

FCC Test Report

(PART 22)

Report No.: RFBFMG-WTW-P22060328-6

FCC ID: B32V2104GPLUS

Test Model: V210 4G Plus

Received Date: Jun. 09, 2022

Test Date: Jul. 12, 2022 ~ Jul. 20, 2022

Issued Date: Sep. 08, 2022

Applicant: Verifone, Inc.

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

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

FCC Registration / 788550 / TW0003

Designation Number: 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBFMG-WTW-P22060328-6	Original Release	Sep. 08, 2022

1 Certificate of Conformity

Product: Point of Sale Terminal

Brand: Verifone

Test Model: V210 4G Plus

Sample Status: Engineering Sample

Applicant: Verifone, Inc.

Test Date: Jul. 12, 2022 ~ Jul. 20, 2022

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:** Sep. 08, 2022
Vera Huang / Specialist

Approved by : Jeremy Lin, **Date:** Sep. 08, 2022
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 22.913 (d)	Modulation Characteristics Peak to Average Ratio	Pass	Meet the requirement. 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 -20.45 dB at 1672.80 MHz.

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	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~ 1000MHz	2.92 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.	Date Of Calibration	Due Date Of Calibration
Test Receiver Rohde & Schwarz	ESR3	102579	Jul. 01, 2022	Jun. 30, 2023
Spectrum Analyzer KEYSIGHT	N9020B	MY60110462	Dec. 21, 2021	Dec. 20, 2022
BILOG Antenna SCHWARZBECK	VULB9168	995	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-404	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna EMCI	EM-6879	269	Sep. 16, 2021	Sep. 15, 2022
Preamplifier EMCI	EMC330N	980783	Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980810	Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980787	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM-(900 0+2000+1000)	201230+ 201242+ 210101	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM-NM -(9000+300+500)	201252+ 201250+ 201245	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM-(5 000+3000+2000)	201261+201258+ 201249	Jan. 17, 2022	Jan. 16, 2023
Software BV CPS	ADT_Radiated_V7.6.1 5.9.5	NA	NA	NA
Turn Table Max-Full	MFT-151SS-0.5T	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208675	NA	NA
Antenna Tower KaiTuo	NA	NA	NA	NA
Antenna Tower Controller KaiTuo	KT-2000	NA	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5 5190004/MY55190 007/MY55210005	Jul. 12, 2021	Jul. 11, 2022
			Jul. 13, 2022	Jul. 12, 2023
Radio Communication Analyzer Anritsu	MT8821C	6261806803	Feb. 16, 2022	Feb. 15, 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 7.

3 General Information

3.1 General Description of EUT

Product	Point of Sale Terminal	
Brand	Verifone	
Test Model	V210 4G Plus	
Status of EUT	Engineering Sample	
Power Supply Rating	5 Vdc (from adapter) 3.7 Vdc (from Li-ion battery)	
Modulation Type	GSM/GPRS	GMSK
	EDGE	GMSK, 8PSK
	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	GSM/GPRS/EDGE	824.2 ~ 848.8 MHz
	WCDMA	826.4 ~ 846.6 MHz
	LTE 5 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 5 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 5 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 5 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
Max. ERP Power	GSM/GPRS	1815.516 mW (32.59dBm)
	EDGE	423.643 mW (26.27dBm)
	WCDMA	180.302 mW (22.56dBm)
	LTE 5 (Channel Bandwidth: 1.4 MHz)	167.494 mW (22.24dBm)
	LTE 5 (Channel Bandwidth: 3 MHz)	163.682 mW (22.14dBm)
	LTE 5 (Channel Bandwidth: 5 MHz)	162.930 mW (22.12dBm)
	LTE 5 (Channel Bandwidth: 10 MHz)	168.267 mW (22.26dBm)
Emission Designator	GSM/GPRS	249KGXW
	EDGE	248KG7W
	WCDMA	4M19F9W
	LTE 5 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE 5 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE 5 (Channel Bandwidth: 5 MHz)	4M49G7D
	LTE 5 (Channel Bandwidth: 10 MHz)	8M96D7W

Note:

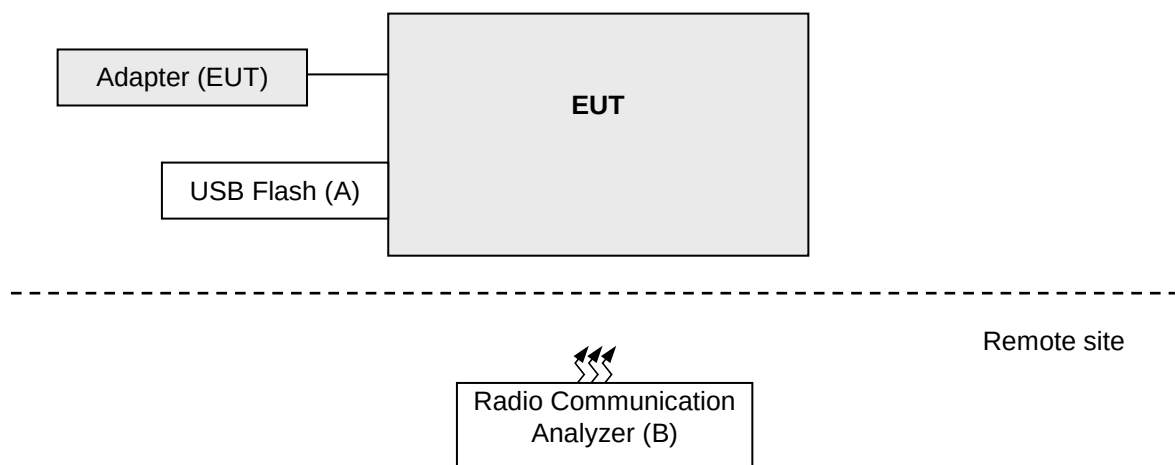
1. The antenna information is listed as below.

Ant. Type	Ant.	Antenna Peak Gain (dBi)				
		GSM850 / WCDMA 5 / LTE 5	GSM1900 / WCDMA 2 / LTE 2	WCDMA 4 / LTE 4	LTE 7	LTE 66
Dipole	1	0	3.6	3.2	2.0	3.2
	2	1.9	3.8	2.7	2.2	2.7

* The Max antenna gain was chosen for final test.

2. Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.
3. 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	USB Flash	SanDisk	SDDDC3-032G	N/A	N/A	Supplied by lab
B	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	N/A	Supplied 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, XYZ axis, and antenna ports.

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	Radiated Emission
GSM	X-axis
EDGE	X-axis
WCDMA	X-axis
LTE Band 5	X-axis

GSM

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	128 to 251	128, 189, 251	GSM, EDGE
-	Modulation Characteristics	128 to 251	189	GSM, EDGE
-	Frequency Stability	128 to 251	128, 251	GSM, EDGE
-	Occupied Bandwidth	128 to 251	128, 189, 251	GSM, EDGE
-	Band Edge	128 to 251	128, 251	GSM, EDGE
-	Peak to Average Ratio	128 to 251	128, 189, 251	GSM, EDGE
-	Conducted Emission	128 to 251	128, 189, 251	GSM, EDGE
-	Radiated Emission Below 1GHz	128 to 251	189	GSM, EDGE
-	Radiated Emission Above 1GHz	128 to 251	128, 189, 251	GSM, EDGE

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

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Modulation Characteristics	4132 to 4233	4182	WCDMA, HSDPA, HSUPA
-	Frequency Stability	4132 to 4233	4132, 4233	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Band Edge	4132 to 4233	4132, 4233	WCDMA, HSDPA, HSUPA
-	Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Conducted Emission	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	4132 to 4233	4182	WCDMA
-	Radiated Emission Above 1GHz	4132 to 4233	4132, 4182, 4233	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, 20525, 20643	1.4 MHz	QPSK / 16QAM	1 Half Full
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK / 16QAM	1 Half Full
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK / 16QAM	1 Half Full
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK / 16QAM	1 Half Full
-	Modulation Characteristics	20450 to 20600	20525	10 MHz	QPSK / 16QAM	Full
-	Frequency Stability	20407 to 20643	20407, 20643	1.4 MHz	QPSK	Full
		20415 to 20635	20415, 20635	3 MHz	QPSK	Full
		20425 to 20625	20425, 20625	5 MHz	QPSK	Full
		20450 to 20600	20450, 20600	10 MHz	QPSK	Full
-	Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK / 16QAM	Full
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK / 16QAM	Full
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK / 16QAM	Full
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK / 16QAM	Full
-	Band Edge	20407 to 20643	20407, 20643	1.4MHz	QPSK	1 Half Full
		20415 to 20635	20415, 20635	3 MHz	QPSK	1 Half Full
		20425 to 20625	20425, 20625	5 MHz	QPSK	1 Half Full
		20450 to 20600	20450, 20600	10 MHz	QPSK	1 Half Full
-	Peak to Average Ratio	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK / 16QAM	1
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK / 16QAM	1
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK / 16QAM	1
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK / 16QAM	1
-	Conducted Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK	1
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1
-	Radiated Emission Below 1GHz	20450 to 20600	20525	10 MHz	QPSK	1
-	Radiated Emission Above 1GHz	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation. Therefore, only ERP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Modulation Characteristics	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Frequency Stability	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Occupied Bandwidth	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Band Edge	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Peak to Average Ratio	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Conducted Emission	25 deg. C, 65 % RH	3.7 Vdc	James Yang
Radiated Emission Below 1GHz	23 deg. C, 68 % RH	120 Vac, 60 Hz	Edison Lee
Radiated Emission Above 1GHz	23 deg. C, 68 % RH	120 Vac, 60 Hz	Edison Lee / Wade Huang

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 and references:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

Note: All test items have been performed as a reference to the above KDB test guidance.

