



TEST REPORT
No. I21Z70567-WMD04
for

SAMSUNG Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE/5GNR Phone with Bluetooth,WLAN

Model Name: SM-A226B/DSN

FCC ID: ZCasma226BN1

with

Hardware Version: REV1.1

Software Version: A226B.001

Issued Date: 2021-12-14

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z70567-WMD04	Rev.0	1 st edition	2021-12-14

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

Location 2: CTTL (Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

Location 3: CTTL (BDA)

Address: No. 18A, Kangding Street, Beijing Economic-Technology
Development Area, Beijing, 100176, P.R. China

1.3. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

1.4. Project Data

Testing Start Date: 2021-04-06
Testing End Date: 2021-12-14

1.5. Signature



Dong Yuan
(Prepared this test report)



Zhou Yu
(Reviewed this test report)



Zhao Hui Lin
Deputy Director of the laboratory
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Samsung Electronics Co., Ltd.
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Contact: Jenni Chun
Email: j1.chun@samsung.com
Telephone: +1-201-937-4203

2.2. Manufacturer Information

Company Name: Samsung Electronics Co., Ltd.
Address /Post: Samsung R5, Maetan dong 129, Samsung ro
Youngtong gu, Suwon city 443 742, Korea
Contact: Sunghoon Cho
Email: ggobi.cho@samsung.com
Telephone: +82-10-2722-4159

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE/5GNR Phone with Bluetooth,WLAN
Model Name	SM-A226B/DSN
FCC ID	ZCASMA226BN1
Antenna	Embedded
Output power	14.72 dBm maximum ERP measured for NR n5
Extreme vol. Limits	3.5VDC to 4.4VDC (nominal: 3.85VDC)
Extreme temp. Tolerance	-10°C to +55°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN	HW Version	SW Version	Date of receipt
UT05a	2170567UT05a	REV1.1	A226B.001	2021-11-16

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery
AE1	
Model	SCUD-WT-W1
Manufacturer	SCUD(Fujian)Electronic Co.,Ltd.
Capacitance	4900mAh

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-20 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01

5. Laboratory Environment

Control room / conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Semi-anechoic chamber SAC-1 (23 meters × 17 meters × 10 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Fully-anechoic chamber FAC-3 (8.6 meters × 6.1 meters × 3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

6. Summary Of Test Result

n5

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	22.913	P
2	Emission Limit	2.1051/22.917	P
3	Frequency Stability	2.1055	BR
4	Occupied Bandwidth	2.1049	BR
5	Emission Bandwidth	22.917	BR
6	Band Edge Compliance	22.917	BR
7	Conducted Spurious Emission	22.917	BR

Terms used in Verdict column

P	Pass. The EUT complies with the essential requirements in the standard.
NP	Not Performed. The test was not performed by CTTL.
NA	Not Applicable. The test was not applicable.
BR	Re-use test data from basic model report.
F	Fail. The EUT does not comply with the essential requirements in the standard.

Explanation of worst-case configuration

NR modulation: DFT-s-OFDM pi/2 BPSK; QPSK; 16QAM; 64QAM; 256QAM

CP-OFDM QPSK; 16QAM; 64QAM; 256QAM

NR BW: 5/10/15/20MHz for NR n5.

The test results provided in this report represent the worst case configuration.

For all the NSA cases, LTE Bands are set under the 10MHz bandwidth, middle channel, 50RB and QPSK modulation.

The Equipment Under Test (EUT) model SM-A226B/DSN (FCC ID: ZCASMA226BN1) is a variant product of SM-A226B/DSN (FCC ID: ZCASMA226BN), according to the declaration of changes provided by the applicant and FCC KDB publication 484596 D01, spot check measurements were performed on this device, all the test results are derived from test report No.I21Z70104-WMD04. Please refer Annex A for detail spot check verification data and reference data. The spot check test results are consistent with basic model.

For detail differences between two models please refer the Declaration of Changes document.

7. Test Equipment Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Radio Communication Test Station	MT8000A	6262093285	Anritsu	2022-01-04	1 year
Radio Communication Analyzer	MT8821C	6201763159	Anritsu	2022-08-09	1 year
Signal&Spectrum Analyzer	FSW	104038	R&S	2022-06-24	1 year
Climate chamber	SH-242	93008556	ESPEC	2023-12-23	3 years
Test Receiver	E4440A	Agilent	MY48250642	2022-03-04	1 year
EMI Antenna	VULB9163	Schwarzbeck	9163-235	2022-04-07	1 year
EMI Antenna	LB-7180-NF	A-INFO	2030013000041	2022-02-28	1 year
EMI Antenna	3117	ETS-Lindgren	00058889	2022-11-07	1 year
Signal Generator	N5183A	Agilent	MY49060052	2022-07-11	1 year
EMI Antenna	9117	Schwarzbeck	167	2022-09-21	1 year
Power Amplifier	5S1G4	AR	0341863	/	/
Universal Radio Communication Tester	MT8000A	Anritsu	6262261933	2022-05-06	1 year
Universal Radio Communication Tester	MT8821C	Anritsu	6262257899	2022-05-06	1 year

Annex A: Measurement Results

A.1 Output Power

A.1.1 Summary

During the process of testing, the EUT was controlled via communication tester to ensure max power transmission and proper modulation.

In all cases, output power is within the specified limits.

A.1.2 Conducted

LTE Band 7+NR n5

BAND	BW	SCS	FREQ	OFDM	MODULATON	RB ALLOCATION	TOTAL POWER(dBm)
B7+n5	5MHz	15kHz	826.5MHz	DFT	pi/2 BPSK	InnerFull	24.13
B7+n5	5MHz	15kHz	826.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.57
B7+n5	5MHz	15kHz	826.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.68
B7+n5	5MHz	15kHz	826.5MHz	DFT	pi/2 BPSK	OuterFull	23.64
B7+n5	5MHz	15kHz	826.5MHz	DFT	QPSK	InnerFull	24.10
B7+n5	5MHz	15kHz	826.5MHz	DFT	QPSK	Edge1RBLeft	22.91
B7+n5	5MHz	15kHz	826.5MHz	DFT	QPSK	Edge1RBRight	23.02
B7+n5	5MHz	15kHz	826.5MHz	DFT	QPSK	OuterFull	23.16
B7+n5	5MHz	15kHz	826.5MHz	DFT	16QAM	InnerFull	23.23
B7+n5	5MHz	15kHz	826.5MHz	DFT	16QAM	Edge1RBLeft	22.01
B7+n5	5MHz	15kHz	826.5MHz	DFT	16QAM	Edge1RBRight	22.07
B7+n5	5MHz	15kHz	826.5MHz	DFT	16QAM	OuterFull	22.11
B7+n5	5MHz	15kHz	826.5MHz	DFT	64QAM	InnerFull	21.57
B7+n5	5MHz	15kHz	826.5MHz	DFT	64QAM	Edge1RBLeft	21.58
B7+n5	5MHz	15kHz	826.5MHz	DFT	64QAM	Edge1RBRight	21.68
B7+n5	5MHz	15kHz	826.5MHz	DFT	64QAM	OuterFull	21.62
B7+n5	5MHz	15kHz	826.5MHz	DFT	256QAM	InnerFull	19.73
B7+n5	5MHz	15kHz	826.5MHz	DFT	256QAM	Edge1RBLeft	19.51
B7+n5	5MHz	15kHz	826.5MHz	DFT	256QAM	Edge1RBRight	19.63
B7+n5	5MHz	15kHz	826.5MHz	DFT	256QAM	OuterFull	19.67
B7+n5	5MHz	15kHz	826.5MHz	CP	QPSK	InnerFull	22.58
B7+n5	5MHz	15kHz	826.5MHz	CP	QPSK	Edge1RBLeft	21.00
B7+n5	5MHz	15kHz	826.5MHz	CP	QPSK	Edge1RBRight	21.08
B7+n5	5MHz	15kHz	826.5MHz	CP	QPSK	OuterFull	21.10
B7+n5	5MHz	15kHz	826.5MHz	CP	16QAM	InnerFull	22.09
B7+n5	5MHz	15kHz	826.5MHz	CP	16QAM	Edge1RBLeft	21.03
B7+n5	5MHz	15kHz	826.5MHz	CP	16QAM	Edge1RBRight	21.06
B7+n5	5MHz	15kHz	826.5MHz	CP	16QAM	OuterFull	21.05

B7+n5	5MHz	15kHz	826.5MHz	CP	64QAM	InnerFull	20.73
B7+n5	5MHz	15kHz	826.5MHz	CP	64QAM	Edge1RBLeft	20.57
B7+n5	5MHz	15kHz	826.5MHz	CP	64QAM	Edge1RBRight	20.71
B7+n5	5MHz	15kHz	826.5MHz	CP	64QAM	OuterFull	20.57
B7+n5	5MHz	15kHz	826.5MHz	CP	256QAM	InnerFull	17.85
B7+n5	5MHz	15kHz	826.5MHz	CP	256QAM	Edge1RBLeft	17.77
B7+n5	5MHz	15kHz	826.5MHz	CP	256QAM	Edge1RBRight	17.84
B7+n5	5MHz	15kHz	826.5MHz	CP	256QAM	OuterFull	17.79
B7+n5	5MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	InnerFull	24.07
B7+n5	5MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.59
B7+n5	5MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.47
B7+n5	5MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	OuterFull	23.61
B7+n5	5MHz	15kHz	836.5MHz	DFT	QPSK	InnerFull	24.08
B7+n5	5MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBLeft	22.95
B7+n5	5MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBRight	22.88
B7+n5	5MHz	15kHz	836.5MHz	DFT	QPSK	OuterFull	23.20
B7+n5	5MHz	15kHz	836.5MHz	DFT	16QAM	InnerFull	23.18
B7+n5	5MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBLeft	22.01
B7+n5	5MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBRight	21.95
B7+n5	5MHz	15kHz	836.5MHz	DFT	16QAM	OuterFull	22.08
B7+n5	5MHz	15kHz	836.5MHz	DFT	64QAM	InnerFull	21.55
B7+n5	5MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBLeft	21.63
B7+n5	5MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBRight	21.58
B7+n5	5MHz	15kHz	836.5MHz	DFT	64QAM	OuterFull	21.55
B7+n5	5MHz	15kHz	836.5MHz	DFT	256QAM	InnerFull	19.61
B7+n5	5MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBLeft	19.53
B7+n5	5MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBRight	19.48
B7+n5	5MHz	15kHz	836.5MHz	DFT	256QAM	OuterFull	19.59
B7+n5	5MHz	15kHz	836.5MHz	CP	QPSK	InnerFull	22.50
B7+n5	5MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBLeft	21.11
B7+n5	5MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBRight	20.94
B7+n5	5MHz	15kHz	836.5MHz	CP	QPSK	OuterFull	21.06
B7+n5	5MHz	15kHz	836.5MHz	CP	16QAM	InnerFull	22.06
B7+n5	5MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBLeft	21.09
B7+n5	5MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBRight	20.91
B7+n5	5MHz	15kHz	836.5MHz	CP	16QAM	OuterFull	20.99
B7+n5	5MHz	15kHz	836.5MHz	CP	64QAM	InnerFull	20.64
B7+n5	5MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBLeft	20.92
B7+n5	5MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBRight	20.52
B7+n5	5MHz	15kHz	836.5MHz	CP	64QAM	OuterFull	20.56
B7+n5	5MHz	15kHz	836.5MHz	CP	256QAM	InnerFull	17.83

B7+n5	5MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBLeft	17.83
B7+n5	5MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBRight	17.67
B7+n5	5MHz	15kHz	836.5MHz	CP	256QAM	OuterFull	17.64
B7+n5	5MHz	15kHz	846.5MHz	DFT	pi/2 BPSK	InnerFull	23.72
B7+n5	5MHz	15kHz	846.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.37
B7+n5	5MHz	15kHz	846.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.08
B7+n5	5MHz	15kHz	846.5MHz	DFT	pi/2 BPSK	OuterFull	23.31
B7+n5	5MHz	15kHz	846.5MHz	DFT	QPSK	InnerFull	23.74
B7+n5	5MHz	15kHz	846.5MHz	DFT	QPSK	Edge1RBLeft	22.71
B7+n5	5MHz	15kHz	846.5MHz	DFT	QPSK	Edge1RBRight	22.53
B7+n5	5MHz	15kHz	846.5MHz	DFT	QPSK	OuterFull	22.82
B7+n5	5MHz	15kHz	846.5MHz	DFT	16QAM	InnerFull	22.92
B7+n5	5MHz	15kHz	846.5MHz	DFT	16QAM	Edge1RBLeft	21.84
B7+n5	5MHz	15kHz	846.5MHz	DFT	16QAM	Edge1RBRight	21.65
B7+n5	5MHz	15kHz	846.5MHz	DFT	16QAM	OuterFull	21.80
B7+n5	5MHz	15kHz	846.5MHz	DFT	64QAM	InnerFull	21.33
B7+n5	5MHz	15kHz	846.5MHz	DFT	64QAM	Edge1RBLeft	21.40
B7+n5	5MHz	15kHz	846.5MHz	DFT	64QAM	Edge1RBRight	21.23
B7+n5	5MHz	15kHz	846.5MHz	DFT	64QAM	OuterFull	21.28
B7+n5	5MHz	15kHz	846.5MHz	DFT	256QAM	InnerFull	19.39
B7+n5	5MHz	15kHz	846.5MHz	DFT	256QAM	Edge1RBLeft	19.34
B7+n5	5MHz	15kHz	846.5MHz	DFT	256QAM	Edge1RBRight	19.20
B7+n5	5MHz	15kHz	846.5MHz	DFT	256QAM	OuterFull	19.30
B7+n5	5MHz	15kHz	846.5MHz	CP	QPSK	InnerFull	22.19
B7+n5	5MHz	15kHz	846.5MHz	CP	QPSK	Edge1RBLeft	20.85
B7+n5	5MHz	15kHz	846.5MHz	CP	QPSK	Edge1RBRight	20.65
B7+n5	5MHz	15kHz	846.5MHz	CP	QPSK	OuterFull	20.77
B7+n5	5MHz	15kHz	846.5MHz	CP	16QAM	InnerFull	21.76
B7+n5	5MHz	15kHz	846.5MHz	CP	16QAM	Edge1RBLeft	20.83
B7+n5	5MHz	15kHz	846.5MHz	CP	16QAM	Edge1RBRight	20.63
B7+n5	5MHz	15kHz	846.5MHz	CP	16QAM	OuterFull	20.77
B7+n5	5MHz	15kHz	846.5MHz	CP	64QAM	InnerFull	20.38
B7+n5	5MHz	15kHz	846.5MHz	CP	64QAM	Edge1RBLeft	20.48
B7+n5	5MHz	15kHz	846.5MHz	CP	64QAM	Edge1RBRight	20.09
B7+n5	5MHz	15kHz	846.5MHz	CP	64QAM	OuterFull	20.33
B7+n5	5MHz	15kHz	846.5MHz	CP	256QAM	InnerFull	17.51
B7+n5	5MHz	15kHz	846.5MHz	CP	256QAM	Edge1RBLeft	17.62
B7+n5	5MHz	15kHz	846.5MHz	CP	256QAM	Edge1RBRight	17.39
B7+n5	5MHz	15kHz	846.5MHz	CP	256QAM	OuterFull	17.49
B7+n5	10MHz	15kHz	829MHz	DFT	pi/2 BPSK	InnerFull	23.91
B7+n5	10MHz	15kHz	829MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.47

