



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)

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG460505-02B	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 27O MIMO	24.70	24.36	0.34	3
N78 27O 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 27O	26.23	26.17	0.06	3
ENDC_2A_N78A 27O	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	Ant 10
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	Ant 10
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	Ant 10
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	Ant 10
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~40GHz	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	$\pm 0.1\%$
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
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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
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----- 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, 24(E), 27(L)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S) : Jun. 15, 2024 ~ Jul. 10, 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 C63.26-2015 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
FG460505B	Rev. 01	Initial issue of report	Sep. 05, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	Report Only	-
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2) (Band 25)	EIRP < 2Watt	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt		-
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	-	Report Only	-
3.7	§2.1051 §24.238(a) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 25)(Band 66)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §24.238(a) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 25) (Band 66)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §24.235 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §24.238(a) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 25) (Band 66)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 29.95 dB at 3420.000 MHz

Conformity Assessment Condition:

- 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.
- 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 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45A2
FCC ID	UZ7EM45A2
IMEI Code	Conducted: 352991990029039/352991990029328 Radiation: 352991990029096/352991990029708
HW Version	EV2.5
SW Version	13-32-08.00-TG-U06-STD-ATH-04
MFD	08AUG24
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-EM45EXO1-01

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz
Rx Frequency	LTE Band 2 : 1930 MHz ~ 1990 MHz LTE Band 4 : 2110 MHz ~ 2155 MHz LTE Band 25 : 1930 MHz ~ 1995 MHz LTE Band 66 : 2110 MHz~ 2200 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 25 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	Ant2: LTE Band 2 : 23.66 dBm LTE Band 4 : 23.56 dBm LTE Band 25 : 23.68 dBm LTE Band 66 : 23.60 dBm LTE CA_66B: 23.49 dBm LTE CA_66C: 23.32 dBm Ant5: LTE Band 2 : 23.62 dBm LTE Band 4 : 23.51 dBm LTE Band 66 : 23.55 dBm
Antenna Gain	Ant2: LTE Band 2 : -0.5 dBi LTE Band 4 : -0.5 dBi LTE Band 25 : -0.5 dBi LTE Band 66 : -0.5 dBi Ant5: LTE Band 2 : -0.73 dBi LTE Band 4 : 1.47 dBi LTE Band 66 : 1.47 dBi
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM

Note:

1. The maximum EIRP is calculated from max output power and max antenna gain, so only the maximum EIRP of Antenna 2 for LTE Band2/25/66B/66C and Antenna 5 for LTE Band4/66 are shown in the report.
2. The device supports two PAs for LTE Band 2/4/66: main PA and other PA. The maximum power of main PA(Band2) is higher than the other PA and the maximum power of other PA(Band4/66) is higher than the main PA, therefore, we chose higher power of PA to calculate the EIRP and show in the report.
3. LTE Band 66 UL_CA mode supports Main PA only.

1.3 Modification of EUT

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



1.4 Maximum EIRP Power and Emission Designator

LTE Band 2		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
1.4	1850.7 ~ 1909.3	0.2046	1M09G7D	0.1618	1M10W7D
3	1851.5 ~ 1908.5	0.1995	2M72G7D	0.1754	2M74W7D
5	1852.5 ~ 1907.5	0.1995	4M51G7D	0.1778	4M51W7D
10	1855.0 ~ 1905.0	0.2032	9M07G7D	0.1774	9M03W7D
15	1857.5 ~ 1902.5	0.2018	13M5G7D	0.1799	13M4W7D
20	1860.0 ~ 1900.0	0.2070	17M9G7D	0.1807	17M9W7D
LTE Band 25		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
1.4	1850.7 ~ 1914.3	0.2028	1M09G7D	0.1549	1M10W7D
3	1851.5 ~ 1913.5	0.1977	2M73G7D	0.1774	2M73W7D
5	1852.5 ~ 1912.5	0.1995	4M49G7D	0.1746	4M51W7D
10	1855.0 ~ 1910.0	0.2000	9M07G7D	0.1762	9M03W7D
15	1857.5 ~ 1907.5	0.1972	13M5G7D	0.1746	13M5W7D
20	1860.0 ~ 1905.0	0.2080	17M8G7D	0.1791	17M9W7D
LTE Band 4		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
1.4	1710.7 ~ 1754.3	0.3119	1M09G7D	0.2410	1M09W7D
3	1711.5 ~ 1753.5	0.3090	2M72G7D	0.2339	2M72W7D
5	1712.5 ~ 1752.5	0.3126	4M50G7D	0.2344	4M49W7D
10	1715.0 ~ 1750.0	0.3034	9M05G7D	0.2323	9M07W7D
15	1717.5 ~ 1747.5	0.3062	13M5G7D	0.2291	13M5W7D
20	1720.0 ~ 1745.0	0.3148	17M9G7D	0.2382	18M0W7D
LTE Band 66		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
1.4	1710.7 ~ 1779.3	0.3048	1M09G7D	0.2483	1M09W7D
3	1711.5 ~ 1778.5	0.2985	2M72G7D	0.2483	2M72W7D
5	1712.5 ~ 1777.5	0.3076	4M50G7D	0.2421	4M49W7D
10	1715.0 ~ 1775.0	0.2985	9M05G7D	0.2301	9M07W7D
15	1717.5 ~ 1772.5	0.3027	13M5G7D	0.2307	13M5W7D



20	1720.0 ~ 1770.0	0.3177	17M9G7D	0.2344	18M0W7D
LTE Band CA_66B		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)	
5MHz+5MHz	0.1884	9M39G7D	0.1652	9M31W7D	
5MHz+10MHz	0.1888	13M9G7D	0.1671	13M9W7D	
5MHz+15MHz	0.1905	18M2G7D	0.1675	18M2W7D	
10MHz+5MHz	0.1923	14M0G7D	0.1660	13M8W7D	
10MHz+10MHz	0.1991	18M8G7D	0.1811	18M8W7D	
15MHz+5MHz	0.1914	18M3G7D	0.1660	18M1W7D	
LTE Band CA_66C		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)	
5MHz+20MHz	0.1807	23M2G7D	0.1570	23M3W7D	
10MHz+15MHz	0.1837	23M5G7D	0.1592	23M4W7D	
10MHz+20MHz	0.1807	28M0G7D	0.1578	27M9W7D	
15MHz+10MHz	0.1845	23M3G7D	0.1560	23M4W7D	
15MHz+15MHz	0.1845	28M7G7D	0.1563	28M7W7D	
15MHz+20MHz	0.1820	32M9G7D	0.1563	32M9W7D	
20MHz+5MHz	0.1845	23M2G7D	0.1585	23M3W7D	
20MHz+10MHz	0.1824	28M2G7D	0.1592	28M1W7D	
20MHz+15MHz	0.1811	32M9G7D	0.1563	32M9W7D	
20MHz+20MHz	0.1914	37M8G7D	0.1726	37M8W7D	

Note:

1. LTE Band 66 overlaps the entire frequency range of LTE Band 4. Therefore, the test results provided in this report covers Band 66 as well as Band 4.
2. LTE Band 25 overlaps the entire frequency range of LTE Band 2. Therefore, the test results provided in this report covers Band 25 as well as Band 2.
3. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.



1.5 Testing Location

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 TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacture	Name	Version
1.	TH01-KS	SPORTON	FCC LTE_Ver2.0 Auto_china_210503	2.0
2.	03CH04-KS	AUDIX	E3	210616

1.7 Applicable Standards

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

- ♦ 47 CFR Part 24(E), 27(L)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- ♦ 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.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission. (X/Y-Plane)

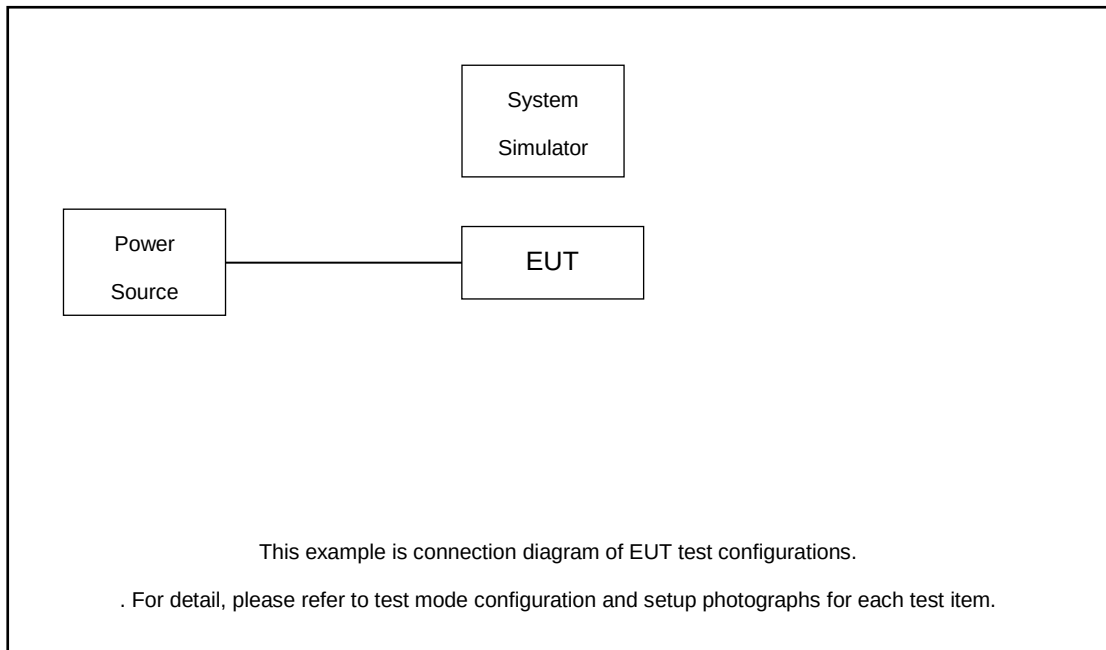
Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16 QAM	64 QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	25	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	25						v	v	v	v	v			v		v	
	66						v	v	v	v	v			v		v	
26dB and 99% Bandwidth	25	v	v	v	v	v	v	v	v					v		v	
	66	v	v	v	v	v	v	v	v					v		v	
Conducted Band Edge	25	v	v	v	v	v	v	v	v	v	v	v		v	v		v
	66	v	v	v	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	25	v	v	v	v	v	v	v				v			v	v	v
	66	v	v	v	v	v	v	v				v			v	v	v
Frequency Stability	25				v			v						v		v	
	66				v			v						v		v	
E.I.R.P	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	25	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	25	Worst Case													v	v	v
	66	Worst Case													v	v	v
Note	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.															



Test Items	Band	Bandwidth (MHz)								Modulation				RB #			Test Channel		
		10+10	15+5	5+15	10+5	5+10	5+5	5+3	3+5	QPSK	16 QAM	64 QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	66B_CA	v	v	v	v	v	v	-	-	v	v	v	v	v			v	v	v
26dB and 99% Bandwidth	66B_CA	v	v	v	v	v	v	-	-	v	v					v		v	
Conducted Band Edge	66B_CA	v	v	v	v	v	v	-	-	v	v	v	v	v		v	v		v
Conducted Spurious Emission	66B_CA	v	v	v	v	v	v	-	-	v				v			v	v	v
E.I.R.P.	66B_CA	v	v	v	v	v	v	-	-	v	v	v	v	v			v	v	v
Radiated Spurious Emission	66B_CA	Worst Case															v	v	v
Note	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. All test items are based on engineering evaluation.																		

Test Items	Band	Bandwidth (MHz)										Modulation				RB #			Test Channel		
		20+20	20+15	20+10	20+5	15+20	15+15	15+10	10+20	10+15	5+20	QPSK	16 QAM	64 QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	66C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	v				v	v	v
26dB and 99% Bandwidth	66C_CA	v	v	v	v	v	v	v	v	v	v	v	v							v	
Conducted Band Edge	66C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	66C_CA	v	v	v	v	v	v	v	v	v	v	v				v			v	v	v
E.I.R.P.	66C_CA	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	66C_CA	Worst Case																	v	v	v
Note	1. The mark “v ” means that this configuration is chosen for testing 2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 3. All test items are based on engineering evaluation																				

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

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	MT8820C	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 5.4 dB

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} \\
 &= 5.4 \text{ (dB)}
 \end{aligned}$$



2.5 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3



LTE Band 25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	26140	26340	26590
	Frequency	1860	1880	1905
15	Channel	26115	26340	26615
	Frequency	1857.5	1880	1907.5
10	Channel	26090	26340	26640
	Frequency	1855	1880	1910
5	Channel	26065	26340	26665
	Frequency	1852.5	1880	1912.5
3	Channel	26055	26340	26675
	Frequency	1851.5	1880	1913.5
1.4	Channel	26047	26340	26683
	Frequency	1850.7	1880	1914.3

LTE Band 66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3



LTE Band 66C_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
10 + 15	PCC	Channel	132025	132351	132477
		Frequency	1715.3	1747.9	1760.5
	SCC	Channel	132145	132471	132597
		Frequency	1727.3	1759.9	1772.5
15 + 10	PCC	Channel	132047	132373	132499
		Frequency	1717.5	1750.1	1762.7
	SCC	Channel	132167	132493	132619
		Frequency	1729.5	1762.1	1774.7
10 + 20	PCC	Channel	132027	132328	132428
		Frequency	1715.5	1745.6	1755.6
	SCC	Channel	132171	132472	132572
		Frequency	1729.9	1760	1770
20 + 10	PCC	Channel	132072	132373	132473
		Frequency	1720	1750.1	1760.1
	SCC	Channel	132216	132517	132617
		Frequency	1734.4	1764.5	1774.5
15 + 15	PCC	Channel	132047	132347	132447
		Frequency	1717.5	1747.5	1757.5
	SCC	Channel	132197	132497	132597
		Frequency	1732.5	1762.5	1772.5
15 + 20	PCC	Channel	132050	132325	132401
		Frequency	1717.8	1745.3	1752.9
	SCC	Channel	132221	132496	132572
		Frequency	1734.9	1762.4	1770
20 + 15	PCC	Channel	132072	132348	132423
		Frequency	1720	1747.6	1755.1
	SCC	Channel	132243	132519	132594
		Frequency	1737.1	1764.7	1772.2
20 + 5	PCC	Channel	132072	132397	132522
		Frequency	1720	1752.5	1765
	SCC	Channel	132189	132514	132639
		Frequency	1731.7	1764.2	1776.7
5 + 20	PCC	Channel	132005	132330	132455



20 + 20	SCC	Frequency	1713.3	1745.8	1758.3
		Channel	132122	132447	132572
	PCC	Frequency	1725	1757.5	1770
		Channel	132072	132323	132374
	SCC	Frequency	1720	1745.1	1750.2
		Channel	132270	132521	132572
	SCC	Frequency	1739.8	1764.9	1770
		Channel	132270	132521	132572

