

FCC Test Report (Part 22 – WCDMA B5, LTE B5/B26)

Report No.: RFBDKX-WTW-P22120419-3

FCC ID: 2ATIO4

Test Model: H4

Received Date: Dec. 13, 2022

Test Date: Feb. 02, 2023 ~ Feb. 07, 2023

Issued Date: Mar. 31, 2023

Applicant: Level Home Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location (1): No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
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**FCC Registration /
Designation Number (1):** 788550 / TW0003

Test Location(2): No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

**FCC Registration /
Designation Number(2):** 281270 / TW0032



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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty.....	6
2.2 Test Site and Instruments.....	7
3 General Information	8
3.1 General Description of EUT.....	8
3.2 Configuration of System under Test.....	10
3.2.1 Description of Support Units.....	10
3.3 Test Mode Applicability and Tested Channel Detail.....	11
3.4 EUT Operating Conditions.....	17
3.5 General Description of Applied Standards and References.....	17
4 Test Types and Results	18
4.1 Output Power Measurement.....	18
4.1.1 Limits of Output Power Measurement.....	18
4.1.2 Test Procedures.....	18
4.1.3 Test Setup.....	18
4.1.4 Test Results.....	18
4.2 Modulation Characteristics Measurement.....	30
4.2.1 Limits of Modulation Characteristics.....	30
4.2.2 Test Procedure.....	30
4.2.3 Test Setup.....	30
4.2.4 Test Results.....	31
4.3 Frequency Stability Measurement.....	33
4.3.1 Limits of Frequency Stability Measurement.....	33
4.3.2 Test Procedure.....	33
4.3.3 Test Setup.....	33
4.3.4 Test Results.....	34
4.4 Occupied Bandwidth Measurement.....	44
4.4.1 Limits of Occupied Bandwidth Measurement.....	44
4.4.2 Test Procedure.....	44
4.4.3 Test Setup.....	44
4.4.4 Test Result.....	45
4.5 Band Edge Measurement.....	55
4.5.1 Limits of Band Edge Measurement.....	55
4.5.2 Test Setup.....	55
4.5.3 Test Procedures.....	55
4.5.4 Test Results.....	56
4.6 Peak to Average Ratio.....	66
4.6.1 Limits of Peak to Average Ratio Measurement.....	66
4.6.2 Test Setup.....	66
4.6.3 Test Procedures.....	66
4.6.4 Test Results.....	67
4.7 Conducted Spurious Emissions.....	77
4.7.1 Limits of Conducted Spurious Emissions Measurement.....	77
4.7.2 Test Setup.....	77
4.7.3 Test Procedure.....	77
4.7.4 Test Results.....	78
4.8 Radiated Emission Measurement.....	90
4.8.1 Limits of Radiated Emission Measurement.....	90
4.8.2 Test Procedure.....	90
4.8.3 Deviation from Test Standard.....	90
4.8.4 Test Setup.....	91

4.8.5 Test Results	92
5 Pictures of Test Arrangements.....	112
Appendix – Information of the Testing Laboratories	113

Release Control Record

Issue No.	Description	Date Issued
RFBDKX-WTW-P22120419-3	Original Release	Mar. 31, 2023

1 Certificate of Conformity

Product: Home IOT Gateway

Brand: Level

Test Model: H4

Sample Status: Engineering Sample

Applicant: Level Home Inc.

Test Date: Feb. 02, 2023 ~ Feb. 07, 2023

Standards: FCC Part 22, Subpart H

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Vera Huang, **Date:** Mar. 31, 2023
Vera Huang / Specialist

Approved by : Jeremy Lin, **Date:** Mar. 31, 2023
Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement
22.913 (d)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.43dB at 1673.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3 dB
	30MHz ~ 1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038B	MY60180018	Feb. 18, 2022	Feb. 17, 2023
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 26, 2022	Dec. 25, 2023
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 20, 2022	Oct. 19, 2023
HORN Antenna RF SPIN	DRH18-E	210101A18E	Nov. 13, 2022	Nov. 12, 2023
HORN Antenna SCHWARZBECK	BBHA 9170	9170-1048	Nov. 13, 2022	Nov. 12, 2023
Loop Antenna TESEQ	HLA 6121	45745	Jul. 27, 2022	Jul. 26, 2023
Preamplifier EMCI	EMC330N	980798	Jan. 16, 2023	Jan. 15, 2024
Preamplifier EMCI	EMC 012645	980115	Oct. 01, 2022	Sep. 30, 2023
Preamplifier EMCI	EMC184045SE	980786	Jan. 16, 2023	Jan. 15, 2024
RF signal cable EMCI	EMC104-SM-SM- (9000+3000+1000)	201244+ 201232+ 210103	Jan. 16, 2023	Jan. 15, 2024
RF signal cable EMCI	EMCCFD400-NM- NM- (9000+300+500)	201251+ 201249+ 201248	Jan. 16, 2023	Jan. 15, 2024
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+ 201255	Jan. 16, 2023	Jan. 15, 2024
Software BV ADT	ADT_Radiated_V7. 6.15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Mar. 03, 2022	Mar. 02, 2023
DC power supply Keysight	U8002A	MY56330015	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2022	Jun. 22, 2023
Spectrum Analyzer KEYSIGHT	N9030B	MY57140953	Jul. 01, 2022	Jun. 30, 2023
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Dec. 27, 2022	Dec. 26, 2023
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 26, 2022	Dec. 25, 2023

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in WM Chamber 9.

3 General Information

3.1 General Description of EUT

Product	Home IOT Gateway	
Brand	Level	
Test Model	H4	
Sample Status	Engineering Sample	
Power Supply Rating	5 Vdc (From adapter) 3.6 Vdc (From battery)	
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM	
Operating Frequency	WCDMA Band 5	826.4MHz ~ 846.6MHz
	LTE Band 5 (Channel Bandwidth 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 5 (Channel Bandwidth 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 5 (Channel Bandwidth 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 5 (Channel Bandwidth 10MHz)	829.0MHz ~ 844.0MHz
	LTE Band 26 (Channel Bandwidth 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 26 (Channel Bandwidth 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 26 (Channel Bandwidth 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 26 (Channel Bandwidth 10MHz)	829.0MHz ~ 844.0MHz
	LTE Band 26 (Channel Bandwidth 15MHz)	831.5MHz ~ 841.5MHz
Max. ERP Power	WCDMA Band 5	148.936mW (21.73dBm)
	LTE Band 5 (Channel Bandwidth 1.4MHz)	151.705mW (21.81dBm)
	LTE Band 5 (Channel Bandwidth 3MHz)	151.356mW (21.80dBm)
	LTE Band 5 (Channel Bandwidth 5MHz)	150.661mW (21.78dBm)
	LTE Band 5 (Channel Bandwidth 10MHz)	157.398mW (21.97dBm)
	LTE Band 26 (Channel Bandwidth 1.4MHz)	148.594mW (21.72dBm)
	LTE Band 26 (Channel Bandwidth 3MHz)	151.008mW (21.79dBm)
	LTE Band 26 (Channel Bandwidth 5MHz)	149.624mW (21.75dBm)
	LTE Band 26 (Channel Bandwidth 10MHz)	151.356mW (21.80dBm)
	LTE Band 26 (Channel Bandwidth 15MHz)	153.462mW (21.86dBm)

Emission Designator	WCDMA Band 5	4M16F9W
	LTE Band 5 (Channel Bandwidth 1.4MHz)	1M09G7D
	LTE Band 5 (Channel Bandwidth 3MHz)	2M70D7W
	LTE Band 5 (Channel Bandwidth 5MHz)	4M50G7D
	LTE Band 5 (Channel Bandwidth 10MHz)	8M96G7D
	LTE Band 26 (Channel Bandwidth 1.4MHz)	1M09G7D
	LTE Band 26 (Channel Bandwidth 3MHz)	2M70D7W
	LTE Band 26 (Channel Bandwidth 5MHz)	4M49D7W
	LTE Band 26 (Channel Bandwidth 10MHz)	8M96G7D
	LTE Band 26 (Channel Bandwidth 15MHz)	13M5G7D
Antenna Type	Refer to note	
Accessory Device	Refer to note	
Cable Supplied	Refer to note	

Note:

1. The antenna information is listed as below.

Antenna Type	Antenna Gain (dBi)		
	WCDMA B5	LTE B5	LTE B26
PIFA	0.43	0.43	0.43

* Detail antenna specification please refer to antenna datasheet or an antenna gain measurement report.

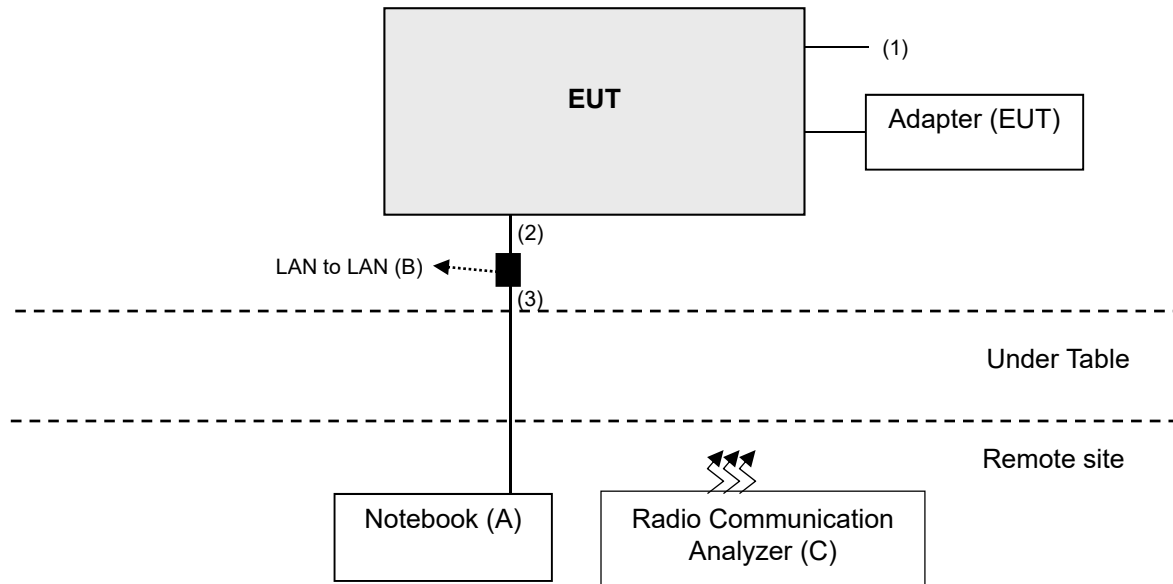
2. The EUT contains following accessory devices.

Battery	Brand	Grand-Pro
	Model	INR18650
	Power Rating	3.6Vdc, 3350mAh, 12.06Wh
AC Adapter	Brand	TENPO
	Model	S024AMP0500350
	AC Input	100-240Vac, 50/60Hz, 0.6A
	DC Output	5.0Vdc, 3.5A, 17.5W
	DC Output Cable	Non-shielded without cord, 1.0m
	AC Cable	Non-shielded without cord, 1.0m
Lan Cable	Signal Line	Non-shielded without cord, 1.0m

3. For WWAN 16QAM modulation bandwidths ≥ 10 MHz, EUT only supports up to 25RB.

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	Lenovo	20J4 MD A003TW	PF-11H9AK	N/A	Provided by Lab
B	LAN to LAN	N/A	N/A	N/A	N/A	Provided by Lab
C	Radio Communication Analyzer	Anritsu	MT8820C	6201010284	N/A	Provided by Lab

Note: Item C acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Micro USB	1	1	N	0	Provided by Lab
2.	RJ45	1	1	N	0	Provided by client
3.	RJ45	1	6	N	0	Provided by Lab

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports. The EUT is designed to be positioned on the X-plane only.

WCDMA Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Modulation Characteristics	4132 to 4233	4182 (836.4MHz)	WCDMA, HSDPA, HSUPA
-	Frequency Stability	4132 to 4233	4132 (826.4MHz), 4233 (846.6MHz)	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Band Edge	4132 to 4233	4132 (826.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Conducted Emission	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	4132 to 4233	4233 (846.6MHz)	WCDMA
-	Radiated Emission Above 1GHz	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA

Note: For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.

LTE Band 5

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	RB #
-	ERP	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 Half Full
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	1 Half Full
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	1 Half Full
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	1 Half Full
-	Modulation Characteristics	20450 to 20600	20525 (836.5MHz)	10MHz	QPSK / 16QAM	Full
-	Frequency Stability	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	Full
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	Full
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	Full
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	Full
-	Occupied Bandwidth	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	Full
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	Full
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	Full
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	Full
-	Band Edge	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 Half Full
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1 Half Full
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 Half Full
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	1 Half Full

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	RB #
-	Peak to Average Ratio	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	1
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	1
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	1
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	1
-	Conducted Emission	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1
-	Radiated Emission Below 1GHz	20450 to 20600	20525 (836.5MHz)	10MHz	QPSK	1
-	Radiated Emission Above 1GHz	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 26

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	RB #
-	ERP	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 Half Full
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	1 Half Full
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	1 Half Full
		26840 to 26990	26840 (829.0MHz), 26915 (836.5MHz), 26990 (844.0MHz)	10MHz	QPSK / 16QAM	1 Half Full
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	1 Half Full
-	Modulation Characteristics	26865 to 26965	26915 (836.5MHz)	15MHz	QPSK / 16QAM	Full
-	Frequency Stability	26797 to 27033	26797 (824.7MHz), 27033 (848.3MHz)	1.4MHz	QPSK	Full
		26805 to 27025	26805 (825.5MHz), 27025 (847.5MHz)	3MHz	QPSK	Full
		26815 to 27015	26815 (826.5MHz), 27015 (846.5MHz)	5MHz	QPSK	Full
		26840 to 26990	26840 (829.0MHz), 26990 (844.0MHz)	10MHz	QPSK	Full
		26865 to 26965	26865 (831.5MHz), 26965 (841.5MHz)	15MHz	QPSK	Full
-	Occupied Bandwidth	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	Full
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	Full
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	Full
		26840 to 26990	26840 (829.0MHz), 26915 (836.5MHz), 26990 (844.0MHz)	10MHz	QPSK / 16QAM	Full
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	Full

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	RB #
-	Band Edge	26797 to 27033	26797 (824.7MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1 Half Full
		26805 to 27025	26805 (825.5MHz), 27025 (847.5MHz)	3MHz	QPSK	1 Half Full
		26815 to 27015	26815 (826.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1 Half Full
		26840 to 26990	26840 (829.0MHz), 26990 (844.0MHz)	10MHz	QPSK	1 Half Full
		26865 to 26965	26865 (831.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1 Half Full
-	Peak to Average Ratio	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	1
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	1
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	1
		26840 to 26990	26840 (829.0MHz), 26915 (836.5MHz), 26990 (844.0MHz)	10MHz	QPSK / 16QAM	1
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	1
-	Conducted Emission	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK	1
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1
		26840 to 26990	26840 (829.0MHz), 26915 (836.5MHz), 26990 (844.0MHz)	10MHz	QPSK	1
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	RB #
-	Radiated Emission Below 1GHz	26797 to 27033	27033 (848.3MHz)	1.4MHz	QPSK	1
-	Radiated Emission Above 1GHz	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under worse mode according to the maximum output power.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Modulation Characteristics	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Frequency Stability	25deg. C, 60%RH	3.6Vdc	Willy Cheng
Occupied Bandwidth	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Band Edge	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Peak To Average Ratio	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Conducted Emission	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Radiated Emission	23deg. C, 67%RH	120Vac, 60Hz	Adair Peng

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 Test Procedures

Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA, LTE link data modulation and link up with simulator. The average (rms) power measurement was performed on emulator and power value was measured from power function on emulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is

given in Equation as follows:

$$\text{EIRP} = P_{\text{Meas}} + G_{\text{T}}$$

$$\text{ERP} = P_{\text{Meas}} + G_{\text{T}} - 2.15$$

where

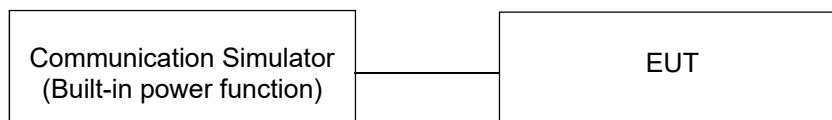
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_{T} gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

4.1.3 Test Setup

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA V		
	4132	4182	4233
TX Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.24	23.45	23.42
HSDPA	22.92	23.20	23.12
HSUPA	22.55	22.74	22.70

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.49	23.69	23.14
		1	24	23.43	23.33	23.24
		1	49	23.36	23.26	23.22
		25	0	23.48	23.05	23.06
		25	12	23.37	23.36	22.89
		25	25	23.30	23.25	23.20
		50	0	22.04	22.14	22.29
10M	16QAM	1	0	22.15	22.35	22.06
		1	24	22.35	22.39	22.19
		1	49	22.15	22.48	22.38
		25	0	22.01	21.94	21.92
		25	12	22.25	22.25	21.80
		25	25	21.92	22.06	22.22
		50	0	-	-	-

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	23.42	23.48	23.13
		1	12	23.26	23.33	23.21
		1	24	23.29	23.50	23.42
		12	0	23.19	23.22	23.27
		12	6	23.04	23.18	22.89
		12	13	23.01	22.90	23.31
		25	0	22.34	21.90	22.37
5M	16QAM	1	0	22.45	22.27	22.14
		1	12	22.06	22.30	22.10
		1	24	22.38	22.46	22.28
		12	0	22.15	21.79	22.11
		12	6	22.07	22.20	22.14
		12	13	22.33	22.02	22.23
		25	0	21.19	21.01	21.14

