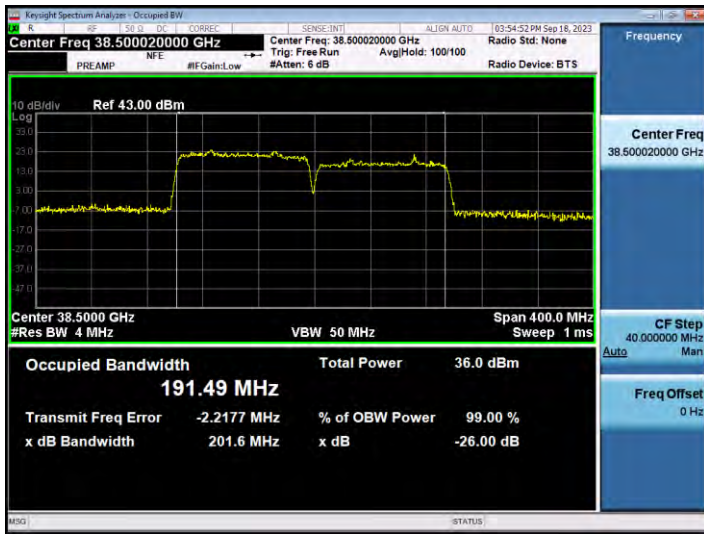
50 MHz, 1CC



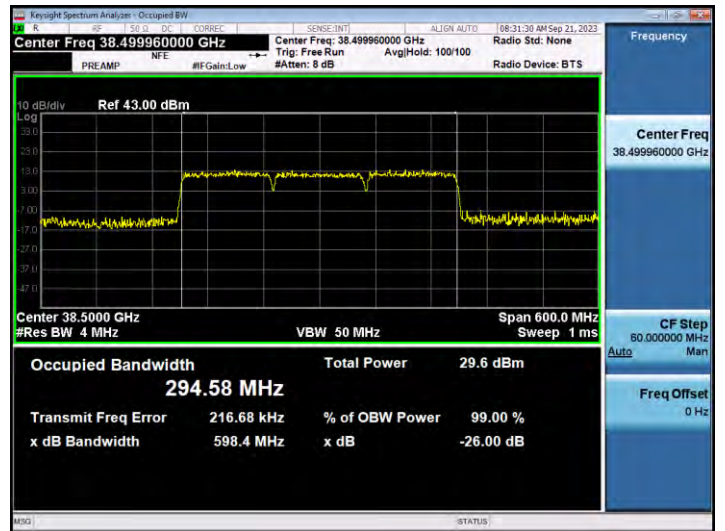
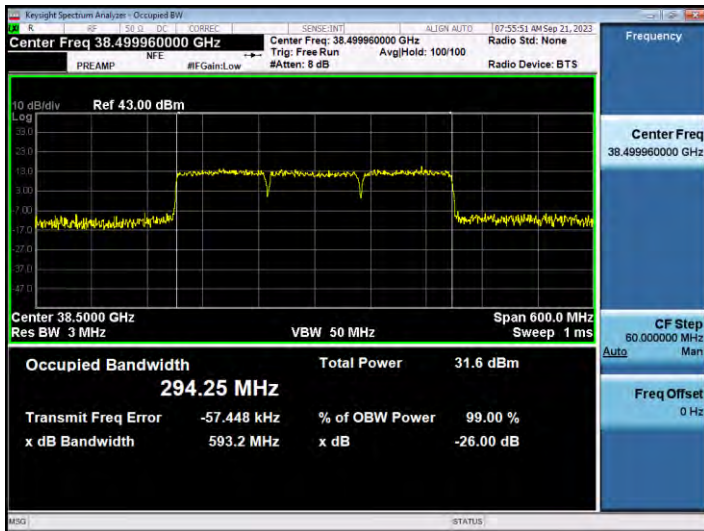