B7+n5	10MHz	15kHz	829MHz	DFT	pi/2 BPSK	Edge1RBRight	23.42
B7+n5	10MHz	15kHz	829MHz	DFT	pi/2 BPSK	OuterFull	23.41
B7+n5	10MHz	15kHz	829MHz	DFT	QPSK	InnerFull	23.98
B7+n5	10MHz	15kHz	829MHz	DFT	QPSK	Edge1RBLeft	22.77
B7+n5	10MHz	15kHz	829MHz	DFT	QPSK	Edge1RBRight	22.77
B7+n5	10MHz	15kHz	829MHz	DFT	QPSK	OuterFull	22.99
B7+n5	10MHz	15kHz	829MHz	DFT	16QAM	InnerFull	22.97
B7+n5	10MHz	15kHz	829MHz	DFT	16QAM	Edge1RBLeft	21.89
B7+n5	10MHz	15kHz	829MHz	DFT	16QAM	Edge1RBRight	21.84
B7+n5	10MHz	15kHz	829MHz	DFT	16QAM	OuterFull	21.98
B7+n5	10MHz	15kHz	829MHz	DFT	64QAM	InnerFull	21.53
B7+n5	10MHz	15kHz	829MHz	DFT	64QAM	Edge1RBLeft	21.38
B7+n5	10MHz	15kHz	829MHz	DFT	64QAM	Edge1RBRight	21.41
B7+n5	10MHz	15kHz	829MHz	DFT	64QAM	OuterFull	21.50
B7+n5	10MHz	15kHz	829MHz	DFT	256QAM	InnerFull	19.56
B7+n5	10MHz	15kHz	829MHz	DFT	256QAM	Edge1RBLeft	19.38
B7+n5	10MHz	15kHz	829MHz	DFT	256QAM	Edge1RBRight	19.48
B7+n5	10MHz	15kHz	829MHz	DFT	256QAM	OuterFull	19.42
B7+n5	10MHz	15kHz	829MHz	CP	QPSK	InnerFull	22.40
B7+n5	10MHz	15kHz	829MHz	CP	QPSK	Edge1RBLeft	20.84
B7+n5	10MHz	15kHz	829MHz	CP	QPSK	Edge1RBRight	20.84
B7+n5	10MHz	15kHz	829MHz	CP	QPSK	OuterFull	20.94
B7+n5	10MHz	15kHz	829MHz	CP	16QAM	InnerFull	22.00
B7+n5	10MHz	15kHz	829MHz	CP	16QAM	Edge1RBLeft	20.80
B7+n5	10MHz	15kHz	829MHz	CP	16QAM	Edge1RBRight	20.73
B7+n5	10MHz	15kHz	829MHz	CP	16QAM	OuterFull	20.94
B7+n5	10MHz	15kHz	829MHz	CP	64QAM	InnerFull	20.48
B7+n5	10MHz	15kHz	829MHz	CP	64QAM	Edge1RBLeft	20.48
B7+n5	10MHz	15kHz	829MHz	CP	64QAM	Edge1RBRight	20.45
B7+n5	10MHz	15kHz	829MHz	CP	64QAM	OuterFull	20.42
B7+n5	10MHz	15kHz	829MHz	CP	256QAM	InnerFull	17.51
B7+n5	10MHz	15kHz	829MHz	CP	256QAM	Edge1RBLeft	17.60
B7+n5	10MHz	15kHz	829MHz	CP	256QAM	Edge1RBRight	17.54
B7+n5	10MHz	15kHz	829MHz	CP	256QAM	OuterFull	17.68
B7+n5	10MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	InnerFull	23.86
B7+n5	10MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.52
B7+n5	10MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.31
B7+n5	10MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	OuterFull	23.33
B7+n5	10MHz	15kHz	836.5MHz	DFT	QPSK	InnerFull	23.84
B7+n5	10MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBLeft	22.84
B7+n5	10MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBRight	22.66

B7+n5	10MHz	15kHz	836.5MHz	DFT	QPSK	OuterFull	22.94
B7+n5	10MHz	15kHz	836.5MHz	DFT	16QAM	InnerFull	22.92
B7+n5	10MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBLeft	21.93
B7+n5	10MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBRight	21.78
B7+n5	10MHz	15kHz	836.5MHz	DFT	16QAM	OuterFull	21.90
B7+n5	10MHz	15kHz	836.5MHz	DFT	64QAM	InnerFull	21.42
B7+n5	10MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBLeft	21.45
B7+n5	10MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBRight	21.22
B7+n5	10MHz	15kHz	836.5MHz	DFT	64QAM	OuterFull	21.42
B7+n5	10MHz	15kHz	836.5MHz	DFT	256QAM	InnerFull	19.45
B7+n5	10MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBLeft	19.42
B7+n5	10MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBRight	19.30
B7+n5	10MHz	15kHz	836.5MHz	DFT	256QAM	OuterFull	19.32
B7+n5	10MHz	15kHz	836.5MHz	CP	QPSK	InnerFull	22.36
B7+n5	10MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBLeft	20.92
B7+n5	10MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBRight	20.72
B7+n5	10MHz	15kHz	836.5MHz	CP	QPSK	OuterFull	20.86
B7+n5	10MHz	15kHz	836.5MHz	CP	16QAM	InnerFull	21.93
B7+n5	10MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBLeft	20.92
B7+n5	10MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBRight	20.70
B7+n5	10MHz	15kHz	836.5MHz	CP	16QAM	OuterFull	20.83
B7+n5	10MHz	15kHz	836.5MHz	CP	64QAM	InnerFull	20.45
B7+n5	10MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBLeft	20.58
B7+n5	10MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBRight	20.32
B7+n5	10MHz	15kHz	836.5MHz	CP	64QAM	OuterFull	20.33
B7+n5	10MHz	15kHz	836.5MHz	CP	256QAM	InnerFull	17.49
B7+n5	10MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBLeft	17.66
B7+n5	10MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBRight	17.44
B7+n5	10MHz	15kHz	836.5MHz	CP	256QAM	OuterFull	17.55
B7+n5	10MHz	15kHz	844MHz	DFT	pi/2 BPSK	InnerFull	23.60
B7+n5	10MHz	15kHz	844MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.23
B7+n5	10MHz	15kHz	844MHz	DFT	pi/2 BPSK	Edge1RBRight	22.92
B7+n5	10MHz	15kHz	844MHz	DFT	pi/2 BPSK	OuterFull	23.23
B7+n5	10MHz	15kHz	844MHz	DFT	QPSK	InnerFull	23.68
B7+n5	10MHz	15kHz	844MHz	DFT	QPSK	Edge1RBLeft	22.66
B7+n5	10MHz	15kHz	844MHz	DFT	QPSK	Edge1RBRight	22.33
B7+n5	10MHz	15kHz	844MHz	DFT	QPSK	OuterFull	22.70
B7+n5	10MHz	15kHz	844MHz	DFT	16QAM	InnerFull	22.69
B7+n5	10MHz	15kHz	844MHz	DFT	16QAM	Edge1RBLeft	21.76
B7+n5	10MHz	15kHz	844MHz	DFT	16QAM	Edge1RBRight	21.34
B7+n5	10MHz	15kHz	844MHz	DFT	16QAM	OuterFull	21.71

B7+n5	10MHz	15kHz	844MHz	DFT	64QAM	InnerFull	21.20
B7+n5	10MHz	15kHz	844MHz	DFT	64QAM	Edge6RBLeft	21.26
B7+n5	10MHz	15kHz	844MHz	DFT	64QAM	Edge6RBRight	20.97
B7+n5	10MHz	15kHz	844MHz	DFT	64QAM	OuterFull	21.29
B7+n5	10MHz	15kHz	844MHz	DFT	256QAM	InnerFull	19.26
B7+n5	10MHz	15kHz	844MHz	DFT	256QAM	Edge1RBLeft	19.26
B7+n5	10MHz	15kHz	844MHz	DFT	256QAM	Edge1RBRight	18.99
B7+n5	10MHz	15kHz	844MHz	DFT	256QAM	OuterFull	19.19
B7+n5	10MHz	15kHz	844MHz	CP	QPSK	InnerFull	22.14
B7+n5	10MHz	15kHz	844MHz	CP	QPSK	Edge1RBLeft	20.76
B7+n5	10MHz	15kHz	844MHz	CP	QPSK	Edge1RBRight	20.45
B7+n5	10MHz	15kHz	844MHz	CP	QPSK	OuterFull	20.71
B7+n5	10MHz	15kHz	844MHz	CP	16QAM	InnerFull	21.67
B7+n5	10MHz	15kHz	844MHz	CP	16QAM	Edge1RBLeft	20.72
B7+n5	10MHz	15kHz	844MHz	CP	16QAM	Edge1RBRight	20.42
B7+n5	10MHz	15kHz	844MHz	CP	16QAM	OuterFull	20.69
B7+n5	10MHz	15kHz	844MHz	CP	64QAM	InnerFull	20.17
B7+n5	10MHz	15kHz	844MHz	CP	64QAM	Edge1RBLeft	20.26
B7+n5	10MHz	15kHz	844MHz	CP	64QAM	Edge1RBRight	19.94
B7+n5	10MHz	15kHz	844MHz	CP	64QAM	OuterFull	20.17
B7+n5	10MHz	15kHz	844MHz	CP	256QAM	InnerFull	17.37
B7+n5	10MHz	15kHz	844MHz	CP	256QAM	Edge1RBLeft	17.48
B7+n5	10MHz	15kHz	844MHz	CP	256QAM	Edge1RBRight	17.15
B7+n5	10MHz	15kHz	844MHz	CP	256QAM	OuterFull	17.34
B7+n5	15MHz	15kHz	831.5MHz	DFT	pi/2 BPSK	InnerFull	24.03
B7+n5	15MHz	15kHz	831.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.50
B7+n5	15MHz	15kHz	831.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.45
B7+n5	15MHz	15kHz	831.5MHz	DFT	pi/2 BPSK	OuterFull	23.58
B7+n5	15MHz	15kHz	831.5MHz	DFT	QPSK	InnerFull	24.11
B7+n5	15MHz	15kHz	831.5MHz	DFT	QPSK	Edge1RBLeft	22.84
B7+n5	15MHz	15kHz	831.5MHz	DFT	QPSK	Edge1RBRight	22.83
B7+n5	15MHz	15kHz	831.5MHz	DFT	QPSK	OuterFull	23.11
B7+n5	15MHz	15kHz	831.5MHz	DFT	16QAM	InnerFull	23.07
B7+n5	15MHz	15kHz	831.5MHz	DFT	16QAM	Edge1RBLeft	21.96
B7+n5	15MHz	15kHz	831.5MHz	DFT	16QAM	Edge1RBRight	21.93
B7+n5	15MHz	15kHz	831.5MHz	DFT	16QAM	OuterFull	22.08
B7+n5	15MHz	15kHz	831.5MHz	DFT	64QAM	InnerFull	21.64
B7+n5	15MHz	15kHz	831.5MHz	DFT	64QAM	Edge1RBLeft	21.50
B7+n5	15MHz	15kHz	831.5MHz	DFT	64QAM	Edge1RBRight	21.48
B7+n5	15MHz	15kHz	831.5MHz	DFT	64QAM	OuterFull	21.63
B7+n5	15MHz	15kHz	831.5MHz	DFT	256QAM	InnerFull	19.59

