



Test Report No.: W7L-P23100014RF04



# VARIANT FCC TEST REPORT (PART 22)

Applicant:	Nokia of America Corp
Address:	3201, Olympus Blvd, Dallas, TX 75019, USA

Manufacturer or Supplier:	Nokia of America Corp
Address:	3201, Olympus Blvd, Dallas, TX 75019, USA
Product:	Nokia Industrial 5G handheld HHRA501x
Brand Name:	Nokia
Model Name:	HHRA501a
Marketing Name:	Nokia Industrial 5G handheld HHRA501a
FCC ID:	2AVO2-HHRA501A
Date of tests:	Nov. 24, 2022 ~ Feb. 03, 2023

The tests have been carried out according to the requirements of the following standard:

- FCC PART 22, Subpart H
- ANSI/TIA/EIA-603-D
- ANSI/TIA/EIA-603-E
- FCC Part 2
- ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Oct. 23, 2023	Date: Oct. 23, 2023

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22110036RF04	Original release	Feb. 03, 2023
W7L-P23100014RF04	Based on the original product changing the model name and FCC ID, brand name, marketing name, product name, battery model, applicant and manufacturer information.	Oct. 23, 2023

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
§2.1046	Conducted Output Power	Compliance
§22.913 (a)(5)	Effective Radiated Power	Compliance
§2.1055 §22.355	Frequency Stability	Compliance
§2.1049	Occupied Bandwidth	Compliance
§22.913 (d)	Peak to average ratio*	Compliance
§22.917(a)	Band Edge Measurements	Compliance
§2.1051 §22.917(a)	Conducted Spurious Emissions	Compliance
§2.1053 §22.917(a)	Radiated Spurious Emissions	Compliance

\* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

## 1.1 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	UNCERTAINTY
Maximum Peak Output Power	±2.06dB
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Radiated emissions (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Band Edge Measurements	±4.70dB
Peak to average ratio	±0.76dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.04,22	Sep.03,23
Bilog Antenna	ETS-LINDGRE N	3143B	00161965	Mar. 06,22	Mar. 05,23
Horn Antenna	ETS-LINDGRE N	3117	00168692	Mar. 06,22	Mar. 05,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 24, 22	Aug. 23, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 15,22	Feb. 14,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 21,22	Feb.20,23
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	May. 07,22	May. 06,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,22	May. 06,23
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
  3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Nokia Industrial 5G handheld HHRA501x	
<b>BRAND NAME</b>	Nokia	
<b>MODEL NAME</b>	HHRA501a	
<b>MARKETING NAME</b>	Nokia Industrial 5G handheld HHRA501a	
<b>NOMINAL VOLTAGE</b>	5.0Vdc(adapter or host equipment) 3.7Vdc (Li-ion, battery)	
<b>MODULATION TYPE</b>	<b>GSM/EDGE</b>	GMSK, 8PSK
	<b>WCDMA</b>	BPSK, QPSK
	<b>LTE</b>	QPSK, 16QAM, 64QAM
<b>FREQUENCY RANGE</b>	<b>GSM/EDGE</b>	824.2MHz ~ 848.8MHz
	<b>WCDMA</b>	826.4MHz ~ 846.6MHz
	<b>LTE Band 5 (Channel Bandwidth: 1.4MHz)</b>	824.7MHz ~ 848.3MHz
	<b>LTE Band 5 (Channel Bandwidth: 3MHz)</b>	825.5MHz ~ 847.5MHz
	<b>LTE Band 5 (Channel Bandwidth: 5MHz)</b>	826.5MHz ~ 846.5MHz
	<b>LTE Band 5 (Channel Bandwidth: 10MHz)</b>	829MHz ~ 844MHz
	<b>LTE Band 26 (Channel Bandwidth: 1.4MHz)</b>	824.7MHz ~ 848.3MHz
	<b>LTE Band 26 (Channel Bandwidth: 3MHz)</b>	825.5MHz ~ 847.5MHz
	<b>LTE Band 26 (Channel Bandwidth: 5MHz)</b>	826.5MHz ~ 846.5MHz
	<b>LTE Band 26 (Channel Bandwidth: 10MHz)</b>	829MHz ~ 844MHz
	<b>LTE Band 26 (Channel Bandwidth: 15MHz)</b>	831.5MHz ~ 841.5MHz
<b>MAX. ERP POWER</b>	<b>GSM</b>	497.74mW
	<b>EDGE</b>	123.59mW
	<b>WCDMA</b>	57.94mW
	<b>LTE Band 5 (Channel Bandwidth: 1.4MHz)</b>	56.49mW
	<b>LTE Band 5 (Channel Bandwidth: 3MHz)</b>	56.36mW
	<b>LTE Band 5 (Channel Bandwidth: 5MHz)</b>	56.62mW





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	<b>LTE Band 5 (Channel Bandwidth: 10MHz)</b>	57.28mW	
<b>MAX. ERP POWER</b>	<b>LTE Band 26 (Channel Bandwidth: 1.4MHz)</b>	53.33mW	
	<b>LTE Band 26 (Channel Bandwidth: 3MHz)</b>	53.83mW	
	<b>LTE Band 26 (Channel Bandwidth: 5MHz)</b>	53.83mW	
	<b>LTE Band 26 (Channel Bandwidth: 10MHz)</b>	53.7mW	
	<b>LTE Band 26 (Channel Bandwidth: 15MHz)</b>	54.08mW	
	<b>EMISSION DESIGNATORGOGN</b>	<b>GSM</b>	247KGXW
<b>EDGE</b>		243KG7W	
<b>WCDMA</b>		4M15F9W	
<b>LTE Band 26 (Channel Bandwidth: 1.4MHz)</b>		QPSK: 1M09G7D	
		16QAM: 1M09W7D	
		64QAM: 1M09W7D	
<b>LTE Band 26 (Channel Bandwidth: 3MHz)</b>		QPSK: 2M70G7D	
		16QAM: 2M69W7D	
		64QAM: 2M70W7D	
<b>LTE Band 26 (Channel Bandwidth: 5MHz)</b>		QPSK: 4M50G7D	
		16QAM: 4M51W7D	
		64QAM: 4M50W7D	
<b>LTE Band 26 (Channel Bandwidth: 10MHz)</b>		QPSK: 8M98G7D	
		16QAM: 8M96W7D	
		64QAM: 8M97W7D	
<b>LTE Band 26 (Channel Bandwidth: 15MHz)</b>		QPSK: 13M5G7D	
		16QAM: 13M5W7D	
		64QAM: 13M5W7D	
<b>ANTENNA TYPE</b>		PIFA Antenna with -3dBi gain for GSM850/WCDMA V/LTE B5/LTE B26	
<b>HW VERSION</b>		V02	
<b>SW VERSION</b>		IS540_ROW_00.00_1_20221017	
<b>I/O PORTS</b>		Refer to user's manual	
<b>CABLE SUPPLIED</b>		USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter	
<b>EXTREME TEMPERATURE</b>		-10-50 °C	
<b>EXTREME VOLTAGE</b>	3.6V - 4.2V		



**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

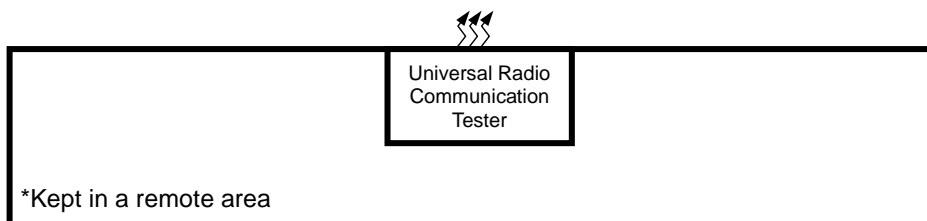
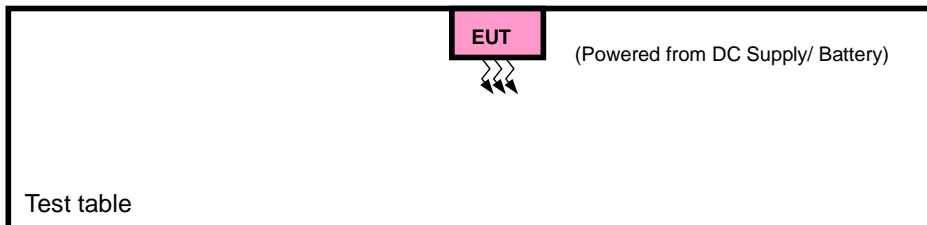
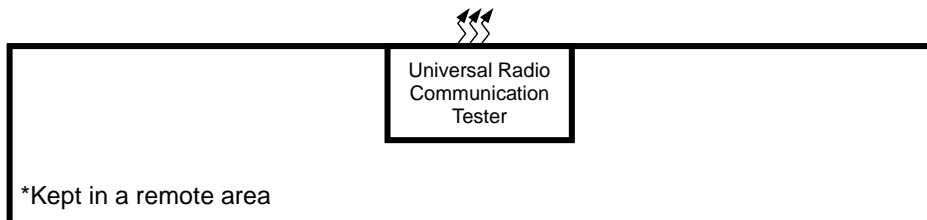
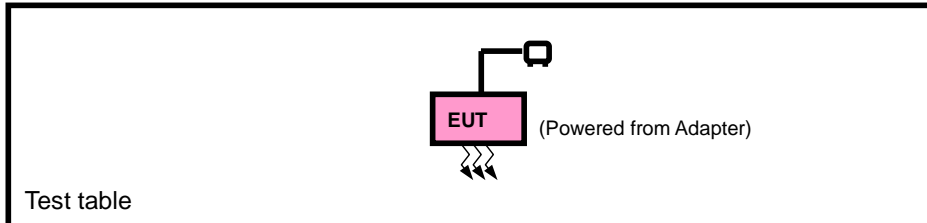
MODULATION MODE	TX FUNCTION
GSM/GPRS/EDGE	1TX/1RX
WCDMA	1TX/1RX
LTE	1TX/1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessory:**

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	N/A	FPR Connectivity Technology Inc.	BL440ACP	Capacity: 3.7Vdc, 4400mAh
AC Adapter	N/A	SHENZHEN SHI YINGYUAN POWER SUPPLY TECHNOLOGY CO., LTD.	ICP12-050-2000B	I/P: 100-240Vac, 0.3A, O/P: 5.0Vdc, 2A
USB Cable 1	N/A	Winpower Technology Co., LTD	USB2.0	Signal Line, 1.0meter
USB Cable 2	N/A	Winpower Technology Co., LTD	PROTECTOR 2.0	Signal Line, 1.0meter

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION



### 2.3 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

### 2.4 TEST ITEM AND TEST CONFIGURATION

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 in ERP and radiated emission was found when positioned on X-plane for GSM /EDGE /LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter with GSM or WCDMA or LTE link
B	EUT + DC Supply with GSM or WCDMA or LTE link



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### GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	ERP	128 to 251	128, 189, 251	GSM,EDGE
B	FREQUENCY STABILITY	128 to 251	128, 189, 251	GSM,EDGE
A	OCCUPIED BANDWIDTH	128 to 251	128, 189, 251	GSM,EDGE
A	BAND EDGE	128 to 251	128, 251	GSM,EDGE
A	CONDCUDED EMISSION	128 to 251	128, 189, 251	GSM,EDGE
A	RADIATED EMISSION	128 to 251	128, 189, 251	GSM,EDGE
A	PEAK TO AVERAGE RATIO	128 to 251	128, 189, 251	GSM,EDGE

### WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
B	FREQUENCY STABILITY	4132 to 4233	4132, 4182, 4233	WCDMA
A	OCCUPIED BANDWIDTH	4132 to 4233	4132, 4182, 4233	WCDMA
A	BAND EDGE	4132 to 4233	4132, 4233	WCDMA
A	CONDCUDED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
A	RADIATED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
A	PEAK TO AVERAGE RATIO	4132 to 4233	4132, 4182, 4233	WCDMA



LTE BAND 5 MODE

EUT CONFIGURE MODE	TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
A	ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset

Note: 1.This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 5 are covered by LTE Band 26, Because it is a subset of LTE Band 26 with the same output power and supported bandwidths, So the test data please refer to LTE Band 26

LTE BAND 26 MODE

EUT CONFIGURE MODE	TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
A	ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM,64QAM	6 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM,64QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM,64QAM	75 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM,64QAM	6 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM,64QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM,64QAM	75 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	26697 to 26783	26697, 26740, 26783	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset



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		26715 to 26765	26715, 26740, 26765	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
		26740	26740	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
A	BAND EDGE	26797 to 27033	26797	1.4 MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset		
		26797 to 27033	27033	1.4 MHz	QPSK,16QAM,64QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset		
		26805 to 27025	26805	3 MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset		
		26805 to 27025	27025	3 MHz	QPSK,16QAM,64QAM	1 RB / 14 RB Offset 15 RB / 0 RB Offset		
		26815 to 27015	26815	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
		26815 to 27015	27015	5MHz	QPSK,16QAM,64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		26840 to 26990	26840	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
		26840 to 26990	26990	10MHz	QPSK,16QAM,64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		26865 to 26965	26865	15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset		
		26865 to 26965	26965	15MHz	QPSK,16QAM,64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset		
		A	CONDCUDED EMISSION	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
				26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
26815 to 27015	26815, 26915, 27015			5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
26840 to 26990	26840, 26915, 26990			10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
26865 to 26965	26865, 26915, 26965			15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset		
A	RADIATED EMISSION	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset		
		26805 to 27025	26915	3MHz	QPSK	1 RB / 0 RB Offset		
		26815 to 27015	26915	5MHz	QPSK	1 RB / 0 RB Offset		
		26840 to 26990	26915	10MHz	QPSK	1 RB / 0 RB Offset		
		26865 to 26965	26865, 26915, 26965	15MHz	QPSK	1 RB / 0 RB Offset		

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



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**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 70%RH	DC 5V By Adapter	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.6V/3.7V/4.2V By DC Supply	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC5V By Adapter	James Fu
BAND EDGE	23deg. C, 70%RH	DC 5V By Adapter	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	DC5V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC5V By Adapter	James Fu

**2.5 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





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## 2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 22**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**ANSI/TIA/EIA-603-D**

**ANSI/TIA/EIA-603-E**

**ANSI C63.26-2015**

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

### 3 TEST TYPES AND RESULTS

#### 3.1 OUTPUT POWER MEASUREMENT

##### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

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

##### 3.1.2 TEST PROCEDURES

###### **EIRP / ERP MEASUREMENT:**

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = measured transmitter output power or PSD, in dBm or dBW;

$G_T$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

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

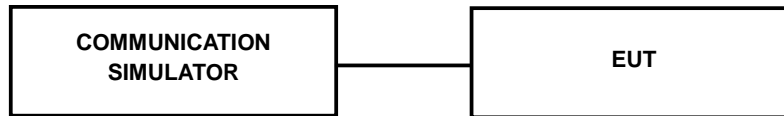
###### **CONDUCTED POWER MEASUREMENT:**

The EUT was set up for the maximum power with WCDMA 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.

### 3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



### 3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850		
Channel	128	189	251
Frequency	824.2	836.4	848.8
<b>GSM</b>	32.05	<b>32.12</b>	32.02
<b>GPRS (GMSK, 1Tx-slot)</b>	32.04	32.10	31.99
<b>GPRS (GMSK, 2Tx-slot)</b>	30.25	30.09	30.23
<b>GPRS (GMSK, 3Tx-slot)</b>	28.73	28.64	28.65
<b>GPRS (GMSK, 4Tx-slot)</b>	27.20	27.07	27.16
<b>EDGE (8PSK, 1Tx-slot)</b>	25.71	26.07	25.95
<b>EDGE (8PSK, 2Tx-slot)</b>	25.42	25.77	25.69
<b>EDGE (8PSK, 3Tx-slot)</b>	21.71	21.69	21.70
<b>EDGE (8PSK, 4Tx-slot)</b>	20.68	20.65	20.63

Band	WCDMA V		
Channel	4132	4182	4233
Frequency	826.4	836.4	846.6
<b>RMC 12.2K</b>	<b>22.78</b>	22.76	22.75
<b>HSDPA Subtest-1</b>	21.76	21.68	21.73
<b>HSDPA Subtest-2</b>	21.73	21.68	21.74
<b>HSDPA Subtest-3</b>	21.24	21.21	21.20
<b>HSDPA Subtest-4</b>	21.20	21.25	21.20
<b>DC-HSDPA Subtest-1</b>	21.74	21.71	21.74
<b>DC-HSDPA Subtest-2</b>	21.72	21.74	21.70
<b>DC-HSDPA Subtest-3</b>	21.21	21.21	21.23
<b>DC-HSDPA Subtest-4</b>	21.20	21.24	21.20
<b>HSUPA Subtest-1</b>	19.26	19.18	19.23
<b>HSUPA Subtest-2</b>	19.20	19.20	19.17
<b>HSUPA Subtest-3</b>	19.22	19.24	19.19
<b>HSUPA Subtest-4</b>	19.21	19.21	19.23
<b>HSUPA Subtest-5</b>	21.42	21.39	21.40



**BUREAU  
VERITAS**

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**LTE Band 5**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20407	Mid CH 20525	High CH 20643
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz
5/ 1.4	QPSK	1	0	22.50	22.67	22.50
		1	2	22.13	22.41	22.18
		1	5	22.25	22.41	22.30
		3	0	22.24	22.48	22.31
		3	1	22.22	22.46	22.28
		3	3	22.25	22.61	22.33
	16QAM	1	0	21.40	21.69	21.43
		1	2	21.39	21.68	21.46
		1	5	21.42	21.73	21.52
		3	0	21.25	21.41	21.28
		3	1	21.26	21.53	21.33
		3	3	21.34	21.67	21.38
	64QAM	6	0	20.26	20.53	20.38
		1	0	20.28	20.49	20.25
		1	2	20.28	20.64	20.39
		1	5	20.41	20.57	20.39
		3	0	20.19	20.48	20.24
		3	1	20.23	20.57	20.31
		3	3	20.36	20.55	20.38
	6	0	19.28	19.54	19.32	



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20415	Mid CH 20525	High CH 20635
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz
5/3	QPSK	1	0	22.45	22.66	22.47
		1	7	22.11	22.43	22.21
		1	14	22.19	22.47	22.26
		8	0	21.21	21.55	21.30
		8	3	21.22	21.46	21.25
		8	7	21.25	21.61	21.36
		15	0	21.24	21.41	21.27
	16QAM	1	0	21.44	21.63	21.47
		1	7	21.38	21.69	21.43
		1	14	21.47	21.69	21.55
		8	0	20.25	20.42	20.25
		8	3	20.28	20.51	20.39
		8	7	20.39	20.67	20.36
		15	0	20.26	20.53	20.33
	64QAM	1	0	20.31	20.48	20.28
		1	7	20.31	20.64	20.37
		1	14	20.41	20.57	20.40
		8	0	19.19	19.50	19.27
		8	3	19.27	19.51	19.36
		8	7	19.33	19.59	19.34
		15	0	19.30	19.51	19.36



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20425	Mid CH 20525	High CH 20625
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz
5/5	QPSK	1	0	22.47	22.68	22.47
		1	12	22.10	22.47	22.18
		1	24	22.23	22.44	22.31
		12	0	21.23	21.54	21.27
		12	6	21.19	21.46	21.31
		12	13	21.25	21.60	21.33
		25	0	21.27	21.38	21.29
	16QAM	1	0	21.38	21.65	21.40
		1	12	21.40	21.71	21.42
		1	24	21.43	21.70	21.55
		12	0	20.21	20.42	20.25
		12	6	20.27	20.54	20.39
		12	13	20.32	20.67	20.38
		25	0	20.23	20.60	20.37
	64QAM	1	0	20.28	20.49	20.22
		1	12	20.28	20.65	20.42
		1	24	20.39	20.60	20.33
		12	0	19.21	19.52	19.29
		12	6	19.21	19.58	19.35
		12	13	19.37	19.58	19.31
		25	0	19.26	19.57	19.34

Band/BW	Modulation	RB Size	RB Offset	Low CH 20450	Mid CH 20525	High CH 20600
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz
5/ 10	QPSK	1	0	22.51	<b>22.73</b>	22.52
		1	24	22.18	22.48	22.23
		1	49	22.27	22.49	22.32
		25	0	21.29	21.56	21.32
		25	12	21.26	21.51	21.33
		25	25	21.33	21.62	21.38
		50	0	21.29	21.46	21.31
	16QAM	1	0	21.46	21.71	21.48
		1	24	21.46	21.73	21.48
		1	49	21.50	21.75	21.57
		25	0	20.27	20.49	20.30
		25	12	20.34	20.59	20.41
		25	25	20.40	20.69	20.44
		50	0	20.31	20.61	20.39
	64QAM	1	0	20.32	20.54	20.30
		1	24	20.36	20.66	20.44
		1	49	20.43	20.65	20.41
		25	0	19.27	19.54	19.32
		25	12	19.29	19.59	19.37
		25	25	19.41	19.63	19.39
		50	0	19.32	19.59	19.37



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

**LTE BAND 26**

Band/BW	Modulation	RB Size	RB Offset	Low CH 26797	Mid CH 26915	High CH 27033
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz
26/ 1.4	QPSK	1	0	22.32	22.26	22.42
		1	2	22.35	22.25	22.40
		1	5	22.13	22.16	22.30
		3	0	22.21	22.05	22.25
		3	1	22.13	22.06	22.21
		3	3	22.15	22.17	22.32
		6	0	21.37	21.34	21.48
	16QAM	1	0	21.48	21.52	21.65
		1	2	21.79	21.79	21.93
		1	5	21.78	21.71	21.87
		3	0	21.30	21.28	21.47
		3	1	21.35	21.23	21.43
		3	3	21.30	21.37	21.46
		6	0	20.31	20.20	20.42
	64QAM	1	0	20.39	20.45	20.54
		1	2	20.26	20.16	20.26
		1	5	20.02	19.92	20.14
		3	0	20.42	20.39	20.56
		3	1	20.49	20.41	20.47
		3	3	20.37	20.34	20.57
		6	0	19.41	19.36	19.50





**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 26805	Mid CH 26915	High CH 27025
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz
26/ 3	QPSK	1	0	22.29	22.26	22.41
		1	7	22.35	22.25	22.46
		1	14	22.16	22.12	22.31
		8	0	21.40	21.26	21.45
		8	3	21.27	21.32	21.40
		8	7	21.37	21.40	21.52
		15	0	21.32	21.34	21.41
	16QAM	1	0	21.48	21.55	21.68
		1	7	21.74	21.83	21.94
		1	14	21.78	21.70	21.87
		8	0	20.28	20.30	20.47
		8	3	20.31	20.29	20.43
		8	7	20.31	20.36	20.46
		15	0	20.27	20.21	20.42
	64QAM	1	0	20.40	20.44	20.54
		1	7	20.21	20.20	20.26
		1	14	19.96	19.98	20.13
		8	0	19.44	19.42	19.54
		8	3	19.42	19.42	19.52
		8	7	19.38	19.37	19.53
		15	0	19.36	19.40	19.54



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 26815	Mid CH 26915	High CH 27015
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz
26/ 5	QPSK	1	0	22.28	22.26	22.46
		1	12	22.30	22.28	22.43
		1	24	22.13	22.18	22.31
		12	0	21.36	21.30	21.46
		12	6	21.31	21.28	21.41
		12	13	21.33	21.44	21.52
		25	0	21.33	21.31	21.44
	16QAM	1	0	21.53	21.52	21.68
		1	12	21.74	21.81	21.90
		1	24	21.77	21.72	21.82
		12	0	20.34	20.29	20.50
		12	6	20.31	20.23	20.40
		12	13	20.37	20.39	20.49
		25	0	20.28	20.20	20.38
	64QAM	1	0	20.46	20.43	20.60
		1	12	20.24	20.20	20.24
		1	24	20.02	19.91	20.13
		12	0	19.40	19.43	19.53
		12	6	19.48	19.35	19.50
		12	13	19.34	19.38	19.56
		25	0	19.40	19.34	19.49



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 26840	Mid CH 26915	High CH 26990
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz
26/10	QPSK	1	0	22.33	22.27	22.45
		1	24	22.32	22.26	22.43
		1	49	22.19	22.12	22.34
		25	0	21.39	21.23	21.39
		25	12	21.31	21.28	21.40
		25	25	21.33	21.44	21.52
		50	0	21.34	21.31	21.44
	16QAM	1	0	21.49	21.58	21.68
		1	24	21.75	21.80	21.97
		1	49	21.72	21.76	21.83
		25	0	20.34	20.28	20.51
		25	12	20.29	20.25	20.40
		25	25	20.32	20.39	20.49
		50	0	20.28	20.20	20.39
	64QAM	1	0	20.43	20.44	20.60
		1	24	20.21	20.20	20.24
		1	49	20.02	19.91	20.09
		25	0	19.40	19.41	19.59
		25	12	19.44	19.41	19.45
		25	25	19.37	19.34	19.57
		50	0	19.38	19.37	19.53



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

Band/BW	Modulation	RB Size	RB Offset	Low CH 26865	Mid CH 26915	High CH 26965
				Frequency 831.5 MHz	Frequency 836.5 MHz	Frequency 841.5 MHz
26/ 15	QPSK	1	0	22.34	22.33	22.47
		1	37	22.37	22.33	<b>22.48</b>
		1	74	22.21	22.20	22.36
		36	0	21.44	21.31	21.47
		36	19	21.35	21.33	21.46
		36	39	21.41	21.45	21.54
		75	0	21.38	21.36	21.49
	16QAM	1	0	21.55	21.60	21.70
		1	37	21.82	21.85	21.98
		1	74	21.80	21.78	21.88
		36	0	20.36	20.36	20.52
		36	19	20.37	20.31	20.45
		36	39	20.38	20.41	20.51
		75	0	20.33	20.28	20.44
	64QAM	1	0	20.47	20.49	20.62
		1	37	20.29	20.22	20.32
		1	74	20.04	19.99	20.15
		36	0	19.48	19.47	19.61
		36	19	19.50	19.43	19.53
		36	39	19.42	19.42	19.58
		75	0	19.42	19.42	19.55

**ERP POWER (dBm)**

**GSM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	32.05	-3	26.9	489.78	7
189	836.4	32.12	-3	26.97	497.74	7
251	848.8	32.02	-3	26.87	486.41	7

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

**EDGE**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	25.71	-3	20.56	113.76	7
189	836.4	26.07	-3	20.92	123.59	7
251	848.8	25.95	-3	20.8	120.23	7

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

**WCDMA**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
4132	826.4	22.78	-3	17.63	57.94	7
4182	836.4	22.76	-3	17.61	57.68	7
4233	846.6	22.75	-3	17.6	57.54	7

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).



LTE BAND 5

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	22.5	-3	17.35	54.33	7
20525	836.5	22.67	-3	17.52	56.49	7
20643	848.3	22.5	-3	17.35	54.33	7

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	21.42	-3	16.27	42.36	7
20525	836.5	21.73	-3	16.58	45.5	7
20643	848.3	21.52	-3	16.37	43.35	7

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	20.41	-3	15.26	33.57	7
20525	836.5	20.64	-3	15.49	35.4	7
20643	848.3	20.39	-3	15.24	33.42	7

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	22.45	-3	17.3	53.7	7
20525	836.5	22.66	-3	17.51	56.36	7
20635	847.5	22.47	-3	17.32	53.95	7

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	21.47	-3	16.32	42.85	7
20525	836.5	21.69	-3	16.54	45.08	7
20635	847.5	21.55	-3	16.4	43.65	7



**CHANNEL BANDWIDTH: 3MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	20.41	-3	15.26	33.57	7
20525	836.5	20.64	-3	15.49	35.4	7
20635	847.5	20.4	-3	15.25	33.5	7

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	22.47	-3	17.32	53.95	7
20525	836.5	22.68	-3	17.53	56.62	7
20625	846.5	22.47	-3	17.32	53.95	7

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	21.43	-3	16.28	42.46	7
20525	836.5	21.71	-3	16.56	45.29	7
20625	846.5	21.55	-3	16.4	43.65	7

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	20.39	-3	15.24	33.42	7
20525	836.5	20.65	-3	15.5	35.48	7
20625	846.5	20.42	-3	15.27	33.65	7



**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	22.51	-3	17.36	54.45	7
20525	836.5	22.73	-3	17.58	57.28	7
20600	844.0	22.52	-3	17.37	54.58	7

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	21.5	-3	16.35	43.15	7
20525	836.5	21.75	-3	16.6	45.71	7
20600	844.0	21.57	-3	16.42	43.85	7

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	20.43	-3	15.28	33.73	7
20525	836.5	20.66	-3	15.51	35.56	7
20600	844.0	20.44	-3	15.29	33.81	7

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).