LTE Band 66B_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
5 + 5	PCC	Channel	131997	132398	132599
		Frequency	1712.5	1752.6	1772.7
	SCC	Channel	132045	132446	132647
		Frequency	1717.3	1757.4	1777.5
5 + 10	PCC	Channel	132000	132375	132550
		Frequency	1712.8	1750.3	1767.8
	SCC	Channel	132072	132447	132622
		Frequency	1720	1757.5	1775
10 + 5	PCC	Channel	132022	132397	132572
		Frequency	1715	1752.5	1770
	SCC	Channel	132094	132469	132644
		Frequency	1722.2	1759.7	1777.2
5 + 15	PCC	Channel	132002	132353	132504
		Frequency	1713	1748.1	1763.2
	SCC	Channel	132095	132446	132597
		Frequency	1722.3	1757.4	1772.5
15 + 5	PCC	Channel	132047	132398	132549
		Frequency	1717.5	1752.6	1767.7
	SCC	Channel	132140	132491	132642
		Frequency	1726.8	1761.9	1777
10 + 10	PCC	Channel	132022	132373	132523
		Frequency	1715	1750.1	1765.1
	SCC	Channel	132121	132472	132622
		Frequency	1724.9	1760	1775

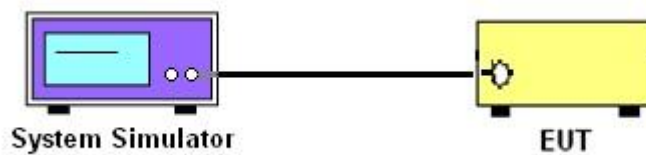
3 Conducted Test Items

3.1 Measuring Instruments

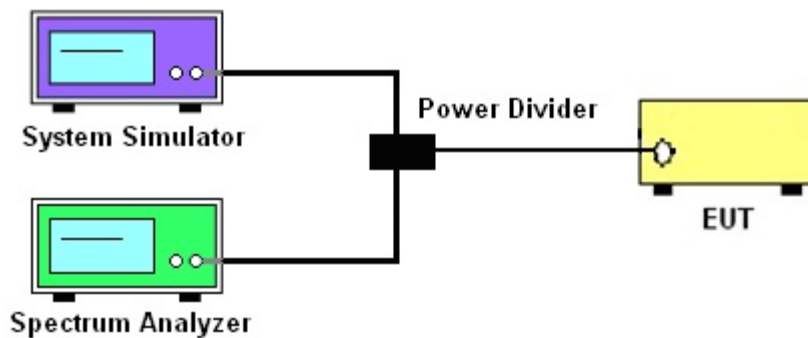
See list of measuring instruments of this test report.

3.2 Test Setup

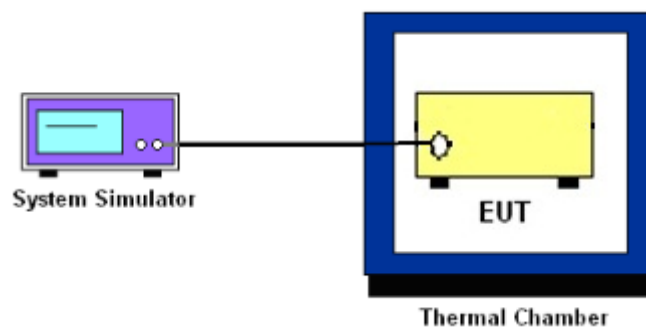
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and EIRP

3.4.1 Description of the Conducted Output Power Measurement and EIRP Measurement

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

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4 and Band 66.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

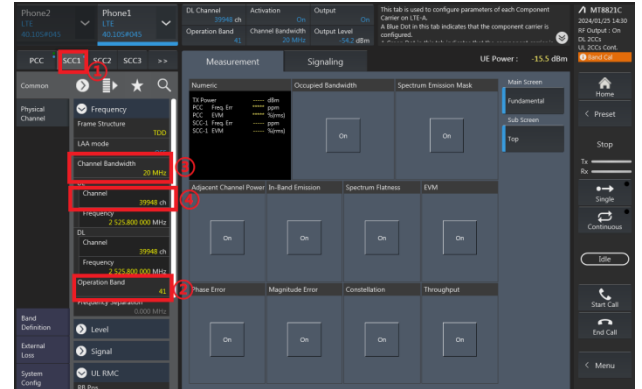
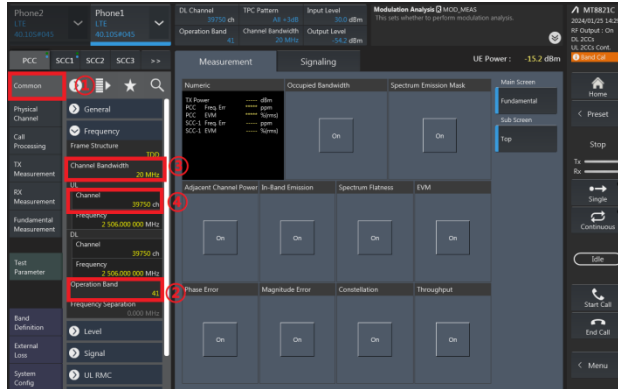
L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

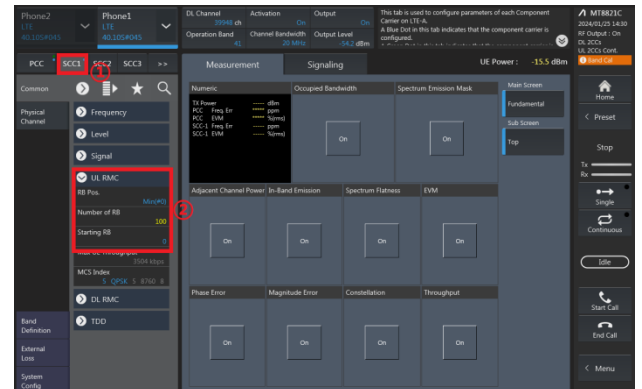
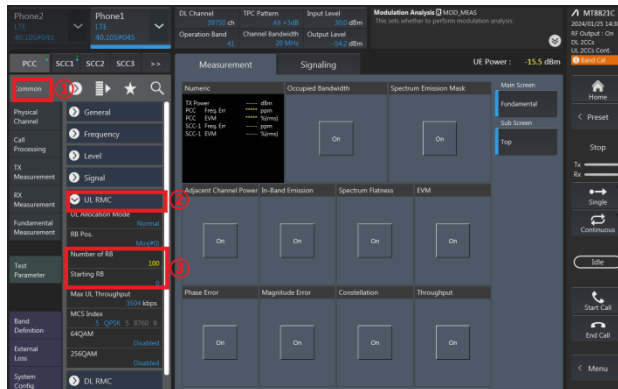
3.4.3 Test Procedures for LTE ULCA

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter PCC & SCC output ports were connected to the system simulator.
3. Set EUT at maximum power, set the PCC/SCC CA band, channel, bandwidth and RB config.
PCC config_(Channel Bandwidth / Channel / Band) SCC config_(Channel Bandwidth / Channel / Band)



PCC config_(Number of RB / Starting RB)

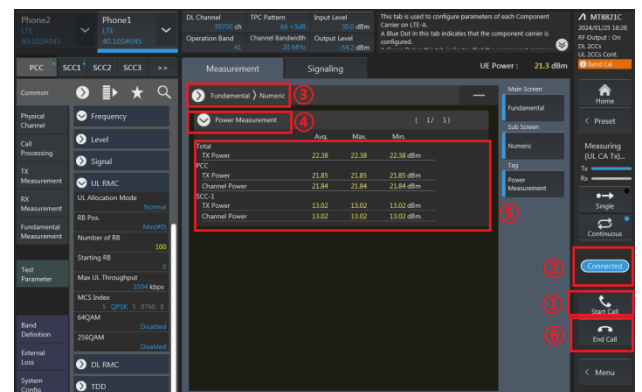
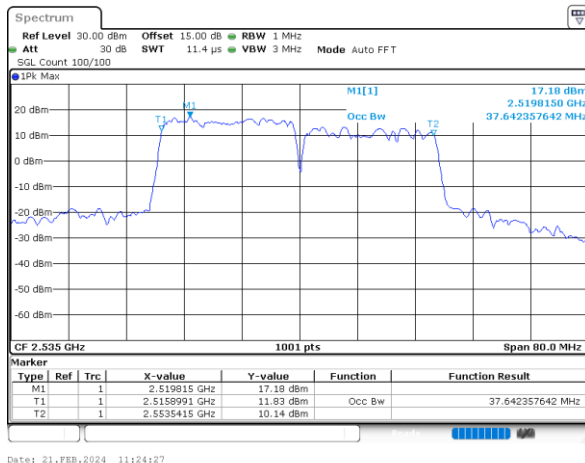
SCC config_(Number of RB / Starting RB)



4. Select lowest, middle, and highest channels for each ULCA band and different modulation.
5. Check the ULCA spectrum and record the total power from the system simulator.

Check the ULCA spectrum (eg. 20M+20M)

Read the Total UL CA output power (PCC+SCC)



3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 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.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. 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.
5. Set the detection mode to peak, and the trace mode to max hold.
6. 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)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. 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.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (h)

For operations in the 1710 – 1780 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

Example:

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

$$= P(\text{W}) - [43 + 10\log(P)] (\text{dB})$$

$$= [30 + 10\log(P)] (\text{dBm}) - [43 + 10\log(P)] (\text{dB}) = -13\text{dBm}.$$

9. 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.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)]$ (dB)
 $= [30 + 10\log(P)]$ (dBm) - $[43 + 10\log(P)]$ (dB)
 $= -13\text{dBm}$.

3.9 Frequency Stability

3.9.1 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.

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. 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.
4. 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.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at $20\pm 5^{\circ}\text{C}$ and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

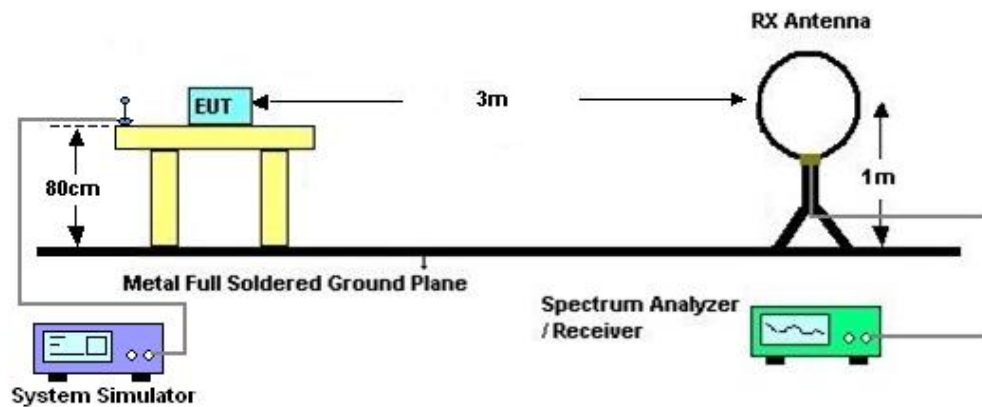
4 Radiated Test Items

4.1 Measuring Instruments

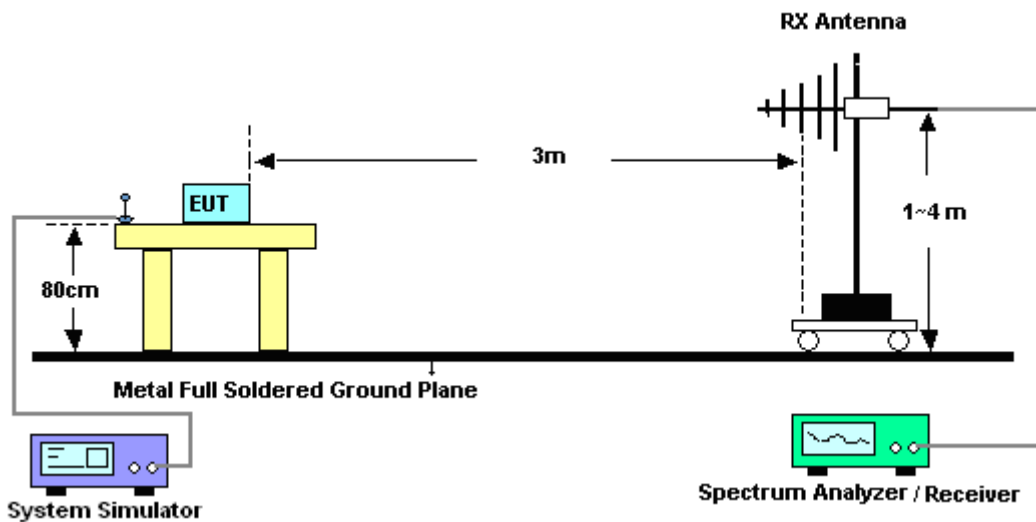
See list of measuring instruments of this test report.

4.2 Test Setup

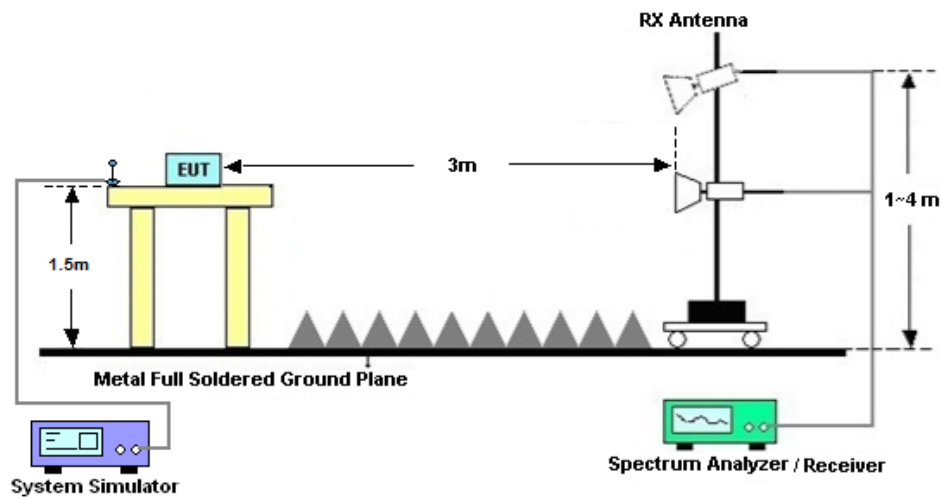
4.2.1 For radiated test below 30MHz



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

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 $43 + 10 \log (P)$ dB.