B7+n5	15MHz	15kHz	831.5MHz	DFT	256QAM	Edge1RBLeft	19.45
B7+n5	15MHz	15kHz	831.5MHz	DFT	256QAM	Edge1RBRight	19.43
B7+n5	15MHz	15kHz	831.5MHz	DFT	256QAM	OuterFull	19.57
B7+n5	15MHz	15kHz	831.5MHz	CP	QPSK	InnerFull	22.57
B7+n5	15MHz	15kHz	831.5MHz	CP	QPSK	Edge1RBLeft	20.98
B7+n5	15MHz	15kHz	831.5MHz	CP	QPSK	Edge1RBRight	20.87
B7+n5	15MHz	15kHz	831.5MHz	CP	QPSK	OuterFull	21.07
B7+n5	15MHz	15kHz	831.5MHz	CP	16QAM	InnerFull	22.11
B7+n5	15MHz	15kHz	831.5MHz	CP	16QAM	Edge1RBLeft	20.89
B7+n5	15MHz	15kHz	831.5MHz	CP	16QAM	Edge1RBRight	20.88
B7+n5	15MHz	15kHz	831.5MHz	CP	16QAM	OuterFull	21.11
B7+n5	15MHz	15kHz	831.5MHz	CP	64QAM	InnerFull	20.64
B7+n5	15MHz	15kHz	831.5MHz	CP	64QAM	Edge1RBLeft	20.59
B7+n5	15MHz	15kHz	831.5MHz	CP	64QAM	Edge1RBRight	20.37
B7+n5	15MHz	15kHz	831.5MHz	CP	64QAM	OuterFull	20.63
B7+n5	15MHz	15kHz	831.5MHz	CP	256QAM	InnerFull	17.77
B7+n5	15MHz	15kHz	831.5MHz	CP	256QAM	Edge1RBLeft	17.65
B7+n5	15MHz	15kHz	831.5MHz	CP	256QAM	Edge1RBRight	17.62
B7+n5	15MHz	15kHz	831.5MHz	CP	256QAM	OuterFull	17.74
B7+n5	15MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	InnerFull	24.07
B7+n5	15MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.63
B7+n5	15MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.36
B7+n5	15MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	OuterFull	23.56
B7+n5	15MHz	15kHz	836.5MHz	DFT	QPSK	InnerFull	24.08
B7+n5	15MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBLeft	22.96
B7+n5	15MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBRight	22.70
B7+n5	15MHz	15kHz	836.5MHz	DFT	QPSK	OuterFull	23.13
B7+n5	15MHz	15kHz	836.5MHz	DFT	16QAM	InnerFull	23.05
B7+n5	15MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBLeft	22.09
B7+n5	15MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBRight	21.86
B7+n5	15MHz	15kHz	836.5MHz	DFT	16QAM	OuterFull	22.11
B7+n5	15MHz	15kHz	836.5MHz	DFT	64QAM	InnerFull	21.63
B7+n5	15MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBLeft	21.60
B7+n5	15MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBRight	21.38
B7+n5	15MHz	15kHz	836.5MHz	DFT	64QAM	OuterFull	21.63
B7+n5	15MHz	15kHz	836.5MHz	DFT	256QAM	InnerFull	19.59
B7+n5	15MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBLeft	19.58
B7+n5	15MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBRight	19.36
B7+n5	15MHz	15kHz	836.5MHz	DFT	256QAM	OuterFull	19.57
B7+n5	15MHz	15kHz	836.5MHz	CP	QPSK	InnerFull	22.58
B7+n5	15MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBLeft	21.11

B7+n5	15MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBRight	20.78
B7+n5	15MHz	15kHz	836.5MHz	CP	QPSK	OuterFull	21.07
B7+n5	15MHz	15kHz	836.5MHz	CP	16QAM	InnerFull	22.12
B7+n5	15MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBLeft	21.10
B7+n5	15MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBRight	20.72
B7+n5	15MHz	15kHz	836.5MHz	CP	16QAM	OuterFull	21.02
B7+n5	15MHz	15kHz	836.5MHz	CP	64QAM	InnerFull	20.49
B7+n5	15MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBLeft	20.72
B7+n5	15MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBRight	20.33
B7+n5	15MHz	15kHz	836.5MHz	CP	64QAM	OuterFull	20.57
B7+n5	15MHz	15kHz	836.5MHz	CP	256QAM	InnerFull	17.85
B7+n5	15MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBLeft	17.79
B7+n5	15MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBRight	17.51
B7+n5	15MHz	15kHz	836.5MHz	CP	256QAM	OuterFull	17.67
B7+n5	15MHz	15kHz	841.5MHz	DFT	pi/2 BPSK	InnerFull	23.91
B7+n5	15MHz	15kHz	841.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.50
B7+n5	15MHz	15kHz	841.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.02
B7+n5	15MHz	15kHz	841.5MHz	DFT	pi/2 BPSK	OuterFull	23.49
B7+n5	15MHz	15kHz	841.5MHz	DFT	QPSK	InnerFull	23.94
B7+n5	15MHz	15kHz	841.5MHz	DFT	QPSK	Edge1RBLeft	22.91
B7+n5	15MHz	15kHz	841.5MHz	DFT	QPSK	Edge1RBRight	22.44
B7+n5	15MHz	15kHz	841.5MHz	DFT	QPSK	OuterFull	23.08
B7+n5	15MHz	15kHz	841.5MHz	DFT	16QAM	InnerFull	22.94
B7+n5	15MHz	15kHz	841.5MHz	DFT	16QAM	Edge1RBLeft	21.99
B7+n5	15MHz	15kHz	841.5MHz	DFT	16QAM	Edge1RBRight	21.58
B7+n5	15MHz	15kHz	841.5MHz	DFT	16QAM	OuterFull	22.03
B7+n5	15MHz	15kHz	841.5MHz	DFT	64QAM	InnerFull	21.51
B7+n5	15MHz	15kHz	841.5MHz	DFT	64QAM	Edge1RBLeft	21.52
B7+n5	15MHz	15kHz	841.5MHz	DFT	64QAM	Edge1RBRight	21.11
B7+n5	15MHz	15kHz	841.5MHz	DFT	64QAM	OuterFull	21.53
B7+n5	15MHz	15kHz	841.5MHz	DFT	256QAM	InnerFull	19.48
B7+n5	15MHz	15kHz	841.5MHz	DFT	256QAM	Edge1RBLeft	19.49
B7+n5	15MHz	15kHz	841.5MHz	DFT	256QAM	Edge1RBRight	19.18
B7+n5	15MHz	15kHz	841.5MHz	DFT	256QAM	OuterFull	19.51
B7+n5	15MHz	15kHz	841.5MHz	CP	QPSK	InnerFull	22.42
B7+n5	15MHz	15kHz	841.5MHz	CP	QPSK	Edge1RBLeft	21.01
B7+n5	15MHz	15kHz	841.5MHz	CP	QPSK	Edge1RBRight	20.57
B7+n5	15MHz	15kHz	841.5MHz	CP	QPSK	OuterFull	20.99
B7+n5	15MHz	15kHz	841.5MHz	CP	16QAM	InnerFull	21.93
B7+n5	15MHz	15kHz	841.5MHz	CP	16QAM	Edge1RBLeft	21.01
B7+n5	15MHz	15kHz	841.5MHz	CP	16QAM	Edge1RBRight	20.42

B7+n5	15MHz	15kHz	841.5MHz	CP	16QAM	OuterFull	20.95
B7+n5	15MHz	15kHz	841.5MHz	CP	64QAM	InnerFull	20.54
B7+n5	15MHz	15kHz	841.5MHz	CP	64QAM	Edge1RBLeft	20.95
B7+n5	15MHz	15kHz	841.5MHz	CP	64QAM	Edge1RBRight	20.08
B7+n5	15MHz	15kHz	841.5MHz	CP	64QAM	OuterFull	20.46
B7+n5	15MHz	15kHz	841.5MHz	CP	256QAM	InnerFull	17.70
B7+n5	15MHz	15kHz	841.5MHz	CP	256QAM	Edge1RBLeft	17.67
B7+n5	15MHz	15kHz	841.5MHz	CP	256QAM	Edge1RBRight	17.27
B7+n5	15MHz	15kHz	841.5MHz	CP	256QAM	OuterFull	17.59
B7+n5	20MHz	15kHz	834MHz	DFT	pi/2 BPSK	InnerFull	24.04
B7+n5	20MHz	15kHz	834MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.42
B7+n5	20MHz	15kHz	834MHz	DFT	pi/2 BPSK	Edge1RBRight	23.28
B7+n5	20MHz	15kHz	834MHz	DFT	pi/2 BPSK	OuterFull	23.51
B7+n5	20MHz	15kHz	834MHz	DFT	QPSK	InnerFull	24.02
B7+n5	20MHz	15kHz	834MHz	DFT	QPSK	Edge1RBLeft	22.80
B7+n5	20MHz	15kHz	834MHz	DFT	QPSK	Edge1RBRight	22.63
B7+n5	20MHz	15kHz	834MHz	DFT	QPSK	OuterFull	23.04
B7+n5	20MHz	15kHz	834MHz	DFT	16QAM	InnerFull	23.08
B7+n5	20MHz	15kHz	834MHz	DFT	16QAM	Edge1RBLeft	21.91
B7+n5	20MHz	15kHz	834MHz	DFT	16QAM	Edge1RBRight	21.73
B7+n5	20MHz	15kHz	834MHz	DFT	16QAM	OuterFull	21.99
B7+n5	20MHz	15kHz	834MHz	DFT	64QAM	InnerFull	21.57
B7+n5	20MHz	15kHz	834MHz	DFT	64QAM	Edge1RBLeft	21.40
B7+n5	20MHz	15kHz	834MHz	DFT	64QAM	Edge1RBRight	21.47
B7+n5	20MHz	15kHz	834MHz	DFT	64QAM	OuterFull	21.55
B7+n5	20MHz	15kHz	834MHz	DFT	256QAM	InnerFull	19.54
B7+n5	20MHz	15kHz	834MHz	DFT	256QAM	Edge1RBLeft	19.41
B7+n5	20MHz	15kHz	834MHz	DFT	256QAM	Edge1RBRight	19.23
B7+n5	20MHz	15kHz	834MHz	DFT	256QAM	OuterFull	19.46
B7+n5	20MHz	15kHz	834MHz	CP	QPSK	InnerFull	22.56
B7+n5	20MHz	15kHz	834MHz	CP	QPSK	Edge1RBLeft	20.88
B7+n5	20MHz	15kHz	834MHz	CP	QPSK	Edge1RBRight	20.66
B7+n5	20MHz	15kHz	834MHz	CP	QPSK	OuterFull	20.98
B7+n5	20MHz	15kHz	834MHz	CP	16QAM	InnerFull	22.05
B7+n5	20MHz	15kHz	834MHz	CP	16QAM	Edge1RBLeft	20.80
B7+n5	20MHz	15kHz	834MHz	CP	16QAM	Edge1RBRight	20.64
B7+n5	20MHz	15kHz	834MHz	CP	16QAM	OuterFull	20.90
B7+n5	20MHz	15kHz	834MHz	CP	64QAM	InnerFull	20.54
B7+n5	20MHz	15kHz	834MHz	CP	64QAM	Edge1RBLeft	20.46
B7+n5	20MHz	15kHz	834MHz	CP	64QAM	Edge1RBRight	20.76
B7+n5	20MHz	15kHz	834MHz	CP	64QAM	OuterFull	20.45

B7+n5	20MHz	15kHz	834MHz	CP	256QAM	InnerFull	17.67
B7+n5	20MHz	15kHz	834MHz	CP	256QAM	Edge1RBLeft	17.60
B7+n5	20MHz	15kHz	834MHz	CP	256QAM	Edge1RBRight	17.47
B7+n5	20MHz	15kHz	834MHz	CP	256QAM	OuterFull	17.60
B7+n5	20MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	InnerFull	24.06
B7+n5	20MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.57
B7+n5	20MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	Edge1RBRight	23.21
B7+n5	20MHz	15kHz	836.5MHz	DFT	pi/2 BPSK	OuterFull	23.52
B7+n5	20MHz	15kHz	836.5MHz	DFT	QPSK	InnerFull	24.05
B7+n5	20MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBLeft	22.97
B7+n5	20MHz	15kHz	836.5MHz	DFT	QPSK	Edge1RBRight	22.56
B7+n5	20MHz	15kHz	836.5MHz	DFT	QPSK	OuterFull	23.02
B7+n5	20MHz	15kHz	836.5MHz	DFT	16QAM	InnerFull	23.15
B7+n5	20MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBLeft	22.08
B7+n5	20MHz	15kHz	836.5MHz	DFT	16QAM	Edge1RBRight	21.73
B7+n5	20MHz	15kHz	836.5MHz	DFT	16QAM	OuterFull	22.02
B7+n5	20MHz	15kHz	836.5MHz	DFT	64QAM	InnerFull	21.60
B7+n5	20MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBLeft	21.77
B7+n5	20MHz	15kHz	836.5MHz	DFT	64QAM	Edge1RBRight	21.26
B7+n5	20MHz	15kHz	836.5MHz	DFT	64QAM	OuterFull	21.57
B7+n5	20MHz	15kHz	836.5MHz	DFT	256QAM	InnerFull	19.52
B7+n5	20MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBLeft	19.64
B7+n5	20MHz	15kHz	836.5MHz	DFT	256QAM	Edge1RBRight	19.28
B7+n5	20MHz	15kHz	836.5MHz	DFT	256QAM	OuterFull	19.51
B7+n5	20MHz	15kHz	836.5MHz	CP	QPSK	InnerFull	22.58
B7+n5	20MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBLeft	21.03
B7+n5	20MHz	15kHz	836.5MHz	CP	QPSK	Edge1RBRight	20.64
B7+n5	20MHz	15kHz	836.5MHz	CP	QPSK	OuterFull	21.01
B7+n5	20MHz	15kHz	836.5MHz	CP	16QAM	InnerFull	22.08
B7+n5	20MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBLeft	21.00
B7+n5	20MHz	15kHz	836.5MHz	CP	16QAM	Edge1RBRight	20.65
B7+n5	20MHz	15kHz	836.5MHz	CP	16QAM	OuterFull	20.97
B7+n5	20MHz	15kHz	836.5MHz	CP	64QAM	InnerFull	20.55
B7+n5	20MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBLeft	20.65
B7+n5	20MHz	15kHz	836.5MHz	CP	64QAM	Edge1RBRight	20.34
B7+n5	20MHz	15kHz	836.5MHz	CP	64QAM	OuterFull	20.49
B7+n5	20MHz	15kHz	836.5MHz	CP	256QAM	InnerFull	17.72
B7+n5	20MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBLeft	17.77
B7+n5	20MHz	15kHz	836.5MHz	CP	256QAM	Edge1RBRight	17.48
B7+n5	20MHz	15kHz	836.5MHz	CP	256QAM	OuterFull	17.65
B7+n5	20MHz	15kHz	839MHz	DFT	pi/2 BPSK	InnerFull	23.92