**LTE BAND 26**

**CHANNEL BANDWIDTH: 1.4MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26797	824.7	22.35	-3	17.2	52.48	7
26915	836.5	22.26	-3	17.11	51.4	7
27033	848.3	22.42	-3	17.27	53.33	7

**CHANNEL BANDWIDTH: 1.4MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26797	824.7	21.79	-3	16.64	46.13	7
26915	836.5	21.79	-3	16.64	46.13	7
27033	848.3	21.93	-3	16.78	47.64	7

**CHANNEL BANDWIDTH: 1.4MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26797	824.7	20.49	-3	15.34	34.2	7
26915	836.5	20.45	-3	15.3	33.88	7
27033	848.3	20.57	-3	15.42	34.83	7



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Test Report No.: W7L-P23100014RF04

**CHANNEL BANDWIDTH: 3MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26805	825.5	22.35	-3	17.2	52.48	7
26915	836.5	22.26	-3	17.11	51.4	7
27025	847.5	22.46	-3	17.31	53.83	7

**CHANNEL BANDWIDTH: 3MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26805	825.5	21.78	-3	16.63	46.03	7
26915	836.5	21.83	-3	16.68	46.56	7
27025	847.5	21.94	-3	16.79	47.75	7

**CHANNEL BANDWIDTH: 3MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26805	825.5	20.4	-3	15.25	33.5	7
26915	836.5	20.44	-3	15.29	33.81	7
27025	847.5	20.54	-3	15.39	34.59	7



**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26815	826.5	22.3	-3	17.15	51.88	7
26915	836.5	22.28	-3	17.13	51.64	7
27015	846.5	22.46	-3	17.31	53.83	7

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26815	826.5	21.77	-3	16.62	45.92	7
26915	836.5	21.81	-3	16.66	46.34	7
27015	846.5	21.9	-3	16.75	47.32	7

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26815	826.5	20.46	-3	15.31	33.96	7
26915	836.5	20.43	-3	15.28	33.73	7
27015	846.5	20.6	-3	15.45	35.08	7



**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26840	829	22.33	-3	17.18	52.24	7
26915	836.5	22.27	-3	17.12	51.52	7
26990	844	22.45	-3	17.3	53.7	7

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26840	829	21.75	-3	16.6	45.71	7
26915	836.5	21.8	-3	16.65	46.24	7
26990	844	21.97	-3	16.82	48.08	7

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26840	829	20.43	-3	15.28	33.73	7
26915	836.5	20.44	-3	15.29	33.81	7
26990	844	20.6	-3	15.45	35.08	7



**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26865	831.5	22.37	-3	17.22	52.72	7
26915	836.5	22.33	-3	17.18	52.24	7
26965	841.5	22.48	-3	17.33	54.08	7

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26865	831.5	21.82	-3	16.67	46.45	7
26915	836.5	21.85	-3	16.7	46.77	7
26965	841.5	21.98	-3	16.83	48.19	7

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>C</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26865	831.5	20.47	-3	15.32	34.04	7
26915	836.5	20.49	-3	15.34	34.2	7
26965	841.5	20.62	-3	15.47	35.24	7

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

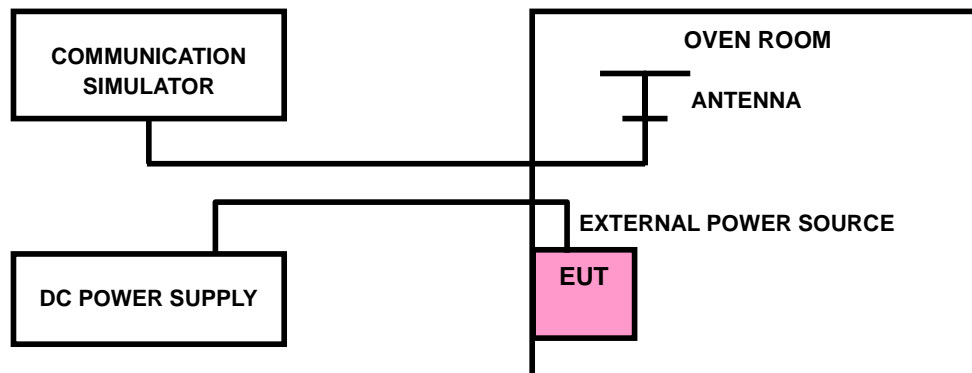
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

### 3.2.2 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  $\pm 0.5^{\circ}\text{C}$  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.

### 3.2.3 TEST SETUP





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### 3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

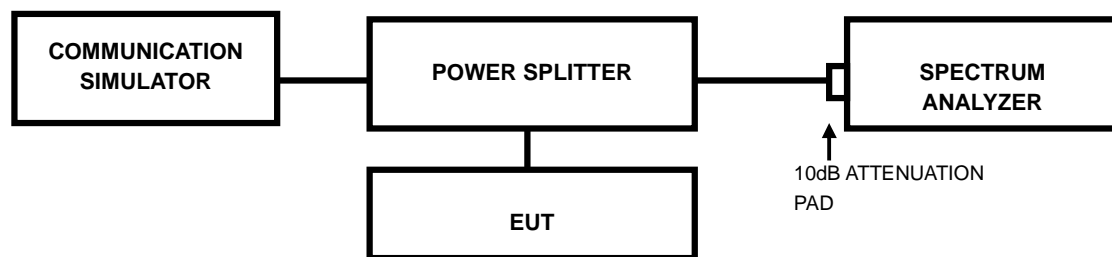
Note: VL = Low voltage(3.6V); VN/NV = Normal voltage(3.7V); VH = High voltage(4.2V);  
NT = Normal temperature (25°C)

### 3.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 3.3.1 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.

#### 3.3.2 TEST SETUP



#### 3.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.





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### 3.3.4 TEST RESULTS

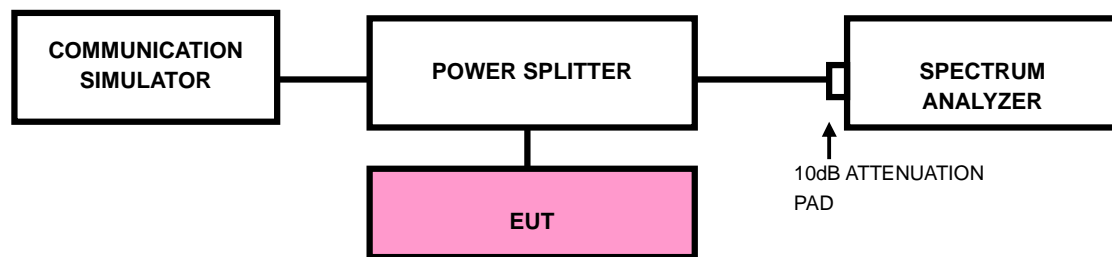
Please Refer to Appendix Of this test report.

### 3.4 BAND EDGE MEASUREMENT

#### 3.4.1 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.

#### 3.4.2 TEST SETUP



### 3.4.3 TEST PROCEDURES

- a) All measurements were done at low and high operational frequency range
- b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- c) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW)
- d) .Set the resolution bandwidth (RBW)  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
- e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- f) Set the video bandwidth (VBW) to  $\geq 3 \times$  RBW.
- g) Select the average power (RMS) display detector.
- h) Set the number of measurement points to  $\geq 1001$ .
- i) Use auto-coupled sweep time.
- j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- l) Record the max trace plot into the test report.



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### 3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

### 3.5 CONDUCTED SPURIOUS EMISSIONS

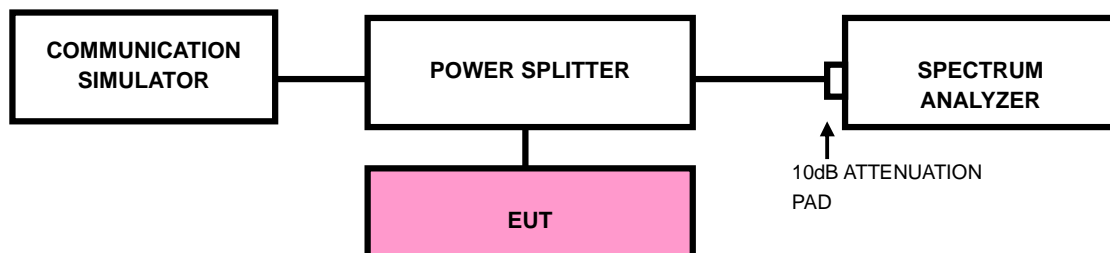
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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  $-13\text{dBm}$ .

#### 3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9kHz up to a frequency including its 10<sup>th</sup> harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

#### 3.5.3 TEST SETUP





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### 3.5.4 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix Of this test report.

### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION 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  $-13\text{dBm}$ .

#### 3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi.}$

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

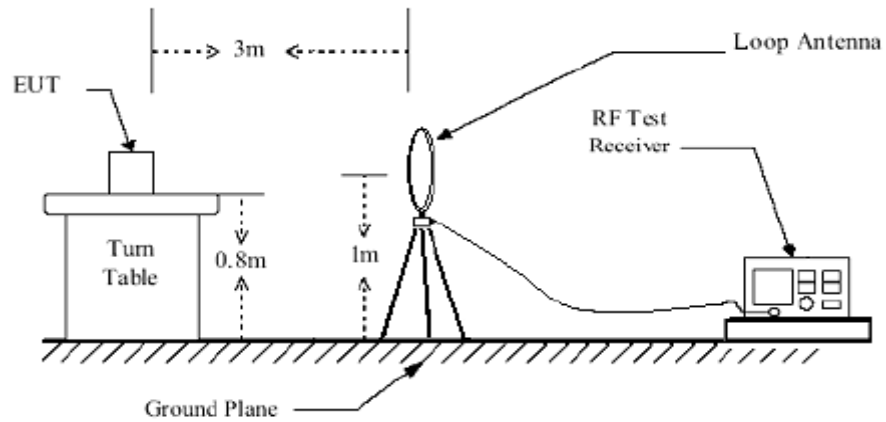
#### 3.6.3 DEVIATION FROM TEST STANDARD

No deviation

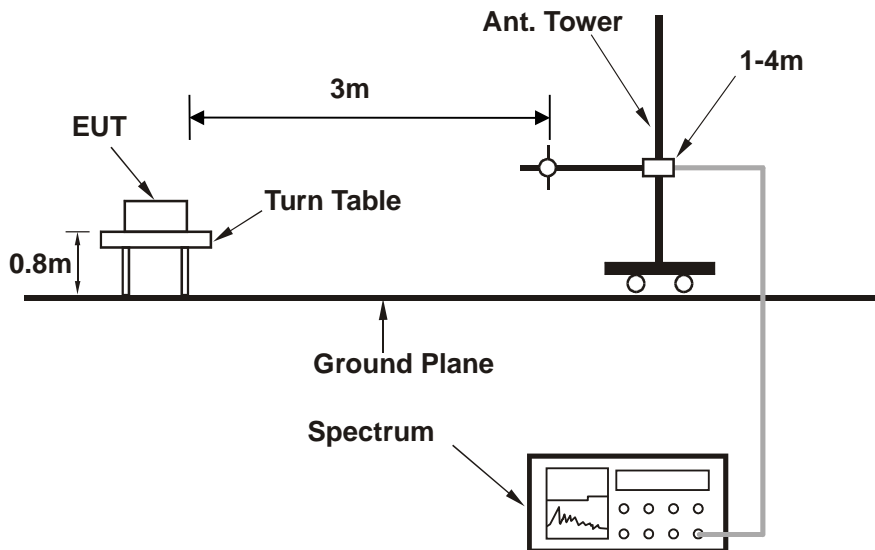


### 3.6.4 TEST SETUP

#### < Frequency Range below 30MHz >

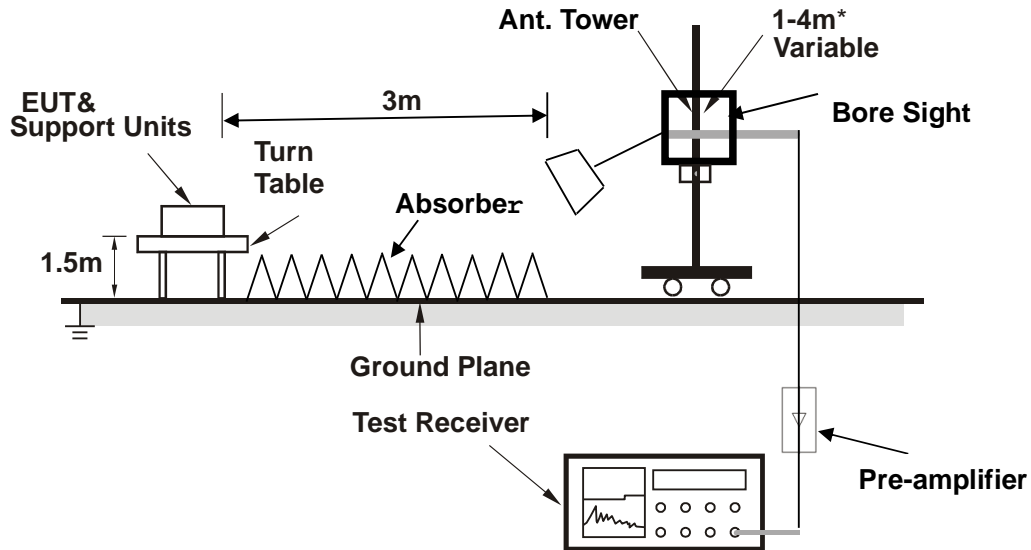


#### < Frequency Range 30MHz~1GHz >





<Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).



### 3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

#### BELOW 1GHz WORST-CASE DATA

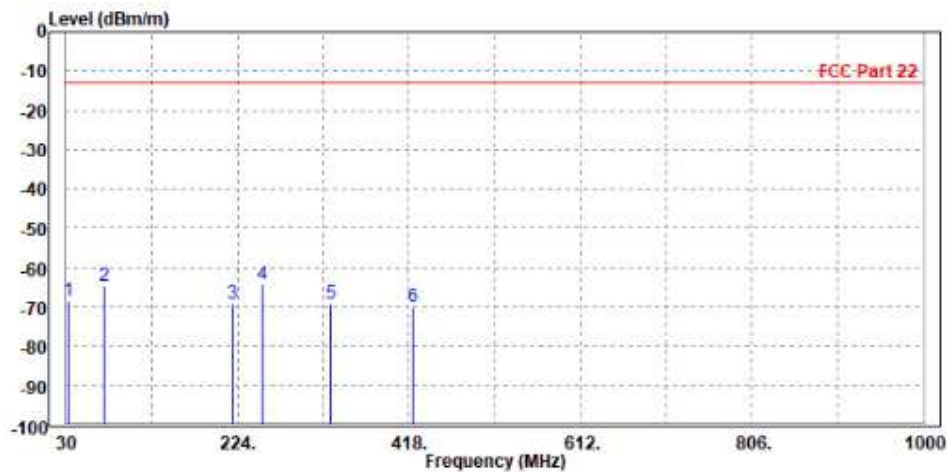
30 MHz – 1GHz data:

EDGE 850:

CHANNEL BANDWIDTH: 128 ~ 251

MODE	TX channel 189	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	31.940	-68.45	-58.85	-13.00	-55.45	-9.60	Peak	Horizontal
2	72.680	-64.79	-43.54	-13.00	-51.79	-21.25	Peak	Horizontal
3	218.180	-69.25	-54.00	-13.00	-56.25	-15.25	Peak	Horizontal
4 PP	252.130	-64.42	-52.92	-13.00	-51.42	-11.50	Peak	Horizontal
5	328.760	-69.02	-57.26	-13.00	-56.02	-11.76	Peak	Horizontal
6	422.850	-69.97	-60.35	-13.00	-56.97	-9.62	Peak	Horizontal



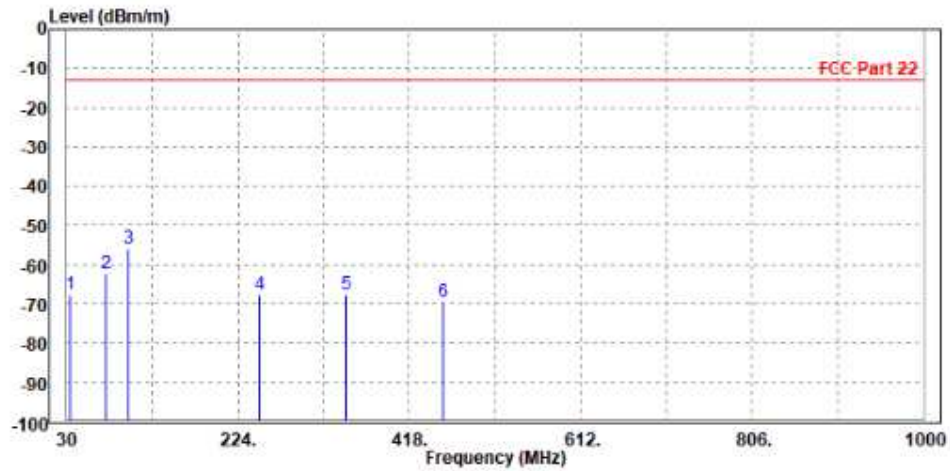


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Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 189	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	34.850	-67.74	-47.17	-13.00	-54.74	-20.57	Peak	Vertical
2	74.620	-62.44	-41.39	-13.00	-49.44	-21.05	Peak	Vertical
3 PP	99.840	-55.72	-49.21	-13.00	-42.72	-6.51	Peak	Vertical
4	248.250	-67.83	-54.08	-13.00	-54.83	-13.75	Peak	Vertical
5	346.220	-67.77	-57.79	-13.00	-54.77	-9.98	Peak	Vertical
6	455.830	-69.68	-61.19	-13.00	-56.68	-8.49	Peak	Vertical





BUREAU VERITAS

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ABOVE 1GHz DATA

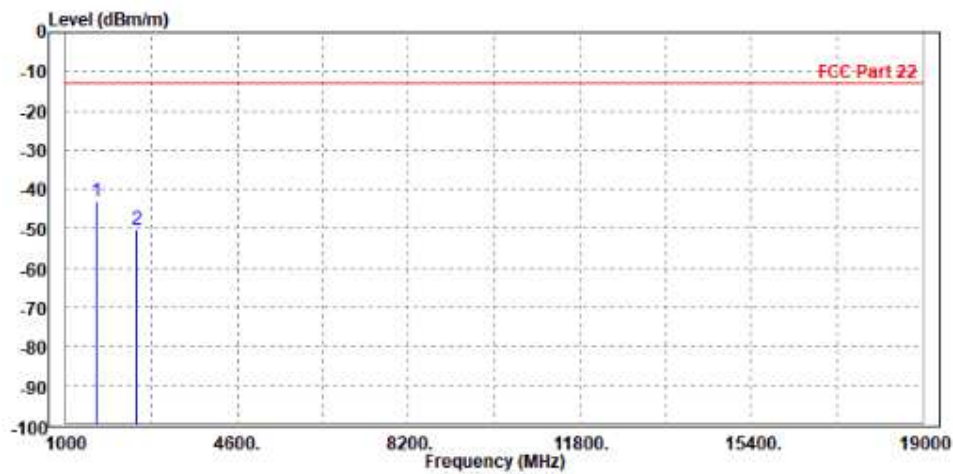
Note: For higher frequency, the emission is too low to be detected.

GSM 850

CH 128:

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.400	-43.02	-43.80	-13.00	-30.02	0.78	Peak	Horizontal
2	2476.000	-50.29	-55.64	-13.00	-37.29	5.35	Peak	Horizontal



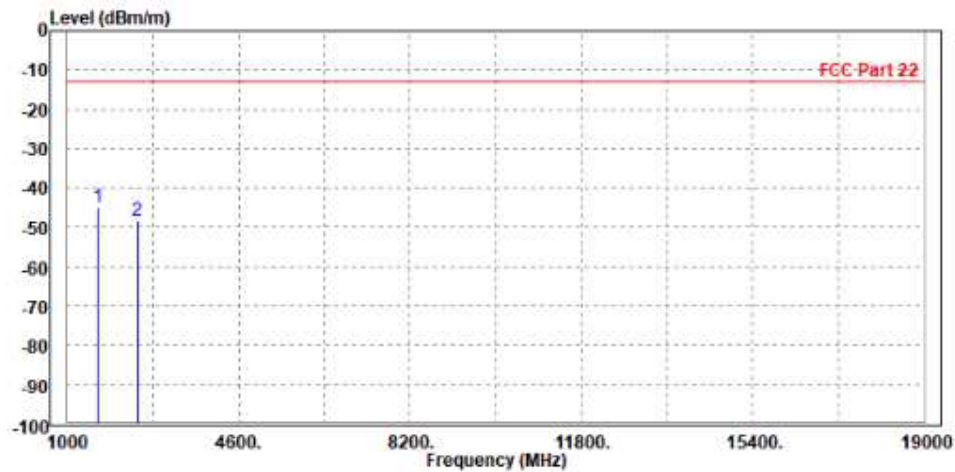


BUREAU VERITAS

Test Report No.: W7L-P23100014RF04

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.000	-44.73	-45.77	-13.00	-31.73	1.04	Peak	Vertical
2	2472.600	-48.32	-53.18	-13.00	-35.32	4.86	Peak	Vertical





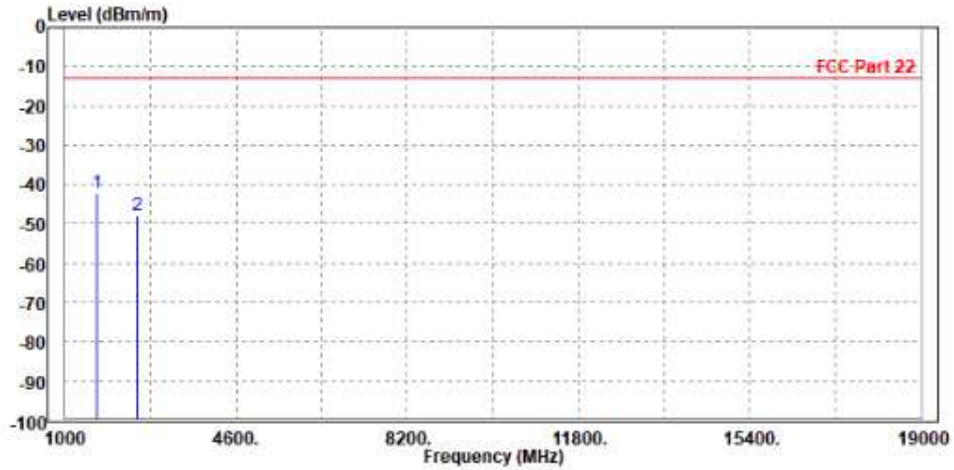
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

CH 189:

<b>MODE</b>	TX channel 189	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1666.000	-42.10	-43.00	-13.00	-29.10	0.92	Peak	Horizontal
2	2509.200	-47.96	-53.42	-13.00	-34.96	5.46	Peak	Horizontal



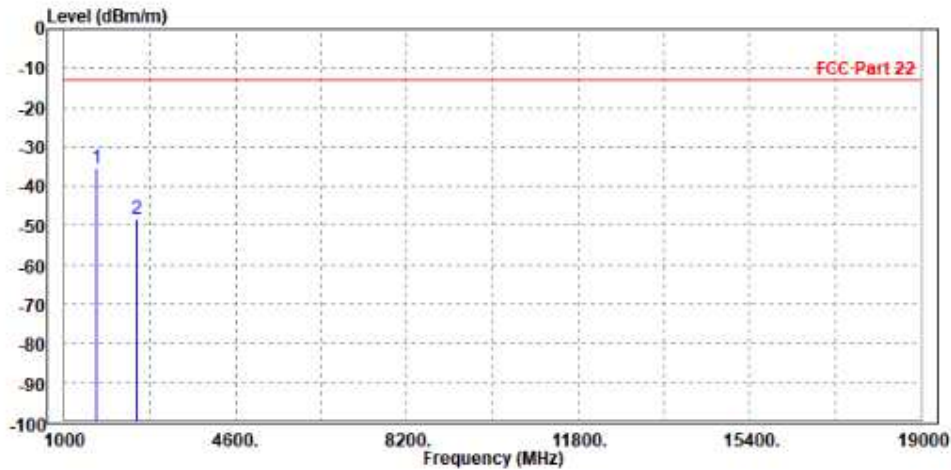


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VERITAS**

Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 189	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1672.800	-35.31	-36.53	-13.00	-22.31	1.22	Peak	Vertical
2	2512.000	-48.41	-53.39	-13.00	-35.41	4.98	Peak	Vertical





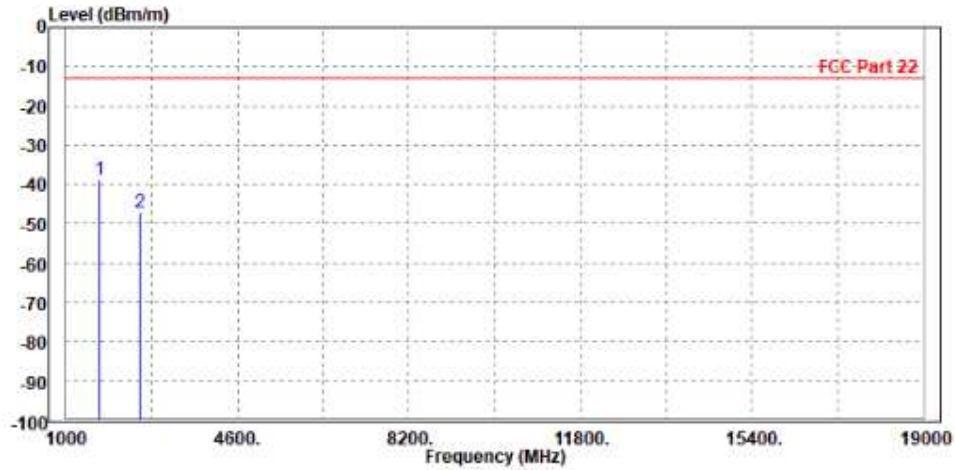
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

CH 251:

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1702.000	-38.63	-39.84	-13.00	-25.63	1.21	Peak	Horizontal
2	2546.400	-47.06	-52.61	-13.00	-34.06	5.55	Peak	Horizontal





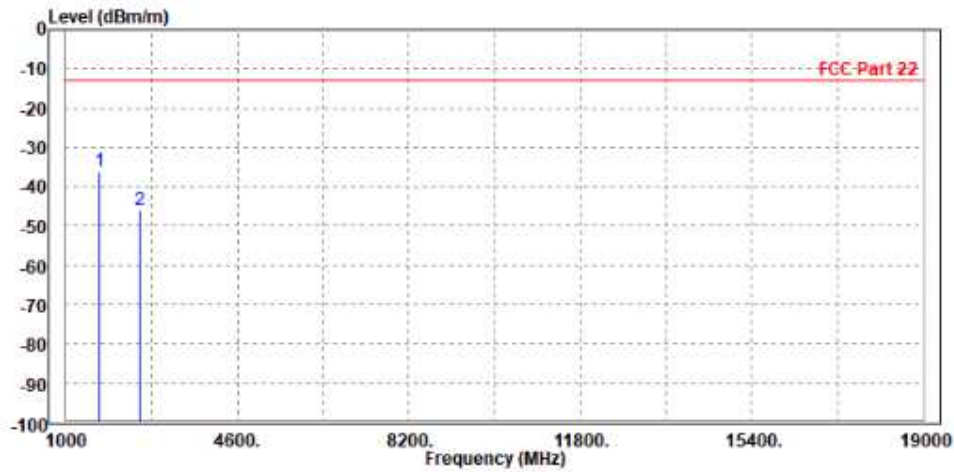


**BUREAU  
VERITAS**

**Test Report No.: W7L-P23100014RF04**

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1697.600	-36.18	-37.58	-13.00	-23.18	1.40	Peak	Vertical
2	2548.000	-45.91	-51.00	-13.00	-32.91	5.09	Peak	Vertical





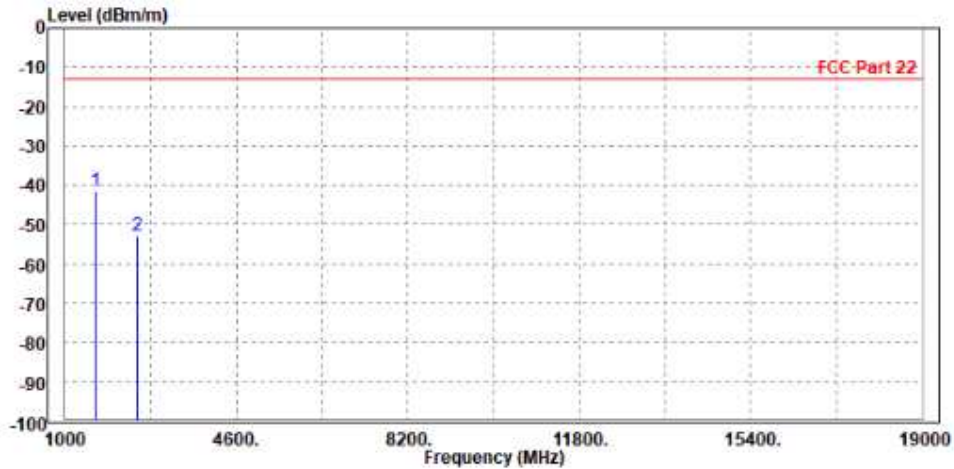
Test Report No.: W7L-P23100014RF04

EDGE 850:

CH 128:

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.000	-41.57	-42.34	-13.00	-28.57	0.77	Peak	Horizontal
2	2509.200	-52.98	-58.44	-13.00	-39.98	5.46	Peak	Horizontal

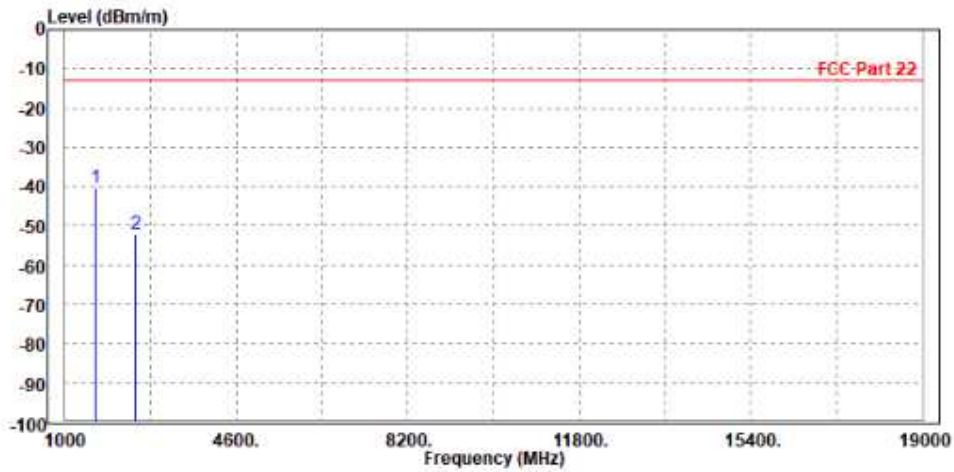




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 128	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.400	-40.17	-41.21	-13.00	-27.17	1.04	Peak	Vertical
2	2476.000	-52.25	-57.12	-13.00	-39.25	4.87	Peak	Vertical