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.35	23.52	23.03
		1	7	23.26	23.19	23.35
		1	14	23.40	23.15	23.31
		8	0	23.11	23.07	23.30
		8	3	23.34	23.31	22.91
		8	7	23.01	22.94	23.33
		15	0	22.24	22.21	22.52
3M	16QAM	1	0	22.53	22.18	22.19
		1	7	22.36	22.07	22.19
		1	14	22.21	22.36	22.23
		8	0	22.12	21.58	22.01
		8	3	21.93	22.06	22.08
		8	7	22.27	22.16	22.31
		15	0	21.05	21.28	20.90

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	23.33	23.53	23.14
		1	2	23.28	23.35	23.13
		1	5	23.18	23.35	23.38
		3	0	23.25	23.05	23.28
		3	1	23.26	23.37	23.08
		3	3	23.21	23.06	23.19
		6	0	22.13	21.98	22.33
1.4M	16QAM	1	0	22.31	22.12	22.17
		1	2	22.25	22.19	22.03
		1	5	22.22	22.31	22.28
		3	0	21.96	21.79	22.07
		3	1	22.10	22.25	22.00
		3	3	22.13	22.14	22.22
		6	0	21.15	21.21	21.01

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	23.47	23.58	23.47
		1	37	23.44	23.37	23.10
		1	74	23.24	23.25	23.22
		36	0	23.45	23.19	23.19
		36	19	23.42	23.45	23.04
		36	39	23.44	23.52	23.08
		75	0	22.23	22.28	21.92
15M	16QAM	1	0	22.28	22.05	22.20
		1	37	22.16	22.13	22.12
		1	74	22.44	22.47	22.45
		25	0	21.71	21.66	21.64
		25	12	21.65	21.50	21.57
		25	25	21.54	21.61	21.62
		75	0	-	-	-

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.17	23.52	23.36
		1	24	23.16	23.27	23.25
		1	49	23.16	23.43	23.31
		25	0	23.47	23.49	23.28
		25	12	23.05	23.31	23.19
		25	25	22.86	23.10	22.98
		50	0	22.04	21.86	21.95
10M	16QAM	1	0	22.47	22.49	22.37
		1	24	22.20	22.45	22.31
		1	49	21.95	22.36	22.18
		25	0	22.35	22.43	22.15
		25	12	22.18	22.23	22.04
		25	25	22.84	22.34	22.16
		50	0	-	-	-

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	23.45	23.47	23.15
		1	12	23.17	23.01	22.85
		1	24	23.15	23.09	23.02
		12	0	23.09	23.16	23.24
		12	6	23.47	23.38	23.02
		12	13	22.99	22.92	23.18
		25	0	22.05	22.17	22.08
5M	16QAM	1	0	22.36	22.48	21.93
		1	12	21.90	22.40	22.28
		1	24	21.97	22.21	21.78
		12	0	22.22	22.63	22.25
		12	6	22.36	22.52	22.48
		12	13	22.91	22.33	22.43
		25	0	21.78	21.62	21.54

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.33	23.32	23.28
		1	7	23.08	22.95	23.02
		1	14	23.04	23.39	23.20
		8	0	23.47	23.10	23.25
		8	3	23.46	23.51	23.01
		8	7	23.05	23.09	23.22
		15	0	22.03	22.22	22.08
3M	16QAM	1	0	22.38	22.51	22.28
		1	7	21.89	22.10	21.97
		1	14	21.94	21.99	22.12
		8	0	22.38	22.55	22.51
		8	3	22.51	22.42	22.72
		8	7	22.71	22.30	22.27
		15	0	21.84	21.68	21.29

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	23.37	23.44	23.27
		1	2	23.14	23.14	22.93
		1	5	23.10	23.25	23.06
		3	0	23.29	23.27	23.24
		3	1	23.27	23.32	23.14
		3	3	23.08	23.11	23.24
		6	0	21.90	22.00	22.06
1.4M	16QAM	1	0	22.34	22.32	22.14
		1	2	22.02	22.24	22.19
		1	5	22.06	22.17	21.99
		3	0	22.37	22.52	22.43
		3	1	22.29	22.38	22.53
		3	3	22.71	22.51	22.34
		6	0	21.61	21.52	21.51

ERP Power (dBm)

Band	WCDMA V		
TX Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	21.52	21.73	21.70
HSDPA	21.20	21.48	21.40
HSUPA	20.83	21.02	20.98

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	21.77	21.97	21.42
		1	24	21.71	21.61	21.52
		1	49	21.64	21.54	21.50
		25	0	21.76	21.33	21.34
		25	12	21.65	21.64	21.17
		25	25	21.58	21.53	21.48
		50	0	20.32	20.42	20.57
10M	16QAM	1	0	20.43	20.63	20.34
		1	24	20.63	20.67	20.47
		1	49	20.43	20.76	20.66
		25	0	20.29	20.22	20.20
		25	12	20.53	20.53	20.08
		25	25	20.20	20.34	20.50
		50	0	-	-	-

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	21.70	21.76	21.41
		1	12	21.54	21.61	21.49
		1	24	21.57	21.78	21.70
		12	0	21.47	21.50	21.55
		12	6	21.32	21.46	21.17
		12	13	21.29	21.18	21.59
		25	0	20.62	20.18	20.65
5M	16QAM	1	0	20.73	20.55	20.42
		1	12	20.34	20.58	20.38
		1	24	20.66	20.74	20.56
		12	0	20.43	20.07	20.39
		12	6	20.35	20.48	20.42
		12	13	20.61	20.30	20.51
		25	0	19.47	19.29	19.42

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	21.63	21.80	21.31
		1	7	21.54	21.47	21.63
		1	14	21.68	21.43	21.59
		8	0	21.39	21.35	21.58
		8	3	21.62	21.59	21.19
		8	7	21.29	21.22	21.61
		15	0	20.52	20.49	20.80
3M	16QAM	1	0	20.81	20.46	20.47
		1	7	20.64	20.35	20.47
		1	14	20.49	20.64	20.51
		8	0	20.40	19.86	20.29
		8	3	20.21	20.34	20.36
		8	7	20.55	20.44	20.59
		15	0	19.33	19.56	19.18

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	21.61	21.81	21.42
		1	2	21.56	21.63	21.41
		1	5	21.46	21.63	21.66
		3	0	21.53	21.33	21.56
		3	1	21.54	21.65	21.36
		3	3	21.49	21.34	21.47
		6	0	20.41	20.26	20.61
1.4M	16QAM	1	0	20.59	20.40	20.45
		1	2	20.53	20.47	20.31
		1	5	20.50	20.59	20.56
		3	0	20.24	20.07	20.35
		3	1	20.38	20.53	20.28
		3	3	20.41	20.42	20.50
		6	0	19.43	19.49	19.29

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	21.75	21.86	21.75
		1	37	21.72	21.65	21.38
		1	74	21.52	21.53	21.50
		36	0	21.73	21.47	21.47
		36	19	21.70	21.73	21.32
		36	39	21.72	21.80	21.36
		75	0	20.51	20.56	20.20
15M	16QAM	1	0	20.56	20.33	20.48
		1	37	20.44	20.41	20.40
		1	74	20.72	20.75	20.73
		25	0	19.99	19.94	19.92
		25	12	19.93	19.78	19.85
		25	25	19.82	19.89	19.90
		75	0	-	-	-

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	21.25	21.45	21.80
		1	24	20.99	21.44	21.55
		1	49	20.86	21.44	21.71
		25	0	21.05	21.75	21.77
		25	12	21.00	21.33	21.59
		25	25	21.04	21.14	21.38
		50	0	19.87	20.32	20.14
10M	16QAM	1	0	19.97	20.75	20.77
		1	24	20.01	20.48	20.73
		1	49	20.10	20.23	20.64
		25	0	20.23	20.63	20.71
		25	12	20.16	20.46	20.51
		25	25	20.02	21.12	20.62
		50	0	-	-	-

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	21.73	21.75	21.43
		1	12	21.45	21.29	21.13
		1	24	21.43	21.37	21.30
		12	0	21.37	21.44	21.52
		12	6	21.75	21.66	21.30
		12	13	21.27	21.20	21.46
		25	0	20.33	20.45	20.36
5M	16QAM	1	0	20.64	20.76	20.21
		1	12	20.18	20.68	20.56
		1	24	20.25	20.49	20.06
		12	0	20.50	20.91	20.53
		12	6	20.64	20.80	20.76
		12	13	21.19	20.61	20.71
		25	0	20.06	19.90	19.82

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	21.61	21.60	21.56
		1	7	21.36	21.23	21.30
		1	14	21.32	21.67	21.48
		8	0	21.75	21.38	21.53
		8	3	21.74	21.79	21.29
		8	7	21.33	21.37	21.50
		15	0	20.31	20.50	20.36
3M	16QAM	1	0	20.66	20.79	20.56
		1	7	20.17	20.38	20.25
		1	14	20.22	20.27	20.40
		8	0	20.66	20.83	20.79
		8	3	20.79	20.70	21.00
		8	7	20.99	20.58	20.55
		15	0	20.12	19.96	19.57

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	21.65	21.72	21.55
		1	2	21.42	21.42	21.21
		1	5	21.38	21.53	21.34
		3	0	21.57	21.55	21.52
		3	1	21.55	21.60	21.42
		3	3	21.36	21.39	21.52
		6	0	20.18	20.28	20.34
1.4M	16QAM	1	0	20.62	20.60	20.42
		1	2	20.30	20.52	20.47
		1	5	20.34	20.45	20.27
		3	0	20.65	20.80	20.71
		3	1	20.57	20.66	20.81
		3	3	20.99	20.79	20.62
		6	0	19.89	19.80	19.79

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

4.2.2 Test Procedure

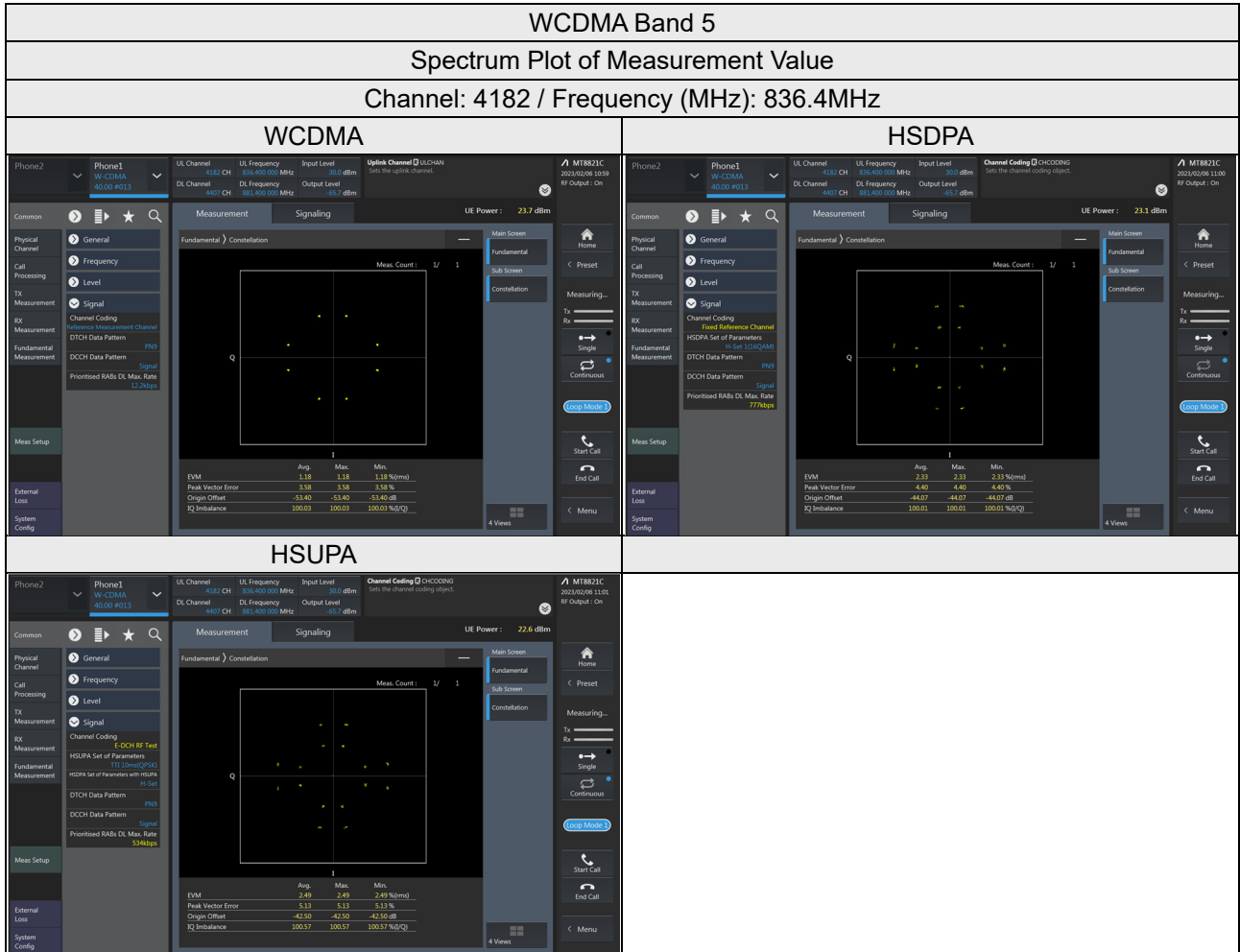
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup