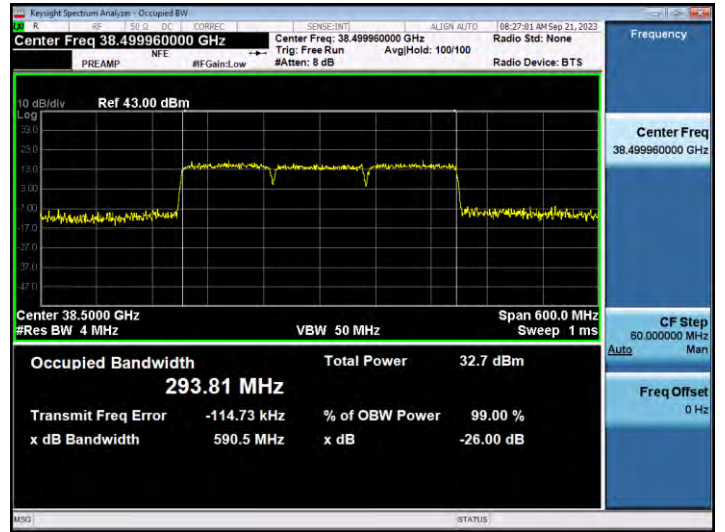
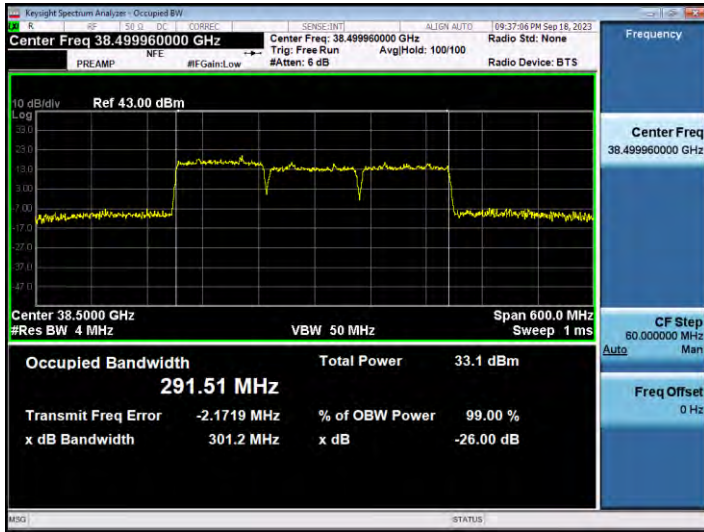
100 MHz, 1CC