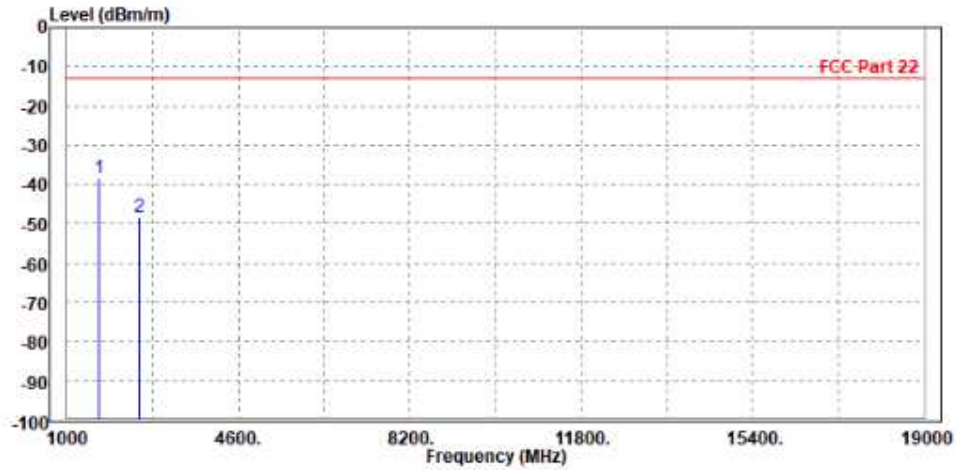
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

CH 189:

<b>MODE</b>	TX channel 189	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1672.800	-38.59	-39.56	-13.00	-25.59	0.97	Peak	Horizontal
2	2512.000	-48.15	-53.62	-13.00	-35.15	5.47	Peak	Horizontal

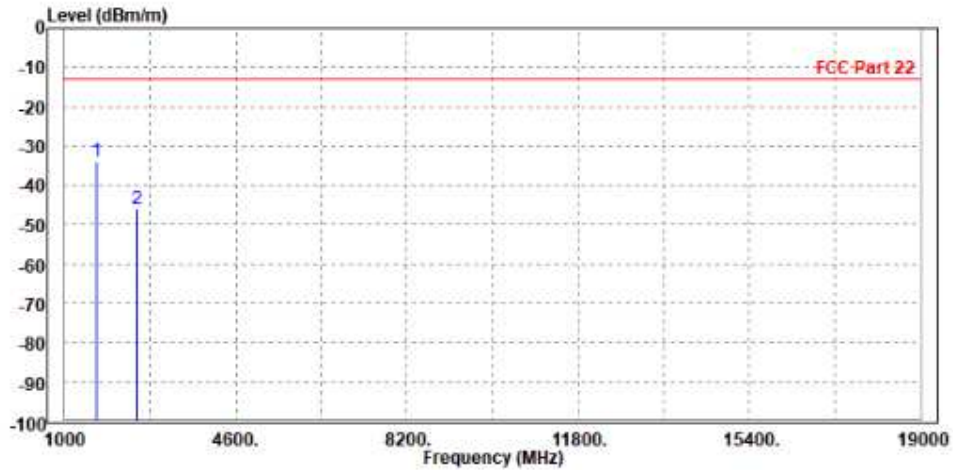




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 189	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1666.000	-33.70	-34.87	-13.00	-20.70	1.17	Peak	Vertical
2	2509.200	-46.15	-51.12	-13.00	-33.15	4.97	Peak	Vertical





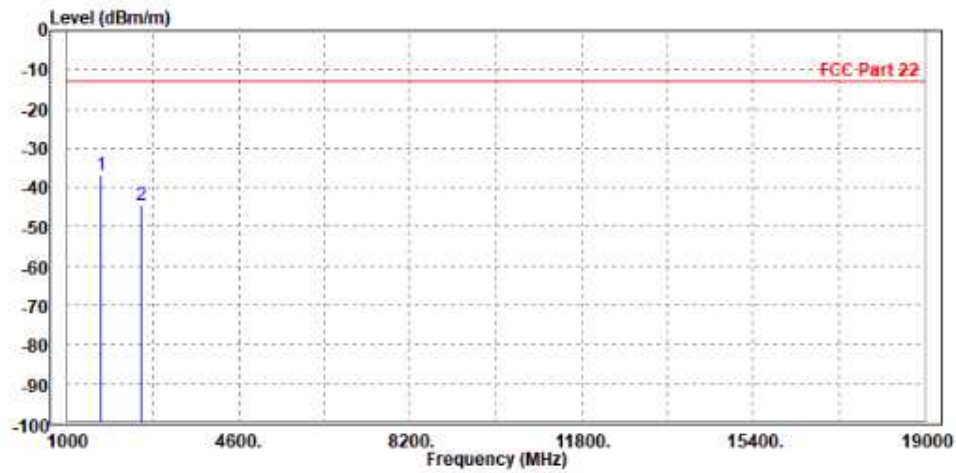
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

CH 251:

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1702.000	-37.01	-38.22	-13.00	-24.01	1.21	Peak	Horizontal
2	2548.000	-44.61	-50.16	-13.00	-31.61	5.55	Peak	Horizontal



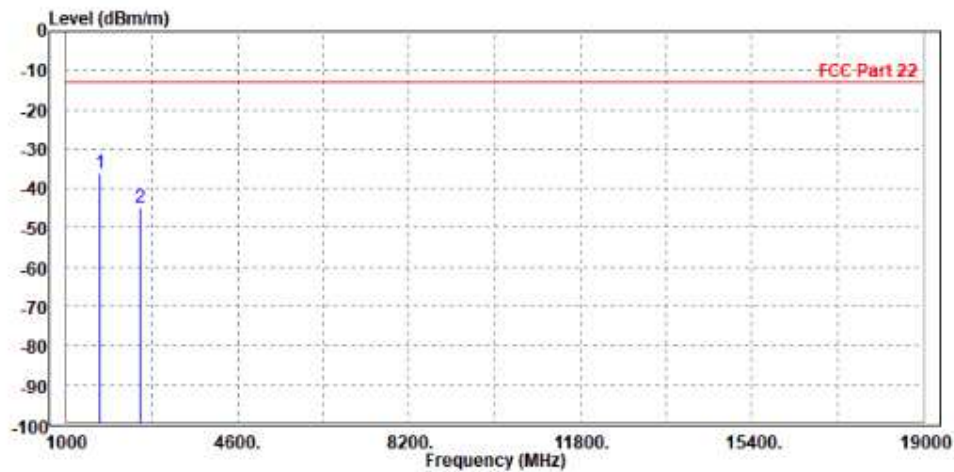


**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Read	Limit	Over				
Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP 1702.000	-36.16	-37.59	-13.00	-23.16	1.43	Peak	Vertical
2 2546.400	-44.90	-49.99	-13.00	-31.90	5.09	Peak	Vertical

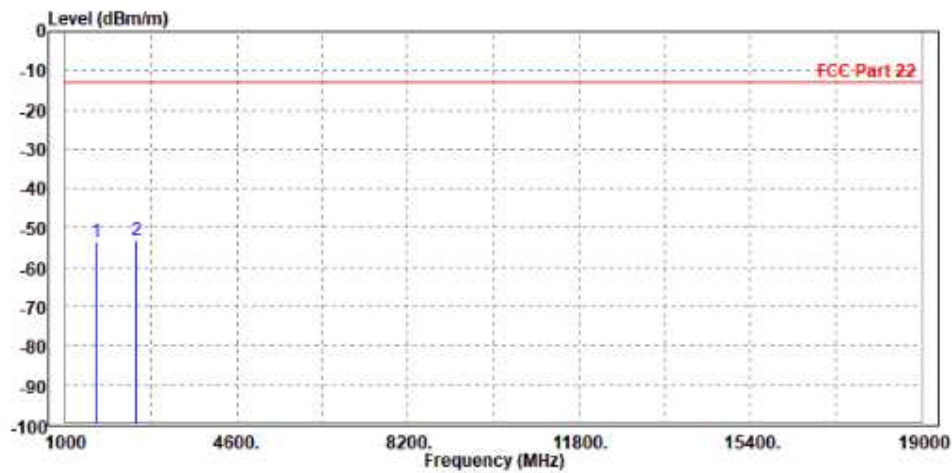


WCDMA Band V:

CH 4132:

MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1652.800	-53.60	-54.41	-13.00	-40.60	0.81	Peak	Horizontal
2 PP	2476.000	-53.20	-58.55	-13.00	-40.20	5.35	Peak	Horizontal



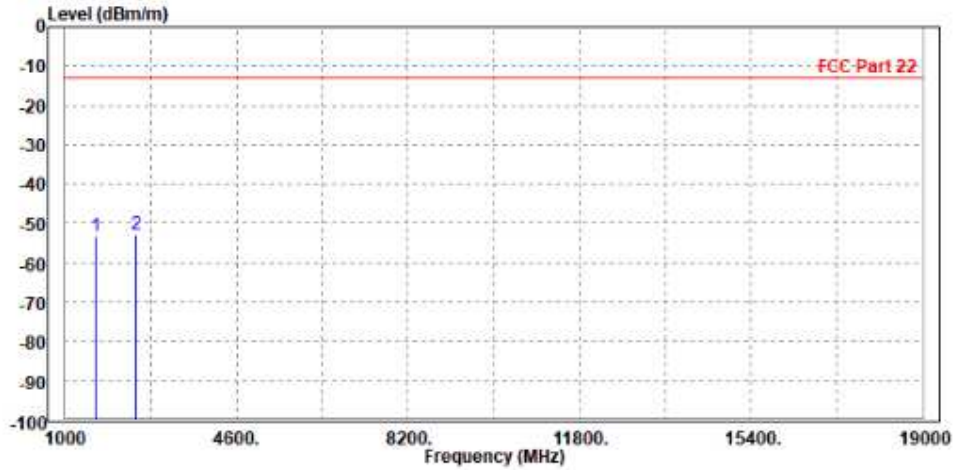




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 4132	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1648.000	-53.15	-54.19	-13.00	-40.15	1.04	Peak	Vertical
2 PP	2479.200	-52.93	-57.81	-13.00	-39.93	4.88	Peak	Vertical



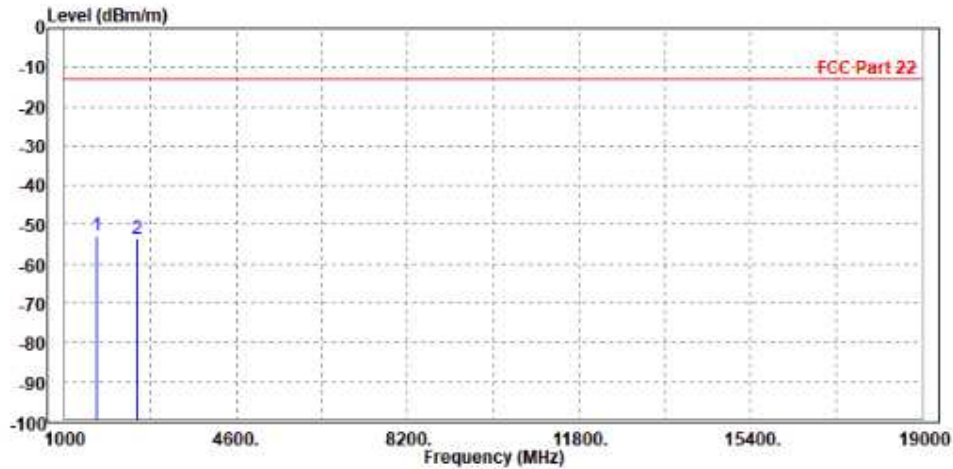


Test Report No.: W7L-P23100014RF04

CH 4182:

<b>MODE</b>	TX channel 4182	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm/m	dBm	dBm/m	dB	dB/m	Pol/Phase
1 PP 1666.000	-52.70	-53.62	-13.00	-39.70	0.92	Peak Horizontal
2 2509.200	-53.50	-58.96	-13.00	-40.50	5.46	Peak Horizontal

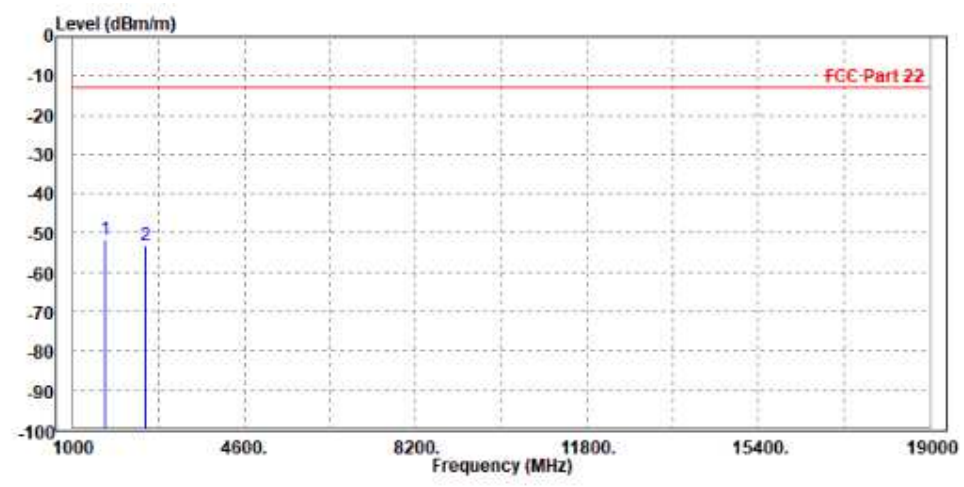




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 4182	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

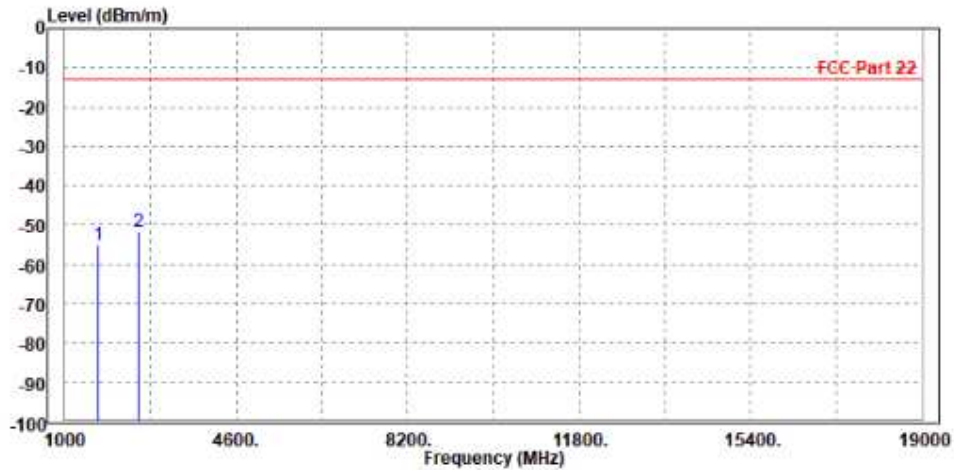
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1672.800	-51.86	-53.08	-13.00	-38.86	1.22	Peak	Vertical
2	2512.000	-53.07	-58.05	-13.00	-40.07	4.98	Peak	Vertical



CH 4233:

<b>MODE</b>	TX channel 4233	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1702.000	-55.19	-56.40	-13.00	-42.19	1.21	Peak	Horizontal
2 PP	2539.800	-51.58	-57.11	-13.00	-38.58	5.53	Peak	Horizontal

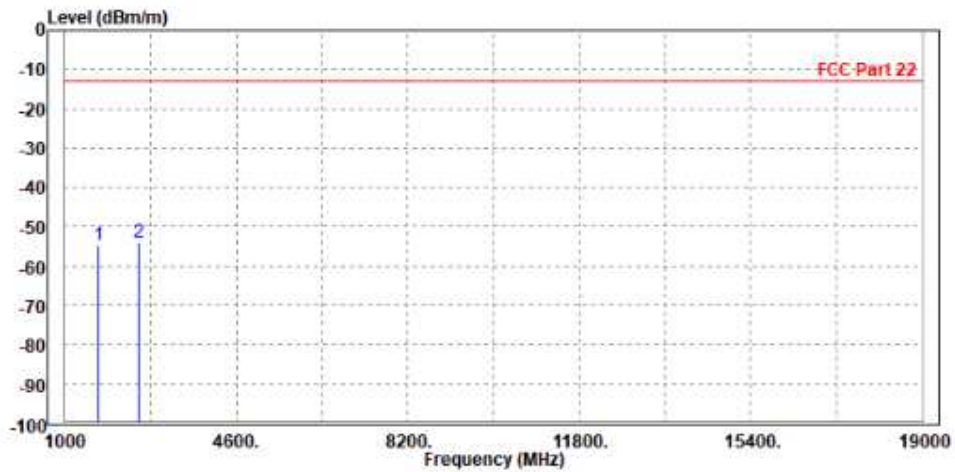




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 4233	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1693.200	-54.94	-56.30	-13.00	-41.94	1.36	Peak	Vertical
2	PP 2548.000	-53.85	-58.94	-13.00	-40.85	5.09	Peak	Vertical





BUREAU VERITAS

Test Report No.: W7L-P23100014RF04

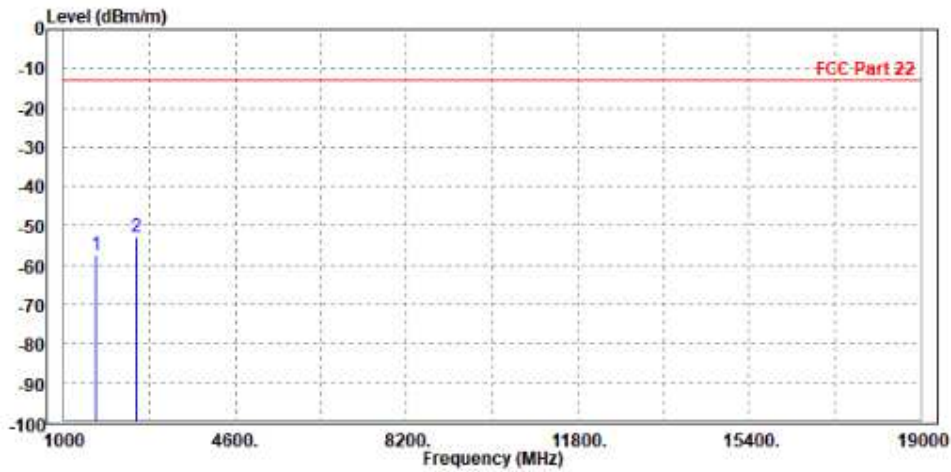
LTE Band 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH26915

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-57.24	-58.16	-13.00	-44.24	0.92	Peak	Horizontal
2 PP	2512.000	-52.72	-58.19	-13.00	-39.72	5.47	Peak	Horizontal

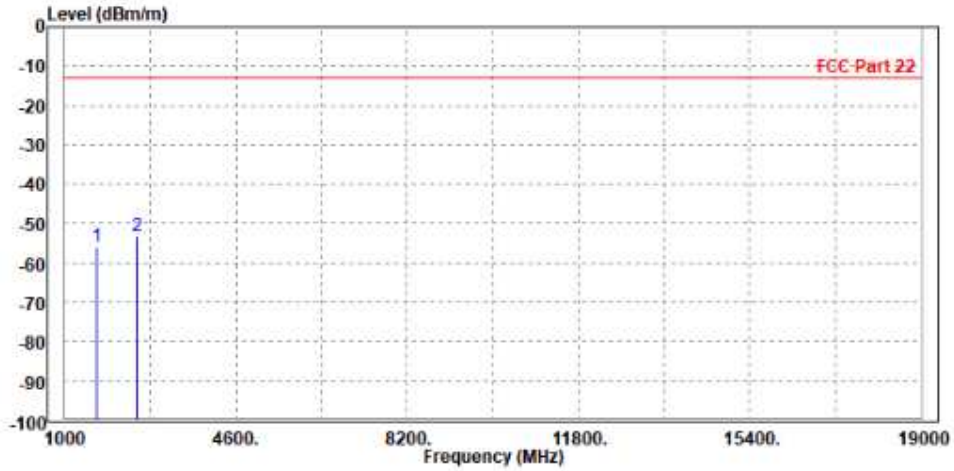




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Read	Limit	Over				
Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1673.000	-55.71	-56.93	-13.00	-42.71	1.22 Peak	Vertical
2	PP 2512.000	-53.31	-58.29	-13.00	-40.31	4.98 Peak	Vertical





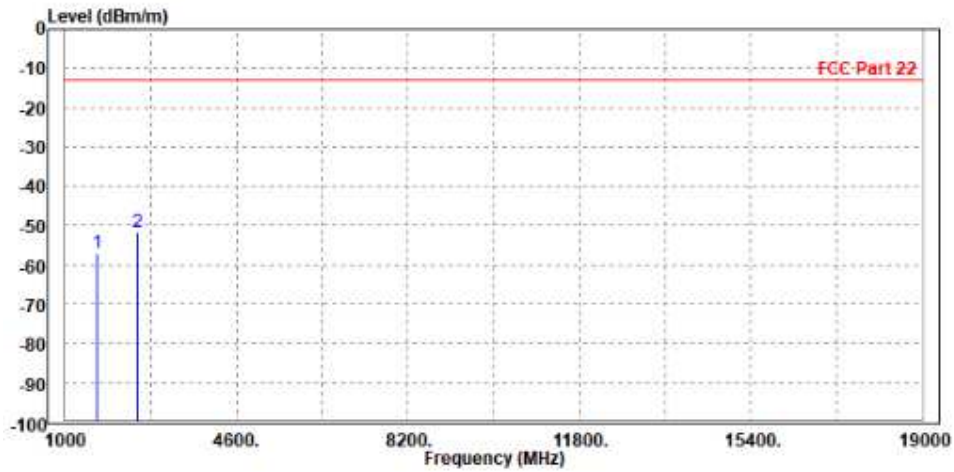
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

**CHANNEL BANDWIDTH: 3MHz / QPSK**

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1673.000	-57.07	-58.05	-13.00	-44.07	0.98	Peak	Horizontal
2 PP	2512.000	-51.83	-57.30	-13.00	-38.83	5.47	Peak	Horizontal





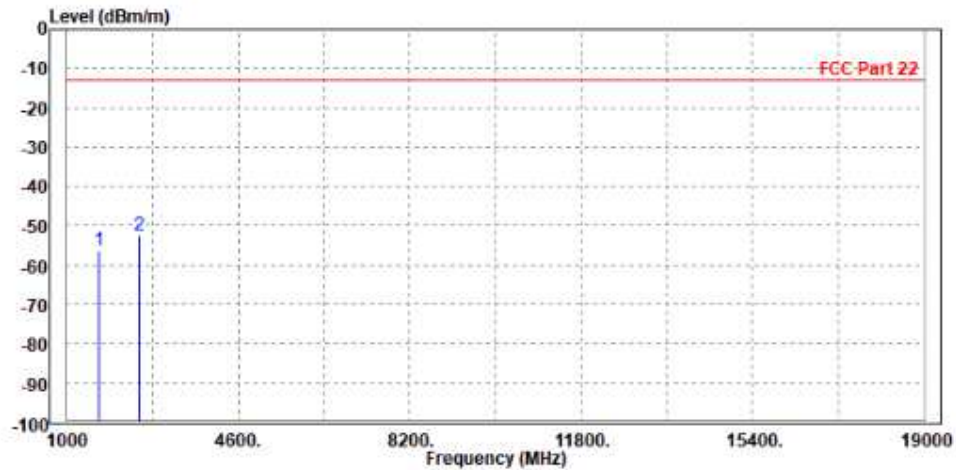


**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-56.36	-57.53	-13.00	-43.36	1.17	Peak	Vertical
2 PP	2509.500	-52.61	-57.58	-13.00	-39.61	4.97	Peak	Vertical





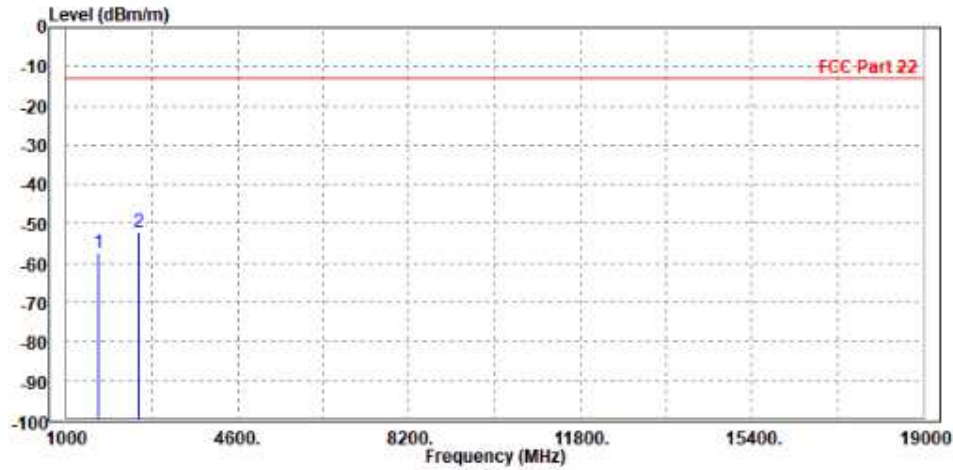
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

**CHANNEL BANDWIDTH: 5MHz / QPSK**

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-57.37	-58.29	-13.00	-44.37	0.92	Peak	Horizontal
2	PP 2509.500	-52.11	-57.57	-13.00	-39.11	5.46	Peak	Horizontal



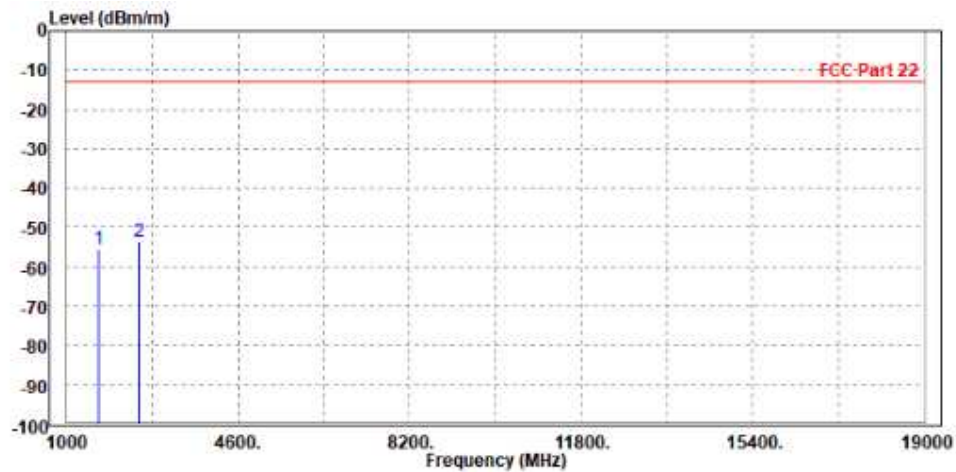


BUREAU VERITAS

Test Report No.: W7L-P23100014RF04

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read	Limit	Over	Factor	Remark	Pol/Phase
			Level	Line	Limit			
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1673.000	-55.58	-56.80	-13.00	-42.58	1.22	Peak	Vertical
2	PP 2512.000	-53.64	-58.62	-13.00	-40.64	4.98	Peak	Vertical



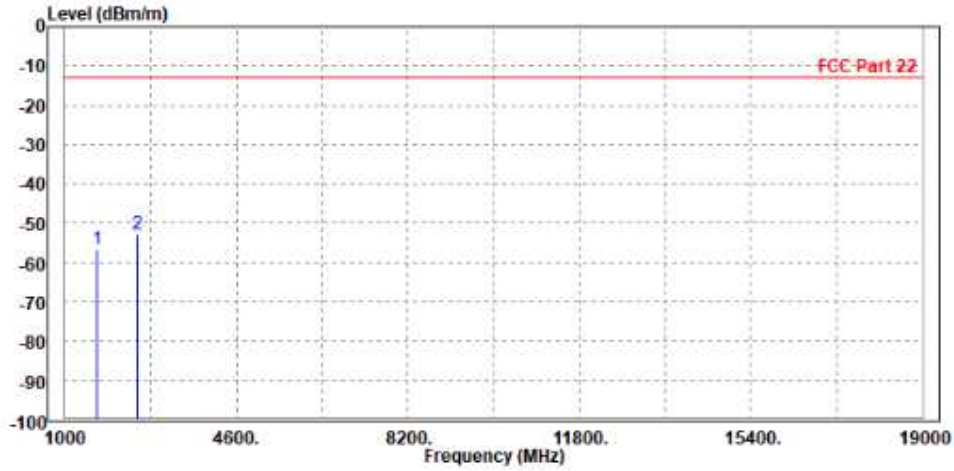


Test Report No.: W7L-P23100014RF04

**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-56.73	-57.65	-13.00	-43.73	0.92	Peak	Horizontal
2 PP	2509.500	-53.02	-58.48	-13.00	-40.02	5.46	Peak	Horizontal

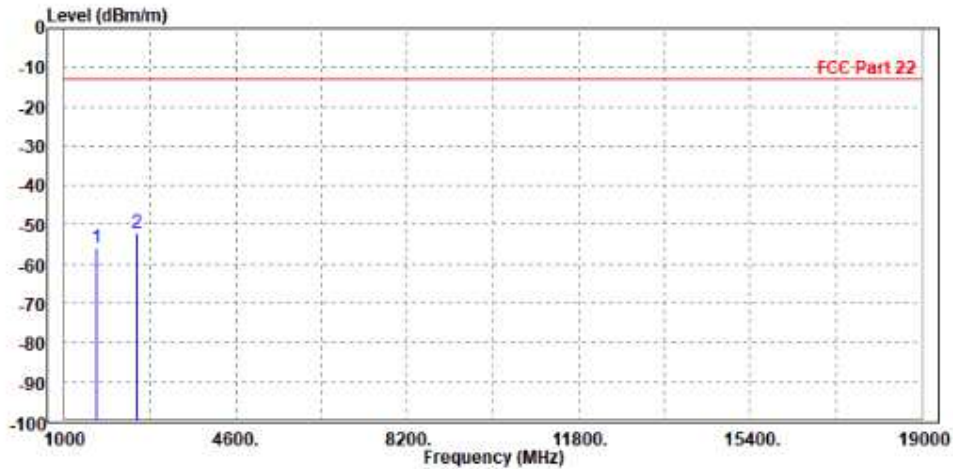




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-55.81	-56.98	-13.00	-42.81	1.17	Peak	Vertical
2 PP	2509.500	-51.94	-56.91	-13.00	-38.94	4.97	Peak	Vertical





