



Spot Check Evaluation

FCC ID : UZ7EM45A1
EQUIPMENT : Enterprise Mobile
BRAND NAME : Zebra
MODEL NAME : EM45A1
APPLICANT : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
MANUFACTURER : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
STANDARD : 47 CFR Part 22(H), 24(E), 27(L), 27(D), 27(H), 27(F),
27(M), 27(N), 27(O), 27(Q), 90(S), 90(R), 96
47 CFR Part 15 Subpart C §15.247
47 CFR Part 15 Subpart C §15.225
47 CFR Part 15 Subpart E §15.407

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

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

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG460505-02P	Rev. 01	Initial issue of report	Feb. 12, 2025



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45A1
FCC ID	UZ7EM45A1
IMEI Code	Conducted: 354708620060822/354708620063123 Conduction: 354708620060426/354708620064352 Radiation: 354708620060269/ 354708620064113 DFS/CBP: 354708620060657/354708620063206
HW Version	DV
SW Version	14-24-09.00-UG-U00-PRD-ATH-04
MFD	09DEC24
EUT Stage	Identical Prototype

Specification of Accessory				
Battery	Brand Name	Zebra	Model	BT-000501
			Part Number	BT-000501-2000

Supported Unit used in test configuration and system				
AC Adapter 1 (Type C Wall Charger 1)	Brand Name	Zebra	Model	SAWA-102-22520A
			Part Number	PWR-WUA5V45W1US
AC Adapter 2 (Type A Wall Charger 2)	Brand Name	Zebra	Model	SAWA-65-20005A
			Part Number	PWR-WUA5V12W0US
Earphone 1 (Wired headset USB-C)	Brand Name	Zebra	Part Number	HDST-USBC-PTT1-01
Earphone 2 (Rugged Bluetooth Headset)	Brand Name	Zebra	Part Number	HS3100-OTH
Earphone 3 (3.5mm PTT Headset)	Brand Name	Zebra	Part Number	HDST-35MM-PTT1-02
Earphone 4 (Rugged Headset)	Brand Name	Zebra	Part Number	HS2100-OTH
3.5mm to 3.5mm audio connector	Brand Name	Zebra	Part Number	CBL-HS2100-3MS1-01
Type C-Audio Cable (Type C to 3.5mm)	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01
USB Cable 1 (USB-C to C Cable)	Brand Name	Zebra	Part Number	CBL-EC5X-USBC3A-01
USB Cable 2 (USB-A to C Cable)	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
EM45 Protective Case	Brand Name	Zebra	Part Number	SG-EM45EXO2-01



1.2 Modification of EUT

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

1.3 Testing Site

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

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-KS CO01-KS DFS01-KS 03CH02-KS 03CH04-KS 03CH06-KS	CN1257	314309

1.4 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH02-KS	AUDIX	E3	6.2009-8-24a1
3.	03CH04-KS	AUDIX	E3	210616
4.	03CH06-KS	AUDIX	E3	210616
5.	DFS01-KS	Sporton	Test Tools	1.0
6.	CO01-KS	AUDIX	E3	6.2009-8-24

1.5 Applicable Standards

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

- ♦ FCC KDB 484596 D01 Referencing Test Data v02r03
- ♦ 47 CFR Part 22(H), 24(E), 27(L), 27(D), 27(H), 27(F), 27(M), 27(N), 27(O), 27(Q), 90(S), 90(R), 96
- ♦ ANSI C63.10-2013
- ♦ ANSI C63.26-2015
- ♦ 47 CFR Part 15 Subpart C §15.225
- ♦ 47 CFR Part 15 Subpart C §15.247
- ♦ 47 CFR Part 15 Subpart E §15.407



2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: EM45A1, FCC ID: UZ7EM45A1) is electrically identical to the reference device (Model: EM45A2, FCC ID: UZ7EM45A2) for the portions of the circuitry corresponding to the data being re-used, following the FCC KDB 484596 D01 Referencing Test Data v02r03.

ECR Data Referencing Inquiry has been approved by FCC, and the data referencing and spot check test plan includes RF/EMC, the details are presented in section 2.3 of this report, and for SAR Reference detail, please refer to FCC SAR report FA460505-02.

The criteria set in section 3 of KDB 484596 D01 v02r03 is followed to determine whether the data referencing is justified. For SAR, the higher between the referenced value and the spot check value is used to determine compliance in both standalone and simultaneous transmission conditions.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: UZ7EM45A1.

2.2 Model Difference Information

The **main** difference between FCC ID: UZ7EM45A2 and FCC ID: UZ7EM45A1 is as below:

- Removed RFID function.
- Antenna 1 removed WWAN TX function, keep supported Low bands and Middle bands RX function.

Other differences and all the details of similarity and difference can be found in the confidential documents (UZ7EM45A1 Operational Description of Product Equality Declaration).



2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Reference on test	Reference Title	FCC ID Filling (Variant)	Test on the variant	Data Referencing (Y/N)
15C	DSS (BR/EDR)	2400~2483.5	UZ7EM45A2	Full test	FR460505A	UZ7EM45A1	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	UZ7EM45A2	Full test	FR460505B	UZ7EM45A1	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	UZ7EM45A2	Full test	FR460505C	UZ7EM45A1	Spot check	Y, All test items
	DXX (NFC)	13.56	UZ7EM45A2	Full test	FR460505D	UZ7EM45A1	Spot check	Y, All test items
15E	U-NII	5180~5240	UZ7EM45A2	Full test	FR460505E	UZ7EM45A1	Spot check	Y, All test items
		5260~5320	UZ7EM45A2	Full test	FR460505E	UZ7EM45A1	Spot check	Y, All test items
		5500~5720	UZ7EM45A2	Full test	FR460505E	UZ7EM45A1	Spot check	Y, All test items
		5745~5825	UZ7EM45A2	Full test	FR460505E	UZ7EM45A1	Spot check	Y, All test items
		5260~5320 5500~5720	UZ7EM45A2	Full test	FZ460505	UZ7EM45A1	Spot check	Y, All test items
	6CD	5925~7125	UZ7EM45A2	Full test	FR460505G FR460505H	UZ7EM45A1	Spot check	Y, All test items
22, 24, 27, 90, 96,	PCE (WCDMA)	Band II, IV, V	UZ7EM45A2	Full test	FG460505A	UZ7EM45A1	Spot check	Y, All test items
	PCE (LTE)	B2/4/5/7/12/13/17/25/ 26/30/38/41/66/71 ULCA 5B/7C/38C 41C/66B/66C	UZ7EM45A2	Full test	FG460505B FG460505C FG460505D FG460505G FG460505J	UZ7EM45A1	Spot check	Y, All test items
	PCE (LTE)	B14 (90R)	UZ7EM45A2	Full test	FG460505E	UZ7EM45A1	Spot check	Y, All test items
	PCE (LTE)	B26 (90S)	UZ7EM45A2	Full test	FG460505F	UZ7EM45A1	Spot check	Y, All test items
	CBE (LTE)	B48/48C (Part96)	UZ7EM45A2	Full test	FG460505H FG460505I	UZ7EM45A1	Spot check	Y, All test items
	PCE (NR)	n2/n5/n7/n12/n13/n25/ n26/n30/n38/n41/n66/ n71/n77/n78	UZ7EM45A2	Full test	FG460505K FG460505L FG460505O FG460505R FG460505S	UZ7EM45A1	Spot check	Y, All test items
	PCE (NR)	n14 (90R)	UZ7EM45A2	Full test	FG460505M	UZ7EM45A1	Spot check	Y, All test items
	PCE (NR)	n26 (90S)	UZ7EM45A2	Full test	FG460505N	UZ7EM45A1	Spot check	Y, All test items
	CBE (NR)	n48/n77/n78 (Part96)	UZ7EM45A2	Full test	FG460505P FG460505Q	UZ7EM45A1	Spot check	Y, All test items

Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit

2.4 Spot Check Verification Data Section

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d_{dB} from the reference data no larger than 3 dB:

$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad (1)$$

V_{dB} , the variant spot-check level

R_{dB} , the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} = |C_{dB} - R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation d_{dB} from the reference data satisfies the following condition:

$$d_{dB} = |V_{dB} - R_{dB}| \leq (3 + M_{dB}/20) \text{ dB}, \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad (2)$$

$$d_{dB} = |V_{dB} - R_{dB}| = 6 \text{ dB}, \text{ for } M_{dB} > 60 \text{ dB}$$

where “| |” is the absolute value of the measured quantity.

When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB.



Summary for spot check for each rule entry and technology is listed as below:

Mode	Test Item	UZ7EM45A2 Parent Worst mode Test Result	UZ7EM45A1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
BT 1Mbps (CH78)	Number of Channels	79	79	0	3
	Hopping Channel Separation	0.996	1.004	0.008	3
	Dwell Time of Each Channel	0.31	0.31	0	3
	20dB Bandwidth	0.94	0.94	0	3
	99% Bandwidth	0.836	0.845	0.009	3
	Conducted Band Edges	-41.83	-44.27	2.44	3
	Conducted Spurious Emission	-45.65	-48	2.35	3
BT 1Mbps (CH39)	Radiated Band Edges and Radiated Spurious Emission	55.68	56.85	1.17	3
BT	AC Conducted Emission	11.93	10.83	1.1	3
BLE 1Mbps (CH39)	6dB Bandwidth	1.15	1.15	0	3
	99% Bandwidth	2.01	2.014	0.004	3
	Power Spectral Density	-9.33	-9.34	0.01	3
	Conducted Band Edges	-33.74	-33.98	0.24	3
	Conducted Spurious Emission	-51.53	-52.95	1.42	3
BLE 2Mbps (CH39)	Radiated Band Edges and Spurious Emission	47.73	46.09	1.46	3
BLE	AC Conducted Emission	11.93	10.83	1.1	3
WIFI 2.4G (802.11b CH11)	6dB Bandwidth	8.08	8.08	0	3
	99% Bandwidth	13.467	13.387	0.08	3
	Power Spectral Density	-1.15	-1.27	0.12	3
	Conducted Band Edges	-47.96	-48.2	0.24	3
	Conducted Spurious Emission	-43.67	-45.68	2.01	3
WIFI 2.4G (802.11ax HE20 CH11)	Radiated Band Edges and Spurious Emission	52.29	49.61	2.68	3
WIFI 2.4G	AC Conducted Emission	11.93	10.83	1.1	3
WIFI 5G (802.11a CH149)	26dB Bandwidth	19.29	19.2	0.09	3
WIFI 5G (802.11a CH149)	99% Bandwidth	16.705	16.705	0	3
WIFI 5G (802.11a CH149)	Power Spectral Density	8.3	7.99	0.31	3
WIFI 5G (802.11a CH149)	Unwanted Emissions	16.31	16.31	0	3
WIFI 5G (11ax HE80 Ch42)	Radiated Band Edges and Spurious Emission	50.86	50.93	0.07	3
WIFI 5G	AC Conducted Emission	12.50	11.33	1.17	3
WIFI 5G (802.11a CH116)	DFS	0.851628	0.87852	0.026	3
FCC-WIFI 6G UNII-5 (802.11ax HE80 CH47 6185MHz)-6XD	26dB Emission Bandwidth	165.79	165.41	0.38	3
	99% Occupied Bandwidth	157.105	157.257	0.152	3
	Fundamental Maximum EIRP	17.30	17.00	0.30	3
	Fundamental Power Spectral Density	-3.33	-5.16	1.83	3
	In-Band Emissions	-12.47	-11.09	1.38	3

FCC-WIFI 6G UNII-5 (802.11ax HE80 CH47 6185MHz)-6CD	26dB Emission Bandwidth	165.79	165.41	0.38	3
	99% Occupied Bandwidth	157.105	157.257	0.152	3
	Fundamental Maximum EIRP	17.30	17.04	0.26	3
	Fundamental Power Spectral Density	-3.33	-5.16	1.83	3
	In-Band Emissions	-12.47	-11.09	1.38	3
WIFI 6G UNII-5 (802.11ax HE160 CH47 6185MHz)	Contention Based Protocol	-65.36	-65.88	0.52	3
6E (802.11ax HE20_Ch233)	Radiated Band Edges and Spurious Emission	66.93	67.17	0.24	3
WIFI 6G	AC Conducted Emission	11.52	12.62	1.1	3
Part 15C NFC	20dB Spectrum Bandwidth	2.48	2.48	0	3
	99% OBW Spectrum Bandwidth	2.10	2.11	0.01	3
	Frequency Stability	-22.9351	-20.8333	2.1018	3
	Field Strength of Fundamental Emissions	58.04	58.19	0.15	3
	Radiated Spurious Emissions	33.28	35.09	1.81	3
	AC Conducted Emissions	11.94	11.86	0.06	3

Mode	Test Item	UZ7EM45A2 Parent Worst mode Test Result	UZ7EM45A1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Part 96 SA_n77	Radiated Spurious Emission	-43.4	-43.69	0.29	3
Part 96 SA_n48	End User Device additional requirement	Pass	Pass	-	-
Part96 Band48CA	Equivalent Isotropic Radiated Power	20.99	20.96	0.203	3
	Peak-to-Average Ratio	6.43	6.22	0.21	3
	Occupied Bandwidth	32.80	32.80	0.00	3
	Conducted Band Edge	-40.19	-40.98	0.79	3
	Conducted Spurious Emission	-48.81	-47.65	1.16	3
	Frequency Stability	0.0005	0.0011	0.0006	3



Conducted power for Unlicensed bands

Test Item	Mode	UZ7EM45A2 Parent Worst mode Test Result	UZ7EM45A1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Conducted Power (dBm)	BT BR/EDR	9.32	8.85	0.47	3
	BLE 1Mbps	9.12	8.87	0.25	3
	BLE 2Mbps	9.33	9.00	0.33	3
	11b, 2.4GHz	22.51	22.46	0.05	3
	11g, 2.4GHz	21.97	21.92	0.05	3
	11n HT20, 2.4GHz	21.27	21.20	0.07	3
	11ac VHT20, 2.4GHz	21.31	21.25	0.06	3
	11ax HE20, 2.4GHz	21.33	21.31	0.02	3
	11a, 5.2GHz	22.28	22.15	0.13	3
	11a, 5.3GHz	22.27	22.08	0.19	3
	11a, 5.5GHz	22.41	22.22	0.19	3
	11a, 5.8GHz	22.45	22.39	0.06	3
	11n HT20, 5.2GHz	21.20	21.11	0.09	3
	11n HT20, 5.3GHz	20.56	20.27	0.29	3
	11n HT20, 5.5GHz	21.42	21.01	0.41	3
	11n HT20, 5.8GHz	21.51	21.14	0.37	3
	11ac VHT20, 5.2GHz	21.25	21.16	0.09	3
	11ac VHT20, 5.3GHz	20.62	20.31	0.31	3
	11ac VHT20, 5.5GHz	21.46	21.04	0.42	3
	11ac VHT20, 5.8GHz	21.56	21.17	0.39	3
	11ax HE20, 5.2GHz	21.29	21.20	0.09	3
	11ax HE20, 5.3GHz	20.68	20.38	0.30	3
	11ax HE20, 5.5GHz	21.41	21.09	0.32	3
	11ax HE20, 5.8GHz	21.41	21.06	0.35	3
	11n HT40, 5.2GHz	20.45	20.03	0.42	3
	11n HT40, 5.3GHz	20.22	19.85	0.37	3
	11n HT40, 5.5GHz	20.52	20.33	0.19	3
	11n HT40, 5.8GHz	20.30	20.24	0.06	3
	11ac VHT40, 5.2GHz	20.51	20.08	0.43	3
	11ac VHT40, 5.3GHz	20.27	19.89	0.38	3
	11ac VHT40, 5.5GHz	20.55	20.39	0.16	3
	11ac VHT40, 5.8GHz	20.36	20.32	0.04	3
	11ax HE40, 5.2GHz	20.56	20.14	0.42	3
	11ax HE40, 5.3GHz	20.30	19.94	0.36	3
	11ax HE40, 5.5GHz	20.60	20.44	0.16	3
	11ax HE40, 5.8GHz	20.42	20.35	0.07	3
	11ac VHT80, 5.2GHz	20.25	20.02	0.23	3
	11ac VHT80, 5.3GHz	20.03	19.77	0.26	3
	11ac VHT80, 5.5GHz	20.18	20.01	0.17	3
	11ac VHT80, 5.8GHz	19.83	19.79	0.04	3
	11ax HE80, 5.2GHz	20.31	20.05	0.26	3
	11ax HE80, 5.3GHz	20.07	19.79	0.28	3
	11ax HE80, 5.5GHz	20.21	20.03	0.18	3
	11ax HE80, 5.8GHz	19.85	19.82	0.03	3
	11ac VHT160, 5.3GHz	19.21	19.11	0.10	3
	11ac VHT160, 5.5GHz	19.48	19.24	0.24	3
	11ax HE160, 5.3GHz	19.23	19.14	0.09	3
	11ax HE160, 5.5GHz	19.52	19.28	0.24	3
	6CD Indoor 11a, U-NII-5	7.13	7.06	0.07	3
	6CD Indoor 11a, U-NII-6	7.63	7.61	0.02	3
	6CD Indoor 11a, U-NII-7	6.43	6.38	0.05	3
	6CD Indoor 11a, U-NII-8	5.80	5.71	0.09	3
	6CD Indoor 11ax HE20, U-NII-5	10.68	10.47	0.21	3
	6CD Indoor 11ax HE20, U-NII-6	11.19	11.12	0.07	3