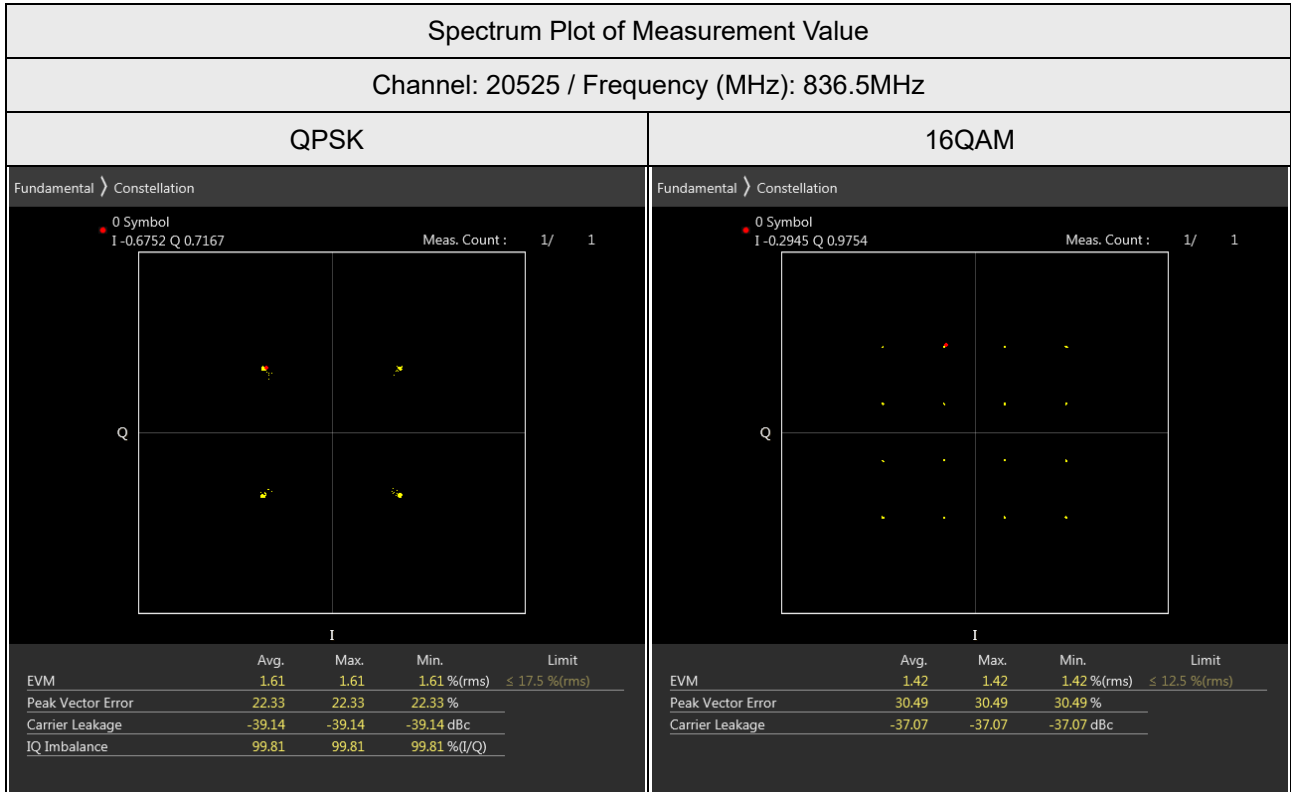


4.2.4 Test Results

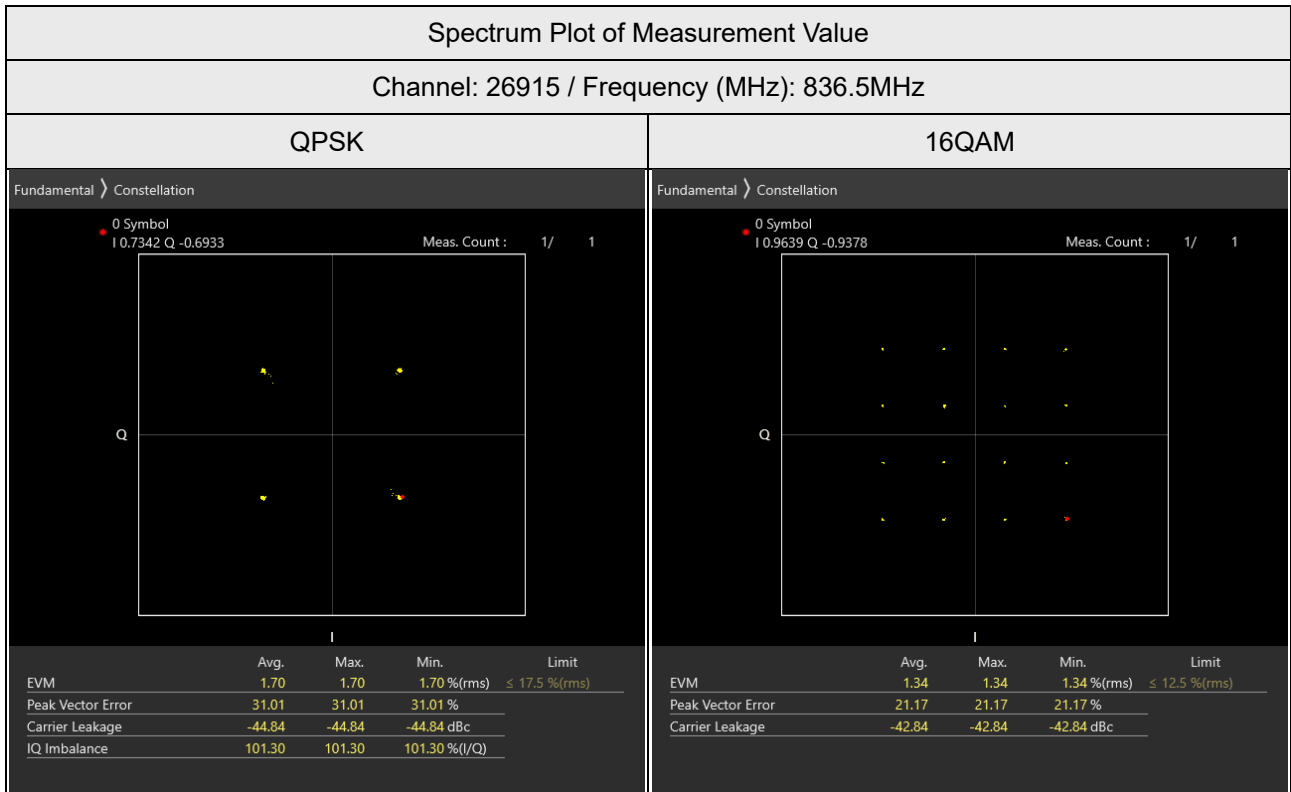
WCDMA



LTE Band 5



LTE Band 26



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

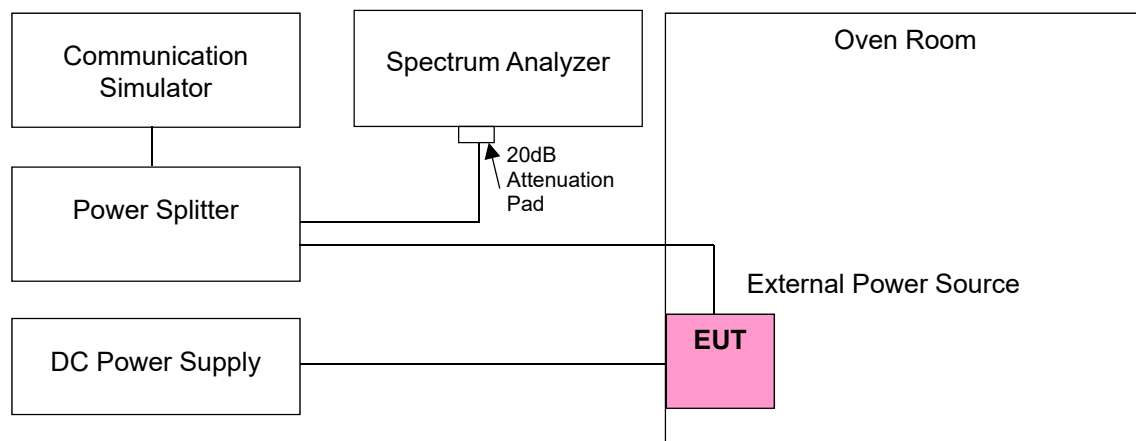
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Vdc)	WCDMA Band 5			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	826.3999980	-0.002	846.5999990	-0.001
3.60	826.3999990	-0.001	846.6000040	0.005
4.14	826.3999970	-0.004	846.6000040	0.005

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA Band 5			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.3999960	-0.005	846.6000010	0.001
-20	826.3999990	-0.001	846.6000040	0.005
-10	826.3999970	-0.004	846.5999960	-0.005
0	826.3999980	-0.002	846.5999980	-0.002
10	826.3999990	-0.001	846.6000030	0.004
20	826.3999960	-0.005	846.6000030	0.004
30	826.4000020	0.002	846.6000030	0.004
40	826.4000020	0.002	846.5999960	-0.005
50	826.3999970	-0.004	846.6000040	0.005

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 5			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	824.7000040	0.005	848.3000040	0.005
3.60	824.7000040	0.005	848.2999980	-0.002
4.14	824.6999960	-0.005	848.3000020	0.002

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.6999960	-0.005	848.2999990	-0.001
-20	824.7000010	0.001	848.2999970	-0.004
-10	824.6999980	-0.002	848.2999970	-0.004
0	824.6999980	-0.002	848.3000030	0.004
10	824.6999990	-0.001	848.3000020	0.002
20	824.6999960	-0.005	848.2999970	-0.004
30	824.6999990	-0.001	848.2999960	-0.005
40	824.6999980	-0.002	848.2999960	-0.005
50	824.7000010	0.001	848.3000020	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 5			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	825.5000030	0.004	847.4999990	-0.001
3.60	825.5000040	0.005	847.5000040	0.005
4.14	825.5000040	0.005	847.4999970	-0.004

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	825.5000010	0.001	847.4999990	-0.001
-20	825.4999960	-0.005	847.4999970	-0.004
-10	825.4999970	-0.004	847.5000020	0.002
0	825.4999990	-0.001	847.4999970	-0.004
10	825.5000010	0.001	847.5000020	0.002
20	825.5000020	0.002	847.5000020	0.002
30	825.5000010	0.001	847.5000030	0.004
40	825.5000010	0.001	847.4999990	-0.001
50	825.4999960	-0.005	847.4999990	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 5			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	826.4999960	-0.005	846.5000010	0.001
3.60	826.5000030	0.004	846.4999970	-0.004
4.14	826.5000010	0.001	846.4999990	-0.001

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.4999970	-0.004	846.5000030	0.004
-20	826.5000010	0.001	846.4999960	-0.005
-10	826.5000010	0.001	846.5000020	0.002
0	826.4999980	-0.002	846.5000020	0.002
10	826.5000030	0.004	846.4999990	-0.001
20	826.4999960	-0.005	846.4999980	-0.002
30	826.5000020	0.002	846.5000010	0.001
40	826.5000040	0.005	846.5000040	0.005
50	826.5000010	0.001	846.5000020	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 5			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	828.9999980	-0.002	843.9999960	-0.005
3.60	829.0000030	0.004	844.0000010	0.001
4.14	828.9999960	-0.005	843.9999970	-0.004

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.0000040	0.005	844.0000040	0.005
-20	829.0000010	0.001	844.0000010	0.001
-10	829.0000040	0.005	844.0000010	0.001
0	828.9999990	-0.001	844.0000020	0.002
10	828.9999970	-0.004	843.9999960	-0.005
20	829.0000040	0.005	844.0000030	0.004
30	829.0000020	0.002	844.0000020	0.002
40	828.9999990	-0.001	844.0000030	0.004
50	829.0000030	0.004	843.9999960	-0.005

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	824.7000010	0.001	848.2999980	-0.002
3.60	824.7000020	0.002	848.2999960	-0.005
4.14	824.6999970	-0.004	848.2999990	-0.001

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.7000030	0.004	848.2999960	-0.005
-20	824.6999990	-0.001	848.2999970	-0.004
-10	824.7000030	0.004	848.2999990	-0.001
0	824.7000030	0.004	848.2999960	-0.005
10	824.6999970	-0.004	848.2999990	-0.001
20	824.7000030	0.004	848.3000030	0.004
30	824.6999960	-0.005	848.3000040	0.005
40	824.6999960	-0.005	848.2999970	-0.004
50	824.6999980	-0.002	848.3000020	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	825.5000010	0.001	847.4999960	-0.005
3.60	825.4999990	-0.001	847.5000020	0.002
4.14	825.4999960	-0.005	847.5000020	0.002

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	825.4999970	-0.004	847.5000040	0.005
-20	825.4999990	-0.001	847.4999980	-0.002
-10	825.5000040	0.005	847.5000030	0.004
0	825.5000040	0.005	847.5000020	0.002
10	825.4999990	-0.001	847.4999970	-0.004
20	825.4999970	-0.004	847.4999960	-0.005
30	825.4999960	-0.005	847.5000040	0.005
40	825.5000030	0.004	847.5000040	0.005
50	825.4999990	-0.001	847.5000020	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	826.4999990	-0.001	846.4999990	-0.001
3.60	826.4999960	-0.005	846.5000020	0.002
4.14	826.4999990	-0.001	846.4999990	-0.001

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.5000040	0.005	846.5000020	0.002
-20	826.4999980	-0.002	846.4999960	-0.005
-10	826.4999990	-0.001	846.4999980	-0.002
0	826.4999990	-0.001	846.5000010	0.001
10	826.4999980	-0.002	846.4999990	-0.001
20	826.5000030	0.004	846.4999970	-0.004
30	826.4999970	-0.004	846.4999980	-0.002
40	826.5000020	0.002	846.5000010	0.001
50	826.4999990	-0.001	846.5000030	0.004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 26			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	828.9999970	-0.004	844.0000020	0.002
3.60	828.9999970	-0.004	843.9999990	-0.001
4.14	828.9999960	-0.005	843.9999980	-0.002

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.0000010	0.001	843.9999990	-0.001
-20	829.0000040	0.005	844.0000020	0.002
-10	829.0000010	0.001	844.0000040	0.005
0	828.9999990	-0.001	843.9999970	-0.004
10	829.0000010	0.001	844.0000030	0.004
20	829.0000030	0.004	843.9999960	-0.005
30	828.9999980	-0.002	843.9999990	-0.001
40	828.9999960	-0.005	844.0000030	0.004
50	828.9999980	-0.002	844.0000020	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 26			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.06	831.4999990	-0.001	841.4999960	-0.005
3.60	831.5000010	0.001	841.5000010	0.001
4.14	831.5000020	0.002	841.4999970	-0.004

Note: The applicant defined the normal working voltage is from 3.06Vdc to 4.14Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	831.5000040	0.005	841.5000040	0.005
-20	831.4999960	-0.005	841.4999990	-0.001
-10	831.5000020	0.002	841.4999980	-0.002
0	831.4999970	-0.004	841.5000020	0.002
10	831.5000040	0.005	841.4999980	-0.002
20	831.4999970	-0.004	841.5000010	0.001
30	831.5000020	0.002	841.5000020	0.002
40	831.5000020	0.002	841.5000010	0.001
50	831.4999970	-0.004	841.5000040	0.005

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission.

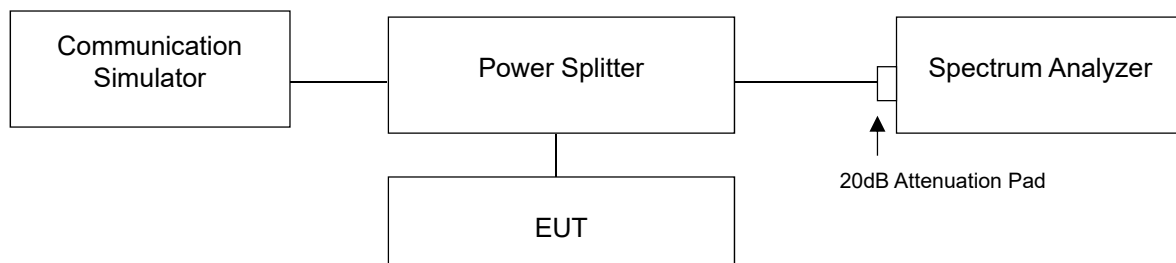
4.4.2 Test Procedure

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of 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 $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
- d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- f) Determine the following reference values: 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).
- g) Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
- h) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- i) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

For the occupied bandwidth measurement method, please refer to section 5.4.4 of ANSI C63.26.

4.4.3 Test Setup

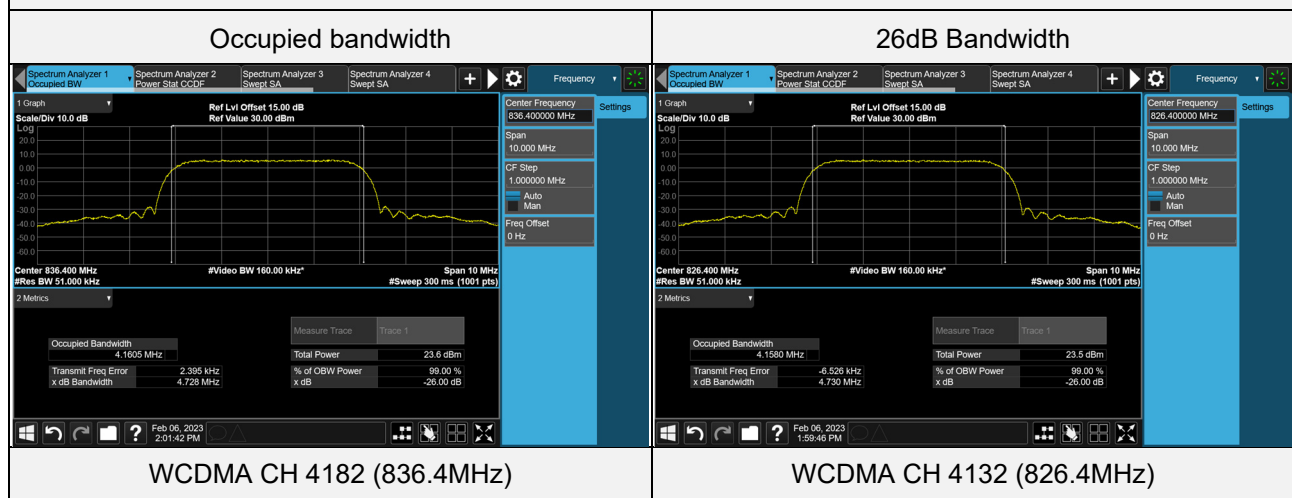


4.4.4 Test Result

WCDMA Band 5

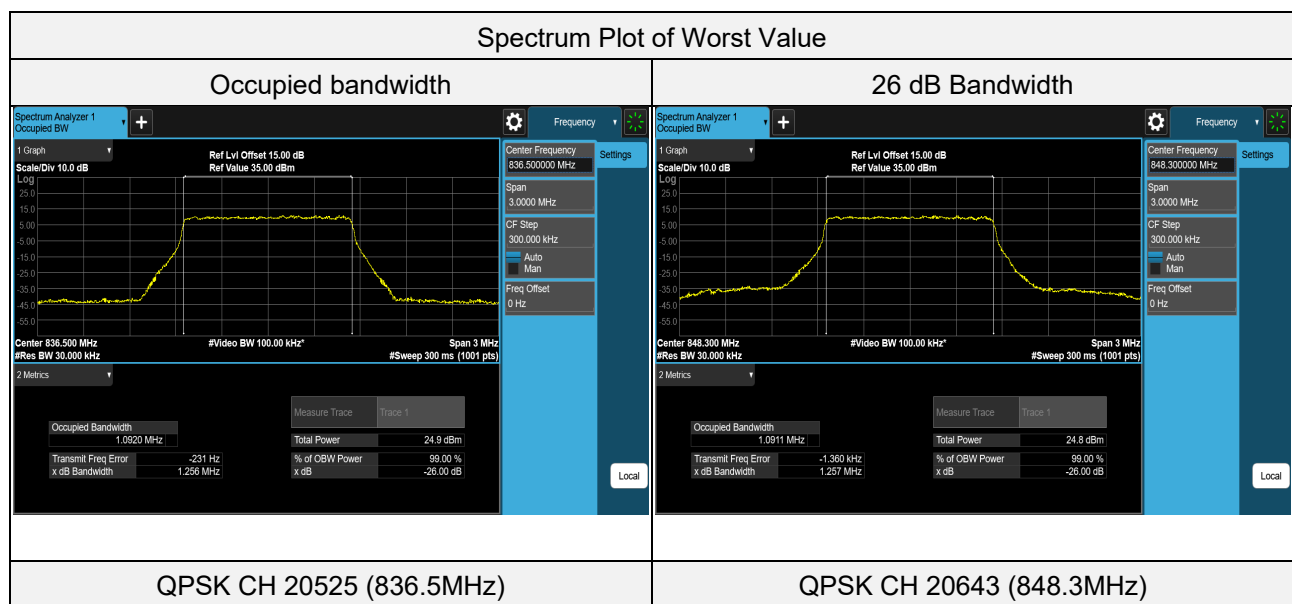
Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA	4132	826.4	4.1580	4.730
WCDMA	4182	836.4	4.1605	4.728
WCDMA	4233	846.6	4.1318	4.707
HSDPA	4132	826.4	4.1366	4.687
HSDPA	4182	836.4	4.1402	4.713
HSDPA	4233	846.6	4.1362	4.703
HSUPA	4132	826.4	4.1376	4.705
HSUPA	4182	836.4	4.1455	4.711
HSUPA	4233	846.6	4.1404	4.707