B7+n5	20MHz	15kHz	839MHz	DFT	pi/2 BPSK	Edge1RBLeft	23.54
B7+n5	20MHz	15kHz	839MHz	DFT	pi/2 BPSK	Edge1RBRight	22.95
B7+n5	20MHz	15kHz	839MHz	DFT	pi/2 BPSK	OuterFull	23.55
B7+n5	20MHz	15kHz	839MHz	DFT	QPSK	InnerFull	23.99
B7+n5	20MHz	15kHz	839MHz	DFT	QPSK	Edge1RBLeft	22.94
B7+n5	20MHz	15kHz	839MHz	DFT	QPSK	Edge1RBRight	22.43
B7+n5	20MHz	15kHz	839MHz	DFT	QPSK	OuterFull	23.02
B7+n5	20MHz	15kHz	839MHz	DFT	16QAM	InnerFull	23.05
B7+n5	20MHz	15kHz	839MHz	DFT	16QAM	Edge1RBLeft	22.04
B7+n5	20MHz	15kHz	839MHz	DFT	16QAM	Edge1RBRight	21.57
B7+n5	20MHz	15kHz	839MHz	DFT	16QAM	OuterFull	22.05
B7+n5	20MHz	15kHz	839MHz	DFT	64QAM	InnerFull	21.58
B7+n5	20MHz	15kHz	839MHz	DFT	64QAM	Edge1RBLeft	21.55
B7+n5	20MHz	15kHz	839MHz	DFT	64QAM	Edge1RBRight	21.05
B7+n5	20MHz	15kHz	839MHz	DFT	64QAM	OuterFull	21.60
B7+n5	20MHz	15kHz	839MHz	DFT	256QAM	InnerFull	19.47
B7+n5	20MHz	15kHz	839MHz	DFT	256QAM	Edge1RBLeft	19.63
B7+n5	20MHz	15kHz	839MHz	DFT	256QAM	Edge1RBRight	19.10
B7+n5	20MHz	15kHz	839MHz	DFT	256QAM	OuterFull	19.62
B7+n5	20MHz	15kHz	839MHz	CP	QPSK	InnerFull	22.60
B7+n5	20MHz	15kHz	839MHz	CP	QPSK	Edge1RBLeft	21.01
B7+n5	20MHz	15kHz	839MHz	CP	QPSK	Edge1RBRight	20.48
B7+n5	20MHz	15kHz	839MHz	CP	QPSK	OuterFull	21.02
B7+n5	20MHz	15kHz	839MHz	CP	16QAM	InnerFull	22.07
B7+n5	20MHz	15kHz	839MHz	CP	16QAM	Edge1RBLeft	20.98
B7+n5	20MHz	15kHz	839MHz	CP	16QAM	Edge1RBRight	20.51
B7+n5	20MHz	15kHz	839MHz	CP	16QAM	OuterFull	20.93
B7+n5	20MHz	15kHz	839MHz	CP	64QAM	InnerFull	20.51
B7+n5	20MHz	15kHz	839MHz	CP	64QAM	Edge1RBLeft	20.67
B7+n5	20MHz	15kHz	839MHz	CP	64QAM	Edge1RBRight	20.16
B7+n5	20MHz	15kHz	839MHz	CP	64QAM	OuterFull	20.51
B7+n5	20MHz	15kHz	839MHz	CP	256QAM	InnerFull	17.72
B7+n5	20MHz	15kHz	839MHz	CP	256QAM	Edge1RBLeft	17.75
B7+n5	20MHz	15kHz	839MHz	CP	256QAM	Edge1RBRight	17.29
B7+n5	20MHz	15kHz	839MHz	CP	256QAM	OuterFull	17.68

A.1.3 Radiated

A.1.3.1 Description

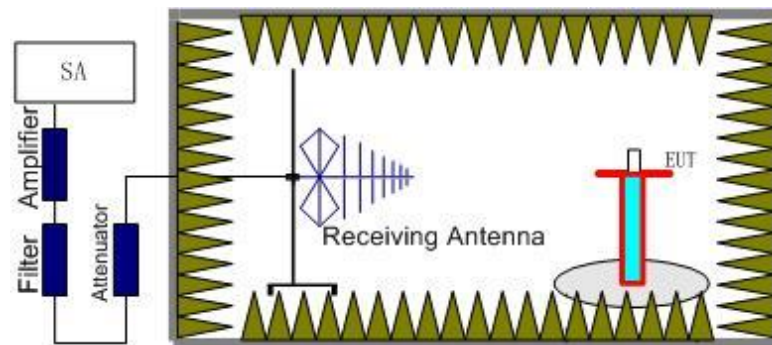
This is the test for the maximum radiated power from the EUT.

Part 22.913(a) specifies "The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts".

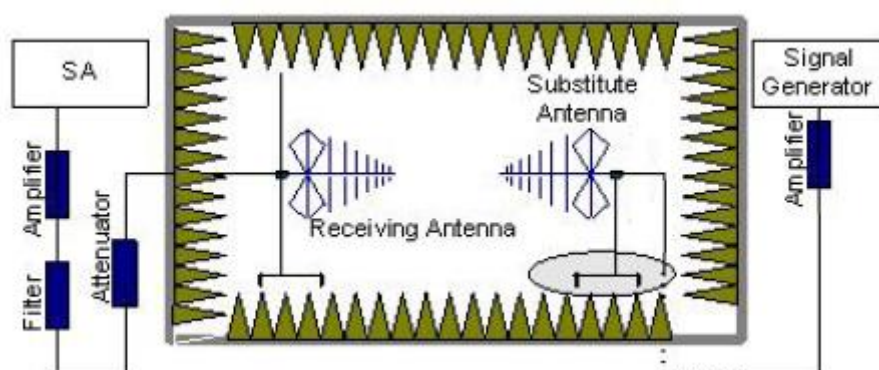
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603E-2016 are used.

1. EUT was placed on a 1.5-meter-high non-conductive stand at a 3-meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360 and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (P_r).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded.

The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

- An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.

The cable loss (P_{cl}), the substitution antenna Gain (G_a) and the amplifier Gain (P_{Ag}) should be recorded after test.

The measurement results are obtained as described below:

$$\text{Power (EIRP)} = P_{\text{Mea}} - P_{\text{Ag}} - P_{\text{cl}} - G_a$$

- This value is EIRP since the measurement is calibrated using an antenna of known gain (unit dBi) and known input power.
- ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15$.

A.1.3.3 Measurement result

Note: For the test results, all test configuration and test mode had been tested. But only the worst cases were shown in test report.

Spot Check Measurement Results:

LTE Band 7+NR n5

Limits: $\leq 38.5\text{dBm}$ (7W)

DFT-OFDM PI/2 BPSK

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	P _{mea} (dBm)	Cable Loss(dB)	P _{Ag} (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-25.39	3.38	45.77	0.93	2.15	15.78	38.45	22.67	H
	836.50	-24.70	3.34	45.66	0.82	2.15	16.29	38.45	22.16	H
	846.50	-24.97	3.36	45.56	0.82	2.15	15.90	38.45	22.55	H
5+10	829.00	-25.49	3.41	45.77	0.90	2.15	15.62	38.45	22.83	H
	836.50	-24.50	3.34	45.66	0.82	2.15	16.49	38.45	21.96	H
	844.00	-24.47	3.37	45.59	0.82	2.15	16.42	38.45	22.03	H
5+15	831.50	-25.80	3.39	45.71	0.87	2.15	15.24	38.45	23.21	H
	836.50	-25.72	3.34	45.66	0.82	2.15	15.27	38.45	23.18	H
	841.50	-25.38	3.37	45.61	0.82	2.15	15.53	38.45	22.92	H
5+20	834.00	-25.75	3.34	45.69	0.85	2.15	15.30	38.45	23.15	H
	836.50	-25.69	3.34	45.66	0.82	2.15	15.30	38.45	23.15	H
	839.00	-25.51	3.37	46.64	0.82	2.15	16.43	38.45	22.02	H

DFT-OFDM QPSK

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-25.41	3.38	45.77	0.93	2.15	15.76	38.45	22.69	H
	836.50	-24.98	3.34	45.66	0.82	2.15	16.01	38.45	22.44	H
	846.50	-24.99	3.36	45.56	0.82	2.15	15.88	38.45	22.57	H
5+10	829.00	-25.52	3.41	45.77	0.90	2.15	15.59	38.45	22.86	H
	836.50	-24.88	3.34	45.66	0.82	2.15	16.11	38.45	22.34	H
	844.00	-25.05	3.37	45.59	0.82	2.15	15.84	38.45	22.61	H
5+15	831.50	-25.51	3.39	45.71	0.87	2.15	15.53	38.45	22.92	H
	836.50	-25.02	3.34	45.66	0.82	2.15	15.97	38.45	22.48	H
	841.50	-25.07	3.37	45.61	0.82	2.15	15.84	38.45	22.61	H
5+20	834.00	-24.90	3.34	45.69	0.85	2.15	16.15	38.45	22.30	H
	836.50	-24.98	3.34	45.66	0.82	2.15	16.01	38.45	22.44	H
	839.00	-25.99	3.37	46.64	0.82	2.15	15.95	38.45	22.50	H

DFT-OFDM 16QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-25.43	3.38	45.77	0.93	2.15	15.74	38.45	22.71	H
	836.50	-25.69	3.34	45.66	0.82	2.15	15.30	38.45	23.15	H
	846.50	-25.99	3.36	45.56	0.82	2.15	14.88	38.45	23.57	H
5+10	829.00	-25.54	3.41	45.77	0.90	2.15	15.57	38.45	22.88	H
	836.50	-25.76	3.34	45.66	0.82	2.15	15.23	38.45	23.22	H
	844.00	-25.82	3.37	45.59	0.82	2.15	15.07	38.45	23.38	H
5+15	831.50	-25.80	3.39	45.71	0.87	2.15	15.24	38.45	23.21	H
	836.50	-25.92	3.34	45.66	0.82	2.15	15.07	38.45	23.38	H
	841.50	-25.98	3.37	45.61	0.82	2.15	14.93	38.45	23.52	H
5+20	834.00	-25.99	3.34	45.69	0.85	2.15	15.06	38.45	23.39	H
	836.50	-26.01	3.34	45.66	0.82	2.15	14.98	38.45	23.47	H
	839.00	-26.45	3.37	46.64	0.82	2.15	15.49	38.45	22.96	H

DFT-OFDM 64QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-26.60	3.38	45.77	0.93	2.15	14.57	38.45	23.88	H
	836.50	-26.59	3.34	45.66	0.82	2.15	14.40	38.45	24.05	H
	846.50	-26.48	3.36	45.56	0.82	2.15	14.39	38.45	24.06	H
5+10	829.00	-26.84	3.41	45.77	0.90	2.15	14.27	38.45	24.18	H
	836.50	-26.85	3.34	45.66	0.82	2.15	14.14	38.45	24.31	H
	844.00	-26.55	3.37	45.59	0.82	2.15	14.34	38.45	24.11	H
5+15	831.50	-26.64	3.39	45.71	0.87	2.15	14.40	38.45	24.05	H
	836.50	-26.92	3.34	45.66	0.82	2.15	14.07	38.45	24.38	H
	841.50	-26.75	3.37	45.61	0.82	2.15	14.16	38.45	24.29	H
5+20	834.00	-26.94	3.34	45.69	0.85	2.15	14.11	38.45	24.34	H
	836.50	-26.92	3.34	45.66	0.82	2.15	14.07	38.45	24.38	H
	839.00	-27.89	3.37	46.64	0.82	2.15	14.05	38.45	24.40	H

DFT-OFDM 256QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-28.58	3.38	45.77	0.93	2.15	12.59	38.45	25.86	H
	836.50	-28.25	3.34	45.66	0.82	2.15	12.74	38.45	25.71	H
	846.50	-27.96	3.36	45.56	0.82	2.15	12.91	38.45	25.54	H
5+10	829.00	-28.85	3.41	45.77	0.90	2.15	12.26	38.45	26.19	H
	836.50	-27.75	3.34	45.66	0.82	2.15	13.24	38.45	25.21	H
	844.00	-28.88	3.37	45.59	0.82	2.15	12.01	38.45	26.44	H
5+15	831.50	-28.01	3.39	45.71	0.87	2.15	13.03	38.45	25.42	H
	836.50	-27.95	3.34	45.66	0.82	2.15	13.04	38.45	25.41	H
	841.50	-28.10	3.37	45.61	0.82	2.15	12.81	38.45	25.64	H
5+20	834.00	-28.45	3.34	45.69	0.85	2.15	12.60	38.45	25.85	H
	836.50	-28.56	3.34	45.66	0.82	2.15	12.43	38.45	26.02	H
	839.00	-29.46	3.37	46.64	0.82	2.15	12.48	38.45	25.97	H

Reference Measurement Results from basic model:

LTE Band 7+NR n5

DFT-OFDM PI/2 BPSK

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	829.00	-28.73	2.25	45.77	0.90	2.15	13.54	38.45	24.91	H
	836.50	-27.97	2.26	45.66	0.82	2.15	14.10	38.45	24.35	H
	844.00	-28.34	2.26	45.59	0.82	2.15	13.66	38.45	24.79	H
5+10	831.50	-28.31	2.12	45.71	0.87	2.15	14.00	38.45	24.45	H
	836.50	-27.95	2.26	45.66	0.82	2.15	14.12	38.45	24.33	H
	841.50	-28.20	2.26	45.61	0.82	2.15	13.82	38.45	24.63	H
5+15	831.50	-28.31	2.12	45.71	0.87	2.15	14.00	38.45	24.45	H
	836.50	-27.95	2.26	45.66	0.82	2.15	14.12	38.45	24.33	H
	841.50	-28.20	2.26	45.61	0.82	2.15	13.82	38.45	24.63	H
5+20	834.00	-27.91	2.19	45.69	0.85	2.15	14.29	38.45	24.16	H
	836.50	-28.14	2.26	45.66	0.82	2.15	13.93	38.45	24.52	H
	839.00	-28.43	2.26	45.64	0.82	2.15	13.62	38.45	24.83	H

DFT-OFDM QPSK

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-29.11	2.25	45.77	0.93	2.15	13.19	38.45	25.26	H
	836.50	-28.34	2.26	45.66	0.82	2.15	13.73	38.45	24.72	H
	846.50	-27.83	2.26	45.56	0.82	2.15	14.14	38.45	24.31	V
5+10	829.00	-28.72	2.25	45.77	0.90	2.15	13.55	38.45	24.90	H
	836.50	-28.02	2.26	45.66	0.82	2.15	14.05	38.45	24.40	H
	844.00	-28.43	2.26	45.59	0.82	2.15	13.57	38.45	24.88	H
5+15	831.50	-28.33	2.12	45.71	0.87	2.15	13.98	38.45	24.47	H
	836.50	-28.09	2.26	45.66	0.82	2.15	13.98	38.45	24.47	H
	841.50	-28.27	2.26	45.61	0.82	2.15	13.75	38.45	24.70	H
5+20	834.00	-27.98	2.19	45.69	0.85	2.15	14.22	38.45	24.23	H
	836.50	-28.33	2.26	45.66	0.82	2.15	13.74	38.45	24.71	H
	839.00	-28.53	2.26	45.64	0.82	2.15	13.52	38.45	24.93	H