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

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. 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.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$$

$$= -13\text{dBm}.$$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Jun. 15, 2024~ Jul. 10, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Jun. 15, 2024~ Jul. 10, 2024	NCR	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 05, 2023	Jun. 15, 2024~ Jul. 10, 2024	Jul. 04, 2024	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2024		Jul. 03, 2025	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz~44G,MAX 30dB	Oct. 11, 2023	Jun. 27, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11 2023	Jun. 27, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz~1GHz	Aug. 19, 2023	Jun. 27, 2024	Aug. 18, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 23, 2023	Jun. 27, 2024	Oct. 22, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 27, 2024	Jun. 27, 2024	Jan. 26, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	413740	9KHz~1GHz	Jan. 03, 2024	Jun. 27, 2024	Jan. 02, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM18G40G A	060728	18~40GHz	Jan. 02, 2024	Jun. 27, 2024	Jan. 01, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz~18Ghz	Oct. 11, 2023	Jun. 27, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
Amplifier	EM	EM01G18G A	060892	1Ghz~18Ghz	Oct. 11, 2023	Jun. 27, 2024	Oct. 10, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jun. 27, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jun. 27, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jun. 27, 2024	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 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

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	±0.4 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83dB
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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))	2.83dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

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



Appendix A. Test Results of Conducted Test

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

Conducted Output Power(Average power) and EIRP

LTE Band 2:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				18700	18900	19100			
Frequency (MHz)				1860	1880	1900	L	M	H
20	QPSK	1	0	23.52	23.66	23.59	0.2004	0.2070	0.2037
20	QPSK	1	99	23.56	23.60	23.54	0.2023	0.2042	0.2014
20	QPSK	100	0	22.64	22.74	22.67	0.1637	0.1675	0.1648
20	16QAM	1	0	23.00	23.05	23.07	0.1778	0.1799	0.1807
20	64QAM	1	0	21.64	21.73	21.70	0.1300	0.1327	0.1318
20	256QAM	1	0	18.63	18.54	18.59	0.0650	0.0637	0.0644
Channel				18675	18900	19125	EIRP(W)		
Frequency (MHz)				1857.5	1880	1902.5	L	M	H
15	QPSK	1	0	23.47	23.55	23.49	0.1982	0.2018	0.1991
15	16QAM	1	0	22.93	22.90	23.05	0.1750	0.1738	0.1799
Channel				18650	18900	19150	EIRP(W)		
Frequency (MHz)				1855	1880	1905	L	M	H
10	QPSK	1	0	23.41	23.58	23.45	0.1954	0.2032	0.1972
10	16QAM	1	0	22.88	22.96	22.99	0.1730	0.1762	0.1774
Channel				18625	18900	19175	EIRP(W)		
Frequency (MHz)				1852.5	1880	1907.5	L	M	H
5	QPSK	1	0	23.41	23.50	23.43	0.1954	0.1995	0.1963
5	16QAM	1	0	22.85	23.00	22.94	0.1718	0.1778	0.1754
Channel				18615	18900	19185	EIRP(W)		
Frequency (MHz)				1851.5	1880	1908.5	L	M	H
3	QPSK	1	0	23.37	23.50	23.45	0.1936	0.1995	0.1972
3	16QAM	1	0	22.85	22.87	22.94	0.1718	0.1726	0.1754
Channel				18607	18900	19193	EIRP(W)		
Frequency (MHz)				1850.7	1880	1909.3	L	M	H
1.4	QPSK	1	0	23.43	23.61	23.42	0.1963	0.2046	0.1959
1.4	16QAM	1	0	22.59	22.47	22.48	0.1618	0.1574	0.1578



LTE Band 4:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				20050	20175	20300			
Frequency (MHz)				1720	1732.5	1745	L	M	H
20	QPSK	1	0	23.33	23.51	23.39	0.3020	0.3148	0.3062
20	QPSK	1	99	23.27	23.38	23.31	0.2979	0.3055	0.3006
20	QPSK	100	0	22.38	22.41	22.28	0.2427	0.2443	0.2371
20	16QAM	1	0	22.23	22.30	22.14	0.2344	0.2382	0.2296
20	64QAM	1	0	21.50	21.69	21.61	0.1982	0.2070	0.2032
20	256QAM	1	0	18.43	18.58	18.36	0.0977	0.1012	0.0962
Channel				20025	20175	20325	EIRP(W)		
Frequency (MHz)				1717.5	1732.5	1747.5	L	M	H
15	QPSK	1	0	23.23	23.39	23.29	0.2951	0.3062	0.2992
15	16QAM	1	0	22.08	22.13	22.11	0.2265	0.2291	0.2280
Channel				20000	20175	20350	EIRP(W)		
Frequency (MHz)				1715	1732.5	1750	L	M	H
10	QPSK	1	0	23.27	23.35	23.28	0.2979	0.3034	0.2985
10	16QAM	1	0	22.04	22.19	22.16	0.2244	0.2323	0.2307
Channel				19975	20175	20375	EIRP(W)		
Frequency (MHz)				1712.5	1732.5	1752.5	L	M	H
5	QPSK	1	0	23.27	23.48	23.25	0.2979	0.3126	0.2965
5	16QAM	1	0	22.21	22.23	22.02	0.2333	0.2344	0.2234
Channel				19965	20175	20385	EIRP(W)		
Frequency (MHz)				1711.5	1732.5	1753.5	L	M	H
3	QPSK	1	0	23.25	23.43	23.30	0.2965	0.3090	0.2999
3	16QAM	1	0	22.05	22.22	22.08	0.2249	0.2339	0.2265
Channel				19957	20175	20393	EIRP(W)		
Frequency (MHz)				1710	1732.5	1754.3	L	M	H
1.4	QPSK	1	0	23.32	23.47	23.32	0.3013	0.3119	0.3013
1.4	16QAM	1	0	22.35	22.33	22.33	0.2410	0.2399	0.2399

LTE Band 25:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				26140	26340	26590			
Frequency (MHz)				1860	1880	1905	L	M	H
20	QPSK	1	0	23.49	23.68	23.58	0.1991	0.2080	0.2032
20	QPSK	1	99	23.51	23.55	23.59	0.2000	0.2018	0.2037
20	QPSK	100	0	22.69	22.77	22.73	0.1656	0.1687	0.1671
20	16QAM	1	0	22.95	23.03	22.97	0.1758	0.1791	0.1766
20	64QAM	1	0	21.64	21.73	21.70	0.1300	0.1327	0.1318
20	256QAM	1	0	18.79	18.87	18.82	0.0675	0.0687	0.0679
Channel				26115	26340	26615	EIRP(W)		
Frequency (MHz)				1857.5	1880	1907.5	L	M	H
15	QPSK	1	0	23.45	23.45	23.45	0.1972	0.1972	0.1972
15	16QAM	1	0	22.91	22.92	22.83	0.1742	0.1746	0.1710
Channel				26090	26340	26640	EIRP(W)		



Frequency (MHz)				1855	1880	1910	L	M	H
10	QPSK	1	0	23.44	23.45	23.51	0.1968	0.1972	0.2000
10	16QAM	1	0	22.80	22.96	22.87	0.1698	0.1762	0.1726
Channel				26065	26340	26665	EIRP(W)		
Frequency (MHz)				1852.5	1880	1912.5	L	M	H
5	QPSK	1	0	23.39	23.50	23.46	0.1945	0.1995	0.1977
5	16QAM	1	0	22.89	22.92	22.90	0.1734	0.1746	0.1738
Channel				26055	26340	26675	EIRP(W)		
Frequency (MHz)				1851.5	1880	1913.5	L	M	H
3	QPSK	1	0	23.35	23.46	23.45	0.1928	0.1977	0.1972
3	16QAM	1	0	22.85	22.99	22.80	0.1718	0.1774	0.1698
Channel				26047	26340	26683	EIRP(W)		
Frequency (MHz)				1850.7	1880	1914.3	L	M	H
1.4	QPSK	1	0	23.42	23.57	23.41	0.1959	0.2028	0.1954
1.4	16QAM	1	0	22.30	22.40	22.36	0.1514	0.1549	0.1535

LTE Band 66:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				132072	132322	132572			
Frequency (MHz)				1720	1745	1770	L	M	H
20	QPSK	1	0	23.19	23.55	23.24	0.2924	0.3177	0.2958
20	QPSK	1	99	23.22	23.33	23.20	0.2944	0.3020	0.2931
20	QPSK	100	0	22.22	22.28	22.14	0.2339	0.2371	0.2296
20	16QAM	1	0	22.14	22.23	22.03	0.2296	0.2344	0.2239
20	64QAM	1	0	21.43	21.54	21.50	0.1950	0.2000	0.1982
20	256QAM	1	0	18.38	18.42	18.30	0.0966	0.0975	0.0948
Channel				132047	132322	132597	EIRP(W)		
Frequency (MHz)				1717.5	1745	1772.5	L	M	H
15	QPSK	1	0	23.17	23.34	23.17	0.2911	0.3027	0.2911
15	16QAM	1	0	22.16	22.04	22.04	0.2307	0.2244	0.2244
Channel				132022	132322	132622	EIRP(W)		
Frequency (MHz)				1715	1745	1775	L	M	H
10	QPSK	1	0	23.13	23.28	23.19	0.2884	0.2985	0.2924
10	16QAM	1	0	22.13	22.15	22.08	0.2291	0.2301	0.2265
Channel				131997	132322	132647	EIRP(W)		
Frequency (MHz)				1712.5	1745	1777.5	L	M	H
5	QPSK	1	0	23.20	23.41	23.21	0.2931	0.3076	0.2938
5	16QAM	1	0	22.05	22.37	22.10	0.2249	0.2421	0.2275
Channel				131987	132322	132657	EIRP(W)		
Frequency (MHz)				1711.5	1745	1778.5	L	M	H
3	QPSK	1	0	23.18	23.28	23.25	0.2917	0.2985	0.2965
3	16QAM	1	0	22.38	22.48	22.39	0.2427	0.2483	0.2432
Channel				131979	132322	132665	EIRP(W)		
Frequency (MHz)				1710.7	1745	1779.3	L	M	H
1.4	QPSK	1	0	23.20	23.37	23.20	0.2931	0.3048	0.2931
1.4	16QAM	1	0	22.48	22.38	22.43	0.2483	0.2427	0.2455



LTE CA_66B:

Combination 10MHz+10MHz (50RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	23.41	0.1954
M	QPSK	1	Max	1	0	23.31	0.1910
H	QPSK	1	Max	1	0	23.49	0.1991
L	16QAM	1	Max	1	0	22.92	0.1746
M	16QAM	1	Max	1	0	22.94	0.1754
H	16QAM	1	Max	1	0	23.08	0.1811
L	64QAM	1	Max	1	0	21.56	0.1276
M	64QAM	1	Max	1	0	21.49	0.1256
H	64QAM	1	Max	1	0	21.61	0.1291
L	256QAM	1	Max	1	0	18.45	0.0624
M	256QAM	1	Max	1	0	18.52	0.0634
H	256QAM	1	Max	1	0	18.37	0.0612
Combination 15MHz+5MHz (75RB+25RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.32	0.1914
H	16QAM	1	Max	1	0	22.70	0.1660
Combination 5MHz+15MHz (25RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.30	0.1905
H	16QAM	1	Max	1	0	22.74	0.1675
Combination 10MHz+5MHz (50RB+25RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.34	0.1923
H	16QAM	1	Max	1	0	22.70	0.1660
Combination 5MHz+10MHz (25RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.26	0.1888
H	16QAM	1	Max	1	0	22.73	0.1671
Combination 5MHz+5MHz (25RB+25RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.25	0.1884
H	16QAM	1	Max	1	0	22.68	0.1652



LTE CA_66C:

Combination 20MHz+20MHz (100RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
L	QPSK	1	Max	1	0	23.16	0.1845
M	QPSK	1	Max	1	0	23.14	0.1837
H	QPSK	1	Max	1	0	23.32	0.1914
L	16QAM	1	Max	1	0	22.68	0.1652
M	16QAM	1	Max	1	0	22.72	0.1667
H	16QAM	1	Max	1	0	22.87	0.1726
L	64QAM	1	Max	1	0	21.38	0.1225
M	64QAM	1	Max	1	0	21.26	0.1191
H	64QAM	1	Max	1	0	21.39	0.1227
L	256QAM	1	Max	1	0	18.24	0.0594
M	256QAM	1	Max	1	0	18.35	0.0610
H	256QAM	1	Max	1	0	18.19	0.0587
Combination 20MHz+15MHz (100RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.08	0.1811
H	16QAM	1	Max	1	0	22.44	0.1563
Combination 15MHz+20MHz (75RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.10	0.1820
H	16QAM	1	Max	1	0	22.44	0.1563
Combination 15MHz+15MHz (75RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.16	0.1845
H	16QAM	1	Max	1	0	22.44	0.1563
Combination 20MHz+10MHz (100RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.11	0.1824
H	16QAM	1	Max	1	0	22.52	0.1592
Combination 10MHz+20MHz (50RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.07	0.1807
H	16QAM	1	Max	1	0	22.48	0.1578
Combination 15MHz+10MHz (75RB+50RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.16	0.1845
H	16QAM	1	Max	1	0	22.43	0.1560
Combination 10MHz+15MHz (50RB+75RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.14	0.1837



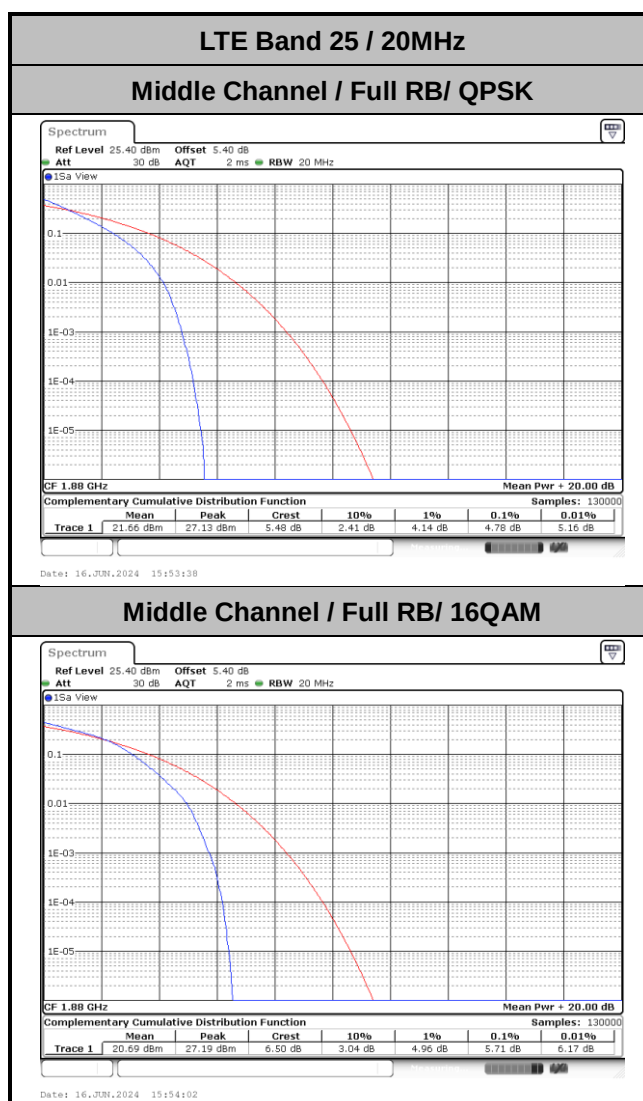
H	16QAM	1	Max	1	0	22.52	0.1592
Combination 20MHz+5MHz (100RB+25RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.16	0.1845
H	16QAM	1	Max	1	0	22.50	0.1585
Combination 5MHz+20MHz (25RB+100RB)							
Channel	Modulation	PCC		SCC		Measured Power	EIRP(W)
		RB Size	RB offset	RB Size	RB offset		
H	QPSK	1	Max	1	0	23.07	0.1807
H	16QAM	1	Max	1	0	22.46	0.1570