Spectrum Plot of Worst Value



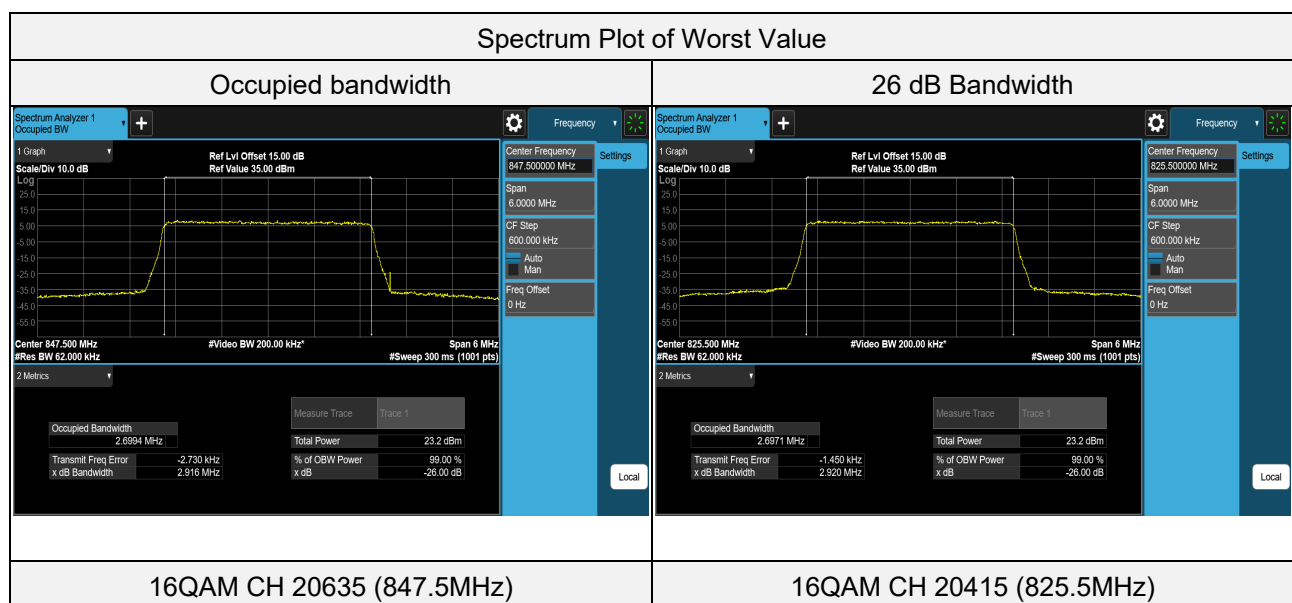
LTE Band 5 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	20407	824.7	1.0872	1.252
QPSK	20525	836.5	1.0920	1.256
QPSK	20643	848.3	1.0911	1.257
16QAM	20407	824.7	1.0882	1.240
16QAM	20525	836.5	1.0875	1.248
16QAM	20643	848.3	1.0886	1.242



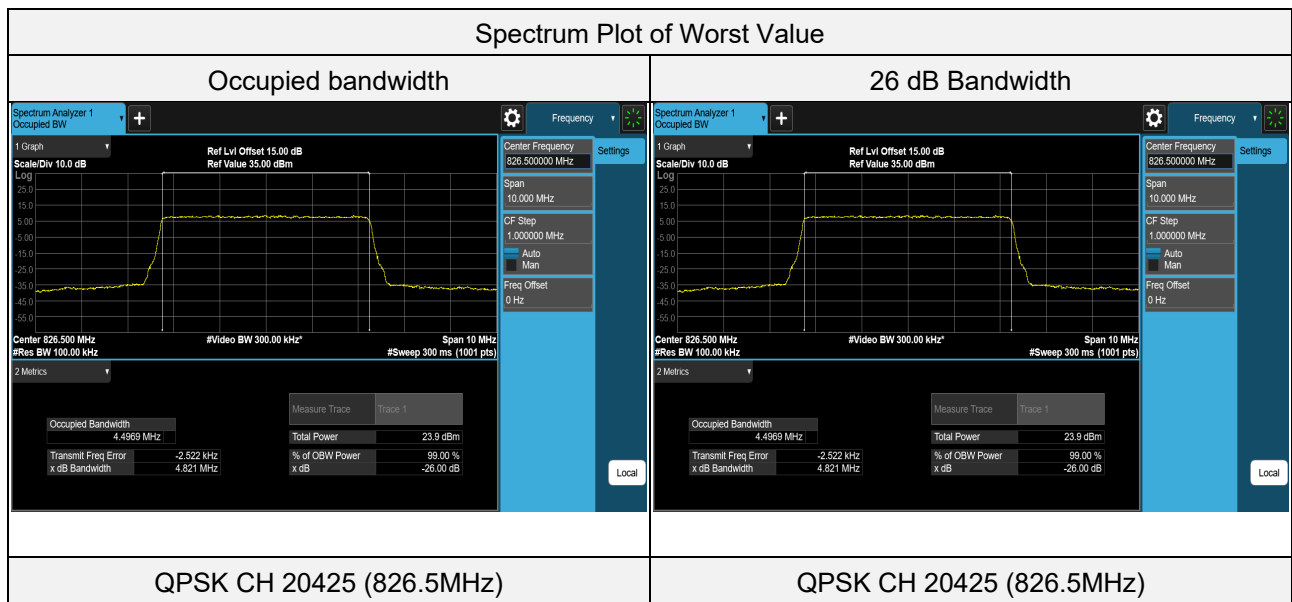
LTE Band 5 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	20415	825.5	2.6960	2.907
QPSK	20525	836.5	2.6969	2.909
QPSK	20635	847.5	2.6939	2.919
16QAM	20415	825.5	2.6971	2.920
16QAM	20525	836.5	2.6978	2.914
16QAM	20635	847.5	2.6994	2.916



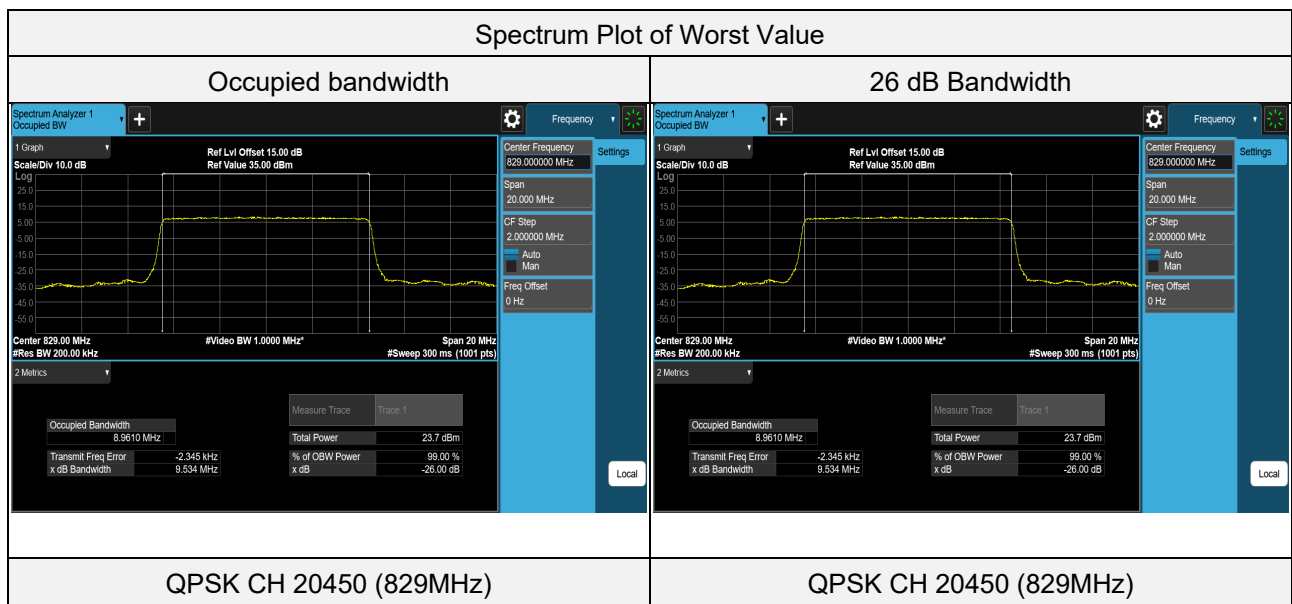
LTE Band 5 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	20425	826.5	4.4969	4.821
QPSK	20525	836.5	4.4904	4.814
QPSK	20625	846.5	4.4900	4.814
16QAM	20425	826.5	4.4879	4.808
16QAM	20525	836.5	4.4861	4.805
16QAM	20625	846.5	4.4880	4.803



LTE Band 5 (Channel Bandwidth 10MHz)

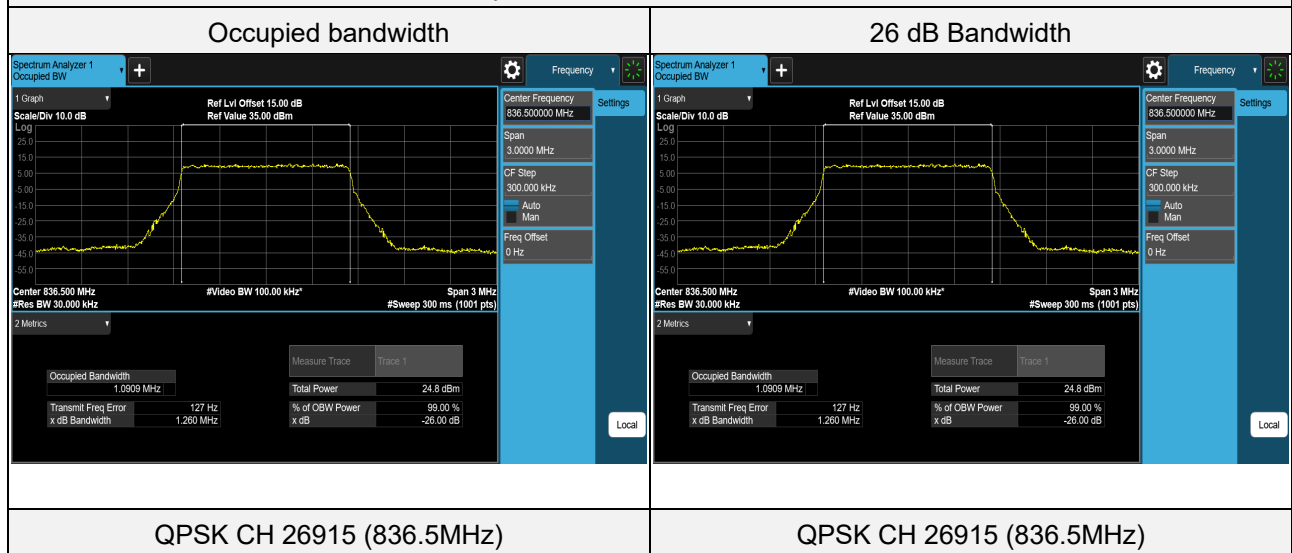
Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	20450	829	8.9610	9.534
QPSK	20525	836.5	8.9560	9.492
QPSK	20600	844	8.9514	9.502
16QAM	20450	829	4.5756	5.170
16QAM	20525	836.5	4.5651	5.086
16QAM	20600	844	4.5652	5.096



LTE Band 26 (Channel Bandwidth 1.4MHz)

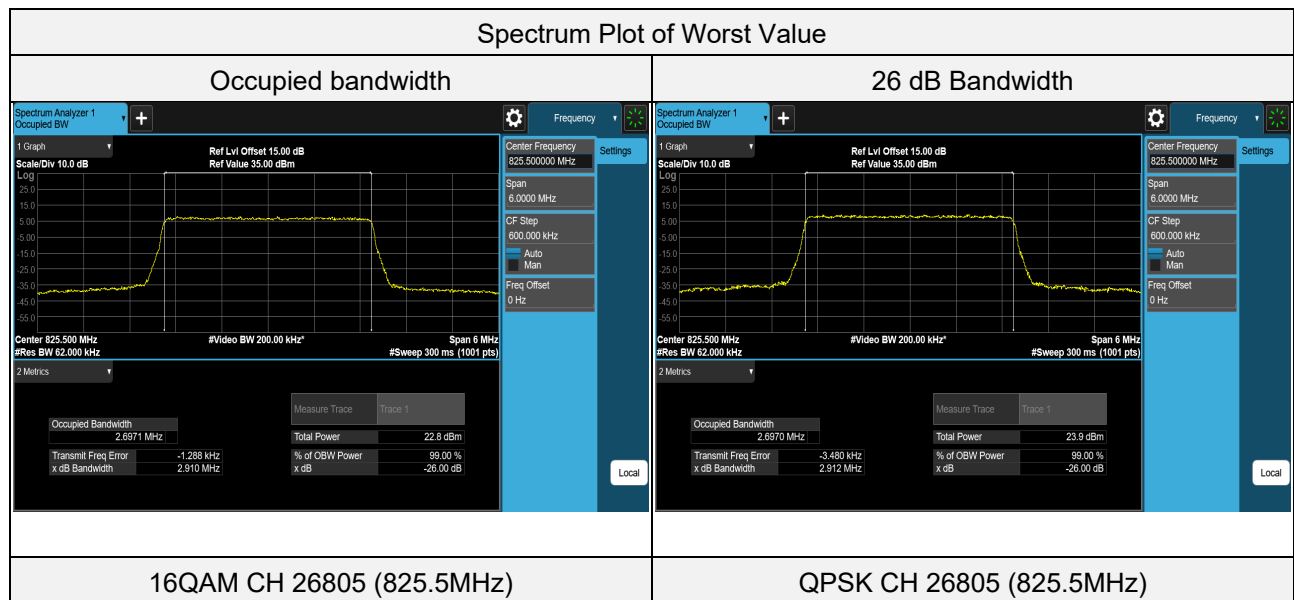
Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	26797	824.7	1.0867	1.245
QPSK	26915	836.5	1.0909	1.260
QPSK	27033	848.3	1.0901	1.257
16QAM	26797	824.7	1.0882	1.245
16QAM	26915	836.5	1.0882	1.247
16QAM	27033	848.3	1.0888	1.240

Spectrum Plot of Worst Value



LTE Band 26 (Channel Bandwidth 3MHz)

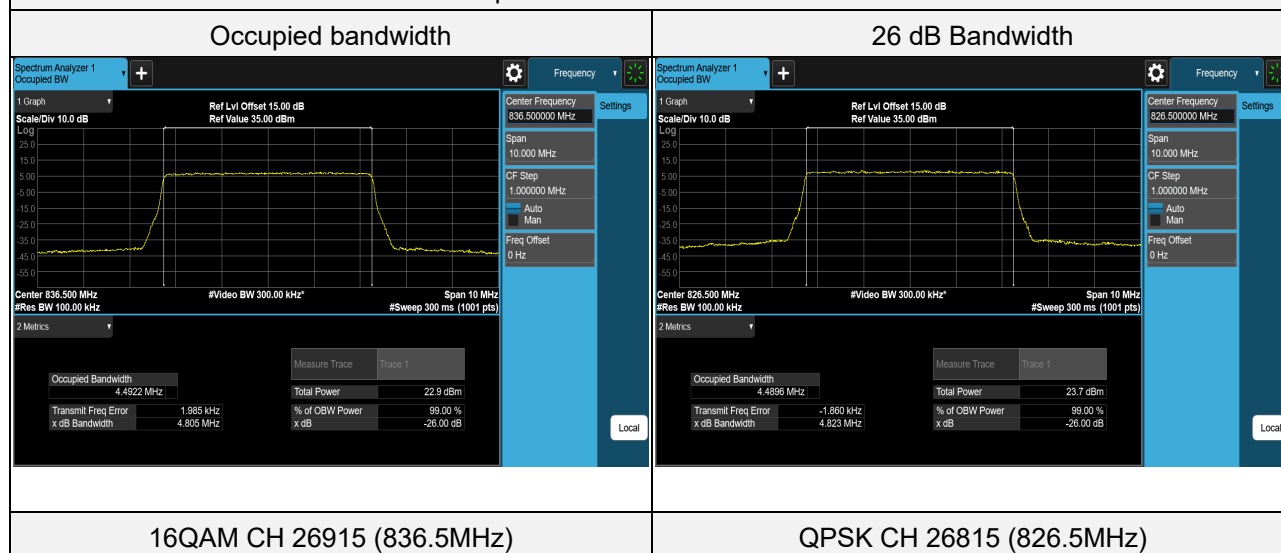
Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	26805	825.5	2.6970	2.912
QPSK	26915	836.5	2.6932	2.908
QPSK	27025	847.5	2.6968	2.903
16QAM	26805	825.5	2.6971	2.910
16QAM	26915	836.5	2.6941	2.907
16QAM	27025	847.5	2.6931	2.906



LTE Band 26 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	26815	826.5	4.4896	4.823
QPSK	26915	836.5	4.4920	4.821
QPSK	27015	846.5	4.4897	4.820
16QAM	26815	826.5	4.4864	4.813
16QAM	26915	836.5	4.4922	4.805
16QAM	27015	846.5	4.4850	4.805

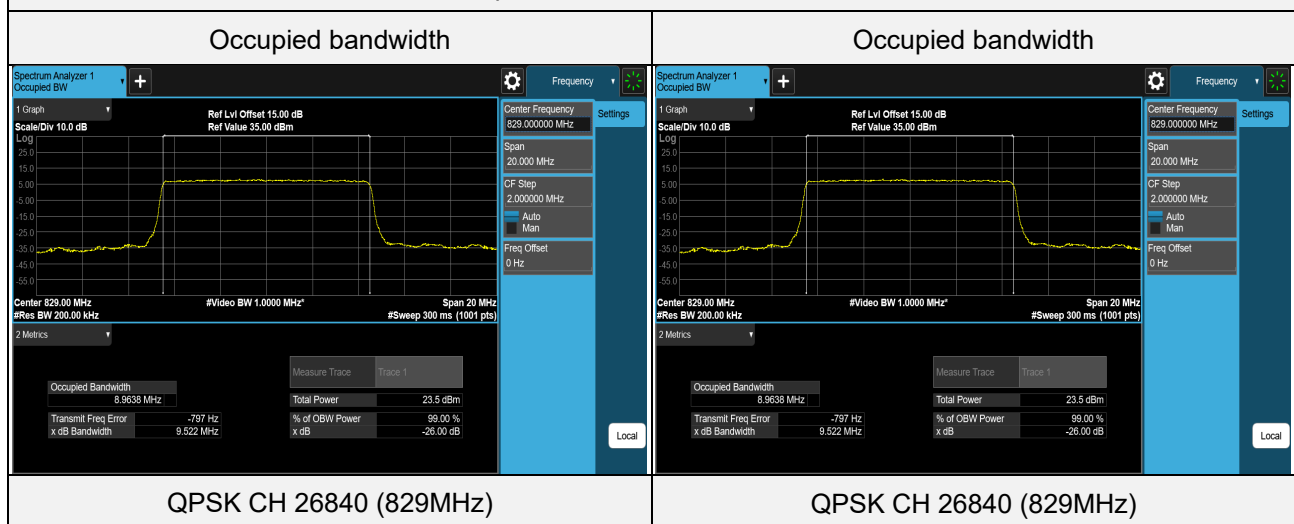
Spectrum Plot of Worst Value



LTE Band 26 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	26840	829	8.9638	9.522
QPSK	26915	836.5	8.9569	9.500
QPSK	26990	844	8.9505	9.506
16QAM	26840	829	4.5702	5.143
16QAM	26915	836.5	4.5701	5.081
16QAM	26990	844	4.5673	5.095