6CD Indoor 11ax HE20, U-NII-7	9.90	9.86	0.04	3
6CD Indoor 11ax HE20, U-NII-8	9.18	8.91	0.27	3
6CD Indoor 11ax HE40, U-NII-5	13.56	13.40	0.16	3
6CD Indoor 11ax HE40, U-NII-6	14.02	13.89	0.13	3
6CD Indoor 11ax HE40, U-NII-7	12.74	12.65	0.09	3
6CD Indoor 11ax HE40, U-NII-8	12.41	12.34	0.07	3
6CD Indoor 11ax HE80, U-NII-5	16.49	16.28	0.21	3
6CD Indoor 11ax HE80, U-NII-6	16.36	16.34	0.02	3
6CD Indoor 11ax HE80, U-NII-7	16.05	15.96	0.09	3
6CD Indoor 11ax HE80, U-NII-8	15.84	15.78	0.06	3
6CD Indoor 11ax HE160, U-NII-5	16.95	16.65	0.30	3
6CD Indoor 11ax HE160, U-NII-6	16.48	16.09	0.39	3
6CD Indoor 11ax HE160, U-NII-7	16.71	16.43	0.28	3
6CD Indoor 11ax HE160, U-NII-8	16.80	16.50	0.30	3
6CD Outdoor 11a, U-NII-5	17.02	16.53	0.49	3
6CD Outdoor 11a, U-NII-7	16.69	16.62	0.07	3
6CD Outdoor 11ax HE20, U-NII-5	16.95	16.55	0.40	3
6CD Outdoor 11ax HE20, U-NII-7	16.61	16.26	0.35	3
6CD Outdoor 11ax HE40, U-NII-5	16.90	16.60	0.30	3
6CD Outdoor 11ax HE40, U-NII-7	16.52	16.22	0.30	3
6CD Outdoor 11ax HE80, U-NII-5	16.85	16.52	0.33	3
6CD Outdoor 11ax HE80, U-NII-7	16.43	16.13	0.30	3
6CD Outdoor 11ax HE160, U-NII-5	16.95	16.65	0.30	3
6CD Outdoor 11ax HE160, U-NII-7	16.42	16.20	0.22	3

Conducted power for Licensed bands

Test Item	Mode	UZ7EM45A2 Parent Worst mode Test Result	UZ7EM45A1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Conducted Power (dBm)	WCDMA II	23.97	23.79	0.18	3
	WCDMA IV	23.92	23.88	0.04	3
	WCDMA V	23.98	23.66	0.32	3
	LTE B2	23.66	23.24	0.42	3
	LTE B4	23.56	23.32	0.24	3
	LTE B5	23.69	23.35	0.34	3
	LTE B5B	23.65	23.52	0.13	3
	LTE B7	22.8	22.61	0.19	3
	LTE B7C	22.79	22.75	0.04	3
	LTE B12	23.89	23.65	0.24	3
	LTE B13	23.71	23.31	0.4	3
	LTE B14	23.83	23.38	0.45	3
	LTE B17	23.82	23.43	0.39	3
	LTE B25	23.68	23.19	0.49	3
	LTE B26L	23.47	23.26	0.21	3
	LTE B26H	23.71	23.26	0.45	3
	LTE B30	23.69	23.57	0.12	3
	LTE B66	23.60	23.28	0.32	3
	LTE B71	22.76	22.72	0.04	3
	LTE B38	22.77	22.70	0.07	3
	LTE B41	26.01	26.00	0.01	3
	LTE B38C	22.63	22.59	0.04	3
	LTE B41C	25.73	25.62	0.11	3
	LTE B48 part96	21.85	21.82	0.03	3
	LTE B48C part96	21.55	21.52	0.03	3
	LTE B66B	23.49	23.27	0.22	3
	LTE B66C	23.32	23.21	0.11	3



N13	24.27	23.96	0.31	3
N14	24.26	23.98	0.28	3
N26 L	24.45	24.06	0.39	3
N26 H	24.49	24.02	0.47	3
ENDC_48A_n66A	24.22	24.18	0.04	3
N77 270 MIMO	24.70	24.36	0.34	3
N78 270 MIMO	24.61	24.32	0.29	3
N77 part96 MIMO	22.31	22.25	0.06	3
N78 part96 MIMO	22.26	22.19	0.07	3
N77 27Q MIMO	24.45	24.12	0.33	3
N78 27Q MIMO	24.11	23.86	0.25	3
ENDC_5A_n2A	24.72	24.27	0.45	3
ENDC_12A_n25A	24.74	24.29	0.45	3
ENDC_2A_n5A	24.39	24.31	0.08	3
ENDC_2A_n7A	23.85	23.51	0.34	3
ENDC_2A_n12A	24.52	24.25	0.27	3
ENDC_2A_n30A	23.65	23.58	0.07	3
ENDC_2A_n38A	23.59	23.45	0.14	3
ENDC_2A_n41A	26.56	26.45	0.11	3
ENDC_2A_n71A	23.39	23.31	0.08	3
ENDC_2A_N77A 270	26.23	26.17	0.06	3
ENDC_2A_N78A 270	26.01	25.94	0.07	3
ENDC_2A_N77A 27Q	25.99	25.75	0.24	3
ENDC_2A_N78A 27Q	25.81	25.47	0.34	3
ENDC_2A_N77A part96	22.85	22.62	0.23	3
ENDC_2A_N78A part96	22.76	22.58	0.18	3
ENDC_2A_N48A part96	22.04	22.01	0.03	3

6CD- < indoor client>

<SISO mode>

U-NII-5 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	001	5955	0.03	0.03	4.55	3.39	0.35	-0.85	4.90	2.54	24.00	Pass	4.5	

U-NII-5 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	049	6195	Full	0.00	0.00	7.91	6.82	0.35	-0.85	8.26	5.97	24.00	Pass	8	8
HE40	MCS0	1	003	5965	Full	0.00	0.00	10.63	10.08	0.35	-0.85	10.98	9.23	24.00	Pass	11	11
HE80	MCS0	1	007	5985	Full	0.00	0.00	13.43	13.02	0.35	-0.85	13.78	12.17	24.00	Pass	14	14
HE160	MCS0	1	047	6185	Full	0.00	0.00	14.01	13.13	0.35	-0.85	14.36	12.28	24.00	Pass	14	14

U-NII-6 SISO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	6515	0.03	0.04	4.81	4.31	0.75	-2.44	5.56	1.87	24.00	Pass	5.5	5.5



U-NII-6 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	105	6475	Full	0.00	0.00	8.41	7.67	0.75	-2.44	9.16	5.23	24.00	Pass	9	9
HE40	MCS0	1	107	6485	Full	0.00	0.00	11.21	10.45	0.75	-2.44	11.96	8.01	24.00	Pass	12	12
HE80	MCS0	1	103	6465	Full	0.00	0.00	13.63	12.91	0.75	-2.44	14.38	10.47	24.00	Pass	14	14
HE160	MCS0	1	111	6505	Full	0.00	0.00	13.37	12.72	0.75	-2.44	14.12	10.28	24.00	Pass	14	14

U-NII-7 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	117	6535	0.03	0.04	3.54	3.14	1.02	0.16	4.56	3.30	24.00	Pass	4	4

U-NII-7 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	117	6535	Full	0.00	0.00	7.19	6.43	1.02	0.16	8.21	6.59	24.00	Pass	7.5	7.5
HE40	MCS0	1	123	6565	Full	0.00	0.00	9.97	9.19	1.02	0.16	10.99	9.35	24.00	Pass	10.5	10.5
HE80	MCS0	1	135	6625	Full	0.00	0.00	13.33	12.45	1.02	0.16	14.35	12.61	24.00	Pass	14	14
HE160	MCS0	1	175	6825	Full	0.00	0.00	13.25	13.51	1.02	0.16	14.27	13.67	24.00	Pass	14	14

U-NII-8 SISO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	7095	0.03	0.04	2.72	2.58	0.70	1.66	3.42	4.24	24.00	Pass	3.5	3.5

U-NII-8 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	229	7095	Full	0.00	0.00	5.85	5.76	0.70	1.66	6.55	7.42	24.00	Pass	6.5	6.5
HE40	MCS0	1	227	7085	Full	0.00	0.00	9.27	9.26	0.70	1.66	9.97	10.92	24.00	Pass	10	10
HE80	MCS0	1	199	6945	Full	0.00	0.00	12.98	12.45	0.70	1.66	13.68	14.11	24.00	Pass	13.5	13.5
HE160	MCS0	1	207	6985	Full	0.00	0.00	13.22	13.58	0.70	1.66	13.92	15.24	24.00	Pass	14	14



<CDD mode>

U-NII-5 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
11a	6Mbps	2	001	5955	0.03	0.04	4.60	3.43	7.06	0.35		7.41	24.00	Pass	4.5	

U-NII-6 MIMO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				Ant 8	Ant 10
11a	6Mbps	2	6515	0.03	0.04	4.84	4.35	7.61	0.75		8.36	24.00	Pass	5.5	

U-NII-7 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
11a	6Mbps	2	117	6535	0.03	0.04	3.57	3.17	6.38	1.02		7.40	24.00	Pass	4	

U-NII-8 MIMO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				Ant 8	Ant 10
11a	6Mbps	2	7095	0.03	0.04	2.74	2.65	5.71	1.66		7.37	24.00	Pass	3.5	

<SDM mode>

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
HE20	MCS0	2	049	6195	Full	0.00	0.00	7.96	6.89	10.47	0.35		10.82	24.00	Pass	8	
HE40	MCS0	2	003	5965	Full	0.00	0.00	10.67	10.10	13.40	0.35		13.75	24.00	Pass	11	
HE80	MCS0	2	007	5985	Full	0.00	0.00	13.49	13.04	16.28	0.35		16.63	24.00	Pass	14	
HE160	MCS0	2	047	6185	Full	0.00	0.00	14.06	13.17	16.65	0.35		17.00	24.00	Pass	14	



U-NII-6 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	105	6475	Full	0.00	0.00	8.44	7.76	11.12	0.75		11.87	24.00	Pass	9	
HE40	MCS0	2	107	6485	Full	0.00	0.00	11.24	10.48	13.89	0.75		14.64	24.00	Pass	12	
HE80	MCS0	2	103	6465	Full	0.00	0.00	13.68	12.95	16.34	0.75		17.09	24.00	Pass	14	
HE160	MCS0	2	111	6505	Full	0.00	0.00	13.40	12.74	16.09	0.75		16.84	24.00	Pass	14	

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
HE20	MCS0	2	117	6535	Full	0.00	0.00	7.22	6.44	9.86	1.02		10.88	24.00	Pass	7.5	
HE40	MCS0	2	123	6565	Full	0.00	0.00	10.02	9.22	12.65	1.02		13.67	24.00	Pass	10.5	
HE80	MCS0	2	135	6625	Full	0.00	0.00	13.35	12.51	15.96	1.02		16.98	24.00	Pass	14	
HE160	MCS0	2	175	6825	Full	0.00	0.00	13.29	13.55	16.43	1.02		17.45	24.00	Pass	14	

U-NII-8 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
HE20	MCS0	2	229	7095	Full	0.00	0.00	5.88	5.91	8.91	1.66		10.57	24.00	Pass	6.5	
HE40	MCS0	2	227	7085	Full	0.00	0.00	9.33	9.32	12.34	1.66		14.00	24.00	Pass	10	
HE80	MCS0	2	199	6945	Full	0.00	0.00	13.02	12.50	15.78	1.66		17.44	24.00	Pass	13.5	
HE160	MCS0	2	207	6985	Full	0.00	0.00	13.36	13.62	16.50	1.66		18.16	24.00	Pass	14	

<standard client >

<SISO mode>

U-NII-5 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	049	6195	0.03	0.04	14.00	12.85	0.35	-0.85	14.35	12.00	30.00	Pass	14	



U-NII-5 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	049	6195	Full	0.00	0.00	13.99	12.97	0.35	-0.85	14.34	12.12	30.00	Pass	14	14
HE40	MCS0	1	051	6205	Full	0.00	0.00	14.02	13.03	0.35	-0.85	14.37	12.18	30.00	Pass	14	14
HE80	MCS0	1	055	6225	Full	0.00	0.00	13.88	13.01	0.35	-0.85	14.23	12.16	30.00	Pass	14	14
HE160	MCS0	1	047	6185	Full	0.00	0.00	14.01	13.13	0.35	-0.85	14.36	12.28	30.00	Pass	14	14

U-NII-7 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	181	6855	0.03	0.04	13.58	13.45	1.02	0.16	14.60	13.61	30.00	Pass	14	14

U-NII-7 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	117	6535	Full	0.00	0.00	13.63	12.76	1.02	0.16	14.65	12.92	30.00	Pass	14	14
HE40	MCS0	1	123	6565	Full	0.00	0.00	13.57	12.76	1.02	0.16	14.59	12.92	30.00	Pass	14	14
HE80	MCS0	1	167	6785	Full	0.00	0.00	13.37	12.76	1.02	0.16	14.39	12.92	30.00	Pass	14	14
HE160	MCS0	1	143	6665	Full	0.00	0.00	13.37	12.91	1.02	0.16	14.39	13.07	30.00	Pass	14	14

<CDD mode>

U-NII-5 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
11a	6Mbps	2	049	6195	0.03	0.04	14.05	12.92	16.53	0.35		16.88	30.00	Pass	14	

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	049	6195	Full	0.00	0.00	14.02	13.00	16.55	0.35		16.90	30.00	Pass	14	
HE40	MCS0	2	051	6205	Full	0.00	0.00	14.06	13.07	16.60	0.35		16.95	30.00	Pass	14	
HE80	MCS0	2	055	6225	Full	0.00	0.00	13.92	13.05	16.52	0.35		16.87	30.00	Pass	14	
HE160	MCS0	2	047	6185	Full	0.00	0.00	14.06	13.17	16.65	0.35		17.00	30.00	Pass	14	



U-NII-7 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
11a	6Mbps	2	181	6855	0.03	0.04	13.63	13.60	16.62	1.02		17.64	30.00	Pass	14	

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	117	6535	Full	0.00	0.00	13.68	12.78	16.26	1.02		17.28	30.00	Pass	14	
HE40	MCS0	2	123	6565	Full	0.00	0.00	13.59	12.79	16.22	1.02		17.24	30.00	Pass	14	
HE80	MCS0	2	167	6785	Full	0.00	0.00	13.40	12.83	16.13	1.02		17.15	30.00	Pass	14	
HE160	MCS0	2	143	6665	Full	0.00	0.00	13.42	12.95	16.20	1.02		17.22	30.00	Pass	14	

Conclusion:

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. All spot check test data are shown within expected level compliant to limit line.

We are using power and ERP/EIRP measurements from the original parent model reports to list on the grant.

The same detection mechanism/software/antenna gain is used in the variant of DFS. Hence, all test cases refer to parent report.

We confirm that the test data referencing policy of FCC KDB 484596 D01 Referencing Test Data v02r03 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.