DFT-OFDM 16QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	P _{mea} (dBm)	Cable Loss(dB)	PA _g (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-29.71	2.25	45.77	0.93	2.15	12.59	38.45	25.86	H
	836.50	-29.33	2.26	45.66	0.82	2.15	12.74	38.45	25.71	H
	846.50	-28.80	2.26	45.56	0.82	2.15	13.17	38.45	25.28	V
5+10	829.00	-29.69	2.25	45.77	0.90	2.15	12.58	38.45	25.87	H
	836.50	-28.99	2.26	45.66	0.82	2.15	13.08	38.45	25.37	H
	844.00	-29.31	2.26	45.59	0.82	2.15	12.69	38.45	25.76	H
5+15	831.50	-29.26	2.12	45.71	0.87	2.15	13.05	38.45	25.40	H
	836.50	-29.28	2.26	45.66	0.82	2.15	12.79	38.45	25.66	H
	841.50	-29.38	2.26	45.61	0.82	2.15	12.64	38.45	25.81	H
5+20	834.00	-28.85	2.19	45.69	0.85	2.15	13.35	38.45	25.10	H
	836.50	-29.25	2.26	45.66	0.82	2.15	12.82	38.45	25.63	H
	839.00	-29.03	2.26	45.64	0.82	2.15	13.02	38.45	25.43	H

DFT-OFDM 64QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	P _{mea} (dBm)	Cable Loss(dB)	PA _g (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-31.46	2.25	45.77	0.93	2.15	10.84	38.45	27.61	H
	836.50	-30.90	2.26	45.66	0.82	2.15	11.17	38.45	27.28	H
	846.50	-30.36	2.26	45.56	0.82	2.15	11.61	38.45	26.84	V
5+10	829.00	-31.42	2.25	45.77	0.90	2.15	10.85	38.45	27.60	H
	836.50	-30.75	2.26	45.66	0.82	2.15	11.32	38.45	27.13	H
	844.00	-30.98	2.26	45.59	0.82	2.15	11.02	38.45	27.43	H
5+15	831.50	-31.16	2.12	45.71	0.87	2.15	11.15	38.45	27.30	H
	836.50	-29.68	2.26	45.66	0.82	2.15	12.39	38.45	26.06	H
	841.50	-31.12	2.26	45.61	0.82	2.15	10.90	38.45	27.55	H
5+20	834.00	-30.68	2.19	45.69	0.85	2.15	11.52	38.45	26.93	H
	836.50	-30.91	2.26	45.66	0.82	2.15	11.16	38.45	27.29	H
	839.00	-30.70	2.26	45.64	0.82	2.15	11.35	38.45	27.10	H

DFT-OFDM 256QAM

LTE and NR Bandwidth combination (MHz)	Frequency (MHz)	Pmea (dBm)	Cable Loss(dB)	PAg (dB)	Antenna Gain(dBi)	Correction (dB)	RMS ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5+5	826.50	-33.25	2.25	45.77	0.93	2.15	9.05	38.45	29.40	H
	836.50	-32.34	2.26	45.66	0.82	2.15	9.73	38.45	28.72	H
	846.50	-32.26	2.26	45.56	0.82	2.15	9.71	38.45	28.74	V
5+10	829.00	-33.30	2.25	45.77	0.90	2.15	8.97	38.45	29.48	H
	836.50	-32.55	2.26	45.66	0.82	2.15	9.52	38.45	28.93	H
	844.00	-32.89	2.26	45.59	0.82	2.15	9.11	38.45	29.34	H
5+15	831.50	-32.93	2.12	45.71	0.87	2.15	9.38	38.45	29.07	H
	836.50	-32.33	2.26	45.66	0.82	2.15	9.74	38.45	28.71	H
	841.50	-32.77	2.26	45.61	0.82	2.15	9.25	38.45	29.20	H
5+20	834.00	-32.48	2.19	45.69	0.85	2.15	9.72	38.45	28.73	H
	836.50	-32.34	2.26	45.66	0.82	2.15	9.73	38.45	28.72	H
	839.00	-32.57	2.26	45.64	0.82	2.15	9.48	38.45	28.97	H

A.2 Emission Limit

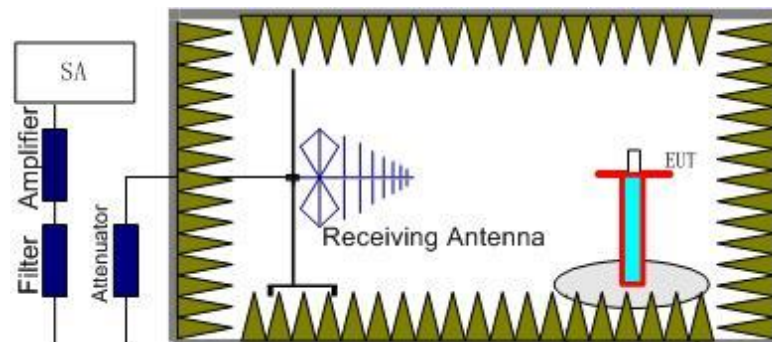
A.2.1 Measurement Method

The measurements procedures in TIA-603E-2016 are used. This measurement is carried out in fully anechoic chamber FAC-3.

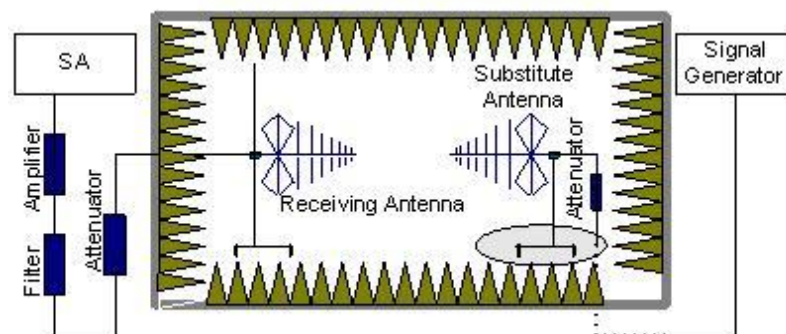
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of each LTE Band.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5-meter-high non-conductive stand at a 3-meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360 and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere

with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.

An amplifier should be connected in for the test.

The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.

The measurement results are obtained as described below:

$$\text{Power (EIRP)} = P_{Mea} + P_{pl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dB}$.

A.2.2 Measurement Limit

Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of each Band. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of each Band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this. The range of evaluated frequency is from 30MHz to 26GHz.

Note: For the test results, all test configuration and test mode had been tested. But only the worst cases were shown in test report.

Spot Check Measurement Results:
LTE Band 7+NR n5, 5MHz+5MHz, DFT-OFDM QPSK , Channel 165300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5070.51	-33.04	6.69	10.00	0.00	-29.73	-13.00	16.73	V
7605.01	-54.31	8.00	12.28	0.00	-50.03	-13.00	39.56	H
9927.50	-53.04	9.12	12.97	0.00	-49.19	-13.00	36.19	V
1661.01	-55.22	3.57	5.21	2.15	-55.73	-13.00	42.73	V
2523.50	-39.86	4.65	6.14	2.15	-40.52	-13.00	27.52	H
3342.52	-60.03	5.31	7.82	2.15	-59.67	-13.00	46.67	H

LTE Band 7+NR n5, 5MHz+10MHz, DFT-OFDM QPSK, Channel 167300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5070.01	-30.82	6.69	10.00	0.00	-27.51	-13.00	14.51	V
7612.51	-53.70	8.03	12.29	0.00	-49.44	-13.00	36.44	H
9597.50	-53.38	9.19	13.30	0.00	-49.27	-13.00	36.27	V
1669.01	-54.98	3.58	5.20	2.15	-55.51	-13.00	42.51	V
2524.00	-41.73	4.65	6.14	2.15	-42.39	-13.00	29.39	H
3334.52	-60.11	5.30	7.80	2.15	-59.76	-13.00	46.76	V

LTE Band 7+NR n5, 5MHz+10MHz, DFT-OFDM QPSK, Channel 169300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5070.51	-30.08	6.69	10.00	0.00	-28.92	-13.00	15.92	V
7607.51	-52.53	8.01	12.29	0.00	-50.40	-13.00	37.40	H
9607.50	-51.74	9.15	13.29	0.00	-49.75	-13.00	36.75	H
1685.01	-55.73	3.59	5.17	2.15	-56.30	-13.00	43.30	V
2524.00	-42.26	4.65	6.14	2.15	-42.92	-13.00	29.92	H
3338.02	-60.44	5.31	7.81	2.15	-60.09	-13.00	47.09	H

Reference Measurement Results from basic model:
LTE Band 7+NR n5, 5MHz+5MHz, DFT-OFDM QPSK , Channel 165300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1652.01	-60.06	3.57	5.23	2.15	-60.55	-13.00	47.55	V
2484.00	-55.10	4.61	6.05	2.15	-55.81	-13.00	42.81	V
3314.02	-57.02	5.29	7.75	2.15	-56.71	-13.00	43.71	H
5079.01	-54.15	6.71	10.01	2.15	-53.00	-13.00	40.00	H
7610.01	-48.45	8.02	12.29	2.15	-46.33	-13.00	33.33	V
9973.00	-50.44	9.16	12.93	2.15	-48.82	-13.00	35.82	V

LTE Band 7+NR n5, 5MHz+10MHz, DFT-OFDM QPSK, Channel 167300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1676.01	-60.80	3.58	5.18	2.15	-61.35	-13.00	48.35	V
2512.00	-55.32	4.64	6.12	2.15	-55.99	-13.00	42.99	H
3351.02	-53.62	5.32	7.84	2.15	-53.25	-13.00	40.25	H
5072.01	-46.52	6.69	10.00	2.15	-45.36	-13.00	32.36	H
7610.01	-48.25	8.02	12.29	2.15	-46.13	-13.00	33.13	V
9996.00	-51.20	9.18	12.90	2.15	-49.63	-13.00	36.64	V

LTE Band 7+NR n5, 5MHz+10MHz, DFT-OFDM QPSK, Channel 169300

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1685.01	-59.34	3.59	5.17	2.15	-59.91	-13.00	46.91	V
2591.00	-54.42	4.70	6.26	2.15	-55.01	-13.00	42.01	H
3408.02	-55.04	5.37	7.98	2.15	-54.58	-13.00	41.58	V
5078.01	-53.26	6.71	10.01	2.15	-52.11	-13.00	39.11	V
7758.01	-53.76	8.35	12.41	2.15	-51.85	-13.00	38.85	H
9976.00	-50.13	9.16	12.92	2.15	-48.52	-13.00	35.52	V

Note2: The maximum value of expanded measurement uncertainty for this test item is $U = 5.16$ dB, $k = 2$.

A.3 Frequency Stability

A.3.1 Method of Measurement

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage. Two reference points are established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as F_L and F_H respectively.

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of UXM.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the UXM, and in a simulated call on middle channel for each NR band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the UXM and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.

A.3.2 Measurement results

LTE Band 7+NR n5

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.240	847.640		
50				-6.40	0.0077
40				-5.30	0.0063
30				-8.40	0.0100
10				-7.90	0.0094
0				-5.20	0.0062
-10				-6.60	0.0079
-20				-5.50	0.0066
-30				-5.70	0.0068

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.50	20	824.240	847.640	-6.70	0.0080
4.40				-8.80	0.0105

A.4 Occupied Bandwidth

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the mid frequencies frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

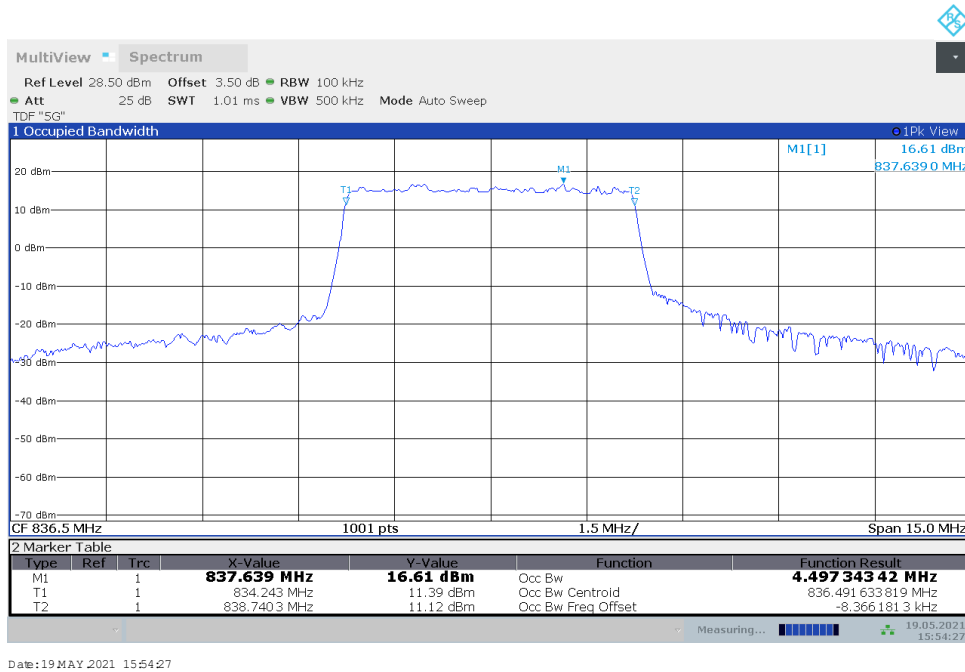
The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times$ RBW.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) Set the detection mode to peak, and the trace mode to max-hold.