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 GSM, GPRS, EDGE, WCDMA, and LTE link data modulation and link up with simulator. 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:

$$\text{EIRP} = P_{\text{Meas}} + G_T$$

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

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	GSM850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	32.83	32.54	32.83
GPRS (GMSK, 1Tx-slot)	32.84	32.74	32.81
GPRS (GMSK, 2Tx-slot)	32.82	32.73	32.80
GPRS (GMSK, 3Tx-slot)	31.26	31.14	31.24
GPRS (GMSK, 4Tx-slot)	29.19	29.07	29.15
EDGE (8PSK, 1Tx-slot)	26.31	26.48	26.52
EDGE (8PSK, 2Tx-slot)	26.05	26.19	26.35
EDGE (8PSK, 3Tx-slot)	24.12	24.63	24.71
EDGE (8PSK, 4Tx-slot)	22.09	22.53	22.56

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.53	22.81	22.41
HSDPA Subtest-1	21.51	21.79	21.39
HSDPA Subtest-2	21.43	21.71	21.31
HSDPA Subtest-3	20.95	21.23	20.83
HSDPA Subtest-4	21.03	21.31	20.91
HSUPA Subtest-1	21.50	21.78	21.38
HSUPA Subtest-2	20.59	20.87	20.47
HSUPA Subtest-3	21.54	21.82	21.42
HSUPA Subtest-4	19.98	20.26	19.86

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	22.48	22.49	22.39
		1	2	22.32	22.30	22.14
		1	5	22.14	22.18	22.09
		3	0	22.09	22.03	22.29
		3	1	22.25	22.31	22.35
		3	3	22.16	22.34	22.20
		6	0	21.29	21.34	21.26
	16QAM	1	0	21.74	21.85	21.62
		1	2	21.47	21.47	21.46
		1	5	21.39	21.42	21.27
		3	0	20.74	20.73	20.72
		3	1	21.40	21.41	21.47
		3	3	21.19	21.30	21.18
		6	0	20.32	20.37	20.24

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	22.00	22.39	22.37
		1	7	22.39	22.32	22.16
		1	14	22.08	22.10	22.08
		8	0	21.40	21.43	21.41
		8	3	21.19	21.35	21.23
		8	7	21.23	21.21	21.28
		15	0	21.33	21.32	21.39
	16QAM	1	0	21.79	21.81	21.70
		1	7	21.58	21.51	21.49
		1	14	21.42	21.36	21.26
		8	0	20.79	20.78	20.75
		8	3	20.32	20.27	20.42
		8	7	20.20	20.26	20.25
		15	0	20.34	20.31	20.28

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	21.95	22.32	22.09
		1	12	22.37	22.29	22.16
		1	24	22.21	22.16	22.05
		12	0	21.38	21.41	21.41
		12	6	21.21	21.37	21.16
		12	13	21.29	21.20	21.14
		25	0	21.27	21.32	21.32
	16QAM	1	0	21.73	21.80	21.61
		1	12	21.47	21.53	21.38
		1	24	21.41	21.44	21.36
		12	0	20.81	20.79	20.81
		12	6	20.31	20.37	20.46
		12	13	20.25	20.19	20.30
		25	0	20.28	20.31	20.31

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	22.41	22.51	22.47
		1	24	22.39	22.45	22.27
		1	49	22.22	22.28	22.21
		25	0	21.49	21.61	21.51
		25	12	21.30	21.47	21.35
		25	25	21.29	21.43	21.29
		50	0	21.35	21.46	21.39
	16QAM	1	0	21.84	21.87	21.76
		1	24	21.60	21.63	21.53
		1	49	21.48	21.57	21.36
		25	0	20.88	20.82	20.85
		25	12	20.46	20.51	20.48
		25	25	20.33	20.44	20.33
		50	0	20.37	20.48	20.39

ERP Power (dBm)

Band	GSM850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	32.58	32.29	32.58
GPRS (GMSK, 1Tx-slot)	32.59	32.49	32.56
GPRS (GMSK, 2Tx-slot)	32.57	32.48	32.55
GPRS (GMSK, 3Tx-slot)	31.01	30.89	30.99
GPRS (GMSK, 4Tx-slot)	28.94	28.82	28.90
EDGE (8PSK, 1Tx-slot)	26.06	26.23	26.27
EDGE (8PSK, 2Tx-slot)	25.80	25.94	26.10
EDGE (8PSK, 3Tx-slot)	23.87	24.38	24.46
EDGE (8PSK, 4Tx-slot)	21.84	22.28	22.31

*ERP = Conducted + antenna gain (1.9dBi)-2.15

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.28	22.56	22.16
HSDPA Subtest-1	21.26	21.54	21.14
HSDPA Subtest-2	21.18	21.46	21.06
HSDPA Subtest-3	20.70	20.98	20.58
HSDPA Subtest-4	20.78	21.06	20.66
HSUPA Subtest-1	21.25	21.53	21.13
HSUPA Subtest-2	20.34	20.62	20.22
HSUPA Subtest-3	21.29	21.57	21.17
HSUPA Subtest-4	19.73	20.01	19.61

*ERP = Conducted + antenna gain (1.9dBi)-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	22.23	22.24	22.14
		1	2	22.07	22.05	21.89
		1	5	21.89	21.93	21.84
		3	0	21.84	21.78	22.04
		3	1	22.00	22.06	22.10
		3	3	21.91	22.09	21.95
		6	0	21.04	21.09	21.01
	16QAM	1	0	21.49	21.60	21.37
		1	2	21.22	21.22	21.21
		1	5	21.14	21.17	21.02
		3	0	20.49	20.48	20.47
		3	1	21.15	21.16	21.22
		3	3	20.94	21.05	20.93
		6	0	20.07	20.12	19.99

*ERP = Conducted + antenna gain (1.9dBi)-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	21.75	22.14	22.12
		1	7	22.14	22.07	21.91
		1	14	21.83	21.85	21.83
		8	0	21.15	21.18	21.16
		8	3	20.94	21.10	20.98
		8	7	20.98	20.96	21.03
		15	0	21.08	21.07	21.14
	16QAM	1	0	21.54	21.56	21.45
		1	7	21.33	21.26	21.24
		1	14	21.17	21.11	21.01
		8	0	20.54	20.53	20.50
		8	3	20.07	20.02	20.17
		8	7	19.95	20.01	20.00
		15	0	20.09	20.06	20.03

*ERP = Conducted + antenna gain (1.9dBi)-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	22.07	21.84
		1	12	22.12	22.04	21.91
		1	24	21.96	21.91	21.80
		12	0	21.13	21.16	21.16
		12	6	20.96	21.12	20.91
		12	13	21.04	20.95	20.89
		25	0	21.02	21.07	21.07
	16QAM	1	0	21.48	21.55	21.36
		1	12	21.22	21.28	21.13
		1	24	21.16	21.19	21.11
		12	0	20.56	20.54	20.56
		12	6	20.06	20.12	20.21
		12	13	20.00	19.94	20.05
		25	0	20.03	20.06	20.06

*ERP = Conducted + antenna gain (1.9dBi)-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	22.16	22.26	22.22
		1	24	22.14	22.20	22.02
		1	49	21.97	22.03	21.96
		25	0	21.24	21.36	21.26
		25	12	21.05	21.22	21.10
		25	25	21.04	21.18	21.04
		50	0	21.10	21.21	21.14
	16QAM	1	0	21.59	21.62	21.51
		1	24	21.35	21.38	21.28
		1	49	21.23	21.32	21.11
		25	0	20.63	20.57	20.60
		25	12	20.21	20.26	20.23
		25	25	20.08	20.19	20.08
		50	0	20.12	20.23	20.14