3 List of Measuring Equipment

For BT/WIFI:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471084	10Hz~44GHz	Jul. 04, 2024	Nov. 05, 2024	Jul. 03, 2025	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Nov. 05, 2024	Sep. 07, 2025	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz~1GHz	Sep. 03, 2024	Nov. 05, 2024	Sep. 02, 2025	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Nov. 05, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Nov. 05, 2024	Jan. 05, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY57280119	500MHz~26.5GHz	Oct. 09, 2024	Nov. 05, 2024	Oct. 08, 2025	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 05, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 05, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 05, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Oct. 26, 2024	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Oct. 26, 2024	Oct. 08, 2025	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 07, 2024~Feb. 11, 2025	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Nov. 07, 2024~Feb. 11, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2025	Nov. 07, 2024~Feb. 11, 2025	Jan. 01, 2026	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Nov. 07, 2024~Feb. 11, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2025	Nov. 07, 2024~Feb. 11, 2025	Jan. 01, 2026	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 05, 2024	Oct. 09, 2025	CBP (DFS01-KS)
MXG-B RF Vector Signal Generator	Keysight	5182B /5182BX07	MY56200417 /MY59360210	9kHz~7.2GHz	Apr. 17, 2024	Nov. 05, 2024	Apr. 16, 2025	CBP (DFS01-KS)
Vector Signal Generator	R&S	SMBV100A	258305	9kHz~6GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	CBP (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Nov. 05, 2024	NCR	CBP (DFS01-KS)
Signal Analyzer	R&S	FSV7	101632	10Hz~7GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Conducted (DFS01-KS)
Vector Signal Generator	R&S	SMJ100A	101908	100kHz~6GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	Conducted (DFS01-KS)



MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY562004 17 /MY59360 210	9kHz~7.2GHz	Apr 17, 2024	Nov. 05, 2024	Apr 16, 2025	Conducted (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7114-M	N/A	0.5GHz~18GHz	NCR	Nov. 05, 2024	NCR	Conducted (DFS01-KS)

NCR: No Calibration Required

For NFC:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Ma x 30dBm	Oct. 11, 2024	Oct. 24, 2024	Oct. 10, 2025	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Oct. 24, 2024	Sep. 07, 2025	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz~1GHz	Aug. 18, 2024	Oct. 24, 2024	Aug. 17, 2025	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413740	9KHz~1GHz	Jan. 03, 2024	Oct. 24, 2024	Jan. 02, 2025	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Oct. 26, 2024	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Oct. 26, 2024	Oct. 08, 2025	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 07, 2024	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 02, 2024	Nov. 07, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Nov. 07, 2024	Jan. 01, 2025	Conducted (TH01-KS)

NCR: No Calibration Required



For WWAN Bands:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 02, 2024	Oct. 09, 2025	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Nov. 02, 2024	NCR	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2024	Nov. 02, 2024	Jul. 03, 2025	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz~44G, MAX 30dB	Oct. 11, 2024	Oct. 20, 2024	Oct. 10, 2025	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 10, 2024	Oct. 20, 2024	Sep. 09, 2025	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz~1GHz	Dec. 06, 2023	Oct. 20, 2024	Dec. 05, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00227860	1GHz~18GHz	Aug. 16, 2024	Oct. 20, 2024	Aug. 15, 2025	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 27, 2024	Oct. 20, 2024	Jan. 26, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	413740	9KHz~1GHz	Jan. 03, 2024	Oct. 20, 2024	Jan. 02, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM18G40G A	060728	18~40GHz	Jan. 02, 2024	Oct. 20, 2024	Jan. 01, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz~18Ghz	Oct. 09, 2024	Oct. 20, 2024	Oct. 08, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM01G18G A	060892	1Ghz~18Ghz	Oct. 09, 2024	Oct. 20, 2024	Oct. 08, 2025	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 05, 2024	Nov. 12, 2024	Jan. 04, 2025	Conducted (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Nov. 12, 2024	NCR	Conducted (DFS01-KS)

NCR: No Calibration Required

4 Measurement Uncertainty

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

Uncertainty of Conducted Measurement (BT/WIFI2.4G/5G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	±0.04 ppm

Uncertainty of Conducted Measurement(WIFI 6G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	0.04ppm
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.54%

Uncertainty of Conducted Measurement(NFC)

Test Item	Uncertainty
Occupied Channel Bandwidth	±0.1%
Frequency	0.04ppm

Uncertainty of Conducted Measurement (DFS)

Test Item	Uncertainty
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.38%

Uncertainty of Conducted Measurement (WWAN)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Peak to Average Ratio	±0.46 dB
Frequency Stability	±0.04 ppm

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.84 dB
---	---------

03CH06-KS(BT/WIF):

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.08dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.18dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.22dB
---	--------

03CH02-KS(NFC):

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.04dB
---	--------



03CH04-KS(WWAN):

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.83 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.83 dB
---	---------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.82 dB
---	---------

----- THE END -----



Appendix B. Reference Report

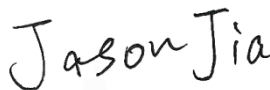
FCC RF Test Report

FCC ID : UZ7EM45A2
EQUIPMENT : Enterprise Mobile
BRAND NAME : Zebra
MODEL NAME : EM45A2
APPLICANT : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
MANUFACTURER : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
STANDARD : 47 CFR Part 2, 96
CLASSIFICATION : Citizens Band End User Devices (CBE)
EQUIPMENT TYPE : End User Equipment
Test Date(s) : Jun. 19, 2024 ~ Jul. 05, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26 and shown compliance with the applicable technical standards.

This report contains data that were produced under subcontract by Sporton International Inc (Shenzhen).

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



Approved by: Jason Jia



Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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History of this test report

Report No.	Version	Description	Issued Date
FG460505P	01	Initial issue of report	Sep. 05, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
-	§96.41	Peak-to-Average Ratio	Not Applicable	Not applicable for End User Devices
3.3	§96.41	Maximum E.I.R.P	Pass	-
		Maximum Power Spectral Density	Not Applicable	Not applicable for End User Devices
3.4	§2.1049 §96.41	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §96.41	Conducted Band Edge Measurement Adjacent Channel Leakage Ratio	Pass	-
3.6	§2.1051 §96.41	Conducted Spurious Emission	Pass	
3.7	§2.1055	Frequency Stability for Temperature & Voltage	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	Under limit 3.40 dB at 10806.00 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

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

1 General Description

1.1 Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45A2
FCC ID	UZ7EM45A2
IMEI Code	Conducted: 352991990028965/352991990029377 Radiation: 352991990029096/352991990029708
Tx/Rx Frequency	5G NR n48/n77/n78: 3550 MHz ~ 3700 MHz
SCS	30kHz
Bandwidth	n48: 10MHz / 20MHz / 40MHz n77/n78: 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Type	PIFA Antenna
Antenna Gain	5G NR n48: <Ant. 4>: -0.56 dBi 5G NR n77/n78: <Ant. 2>: -1.13 dBi <Ant. 3>: 0.50 dBi <Ant. 4>: -0.56 dBi <Ant. 6>: 0.65 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM
HW Version	EV2.5
SW Version	13-32-08.00-TG-U06-STD-ATH-04
MFD	08AUG24
EUT Stage	Identical Prototype

Remark:

1. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP is shown in the report, 5G NR n48/n77/n78 for Antenna 4 and UL MIMO for Ant.(4+6).
2. The device supports n77/n78(1T4R) SRS resources on Ant.2/3/4/6, only the test data of worst Ant.4 is showed in the report according to the maximum power.
3. 5G NR nn77/n78 UL MIMO mode only supports CP-OFDM Modulation, and the UL MIMO mode is completely uncorrelated, the directional gain is selected the maximum gain among the MIMO antennas.
4. For n77/n78 UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add $10 \cdot \log(N_{\text{Ant}})$ according to KDB 662911 D01.
5. 5G NR n48/n77/n78 support SA and NSA mode. The whole testing has assessed NSA mode by referring to the higher conducted power for conducted test items.
6. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with highest power are shown in the report.
7. The EN-DC mode combination could be referred to the product spec
8. For NSA mode of RSE testing, we only choose the combination of the maximum power among all NSA combinations to test.



Specification of Accessory				
Battery	Brand Name	Zebra	Model	BT-000501
			Part Number	BT-000501-2000

Supported Unit used in test configuration and system				
AC Adapter 1 (Type C Wall Charger 1)	Brand Name	Zebra	Model	SAWA-102-22520A
			Part Number	PWR-WUA5V45W1US
AC Adapter 2 (Type A Wall Charger 2)	Brand Name	Zebra	Model	SAWA-65-20005A
			Part Number	PWR-WUA5V12W0US
Earphone 1 (Wired headset USB-C)	Brand Name	Zebra	Part Number	HDST-USBC-PTT1-01
Earphone 2 (Rugged Bluetooth Headset)	Brand Name	Zebra	Part Number	HS3100-OTH
Earphone 3 (3.5mm PTT Headset)	Brand Name	Zebra	Part Number	HDST-35MM-PTT1-02
Earphone 4 (Rugged Headset)	Brand Name	Zebra	Part Number	HS2100-OTH
3.5mm to 3.5mm audio connector	Brand Name	Zebra	Part Number	CBL-HS2100-3MS1-01
Type C-Audio Cable (Type C to 3.5mm)	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01
USB Cable 1 (USB-C to C Cable)	Brand Name	Zebra	Part Number	CBL-EC5X-USBC3A-01
USB Cable 2 (USB-A to C Cable)	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
EM45 Protective Case	Brand Name	Zebra	Part Number	SG-EM45EX01-01

1.2 Maximum EIRP and Emission Designator

ENDC_2A_n48A		PI/2 BPSK / QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
10	3555.00~3694.98	0.1406	8M58G7D	0.1180	8M59W7D
20	3560.01~3690.00	0.0546	18M3G7D	0.0579	18M3W7D
40	3570.00~3679.98	0.0578	37M9G7D	0.0587	37M8W7D

ENDC_2A_n77A		PI/2 BPSK / QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	3560.01 ~ 3690.00	0.1611	18M3G7D	0.1346	18M3W7D
30	3565.02 ~ 3684.99	0.1626	27M8G7D	0.1330	27M8W7D
40	3570.00 ~ 3679.98	0.1675	37M9G7D	0.1409	37M8W7D
50	3575.01 ~ 3675.00	0.1567	47M4G7D	0.1334	47M4W7D
60	3580.02 ~ 3669.99	0.1570	57M8G7D	0.1334	57M9W7D
70	3585.00 ~ 3664.98	0.1493	67M4G7D	0.1253	67M6W7D
80	3590.01 ~ 3660.00	0.1545	77M6G7D	0.1236	77M7W7D
90	3595.02 ~ 3654.99	0.1489	87M5G7D	0.1256	87M5W7D
100	3600.00 ~ 3649.98	0.1694	97M6G7D	0.1276	97M6W7D

UL MIMO n77		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	3560.01 ~ 3690.00	0.1972	18M2G7D	0.1766	18M2W7D
30	3565.02 ~ 3684.99	0.1932	27M9G7D	0.1941	27M9W7D
40	3570.00 ~ 3679.98	0.1977	37M9G7D	0.1828	37M8W7D
50	3575.01 ~ 3675.00	0.1936	47M5G7D	0.1746	47M6W7D
60	3580.02 ~ 3669.99	0.1972	58M0G7D	0.1774	57M8W7D
70	3585.00 ~ 3664.98	0.1901	67M5G7D	0.1726	67M7W7D
80	3590.01 ~ 3660.00	0.1914	77M4G7D	0.1706	77M6W7D
90	3595.02 ~ 3654.99	0.1901	87M7G7D	0.1730	87M6W7D
100	3600.00 ~ 3649.98	0.1977	97M7G7D	0.1734	97M6W7D

ENDC_2A_n78A		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	3560.01 ~ 3690.00	0.1652	18M3G7D	0.1365	18M3W7D
30	3565.02 ~ 3684.99	0.1611	27M8G7D	0.1390	27M8W7D
40	3570.00 ~ 3679.98	0.1637	37M9G7D	0.1409	37M8W7D
50	3575.01 ~ 3675.00	0.1531	47M4G7D	0.1303	47M4W7D
60	3580.02 ~ 3669.99	0.1524	57M8G7D	0.1282	57M9W7D
70	3585.00 ~ 3664.98	0.1507	67M4G7D	0.1236	67M6W7D
80	3590.01 ~ 3660.00	0.1466	77M6G7D	0.1236	77M7W7D
90	3595.02 ~ 3654.99	0.1503	87M5G7D	0.1239	87M5W7D
100	3600.00 ~ 3649.98	0.1660	97M6G7D	0.1279	97M6W7D

UL MIMO n78		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
20	3560.01 ~ 3690.00	0.1945	18M2G7D	0.1799	18M2W7D
30	3565.02 ~ 3684.99	0.1932	27M9G7D	0.1791	27M9W7D
40	3570.00 ~ 3679.98	0.1954	37M9G7D	0.1828	37M8W7D
50	3575.01 ~ 3675.00	0.1928	47M5G7D	0.1746	47M6W7D
60	3580.02 ~ 3669.99	0.1923	58M0G7D	0.1746	57M8W7D
70	3585.00 ~ 3664.98	0.1905	67M5G7D	0.1714	67M7W7D
80	3590.01 ~ 3660.00	0.1862	77M4G7D	0.1679	77M6W7D
90	3595.02 ~ 3654.99	0.1897	87M7G7D	0.1694	87M6W7D
100	3600.00 ~ 3649.98	0.1954	97M7G7D	0.1683	97M6W7D

Note:

1. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.
2. 5G NR Band n77 overlaps the entire frequency range of Band n48/n78, and n77 power > n48/n78 power, therefore the conducted test results of n77 provided in this report cover n48/n78, except for Bandwidth 10M of n48 is full tested.

1.3 Testing Site

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

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

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-SZ	CN1256	421272

Note: Test data subcontracted: Conducted test cases in section 3.2~3.7 of this report.

1.4 Test Software

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

1.5 Applied Standards

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

- ♦ ANSI C63.26-2015
- ♦ 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS v03
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

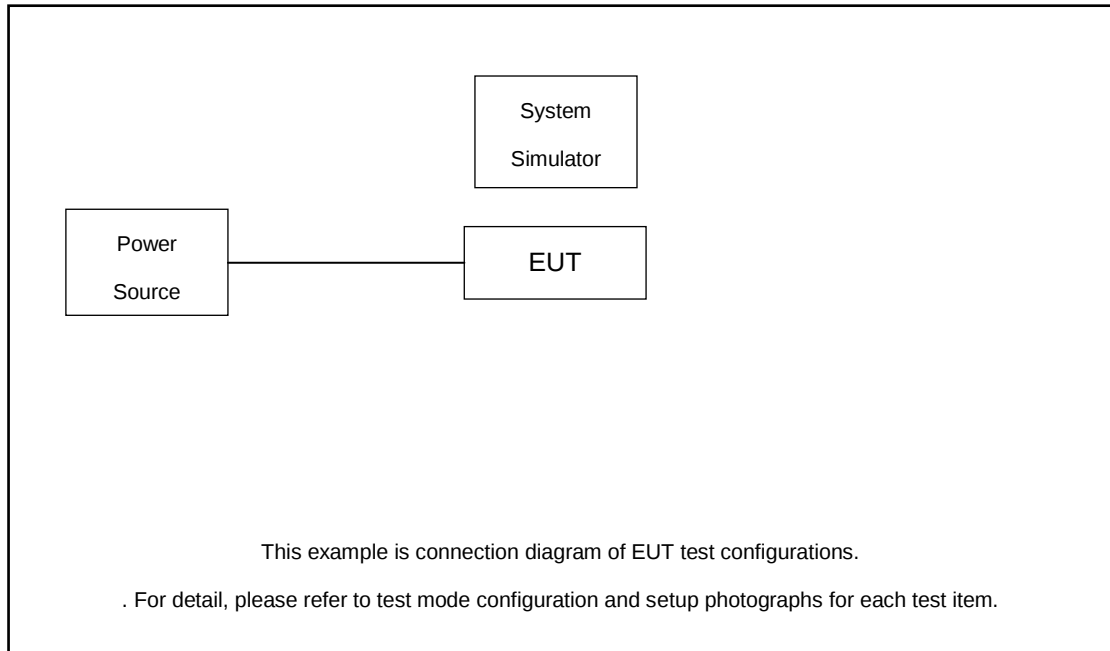
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

Test Items	Band	Bandwidth (MHz)						Modulation					RB #		Test Channel		
		5	10	15	20	30	40	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n48	-	v	-	v	-	v	v	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	n48	-	v	-		-			v	v	v	v		v		v	
Adjacent Channel Leakage Ratio	n48	-	v	-		-		v	v				v	v	v	v	v
Conducted Band Edge	n48	-	v	-		-		v	v				v	v	v	v	v
Conducted Spurious Emission	n48	-	v	-		-		v	v				v		v	v	v
E.I.R.P	n48	-	v	-	v	-	v	v	v	v	v	v	v	v	v	v	v
Frequency Stability	n48	-	v	-		-			v					v		v	
Radiated Spurious Emission	n48	Worst Case													v	v	v
Remark	1. The mark “v” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Frequency Stability: Normal Voltage: 3.85Vdc, Extreme Voltage: 3.50Vdc ~4.41Vdc.																



Test Items	5G NR	Bandwidth (MHz)												Modulation					RB #		Test Channel			
		10	15	20	25	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Full	L	M	H	
Max. Output Power	n77	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
	n78	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
Adjacent Channel Leakage Ratio	n77	-	-		-			v		-			v	v	v				v	v	v	v	v	
26dB and 99% Bandwidth	n77	-	-	v	-	v	v	v	v	v	v	v	v		v	v	v	v		v		v		
Conducted Band Edge	n77	-	-		-			v					v	v	v				v	v	v		v	
Conducted Spurious Emission	n77	-	-		-			v					v	v	v				v		v	v	v	
Frequency Stability	n77	-	-	v	-										v					v		v		
E.I.R.P	n77	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
	n78	-	-	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	
Radiated Spurious Emission	n77	Worst Case																			v	v	v	
	n78	Worst Case																			v	v	v	
Note	5.	The mark “v ” means that this configuration is chosen for testing																						
	6.	The mark “-” means that this bandwidth is not supported.																						
	7.	The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.																						
	8.	Based on engineering evaluation, only the worst modulations test results are shown in the report.																						
	9.	Frequency Stability: Normal Voltage: 3.85Vdc, Extreme Voltage: 3.50Vdc ~4.41Vdc.																						