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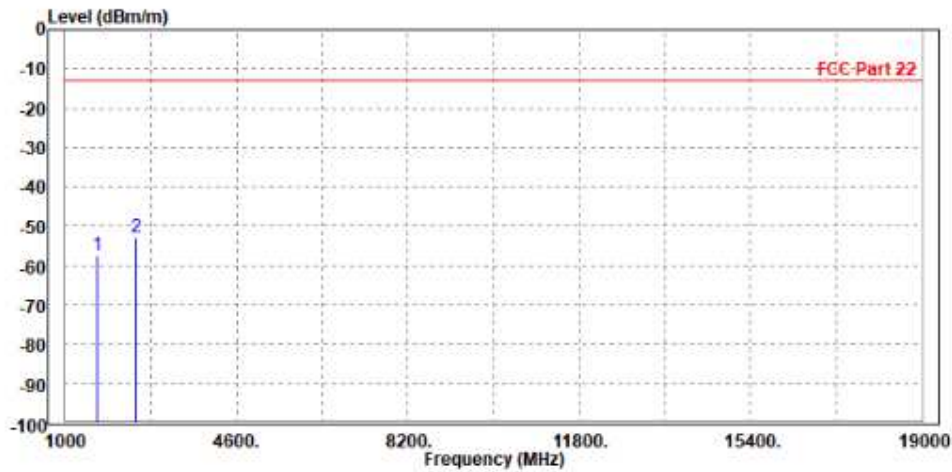
Test Report No.: W7L-P23100014RF04

**CHANNEL BANDWIDTH: 15MHz / QPSK**

**CH26845**

<b>MODE</b>	TX channel 26845	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-57.34	-58.26	-13.00	-44.34	0.92	Peak	Horizontal
2 PP	2487.000	-52.73	-58.12	-13.00	-39.73	5.39	Peak	Horizontal



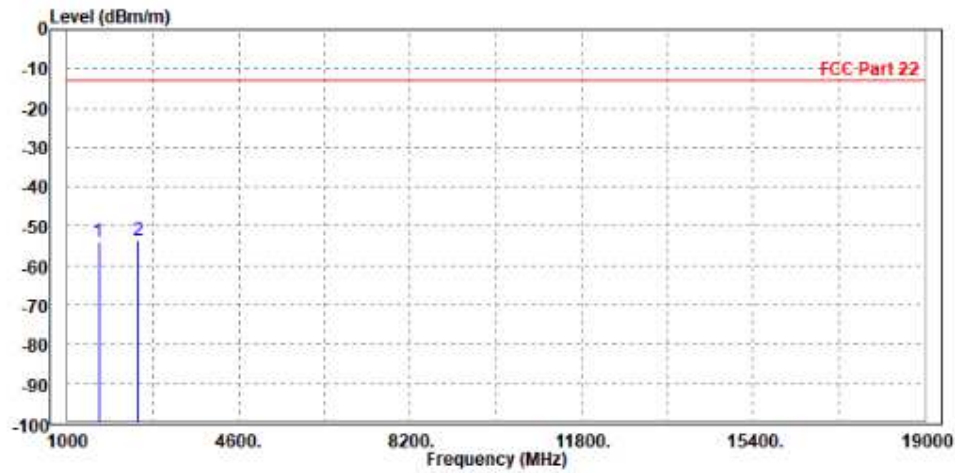


**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26845	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1658.000	-54.10	-55.21	-13.00	-41.10	1.11	Peak	Vertical
2	PP 2494.000	-53.47	-58.39	-13.00	-40.47	4.92	Peak	Vertical



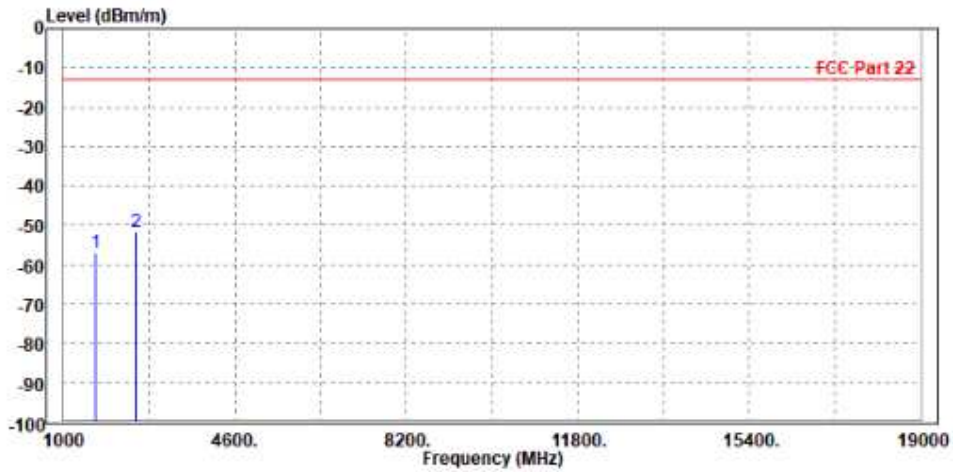


Test Report No.: W7L-P23100014RF04

CH26915

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	PoI/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1673.000	-56.97	-57.95	-13.00	-43.97	0.98	Peak	Horizontal
2 PP	2512.000	-51.82	-57.29	-13.00	-38.82	5.47	Peak	Horizontal





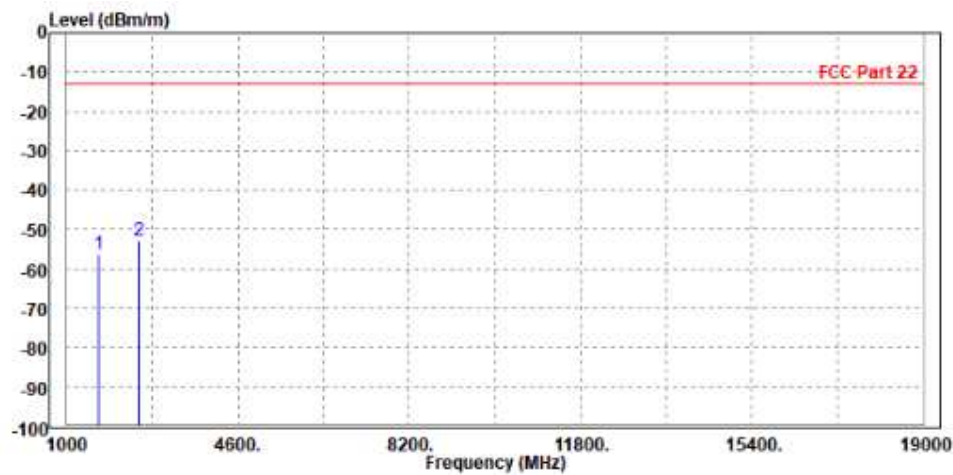


**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26915	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-56.27	-57.44	-13.00	-43.27	1.17	Peak	Vertical
2	PP 2509.500	-53.00	-57.97	-13.00	-40.00	4.97	Peak	Vertical





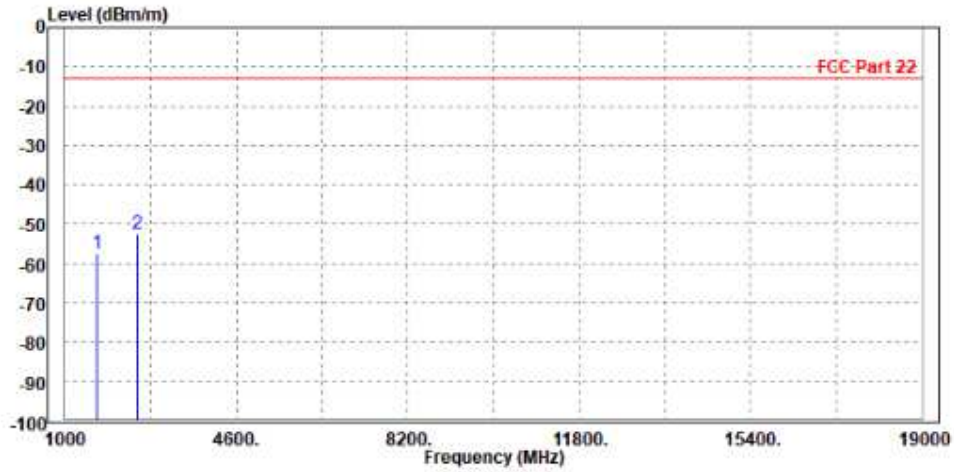
**BUREAU  
VERITAS**

Test Report No.: W7L-P23100014RF04

CH26990

<b>MODE</b>	TX channel 26990	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1688.000	-57.50	-58.60	-13.00	-44.50	1.10	Peak	Horizontal
2	PP 2530.000	-52.60	-58.11	-13.00	-39.60	5.51	Peak	Horizontal

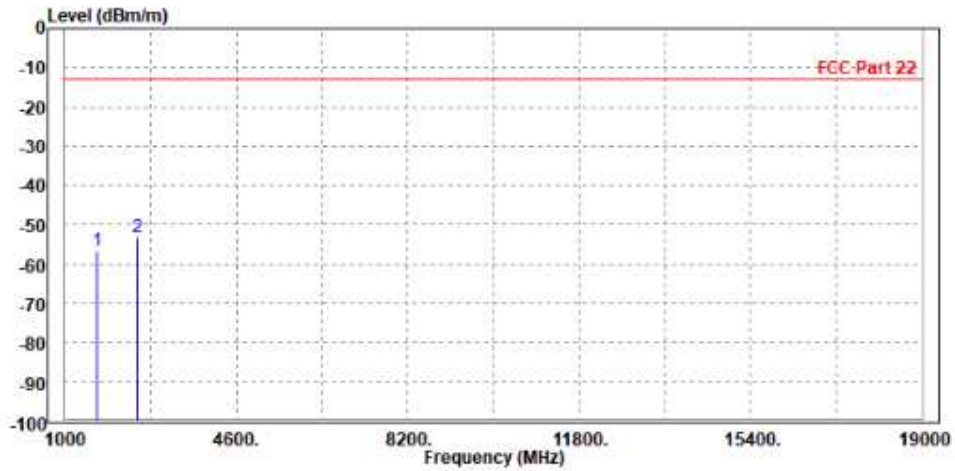




Test Report No.: W7L-P23100014RF04

<b>MODE</b>	TX channel 26990	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	AC 120V/60HZ
<b>TESTED BY</b>	Jace Hu		
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1684.000	-56.68	-57.98	-13.00	-43.68	1.30	Peak	Vertical
2 PP	2532.000	-53.23	-58.27	-13.00	-40.23	5.04	Peak	Vertical

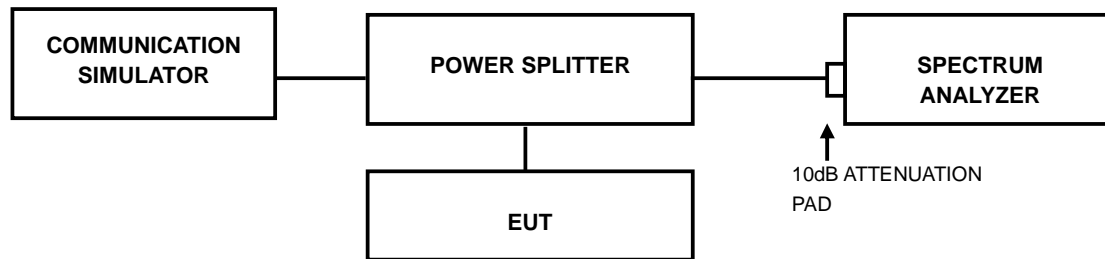


### 3.7 PEAK TO AVERAGE RATIO

#### 3.7.1 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

#### 3.7.2 TEST SETUP



#### 3.7.3 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%.



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### 3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



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## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: W7L-P23100014RF04

## 5 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Shenzhen EMC/RF Lab:**

Tel: +86-755-88696566

Fax: +86-755-88696577

**Email:** [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also.



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Test Report No.: W7L-P23100014RF04

## **6 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.





## 7 APPENDIX

### GSM850

#### PEAK-TO-AVERAGE RATIO (CCDF)

##### Test Result

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	189	2.63	13	PASS
GSM850	128	2.64	13	PASS
GSM850	251	2.63	13	PASS
EGSM850	189	5.76	13	PASS
EGSM850	128	5.82	13	PASS
EGSM850	251	5.77	13	PASS

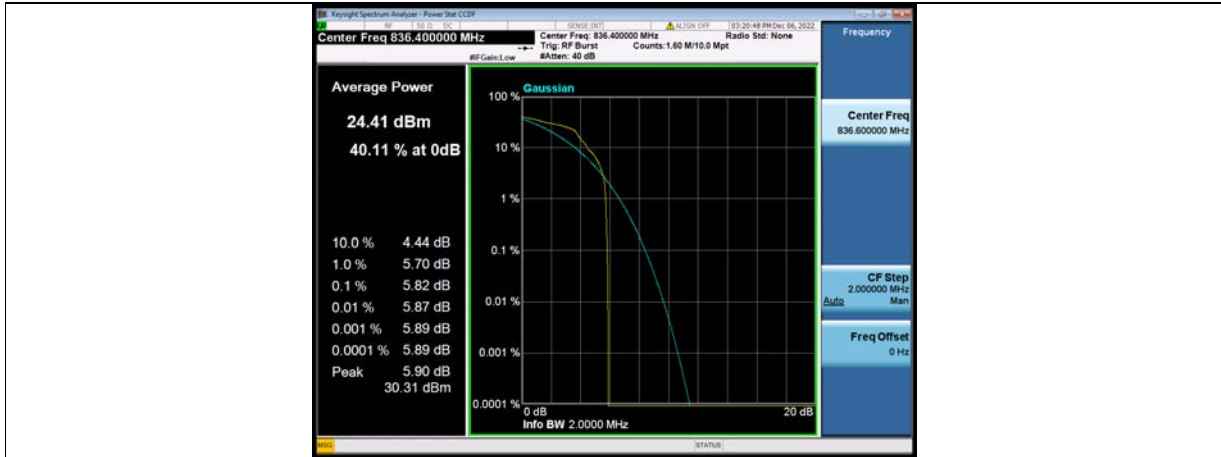
## Test Graphs



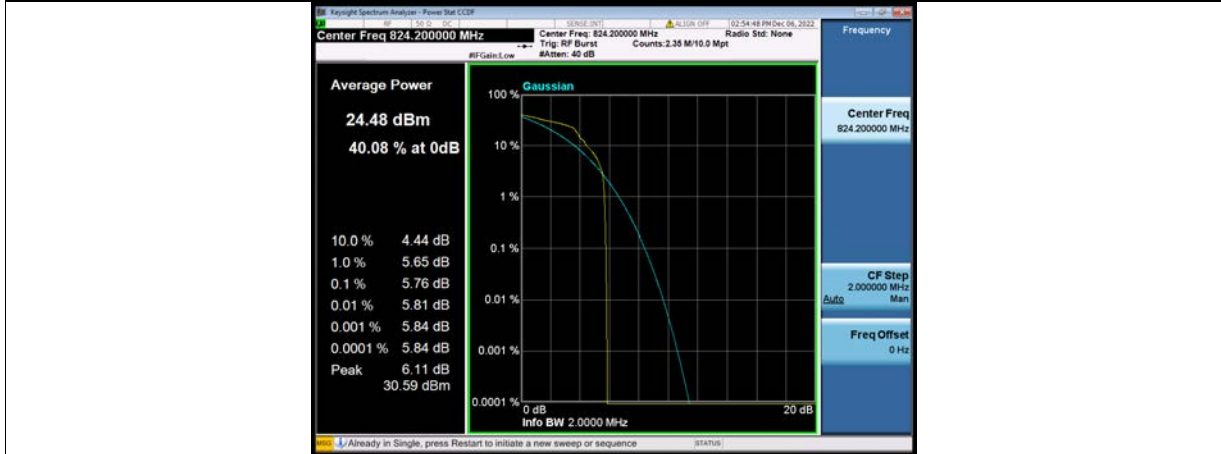


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EGSM850-128



EGSM850-251





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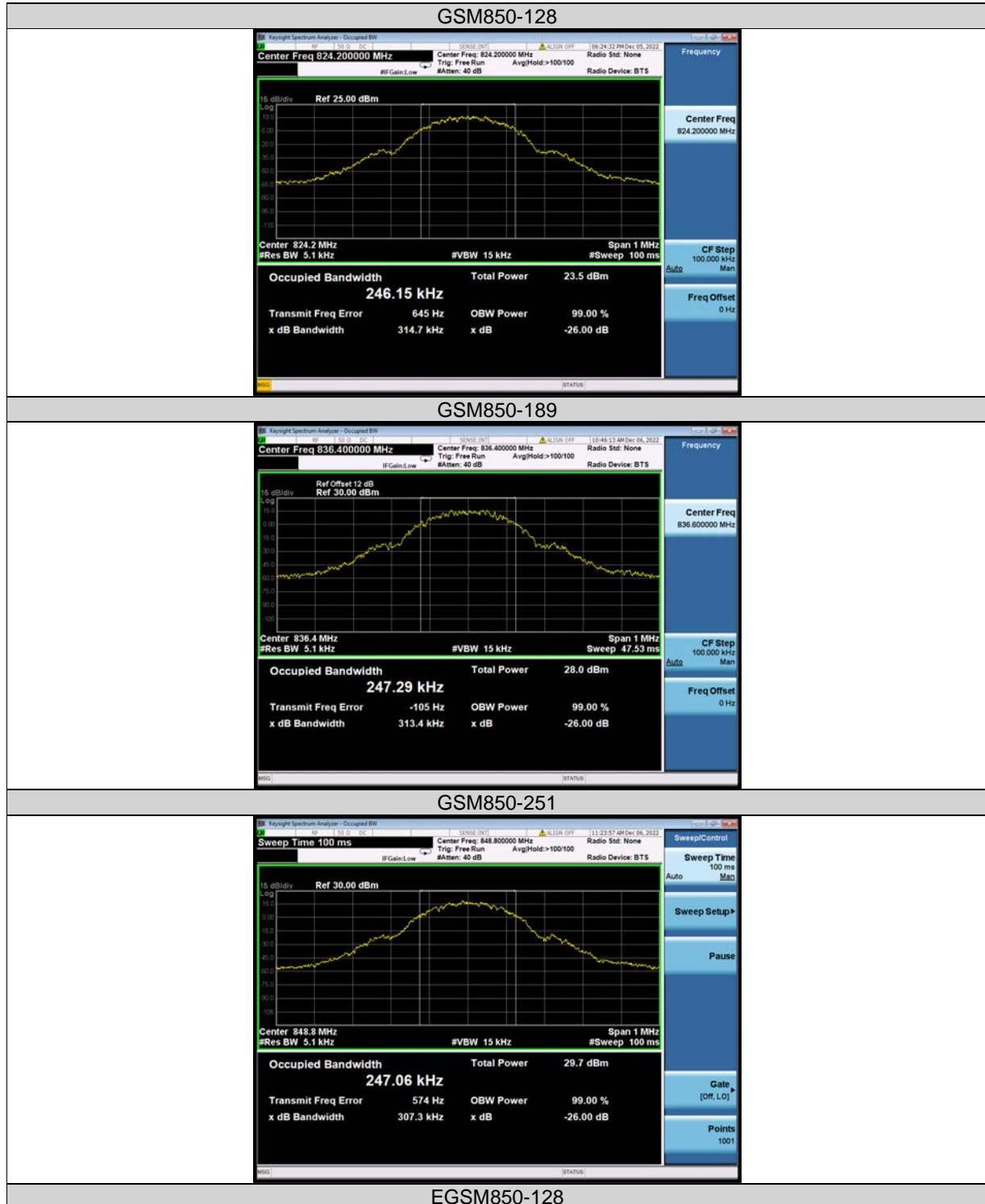
Test Report No.: W7L-P23100014RF04

## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM850	128	0.24615	0.3147	---	PASS
GSM850	189	0.24229	0.3134	---	PASS
GSM850	251	0.24706	0.3073	---	PASS
EGSM850	128	0.24300	0.3059	---	PASS
EGSM850	189	0.24317	0.3139	---	PASS
EGSM850	251	0.24321	0.3000	---	PASS

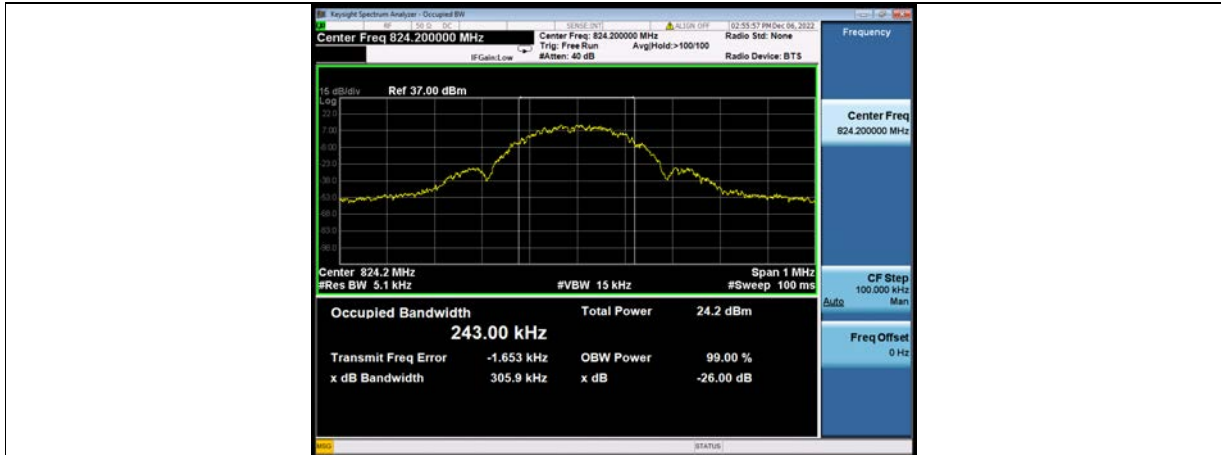
## Test Graphs





BUREAU VERITAS

### Test Report No.: W7L-P23100014RF04



### EGSM850-189



### EGSM850-251





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Test Report No.: W7L-P23100014RF04

## BAND EDGE

### Test Result

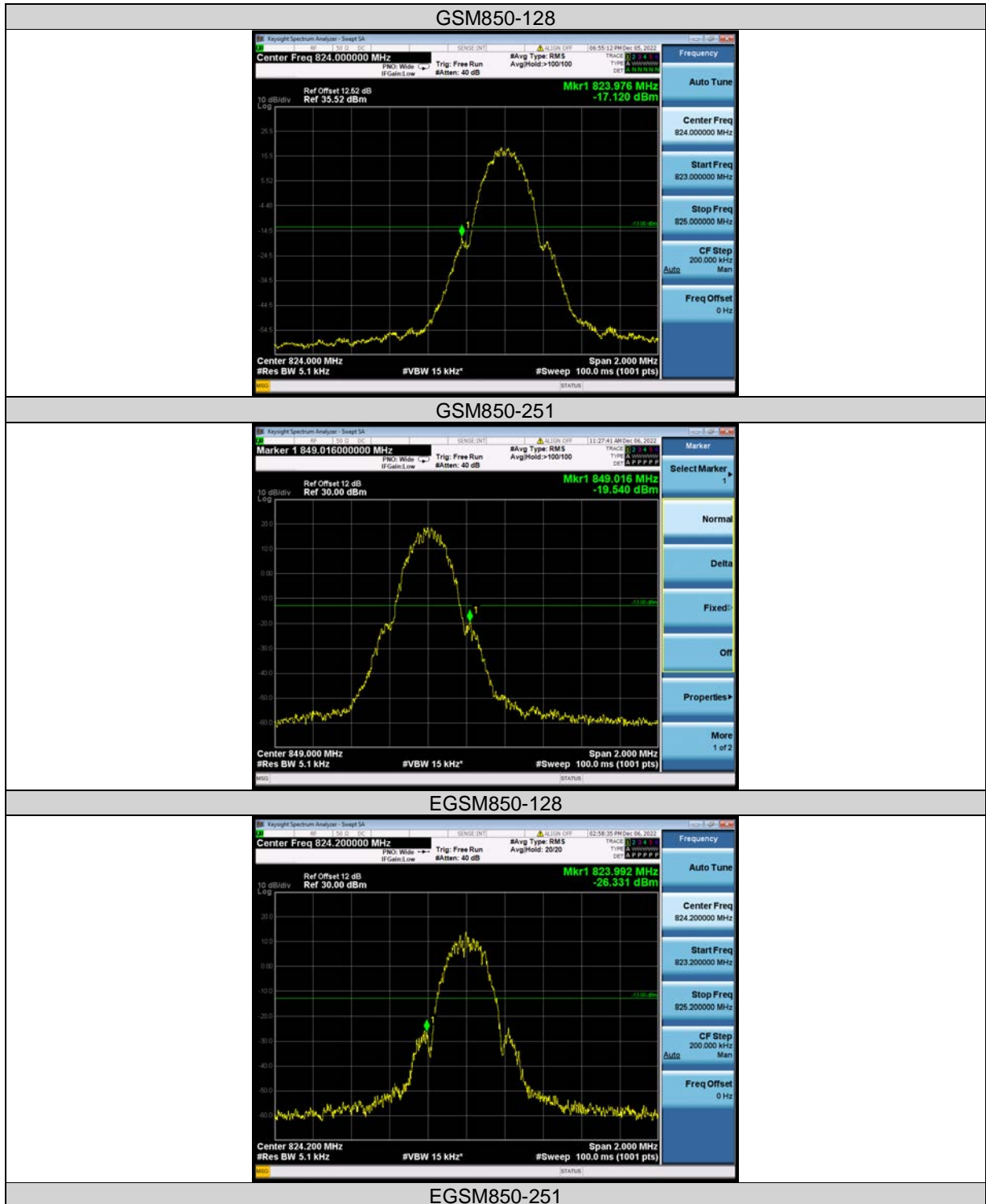
Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM850	128	823.98	-17.12	-13	PASS
GSM850	251	849.02	-19.54	-13	PASS
EGSM850	128	823.99	-26.33	-13	PASS
EGSM850	251	849.02	-28.15	-13	PASS



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Test Report No.: W7L-P23100014RF04

### Test Graphs







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### Test Report No.: W7L-P23100014RF04

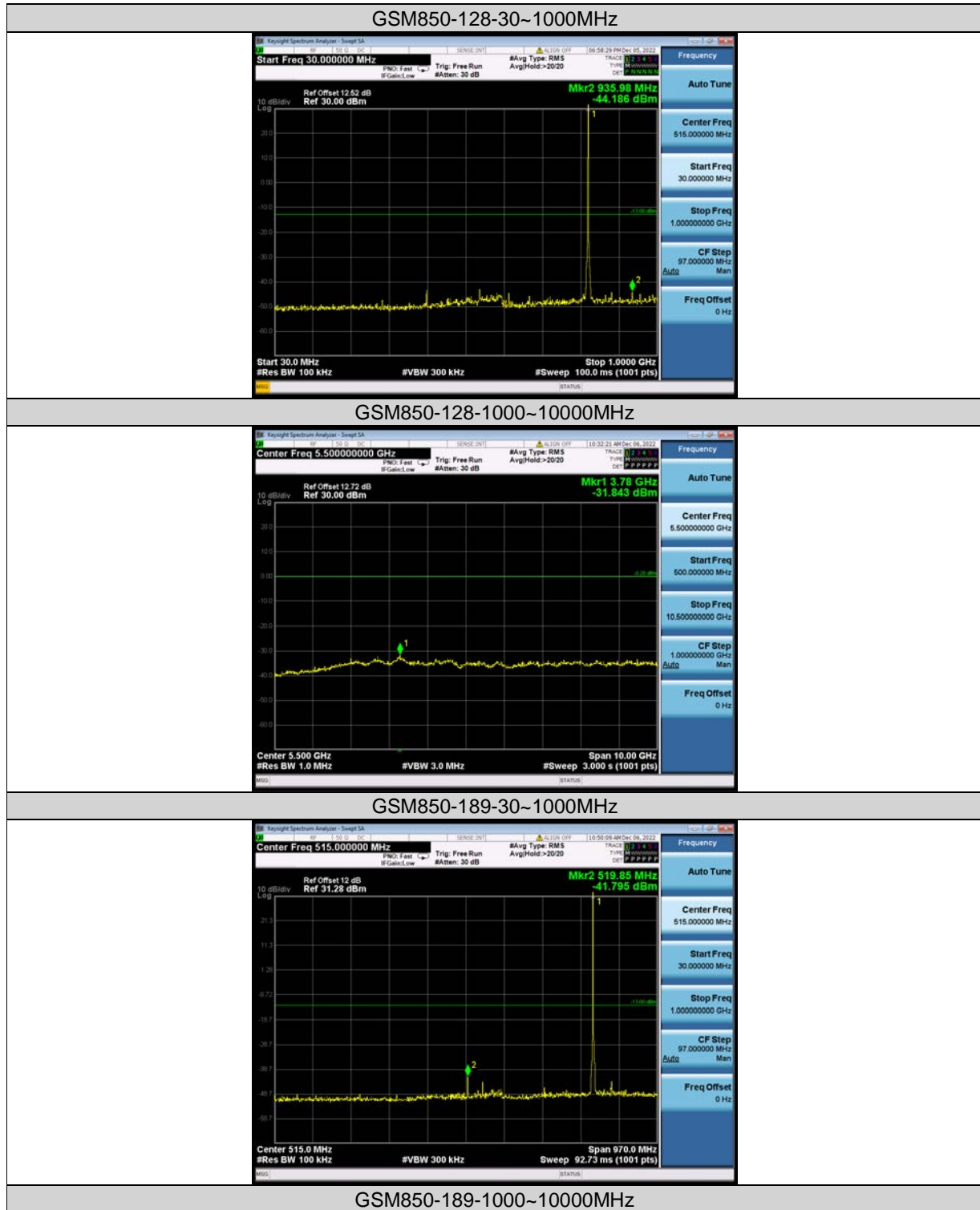


## CONDUCTED SPURIOUS EMISSION

### Test Result

Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM850	189	30~1000MHz	935.98	-44.19	-13	PASS
GSM850	189	1000~10000MHz	3780	-31.84	-13	PASS
GSM850	128	30~1000MHz	519.85	-41.80	-13	PASS
GSM850	128	1000~10000MHz	2512	-35.18	-13	PASS
GSM850	251	30~1000MHz	519.85	-42.49	-13	PASS
GSM850	251	1000~10000MHz	2548	-35.53	-13	PASS
EGSM850	189	30~1000MHz	549.47	-42.45	-13	PASS
EGSM850	189	1000~10000MHz	2472.7	-27.39	-13	PASS
EGSM850	128	30~1000MHz	557.68	-40.34	-13	PASS
EGSM850	128	1000~10000MHz	2509.6	-21.92	-13	PASS
EGSM850	251	30~1000MHz	565.91	-37.96	-13	PASS
EGSM850	251	1000~10000MHz	3879.4	-23.47	-13	PASS