*ERP = Conducted + antenna gain (1.9dBi)-2.15

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

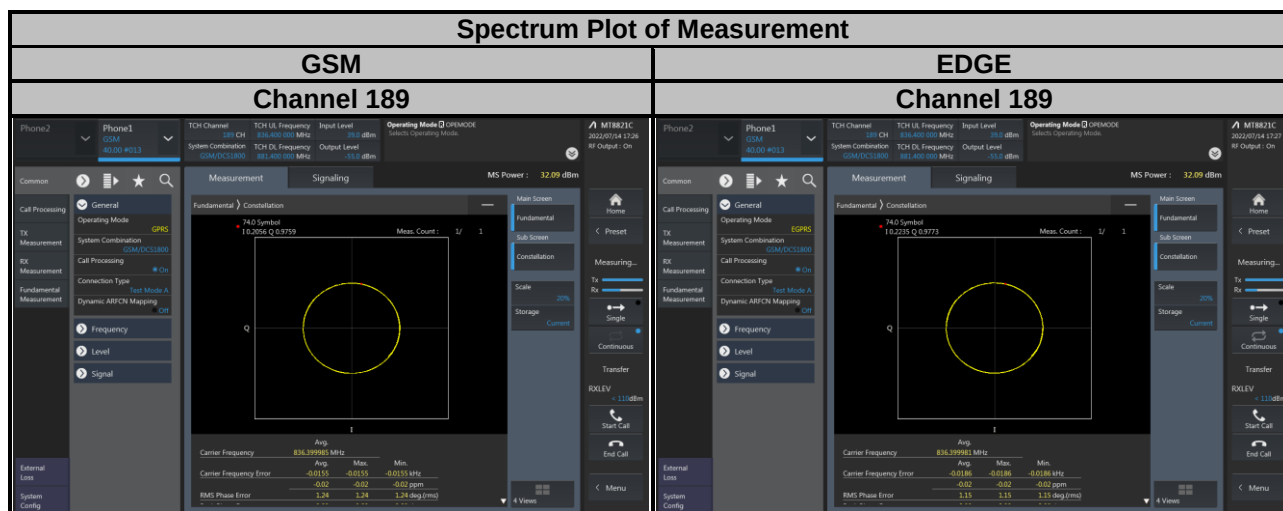
4.2.2 Test Setup



4.2.3 Test Procedure

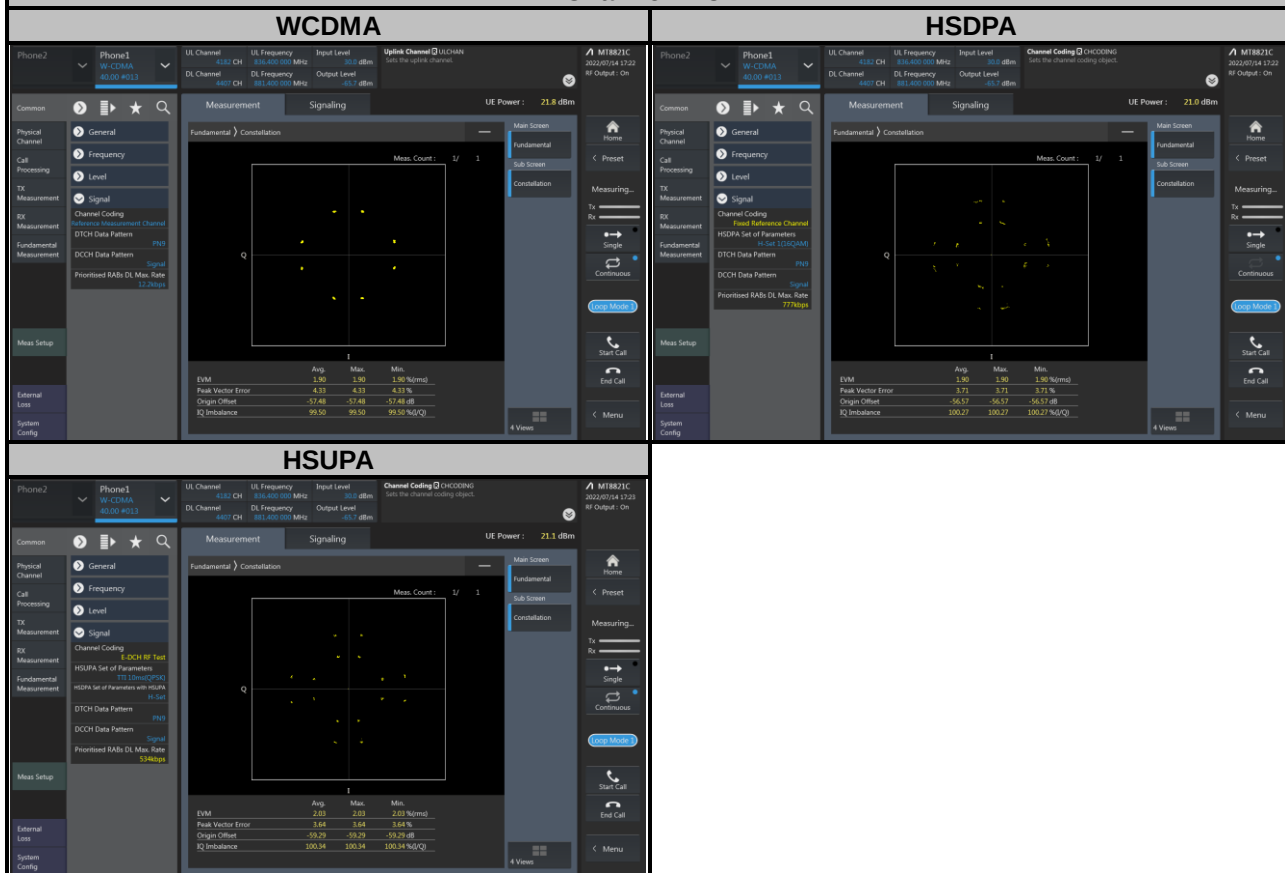
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.4 Test Results



Spectrum Plot of Measurement

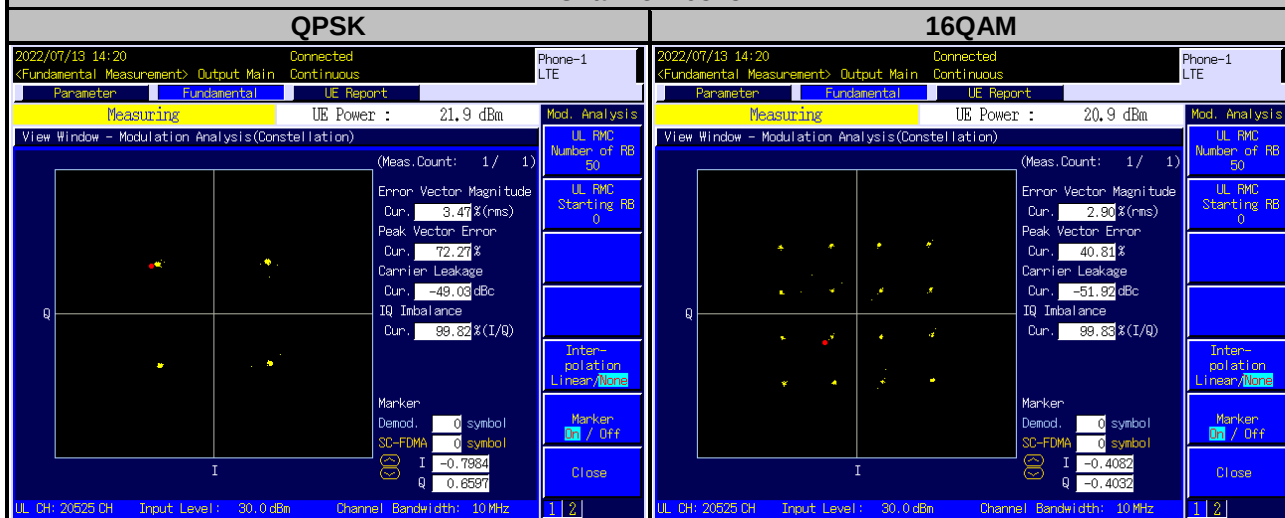
Channel 4182



Spectrum Plot of Measurement

LTE Band 5

Channel 20525



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

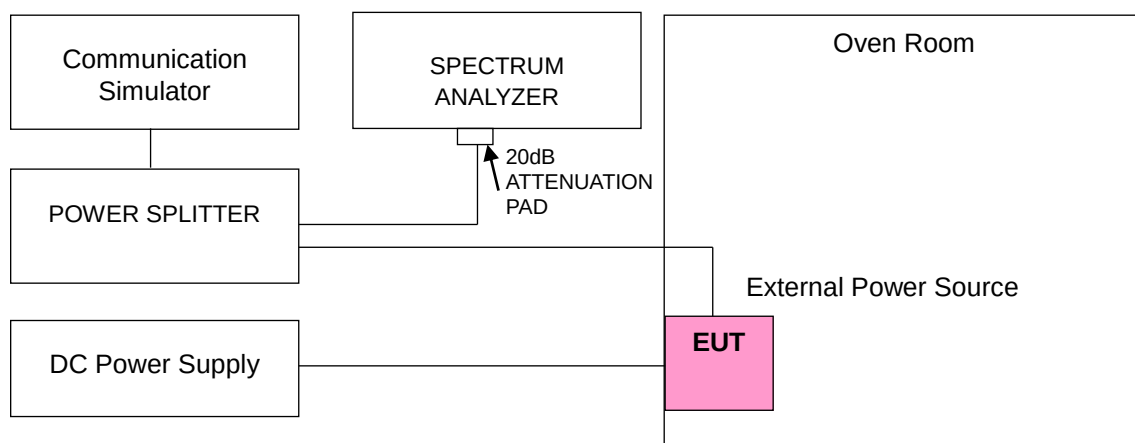
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 (Volts)	GSM			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	824.200004	0.004	848.800002	0.002
3.15	824.200002	0.002	848.800002	0.002
4.26	824.200004	0.004	848.800002	0.002

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	GSM			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.200003	0.004	848.800001	0.002
-20	824.200004	0.004	848.800002	0.002
-10	824.200004	0.004	848.800003	0.003
0	824.200004	0.005	848.800002	0.003
10	824.200004	0.005	848.800002	0.002
20	824.199998	-0.003	848.799997	-0.003
30	824.199999	-0.001	848.799998	-0.002
40	824.199997	-0.004	848.799996	-0.004
50	824.199999	-0.001	848.799998	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	EDGE			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	824.200002	0.002	848.800002	0.002
3.15	824.200004	0.004	848.800001	0.002
4.26	824.200002	0.003	848.800003	0.003

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	EDGE			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.200001	0.001	848.800003	0.004
-20	824.200002	0.002	848.800001	0.001
-10	824.200004	0.004	848.800002	0.002
0	824.200002	0.003	848.800003	0.004
10	824.200002	0.002	848.800002	0.003
20	824.199999	-0.002	848.799997	-0.004
30	824.199999	-0.002	848.799996	-0.005
40	824.199997	-0.004	848.799998	-0.003
50	824.199998	-0.002	848.799997	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	826.400002	0.002	846.600002	0.002
3.15	826.400001	0.001	846.600002	0.002
4.26	826.400003	0.004	846.600003	0.003

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.400002	0.003	846.600003	0.004
-20	826.400001	0.001	846.600003	0.004
-10	826.400002	0.003	846.600003	0.003
0	826.400004	0.004	846.600002	0.002
10	826.400003	0.004	846.600003	0.003
20	826.399996	-0.005	846.599996	-0.005
30	826.399997	-0.004	846.599998	-0.003
40	826.399999	-0.001	846.599997	-0.003
50	826.399999	-0.002	846.599998	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	824.700001	0.001	848.300003	0.003
3.15	824.700004	0.005	848.300004	0.004
4.26	824.700003	0.003	848.300001	0.001