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820/8821	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 8.9 dB.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 8.9 \text{ (dB)} \end{aligned}$$

2.5 Frequency List of Low/Middle/High Channels

5G NR n48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	638000	641666	645332
	Frequency	3570	3624.99	3679.98
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690
10	Channel	637000	641666	646332
	Frequency	3555	3624.99	3694.98

5G n77/n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	640000	641666	643332
	Frequency	3600	3624.99	3649.98
90	Channel	639668	641666	643666
	Frequency	3595.02	3624.99	3654.99
80	Channel	639334	641666	644000
	Frequency	3590.01	3624.99	3660
70	Channel	639000	641666	644332
	Frequency	3585	3624.99	3664.98
60	Channel	638668	641666	644666
	Frequency	3580.02	3624.99	3669.99
50	Channel	638334	641666	645000
	Frequency	3575.01	3624.99	3675
40	Channel	638000	641666	645332
	Frequency	3570	3624.99	3679.98
30	Channel	637668	641666	645666
	Frequency	3565.02	3624.99	3684.99
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690

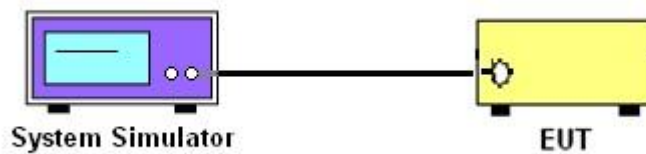
3 Conducted Test Items

3.1 Measuring Instruments

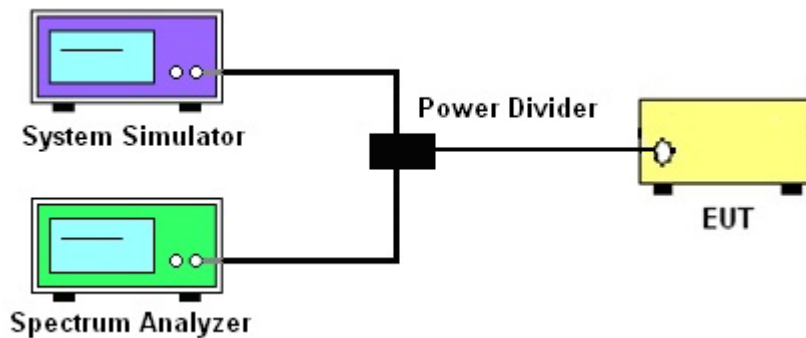
See list of measuring instruments of this test report.

3.1.1 Test Setup

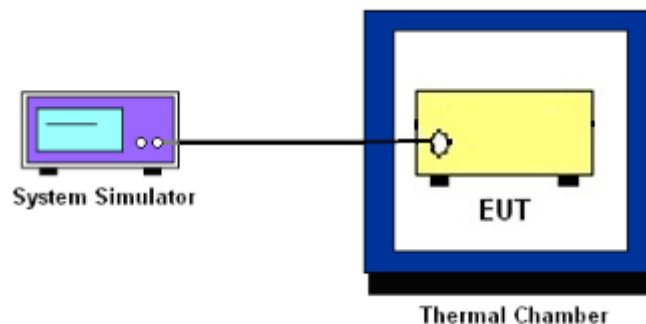
3.1.2 Conducted Output Power



3.1.3 PSD, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power Measurement

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

3.2.2 Test Procedures

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

3.3 EIRP

3.3.1 Description of the EIRP Measurement

EIRP limits for CBRS equipment as below table:

Device		Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
Applied	End User Device	23	n/a
☐	Category A CBSD	30	20
☐	Category B CBSD	47	37

Remark: The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths for LTE Band 48 (i.e. 5, 10, 15, 20MHz)

3.3.2 Test Procedures for EIRP

1. Establishing a communications link with the call box (Base station) to measure the Maximum conducted power, the parameters were set to force the EUT transmitting at maximum output power level. Use the average power measurement function to measure total channel power of each channel bandwidth (per ANSI C63.26-2015 Section 5.2.1)
2. Determining ERP and/or EIRP from conducted RF output power measurements (Per ANSI C63.26-2015 Section 5.2.5.5)
$$\text{EIRP} = P_T + G_T - L_C, \text{ ERP} = \text{EIRP} - 2.15, \text{ where}$$
$$P_T = \text{transmitter output power in dBm}$$
$$G_T = \text{gain of the transmitting antenna in dBi}$$
$$L_C = \text{signal attenuation in the connecting cable between the transmitter and antenna in dB}$$

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

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

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

3.4.2 Test Procedures

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

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

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

Part 96.41 (e) (1) (ii)

For End User Devices the emission limits outside the fundamental are as follows:

Within 0 MHz to B MHz above and below the assigned channel ≤ -13 dBm/MHz

Greater than B MHz above and below the assigned channel ≤ -25 dBm/MHz

where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device.

Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Part 96.41 (e) (2)

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
5. Offset has included the duty factor for LTE Band 48. Duty factor $=10 \log (1/x)$, where x is the measured duty cycle.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

96.41 (e)(2)

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

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is -40dBm/MHz.

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

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

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

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

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

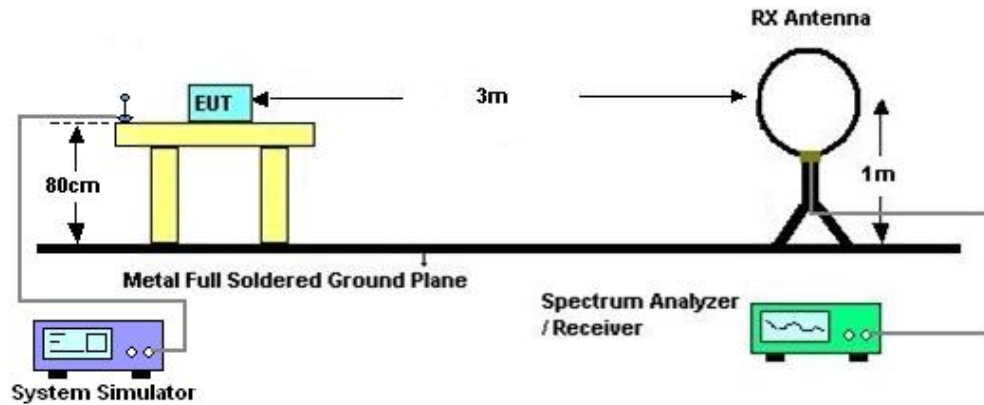
4 Radiated Test Items

4.1 Measuring Instruments

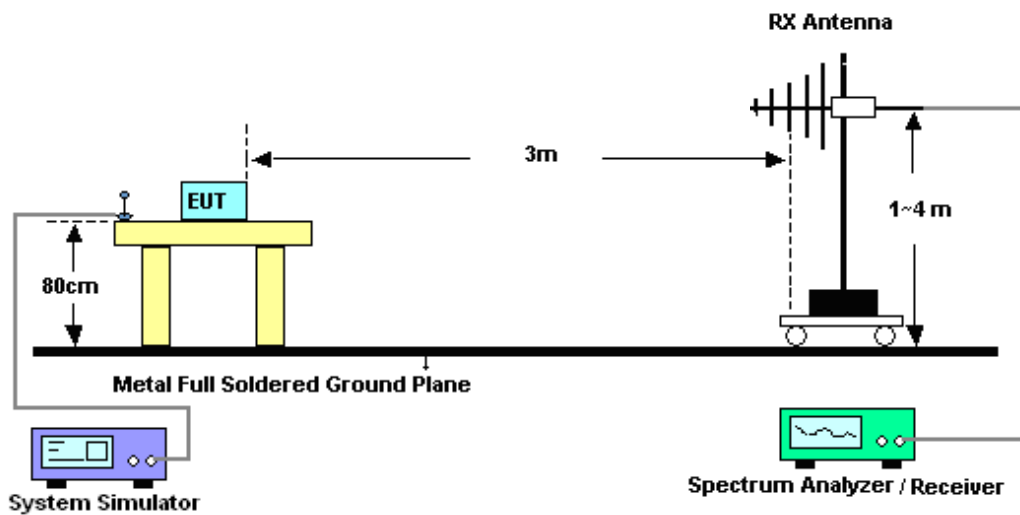
See list of measuring instruments of this test report.

4.2 Test Setup

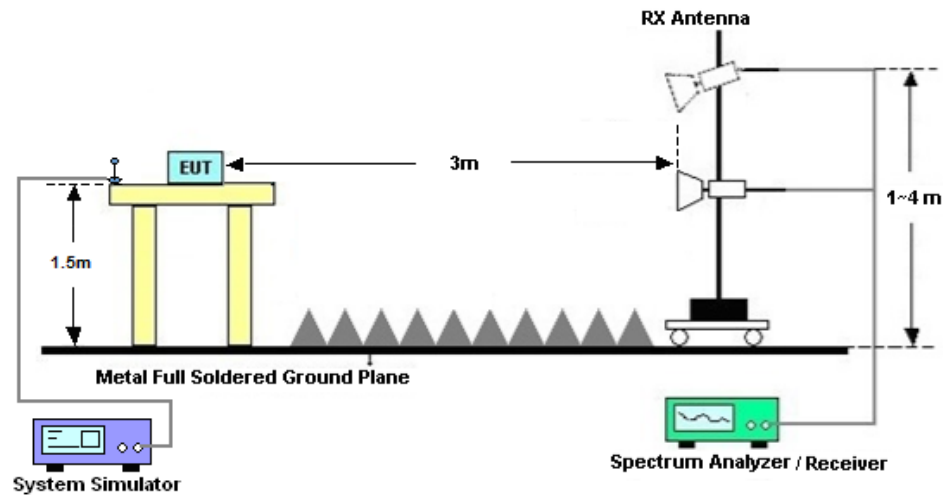
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz.

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

4.4.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
The limit line is -40dBm/MHz



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Jun. 19, 2024~Jul. 05, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V , 3A	Oct. 16, 2023	Jun. 19, 2024~Jul. 05, 2024	Oct. 15, 2024	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2023	Jun. 19, 2024~Jul. 05, 2024	Dec. 24, 2024	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 04, 2024	Jun. 19, 2024~Jul. 05, 2024	Jul. 03, 2025	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 11, 2023	Jul. 05, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11 2023	Jul. 05, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2023	Jul. 05, 2024	Aug. 18, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 23, 2023	Jul. 05, 2024	Oct. 22, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 27, 2024	Jul. 05, 2024	Jan. 26, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 03, 2024	Jul. 05, 2024	Jan. 02, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM18G40G A	060728	18~40GHz	Jan. 02, 2024	Jul. 05, 2024	Jan. 01, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 11, 2023	Jul. 05, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
Amplifier	EM	EM01G18G A	060892	1Ghz-18Ghz	Oct. 11, 2023	Jul. 05, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jul. 05, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jul. 05, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jul. 05, 2024	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	± 1.34 dB
Occupied Channel Bandwidth	± 0.012 MHz
Conducted Power	± 1.34 dB
Conducted Power Density	± 1.32 dB
Peak to Average Ratio	± 1.34 dB
Frequency Stability	± 1.3 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.83 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.83 dB
---	---------

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.82 dB
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----- THE END -----



Appendix A. Test Results of Conducted Test

Test Engineer :	Khan	Temperature :	22~23°C
		Relative Humidity :	40~42%



Software Version: 23.06.1602

FR1 N48 (Ant4)

LTE Band: 2, LTE BW: 10M, LTE ARFCN: Mid

Transmitter Conducted Output Power And EIRP, ($G_T - L_c$)=-0.56dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
48	30	10	637000	3555	DFT-s-OFDM PI/2 BPSK	12@6	21.78	21.22	0.1324
48	30	10	637000	3555	DFT-s-OFDM PI/2 BPSK	1@1	21.8	21.24	0.1330
48	30	10	637000	3555	DFT-s-OFDM PI/2 BPSK	1@22	21.81	21.25	0.1334
48	30	10	637000	3555	DFT-s-OFDM QPSK	12@6	21.83	21.27	0.1340
48	30	10	637000	3555	DFT-s-OFDM QPSK	1@1	21.76	21.2	0.1318
48	30	10	637000	3555	DFT-s-OFDM QPSK	1@22	21.82	21.26	0.1337
48	30	10	637000	3555	DFT-s-OFDM 16 QAM	12@6	20.97	20.41	0.1099
48	30	10	637000	3555	DFT-s-OFDM 16 QAM	1@1	21.12	20.56	0.1138
48	30	10	637000	3555	DFT-s-OFDM 16 QAM	1@22	21.09	20.53	0.1130
48	30	10	637000	3555	DFT-s-OFDM 64 QAM	12@6	19.43	18.87	0.0771
48	30	10	637000	3555	DFT-s-OFDM 64 QAM	1@1	19.42	18.86	0.0769
48	30	10	637000	3555	DFT-s-OFDM 64 QAM	1@22	19.45	18.89	0.0774
48	30	10	637000	3555	DFT-s-OFDM 256 QAM	12@6	17.37	16.81	0.0480
48	30	10	637000	3555	DFT-s-OFDM 256 QAM	1@1	17.13	16.57	0.0454
48	30	10	637000	3555	DFT-s-OFDM 256 QAM	1@22	17.2	16.64	0.0461
48	30	10	637000	3555	CP-OFDM QPSK	12@6	20.42	19.86	0.0968
48	30	10	637000	3555	CP-OFDM QPSK	1@1	20.33	19.77	0.0948
48	30	10	637000	3555	CP-OFDM QPSK	1@22	20.33	19.77	0.0948
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	12@6	22.04	21.48	0.1406
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@1	21.91	21.35	0.1365
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@22	21.95	21.39	0.1377
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	12@6	21.96	21.4	0.1380
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@1	21.91	21.35	0.1365
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@22	21.87	21.31	0.1352
48	30	10	641666	3624.99	DFT-s-OFDM 16 QAM	12@6	21.17	20.61	0.1151



48	30	10	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.23	20.67	0.1167
48	30	10	641666	3624.99	DFT-s-OFDM 16 QAM	1@22	21.21	20.65	0.1161
48	30	10	641666	3624.99	DFT-s-OFDM 64 QAM	12@6	19.66	19.1	0.0813
48	30	10	641666	3624.99	DFT-s-OFDM 64 QAM	1@1	19.55	18.99	0.0793
48	30	10	641666	3624.99	DFT-s-OFDM 64 QAM	1@22	19.59	19.03	0.0800
48	30	10	641666	3624.99	DFT-s-OFDM 256 QAM	12@6	17.47	16.91	0.0491
48	30	10	641666	3624.99	DFT-s-OFDM 256 QAM	1@1	17.25	16.69	0.0467
48	30	10	641666	3624.99	DFT-s-OFDM 256 QAM	1@22	17.34	16.78	0.0476
48	30	10	641666	3624.99	CP-OFDM QPSK	12@6	20.57	20.01	0.1002
48	30	10	641666	3624.99	CP-OFDM QPSK	1@1	20.39	19.83	0.0962
48	30	10	641666	3624.99	CP-OFDM QPSK	1@22	20.43	19.87	0.0971
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	12@6	21.9	21.34	0.1361
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@1	21.86	21.3	0.1349
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@22	21.99	21.43	0.1390
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	12@6	21.87	21.31	0.1352
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@1	21.83	21.27	0.1340
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@22	21.96	21.4	0.1380
48	30	10	646332	3694.98	DFT-s-OFDM 16 QAM	12@6	21.06	20.5	0.1122
48	30	10	646332	3694.98	DFT-s-OFDM 16 QAM	1@1	21.28	20.72	0.1180
48	30	10	646332	3694.98	DFT-s-OFDM 16 QAM	1@22	21.25	20.69	0.1172
48	30	10	646332	3694.98	DFT-s-OFDM 64 QAM	12@6	19.54	18.98	0.0791
48	30	10	646332	3694.98	DFT-s-OFDM 64 QAM	1@1	19.47	18.91	0.0778
48	30	10	646332	3694.98	DFT-s-OFDM 64 QAM	1@22	19.64	19.08	0.0809
48	30	10	646332	3694.98	DFT-s-OFDM 256 QAM	12@6	17.43	16.87	0.0486
48	30	10	646332	3694.98	DFT-s-OFDM 256 QAM	1@1	17.13	16.57	0.0454
48	30	10	646332	3694.98	DFT-s-OFDM 256 QAM	1@22	17.29	16.73	0.0471
48	30	10	646332	3694.98	CP-OFDM QPSK	12@6	20.61	20.05	0.1012
48	30	10	646332	3694.98	CP-OFDM QPSK	1@1	20.62	20.06	0.1014
48	30	10	646332	3694.98	CP-OFDM QPSK	1@22	20.67	20.11	0.1026
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@1	17.86	17.3	0.0537
48	30	20	637334	3560.01	DFT-s-OFDM 16 QAM	1@1	17.04	16.48	0.0445
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@1	17.93	17.37	0.0546