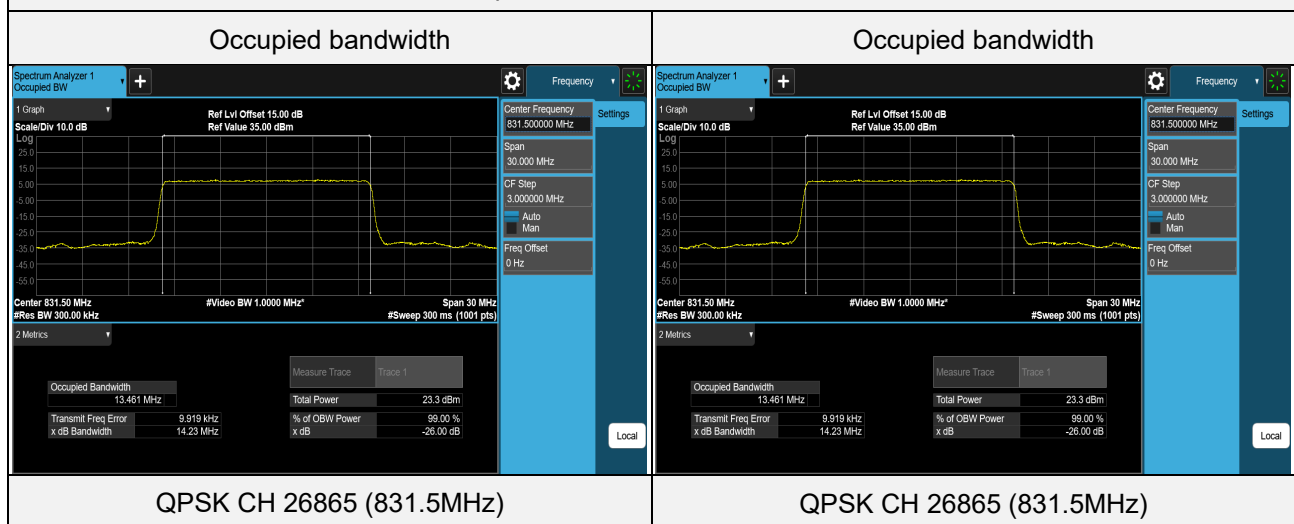
Spectrum Plot of Worst Value



LTE Band 26 (Channel Bandwidth 15MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	26865	831.5	13.4609	14.226
QPSK	26915	836.5	13.4288	14.225
QPSK	26965	841.5	13.4219	14.218
16QAM	26865	831.5	4.6750	5.306
16QAM	26915	836.5	4.6737	5.313
16QAM	26965	841.5	4.6708	5.333

Spectrum Plot of Worst Value



QPSK CH 26865 (831.5MHz)

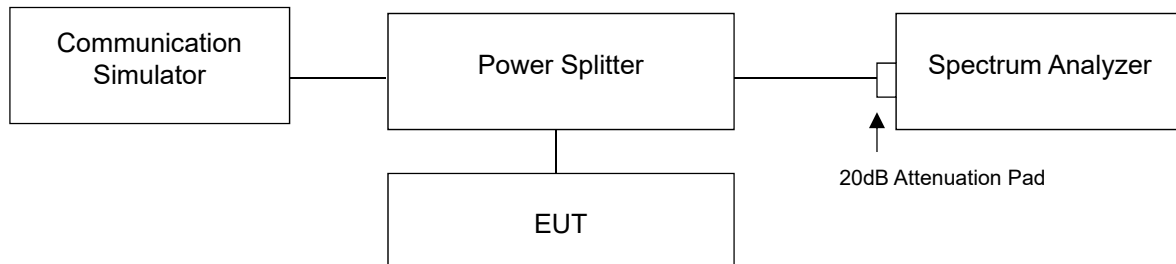
QPSK CH 26865 (831.5MHz)

4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

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. 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.

4.5.2 Test Setup

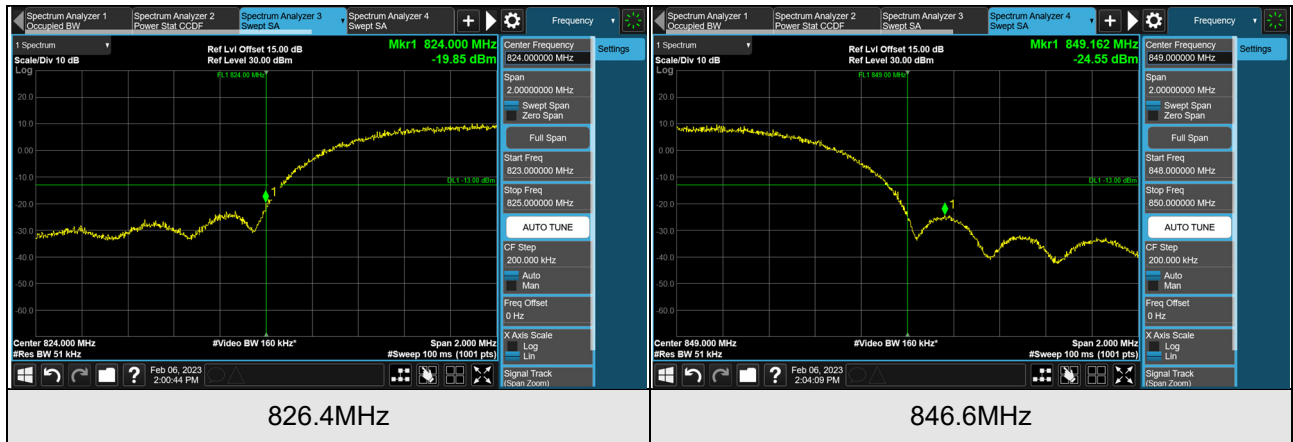


4.5.3 Test Procedures

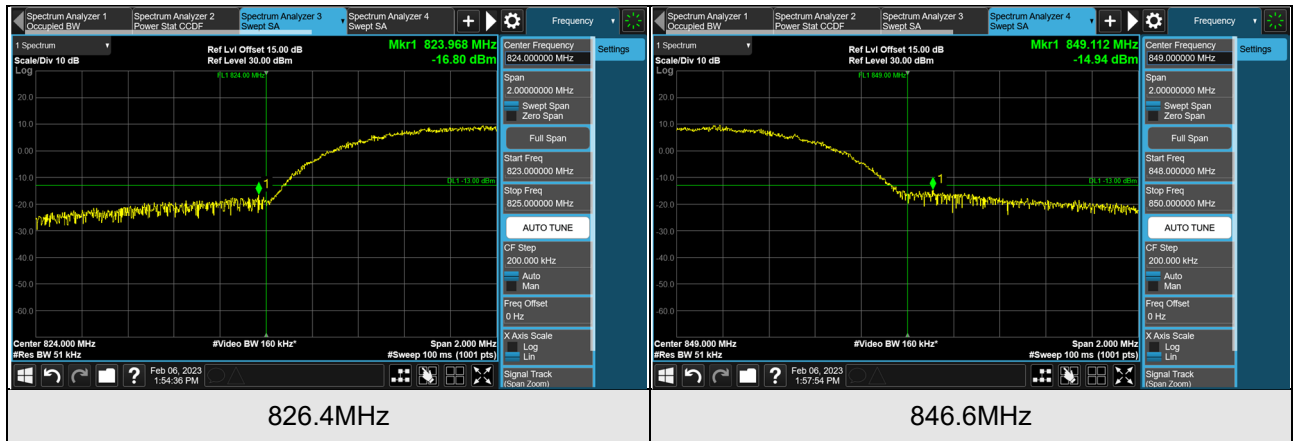
- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (WCDMA / HSDPA / HSUPA).
- c. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
- h. Set the detector to power averaging (rms) detector.
- i. Record the max trace plot into the test report.

4.5.4 Test Results

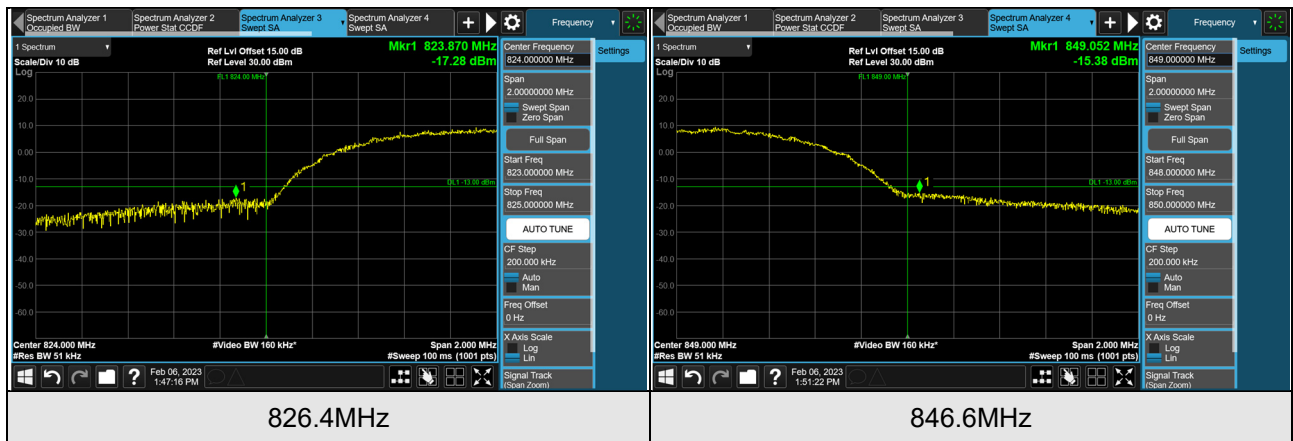
WCDMA



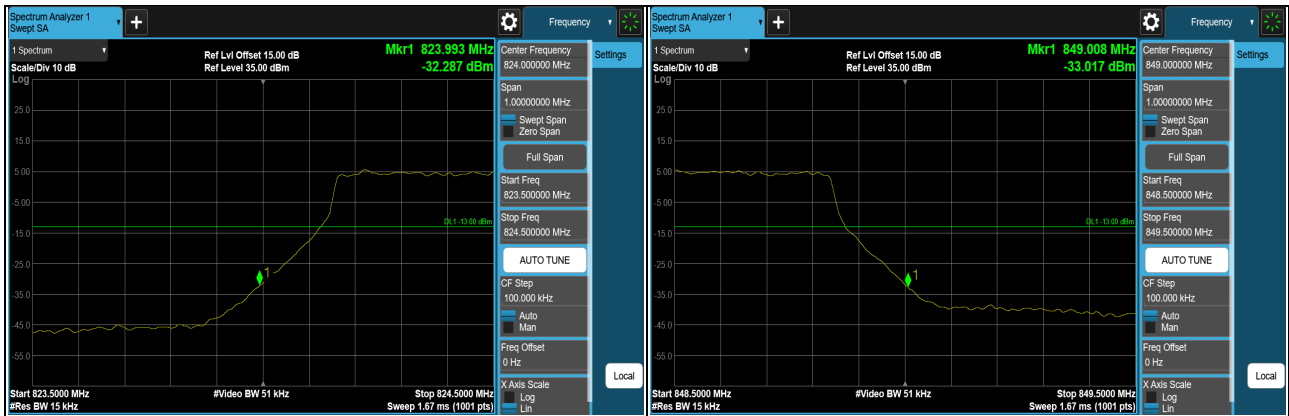
HSDPA



HSUPA

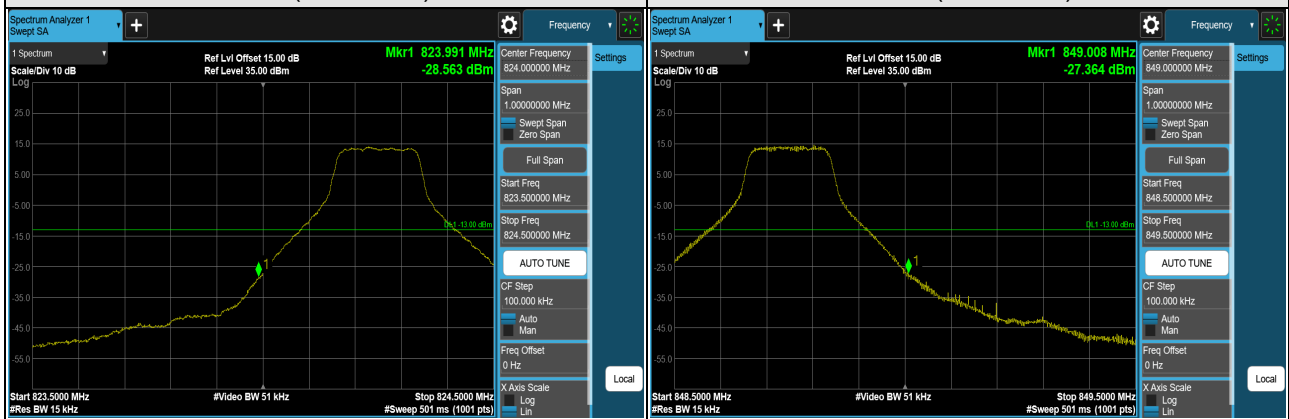


LTE Band 5 (Channel Bandwidth 1.4MHz)



FULL (824.7MHz)

FULL (848.3MHz)

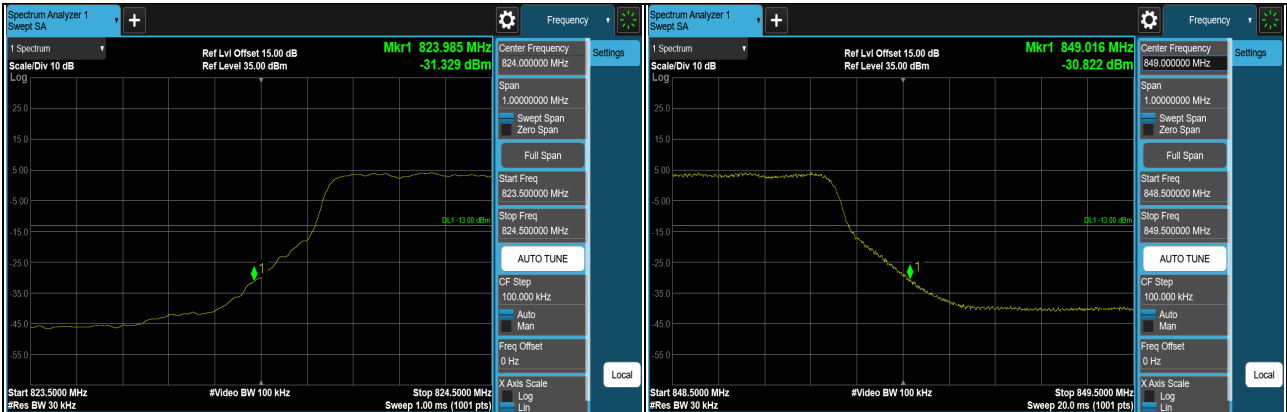


1RB (824.7MHz)

1RB (848.3MHz)

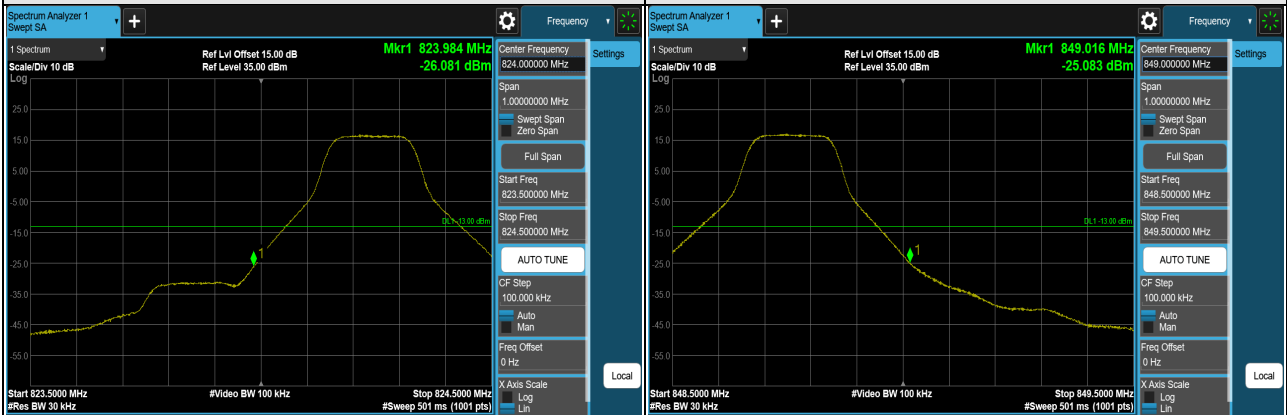


LTE Band 5 (Channel Bandwidth 3MHz)



FULL (825.5MHz)