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

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	824.700004	0.004	848.300002	0.002
-20	824.700003	0.004	848.300002	0.002
-10	824.700003	0.003	848.300001	0.002
0	824.700004	0.005	848.300002	0.002
10	824.700004	0.004	848.300003	0.004
20	824.699997	-0.004	848.299998	-0.002
30	824.699996	-0.004	848.299998	-0.002
40	824.699998	-0.002	848.299998	-0.003
50	824.699997	-0.004	848.299999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	825.500001	0.001	847.500002	0.002
3.15	825.500003	0.003	847.500004	0.004
4.26	825.500003	0.004	847.500002	0.003

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

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	825.500004	0.005	847.500003	0.004
-20	825.500001	0.002	847.500002	0.002
-10	825.500002	0.002	847.500002	0.003
0	825.500004	0.005	847.500002	0.002
10	825.500001	0.002	847.500001	0.001
20	825.499998	-0.003	847.499996	-0.005
30	825.499997	-0.004	847.499997	-0.003
40	825.499998	-0.003	847.499998	-0.002
50	825.499998	-0.003	847.499998	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	826.500002	0.003	846.500002	0.003
3.15	826.500002	0.002	846.500001	0.001
4.26	826.500003	0.004	846.500003	0.003

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

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	826.500001	0.001	846.500004	0.005
-20	826.500003	0.004	846.500001	0.001
-10	826.500003	0.004	846.500004	0.005
0	826.500001	0.001	846.500003	0.003
10	826.500003	0.003	846.500003	0.003
20	826.499999	-0.002	846.499998	-0.002
30	826.499998	-0.002	846.499998	-0.003
40	826.499996	-0.005	846.499998	-0.002
50	826.499997	-0.003	846.499997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.7	829.000002	0.002	844.000004	0.005
3.15	829.000004	0.005	844.000002	0.003
4.26	829.000003	0.004	844.000004	0.005

Note: The applicant defined the normal working voltage is from 3.15 Vdc to 4.26 Vdc.

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	829.000002	0.002	844.000002	0.002
-20	829.000004	0.004	844.000002	0.002
-10	829.000003	0.004	844.000004	0.004
0	829.000003	0.003	844.000004	0.004
10	829.000002	0.002	844.000003	0.004
20	828.999998	-0.003	843.999997	-0.004
30	828.999998	-0.002	843.999996	-0.005
40	828.999998	-0.003	843.999997	-0.004
50	828.999997	-0.004	843.999999	-0.001

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

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

4.4.2 Test Procedure

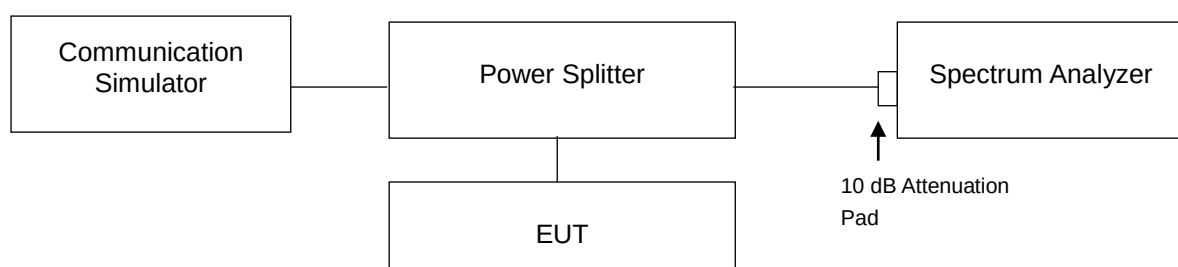
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

- 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.
- The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- 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.
- 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.
- Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- 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).
- 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.
- Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- The 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

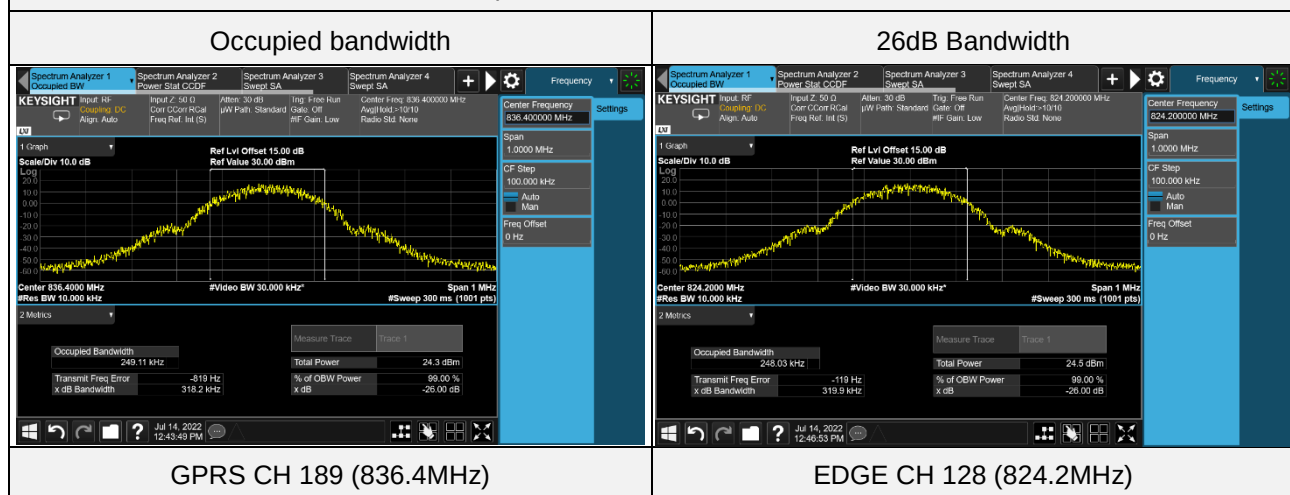


4.4.4 Test Result

GPRS, EDGE

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (kHz)	26dB Bandwidth (kHz)
GPRS	128	824.2	246.93	316.90
GPRS	189	836.4	249.11	318.20
GPRS	251	848.8	245.49	318.00
EDGE	128	824.2	248.03	319.90
EDGE	189	836.4	245.79	319.20
EDGE	251	848.8	246.41	316.90

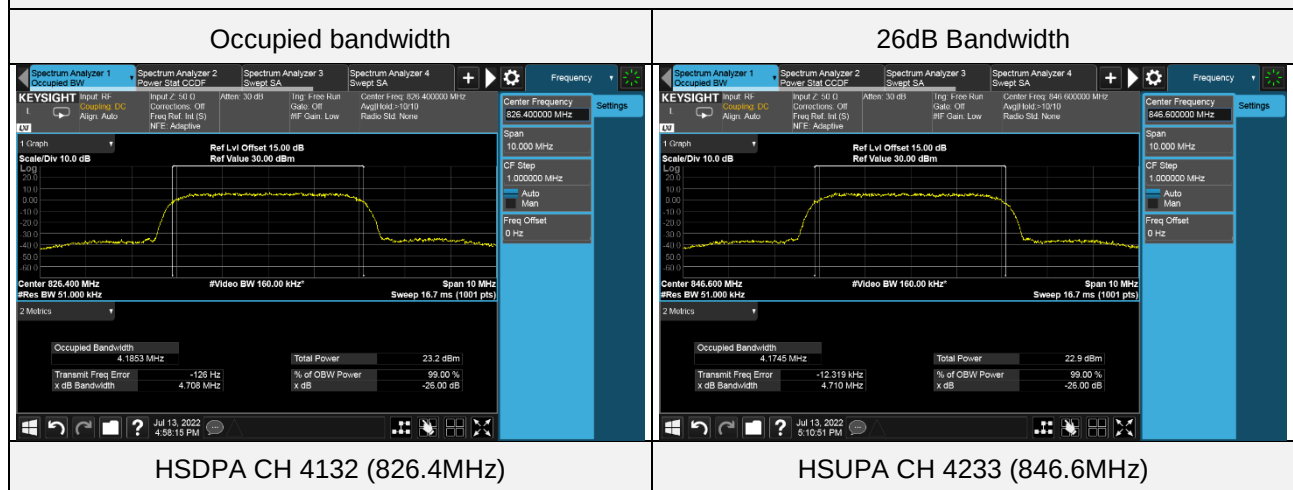
Spectrum Plot of Worst Value



WCDMA

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26dB Bandwidth (MHz)
WCDMA	4132	826.4	4.17	4.69
WCDMA	4182	836.4	4.17	4.70
WCDMA	4233	846.6	4.17	4.69
HSDPA	4132	826.4	4.19	4.71
HSDPA	4182	836.4	4.17	4.70
HSDPA	4233	846.6	4.18	4.67
HSUPA	4132	826.4	4.17	4.70
HSUPA	4182	836.4	4.17	4.71
HSUPA	4233	846.6	4.18	4.71

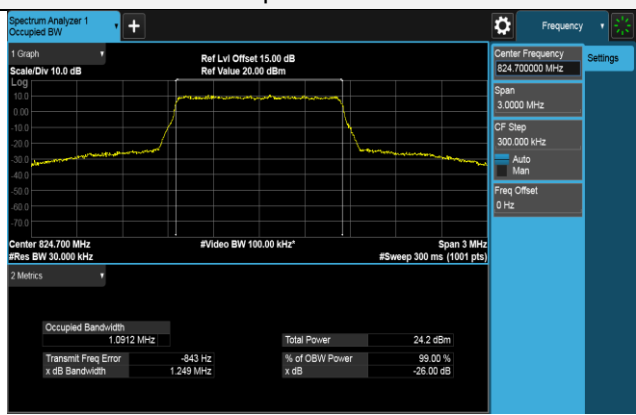
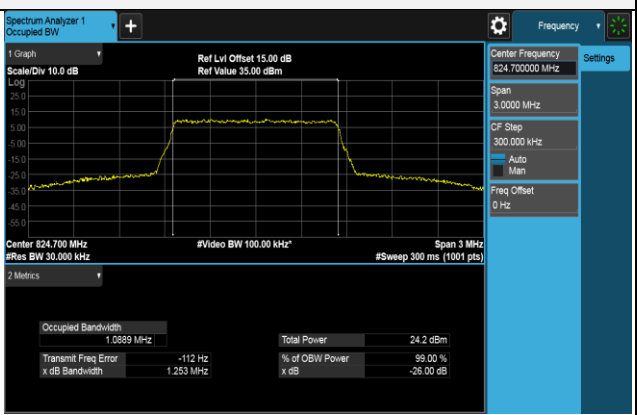
Spectrum Plot of Worst Value