48	30	20	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	18.1	17.54	0.0568
48	30	20	646000	3690	DFT-s-OFDM QPSK	1@1	17.8	17.24	0.0530
48	30	20	646000	3690	DFT-s-OFDM 16 QAM	1@1	18.19	17.63	0.0579
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	50@25	11.65	11.09	0.0129
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	1@1	11.63	11.07	0.0128
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	1@104	11.65	11.09	0.0129
48	30	40	638000	3570	DFT-s-OFDM QPSK	50@25	11.54	10.98	0.0125
48	30	40	638000	3570	DFT-s-OFDM QPSK	1@1	11.55	10.99	0.0126
48	30	40	638000	3570	DFT-s-OFDM QPSK	1@104	11.6	11.04	0.0127
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	50@25	11.08	10.52	0.0113
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	1@1	11.13	10.57	0.0114
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	1@104	11.24	10.68	0.0117
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	50@25	11.07	10.51	0.0112
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	1@1	11.08	10.52	0.0113
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	1@104	11.09	10.53	0.0113
48	30	40	638000	3570	DFT-s-OFDM 256 QAM	50@25	11.1	10.54	0.0113
48	30	40	638000	3570	DFT-s-OFDM 256 QAM	1@1	10.73	10.17	0.0104
48	30	40	638000	3570	DFT-s-OFDM 256 QAM	1@104	10.84	10.28	0.0107
48	30	40	638000	3570	CP-OFDM QPSK	53@26	10.54	9.98	0.0100
48	30	40	638000	3570	CP-OFDM QPSK	1@1	10.54	9.98	0.0100
48	30	40	638000	3570	CP-OFDM QPSK	1@104	10.51	9.95	0.0099
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	50@25	18.1	17.54	0.0568
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@1	18.17	17.61	0.0577
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@104	18.03	17.47	0.0558
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	50@25	18.18	17.62	0.0578
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@1	18.11	17.55	0.0569
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@104	18.06	17.5	0.0562
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	50@25	18.09	17.53	0.0566
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	18.23	17.67	0.0585
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@104	18.24	17.68	0.0586
48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	50@25	18.11	17.55	0.0569
48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	1@1	18.23	17.67	0.0585



48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	1@104	18.25	17.69	0.0587
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	50@25	17.62	17.06	0.0508
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	1@1	17.29	16.73	0.0471
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	1@104	17.32	16.76	0.0474
48	30	40	641666	3624.99	CP-OFDM QPSK	53@26	18.18	17.62	0.0578
48	30	40	641666	3624.99	CP-OFDM QPSK	1@1	18.02	17.46	0.0557
48	30	40	641666	3624.99	CP-OFDM QPSK	1@104	18.09	17.53	0.0566
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	50@25	11.18	10.62	0.0115
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@1	10.56	10	0.0100
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@104	10.49	9.93	0.0098
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	50@25	11.13	10.57	0.0114
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@1	10.43	9.87	0.0097
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@104	10.52	9.96	0.0099
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	50@25	10.68	10.12	0.0103
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@1	10.22	9.66	0.0092
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@104	10.18	9.62	0.0092
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	50@25	10.6	10.04	0.0101
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	1@1	10.1	9.54	0.0090
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	1@104	9.97	9.41	0.0087
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	50@25	10.66	10.1	0.0102
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	1@1	9.74	9.18	0.0083
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	1@104	9.62	9.06	0.0081
48	30	40	645332	3679.98	CP-OFDM QPSK	53@26	10.14	9.58	0.0091
48	30	40	645332	3679.98	CP-OFDM QPSK	1@1	9.45	8.89	0.0077
48	30	40	645332	3679.98	CP-OFDM QPSK	1@104	9.52	8.96	0.0079



Frequency Stability

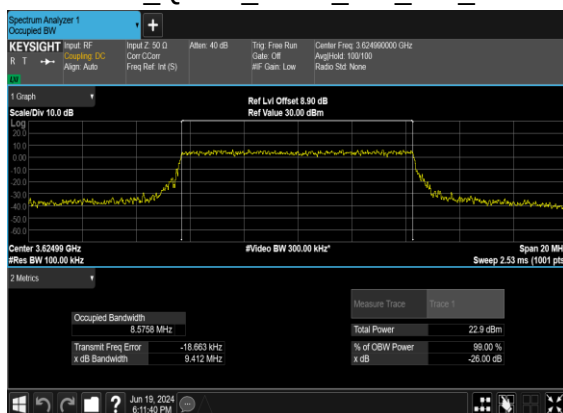
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0	0.00074	PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0		PASS	Normal



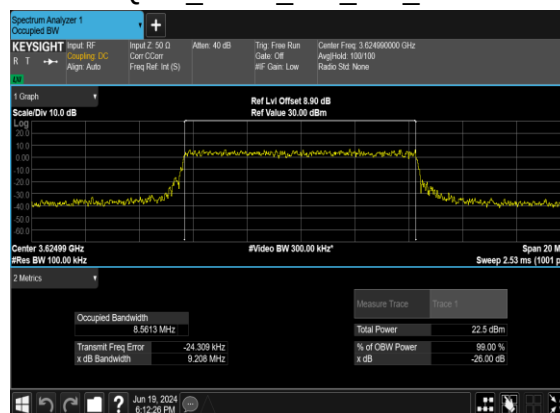
Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
48	30	10	641666	3624.99	CP-OFDM QPSK	24@0	8.5758	9.412
48	30	10	641666	3624.99	CP-OFDM 16 QAM	24@0	8.5613	9.208
48	30	10	641666	3624.99	CP-OFDM 64 QAM	24@0	8.5947	9.389
48	30	10	641666	3624.99	CP-OFDM 256 QAM	24@0	8.5718	9.236

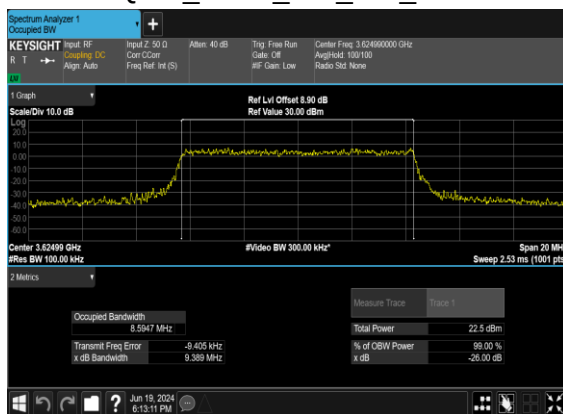
B2_N48(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



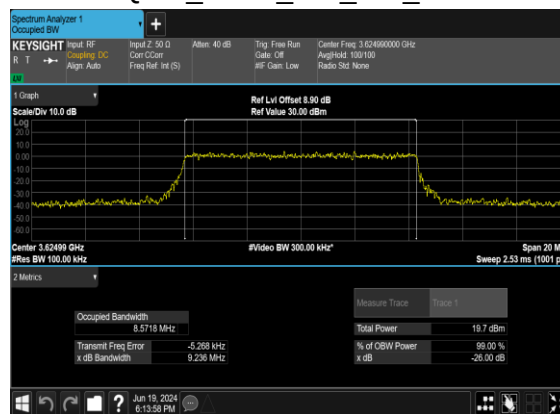
B2_N48(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



B2_N48(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



B2_N48(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



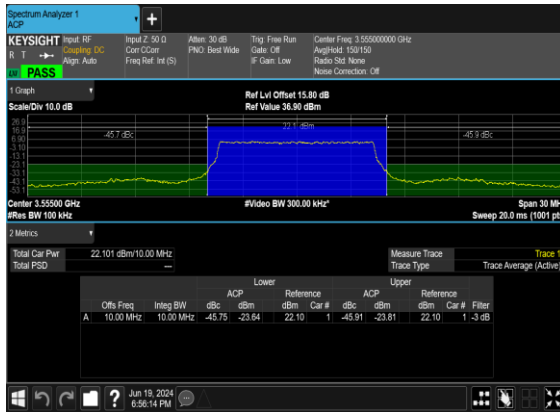


Adjacent Channel Leakage Ratio

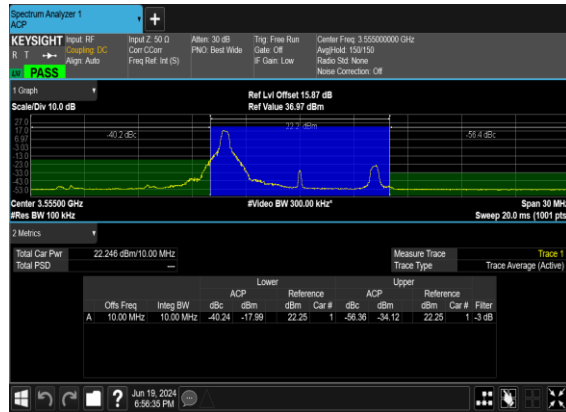
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Lower Margin	Upper Margin	Result	Verdict
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	24@0	-15.75	-15.91	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@0	-10.24	-26.36	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@23	-26.29	-14.74	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	24@0	-14.29	-14.76	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	-12.89	-25.78	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@23	-25.86	-13.41	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	24@0	-16.12	-16.31	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-10.93	-23.02	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@23	-23.03	-14.18	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0	-14.69	-15.66	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	-11.81	-22.52	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@23	-23.37	-13.85	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	24@0	-14.18	-14.22	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@0	-9.68	-20.91	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@23	-22.61	-14.62	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	24@0	-12.34	-12.69	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	-12.66	-21.35	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@23	-20.57	-11.81	see graph	PASS



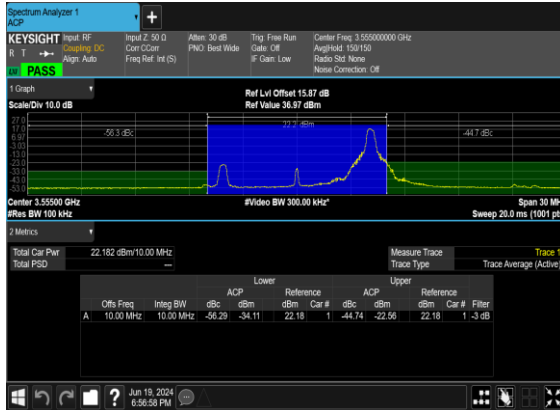
B2_N48(10M)_DFT-s-OFDM_PI_2-
BPSK_Outer_Full_Low_CH



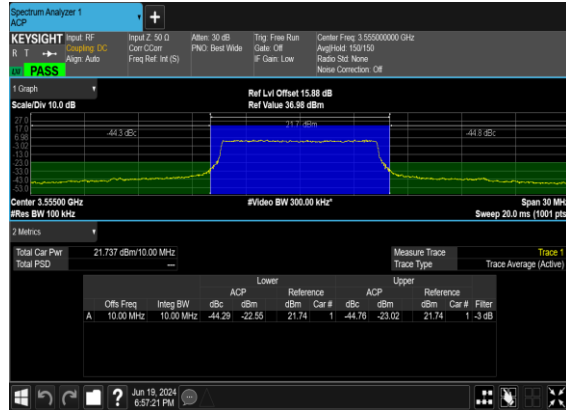
B2_N48(10M)_DFT-s-OFDM_PI_2-
BPSK_Edge_1RB_Left_Low_CH



B2_N48(10M)_DFT-s-OFDM_PI_2-
BPSK_Edge_1RB_Right_Low_CH

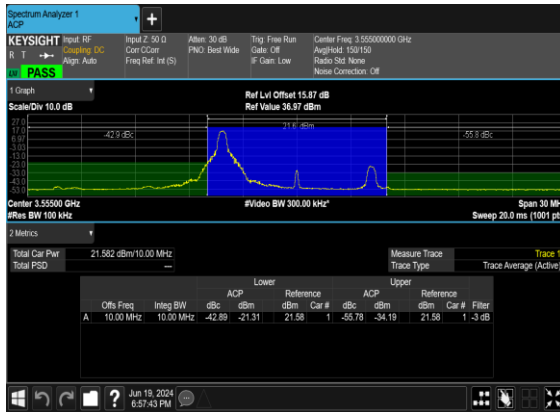


B2_N48(10M)_DFT-s-
OFDM_QPSK_Outer_Full_Low_CH





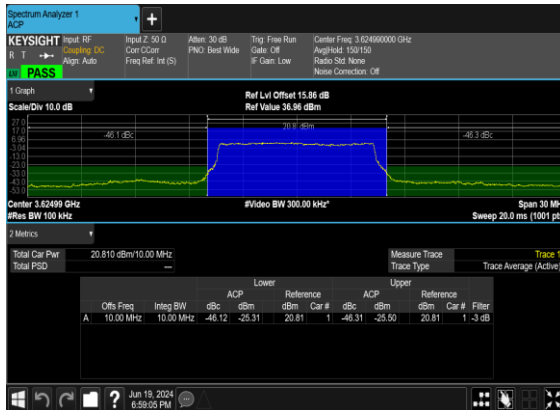
B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



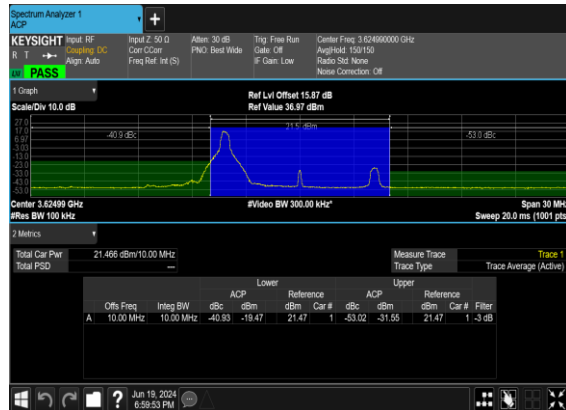
B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH



B2_N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

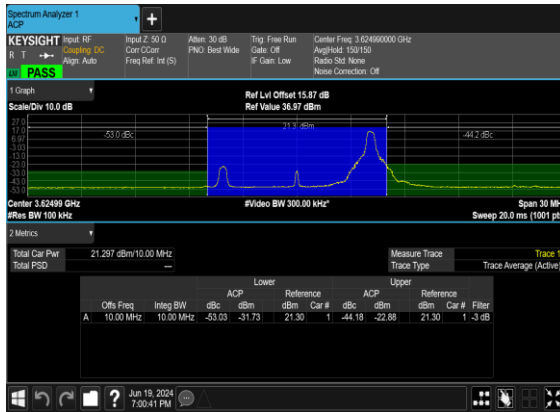


B2_N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH

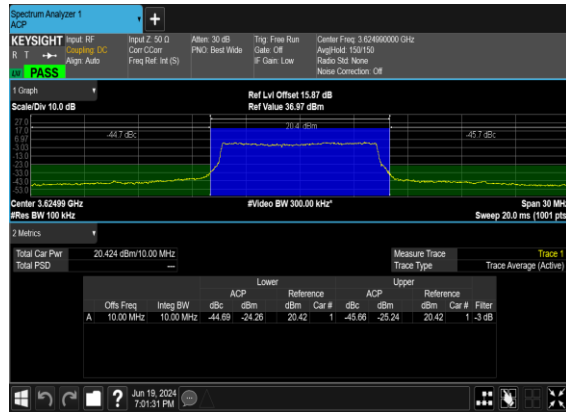




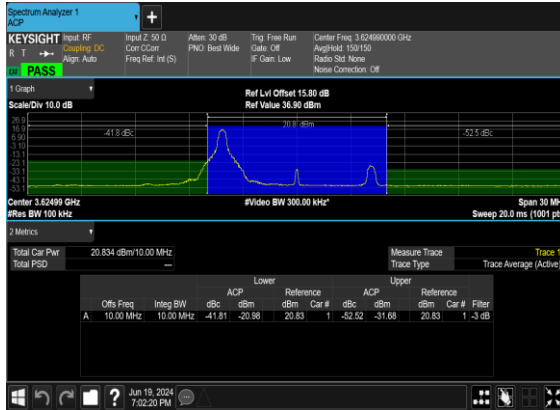
B2_N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH



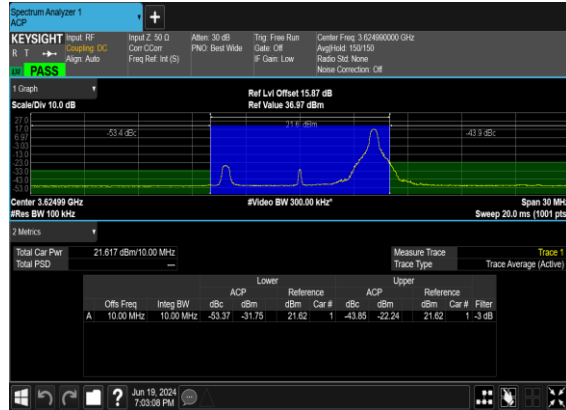
B2_N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH

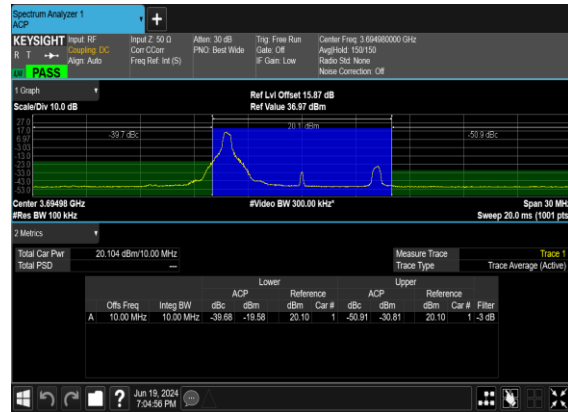




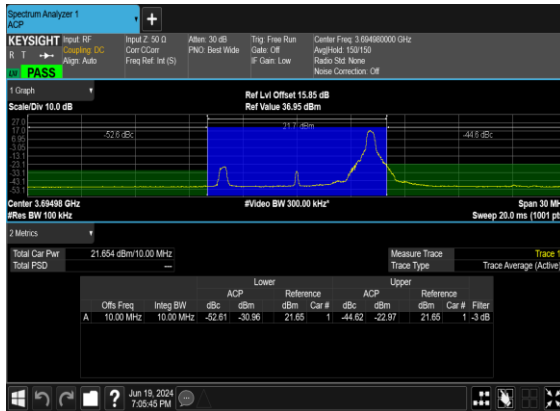
B2_N48(10M)_DFT-s-OFDM_PI_2-
BPSK_Outer_Full_High_CH



B2_N48(10M)_DFT-s-OFDM_PI_2-
BPSK_Edge_1RB_Left_High_CH



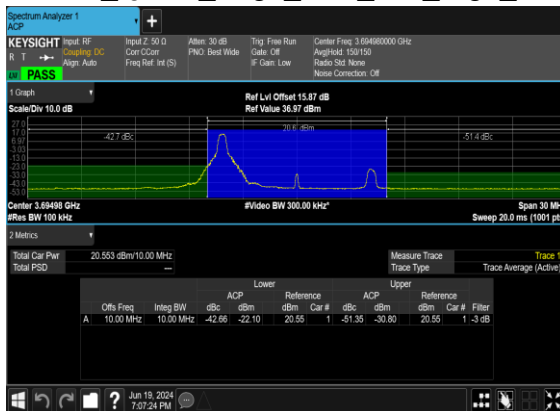
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BPSK_Edge_1RB_Right_High_CH



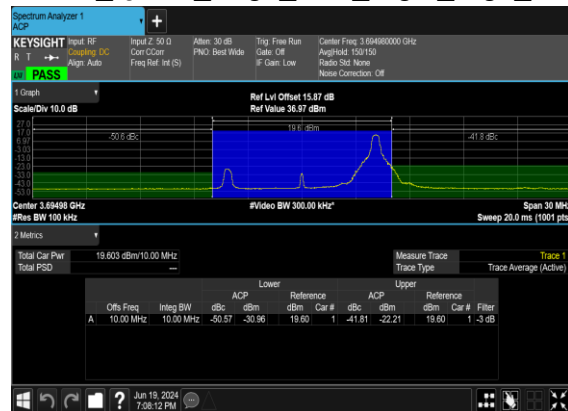
B2_N48(10M)_DFT-s-
OFDM_QPSK_Outer_Full_High_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_High_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Right_High_CH



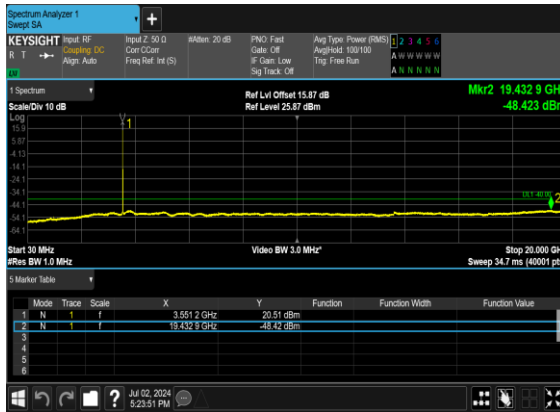


Conducted Spurious Emissions

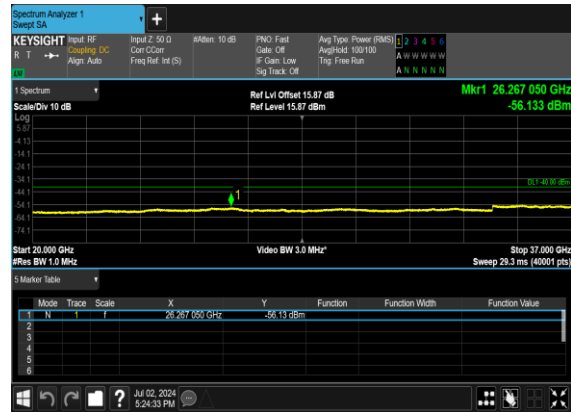
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	PASS



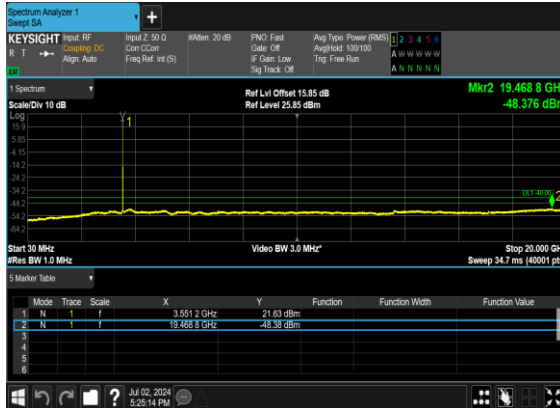
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



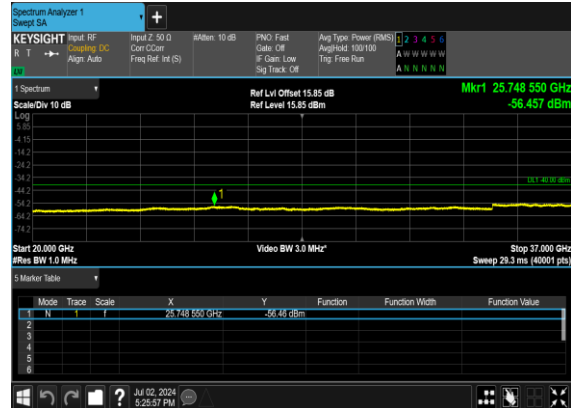
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH

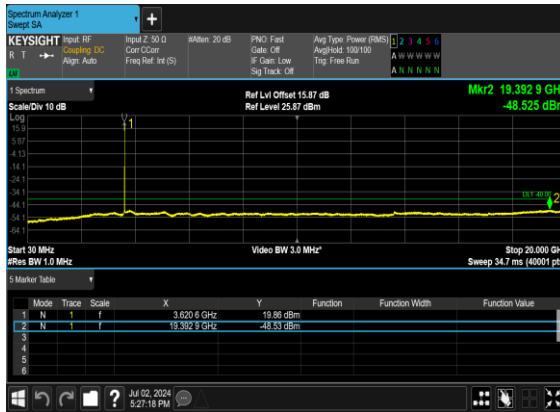


B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH

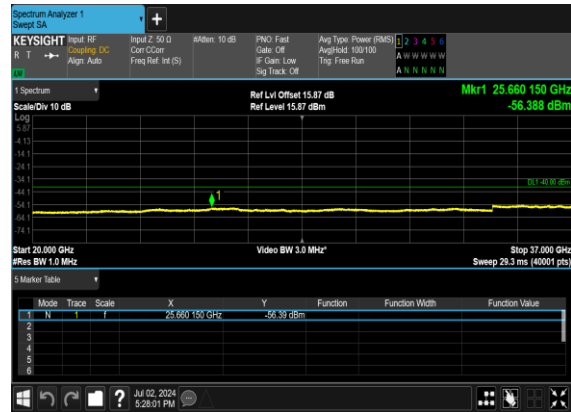




B2_N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



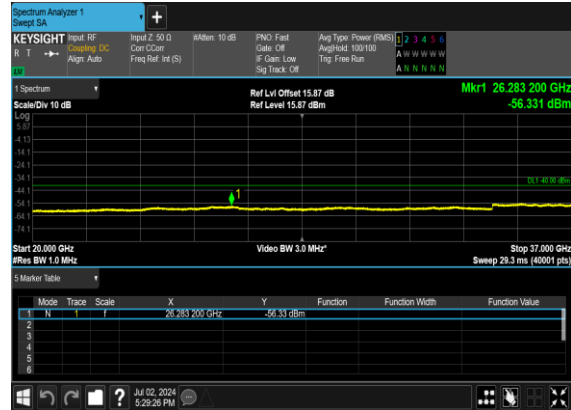
B2_N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

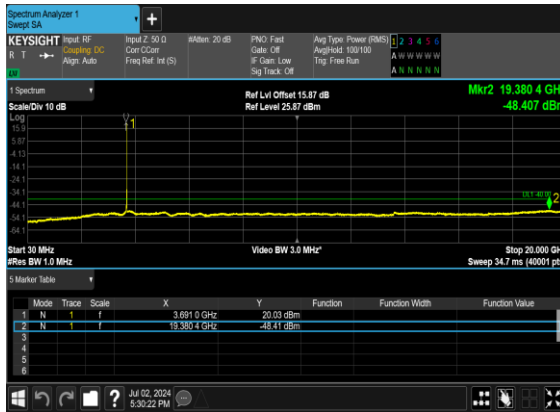


B2_N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

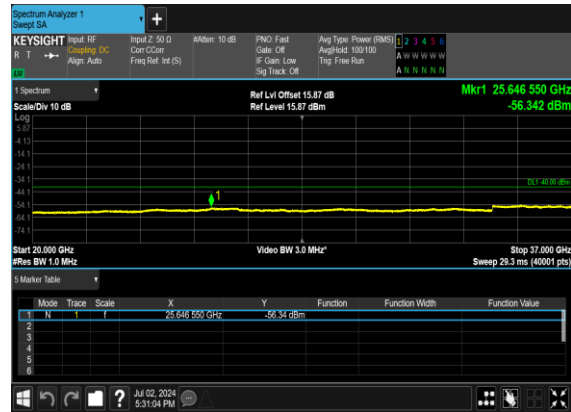




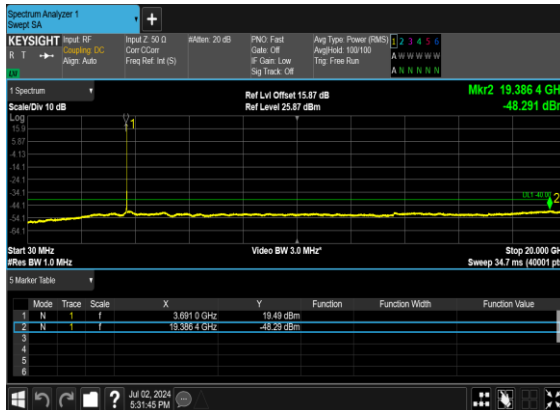
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_High_CH



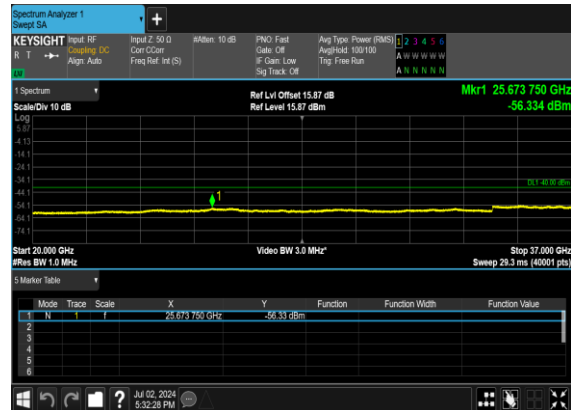
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_High_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_High_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_High_CH

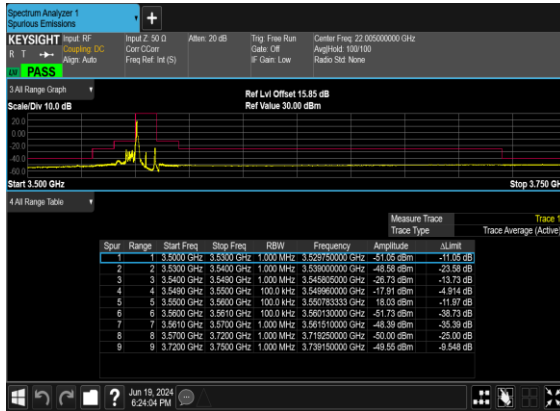


**Conducted Band Edge**

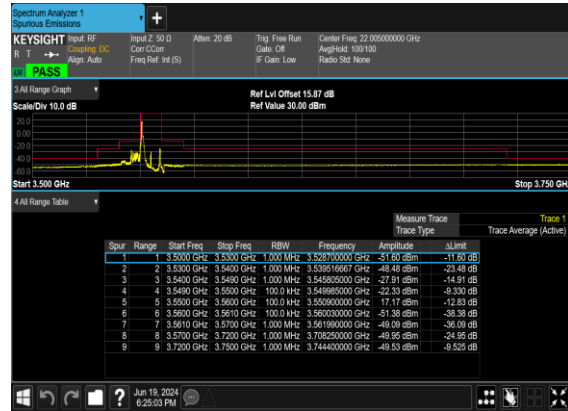
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@23	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@23	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	24@0	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	24@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@23	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@23	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	24@0	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@23	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@23	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	24@0	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	24@0	see graph	PASS



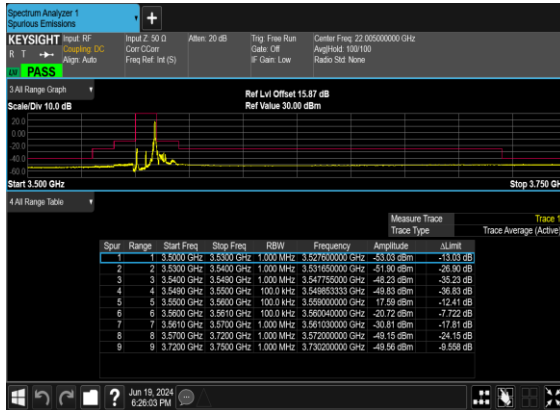
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



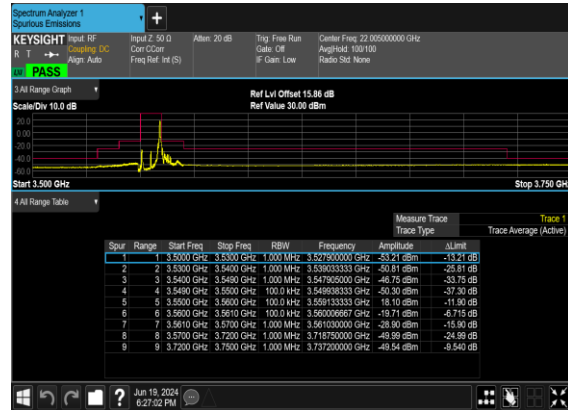
B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Right_Low_CH