LTE Band 7+NR n5
n5, 5MHz (99%)

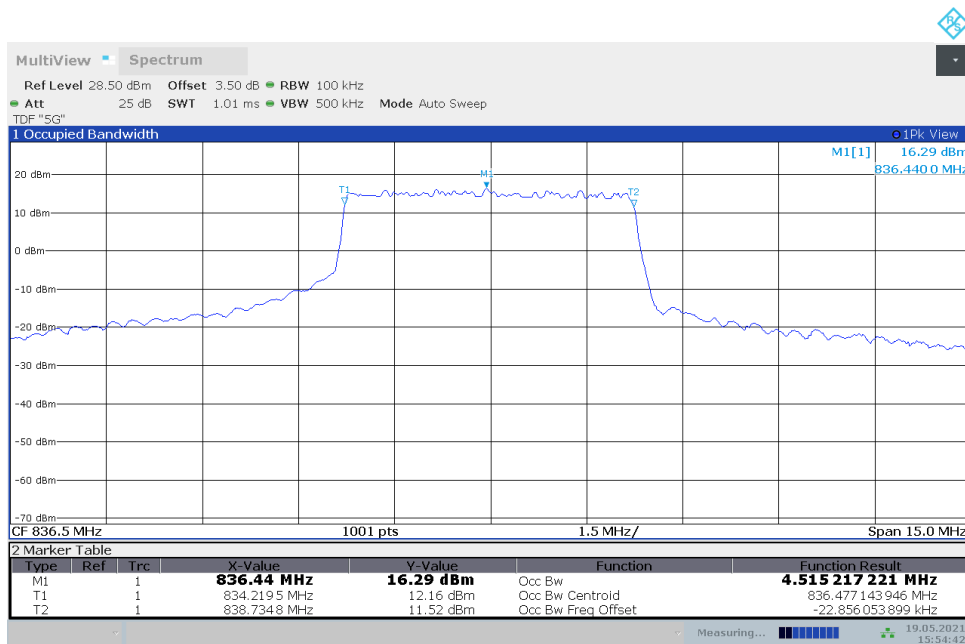
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	4.497	4.515

n5, 5MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)



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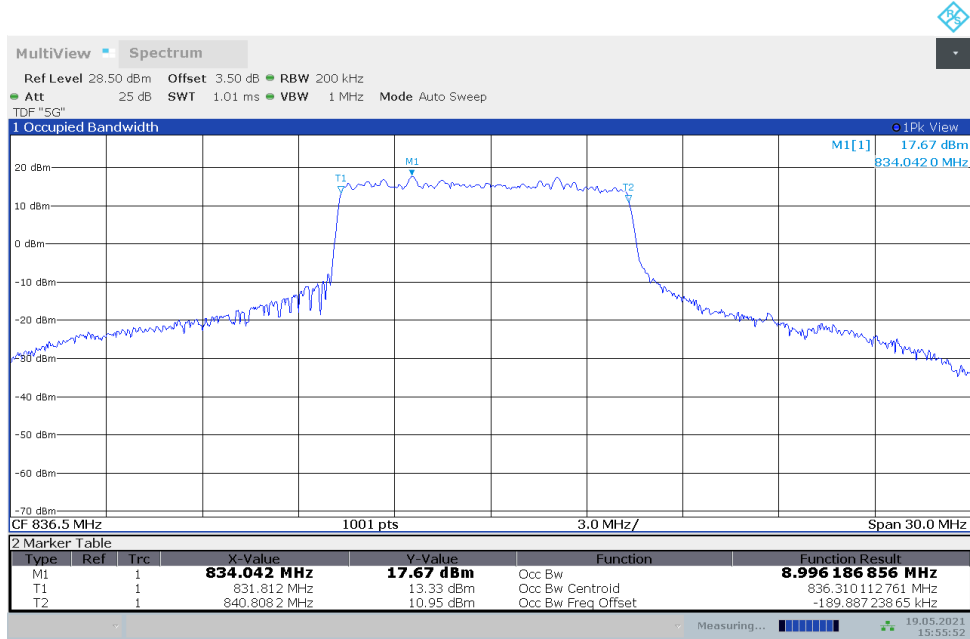
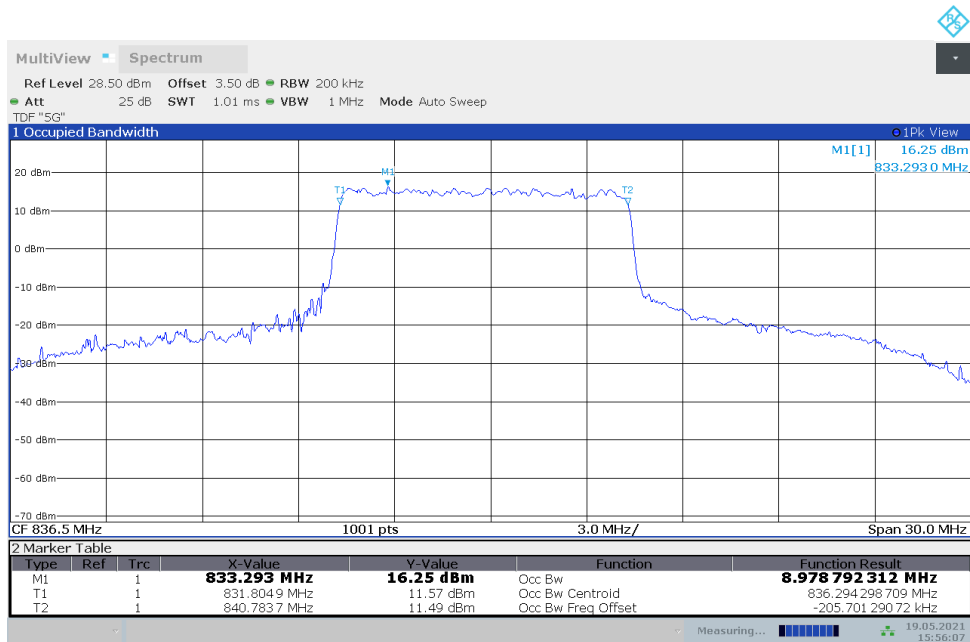
n5, 5MHz Bandwidth,DFT-s-QPSK (99% BW)



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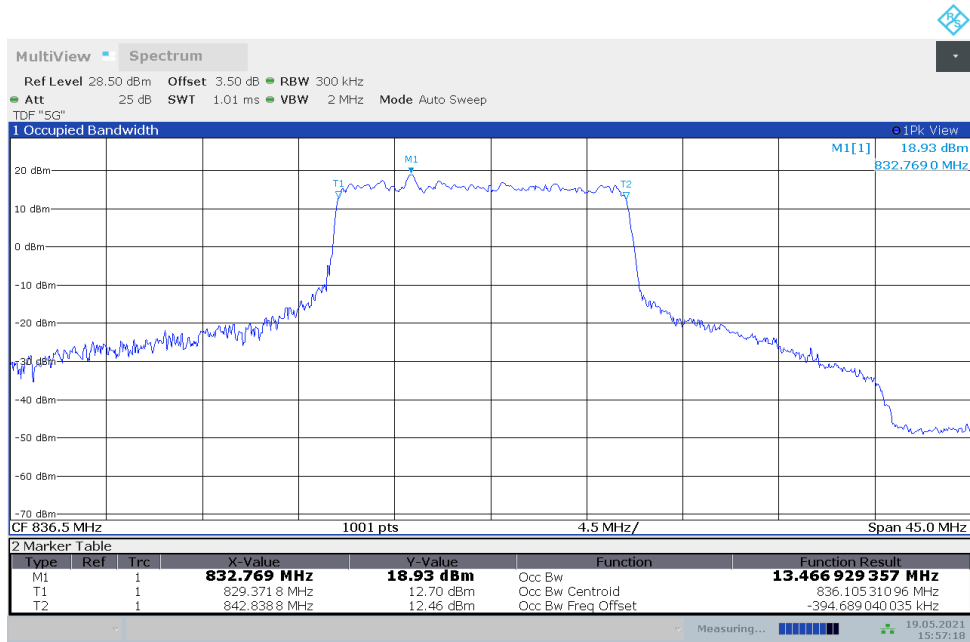
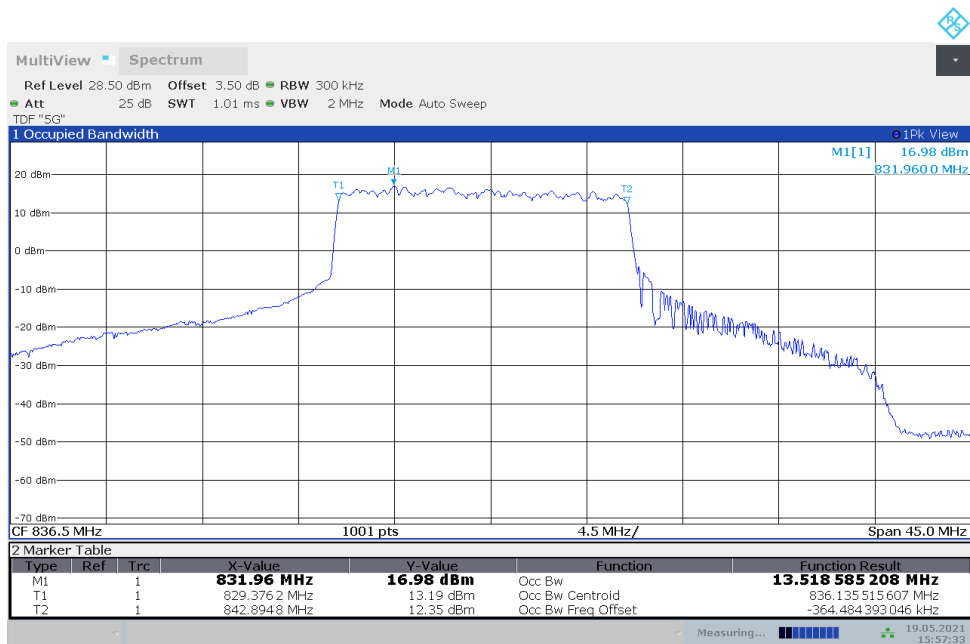
n5, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	8.996	8.979

n5, 10MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)

n5, 10MHz Bandwidth,DFT-s-QPSK (99% BW)


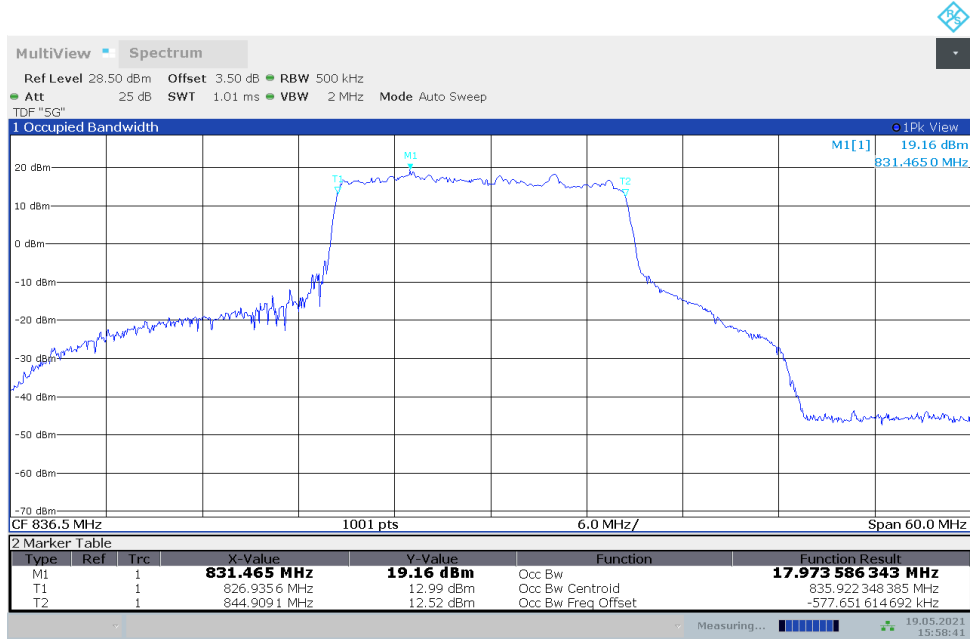
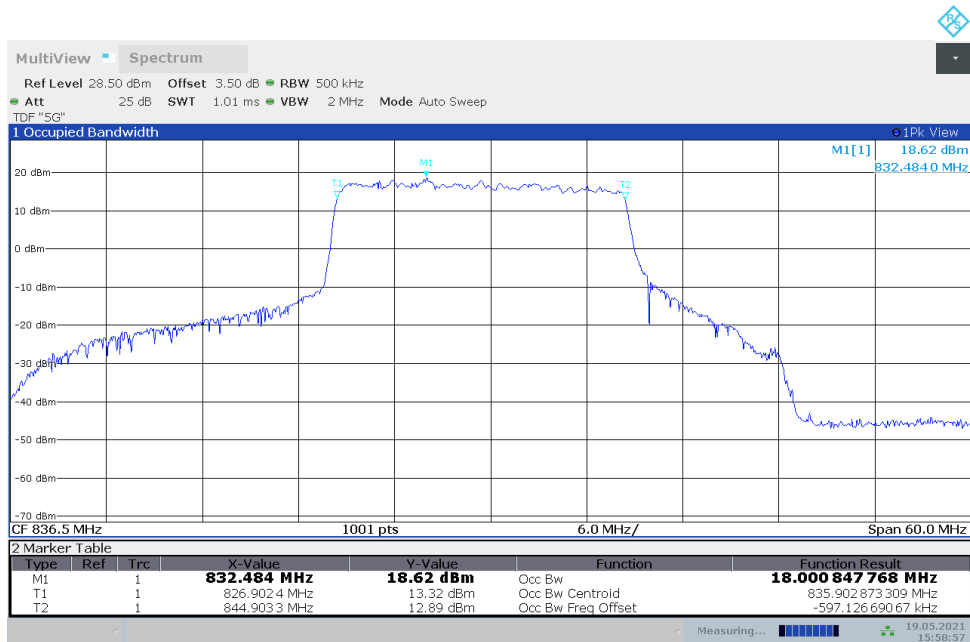
n5, 15MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	13.467	13.519

n5, 15MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)

n5, 15MHz Bandwidth,DFT-s-QPSK (99% BW)


n5, 20MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	17.974	18.001

n5, 20MHz Bandwidth,DFT-s-pi/2 BPSK (99% BW)

n5, 20MHz Bandwidth,DFT-s-QPSK (99% BW)