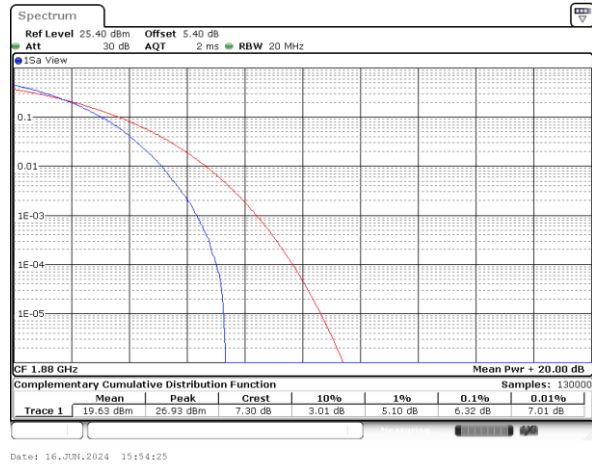
LTE Band 25

Peak-to-Average Ratio

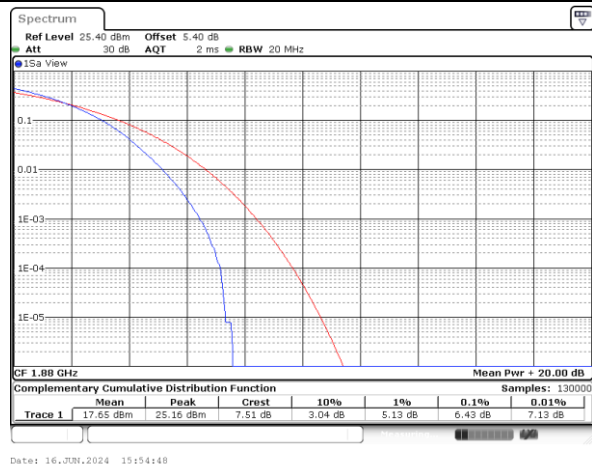
Mode	LTE Band 25 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.78	5.71	6.32	6.43	PASS



Middle Channel / Full RB/ 64QAM



Middle Channel / Full RB/ 256QAM



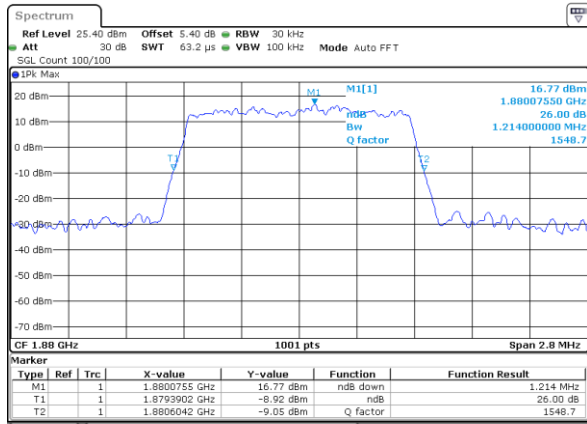
26dB Bandwidth

Mode	LTE Band 25 : 26dB BW(MHz)	
BW	1.4MHz	
Mod.	QPSK	16QAM
Middle CH	1.21	1.22
BW	3MHz	
Mod.	QPSK	16QAM
Middle CH	3.04	3.09
BW	5MHz	
Mod.	QPSK	16QAM
Middle CH	4.99	4.83
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.67	9.87
BW	15MHz	
Mod.	QPSK	16QAM
Middle CH	14.33	14.18
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	19.06	19.14