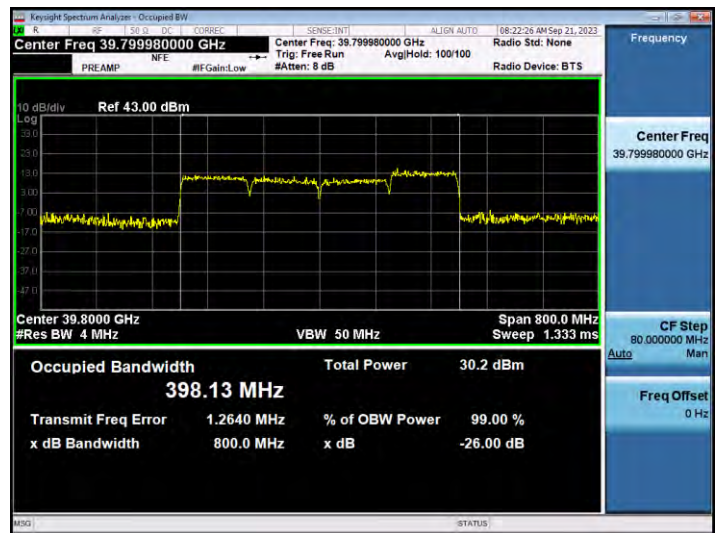
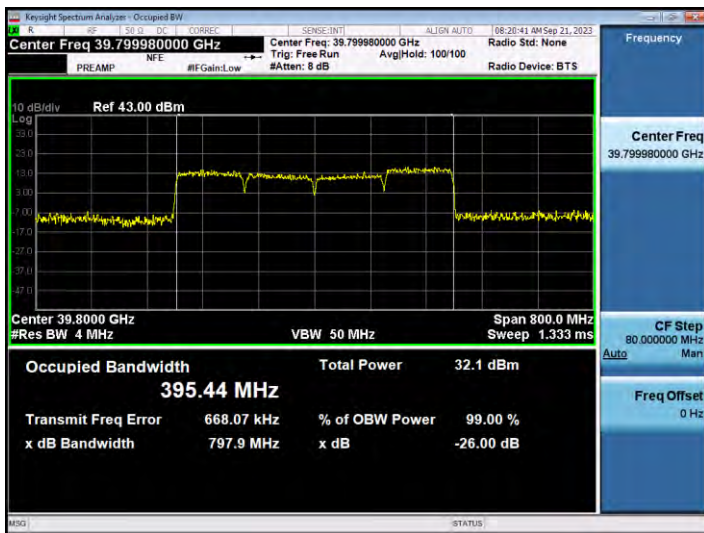
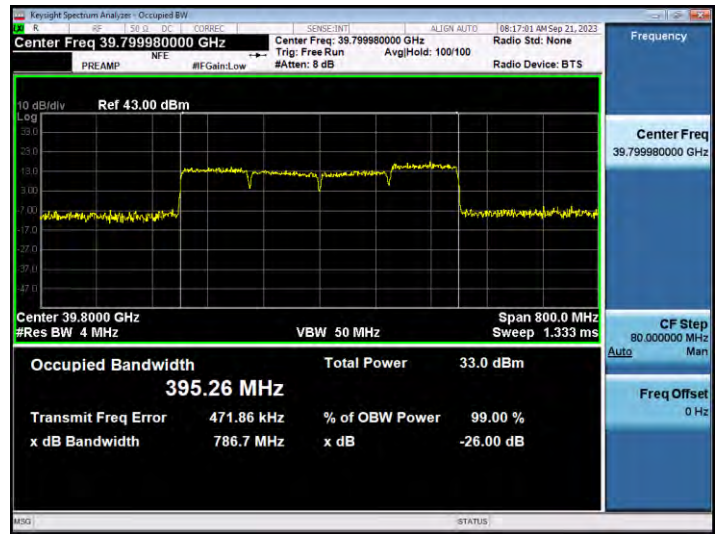
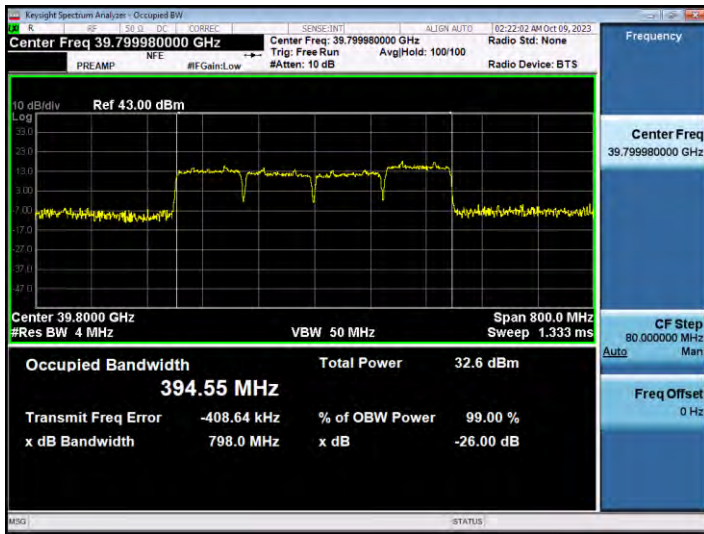
100 MHz, 2CC