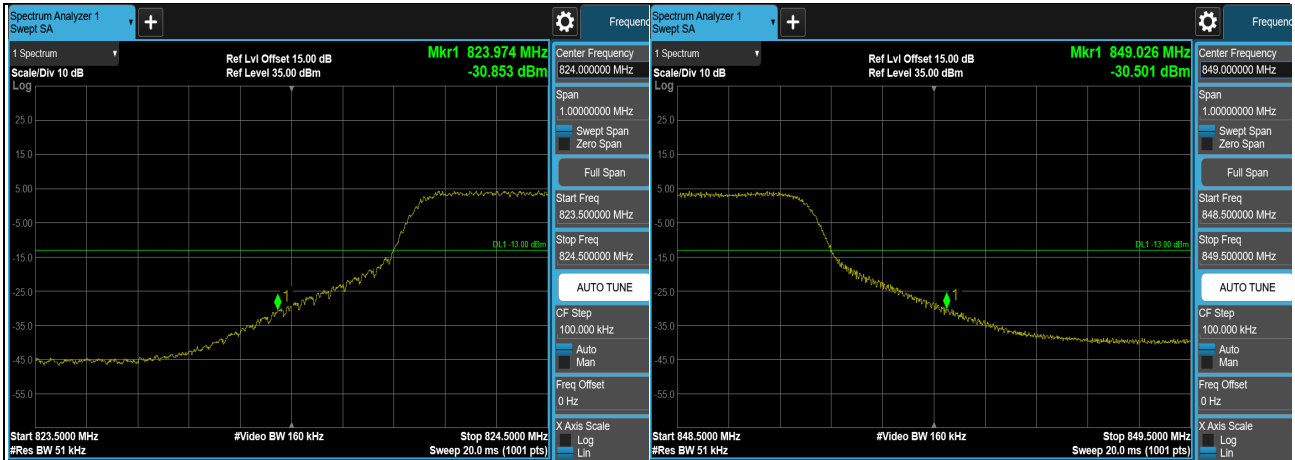
FULL (847.5MHz)



1RB (825.5MHz)

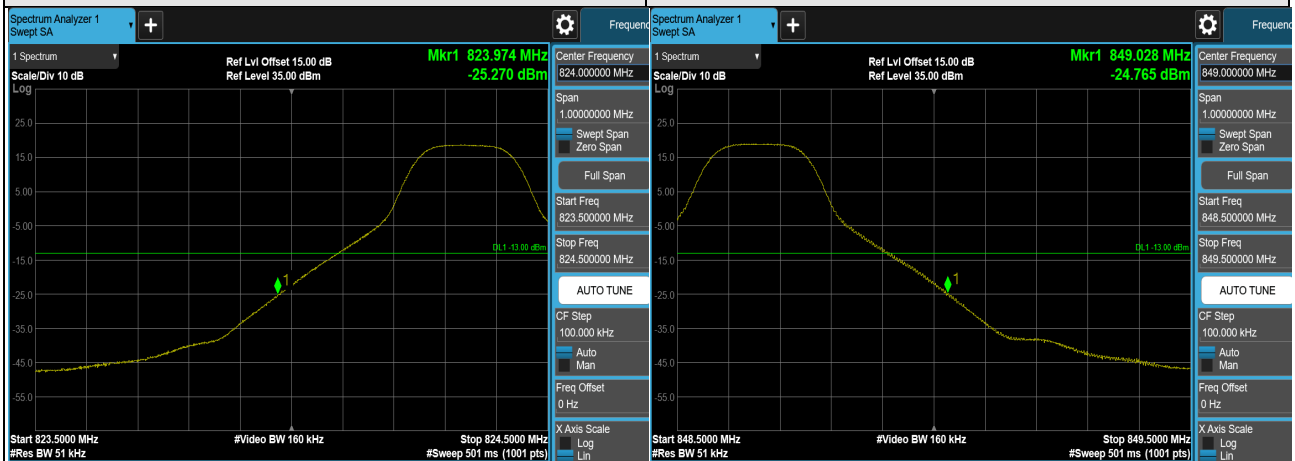
1RB (847.5MHz)

LTE Band 5 (Channel Bandwidth 5MHz)



FULL (826.5MHz)

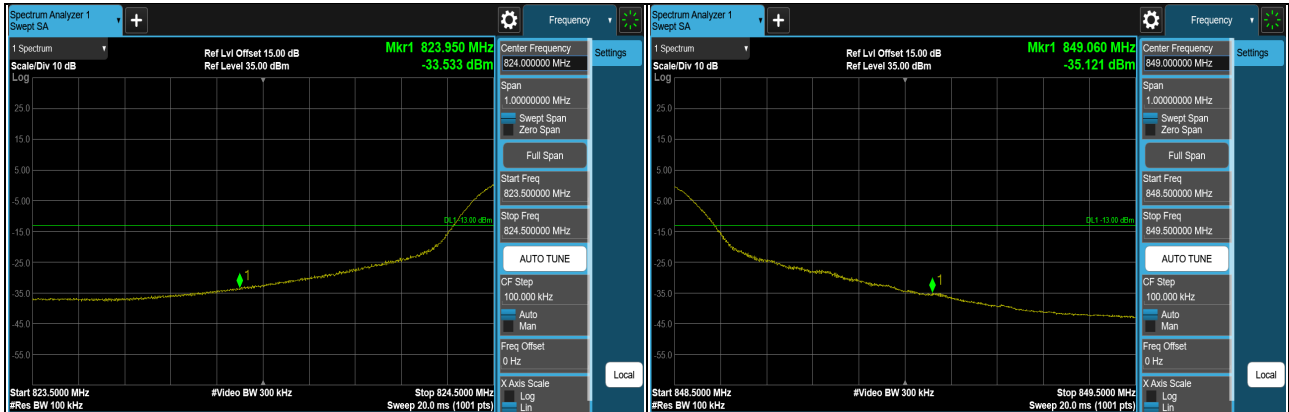
FULL (846.5MHz)



1RB (826.5MHz)

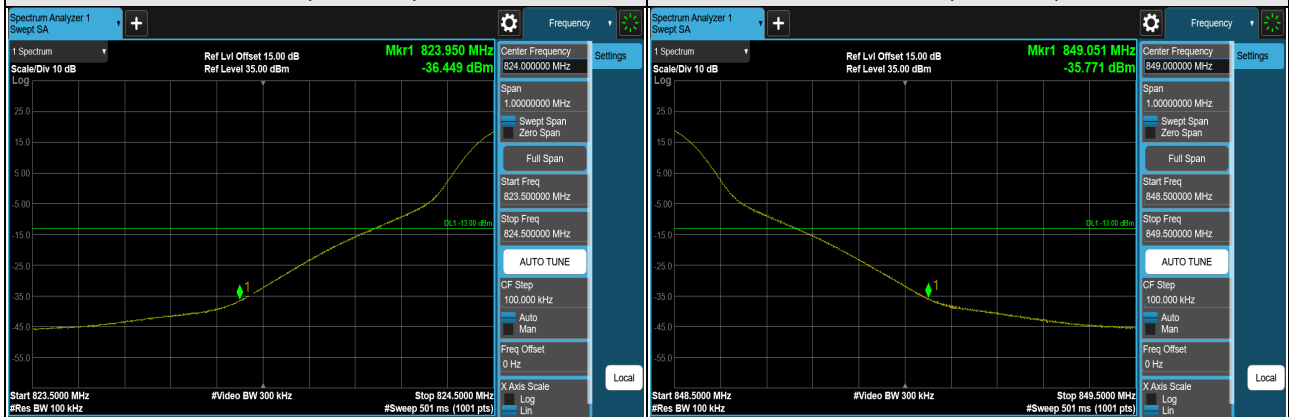
1RB (846.5MHz)

LTE Band 5 (Channel Bandwidth 10MHz)



FULL (829MHz)

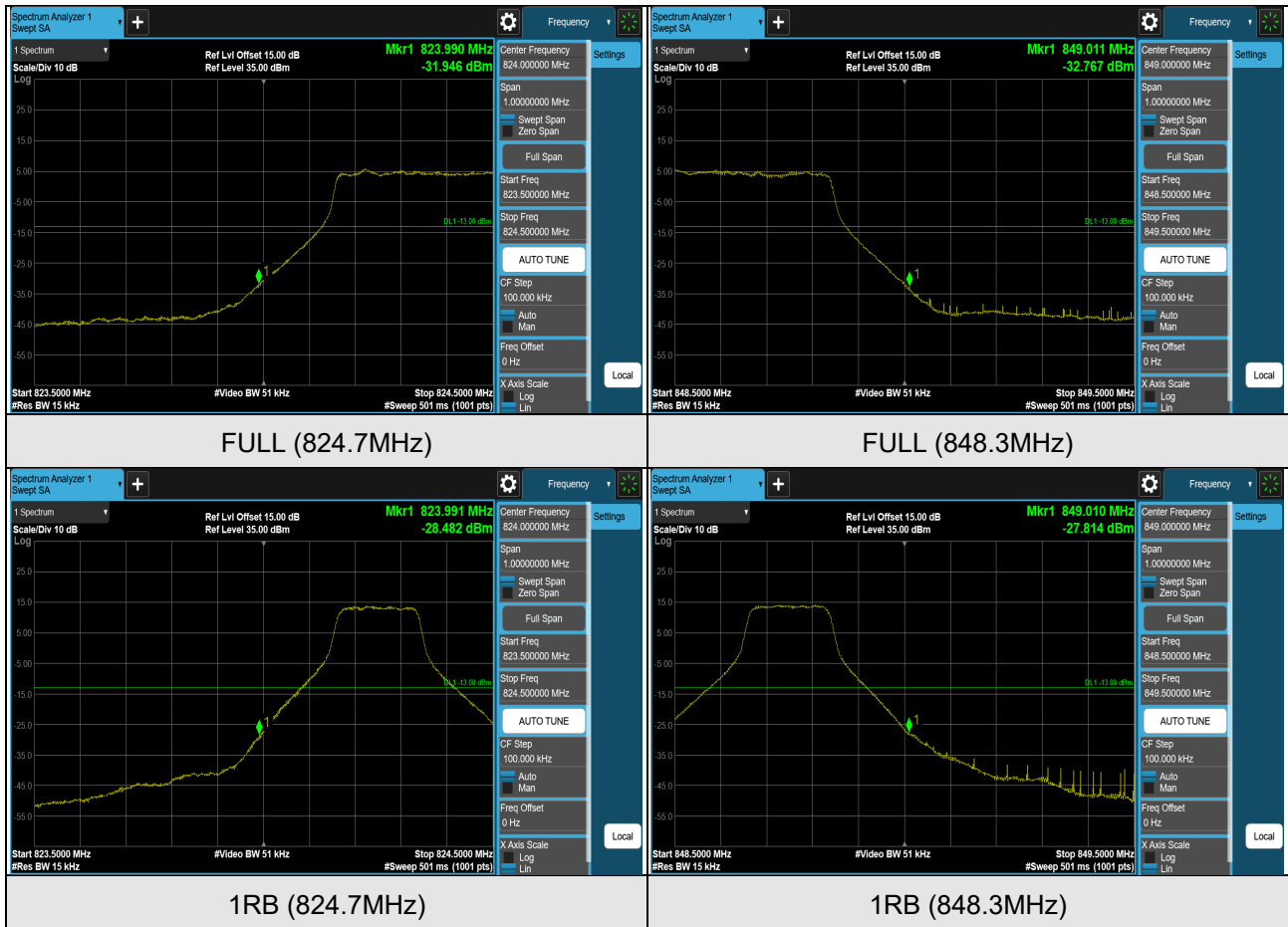
FULL (844MHz)



1RB (829MHz)

1RB (844MHz)

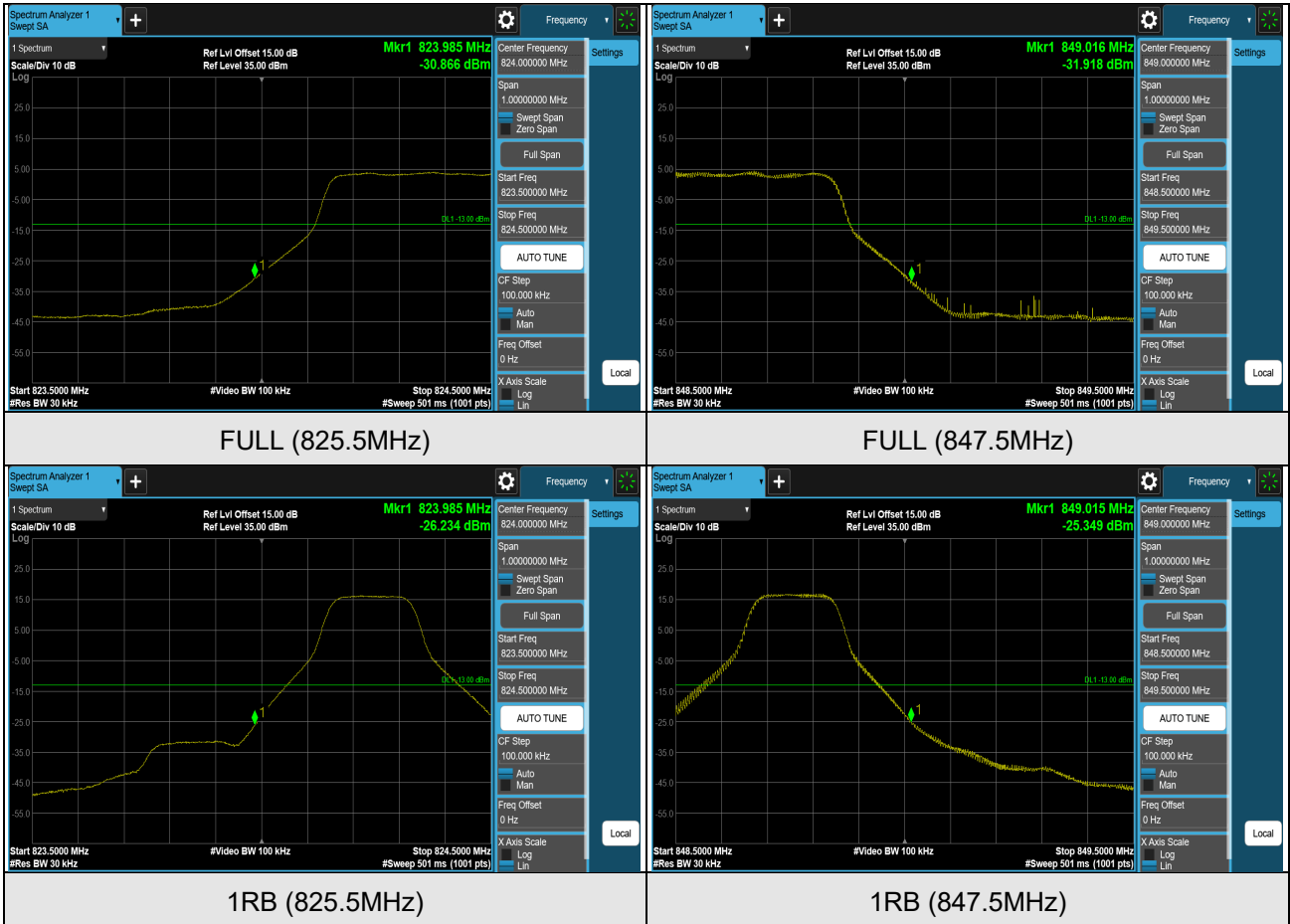
LTE Band 26 (Channel Bandwidth 1.4MHz)



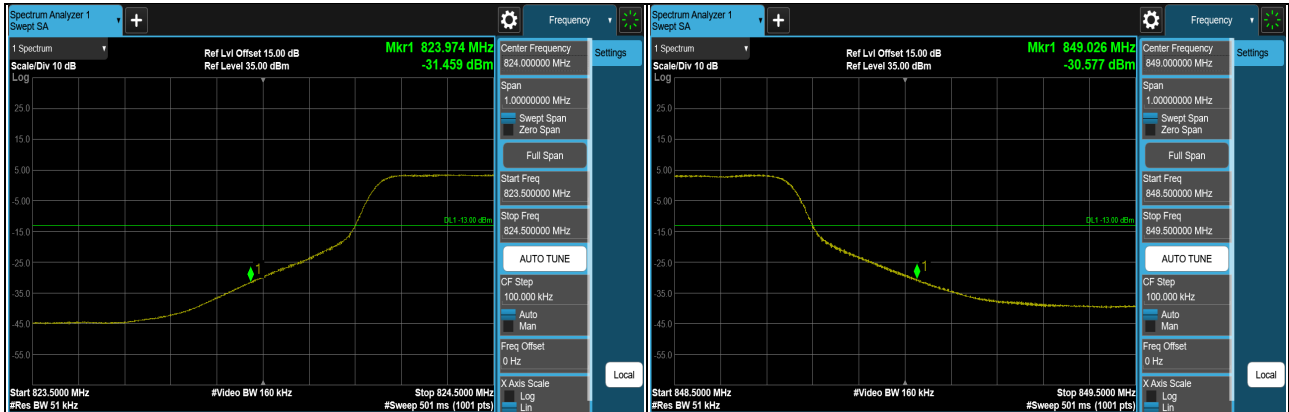


BUREAU
VERITAS

LTE Band 26 (Channel Bandwidth 3MHz)

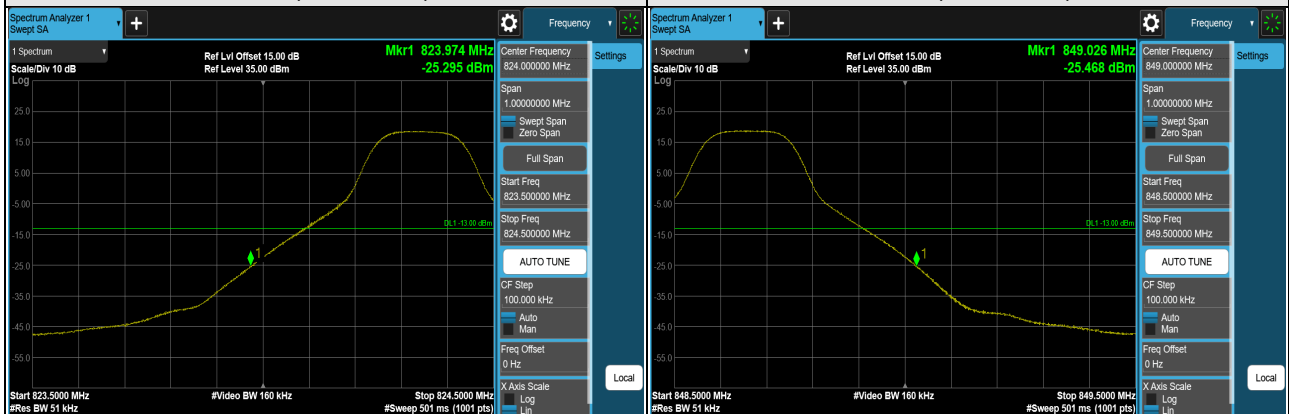


LTE Band 26 (Channel Bandwidth 5MHz)