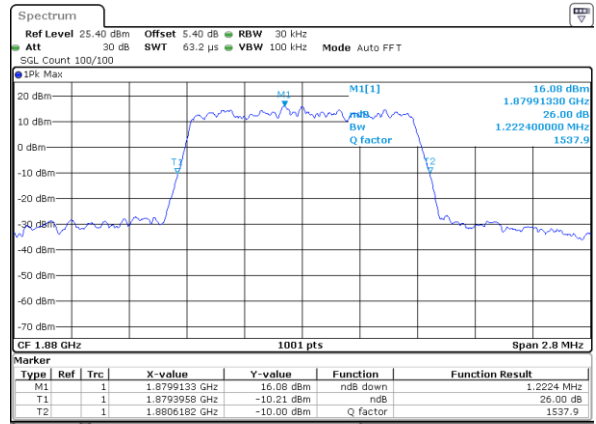
LTE Band 25

Middle Channel / 1.4MHz / QPSK



Date: 16 JUN 2024 16:20:16

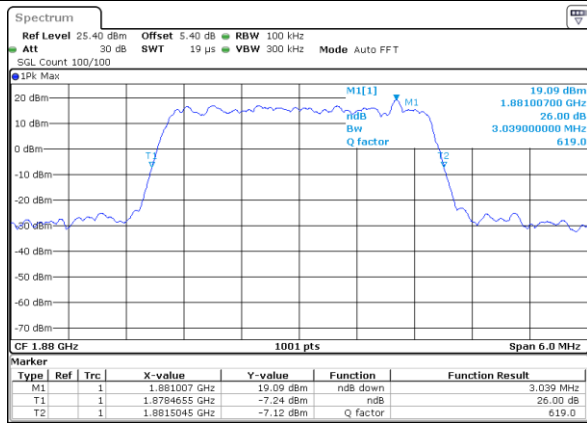
Middle Channel / 1.4MHz / 16QAM



Date: 16 JUN 2024 16:20:37

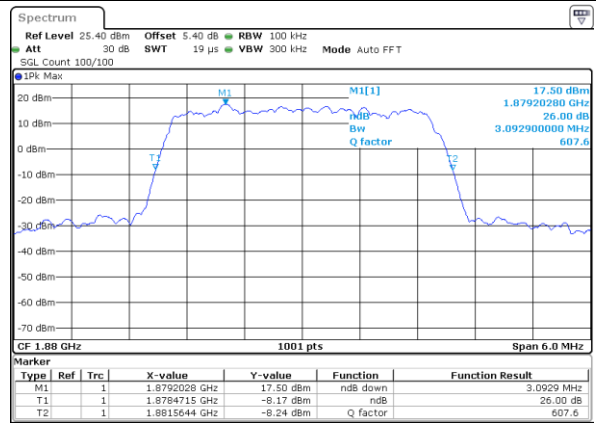
LTE Band 25

Middle Channel / 3MHz / QPSK



Date: 16 JUN 2024 16:18:47

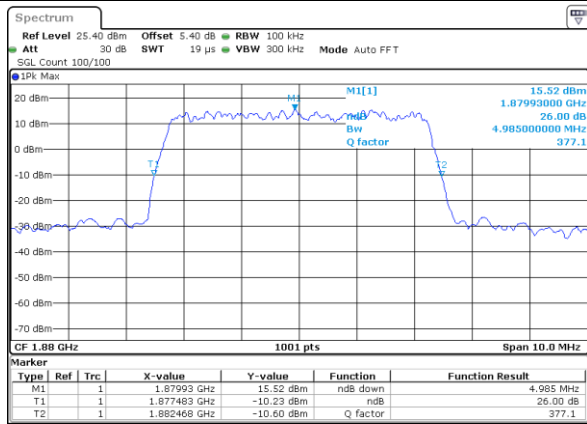
Middle Channel / 3MHz / 16QAM



Date: 16 JUN 2024 16:19:09

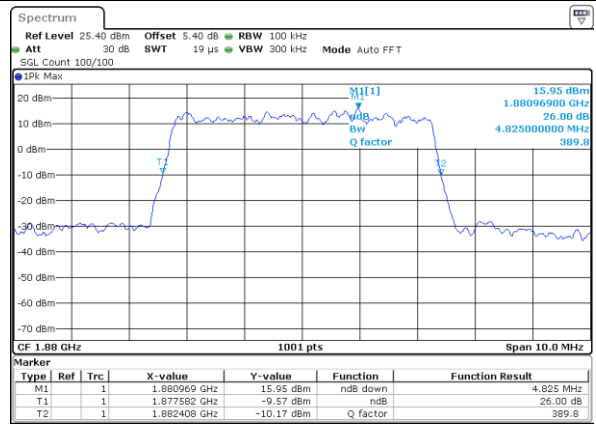
LTE Band 25

Middle Channel / 5MHz / QPSK



Date: 16 JUN 2024 16:17:19

Middle Channel / 5MHz / 16QAM

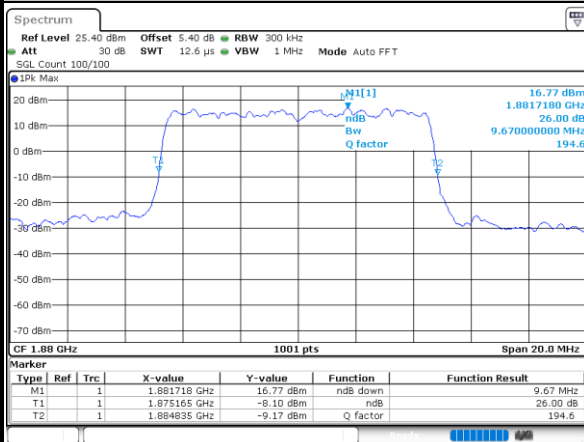


Date: 16 JUN 2024 16:17:40

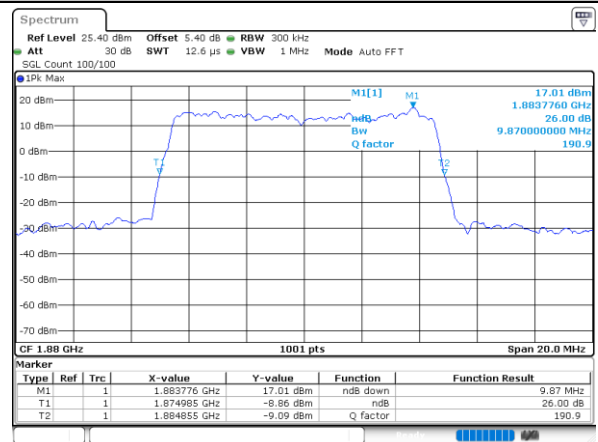


LTE Band 25

Middle Channel / 10MHz / QPSK

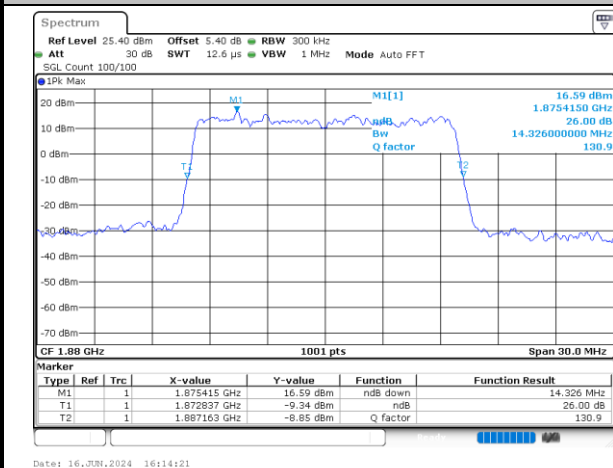


Middle Channel / 10MHz / 16QAM

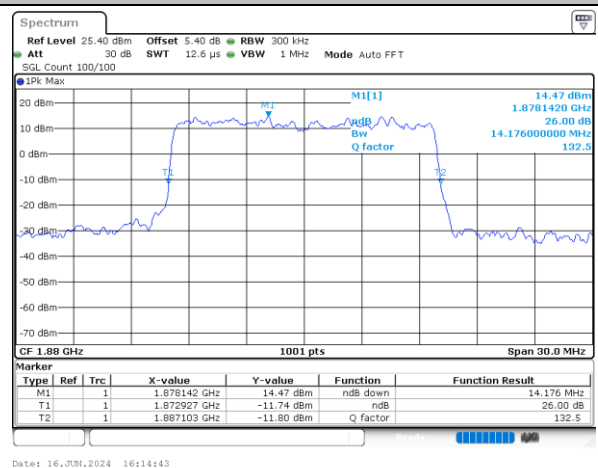


LTE Band 25

Middle Channel / 15MHz / QPSK

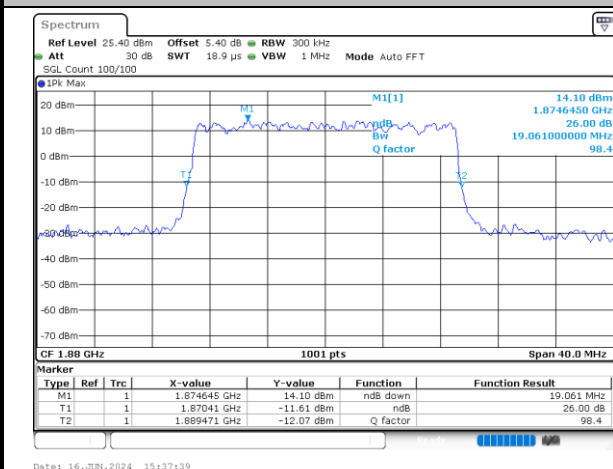


Middle Channel / 15MHz / 16QAM

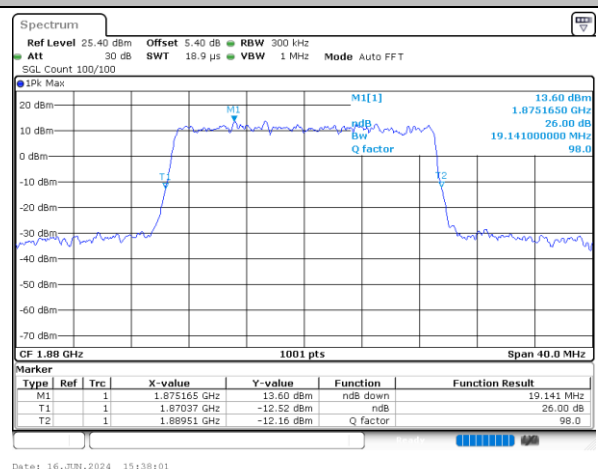


LTE Band 25

Middle Channel / 20MHz / QPSK



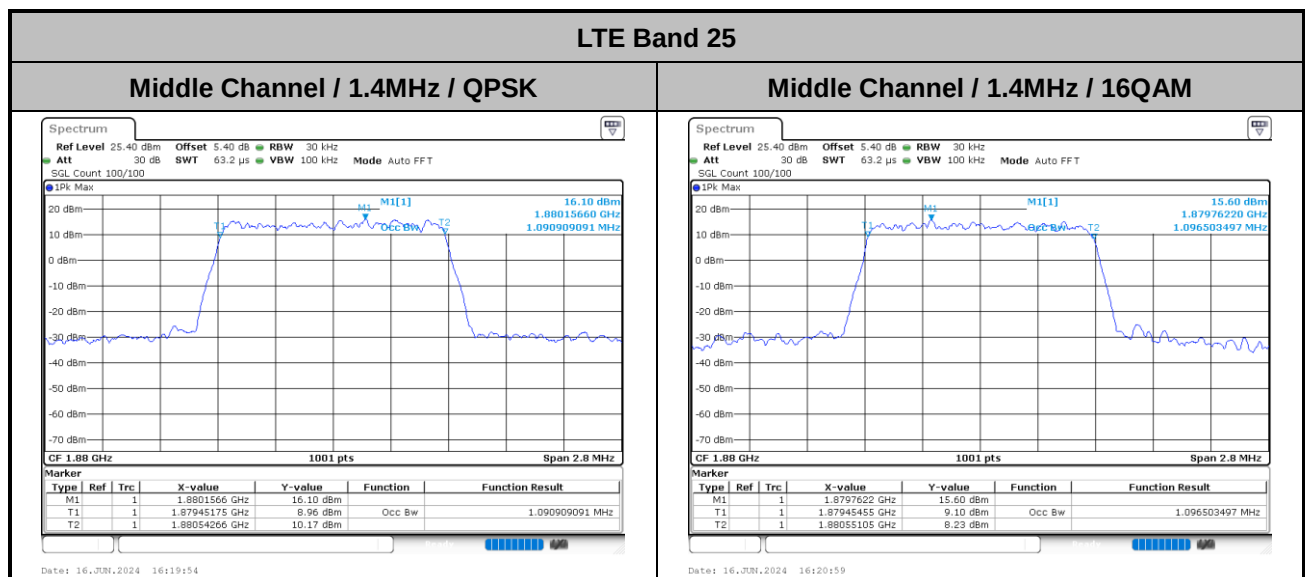
Middle Channel / 20MHz / 16QAM





Occupied Bandwidth

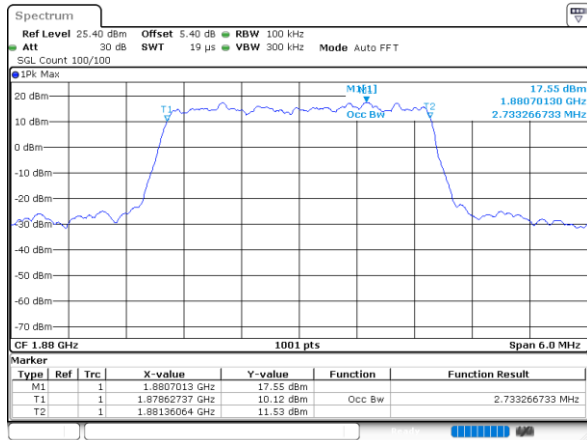
Mode	LTE Band 25 : 99%OBW(MHz)	
BW	1.4MHz	
Mod.	QPSK	16QAM
Middle CH	1.09	1.10
BW	3MHz	
Mod.	QPSK	16QAM
Middle CH	2.73	2.73
BW	5MHz	
Mod.	QPSK	16QAM
Middle CH	4.49	4.51
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.07	9.03
BW	15MHz	
Mod.	QPSK	16QAM
Middle CH	13.52	13.49
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	17.78	17.90