A.5 Emission Bandwidth

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times$ RBW.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

LTE Band 7+NR n5 n5, 5MHz (-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	4.960	5.290

n5, 5MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



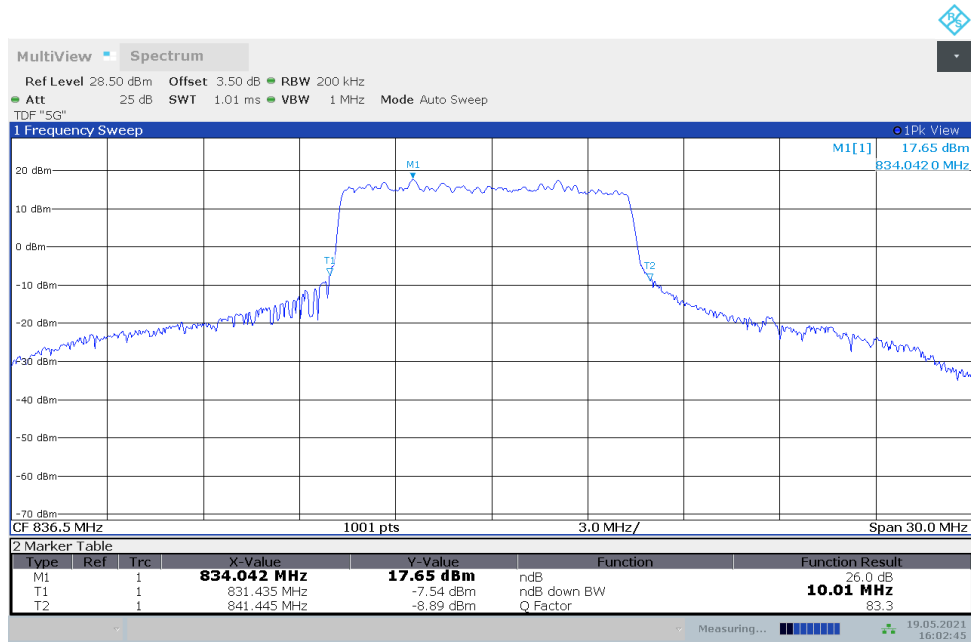
n5, 5MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



n5, 10MHz (-26dBc)

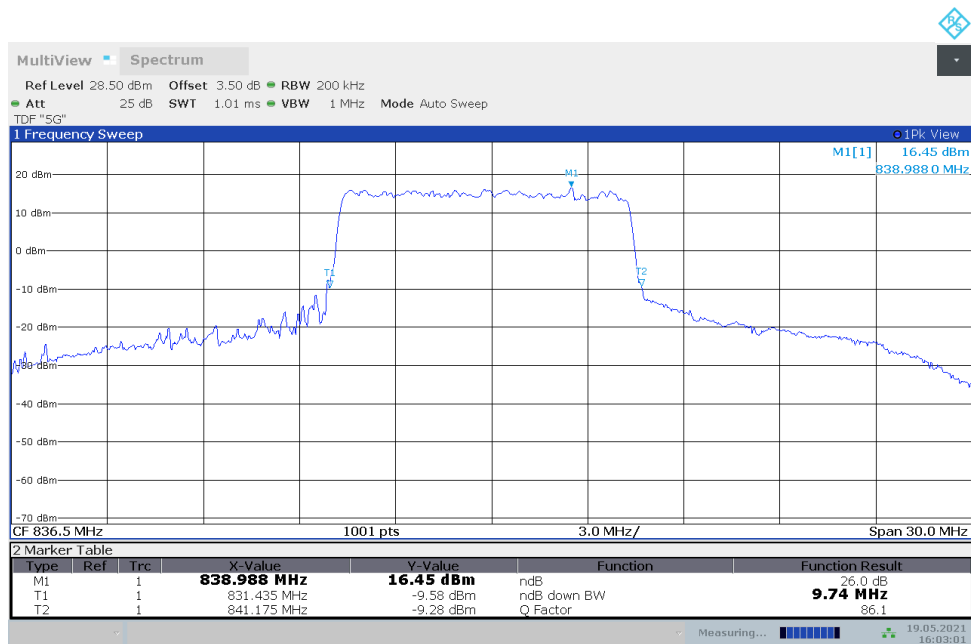
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	10.010	9.740

n5, 10MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



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n5, 10MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

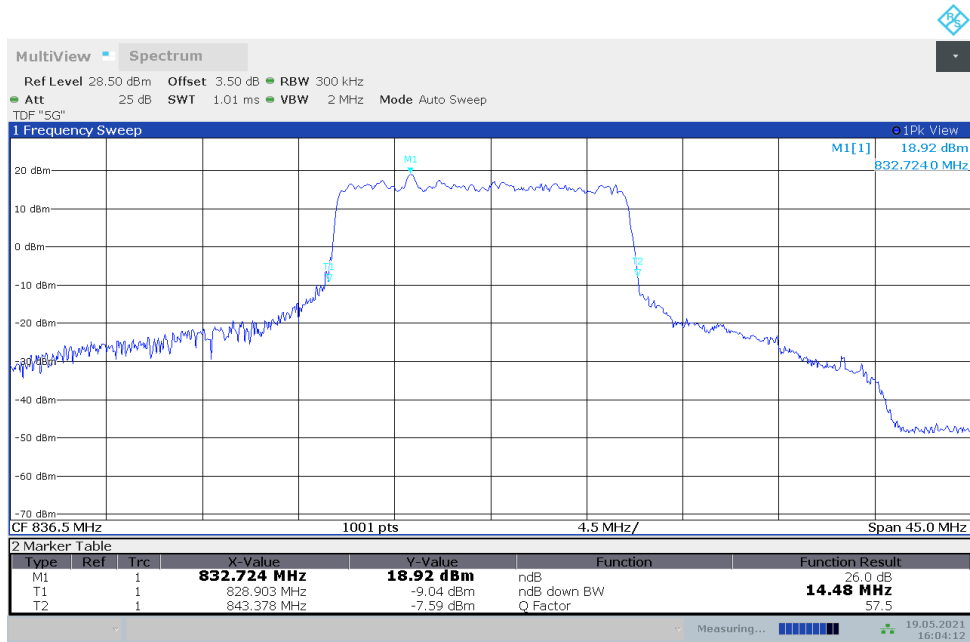


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n5, 15MHz (-26dBc)

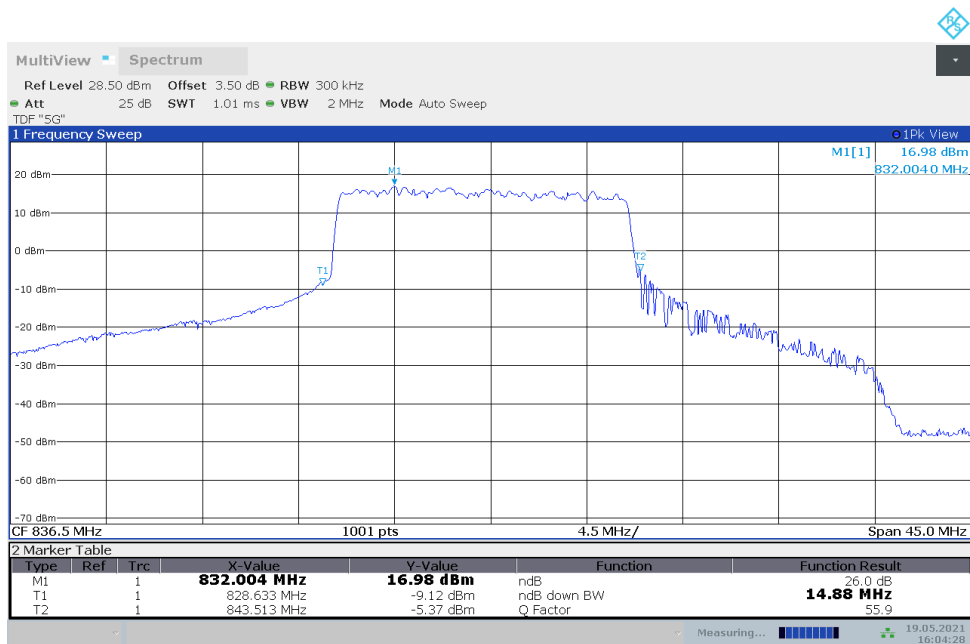
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	14.476	14.880

n5, 15MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



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n5, 15MHz Bandwidth,DFT-s-QPSK (-26dBc BW)

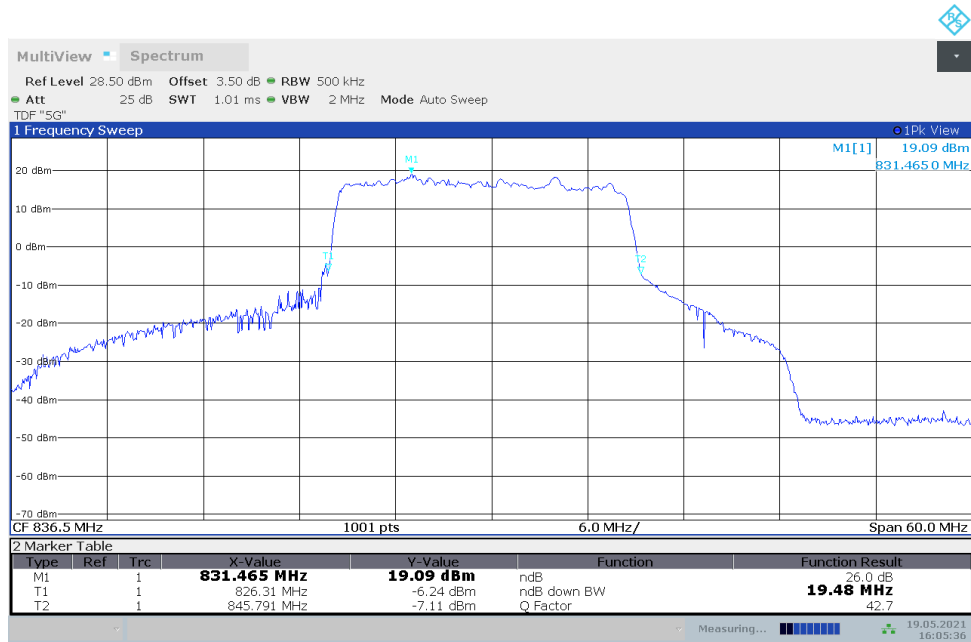


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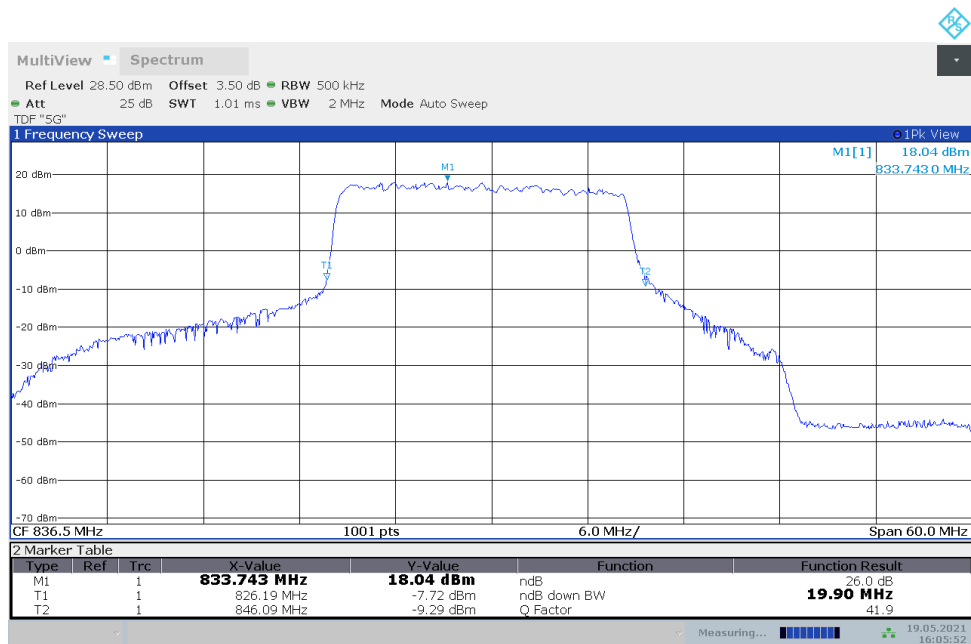
n5, 20MHz (-26dBc)

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	DFT-s-pi/2 BPSK	DFT-s-QPSK
836.5	19.481	19.900

n5, 20MHz Bandwidth,DFT-s-pi/2 BPSK (-26dBc BW)



n5, 20MHz Bandwidth,DFT-s-QPSK (-26dBc BW)