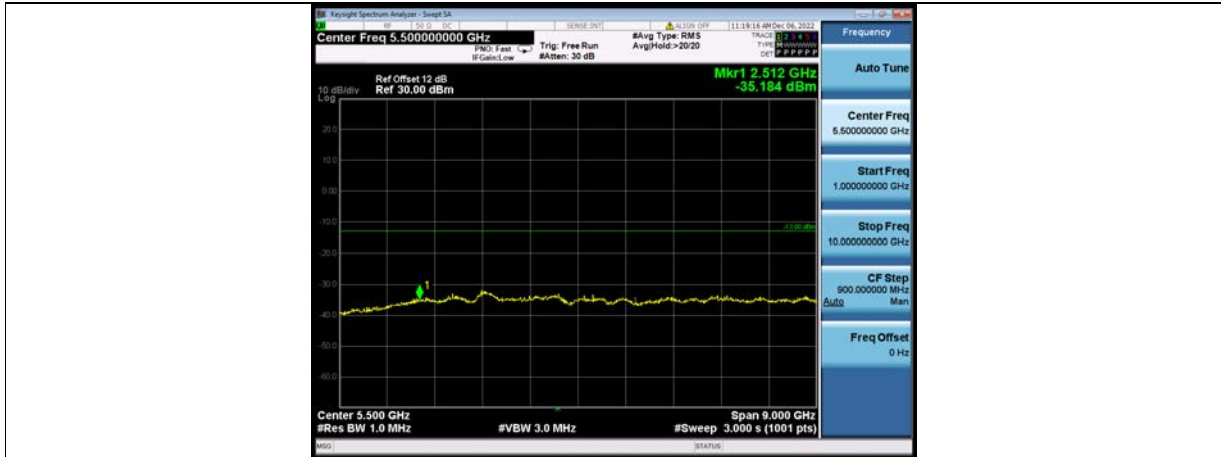
### Test Graphs



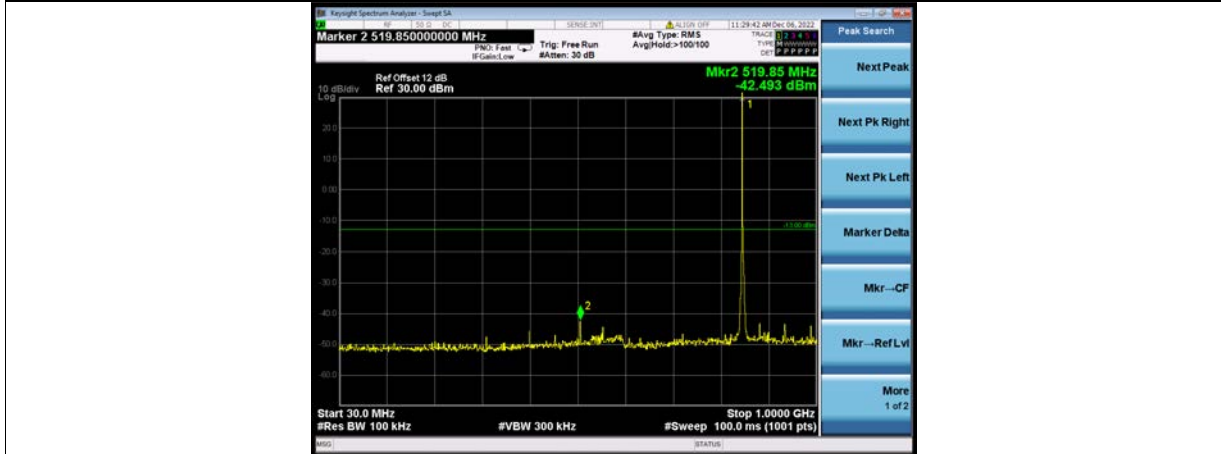


BUREAU VERITAS

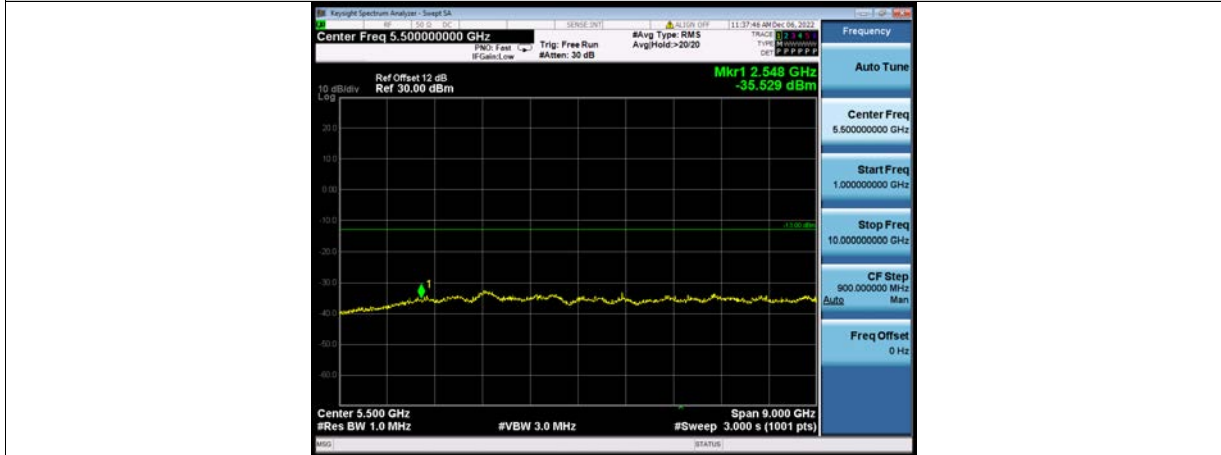
Test Report No.: W7L-P23100014RF04



GSM850-251-30~1000MHz



GSM850-251-1000~1000MHz

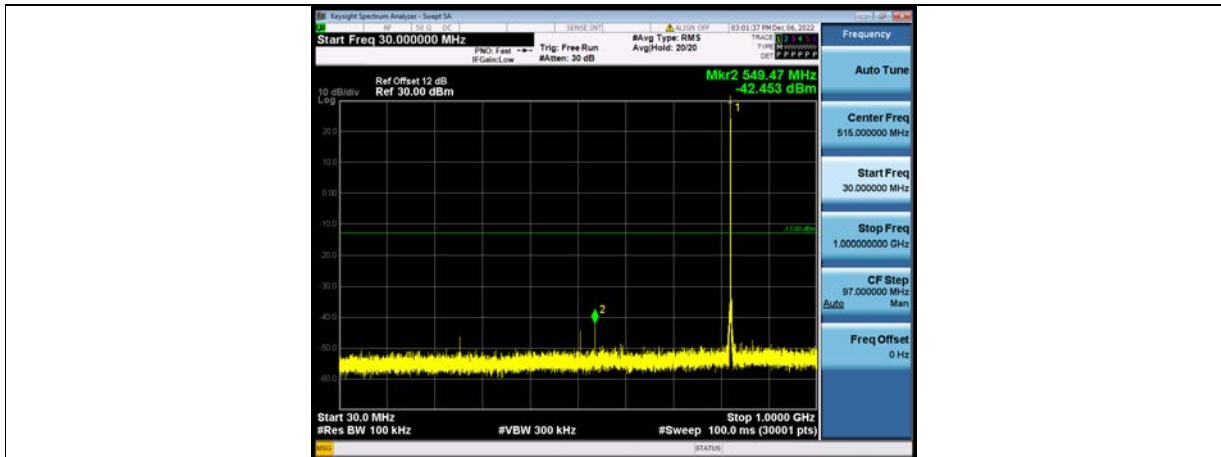


EGSM850-128-30~1000MHz

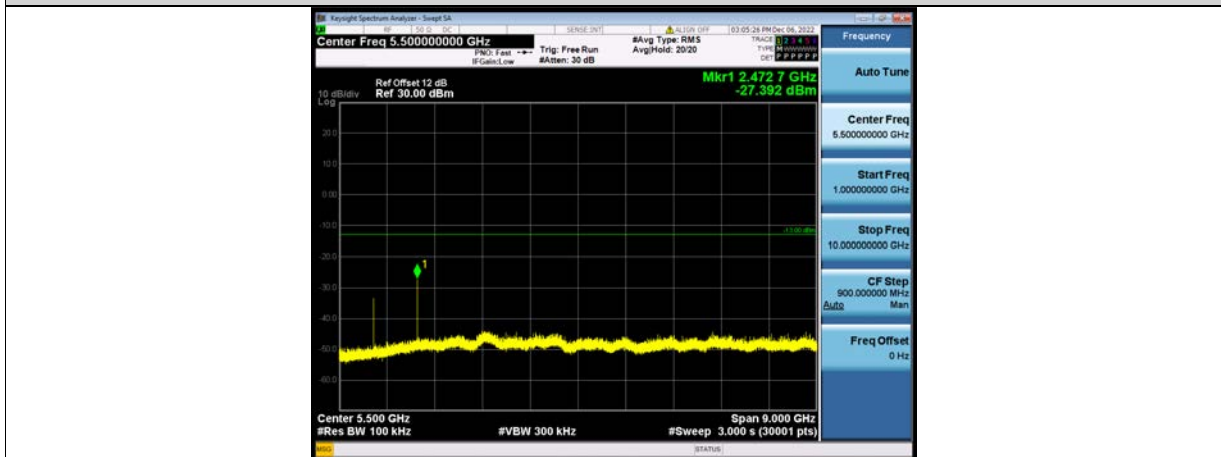


BUREAU VERITAS

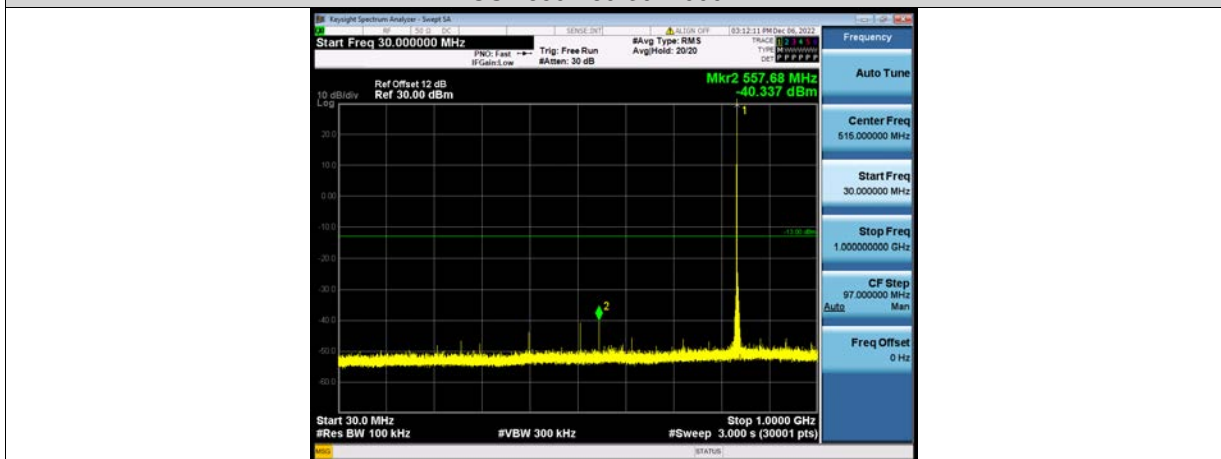
Test Report No.: W7L-P23100014RF04



EGSM850-128-1000~10000MHz



EGSM850-189-30~1000MHz

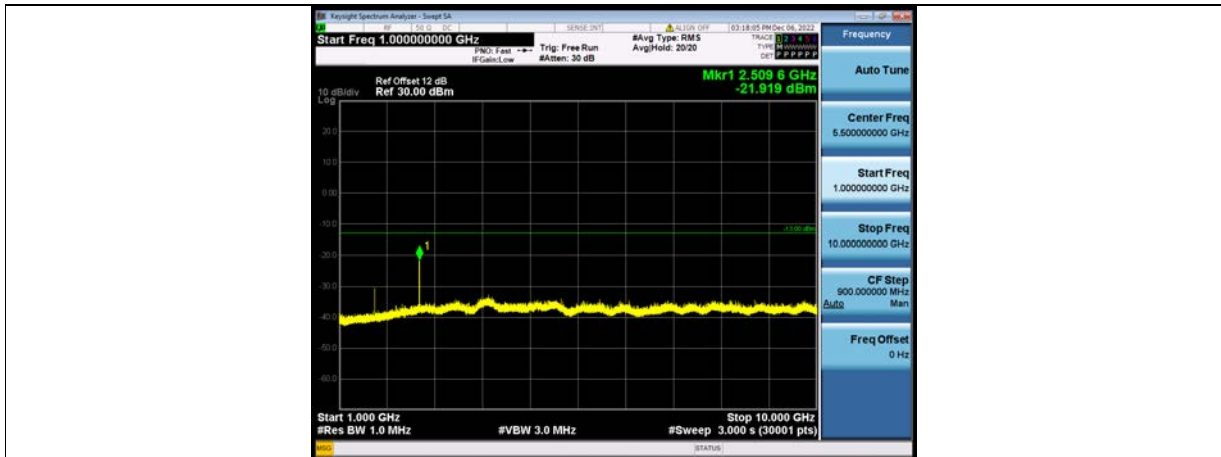


EGSM850-189-1000~10000MHz

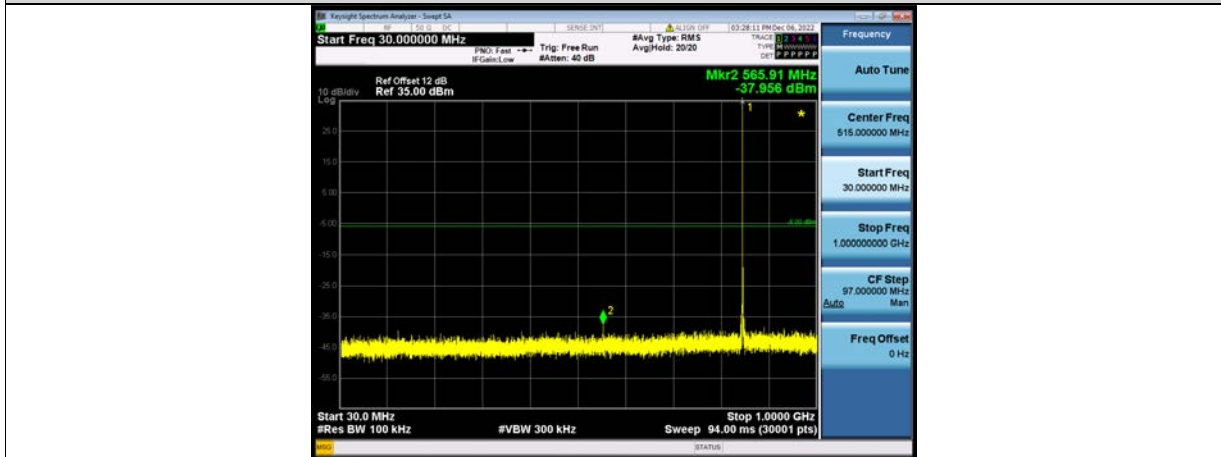


BUREAU VERITAS

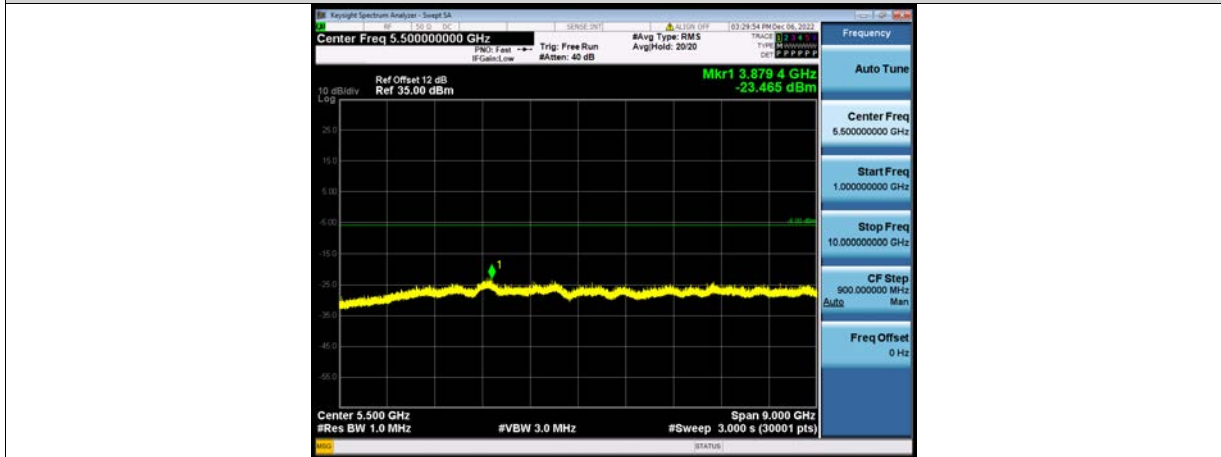
Test Report No.: W7L-P23100014RF04



EGSM850-251-30~1000MHz



EGSM850-251-1000~10000MHz





## FREQUENCY STABILITY

### Test Result

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	189	VL	NT	29.03	0.034706	±2.5	PASS
GSM850	189	VN	NT	24.47	0.029260	±2.5	PASS
GSM850	189	VH	NT	27.18	0.032497	±2.5	PASS
GSM850	128	VL	NT	30.17	0.036602	±2.5	PASS
GSM850	128	VN	NT	24.14	0.029288	±2.5	PASS
GSM850	128	VH	NT	31.80	0.038582	±2.5	PASS
GSM850	251	VL	NT	32.64	0.038452	±2.5	PASS
GSM850	251	VN	NT	31.90	0.037587	±2.5	PASS
GSM850	251	VH	NT	31.60	0.037229	±2.5	PASS
EGSM850	189	VL	NT	22.18	0.026519	±2.5	PASS
EGSM850	189	VN	NT	28.03	0.033517	±2.5	PASS
EGSM850	189	VH	NT	26.08	0.031181	±2.5	PASS
EGSM850	128	VL	NT	25.93	0.031457	±2.5	PASS
EGSM850	128	VN	NT	25.73	0.031221	±2.5	PASS
EGSM850	128	VH	NT	24.51	0.029739	±2.5	PASS
EGSM850	251	VL	NT	27.49	0.032384	±2.5	PASS
EGSM850	251	VN	NT	21.44	0.025263	±2.5	PASS
EGSM850	251	VH	NT	25.69	0.030267	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	189	NV	-30	28.09	0.033580	±2.5	PASS
GSM850	189	NV	-20	30.15	0.036050	±2.5	PASS
GSM850	189	NV	-10	28.59	0.034178	±2.5	PASS
GSM850	189	NV	0	29.59	0.035375	±2.5	PASS
GSM850	189	NV	10	24.95	0.029827	±2.5	PASS
GSM850	189	NV	20	31.94	0.038189	±2.5	PASS
GSM850	189	NV	30	24.57	0.029372	±2.5	PASS
GSM850	189	NV	40	30.76	0.036774	±2.5	PASS
GSM850	189	NV	50	29.90	0.035747	±2.5	PASS
GSM850	128	NV	-30	30.97	0.037576	±2.5	PASS
GSM850	128	NV	-20	32.75	0.039739	±2.5	PASS
GSM850	128	NV	-10	29.17	0.035393	±2.5	PASS
GSM850	128	NV	0	26.91	0.032651	±2.5	PASS
GSM850	128	NV	10	24.30	0.029481	±2.5	PASS
GSM850	128	NV	20	27.76	0.033680	±2.5	PASS
GSM850	128	NV	30	29.89	0.036270	±2.5	PASS
GSM850	128	NV	40	27.02	0.032779	±2.5	PASS
GSM850	128	NV	50	28.77	0.034906	±2.5	PASS



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GSM850	251	NV	-30	25.44	0.029974	±2.5	PASS
GSM850	251	NV	-20	33.49	0.039454	±2.5	PASS
GSM850	251	NV	-10	31.12	0.036661	±2.5	PASS
GSM850	251	NV	0	30.26	0.035648	±2.5	PASS
GSM850	251	NV	10	25.53	0.030074	±2.5	PASS
GSM850	251	NV	20	28.15	0.033168	±2.5	PASS
GSM850	251	NV	30	25.65	0.030215	±2.5	PASS
GSM850	251	NV	40	33.05	0.038938	±2.5	PASS
GSM850	251	NV	50	25.62	0.030187	±2.5	PASS
EGSM850	189	NV	-30	21.15	0.025285	±2.5	PASS
EGSM850	189	NV	-20	19.90	0.023789	±2.5	PASS
EGSM850	189	NV	-10	30.41	0.036353	±2.5	PASS
EGSM850	189	NV	0	22.48	0.026877	±2.5	PASS
EGSM850	189	NV	10	22.13	0.026460	±2.5	PASS
EGSM850	189	NV	20	26.41	0.031572	±2.5	PASS
EGSM850	189	NV	30	21.30	0.025460	±2.5	PASS
EGSM850	189	NV	40	26.46	0.031641	±2.5	PASS
EGSM850	189	NV	50	21.49	0.025692	±2.5	PASS
EGSM850	128	NV	-30	21.07	0.025565	±2.5	PASS
EGSM850	128	NV	-20	30.31	0.036776	±2.5	PASS
EGSM850	128	NV	-10	22.01	0.026711	±2.5	PASS
EGSM850	128	NV	0	25.19	0.030567	±2.5	PASS
EGSM850	128	NV	10	25.96	0.031493	±2.5	PASS
EGSM850	128	NV	20	24.20	0.029358	±2.5	PASS
EGSM850	128	NV	30	26.54	0.032200	±2.5	PASS
EGSM850	128	NV	40	29.35	0.035615	±2.5	PASS
EGSM850	128	NV	50	21.92	0.026592	±2.5	PASS
EGSM850	251	NV	-30	22.59	0.026619	±2.5	PASS
EGSM850	251	NV	-20	28.47	0.033541	±2.5	PASS
EGSM850	251	NV	-10	28.88	0.034019	±2.5	PASS
EGSM850	251	NV	0	30.58	0.036022	±2.5	PASS
EGSM850	251	NV	10	23.65	0.027868	±2.5	PASS
EGSM850	251	NV	20	23.66	0.027873	±2.5	PASS
EGSM850	251	NV	30	22.44	0.026433	±2.5	PASS
EGSM850	251	NV	40	22.83	0.026897	±2.5	PASS
EGSM850	251	NV	50	25.96	0.030586	±2.5	PASS





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## WCMDA BAND5

### PEAK-TO-AVERAGE RATIO

#### Test Result

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band5	4132	3.26	13	PASS
Band5	4182	2.88	13	PASS
Band5	4233	2.91	13	PASS

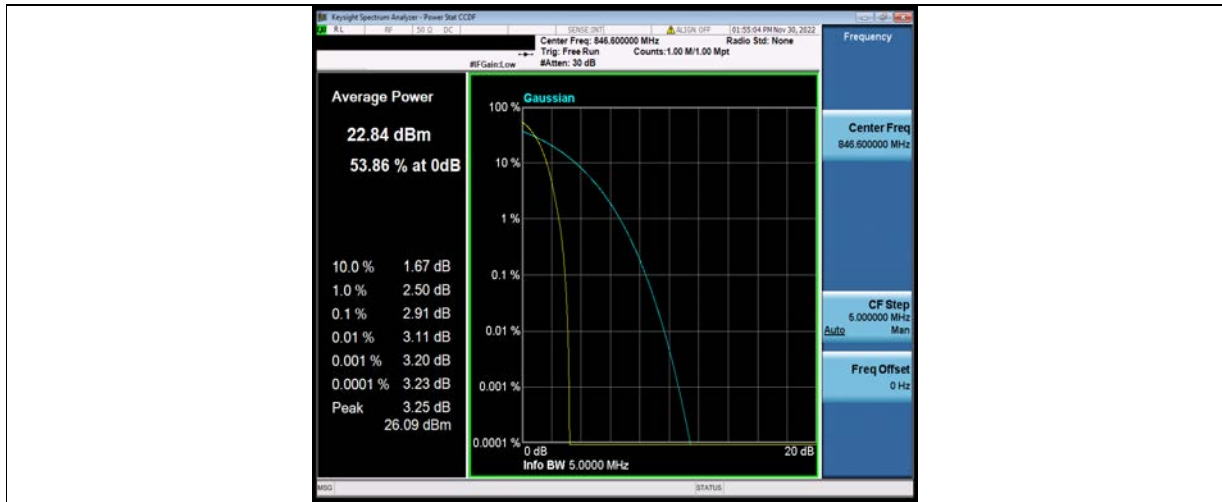
## Test Graphs





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### Test Report No.: W7L-P23100014RF04





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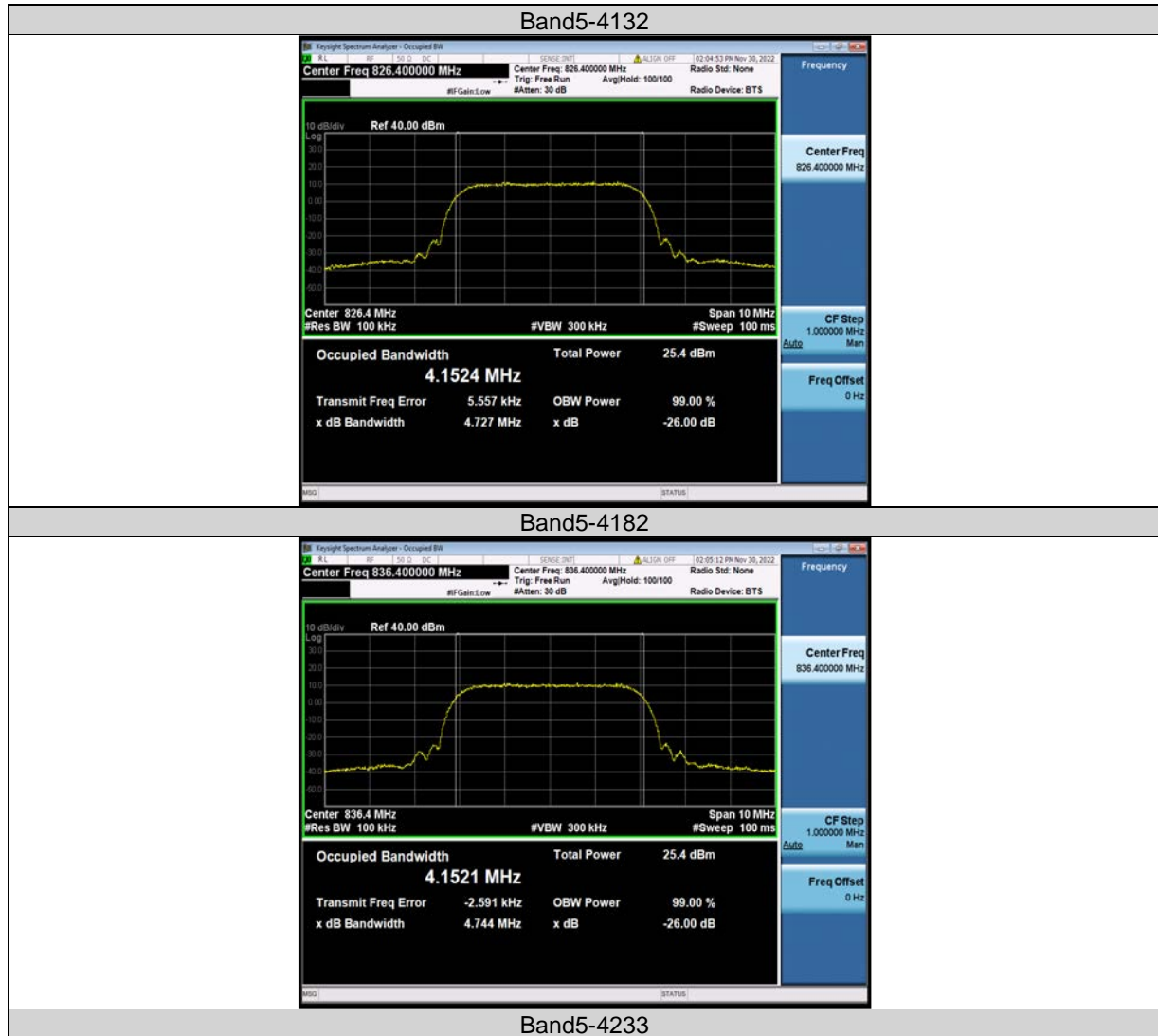
Test Report No.: W7L-P23100014RF04

## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(MHz)	Verdict
Band5	4132	4.1524	4.727	---	PASS
Band5	4182	4.1521	4.744	---	PASS
Band5	4233	4.1480	4.729	---	PASS

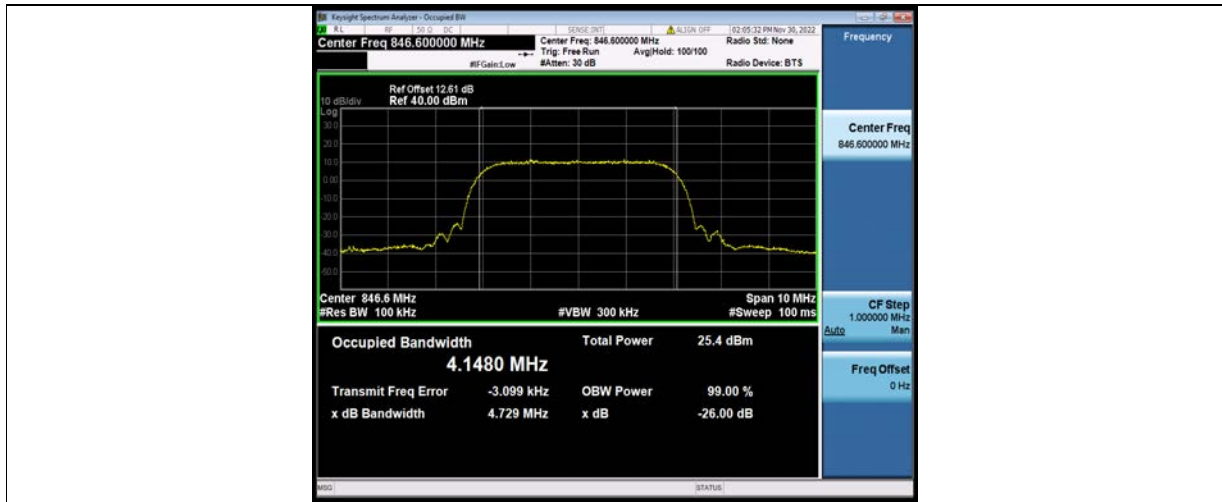
### Test Graphs





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### Test Report No.: W7L-P23100014RF04