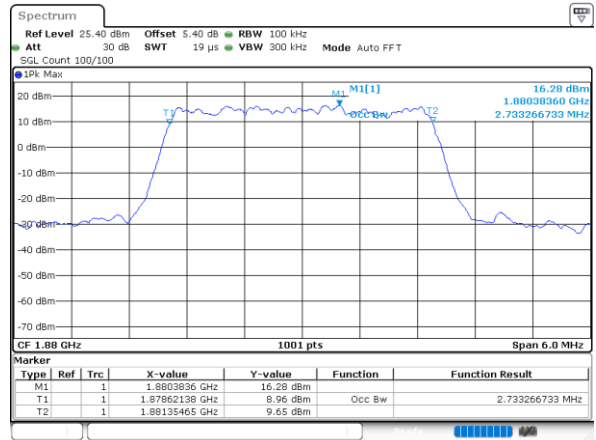
LTE Band 25

Middle Channel / 3MHz / QPSK



Date: 16 JUN 2024 16:18:26

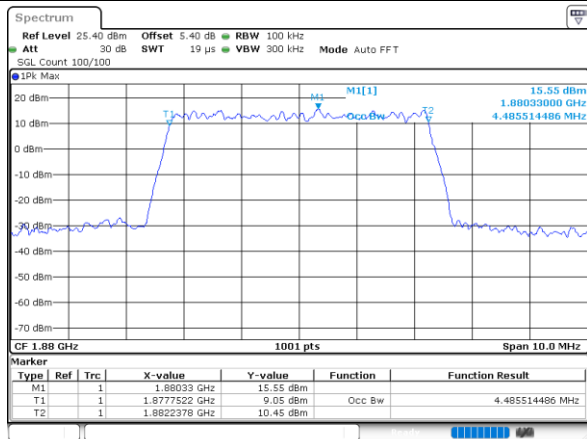
Middle Channel / 3MHz / 16QAM



Date: 16 JUN 2024 16:19:31

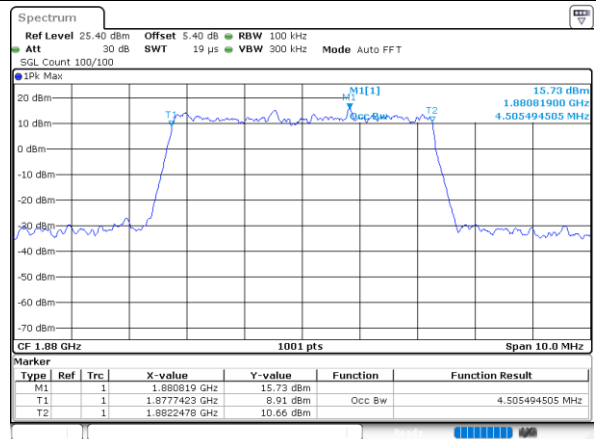
LTE Band 25

Middle Channel / 5MHz / QPSK



Date: 16 JUN 2024 16:16:57

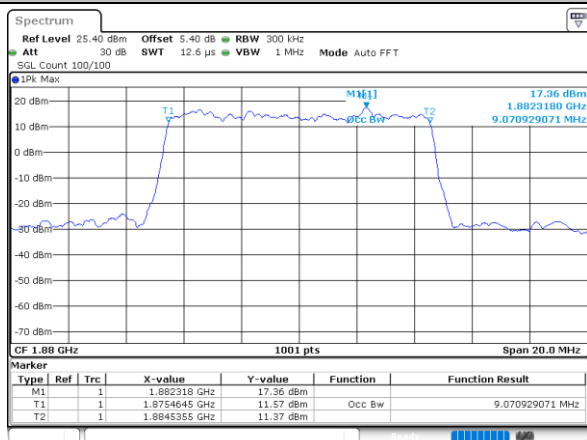
Middle Channel / 5MHz / 16QAM



Date: 16 JUN 2024 16:18:02

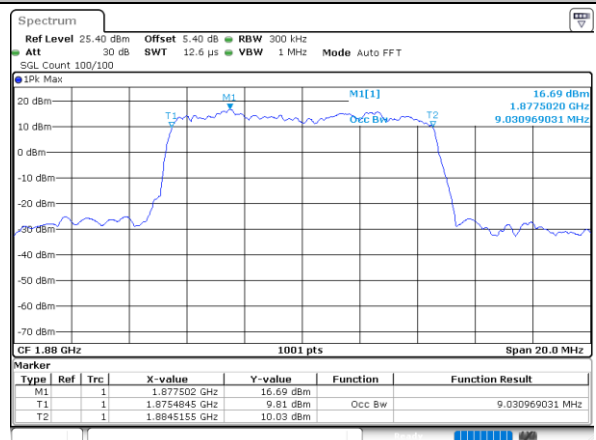
LTE Band 25

Middle Channel / 10MHz / QPSK



Date: 16 JUN 2024 16:15:28

Middle Channel / 10MHz / 16QAM

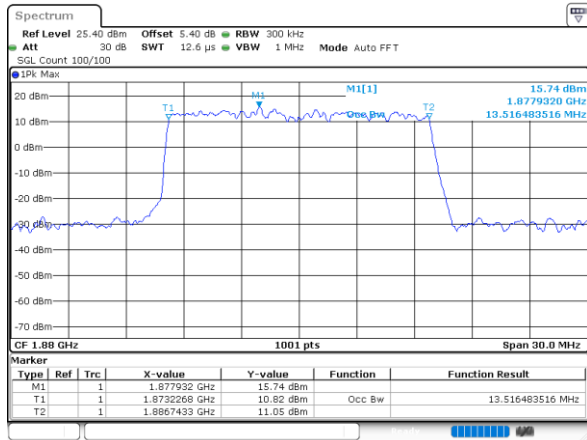


Date: 16 JUN 2024 16:16:33

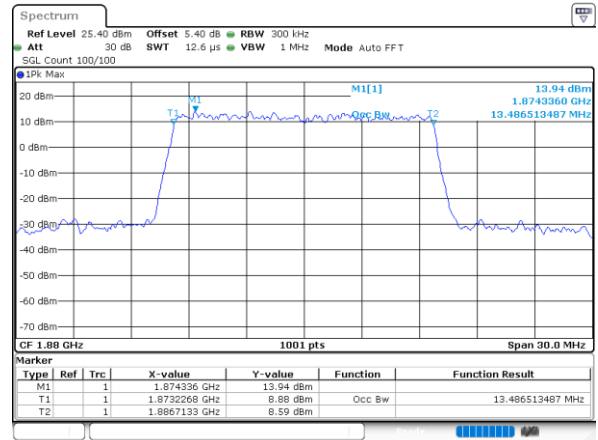


LTE Band 25

Middle Channel / 15MHz / QPSK

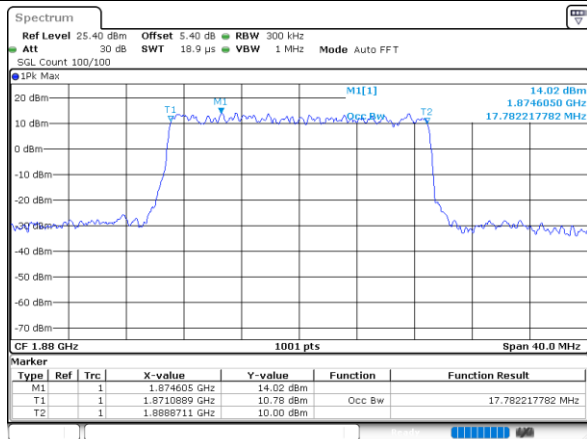


Middle Channel / 15MHz / 16QAM

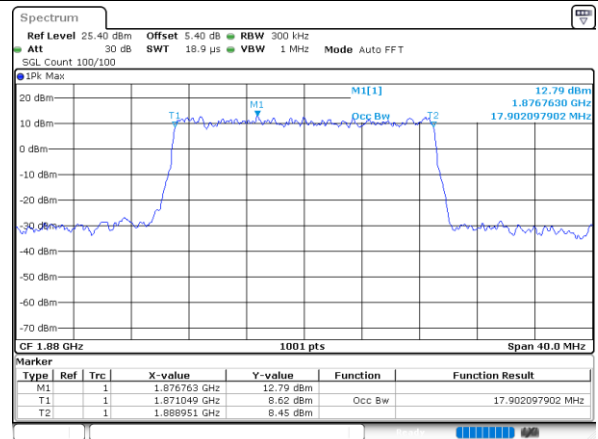


LTE Band 25

Middle Channel / 20MHz / QPSK



Middle Channel / 20MHz / 16QAM

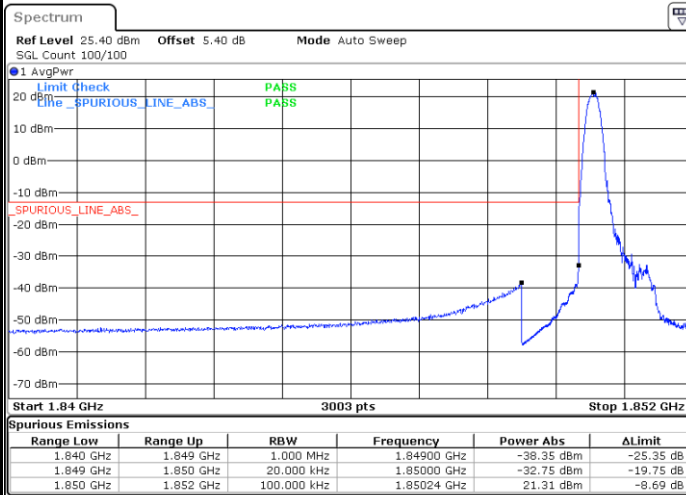




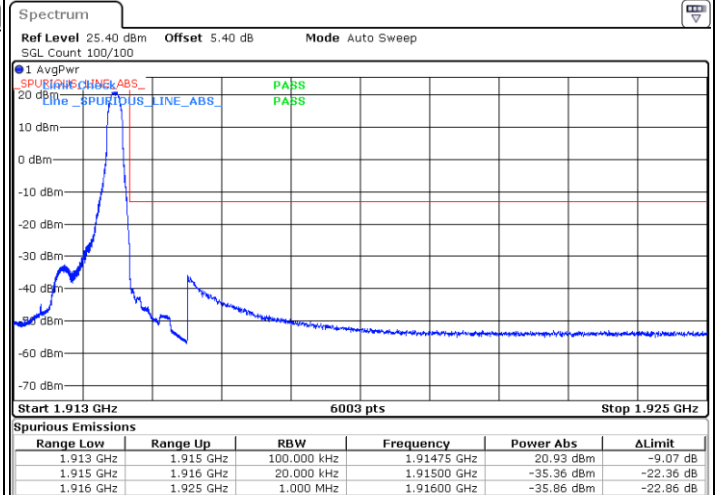
Conducted Band Edge

LTE Band 25 / 1.4MHz / QPSK

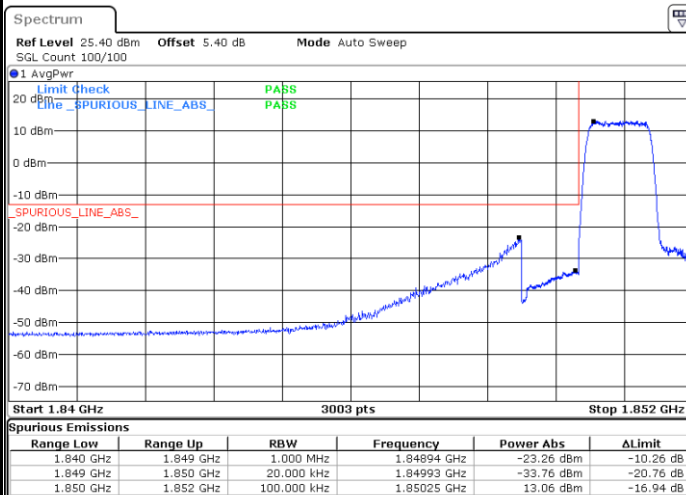
Lowest Band Edge / 1RB



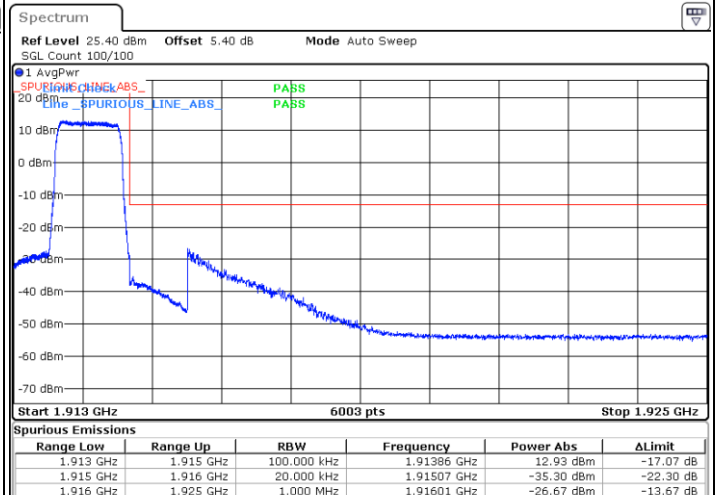
Highest Band Edge / 1RB



Lowest Band Edge / Full RB



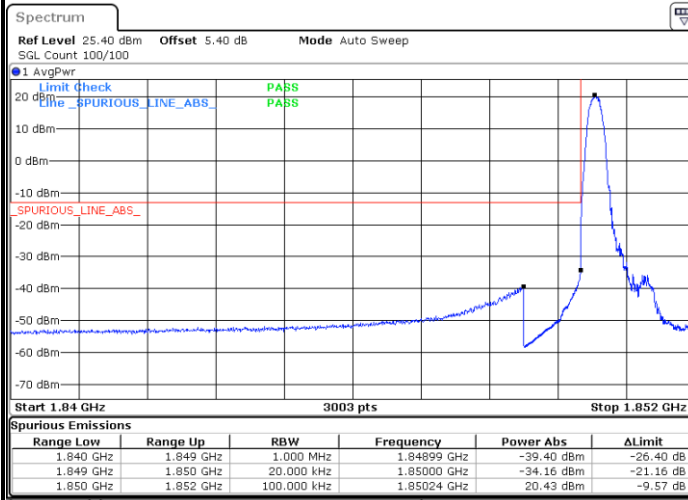
Highest Band Edge / Full RB



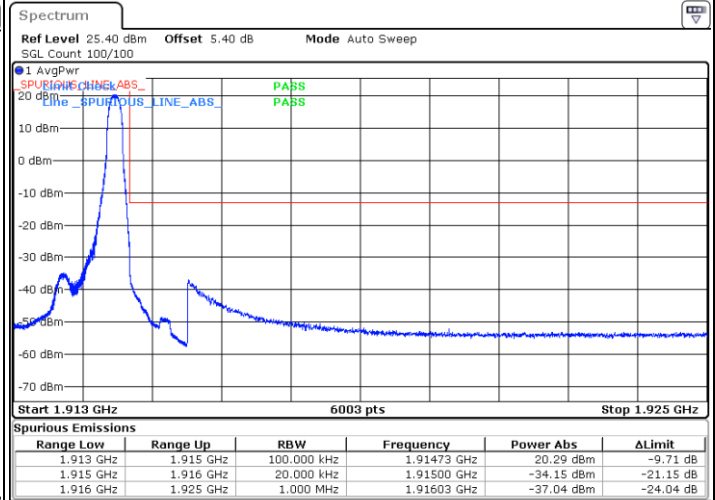


LTE Band 25 / 1.4MHz / 16QAM

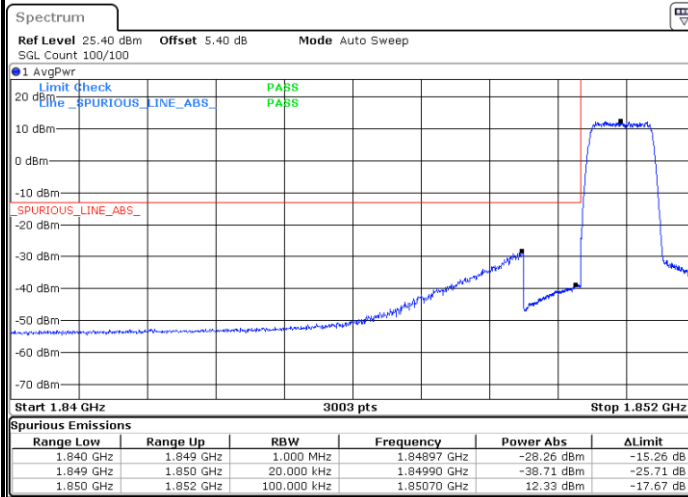
Lowest Band Edge / 1 RB



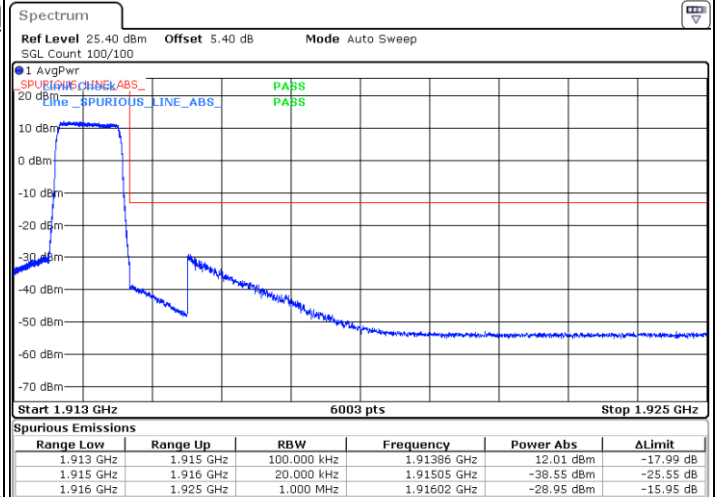
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



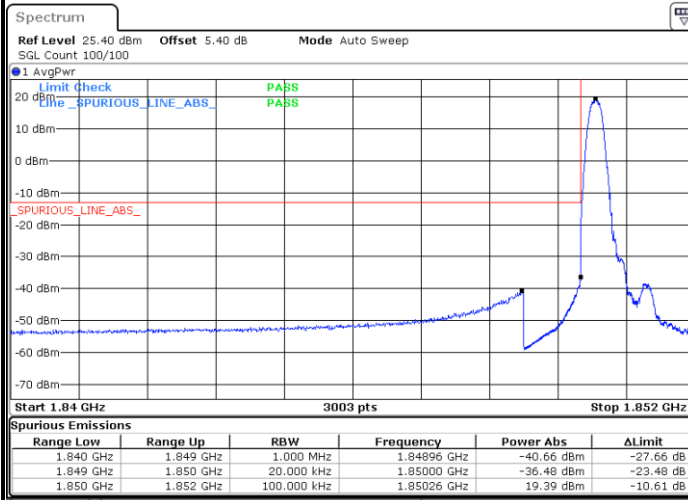
Highest Band Edge / Full RB



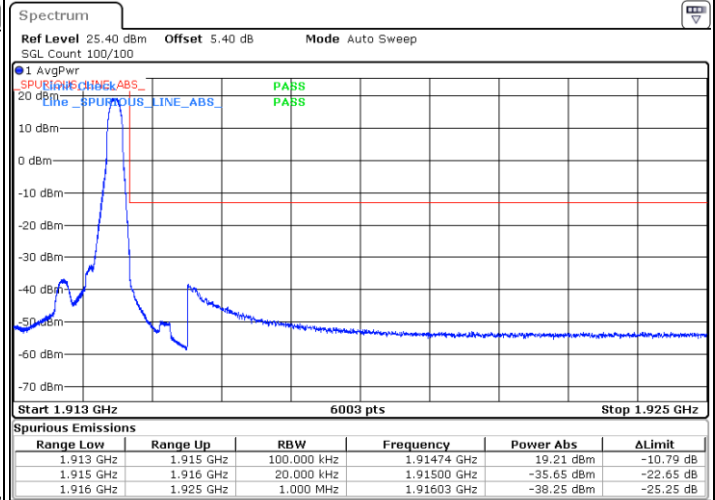


LTE Band 25 / 1.4MHz / 64QAM

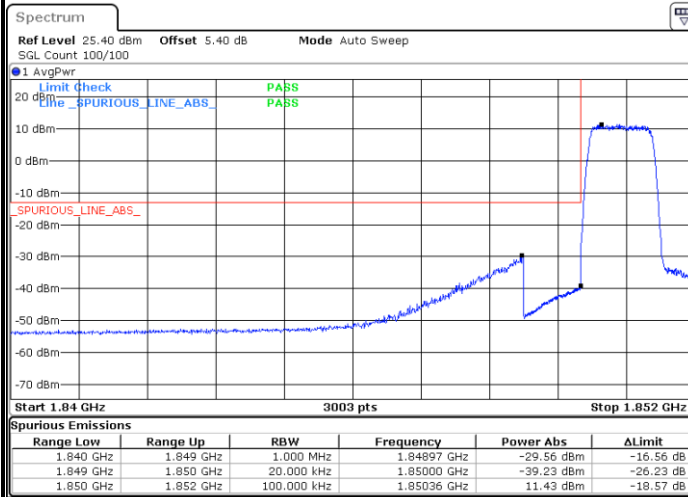
Lowest Band Edge / 1 RB



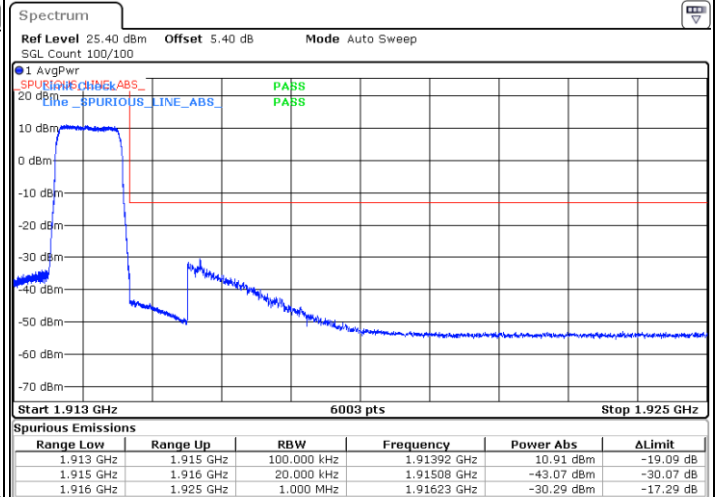
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



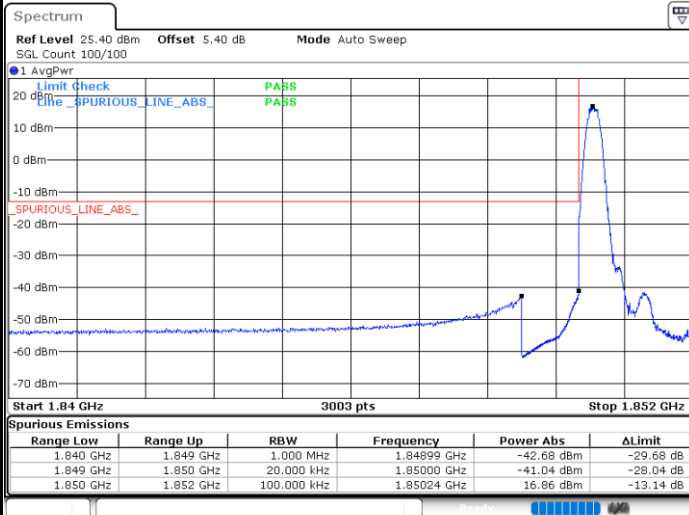
Highest Band Edge / Full RB



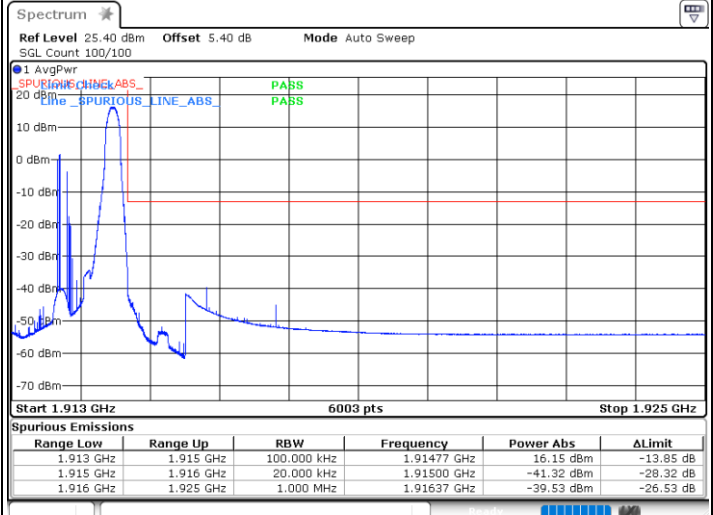


LTE Band 25 / 1.4MHz / 256QAM

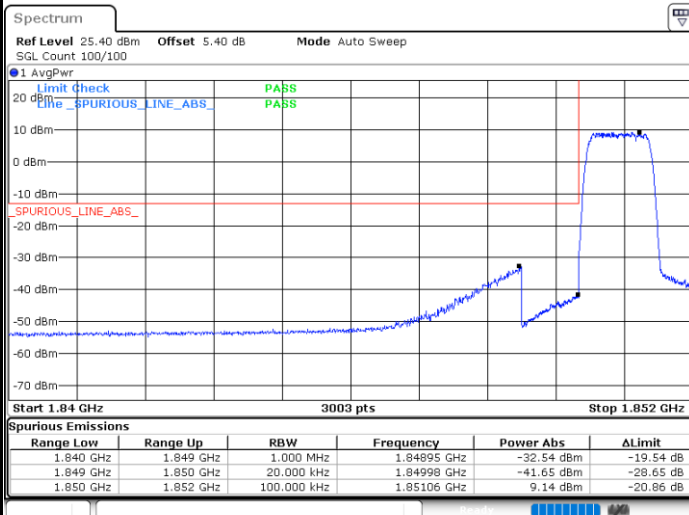
Lowest Band Edge / 1 RB



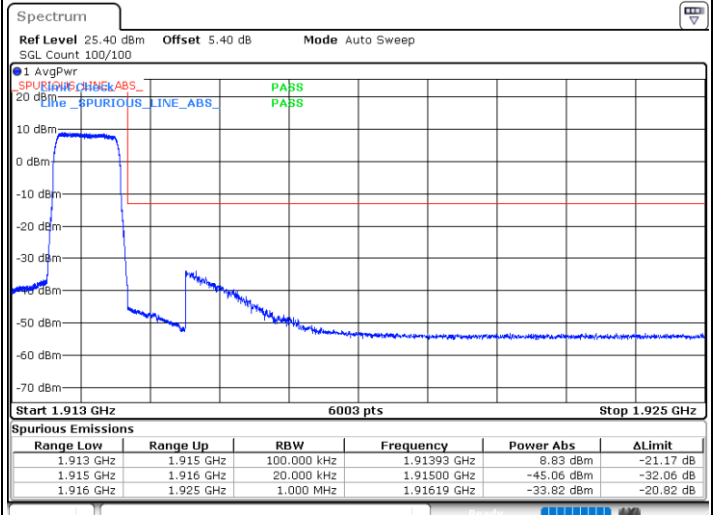
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