LTE Band 5 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	20407	824.7	1.0889	1.253
QPSK	20525	836.5	1.0893	1.243
QPSK	20643	848.3	1.0904	1.249
16QAM	20407	824.7	1.0912	1.249
16QAM	20525	836.5	1.0892	1.246
16QAM	20643	848.3	1.0900	1.249

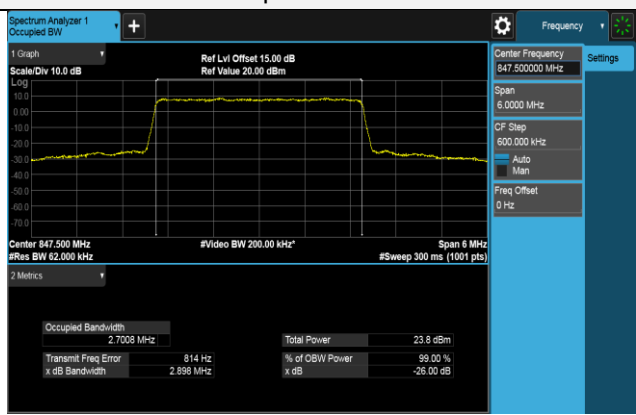
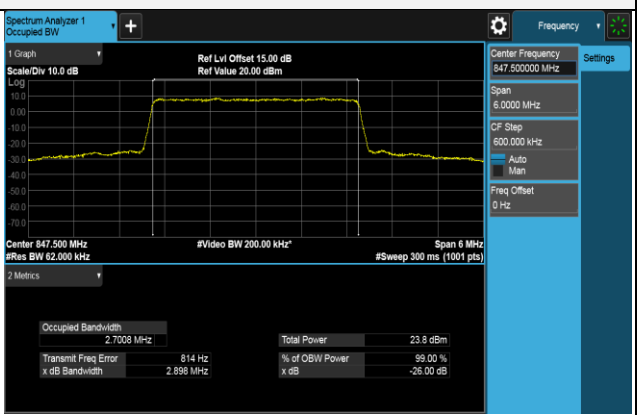
Spectrum Plot of Worst Value

Occupied bandwidth	26 dB Bandwidth
	
16QAM CH 20407 (824.7MHz)	QPSK CH 20407 (824.7MHz)

LTE Band 5 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	20415	825.5	2.6983	2.896
QPSK	20525	836.5	2.6992	2.894
QPSK	20635	847.5	2.7008	2.898
16QAM	20415	825.5	2.6990	2.895
16QAM	20525	836.5	2.6988	2.895
16QAM	20635	847.5	2.7004	2.892

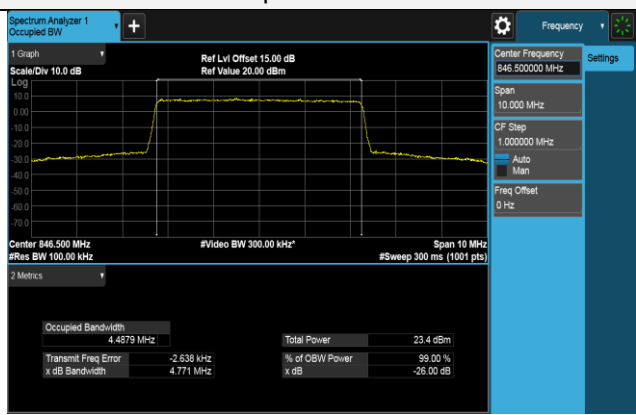
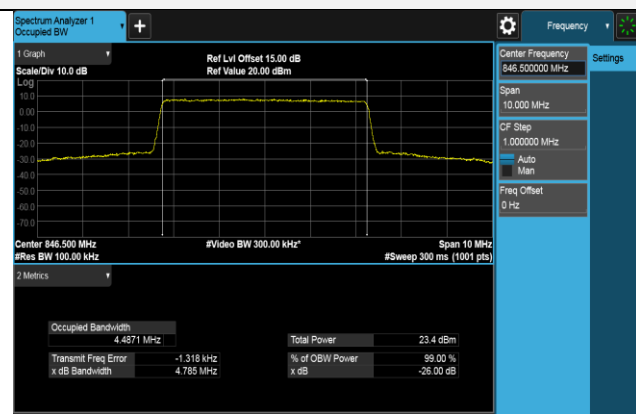
Spectrum Plot of Worst Value

Occupied bandwidth	26 dB Bandwidth
 Center Frequency 847.500000 MHz Span 6.0000 MHz CF Step 600.000 kHz Auto Man Freq Offset 0 Hz Center 847.500 MHz #Res BW 62.000 kHz #Video BW 200.00 kHz #Sweep 300 ms (1001 pts) 2 Metrics Occupied Bandwidth 2.7008 MHz Total Power 23.8 dBm Transmit Freq Error 814 Hz % of OBW Power 99.00 % x dB Bandwidth 2.898 MHz x dB -26.00 dB	 Center Frequency 847.500000 MHz Span 6.0000 MHz CF Step 600.000 kHz Auto Man Freq Offset 0 Hz Center 847.500 MHz #Res BW 62.000 kHz #Video BW 200.00 kHz #Sweep 300 ms (1001 pts) 2 Metrics Occupied Bandwidth 2.7008 MHz Total Power 23.8 dBm Transmit Freq Error 814 Hz % of OBW Power 99.00 % x dB Bandwidth 2.898 MHz x dB -26.00 dB
QPSK CH 20635 (847.5MHz)	QPSK CH 20635 (847.5MHz)

LTE Band 5 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	20425	826.5	4.4876	4.778
QPSK	20525	836.5	4.4862	4.769
QPSK	20625	846.5	4.4879	4.771
16QAM	20425	826.5	4.4872	4.777
16QAM	20525	836.5	4.4844	4.775
16QAM	20625	846.5	4.4871	4.785

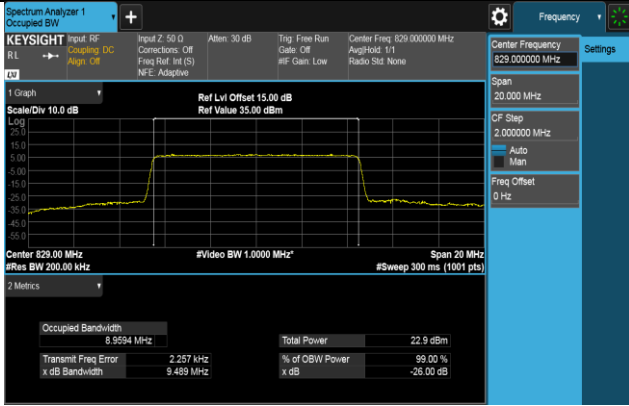
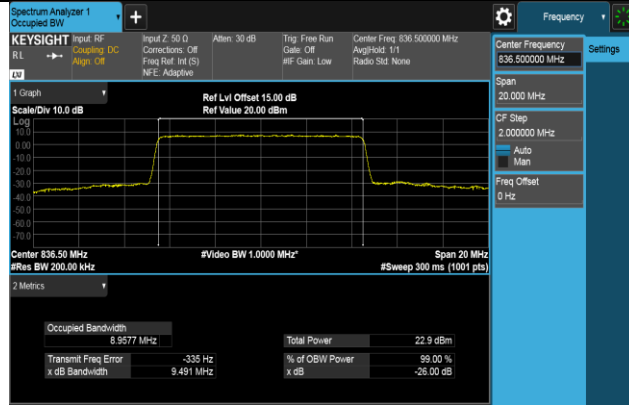
Spectrum Plot of Worst Value

Occupied bandwidth	26 dB Bandwidth
 Center Frequency 846.500000 MHz Span 10.000 MHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz Center 846.500 MHz #Video BW 300.00 kHz #Sweep 300 ms (1001 pts) 2 Metrics Occupied Bandwidth 4.4879 MHz Total Power 23.4 dBm Transmit Freq Error -2.638 kHz % of OBW Power 99.00 % x dB Bandwidth 4.771 MHz x dB -26.00 dB	 Center Frequency 846.500000 MHz Span 10.000 MHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz Center 846.500 MHz #Video BW 300.00 kHz #Sweep 300 ms (1001 pts) 2 Metrics Occupied Bandwidth 4.4871 MHz Total Power 23.4 dBm Transmit Freq Error -1.318 kHz % of OBW Power 99.00 % x dB Bandwidth 4.785 MHz x dB -26.00 dB
QPSK CH 20625 (846.5MHz)	16QAM CH 20625 (846.5MHz)

LTE Band 5 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Occupied bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	20450	829	8.9594	9.489
QPSK	20525	836.5	8.9577	9.491
QPSK	20600	844	8.9532	9.480
16QAM	20450	829	8.9583	9.487
16QAM	20525	836.5	8.9586	9.484
16QAM	20600	844	8.9521	9.474

Spectrum Plot of Worst Value

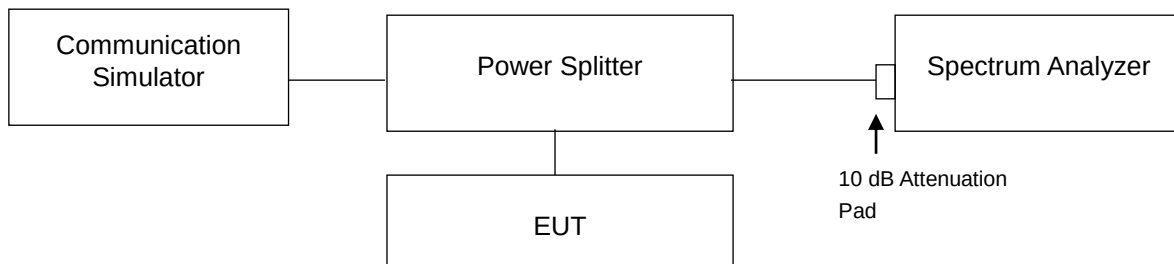
Occupied bandwidth	26 dB Bandwidth
 Center Frequency: 829.000000 MHz Span: 20.000 MHz CF Step: 2.000000 MHz Ref Lvl Offset: 15.00 dB Ref Value: 35.00 dBm Occupied Bandwidth: 8.9594 MHz Total Power: 22.9 dBm Transmit Freq Error: 2.257 kHz % of OBW Power: 99.00 % x dB Bandwidth: 9.489 MHz x dB: -26.00 dB	 Center Frequency: 836.500000 MHz Span: 20.000 MHz CF Step: 2.000000 MHz Ref Lvl Offset: 15.00 dB Ref Value: 20.00 dBm Occupied Bandwidth: 8.9577 MHz Total Power: 22.9 dBm Transmit Freq Error: -335 Hz % of OBW Power: 99.00 % x dB Bandwidth: 9.491 MHz x dB: -26.00 dB
QPSK CH 20450 (829MHz)	QPSK CH 20525 (836.5MHz)

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

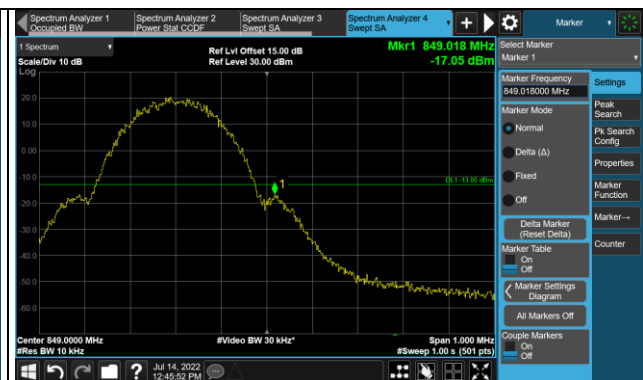
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 10 kHz and VB of the spectrum is 30 kHz (GPRS/EDGE).
- The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (WCDMA / HSDPA / HSUPA).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 15 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (LTE Bandwidth 5 MHz).
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 10 MHz).
- Record the max trace plot into the test report.

4.5.4 Test Results

GPRS



824.2MHz

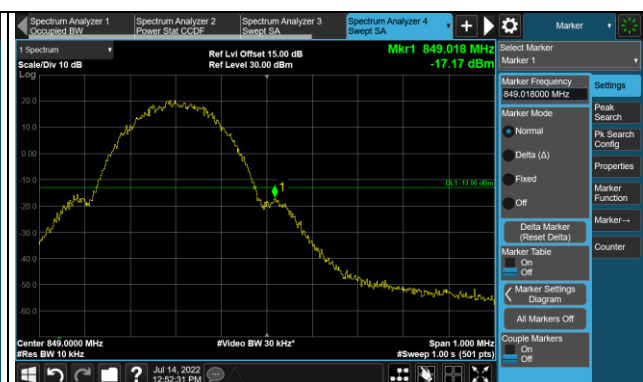


848.8MHz

EDGE

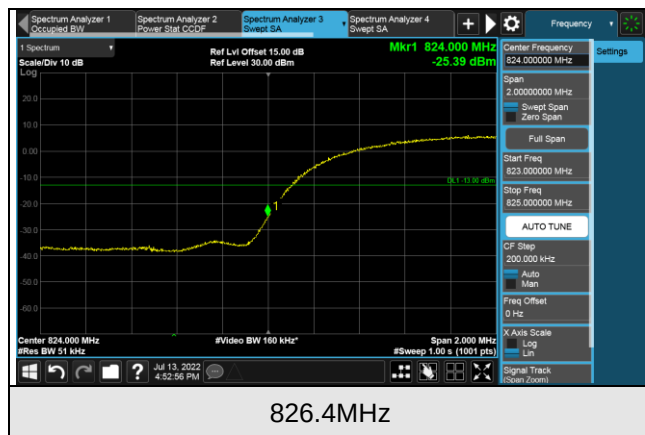


824.2MHz

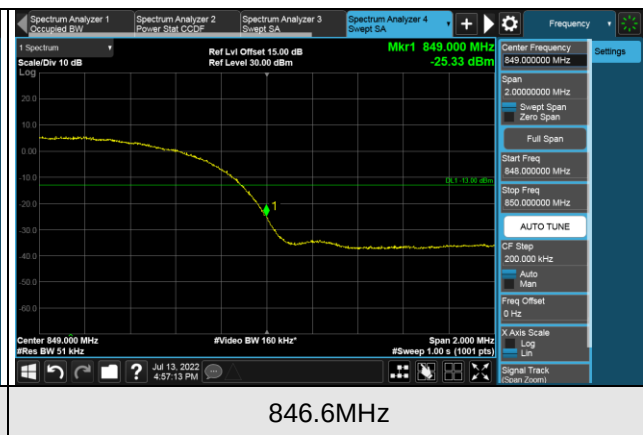


848.8MHz

WCDMA

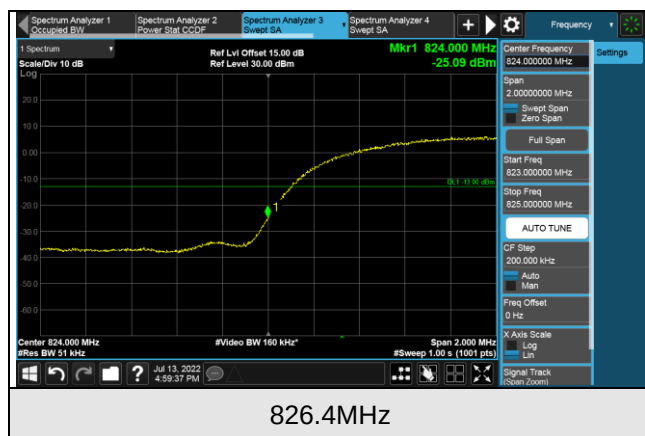


826.4MHz

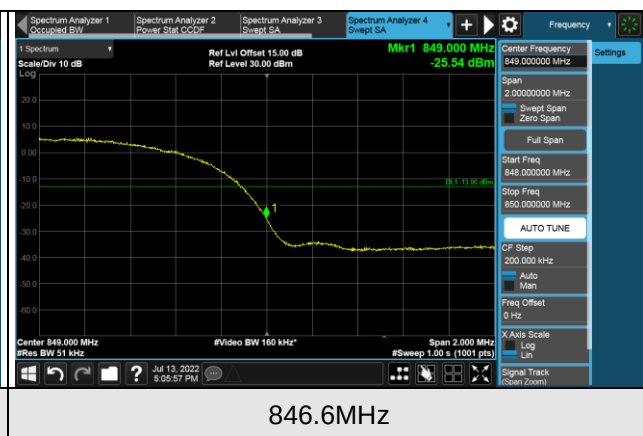


846.6MHz

HSDPA

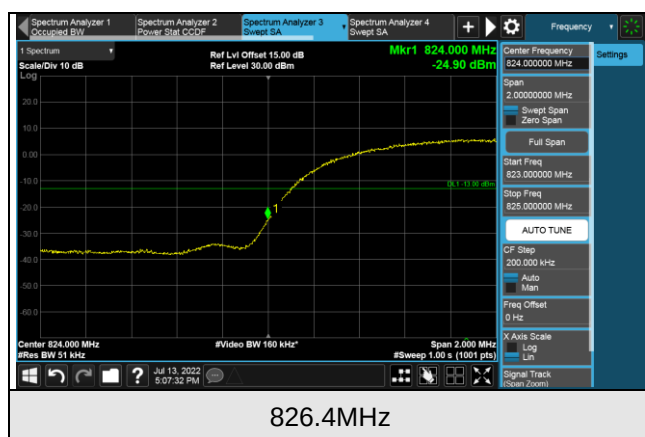


826.4MHz

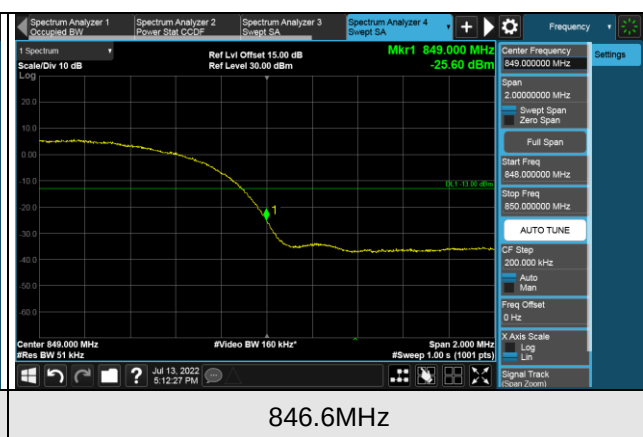


846.6MHz

HSUPA

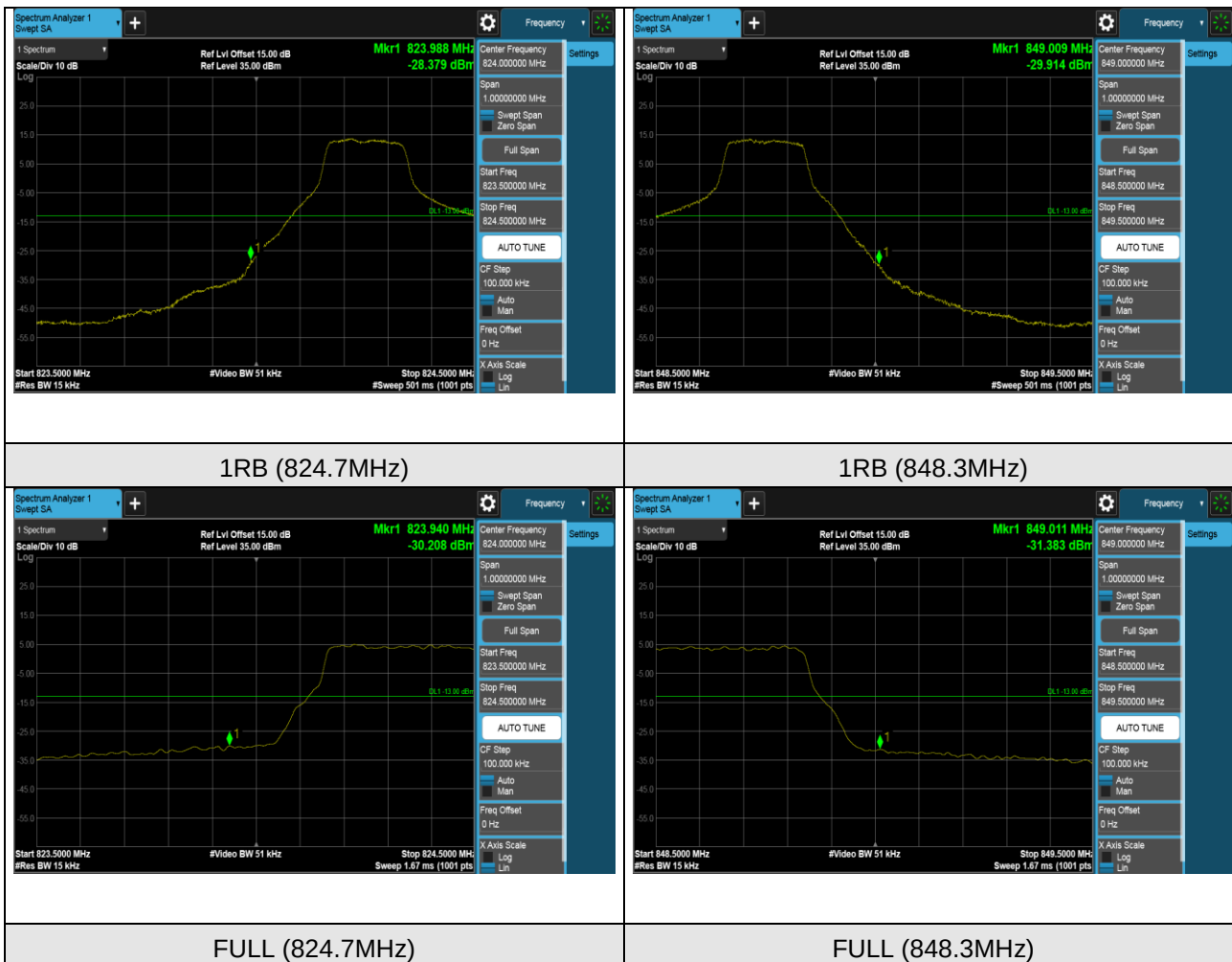


826.4MHz

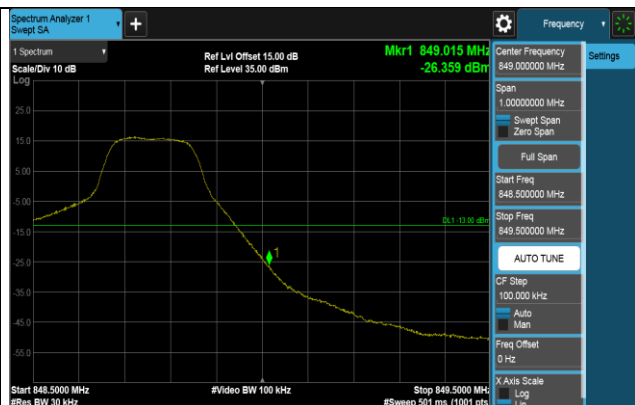
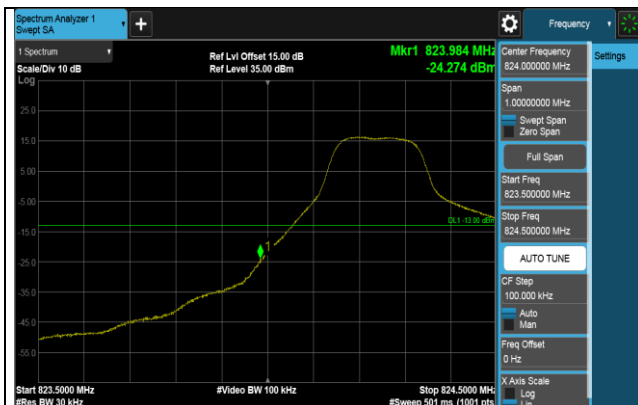


846.6MHz

LTE Band 5 (Channel Bandwidth 1.4MHz)



LTE Band 5 (Channel Bandwidth 3MHz)



1RB (825.5MHz)



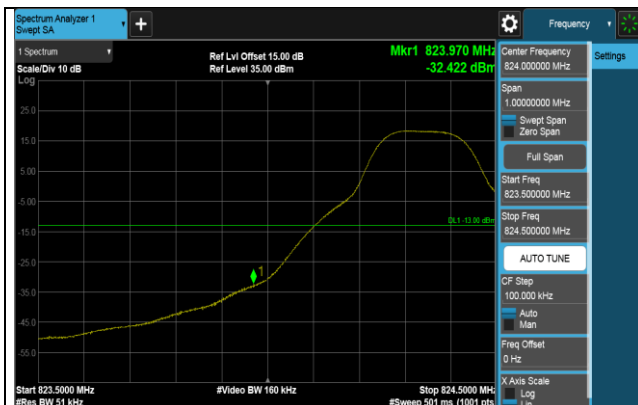
1RB (847.5MHz)



FULL (825.5MHz)

FULL (847.5MHz)

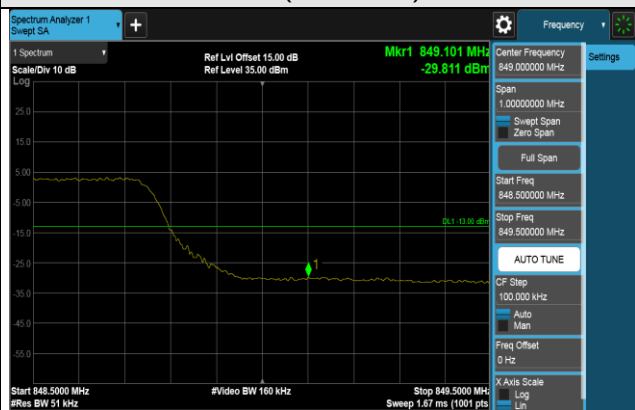
LTE Band 5 (Channel Bandwidth 5MHz)



1RB (826.5MHz)



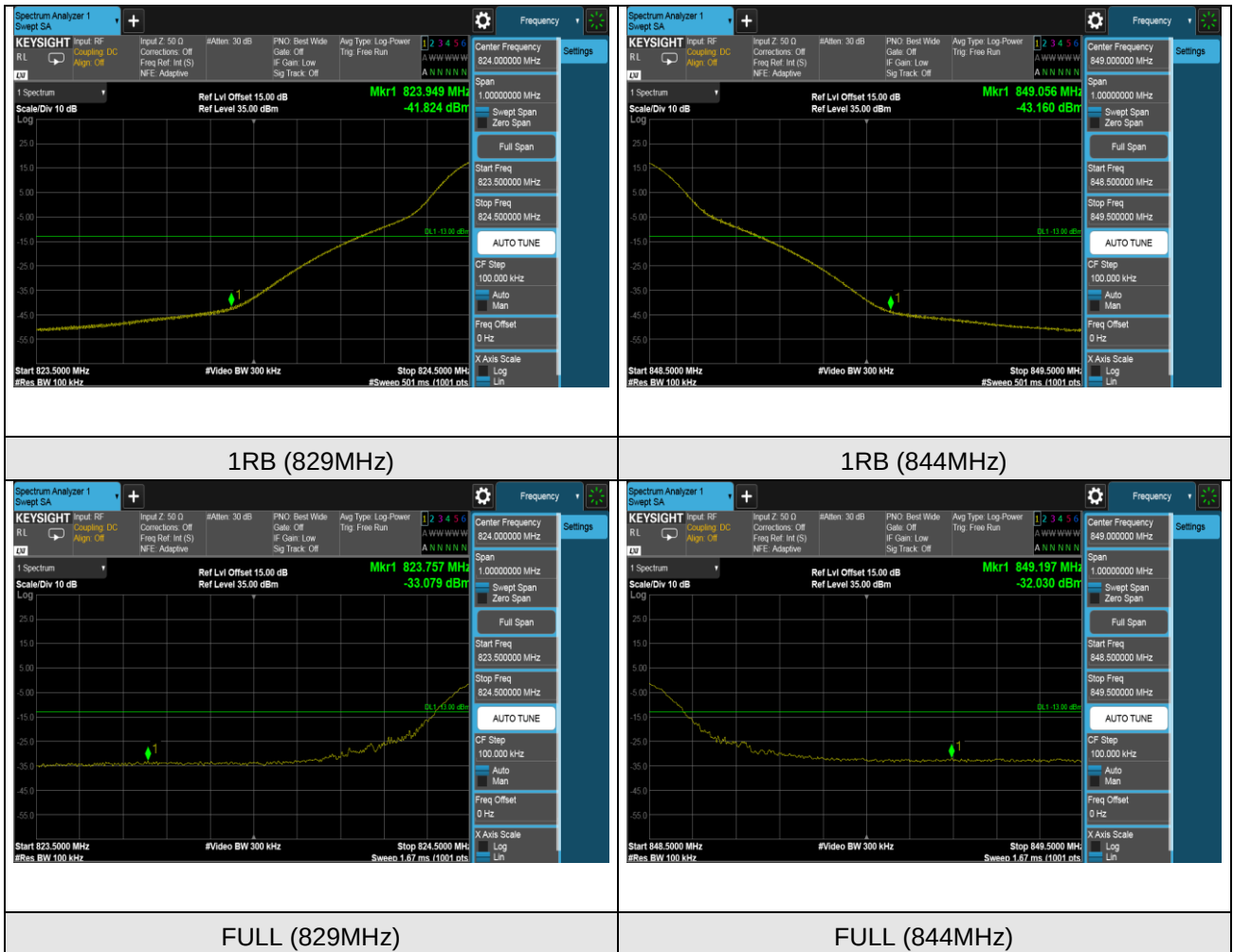
1RB (846.5MHz)