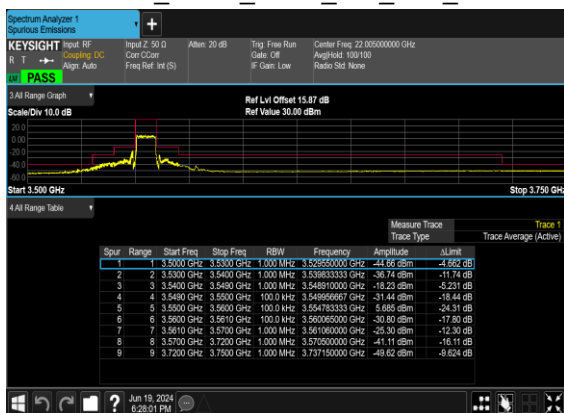


B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Right_Low_CH

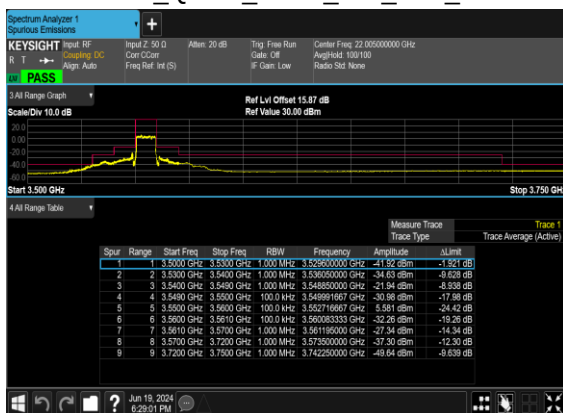




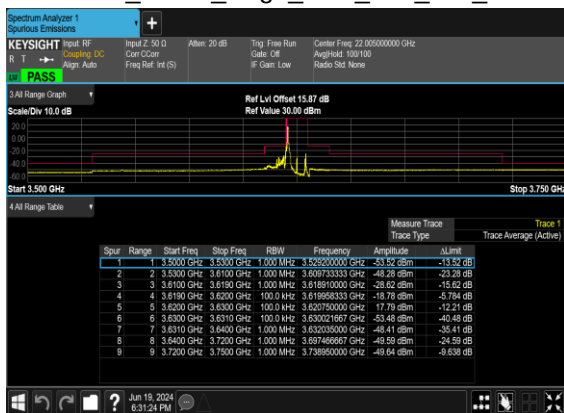
B2_N48(10M)_DFT-s-
OFDM_BPSK_Outer_Full_Low_CH



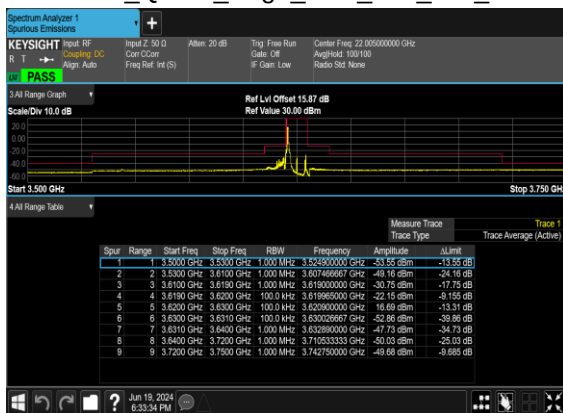
B2_N48(10M)_DFT-s-
OFDM_QPSK_Outer_Full_Low_CH



B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Mid_CH

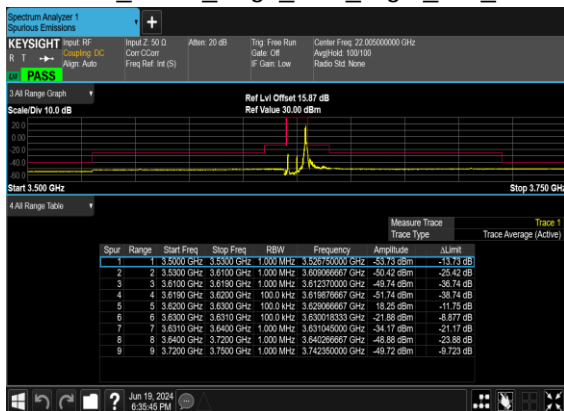


B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Mid_CH

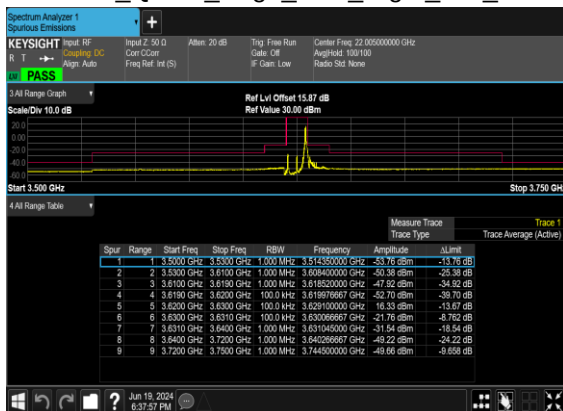




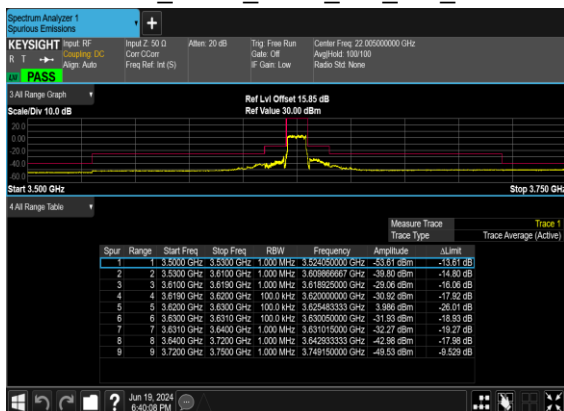
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Right_Mid_CH



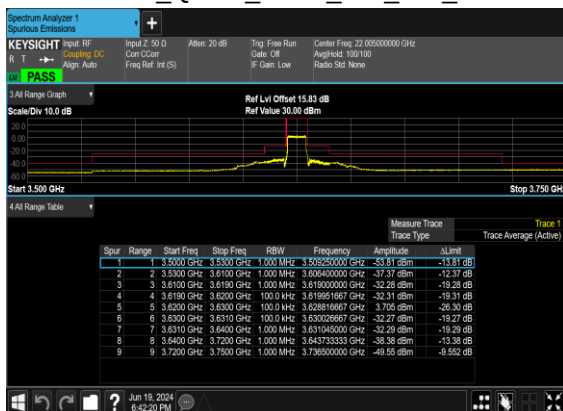
B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Right_Mid_CH



B2_N48(10M)_DFT-s-
OFDM_BPSK_Outer_Full_Mid_CH

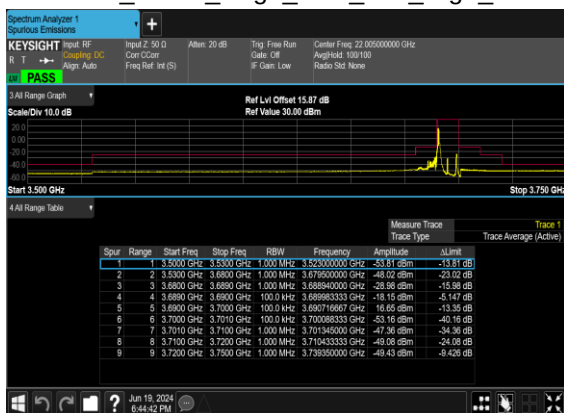


B2_N48(10M)_DFT-s-
OFDM_QPSK_Outer_Full_Mid_CH

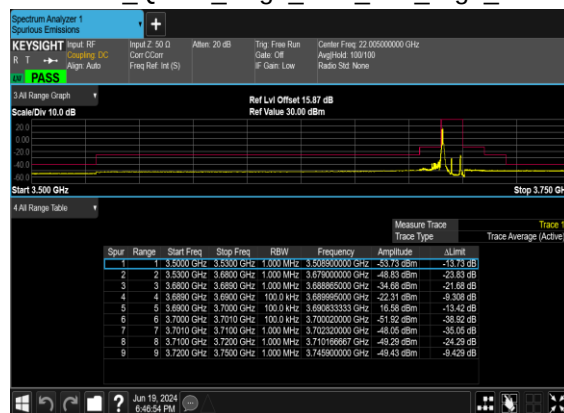




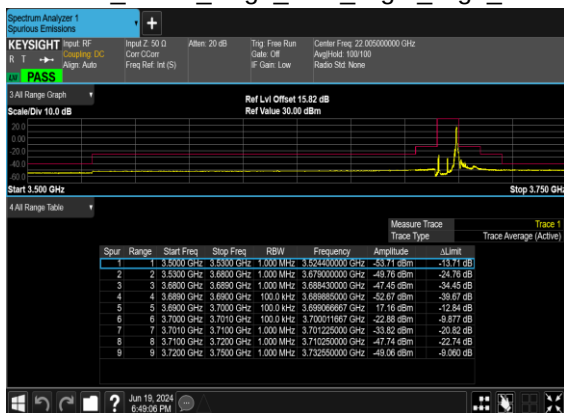
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_High_CH



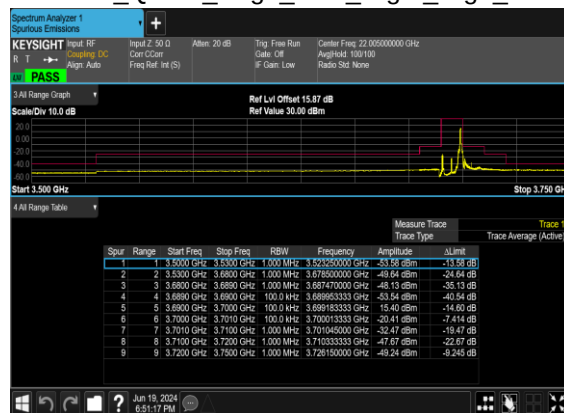
B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_High_CH



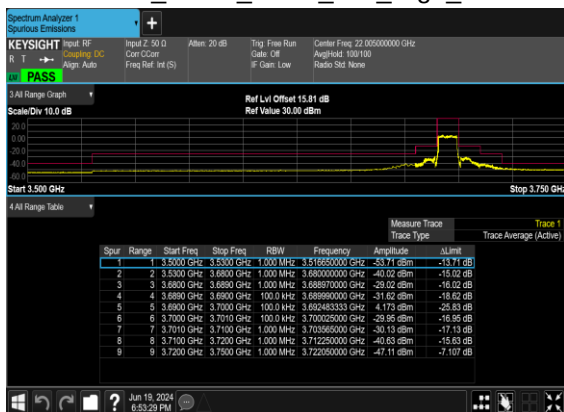
B2_N48(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Right_High_CH



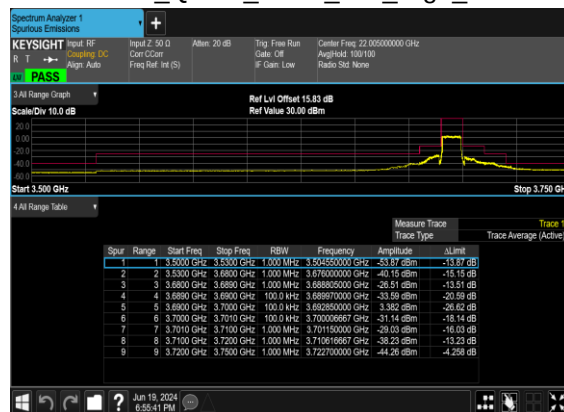
B2_N48(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Right_High_CH



B2_N48(10M)_DFT-s-
OFDM_BPSK_Outer_Full_High_CH



B2_N48(10M)_DFT-s-
OFDM_QPSK_Outer_Full_High_CH





Software Version: 23.06.1602

FR1 N77 SISO (Ant4)

LTE Band: 2, LTE BW: 10M, LTE ARFCN: Mid

Transmitter Conducted Output Power And EIRP, ($G_T - L_C$)=-0.56dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
77	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@1	22.52	21.96	0.1570
77	30	20	637334	3560.01	DFT-s-OFDM 16 QAM	1@1	21.68	21.12	0.1294
77	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.63	22.07	0.1611
77	30	20	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.75	21.19	0.1315
77	30	20	646000	3690	DFT-s-OFDM QPSK	1@1	22.62	22.06	0.1607
77	30	20	646000	3690	DFT-s-OFDM 16 QAM	1@1	21.85	21.29	0.1346
77	30	30	637668	3565.02	DFT-s-OFDM QPSK	1@1	22.52	21.96	0.1570
77	30	30	637668	3565.02	DFT-s-OFDM 16 QAM	1@1	21.8	21.24	0.1330
77	30	30	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.67	22.11	0.1626
77	30	30	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.76	21.2	0.1318
77	30	30	645666	3684.99	DFT-s-OFDM QPSK	1@1	22.18	21.62	0.1452
77	30	30	645666	3684.99	DFT-s-OFDM 16 QAM	1@1	21.34	20.78	0.1197
77	30	40	638000	3570	DFT-s-OFDM QPSK	1@1	22.8	22.24	0.1675
77	30	40	638000	3570	DFT-s-OFDM 16 QAM	1@1	21.93	21.37	0.1371
77	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.8	22.24	0.1675
77	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	22.05	21.49	0.1409
77	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@1	22.14	21.58	0.1439
77	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@1	21.32	20.76	0.1191
77	30	50	638334	3575.01	DFT-s-OFDM QPSK	1@1	22.44	21.88	0.1542
77	30	50	638334	3575.01	DFT-s-OFDM 16 QAM	1@1	21.66	21.1	0.1288
77	30	50	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.51	21.95	0.1567
77	30	50	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.81	21.25	0.1334
77	30	50	645000	3675	DFT-s-OFDM QPSK	1@1	22.51	21.95	0.1567
77	30	50	645000	3675	DFT-s-OFDM 16 QAM	1@1	21.7	21.14	0.1300
77	30	60	638668	3580.02	DFT-s-OFDM QPSK	1@1	22.34	21.78	0.1507
77	30	60	638668	3580.02	DFT-s-OFDM 16 QAM	1@1	21.57	21.01	0.1262
77	30	60	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.36	21.8	0.1514
77	30	60	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.65	21.09	0.1285
77	30	60	644666	3669.99	DFT-s-OFDM QPSK	1@1	22.52	21.96	0.1570
77	30	60	644666	3669.99	DFT-s-OFDM 16 QAM	1@1	21.81	21.25	0.1334



77	30	70	639000	3585	DFT-s-OFDM QPSK	1@1	22.24	21.68	0.1472
77	30	70	639000	3585	DFT-s-OFDM 16 QAM	1@1	21.5	20.94	0.1242
77	30	70	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.3	21.74	0.1493
77	30	70	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.54	20.98	0.1253
77	30	70	644332	3664.98	DFT-s-OFDM QPSK	1@1	22.24	21.68	0.1472
77	30	70	644332	3664.98	DFT-s-OFDM 16 QAM	1@1	21.44	20.88	0.1225
77	30	80	639334	3590.01	DFT-s-OFDM QPSK	1@1	22.19	21.63	0.1455
77	30	80	639334	3590.01	DFT-s-OFDM 16 QAM	1@1	21.4	20.84	0.1213
77	30	80	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.25	21.69	0.1476
77	30	80	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.32	20.76	0.1191
77	30	80	644000	3660	DFT-s-OFDM QPSK	1@1	22.45	21.89	0.1545
77	30	80	644000	3660	DFT-s-OFDM 16 QAM	1@1	21.48	20.92	0.1236
77	30	90	639668	3595.02	DFT-s-OFDM QPSK	1@1	22.18	21.62	0.1452
77	30	90	639668	3595.02	DFT-s-OFDM 16 QAM	1@1	21.43	20.87	0.1222
77	30	90	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.29	21.73	0.1489
77	30	90	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.55	20.99	0.1256
77	30	90	643666	3654.99	DFT-s-OFDM QPSK	1@1	22.26	21.7	0.1479
77	30	90	643666	3654.99	DFT-s-OFDM 16 QAM	1@1	21.44	20.88	0.1225
77	30	100	640000	3600	DFT-s-OFDM PI/2 BPSK	135@67	22.32	21.76	0.1500
77	30	100	640000	3600	DFT-s-OFDM PI/2 BPSK	1@1	22.35	21.79	0.1510
77	30	100	640000	3600	DFT-s-OFDM PI/2 BPSK	1@271	22.11	21.55	0.1429
77	30	100	640000	3600	DFT-s-OFDM QPSK	135@67	22.29	21.73	0.1489
77	30	100	640000	3600	DFT-s-OFDM QPSK	1@1	22.15	21.59	0.1442
77	30	100	640000	3600	DFT-s-OFDM QPSK	1@271	22.16	21.6	0.1445
77	30	100	640000	3600	DFT-s-OFDM 16 QAM	135@67	21.37	20.81	0.1205
77	30	100	640000	3600	DFT-s-OFDM 16 QAM	1@1	21.42	20.86	0.1219
77	30	100	640000	3600	DFT-s-OFDM 16 QAM	1@271	21.27	20.71	0.1178
77	30	100	640000	3600	DFT-s-OFDM 64 QAM	135@67	19.9	19.34	0.0859
77	30	100	640000	3600	DFT-s-OFDM 64 QAM	1@1	19.84	19.28	0.0847
77	30	100	640000	3600	DFT-s-OFDM 64 QAM	1@271	19.7	19.14	0.0820
77	30	100	640000	3600	DFT-s-OFDM 256 QAM	135@67	17.94	17.38	0.0547
77	30	100	640000	3600	DFT-s-OFDM 256 QAM	1@1	17.55	16.99	0.0500
77	30	100	640000	3600	DFT-s-OFDM 256 QAM	1@271	17.41	16.85	0.0484
77	30	100	640000	3600	CP-OFDM QPSK	137@68	20.84	20.28	0.1067
77	30	100	640000	3600	CP-OFDM QPSK	1@1	20.68	20.12	0.1028
77	30	100	640000	3600	CP-OFDM QPSK	1@271	20.68	20.12	0.1028
77	30	100	641666	3624.99	DFT-s-OFDM PI/2 BPSK	135@67	22.27	21.71	0.1483
77	30	100	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@1	22.34	21.78	0.1507
77	30	100	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@271	22.05	21.49	0.1409