A.6 Band Edge Compliance

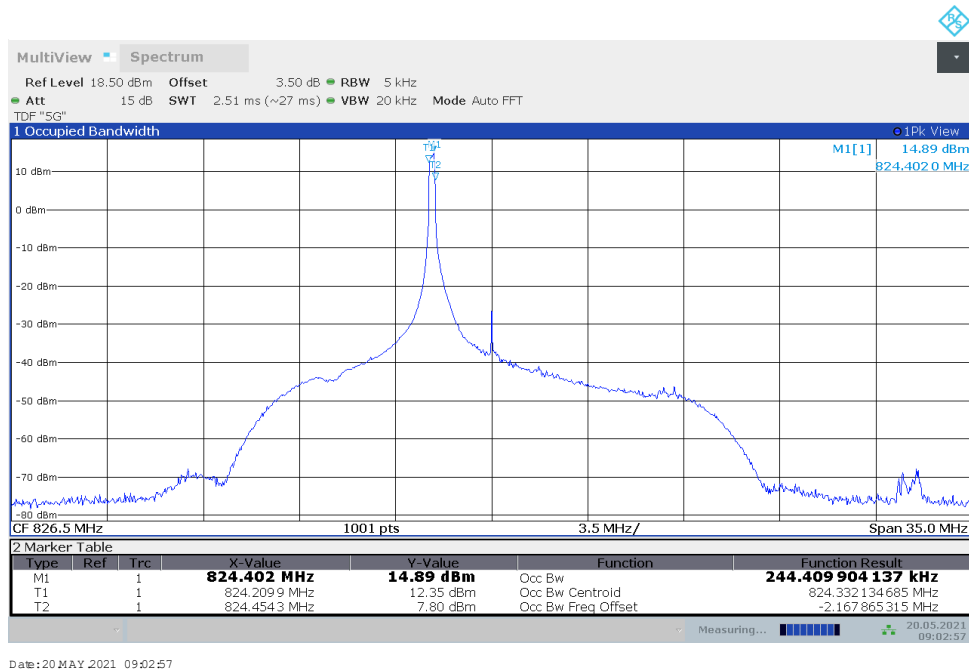
A.6.1 Measurement limit

Part 22.917 specifies that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

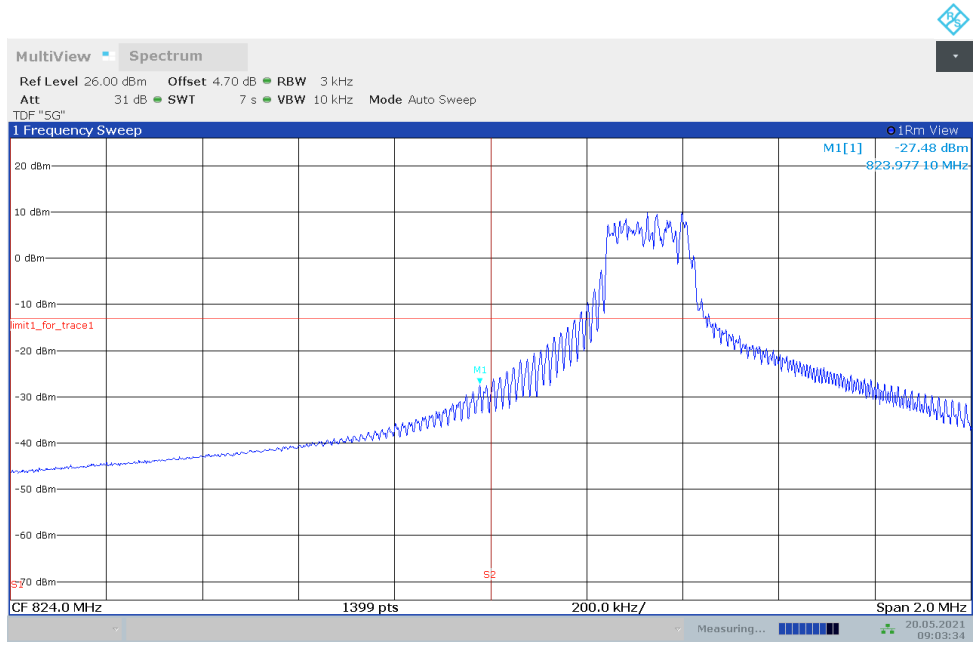
A.6.2 Measurement result

LTE Band 7+NR n5

OBW: 1RB-low_offset

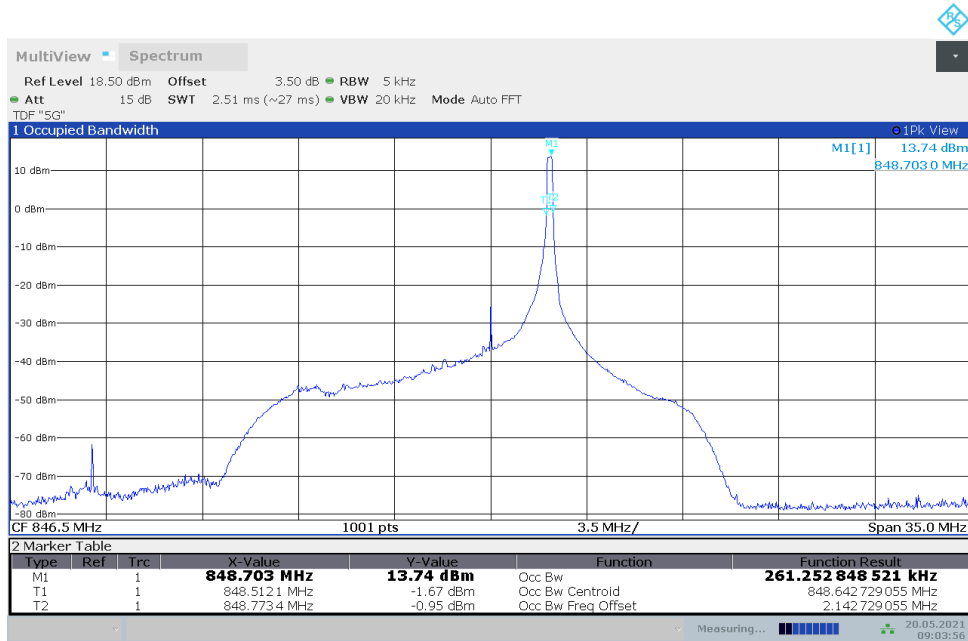


LOW BAND EDGE BLOCK-1RB-low_offset

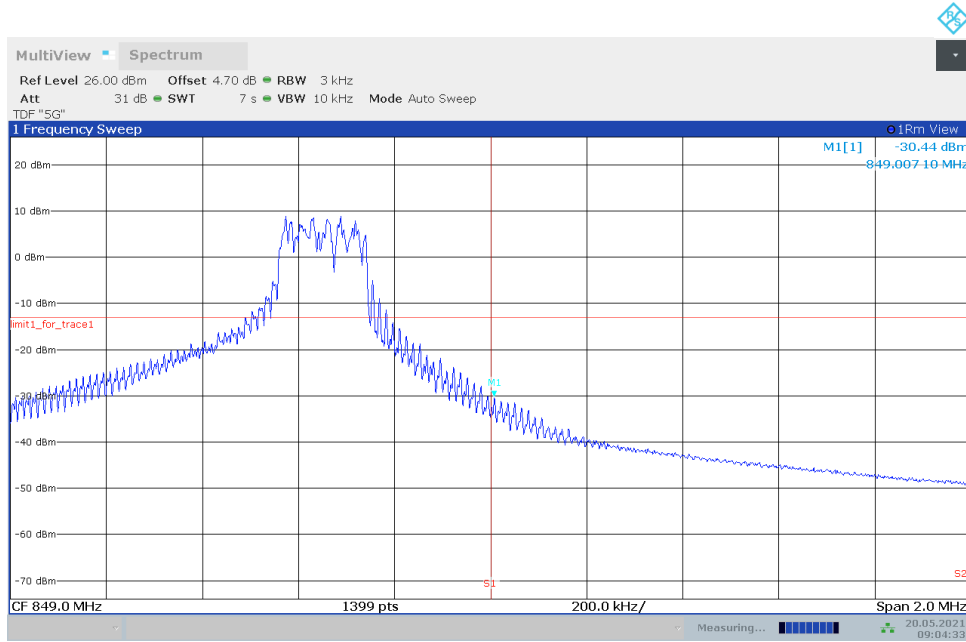


Date: 20 MAY 2021 09:03:34

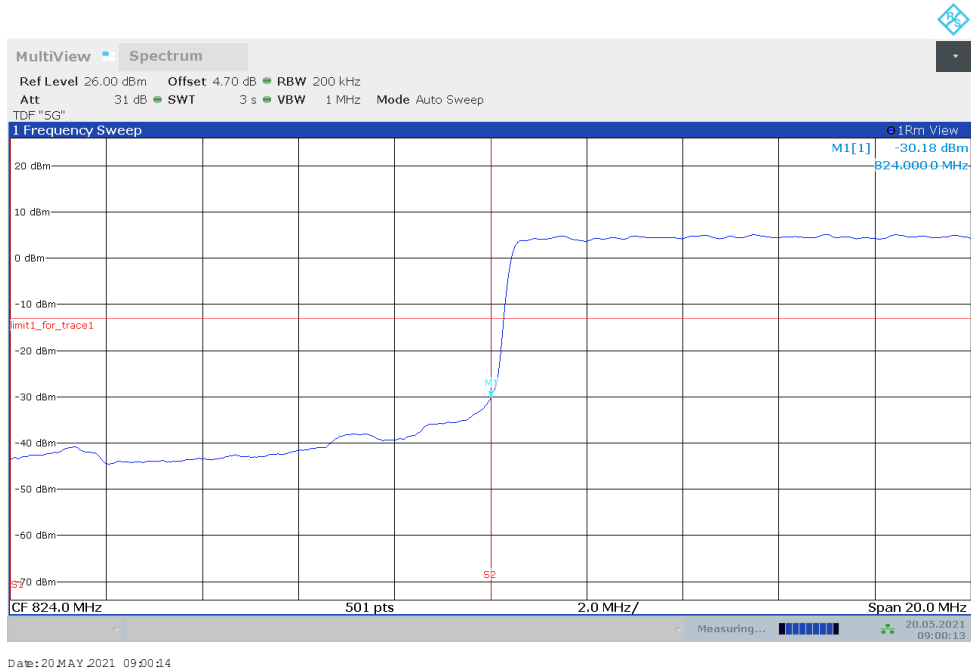
OBW: 1RB-high_offset



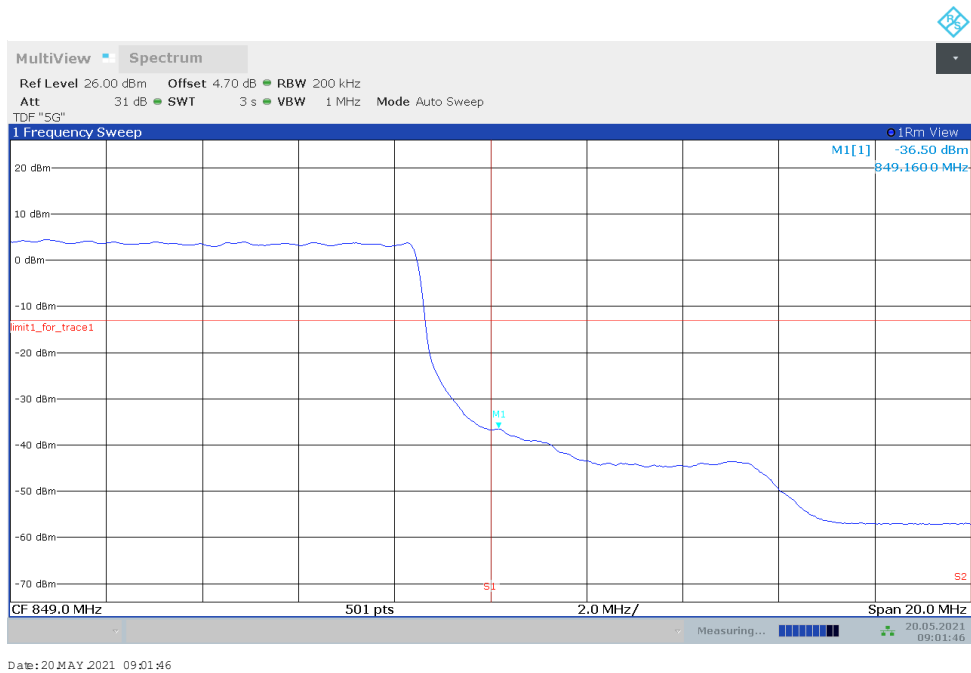
HIGH BAND EDGE BLOCK-1RB-high_offset



LOW BAND EDGE BLOCK-20MHz-100%RB



HIGH BAND EDGE BLOCK-20MHz-100%RB



A.7 Conducted Spurious Emission

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
 - (a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
 - (b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is greater than $2 \times \text{span/RBW}$.

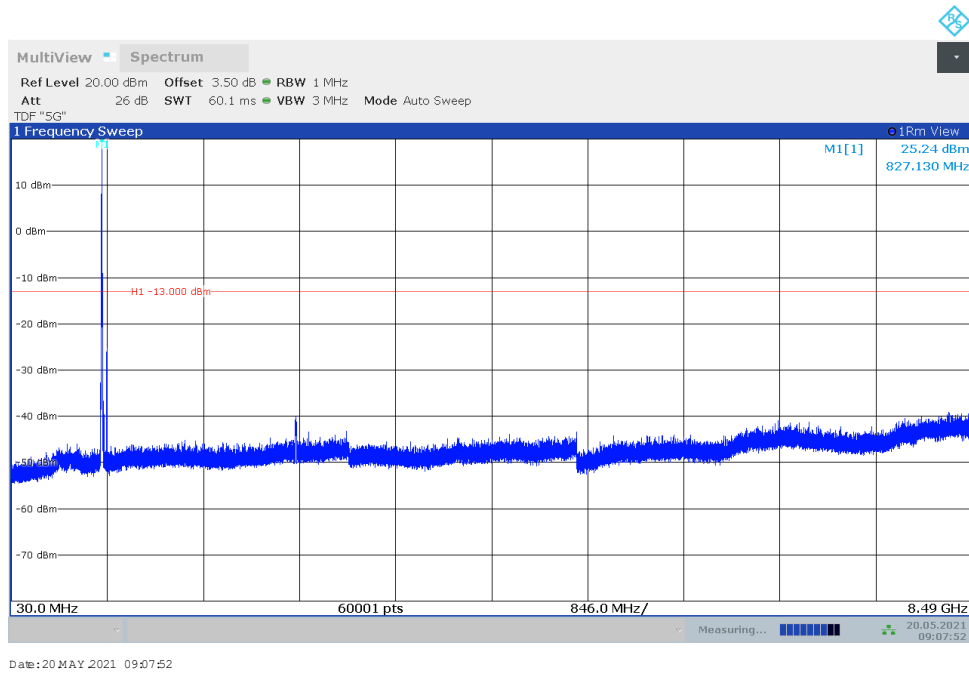
A. 7.2 Measurement Limit

Part 22.917 specifies that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

A. 7.3 Measurement result

LTE Band 7+NR n5

NOTE: peak above the limit line is the carrier frequency.



Annex B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> Certificate of Accreditation to ISO/IEC 17025:2017 <hr/>	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i>	
<hr/> 2021-09-29 through 2022-09-30 <i>Effective Dates</i>	 <hr/>  <i>For the National Voluntary Laboratory Accreditation Program</i>

END OF REPORT