Test Report No.: W7L-P23100014RF04

## BAND EDGE

### Test Result

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band5	4132	823.85	-27.60	-13	PASS
Band5	4233	849.00	-26.89	-13	PASS



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Test Report No.: W7L-P23100014RF04

### Test Graphs



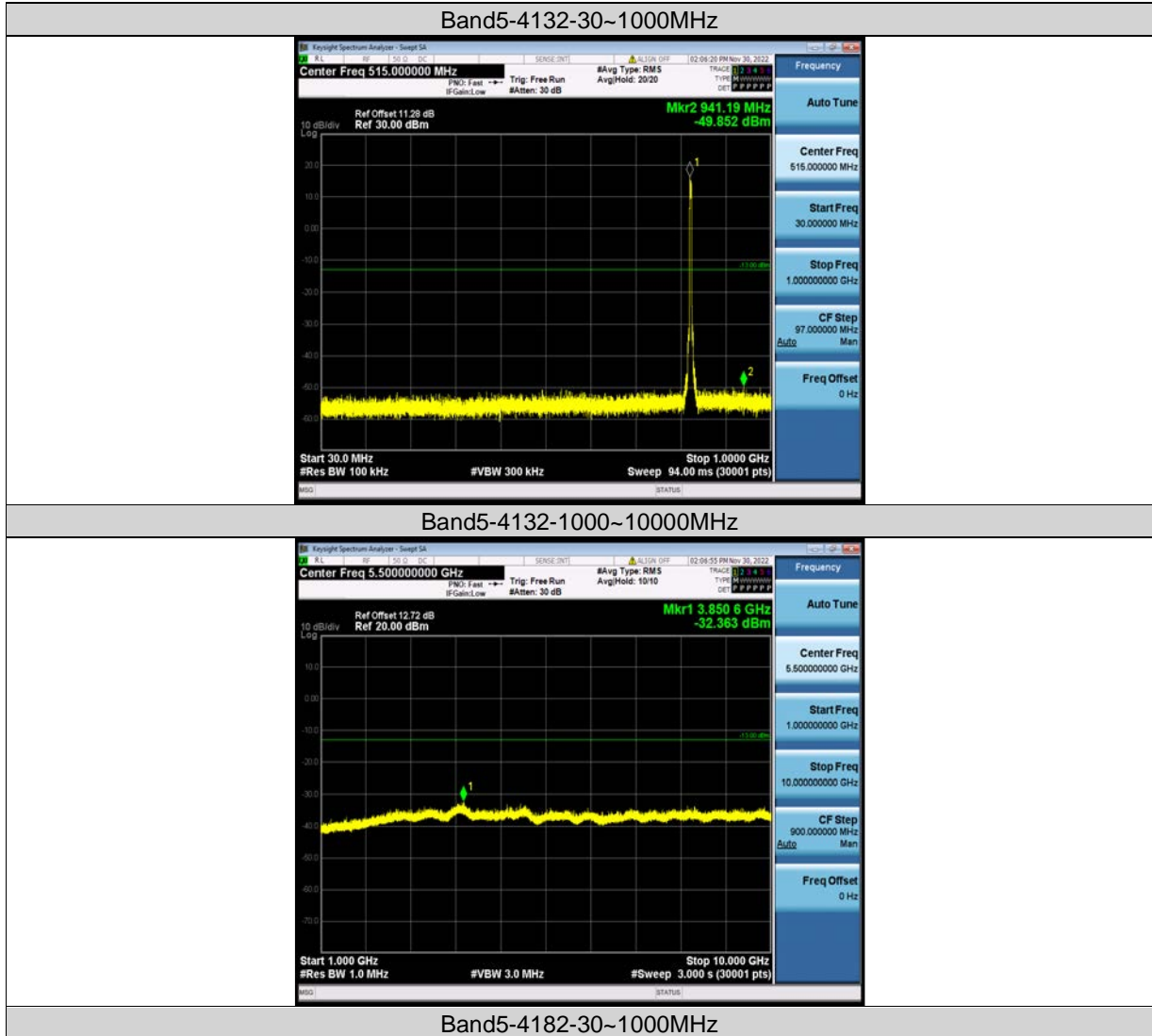


## CONDUCTED SPURIOUS EMISSION

### Test Result

Band	Channel	Frequency Range (Mhz)	Frequency (dBm)	Result (dBm)	Limit (dBm)	Verdict
Band5	4132	30~1000MHz	941.19	-49.85	-13	PASS
Band5	4132	1000~10000MHz	3850.6	-32.36	-13	PASS
Band5	4182	30~1000MHz	951.66	-50.21	-13	PASS
Band5	4182	1000~10000MHz	3788.5	-32.43	-13	PASS
Band5	4233	30~1000MHz	588.07	-50.42	-13	PASS
Band5	4233	1000~10000MHz	3804.4	-32.59	-13	PASS

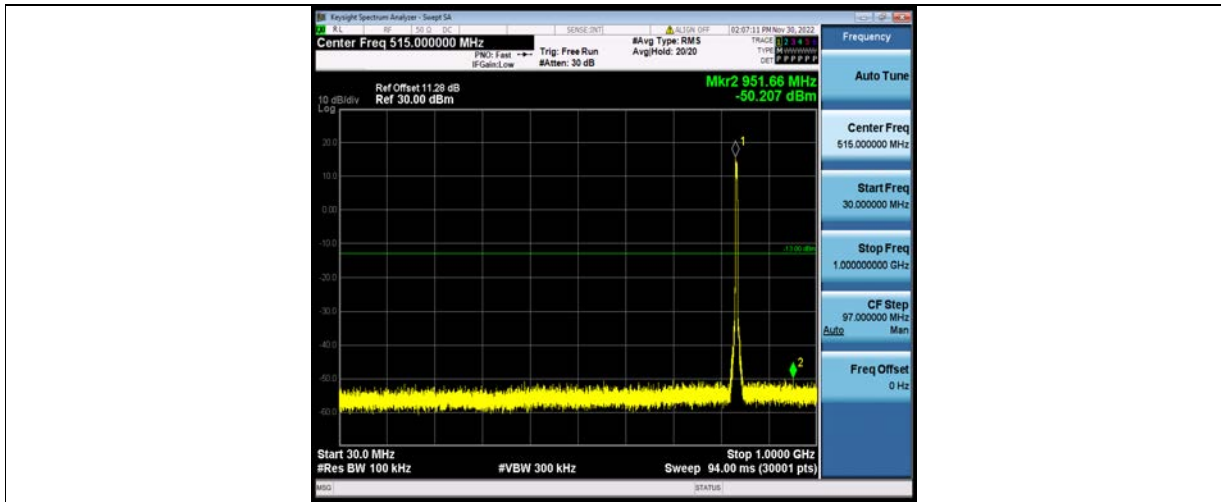
### Test Graphs



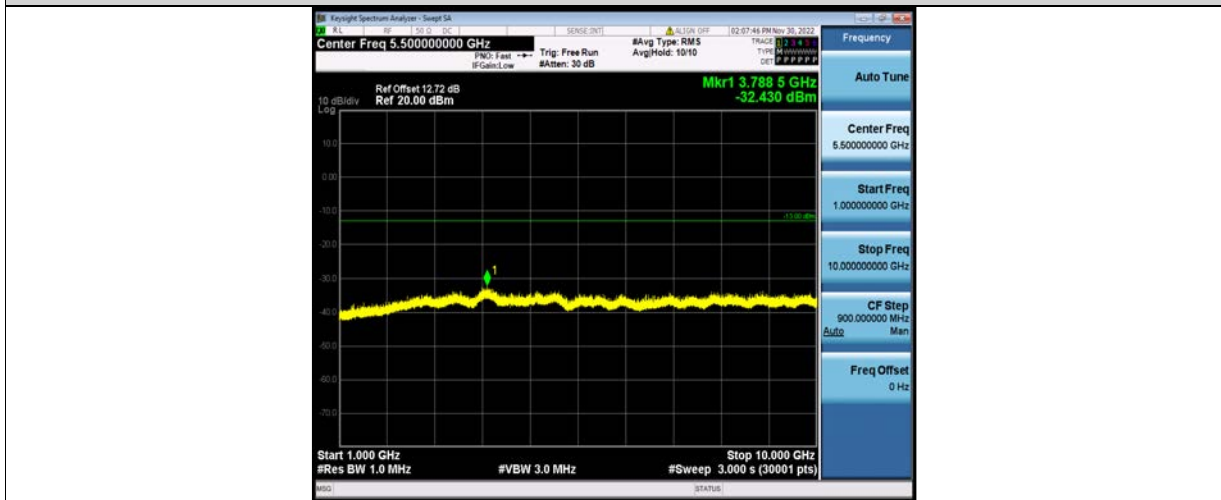


BUREAU VERITAS

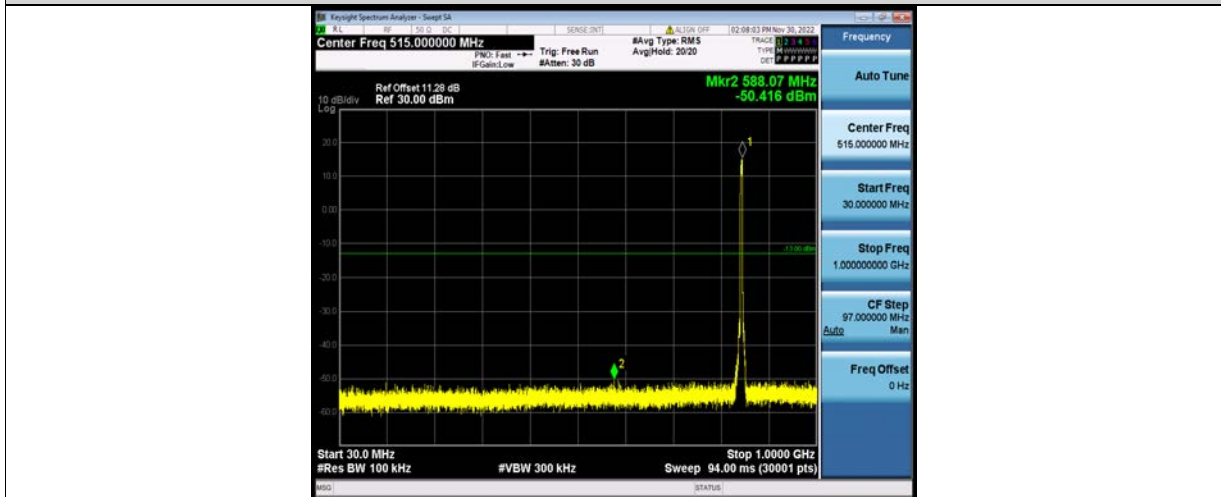
Test Report No.: W7L-P23100014RF04



Band5-4182-1000~10000MHz



Band5-4233-30~1000MHz

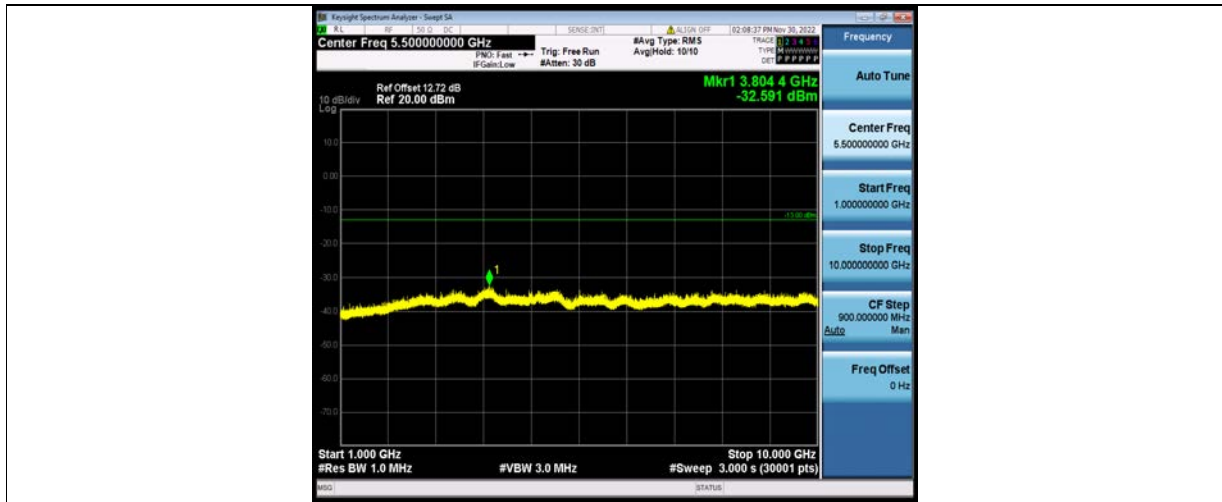


Band5-4233-1000~10000MHz



BUREAU  
VERITAS

Test Report No.: W7L-P23100014RF04





### FREQUENCY STABILITY

#### Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	VL	NT	-0.27	-0.000327	±2.5	PASS
Band5	4132	VN	NT	-0.25	-0.000303	±2.5	PASS
Band5	4132	VH	NT	-0.09	-0.000109	±2.5	PASS
Band5	4182	VL	NT	-0.01	-0.000012	±2.5	PASS
Band5	4182	VN	NT	0.01	0.000012	±2.5	PASS
Band5	4182	VH	NT	0.16	0.000191	±2.5	PASS
Band5	4233	VL	NT	0.07	0.000083	±2.5	PASS
Band5	4233	VN	NT	0.06	0.000071	±2.5	PASS
Band5	4233	VH	NT	0.14	0.000165	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	NV	-30	-0.05	-0.000061	±2.5	PASS
Band5	4132	NV	-20	-0.03	-0.000036	±2.5	PASS
Band5	4132	NV	-10	-0.01	-0.000011	±2.5	PASS
Band5	4132	NV	0	0.05	0.000061	±2.5	PASS
Band5	4132	NV	-10	-0.02	-0.000024	±2.5	PASS
Band5	4132	NV	20	-0.04	-0.000048	±2.5	PASS
Band5	4132	NV	30	0.09	0.000109	±2.5	PASS
Band5	4132	NV	40	0.04	0.000048	±2.5	PASS
Band5	4132	NV	50	0.04	0.000048	±2.5	PASS
Band5	4182	NV	-30	0.09	0.000108	±2.5	PASS
Band5	4182	NV	-20	-0.02	-0.000024	±2.5	PASS
Band5	4182	NV	0	0.00	0.000000	±2.5	PASS
Band5	4182	NV	0	0.00	0.000000	±2.5	PASS
Band5	4182	NV	10	-0.01	-0.000012	±2.5	PASS
Band5	4182	NV	20	0.00	0.000000	±2.5	PASS
Band5	4182	NV	30	0.05	0.000060	±2.5	PASS
Band5	4182	NV	40	0.06	0.000072	±2.5	PASS
Band5	4182	NV	50	-0.02	-0.000024	±2.5	PASS
Band5	4233	NV	-30	-0.01	-0.000012	±2.5	PASS
Band5	4233	NV	-20	0.04	0.000047	±2.5	PASS
Band5	4233	NV	-10	0.06	0.000071	±2.5	PASS
Band5	4233	NV	0	-0.06	-0.000071	±2.5	PASS
Band5	4233	NV	10	0.06	0.000071	±2.5	PASS
Band5	4233	NV	20	0.01	0.000012	±2.5	PASS
Band5	4233	NV	30	-0.10	-0.000118	±2.5	PASS
Band5	4233	NV	40	0.01	0.000012	±2.5	PASS



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Band5	4233	NV	50	-0.04	-0.000047	±2.5	PASS
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## LTE BAND26 (INCLUDING LTE BAND5)

### PEAK-TO-AVERAGE RATIO(CCDF)

#### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band26	1.4MHz	QPSK	26797	1RB#0	3.81	13	PASS
Band26	1.4MHz	QPSK	26797	6RB#0	5.19	13	PASS
Band26	1.4MHz	QPSK	26915	1RB#0	3.86	13	PASS
Band26	1.4MHz	QPSK	26915	6RB#0	5.19	13	PASS
Band26	1.4MHz	QPSK	27033	1RB#0	3.76	13	PASS
Band26	1.4MHz	QPSK	27033	6RB#0	5.09	13	PASS
Band26	1.4MHz	16QAM	26797	1RB#0	5.51	13	PASS
Band26	1.4MHz	16QAM	26797	6RB#0	6.07	13	PASS
Band26	1.4MHz	16QAM	26915	1RB#0	5.54	13	PASS
Band26	1.4MHz	16QAM	26915	6RB#0	6.00	13	PASS
Band26	1.4MHz	16QAM	27033	1RB#0	5.41	13	PASS
Band26	1.4MHz	16QAM	27033	6RB#0	5.99	13	PASS
Band26	1.4MHz	64QAM	26797	1RB#0	6.25	13	PASS
Band26	1.4MHz	64QAM	26797	6RB#0	6.48	13	PASS
Band26	1.4MHz	64QAM	26915	1RB#0	6.75	13	PASS
Band26	1.4MHz	64QAM	26915	6RB#0	6.72	13	PASS
Band26	1.4MHz	64QAM	27033	1RB#0	6.53	13	PASS
Band26	1.4MHz	64QAM	27033	6RB#0	6.42	13	PASS
Band26	3MHz	QPSK	26805	1RB#0	3.65	13	PASS
Band26	3MHz	QPSK	26805	15RB#0	5.12	13	PASS
Band26	3MHz	QPSK	26915	1RB#0	3.63	13	PASS
Band26	3MHz	QPSK	26915	15RB#0	5.13	13	PASS
Band26	3MHz	QPSK	27025	1RB#0	3.68	13	PASS
Band26	3MHz	QPSK	27025	15RB#0	5.08	13	PASS
Band26	3MHz	16QAM	26805	1RB#0	5.31	13	PASS
Band26	3MHz	16QAM	26805	15RB#0	5.96	13	PASS
Band26	3MHz	16QAM	26915	1RB#0	5.33	13	PASS
Band26	3MHz	16QAM	26915	15RB#0	5.98	13	PASS
Band26	3MHz	16QAM	27025	1RB#0	5.29	13	PASS
Band26	3MHz	16QAM	27025	15RB#0	5.88	13	PASS
Band26	3MHz	64QAM	26805	1RB#0	6.42	13	PASS
Band26	3MHz	64QAM	26805	15RB#0	6.79	13	PASS
Band26	3MHz	64QAM	26915	1RB#0	6.54	13	PASS
Band26	3MHz	64QAM	26915	15RB#0	6.64	13	PASS
Band26	3MHz	64QAM	27025	1RB#0	6.16	13	PASS
Band26	3MHz	64QAM	27025	15RB#0	6.66	13	PASS
Band26	5MHz	QPSK	26815	1RB#0	3.66	13	PASS
Band26	5MHz	QPSK	26815	25RB#0	5.15	13	PASS
Band26	5MHz	QPSK	26915	1RB#0	3.64	13	PASS
Band26	5MHz	QPSK	26915	25RB#0	5.19	13	PASS



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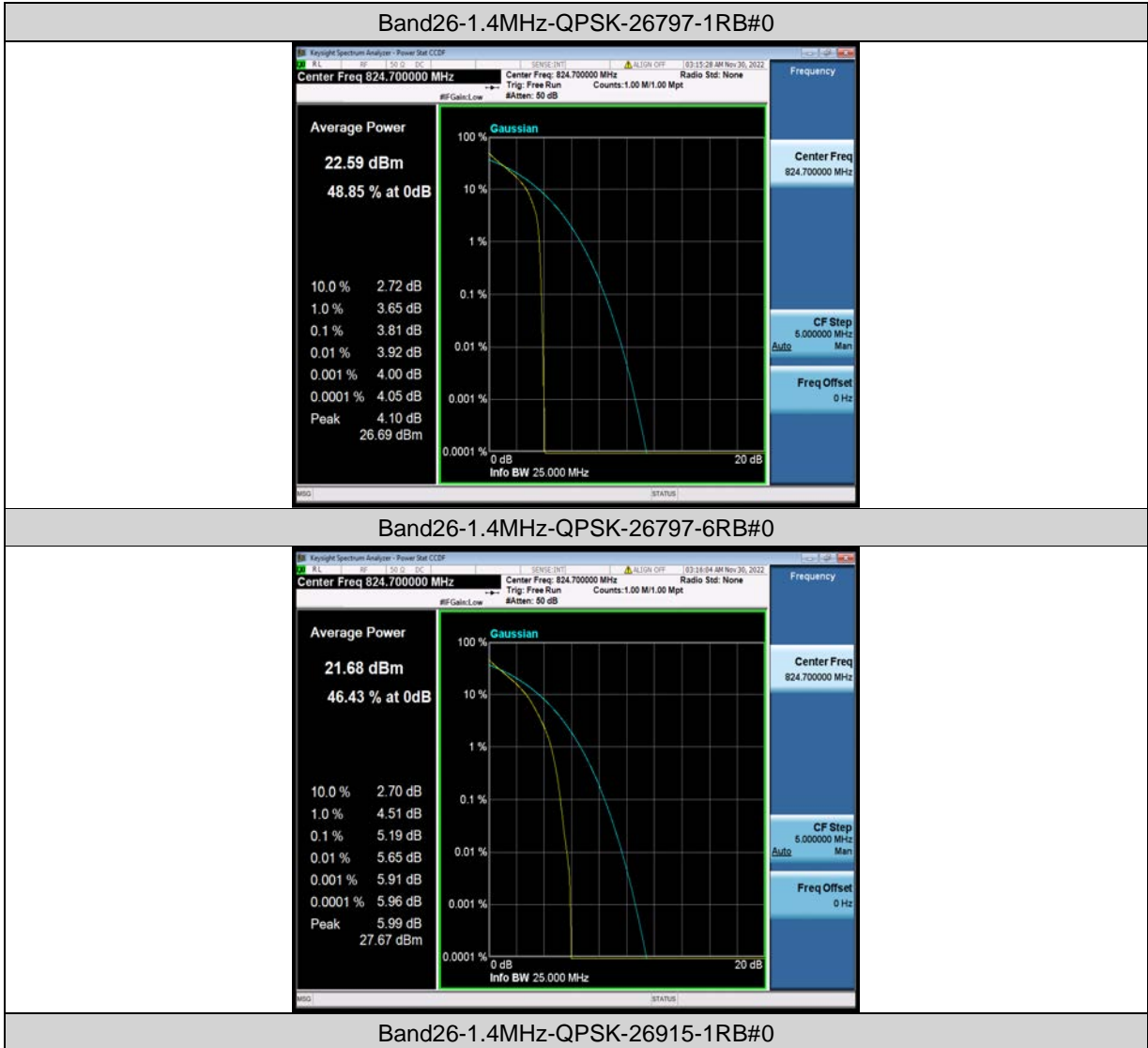
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Band26	5MHz	16QAM	26815	1RB#0	5.18	13	PASS
Band26	5MHz	16QAM	26815	25RB#0	5.96	13	PASS
Band26	5MHz	16QAM	26915	1RB#0	5.23	13	PASS
Band26	5MHz	16QAM	26915	25RB#0	5.98	13	PASS
Band26	5MHz	16QAM	27015	1RB#0	5.40	13	PASS
Band26	5MHz	16QAM	27015	25RB#0	6.02	13	PASS
Band26	5MHz	64QAM	26815	1RB#0	6.41	13	PASS
Band26	5MHz	64QAM	26815	25RB#0	6.64	13	PASS
Band26	5MHz	64QAM	26915	1RB#0	6.37	13	PASS
Band26	5MHz	64QAM	26915	25RB#0	6.67	13	PASS
Band26	5MHz	64QAM	27015	1RB#0	6.26	13	PASS
Band26	5MHz	64QAM	27015	25RB#0	6.68	13	PASS
Band26	10MHz	QPSK	26840	1RB#0	3.58	13	PASS
Band26	10MHz	QPSK	26840	50RB#0	5.16	13	PASS
Band26	10MHz	QPSK	26915	1RB#0	3.57	13	PASS
Band26	10MHz	QPSK	26915	50RB#0	5.16	13	PASS
Band26	10MHz	QPSK	26990	1RB#0	3.67	13	PASS
Band26	10MHz	QPSK	26990	50RB#0	5.22	13	PASS
Band26	10MHz	16QAM	26840	1RB#0	5.30	13	PASS
Band26	10MHz	16QAM	26840	50RB#0	5.98	13	PASS
Band26	10MHz	16QAM	26915	1RB#0	5.20	13	PASS
Band26	10MHz	16QAM	26915	50RB#0	6.00	13	PASS
Band26	10MHz	16QAM	26990	1RB#0	5.14	13	PASS
Band26	10MHz	16QAM	26990	50RB#0	6.04	13	PASS
Band26	10MHz	64QAM	26840	1RB#0	6.45	13	PASS
Band26	10MHz	64QAM	26840	50RB#0	6.63	13	PASS
Band26	10MHz	64QAM	26915	1RB#0	6.38	13	PASS
Band26	10MHz	64QAM	26915	50RB#0	6.69	13	PASS
Band26	10MHz	64QAM	26990	1RB#0	6.09	13	PASS
Band26	10MHz	64QAM	26990	50RB#0	6.65	13	PASS
Band26	15MHz	QPSK	26865	1RB#0	3.57	13	PASS
Band26	15MHz	QPSK	26865	75RB#0	5.41	13	PASS
Band26	15MHz	QPSK	26915	1RB#0	3.57	13	PASS
Band26	15MHz	QPSK	26915	75RB#0	5.41	13	PASS
Band26	15MHz	QPSK	26965	1RB#0	3.55	13	PASS
Band26	15MHz	QPSK	26965	75RB#0	5.48	13	PASS
Band26	15MHz	16QAM	26865	1RB#0	5.19	13	PASS
Band26	15MHz	16QAM	26865	75RB#0	6.10	13	PASS
Band26	15MHz	16QAM	26915	1RB#0	5.27	13	PASS
Band26	15MHz	16QAM	26915	75RB#0	6.11	13	PASS
Band26	15MHz	16QAM	26965	1RB#0	5.28	13	PASS
Band26	15MHz	16QAM	26965	75RB#0	6.17	13	PASS
Band26	15MHz	64QAM	26865	1RB#0	6.53	13	PASS
Band26	15MHz	64QAM	26865	75RB#0	6.70	13	PASS
Band26	15MHz	64QAM	26915	1RB#0	6.57	13	PASS
Band26	15MHz	64QAM	26915	75RB#0	6.67	13	PASS
Band26	15MHz	64QAM	26965	1RB#0	6.47	13	PASS
Band26	15MHz	64QAM	26965	75RB#0	6.66	13	PASS



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### Test Graphs





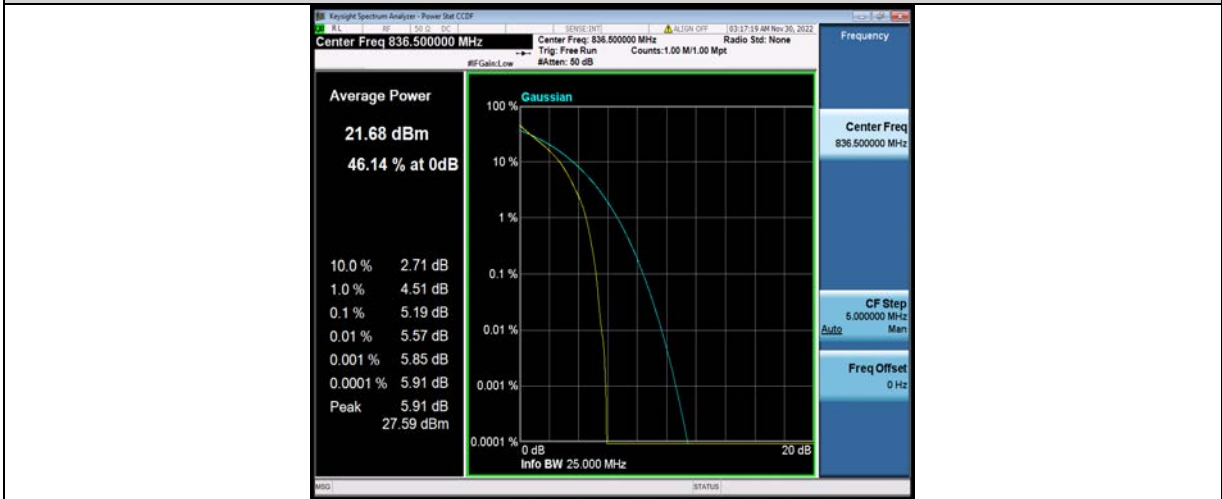


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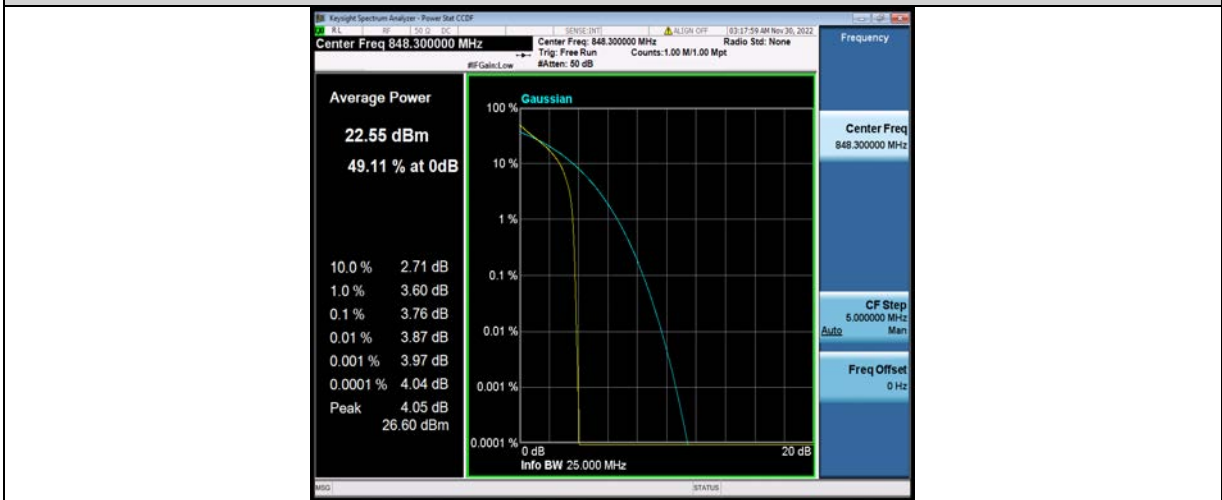
### Test Report No.: W7L-P23100014RF04