FULL (826.5MHz)

FULL (846.5MHz)

LTE Band 5 (Channel Bandwidth 10MHz)

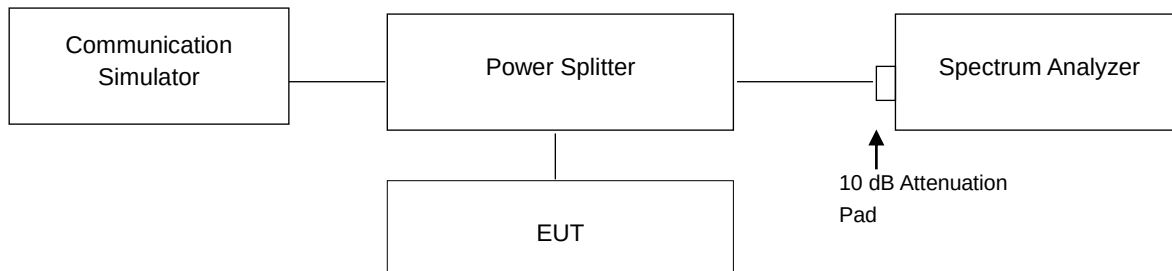


4.6 Peak to Average Ratio

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

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

4.6.4 Test Results

GPRS, EDGE

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
GPRS	128	824.2	2.61	13	Pass
GPRS	189	836.4	2.61	13	Pass
GPRS	251	848.8	2.62	13	Pass
EDGE	128	824.2	2.61	13	Pass
EDGE	189	836.4	2.61	13	Pass
EDGE	251	848.8	2.61	13	Pass

Spectrum Plot of Worst Value

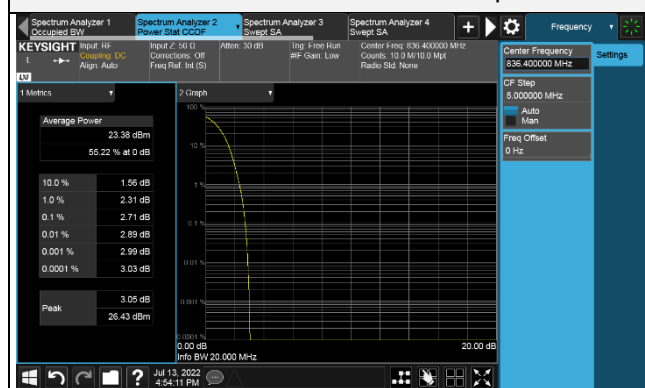


GPRS CH 251 (848.8MHz)

WCDMA Band 5

Test Condition	Channel	Frequency (MHz)	Measure. Value (dB)	Limit (dB)	Result
WCDMA	4132	826.4	2.68	13	Pass
WCDMA	4182	836.4	2.71	13	Pass
WCDMA	4233	846.6	2.68	13	Pass
HSDPA	4132	826.4	2.67	13	Pass
HSDPA	4182	836.4	2.70	13	Pass
HSDPA	4233	846.6	2.67	13	Pass
HSUPA	4132	826.4	2.67	13	Pass
HSUPA	4182	836.4	2.71	13	Pass
HSUPA	4233	846.6	2.68	13	Pass

Spectrum Plot of Worst Value

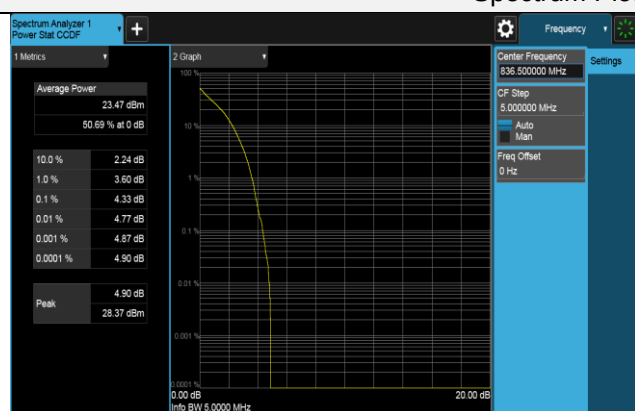


WCDMA CH 4182 (836.4MHz)

LTE Band 5 (Channel Bandwidth 1.4MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value(dB)	Limit dB	Result
QPSK	20407	824.7	3.79	13	PASS
QPSK	20525	836.5	4.33	13	PASS
QPSK	20643	848.3	4.15	13	PASS
16QAM	20407	824.7	3.85	13	PASS
16QAM	20525	836.5	4.31	13	PASS
16QAM	20643	848.3	4.19	13	PASS

Spectrum Plot of Worst Value

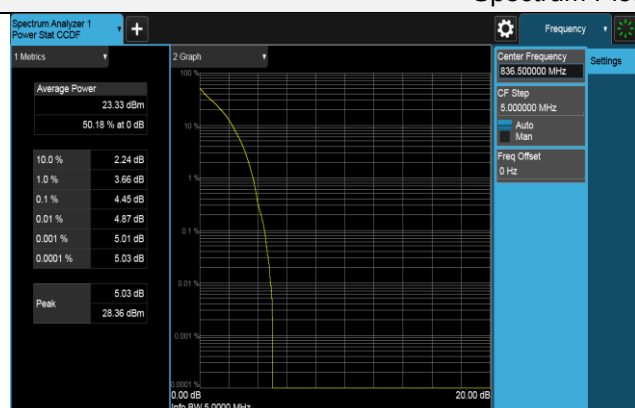


QPSK CH 20525 (836.5MHz)

LTE Band 5 (Channel Bandwidth 3MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value(dB)	Limit dB	Result
QPSK	20415	825.5	3.86	13	PASS
QPSK	20525	836.5	4.39	13	PASS
QPSK	20635	847.5	4.07	13	PASS
16QAM	20415	825.5	3.87	13	PASS
16QAM	20525	836.5	4.45	13	PASS
16QAM	20635	847.5	4.07	13	PASS

Spectrum Plot of Worst Value

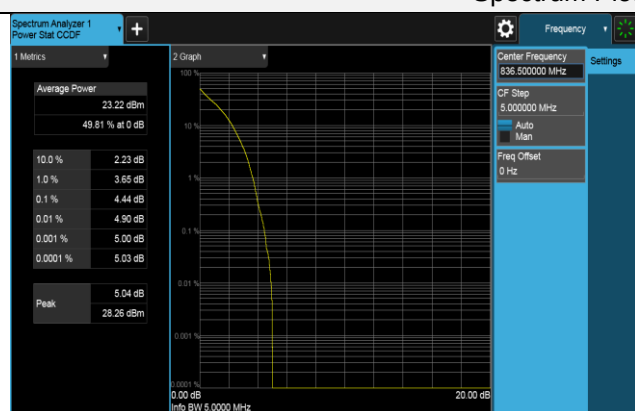


16QAM CH 20525 (836.5MHz)

LTE Band 5 (Channel Bandwidth 5MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value(dB)	Limit dB	Result
QPSK	20425	826.5	3.86	13	PASS
QPSK	20525	836.5	4.44	13	PASS
QPSK	20625	846.5	3.71	13	PASS
16QAM	20425	826.5	3.86	13	PASS
16QAM	20525	836.5	4.43	13	PASS
16QAM	20625	846.5	3.76	13	PASS

Spectrum Plot of Worst Value

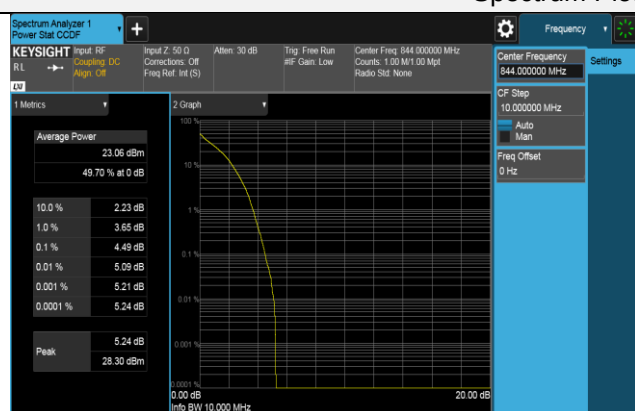


QPSK CH 20525 (836.5MHz)

LTE Band 5 (Channel Bandwidth 10MHz)

Test Condition	Channel	Frequency (MHz)	Measure. Value(dB)	Limit dB	Result
QPSK	20450	829	4.01	13	PASS
QPSK	20525	836.5	4.45	13	PASS
QPSK	20600	844	4.46	13	PASS
16QAM	20450	829	4.04	13	PASS
16QAM	20525	836.5	4.42	13	PASS
16QAM	20600	844	4.49	13	PASS

Spectrum Plot of Worst Value



16QAM CH 20600 (844MHz)