77	30	100	641666	3624.99	DFT-s-OFDM QPSK	135@67	22.23	21.67	0.1469
77	30	100	641666	3624.99	DFT-s-OFDM QPSK	1@1	22.28	21.72	0.1486
77	30	100	641666	3624.99	DFT-s-OFDM QPSK	1@271	21.95	21.39	0.1377
77	30	100	641666	3624.99	DFT-s-OFDM 16 QAM	135@67	21.3	20.74	0.1186
77	30	100	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	21.54	20.98	0.1253
77	30	100	641666	3624.99	DFT-s-OFDM 16 QAM	1@271	21.17	20.61	0.1151
77	30	100	641666	3624.99	DFT-s-OFDM 64 QAM	135@67	19.87	19.31	0.0853
77	30	100	641666	3624.99	DFT-s-OFDM 64 QAM	1@1	19.85	19.29	0.0849
77	30	100	641666	3624.99	DFT-s-OFDM 64 QAM	1@271	19.59	19.03	0.0800
77	30	100	641666	3624.99	DFT-s-OFDM 256 QAM	135@67	17.81	17.25	0.0531
77	30	100	641666	3624.99	DFT-s-OFDM 256 QAM	1@1	17.69	17.13	0.0516
77	30	100	641666	3624.99	DFT-s-OFDM 256 QAM	1@271	17.3	16.74	0.0472
77	30	100	641666	3624.99	CP-OFDM QPSK	137@68	20.83	20.27	0.1064
77	30	100	641666	3624.99	CP-OFDM QPSK	1@1	20.82	20.26	0.1062
77	30	100	641666	3624.99	CP-OFDM QPSK	1@271	20.63	20.07	0.1016
77	30	100	643332	3649.98	DFT-s-OFDM PI/2 BPSK	135@67	22.21	21.65	0.1462
77	30	100	643332	3649.98	DFT-s-OFDM PI/2 BPSK	1@1	22.35	21.79	0.1510
77	30	100	643332	3649.98	DFT-s-OFDM PI/2 BPSK	1@271	22.07	21.51	0.1416
77	30	100	643332	3649.98	DFT-s-OFDM QPSK	135@67	22.16	21.6	0.1445
77	30	100	643332	3649.98	DFT-s-OFDM QPSK	1@1	22.85	22.29	0.1694
77	30	100	643332	3649.98	DFT-s-OFDM QPSK	1@271	22.01	21.45	0.1396
77	30	100	643332	3649.98	DFT-s-OFDM 16 QAM	135@67	21.33	20.77	0.1194
77	30	100	643332	3649.98	DFT-s-OFDM 16 QAM	1@1	21.62	21.06	0.1276
77	30	100	643332	3649.98	DFT-s-OFDM 16 QAM	1@271	21.15	20.59	0.1146
77	30	100	643332	3649.98	DFT-s-OFDM 64 QAM	135@67	19.8	19.24	0.0839
77	30	100	643332	3649.98	DFT-s-OFDM 64 QAM	1@1	19.99	19.43	0.0877
77	30	100	643332	3649.98	DFT-s-OFDM 64 QAM	1@271	19.65	19.09	0.0811
77	30	100	643332	3649.98	DFT-s-OFDM 256 QAM	135@67	17.81	17.25	0.0531
77	30	100	643332	3649.98	DFT-s-OFDM 256 QAM	1@1	17.66	17.1	0.0513
77	30	100	643332	3649.98	DFT-s-OFDM 256 QAM	1@271	17.52	16.96	0.0497
77	30	100	643332	3649.98	CP-OFDM QPSK	137@68	20.77	20.21	0.1050
77	30	100	643332	3649.98	CP-OFDM QPSK	1@1	20.87	20.31	0.1074
77	30	100	643332	3649.98	CP-OFDM QPSK	1@271	20.57	20.01	0.1002



Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0028	PASS	NV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0055	PASS	LV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0021	PASS	HV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0065	PASS	-30℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0050	PASS	-20℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0026	PASS	-10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0038	PASS	0℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0022	PASS	10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0028	PASS	20℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0066	PASS	30℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0059	PASS	40℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0056	PASS	50℃

**Occupied Bandwidth**

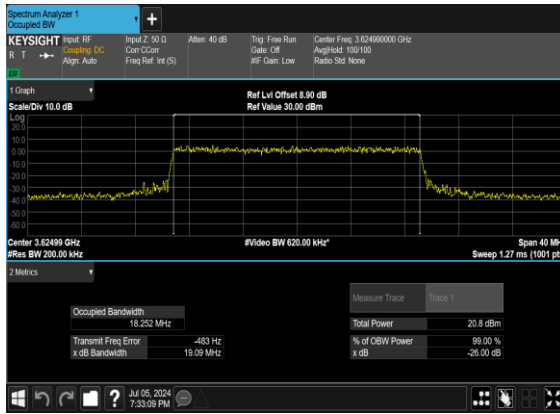
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
77	30	20	641666	3624.99	CP-OFDM QPSK	51@0	18.252	19.09
77	30	20	641666	3624.99	CP-OFDM 16 QAM	51@0	18.211	19.24
77	30	20	641666	3624.99	CP-OFDM 64 QAM	51@0	18.132	18.87
77	30	20	641666	3624.99	CP-OFDM 256 QAM	51@0	18.261	19.12
77	30	30	641666	3624.99	CP-OFDM QPSK	78@0	27.831	28.87
77	30	30	641666	3624.99	CP-OFDM 16 QAM	78@0	27.837	29.17
77	30	30	641666	3624.99	CP-OFDM 64 QAM	78@0	27.807	28.75
77	30	30	641666	3624.99	CP-OFDM 256 QAM	78@0	27.828	28.9
77	30	40	641666	3624.99	CP-OFDM QPSK	106@0	37.858	39.52
77	30	40	641666	3624.99	CP-OFDM 16 QAM	106@0	37.792	39.37
77	30	40	641666	3624.99	CP-OFDM 64 QAM	106@0	37.849	39.2
77	30	40	641666	3624.99	CP-OFDM 256 QAM	106@0	37.773	39.26
77	30	50	641666	3624.99	CP-OFDM QPSK	133@0	47.404	49.26
77	30	50	641666	3624.99	CP-OFDM 16 QAM	133@0	47.441	49.07
77	30	50	641666	3624.99	CP-OFDM 64 QAM	133@0	47.353	48.95
77	30	50	641666	3624.99	CP-OFDM 256 QAM	133@0	47.313	48.96
77	30	60	641666	3624.99	CP-OFDM QPSK	162@0	57.818	59.7
77	30	60	641666	3624.99	CP-OFDM 16 QAM	162@0	57.876	59.78
77	30	60	641666	3624.99	CP-OFDM 64 QAM	162@0	57.683	59.68
77	30	60	641666	3624.99	CP-OFDM 256 QAM	162@0	57.802	59.74
77	30	70	641666	3624.99	CP-OFDM QPSK	189@0	67.406	69.76
77	30	70	641666	3624.99	CP-OFDM 16 QAM	189@0	67.568	69.76



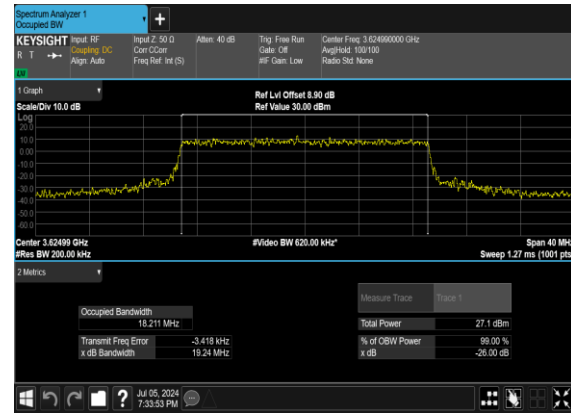
77	30	70	641666	3624.99	CP-OFDM 64 QAM	189@0	67.474	69.67
77	30	70	641666	3624.99	CP-OFDM 256 QAM	189@0	67.522	69.71
77	30	80	641666	3624.99	CP-OFDM QPSK	217@0	77.587	80.09
77	30	80	641666	3624.99	CP-OFDM 16 QAM	217@0	77.54	79.89
77	30	80	641666	3624.99	CP-OFDM 64 QAM	217@0	77.369	79.88
77	30	80	641666	3624.99	CP-OFDM 256 QAM	217@0	77.651	79.88
77	30	90	641666	3624.99	CP-OFDM QPSK	245@0	87.49	90.24
77	30	90	641666	3624.99	CP-OFDM 16 QAM	245@0	87.462	90.34
77	30	90	641666	3624.99	CP-OFDM 64 QAM	245@0	87.376	90.28
77	30	90	641666	3624.99	CP-OFDM 256 QAM	245@0	87.524	90.31
77	30	100	641666	3624.99	CP-OFDM QPSK	273@0	97.56	100.6
77	30	100	641666	3624.99	CP-OFDM 16 QAM	273@0	97.51	100.5
77	30	100	641666	3624.99	CP-OFDM 64 QAM	273@0	97.556	100.5
77	30	100	641666	3624.99	CP-OFDM 256 QAM	273@0	97.638	100.5



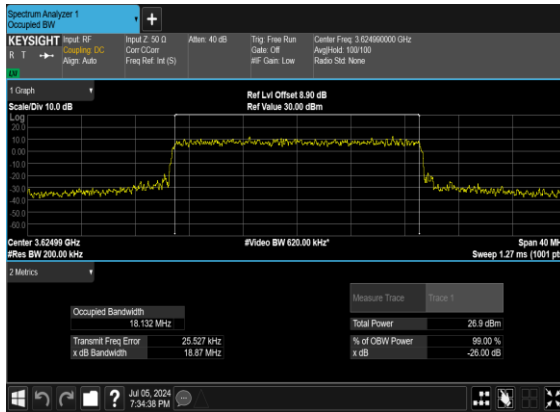
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OFDM_QPSK_Outer_Full_Mid_CH



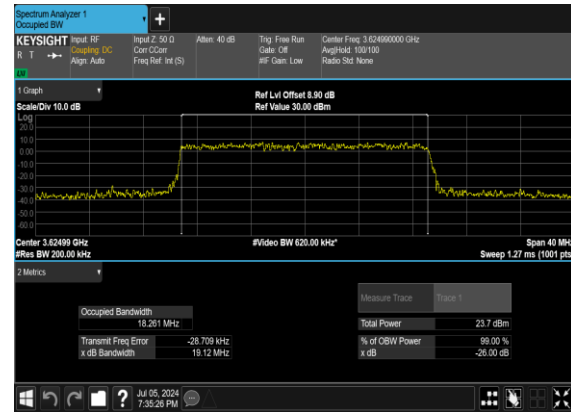
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QAM_Outer_Full_Mid_CH



B2_N77(20M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH

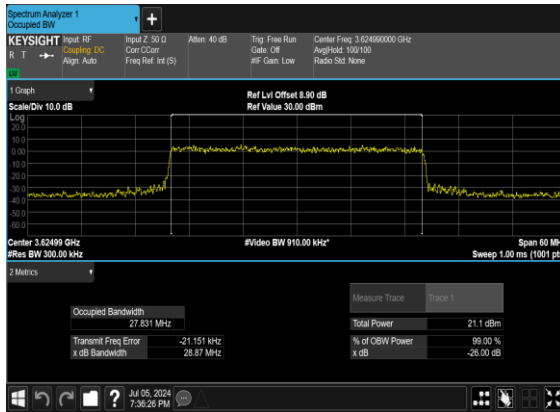


B2_N77(20M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH

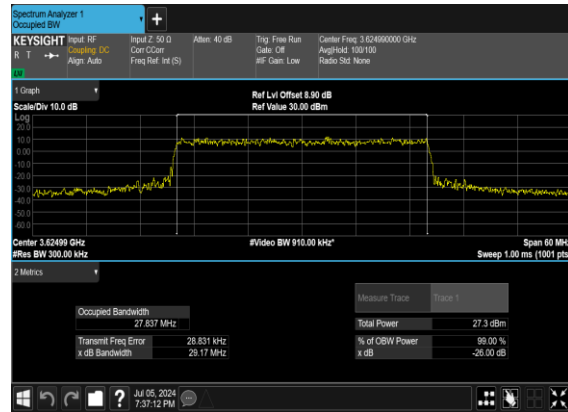




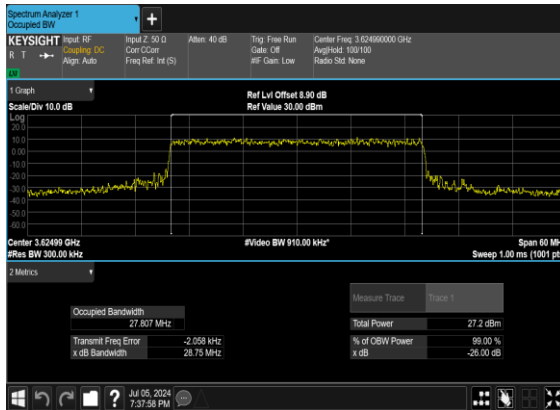
B2_N77(30M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



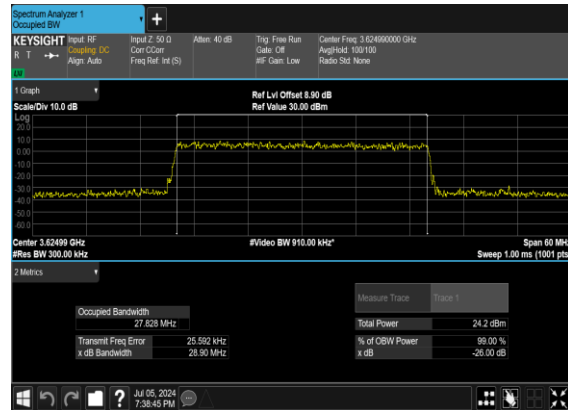
B2_N77(30M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



B2_N77(30M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH

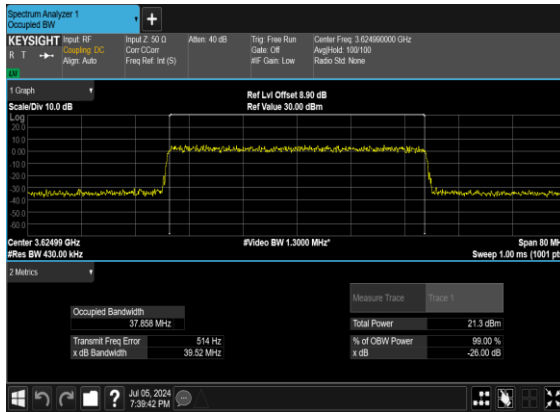


B2_N77(30M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH

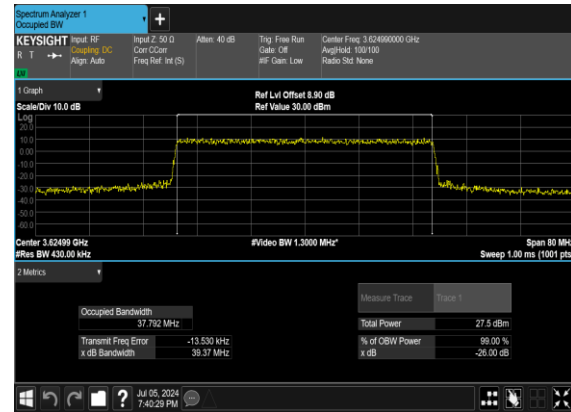




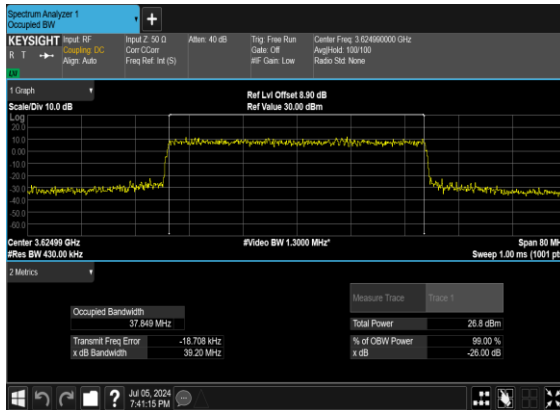
B2_N77(40M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



B2_N77(40M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



B2_N77(40M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



B2_N77(40M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH