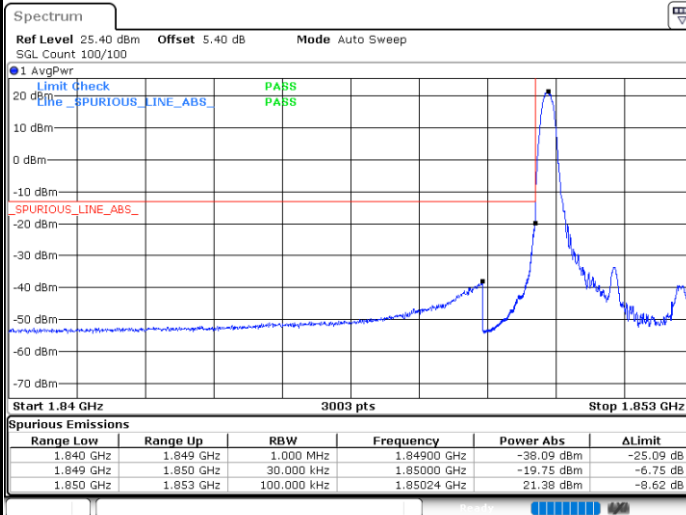
Highest Band Edge / Full RB



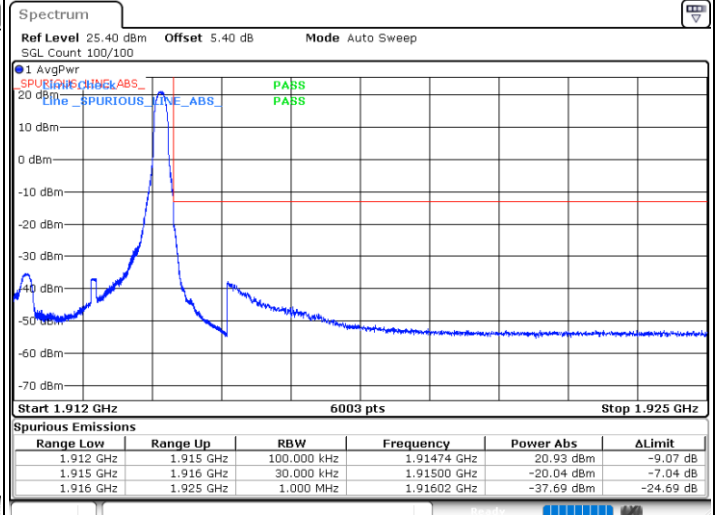


LTE Band 25 / 3MHz / QPSK

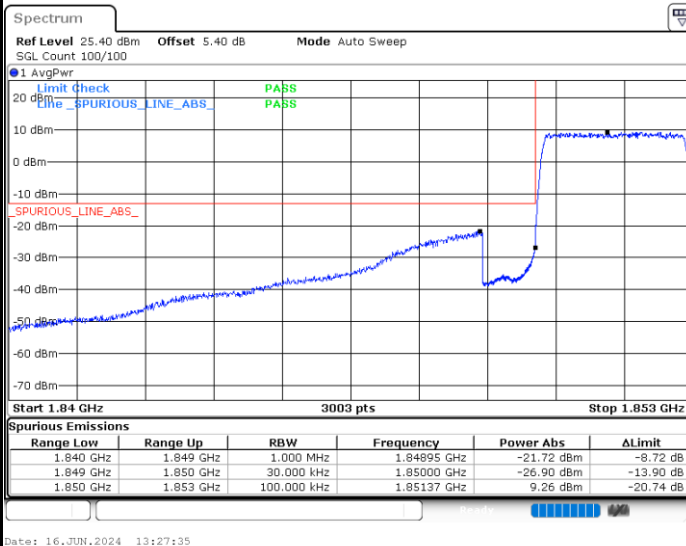
Lowest Band Edge / 1RB



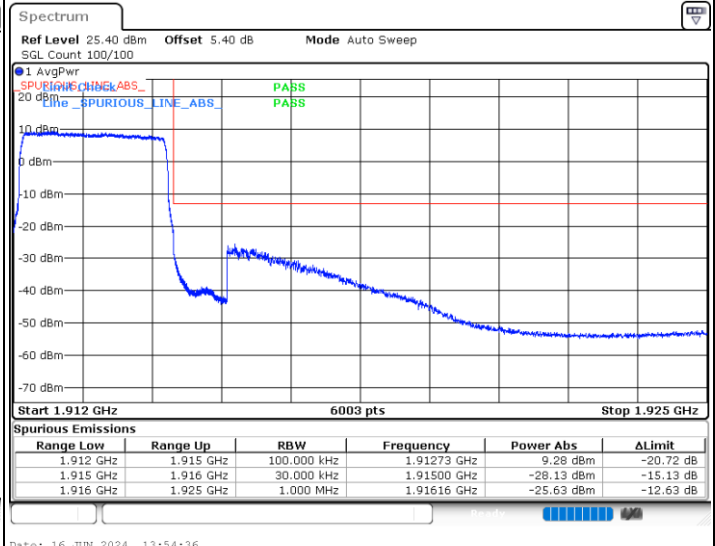
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



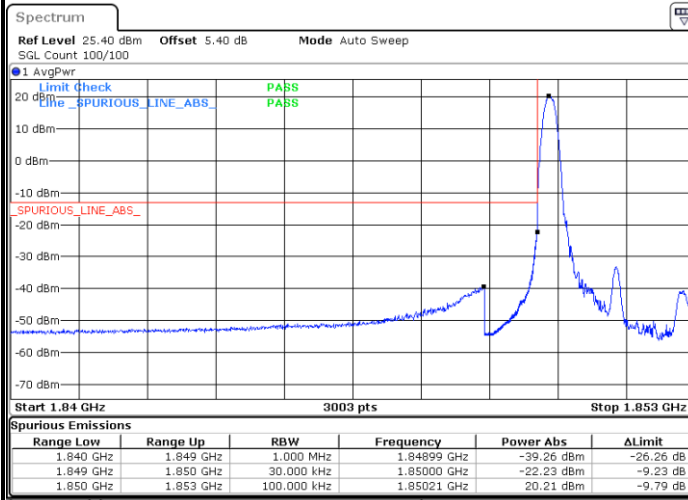
Highest Band Edge / Full RB



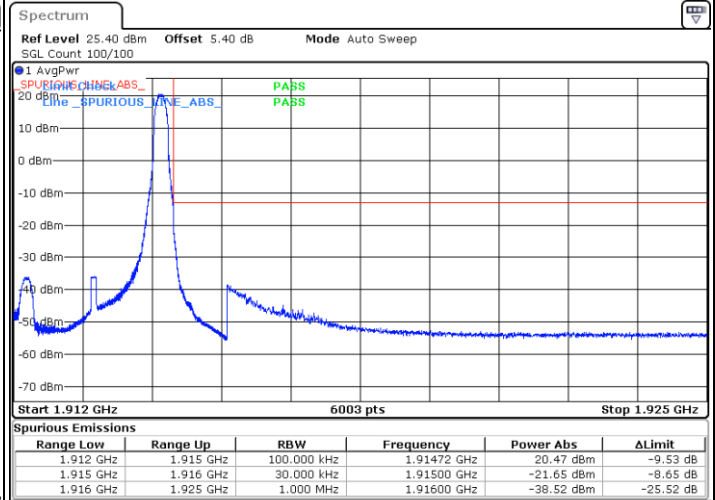


LTE Band 25 / 3MHz / 16QAM

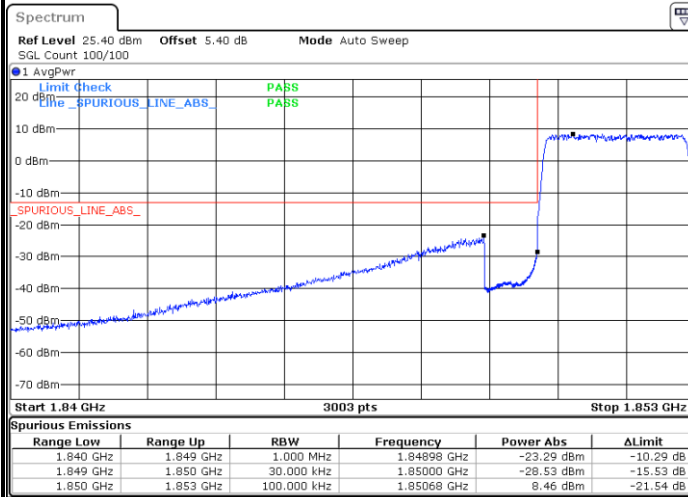
Lowest Band Edge / 1 RB



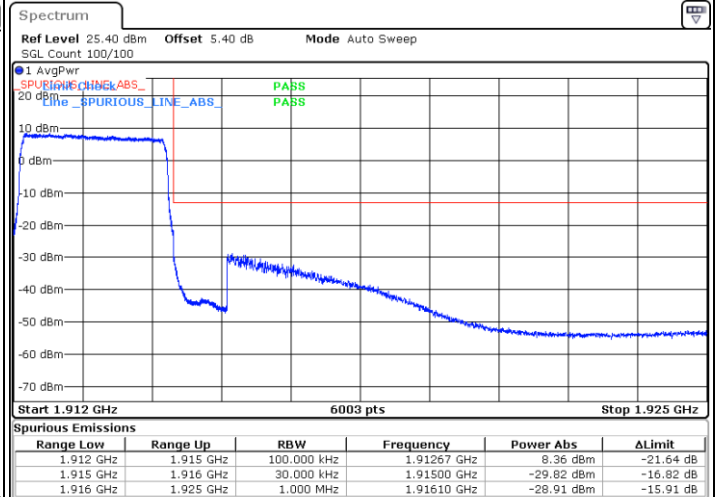
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



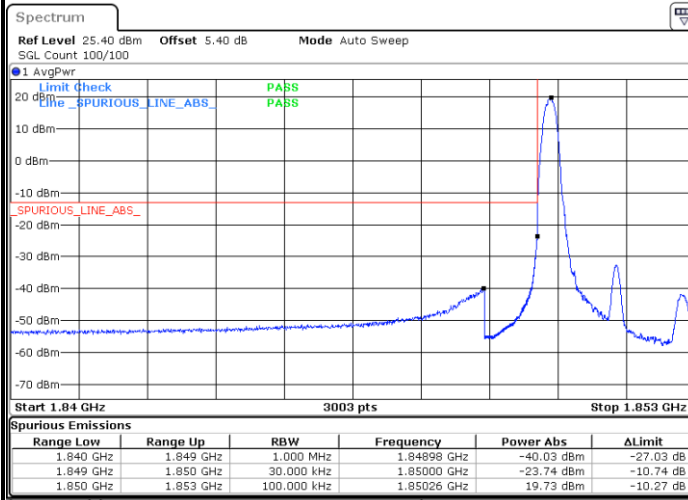
Highest Band Edge / Full RB



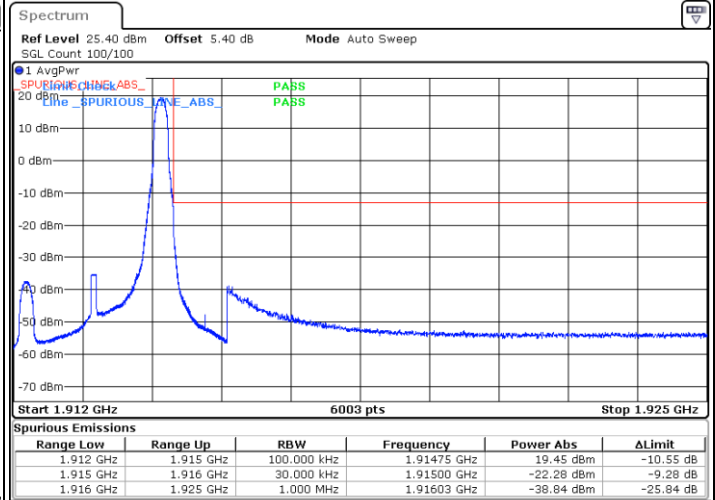


LTE Band 25 / 3MHz / 64QAM

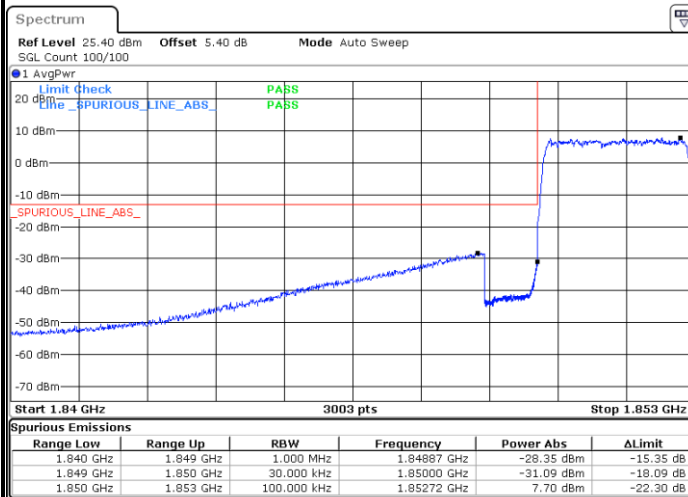
Lowest Band Edge / 1 RB



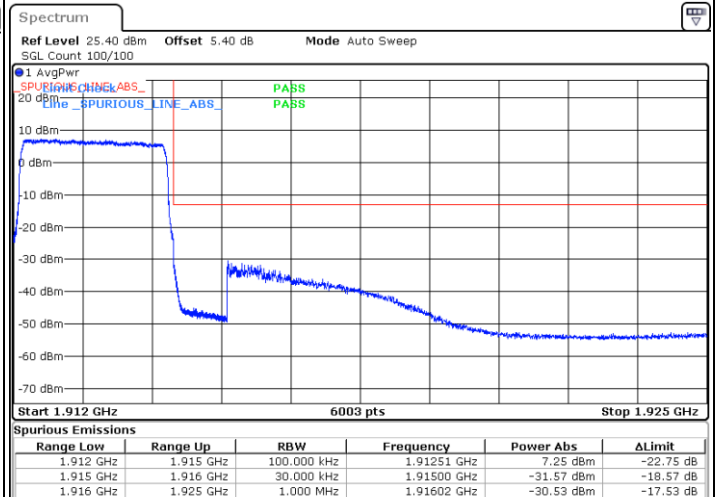
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