Band26-1.4MHz-QPSK-26915-6RB#0



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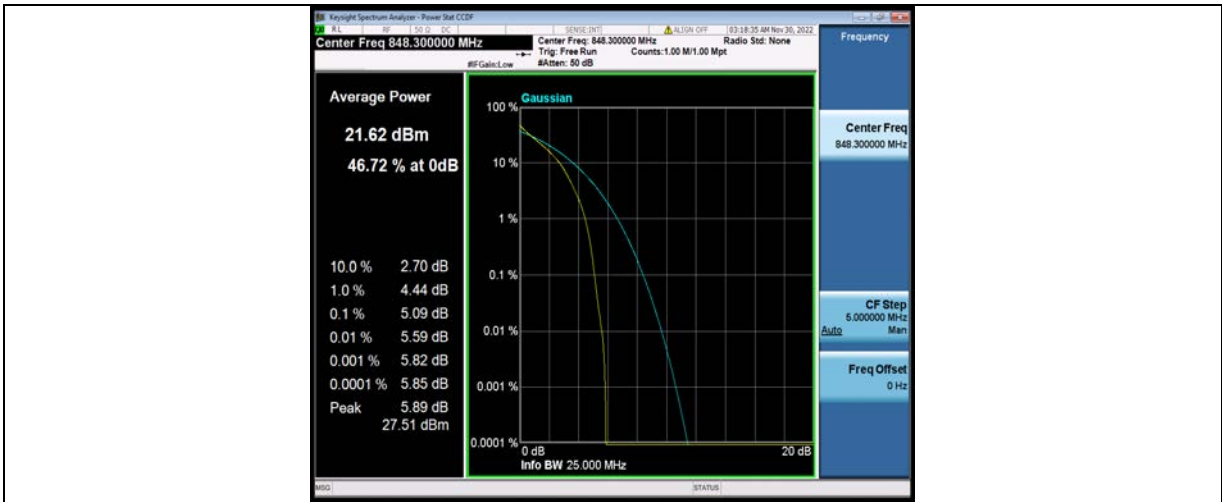


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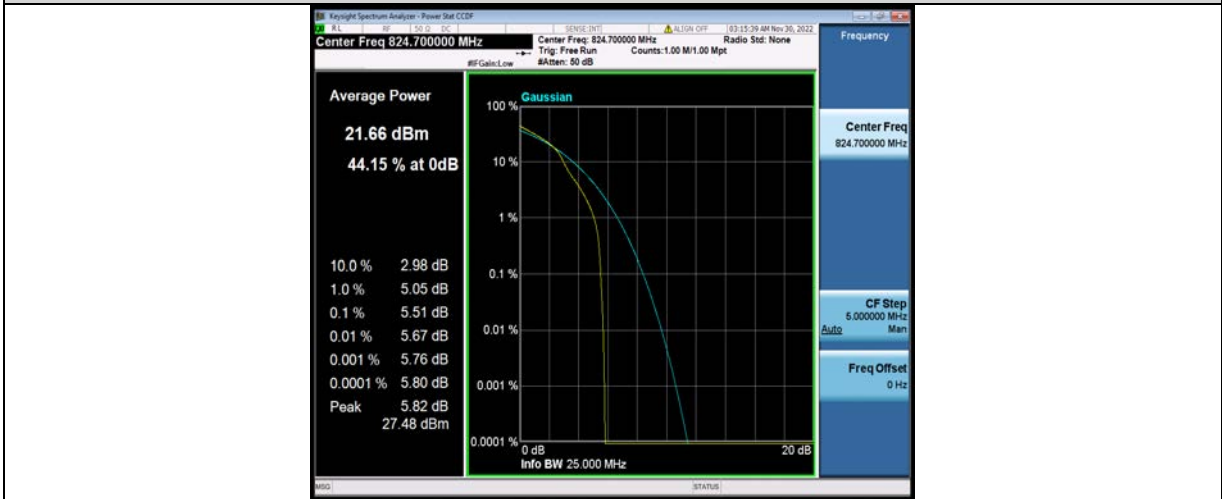


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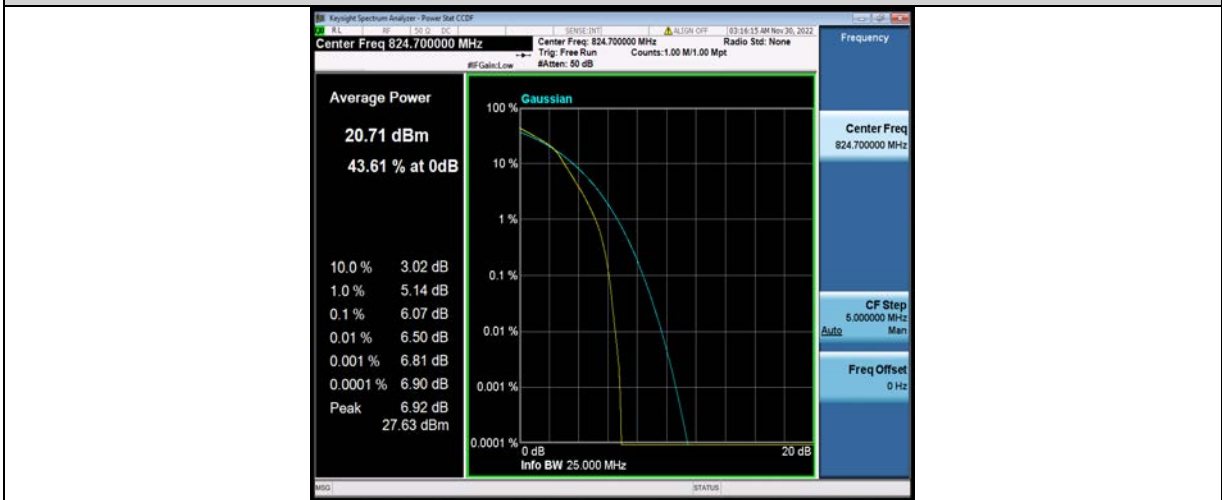
### Test Report No.: W7L-P23100014RF04



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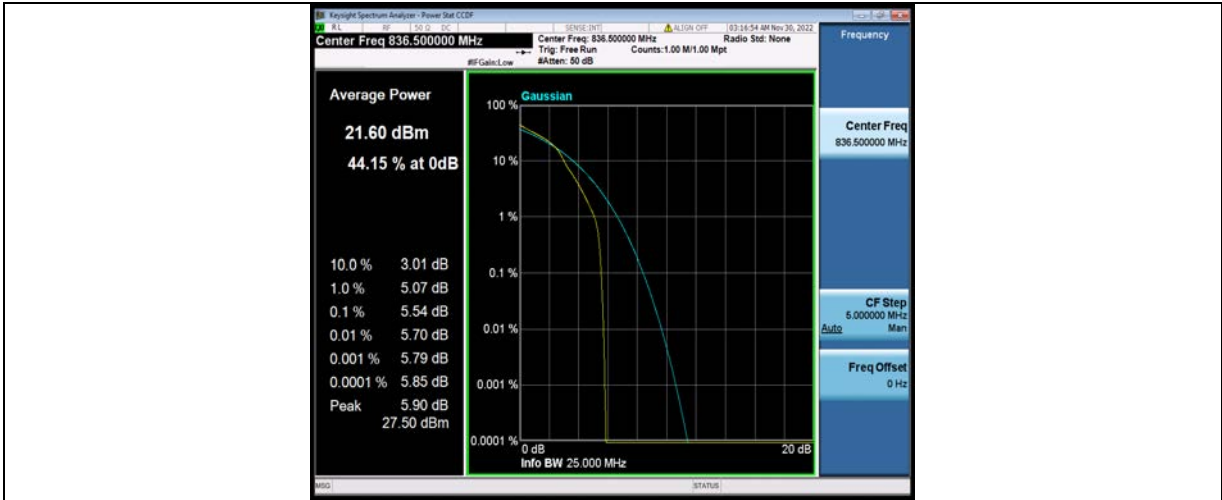


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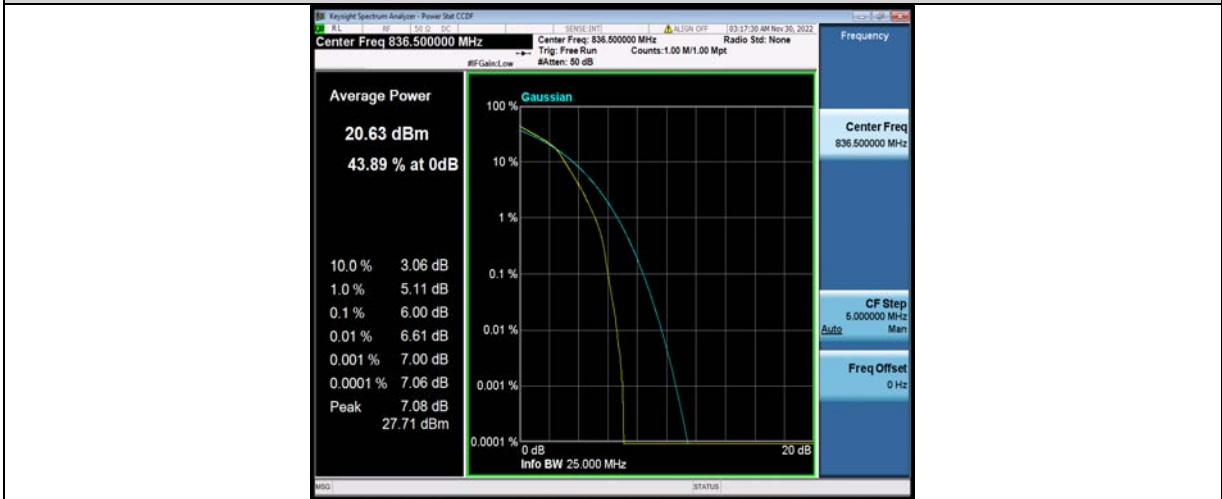


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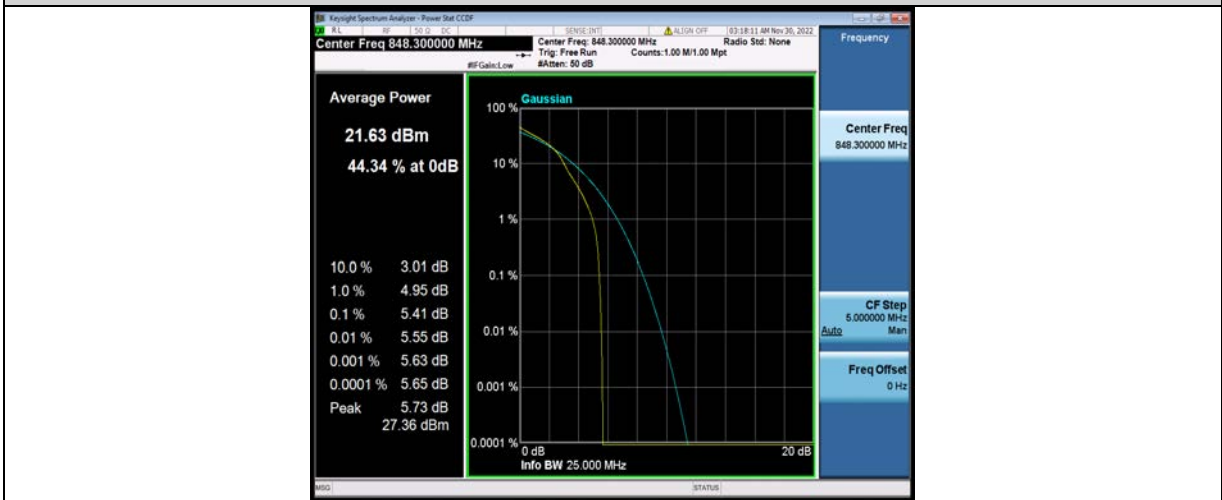
### Test Report No.: W7L-P23100014RF04



Band26-1.4MHz-16QAM-26915-6RB#0



Band26-1.4MHz-16QAM-27033-1RB#0



Band26-1.4MHz-16QAM-27033-6RB#0



BUREAU VERITAS

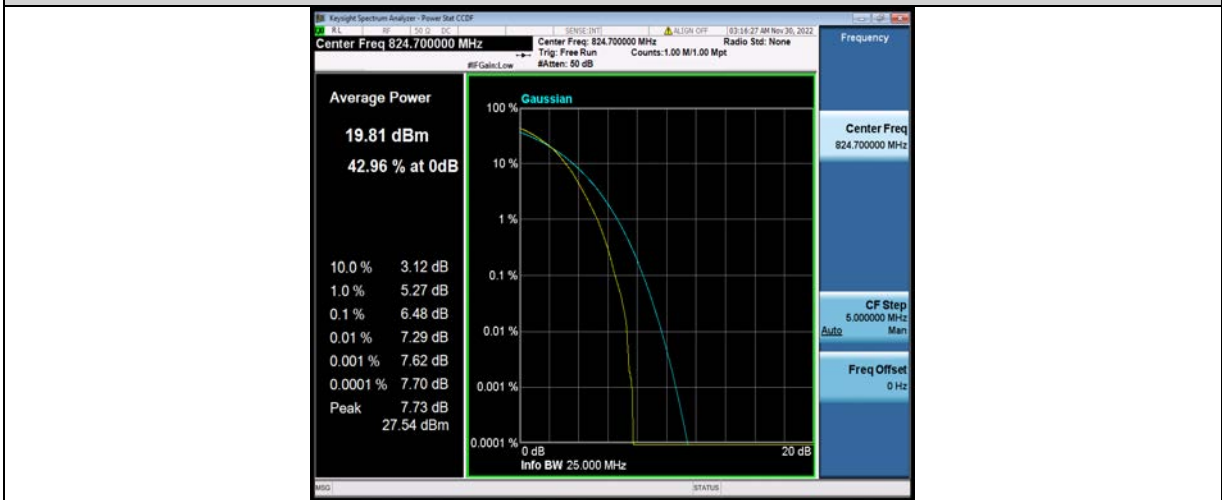
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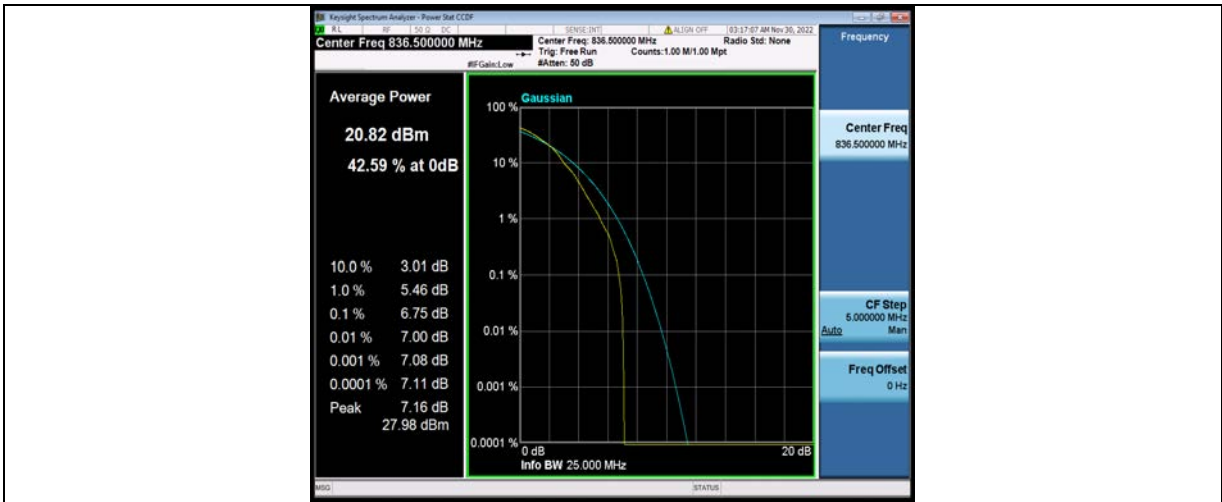


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BUREAU VERITAS

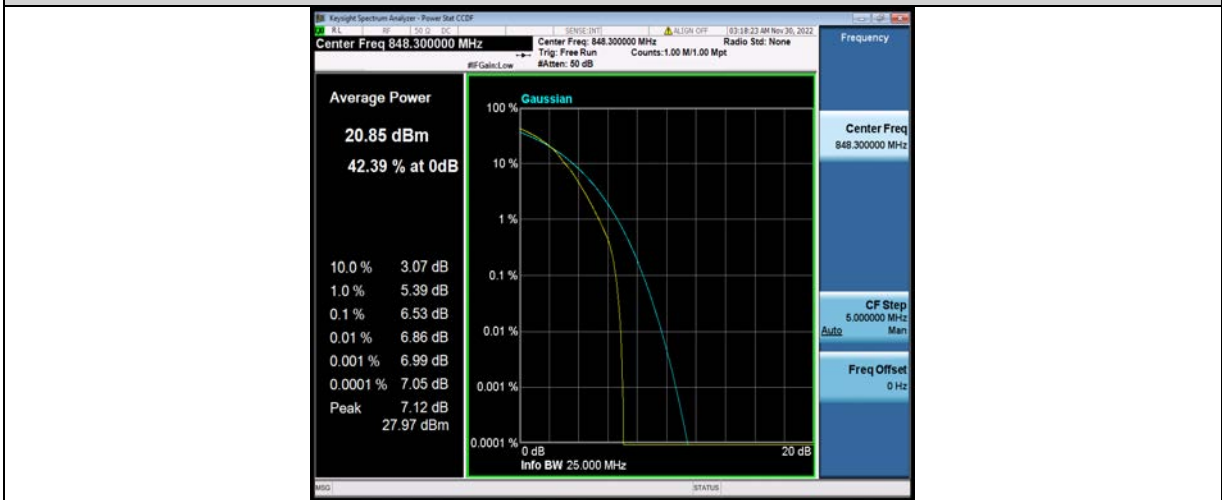
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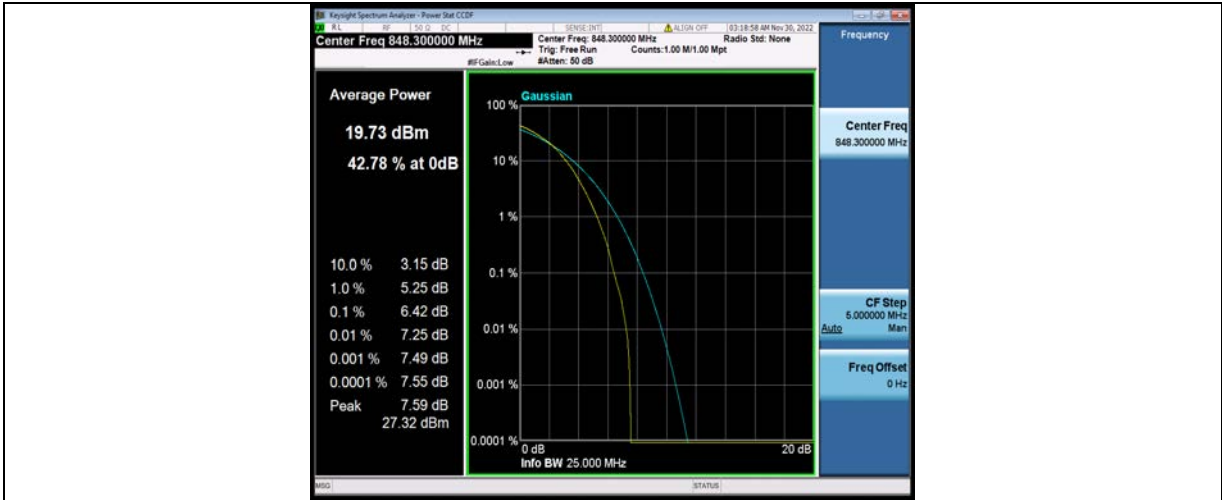


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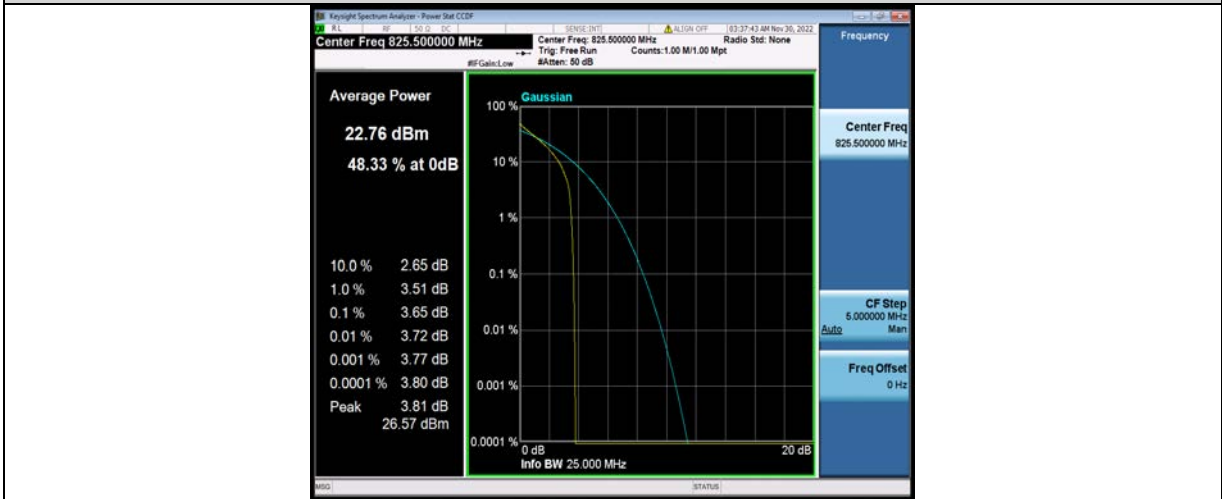


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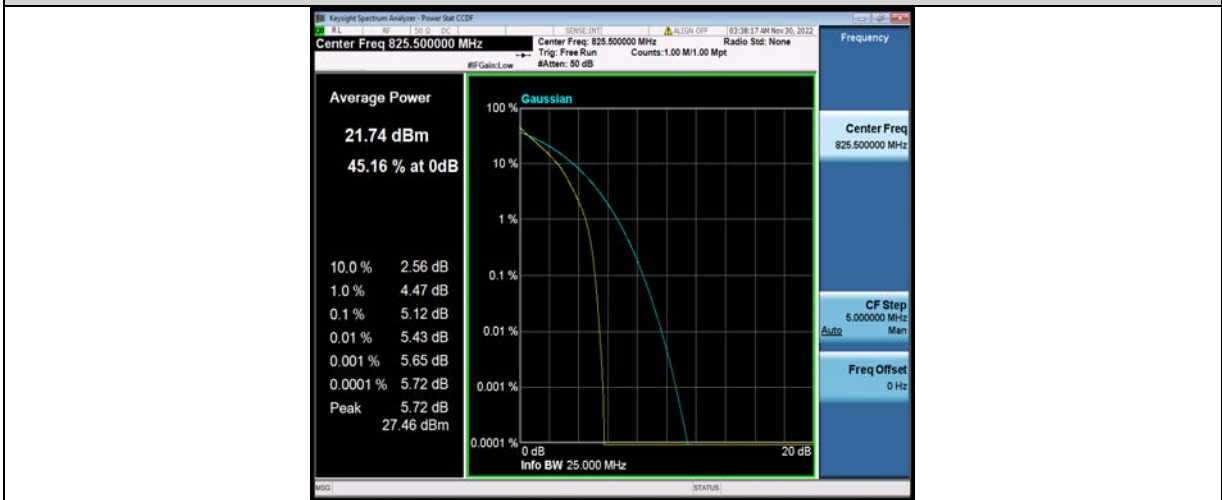
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Band26-3MHz-QPSK-26805-1RB#0



Band26-3MHz-QPSK-26805-15RB#0

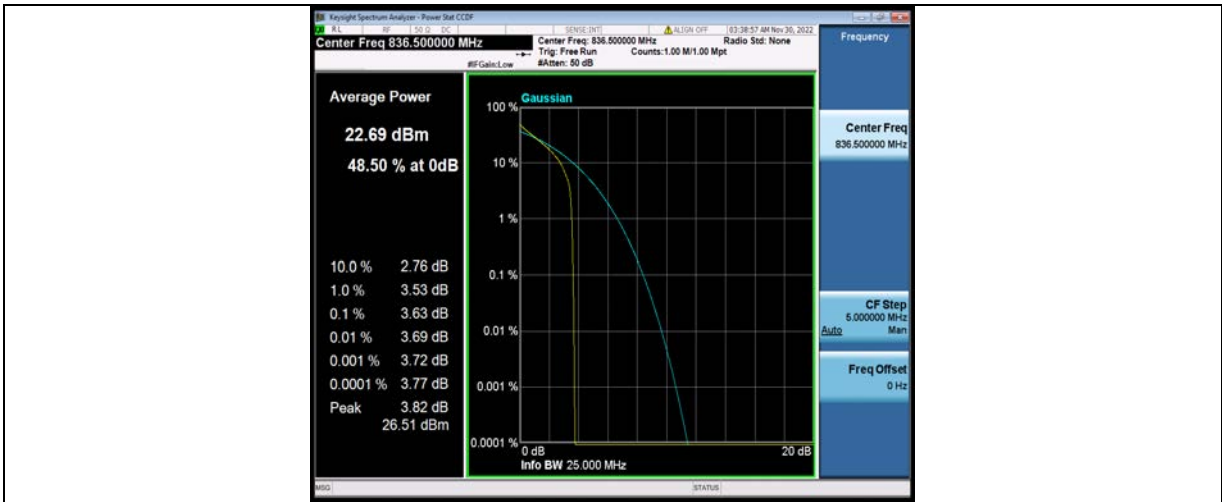


Band26-3MHz-QPSK-26915-1RB#0



BUREAU VERITAS

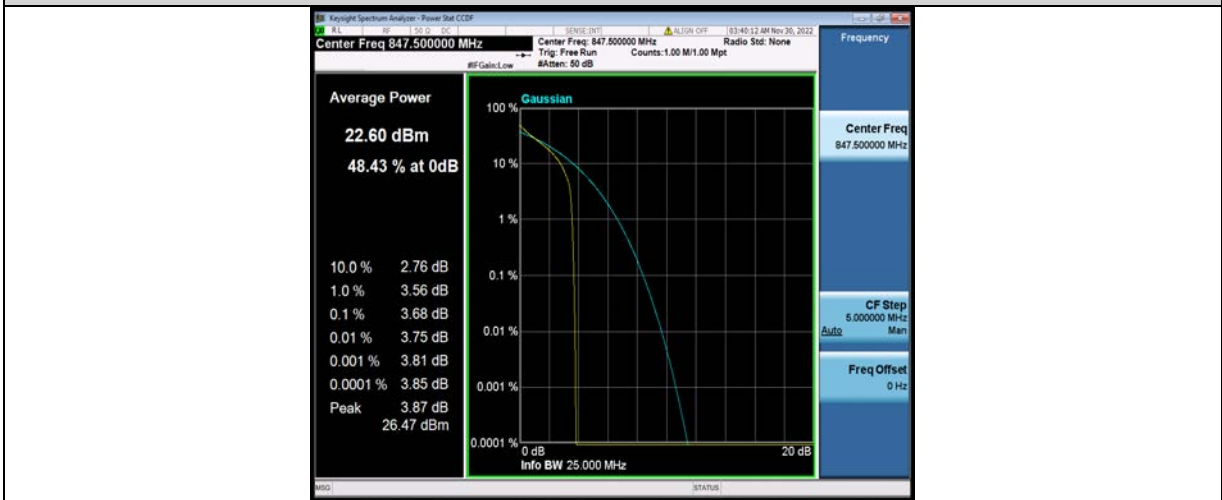
### Test Report No.: W7L-P23100014RF04



Band26-3MHz-QPSK-26915-15RB#0



Band26-3MHz-QPSK-27025-1RB#0



Band26-3MHz-QPSK-27025-15RB#0

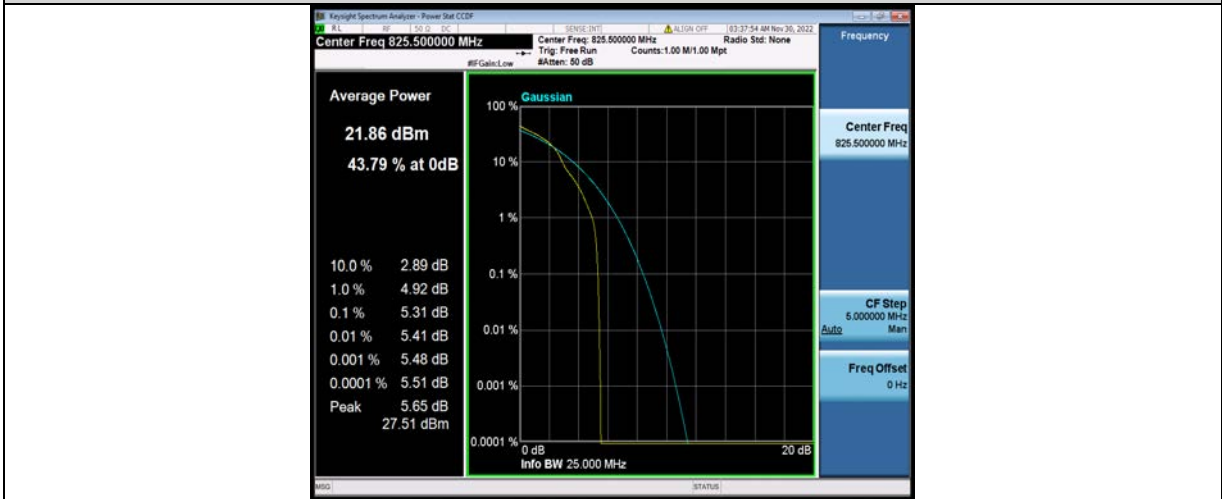


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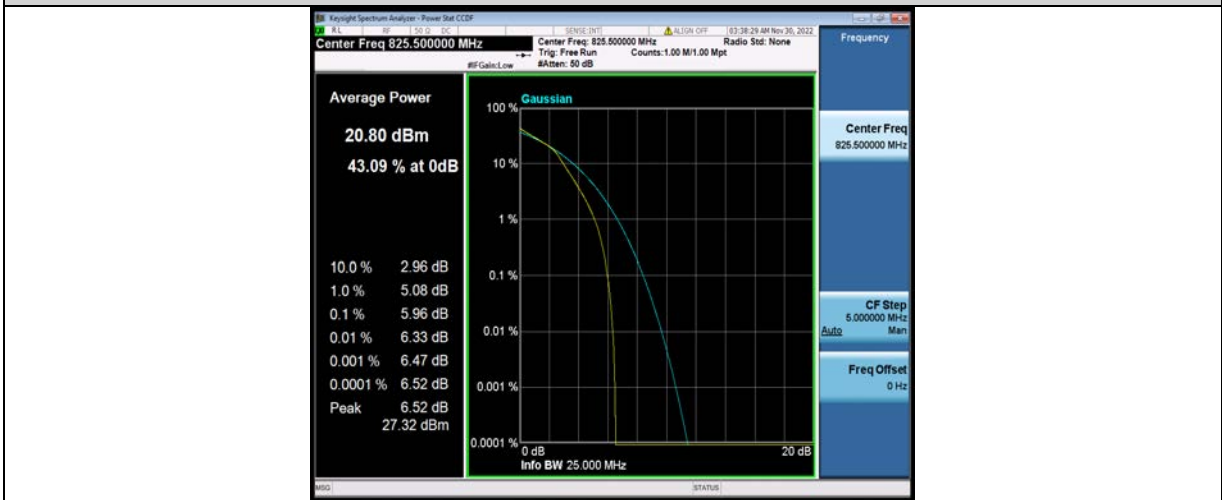
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Band26-3MHz-16QAM-26805-15RB#0