100 MHz, 3CC

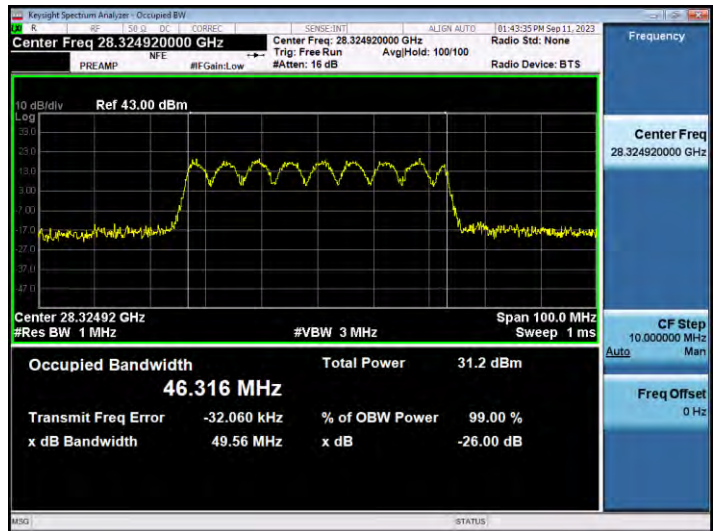
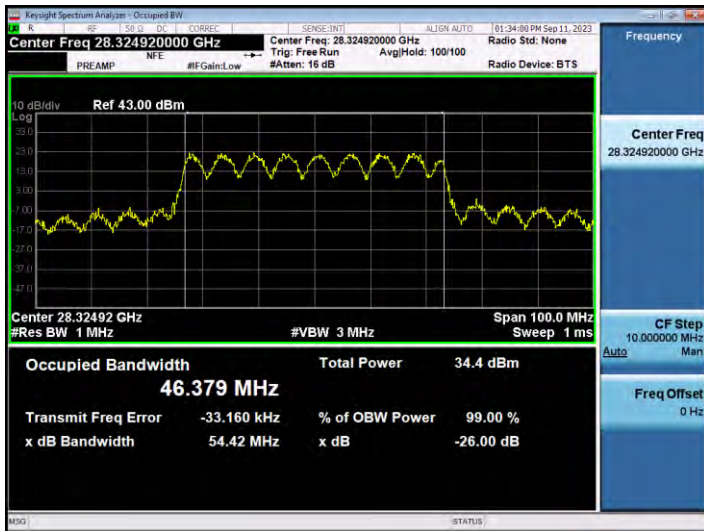
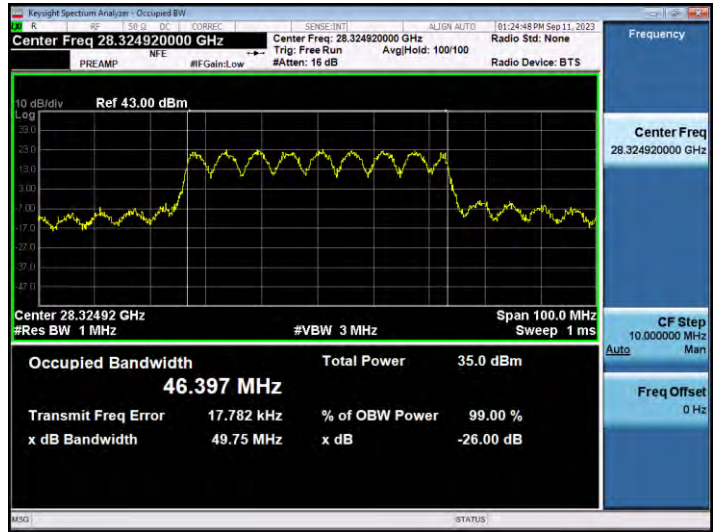
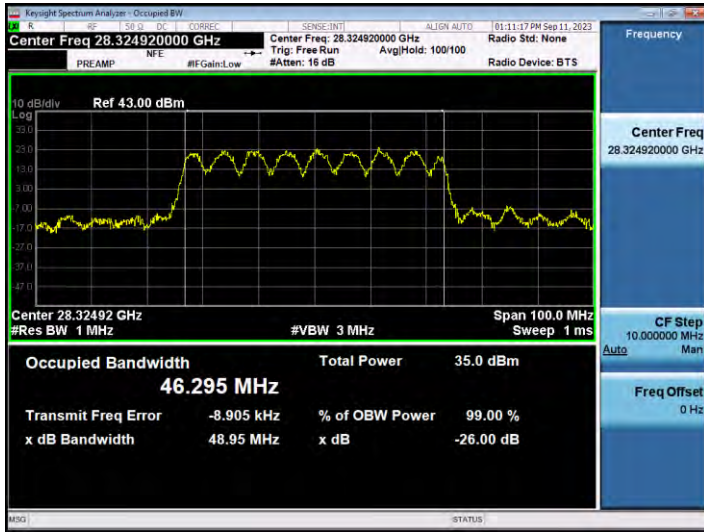