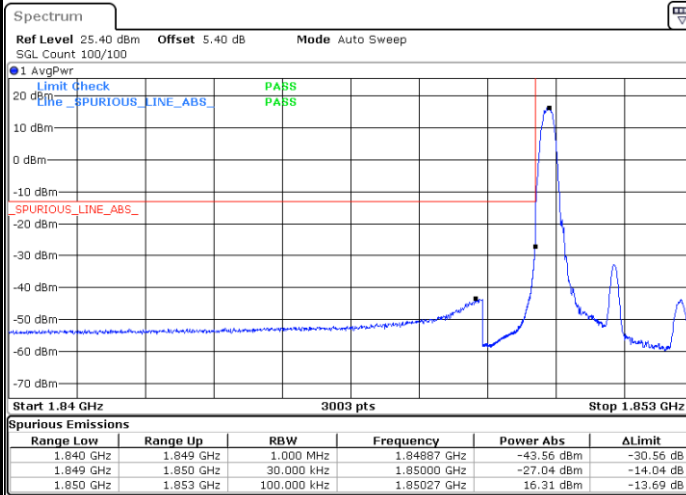
Highest Band Edge / Full RB



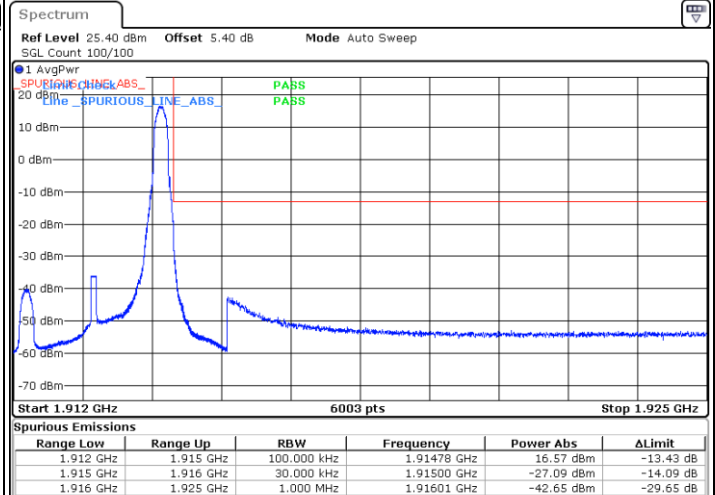


LTE Band 25 / 3MHz / 256QAM

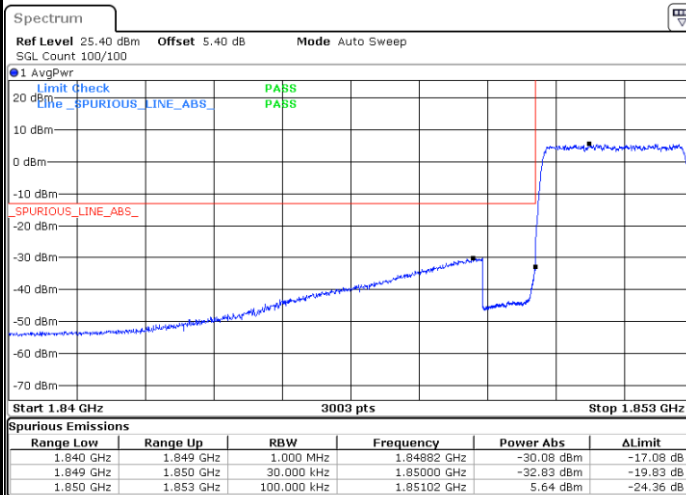
Lowest Band Edge / 1 RB



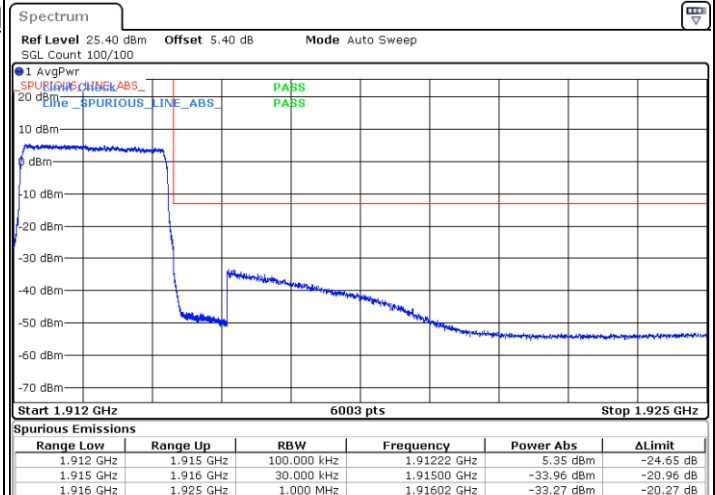
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



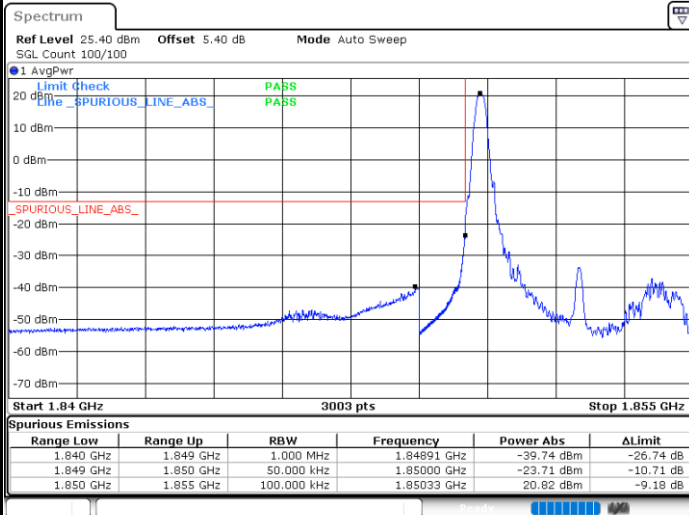
Highest Band Edge / Full RB



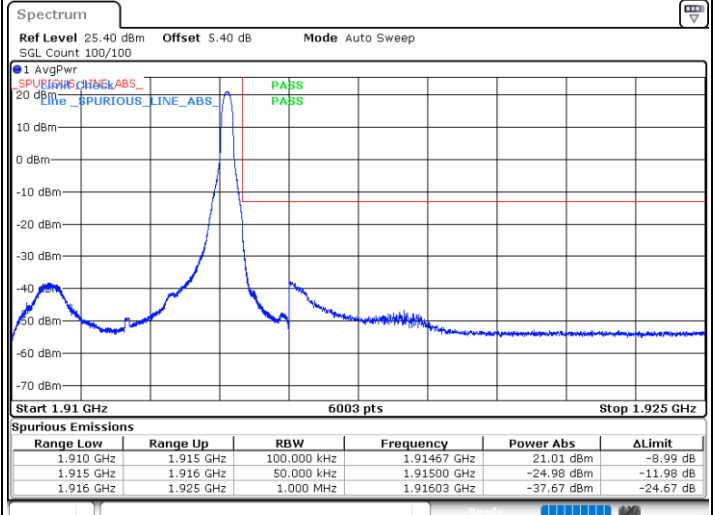


LTE Band 25 / 5MHz / QPSK

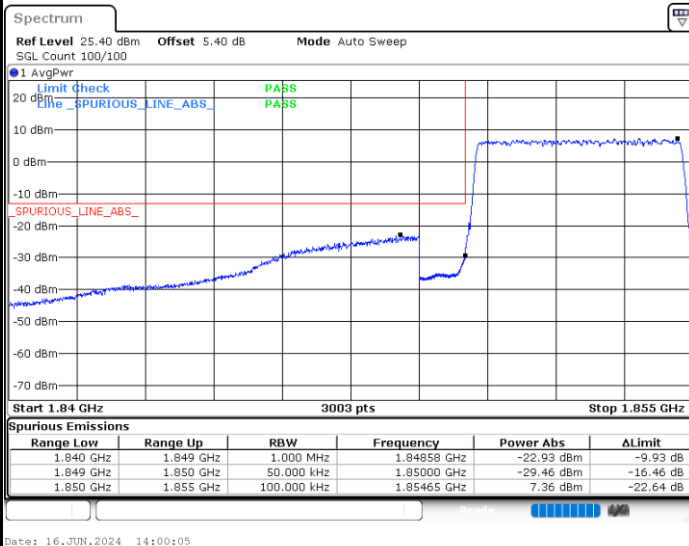
Lowest Band Edge / 1 RB



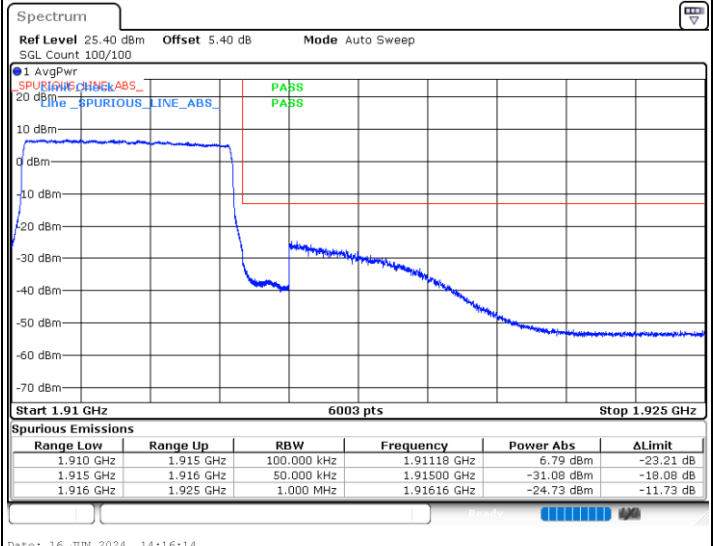
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



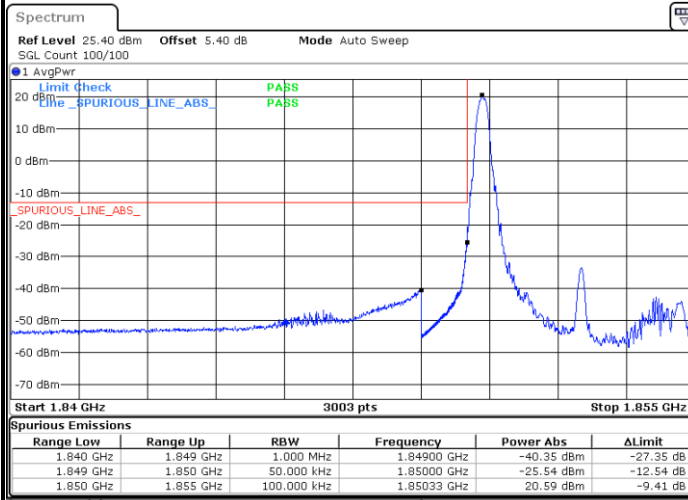
Highest Band Edge / Full RB



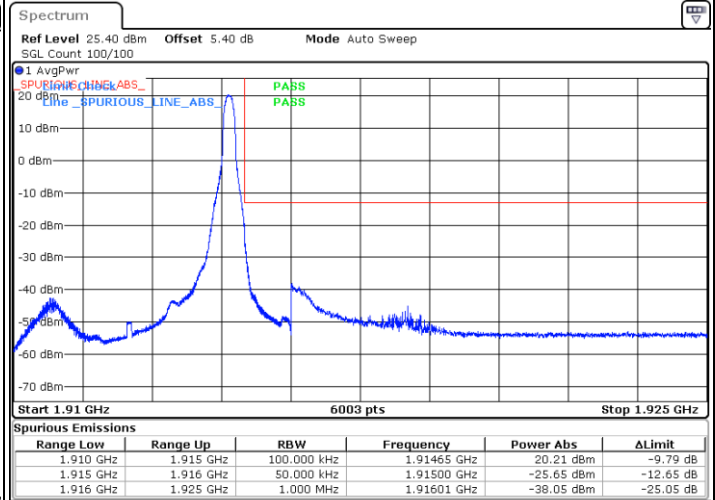


LTE Band 25 / 5MHz / 16QAM

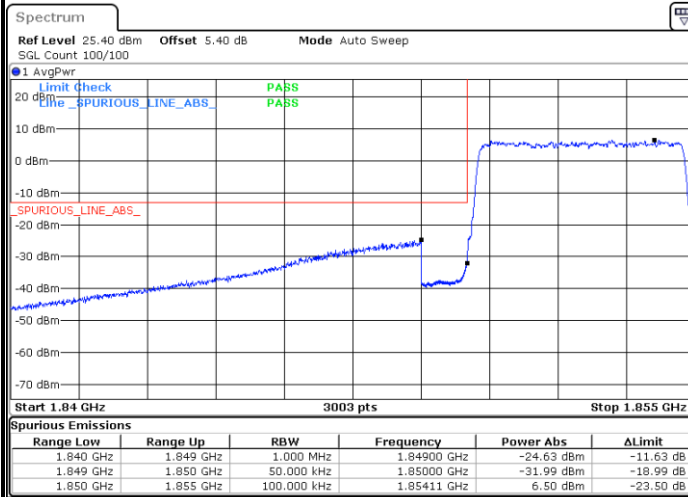
Lowest Band Edge / 1RB



Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



Highest Band Edge / Full RB