FULL (826.5MHz)

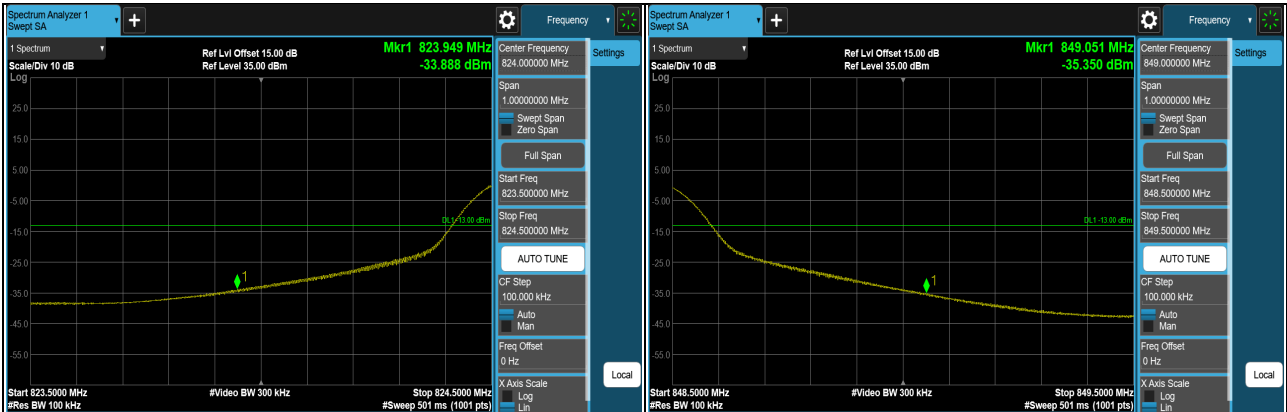
FULL (846.5MHz)



1RB (826.5MHz)

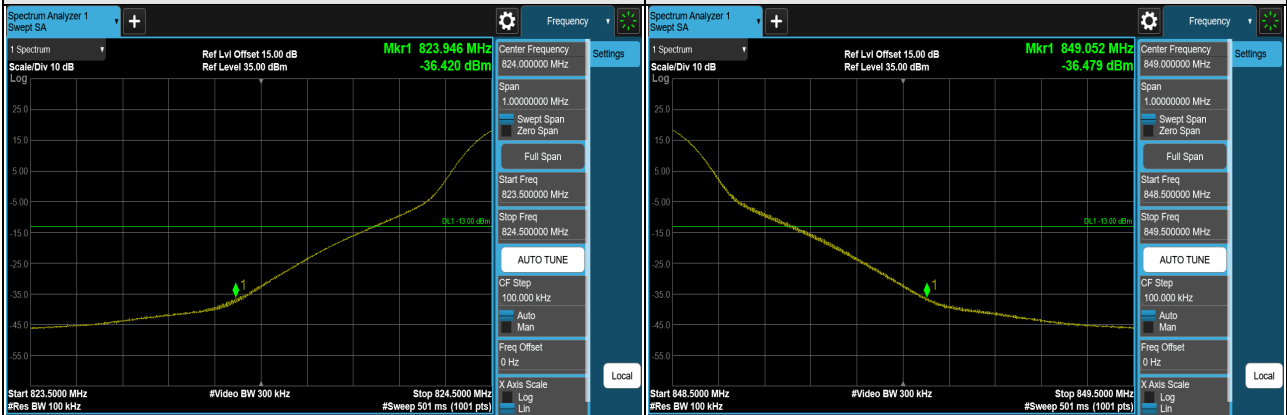
1RB (846.5MHz)

LTE Band 26 (Channel Bandwidth 10MHz)



FULL (829MHz)

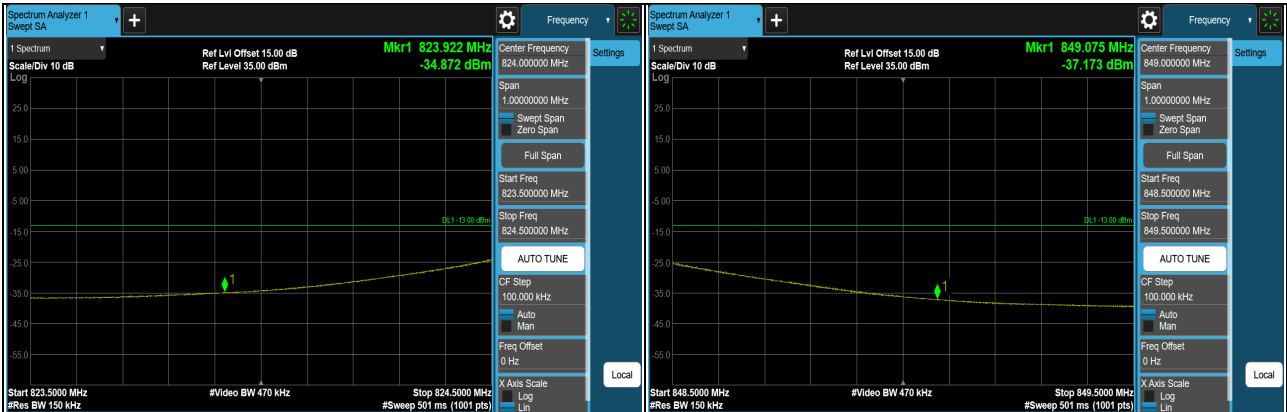
FULL (844MHz)



1RB (829MHz)

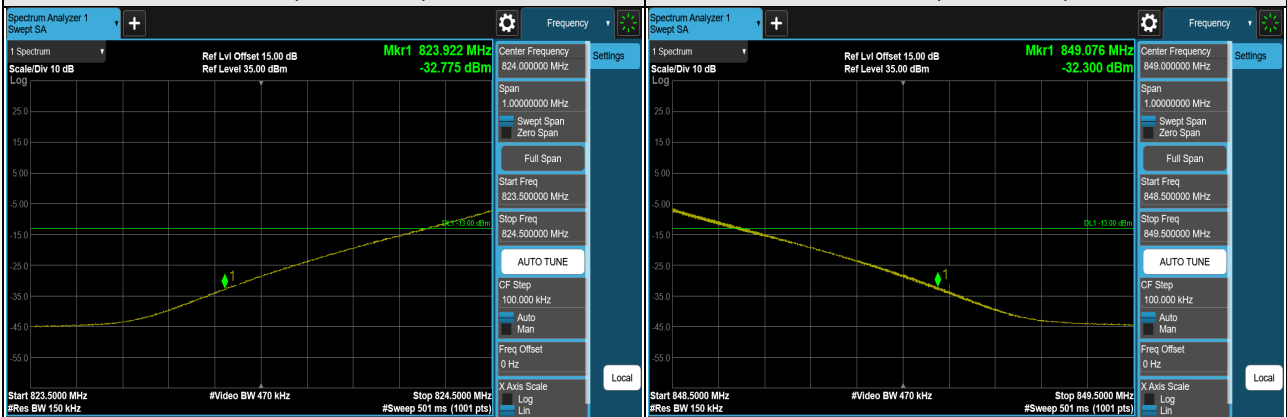
1RB (844MHz)

LTE Band 26 (Channel Bandwidth 15MHz)



FULL (831.5MHz)

FULL (841.5MHz)



1RB (831.5MHz)

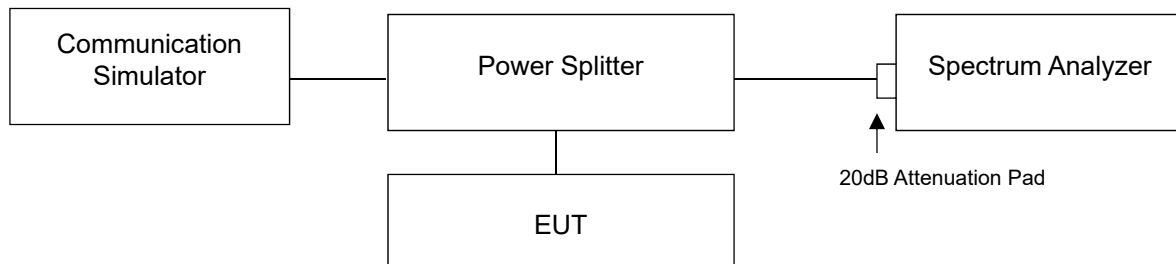
1RB (841.5MHz)

4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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

4.6.2 Test Setup



4.6.3 Test Procedures

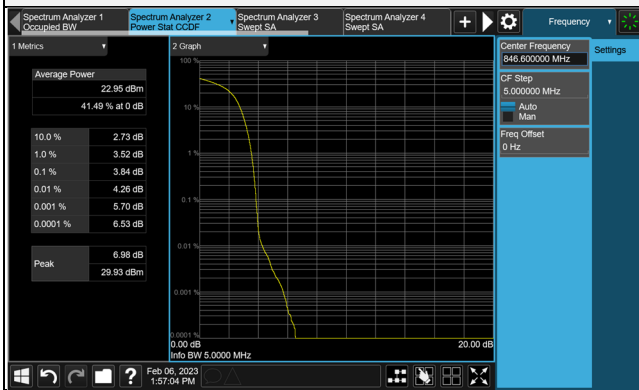
- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

WCDMA Band 5

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
WCDMA	4132	826.4	3.03	13	Pass
WCDMA	4182	836.4	3.05	13	Pass
WCDMA	4233	846.6	3.18	13	Pass
HSDPA	4132	826.4	3.75	13	Pass
HSDPA	4182	836.4	3.81	13	Pass
HSDPA	4233	846.6	3.84	13	Pass
HSUPA	4132	826.4	3.75	13	Pass
HSUPA	4182	836.4	3.79	13	Pass
HSUPA	4233	846.6	3.82	13	Pass

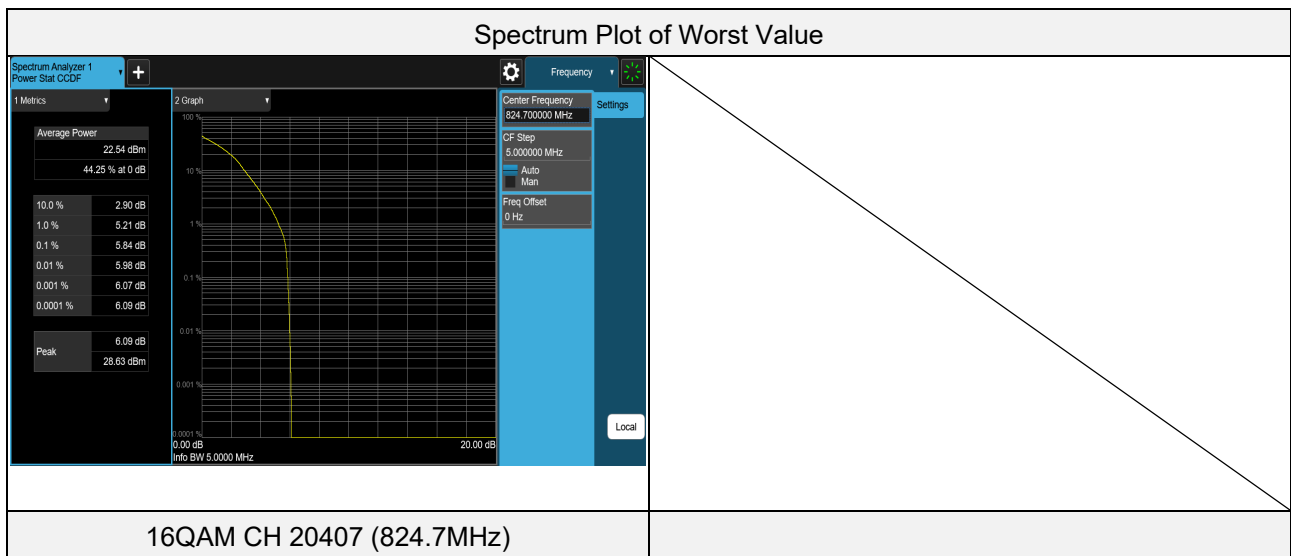
Spectrum Plot of Worst Value



HSDPA CH 4233 (846.6MHz)

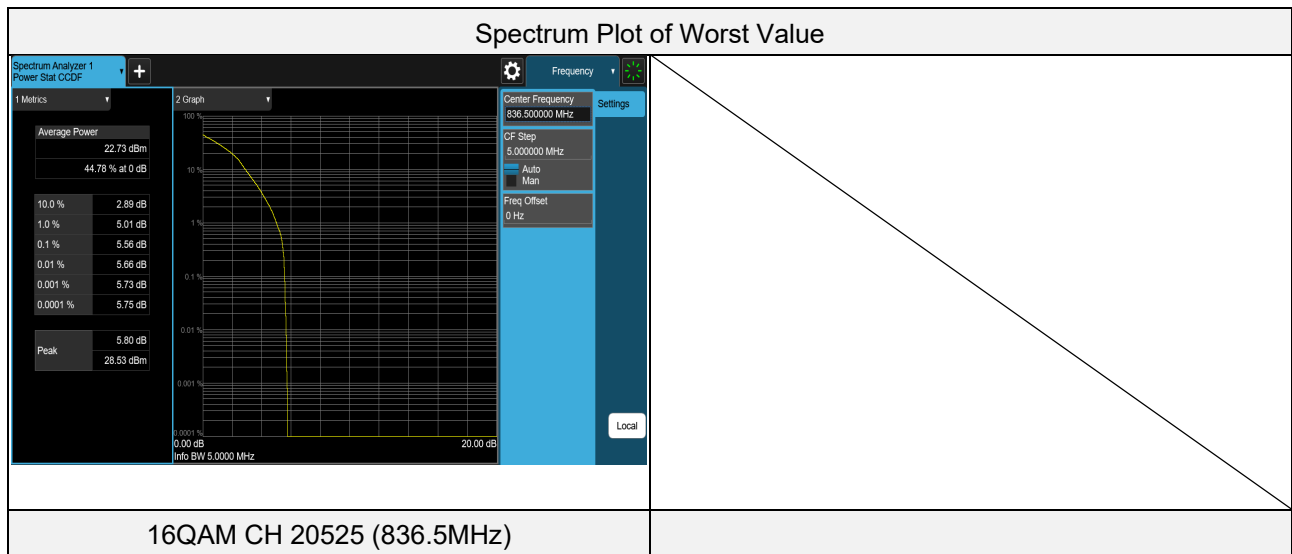
LTE Band 5 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	20407	824.7	4.92	13	Pass
QPSK	20525	836.5	4.56	13	Pass
QPSK	20643	848.3	4.67	13	Pass
16QAM	20407	824.7	5.84	13	Pass
16QAM	20525	836.5	5.50	13	Pass
16QAM	20643	848.3	5.20	13	Pass



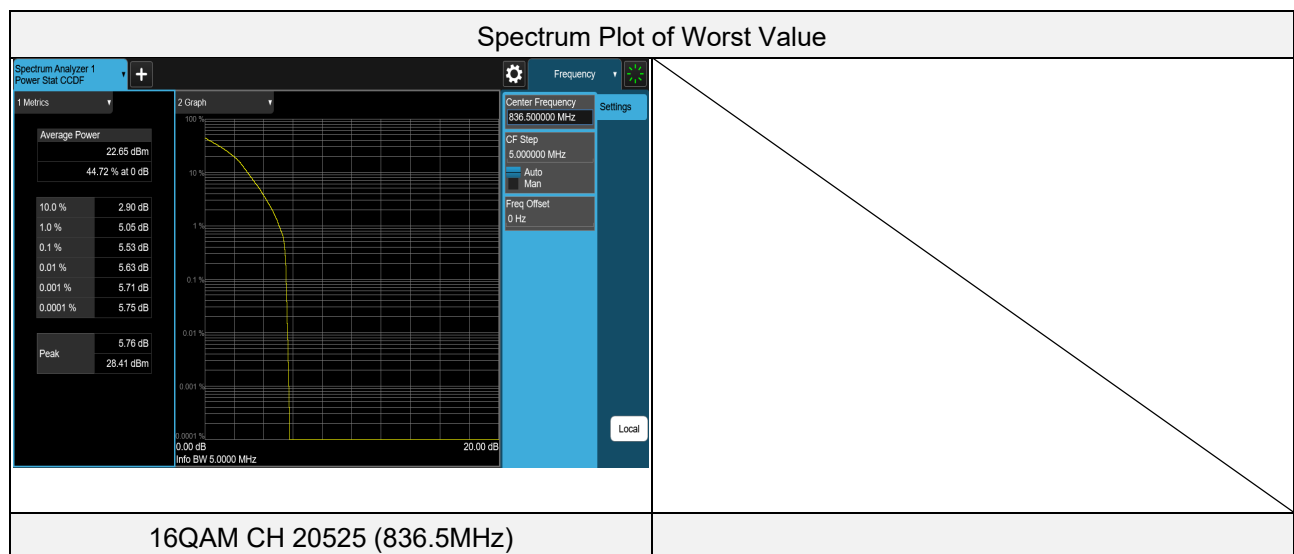
LTE Band 5 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	20415	825.5	4.91	13	Pass
QPSK	20525	836.5	4.98	13	Pass
QPSK	20635	847.5	4.29	13	Pass
16QAM	20415	825.5	5.54	13	Pass
16QAM	20525	836.5	5.56	13	Pass
16QAM	20635	847.5	5.34	13	Pass