100 MHz, 4CC

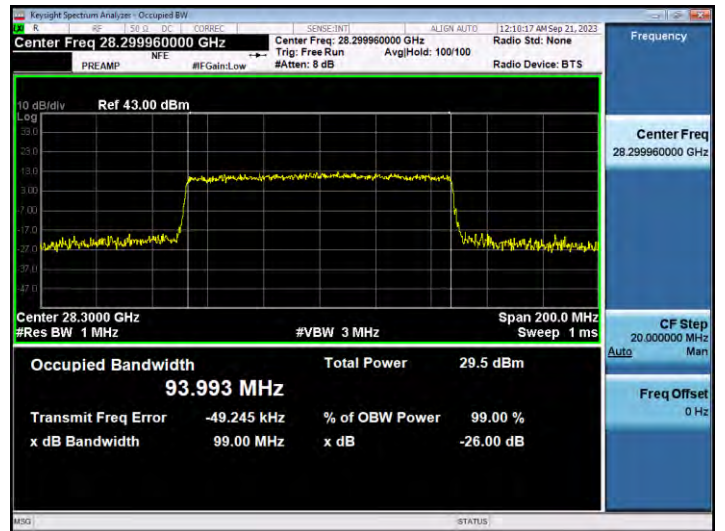
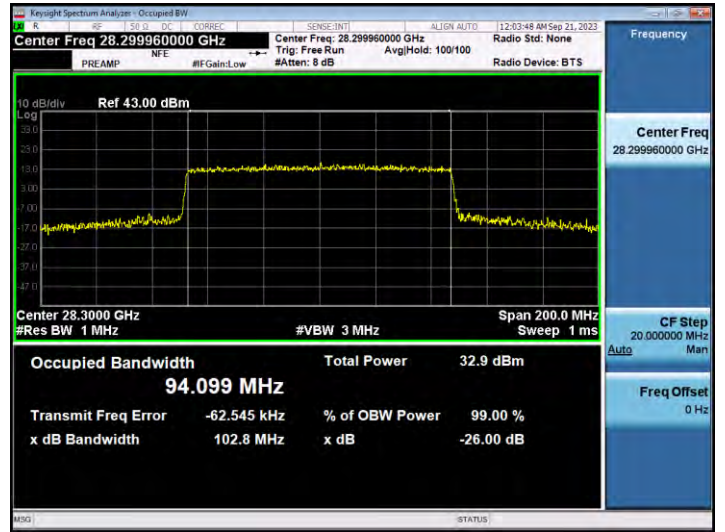
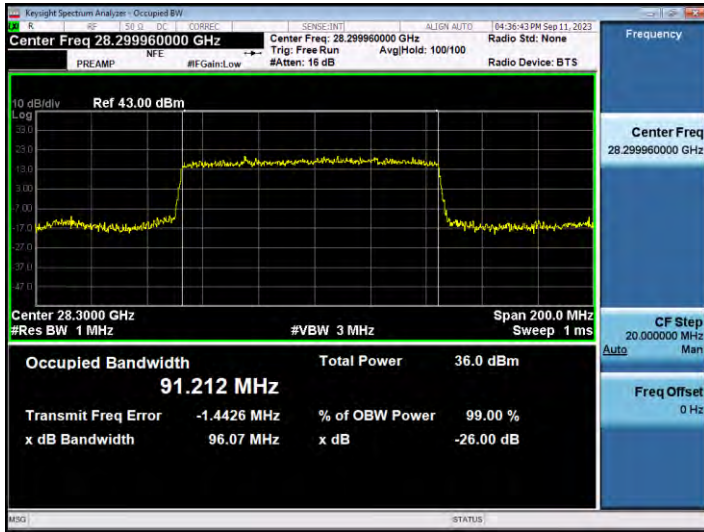


n261 Band Antenna 0 (M patch)

50 MHz, 1CC



100 MHz, 1CC



100 MHz, 2CC