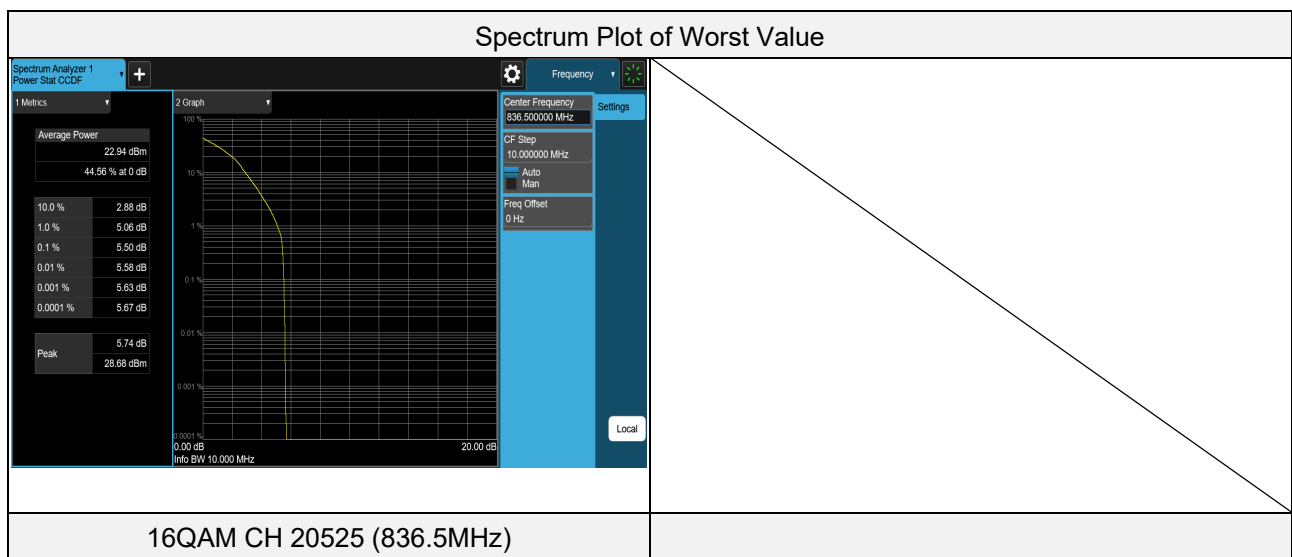
LTE Band 5 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	20425	826.5	4.84	13	Pass
QPSK	20525	836.5	4.56	13	Pass
QPSK	20625	846.5	4.64	13	Pass
16QAM	20425	826.5	5.43	13	Pass
16QAM	20525	836.5	5.53	13	Pass
16QAM	20625	846.5	5.31	13	Pass



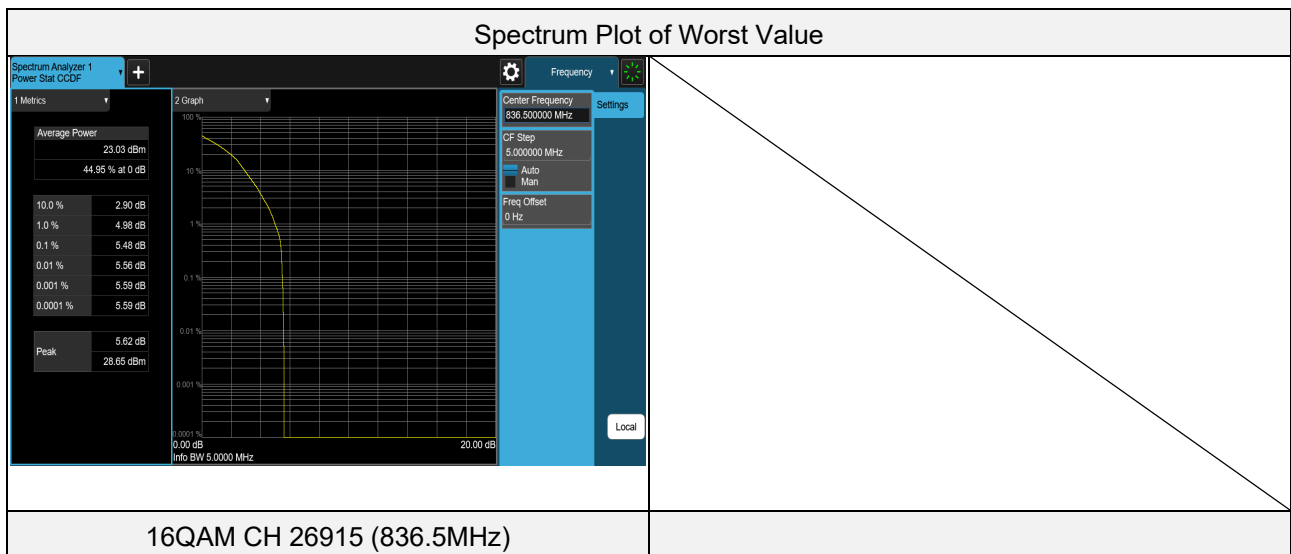
LTE Band 5 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	20450	829	4.50	13	Pass
QPSK	20525	836.5	4.56	13	Pass
QPSK	20600	844	4.43	13	Pass
16QAM	20450	829	5.47	13	Pass
16QAM	20525	836.5	5.50	13	Pass
16QAM	20600	844	5.44	13	Pass



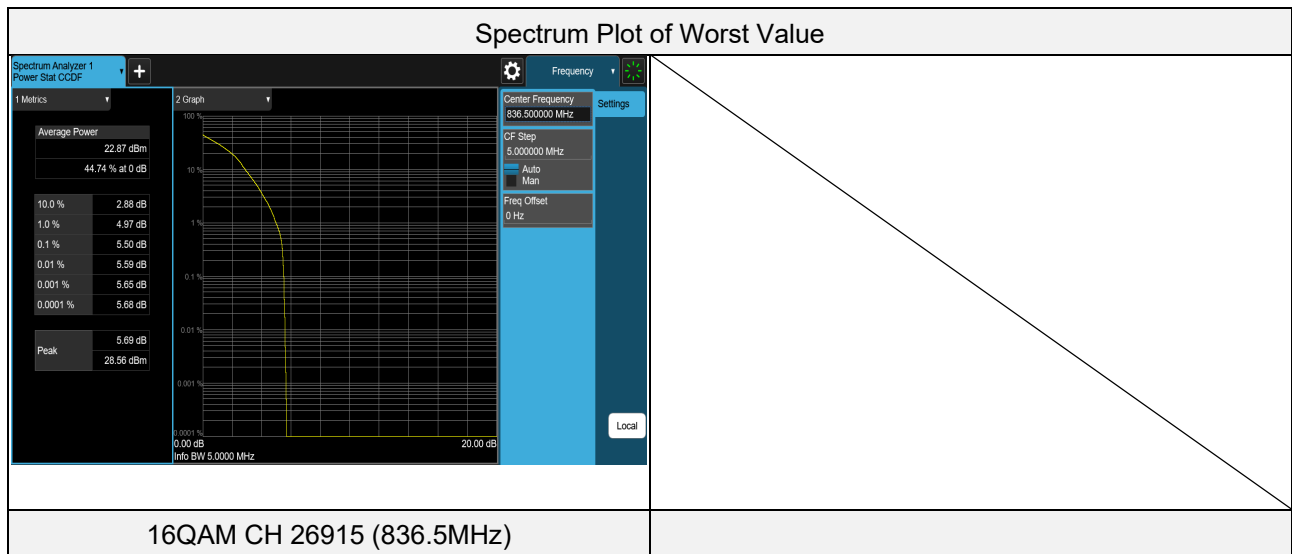
LTE Band 26 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	26797	824.7	4.88	13	Pass
QPSK	26915	836.5	4.56	13	Pass
QPSK	27033	848.3	4.94	13	Pass
16QAM	26797	824.7	5.47	13	Pass
16QAM	26915	836.5	5.48	13	Pass
16QAM	27033	848.3	5.47	13	Pass



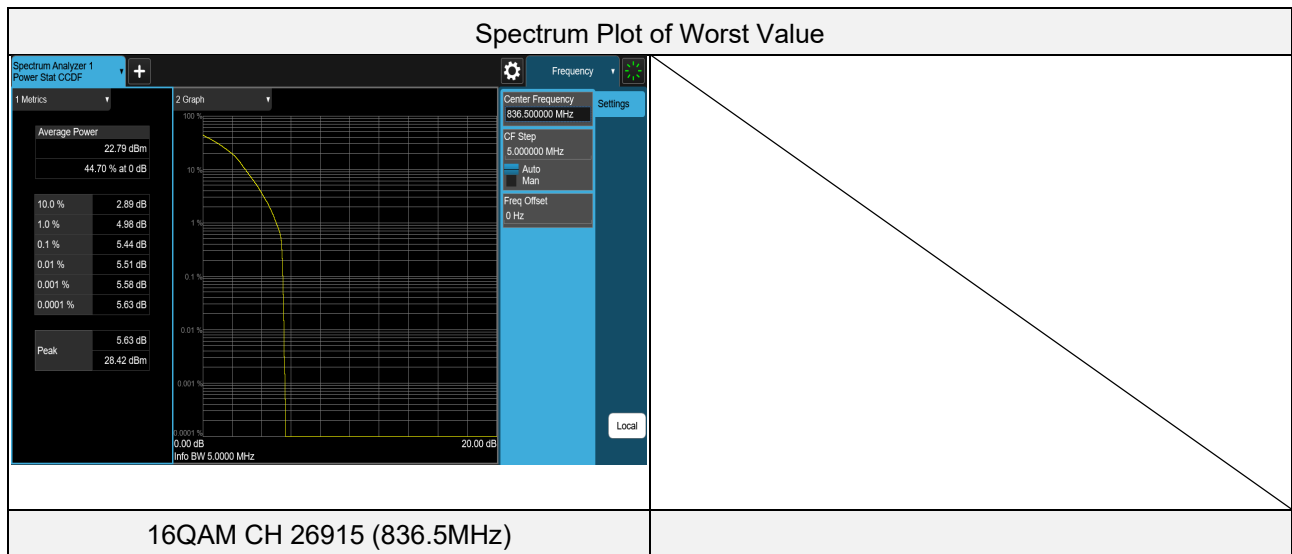
LTE Band 26 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	26805	825.5	4.89	13	Pass
QPSK	26915	836.5	4.58	13	Pass
QPSK	27025	847.5	4.62	13	Pass
16QAM	26805	825.5	5.49	13	Pass
16QAM	26915	836.5	5.50	13	Pass
16QAM	27025	847.5	5.26	13	Pass



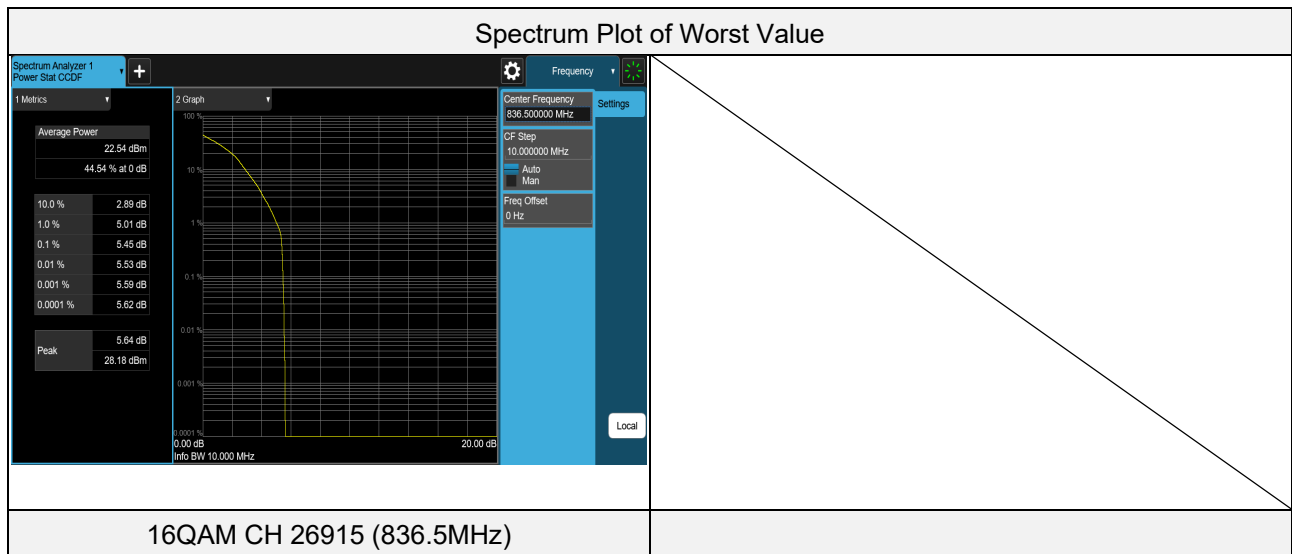
LTE Band 26 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	26815	826.5	4.82	13	Pass
QPSK	26915	836.5	4.52	13	Pass
QPSK	27015	846.5	4.59	13	Pass
16QAM	26815	826.5	5.40	13	Pass
16QAM	26915	836.5	5.44	13	Pass
16QAM	27015	846.5	5.23	13	Pass



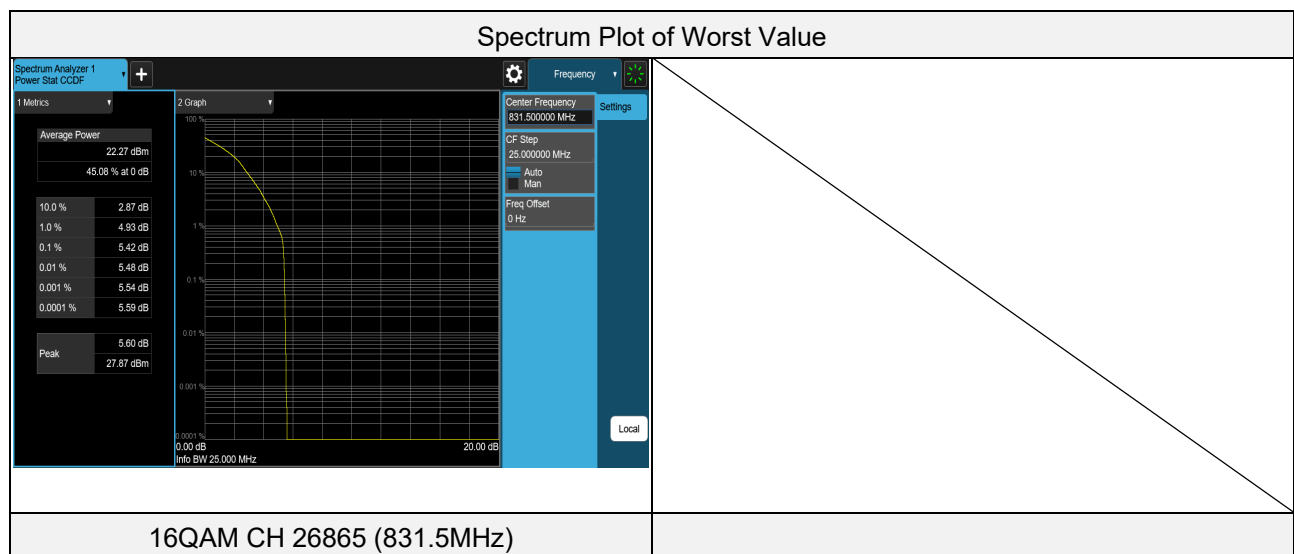
LTE Band 26 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	26840	829	4.81	13	Pass
QPSK	26915	836.5	4.51	13	Pass
QPSK	26990	844	4.34	13	Pass
16QAM	26840	829	5.42	13	Pass
16QAM	26915	836.5	5.45	13	Pass
16QAM	26990	844	5.38	13	Pass



LTE Band 26 (Channel Bandwidth 15MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
QPSK	26865	831.5	4.44	13	Pass
QPSK	26915	836.5	4.48	13	Pass
QPSK	26965	841.5	4.86	13	Pass
16QAM	26865	831.5	5.42	13	Pass
16QAM	26915	836.5	5.38	13	Pass
16QAM	26965	841.5	5.36	13	Pass

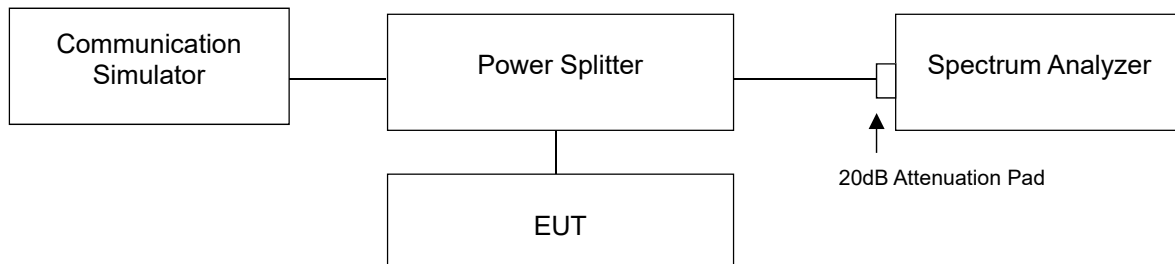


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

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. The emission limit equal to -13dBm .

4.7.2 Test Setup



4.7.3 Test Procedure

- All measurements were done at low, middle and high channels operational frequency range.
- Measuring frequency range is from 9kHz to 9GHz / 10GHz. 20dB attenuation pad is connected with spectrum. Detector = average, RBW = 1MHz and VBW = 3MHz are used for conducted emission measurement.