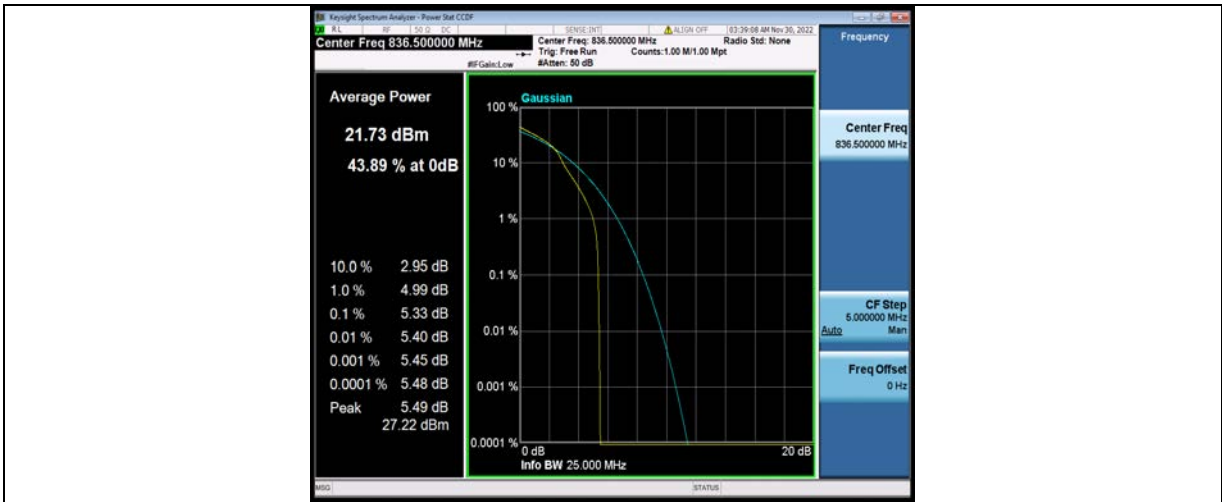
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BUREAU VERITAS

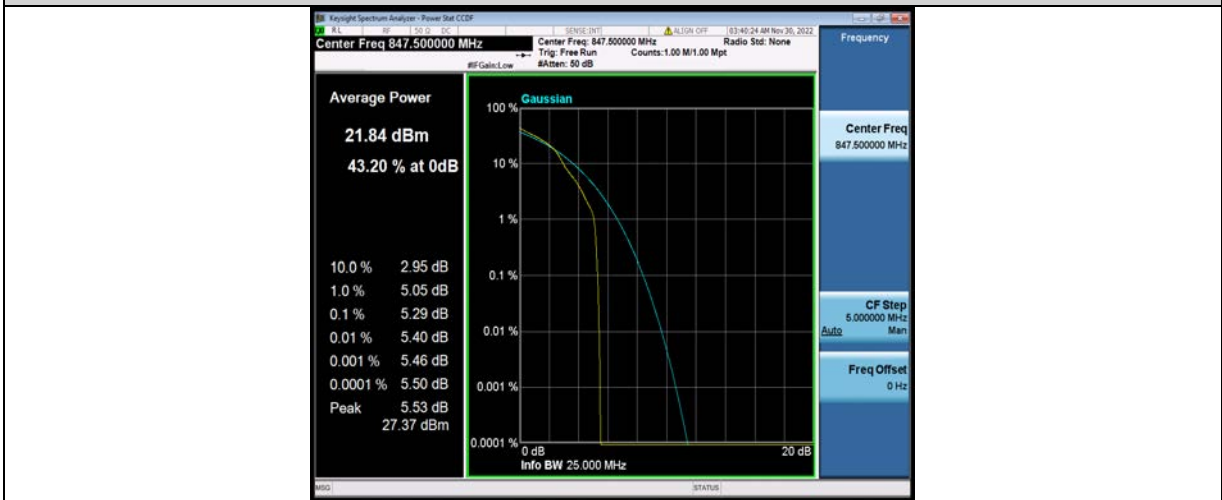
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Band26-3MHz-16QAM-27025-1RB#0



Band26-3MHz-16QAM-27025-15RB#0

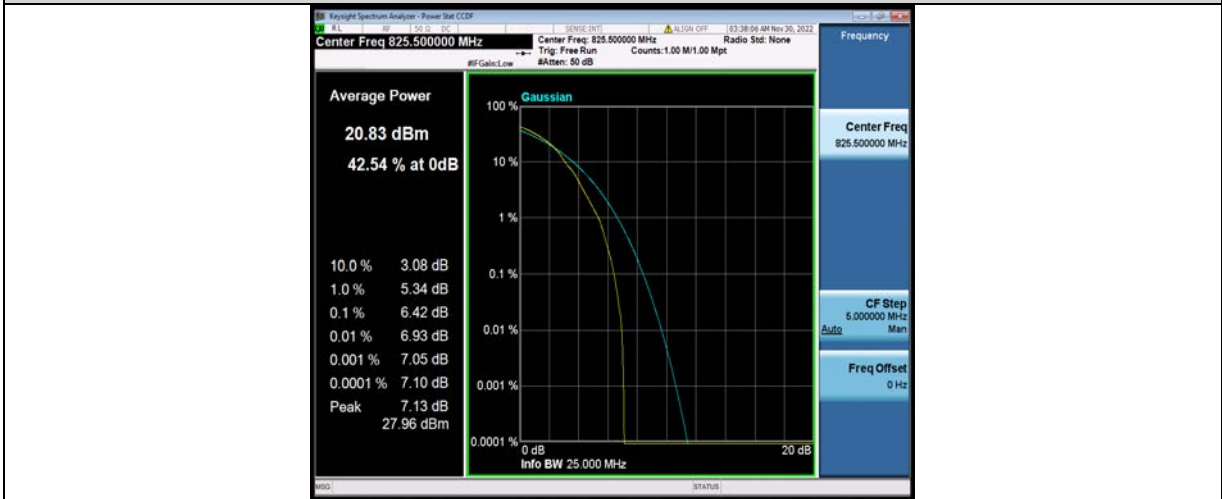


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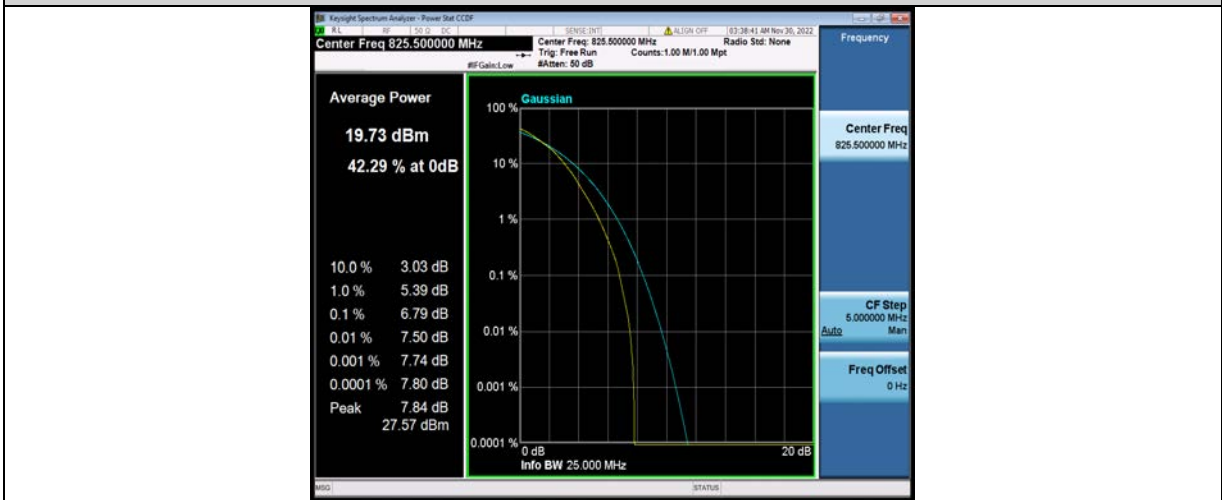
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Band26-3MHz-64QAM-26805-1RB#0



Band26-3MHz-64QAM-26805-15RB#0

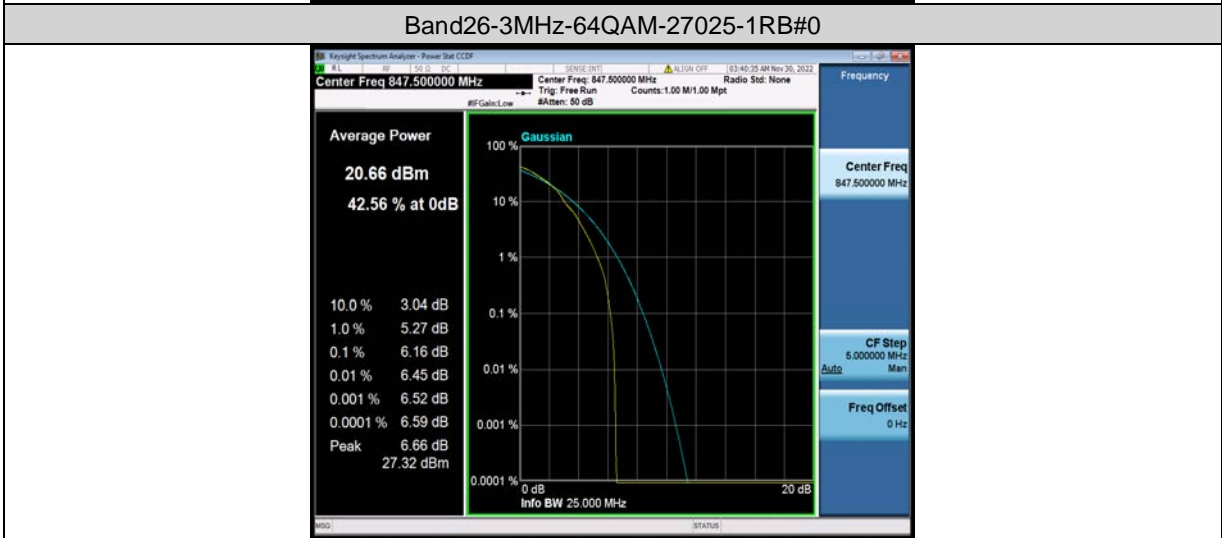
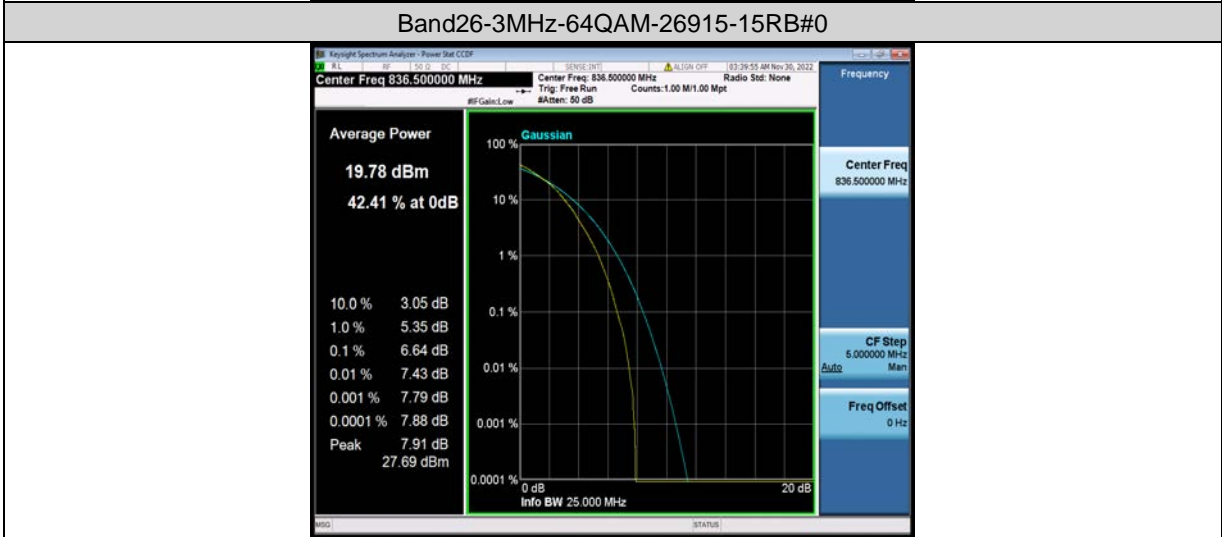
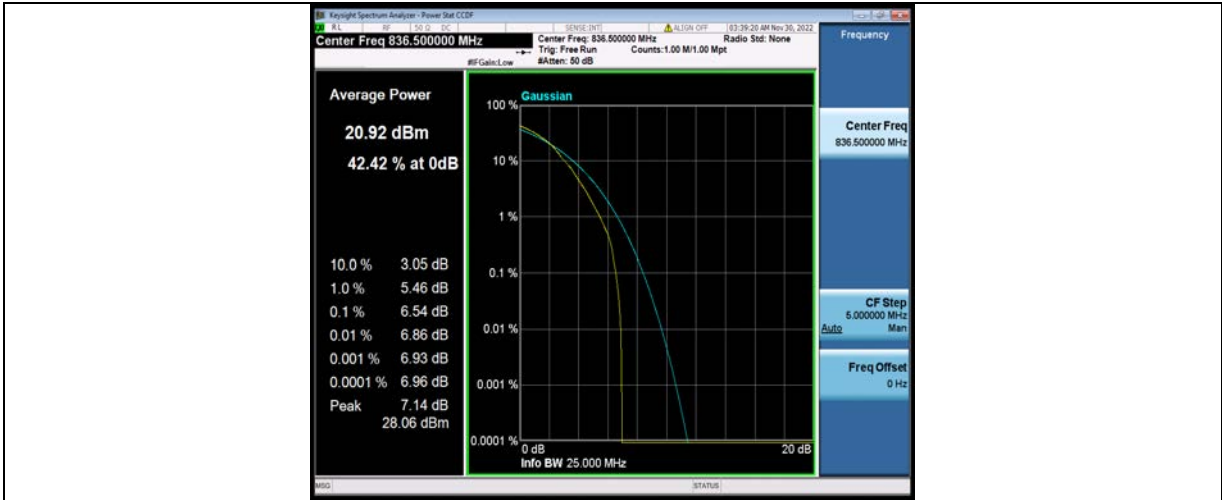


Band26-3MHz-64QAM-26915-1RB#0



BUREAU VERITAS

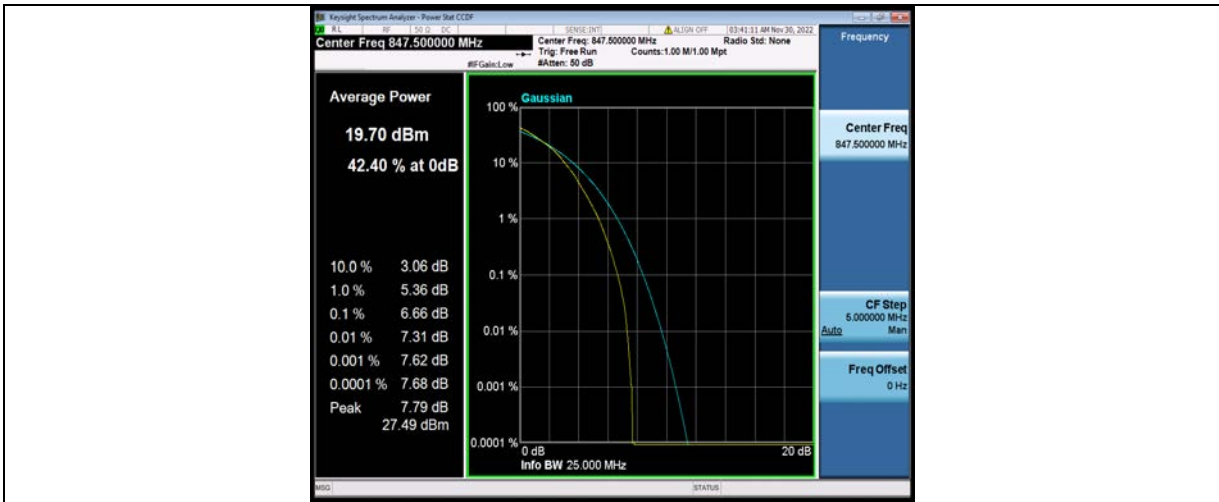
Test Report No.: W7L-P23100014RF04



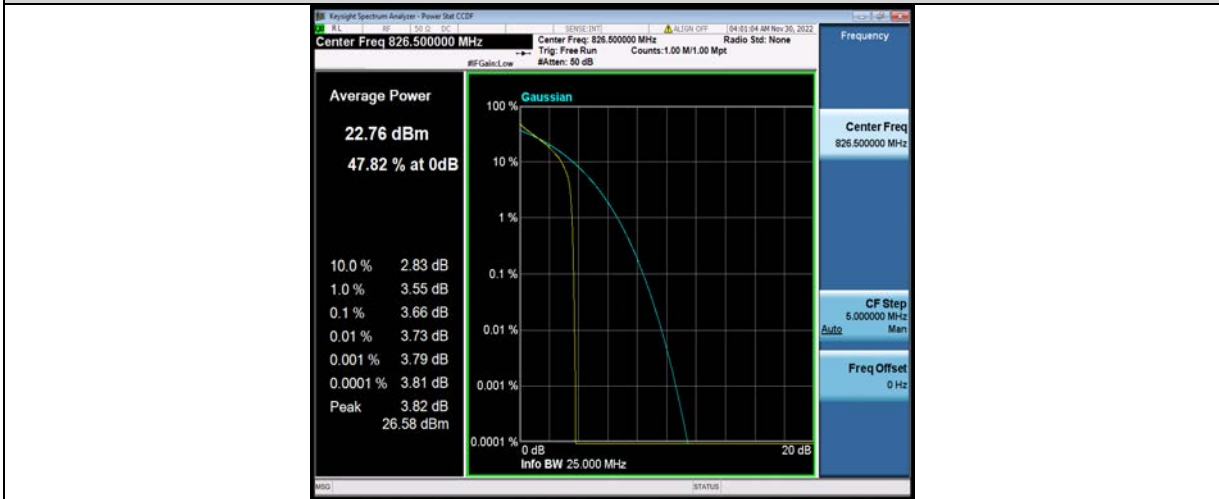


BUREAU VERITAS

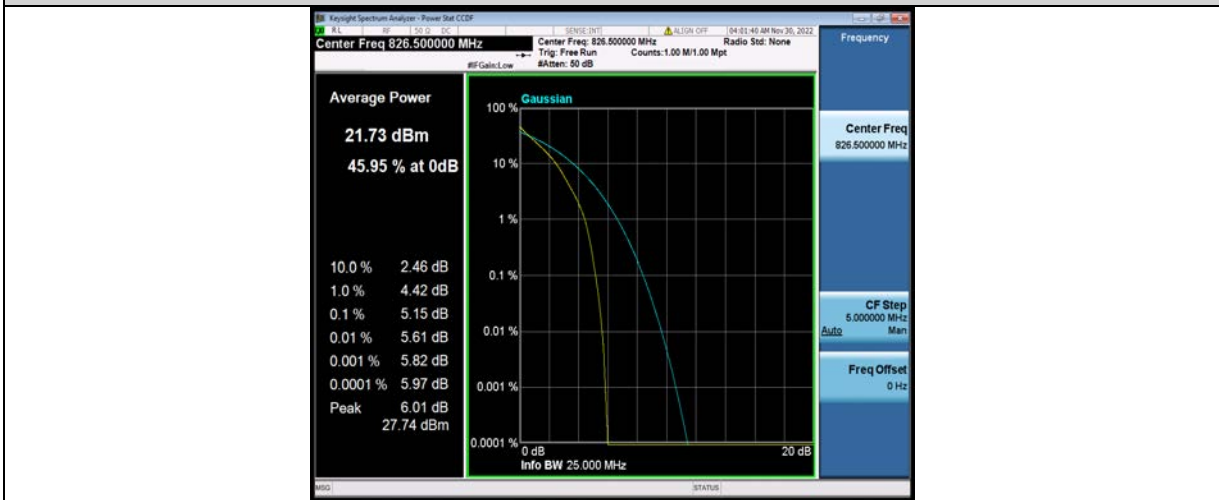
### Test Report No.: W7L-P23100014RF04



Band26-5MHz-QPSK-26815-1RB#0



Band26-5MHz-QPSK-26815-25RB#0

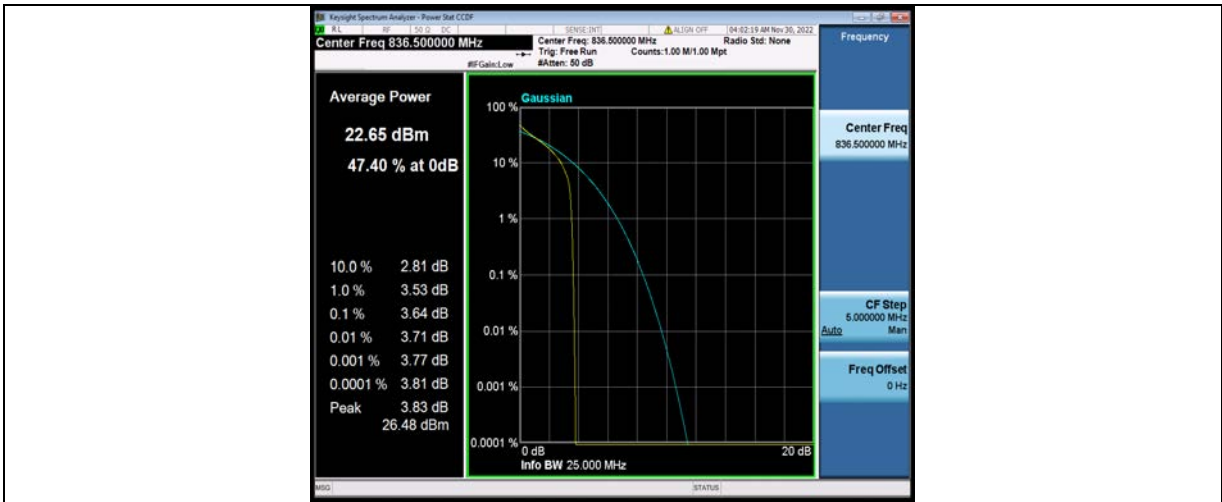


Band26-5MHz-QPSK-26915-1RB#0



BUREAU VERITAS

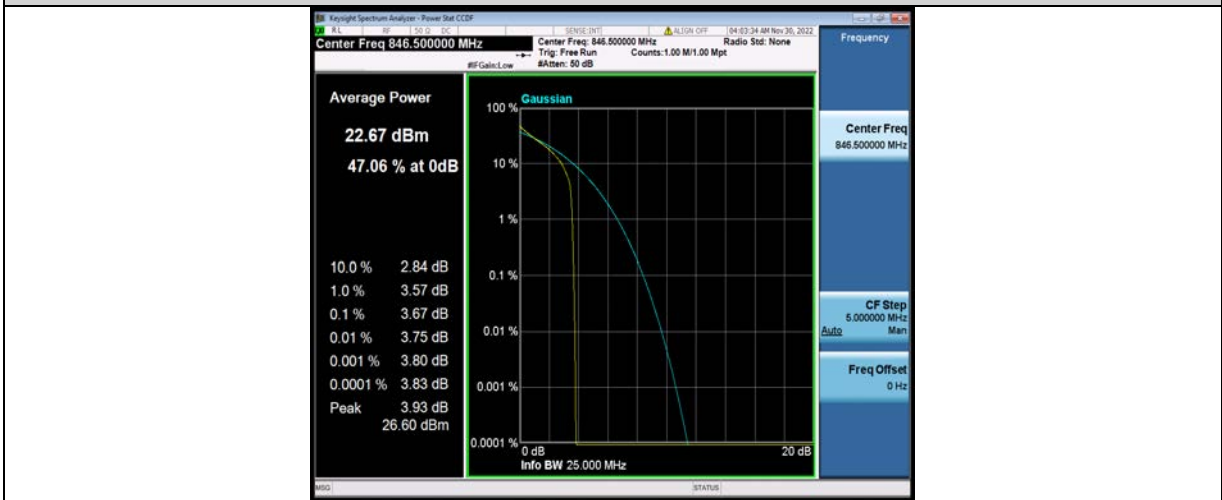
### Test Report No.: W7L-P23100014RF04



Band26-5MHz-QPSK-26915-25RB#0



Band26-5MHz-QPSK-27015-1RB#0

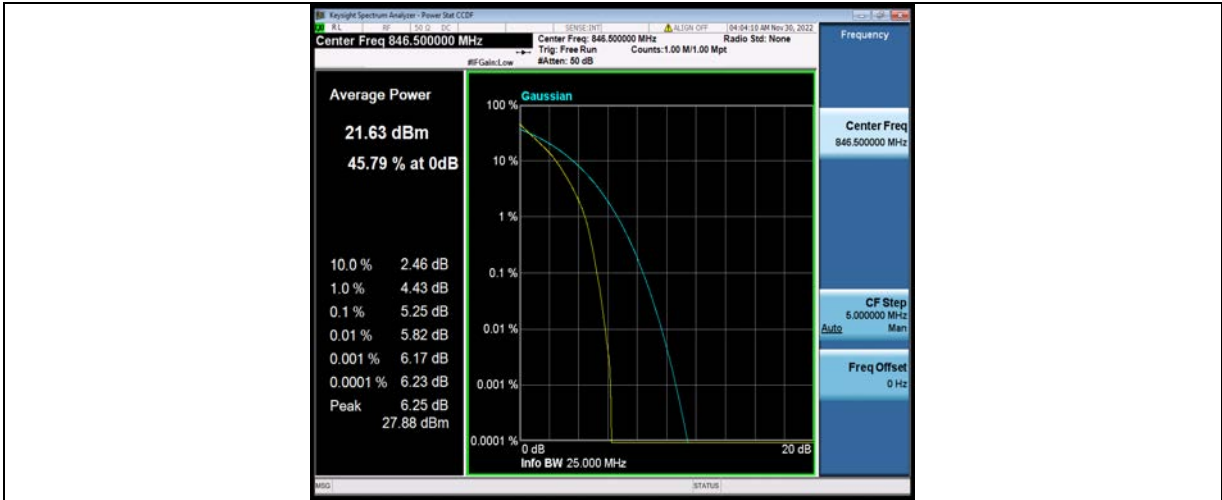


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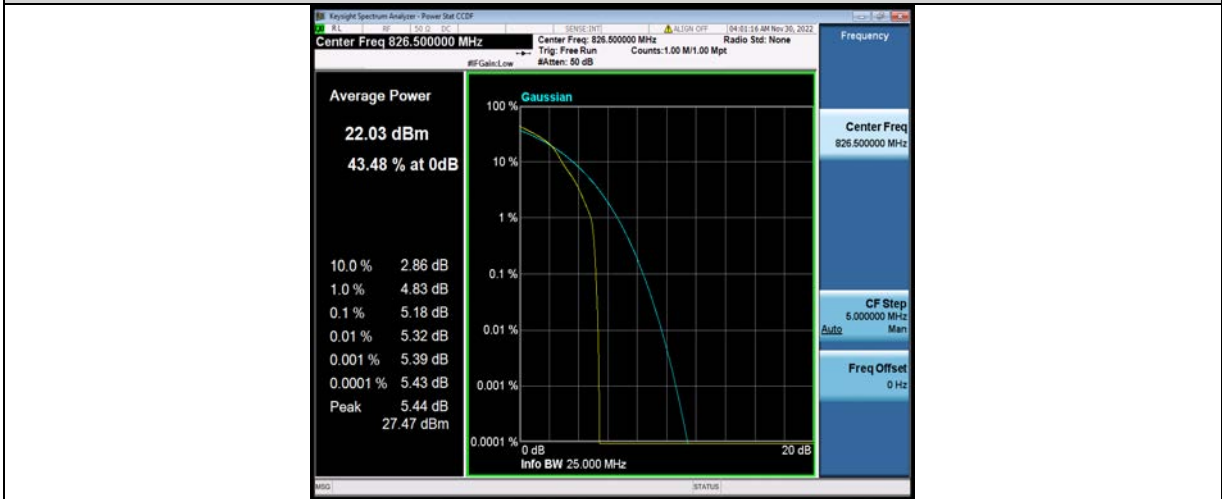


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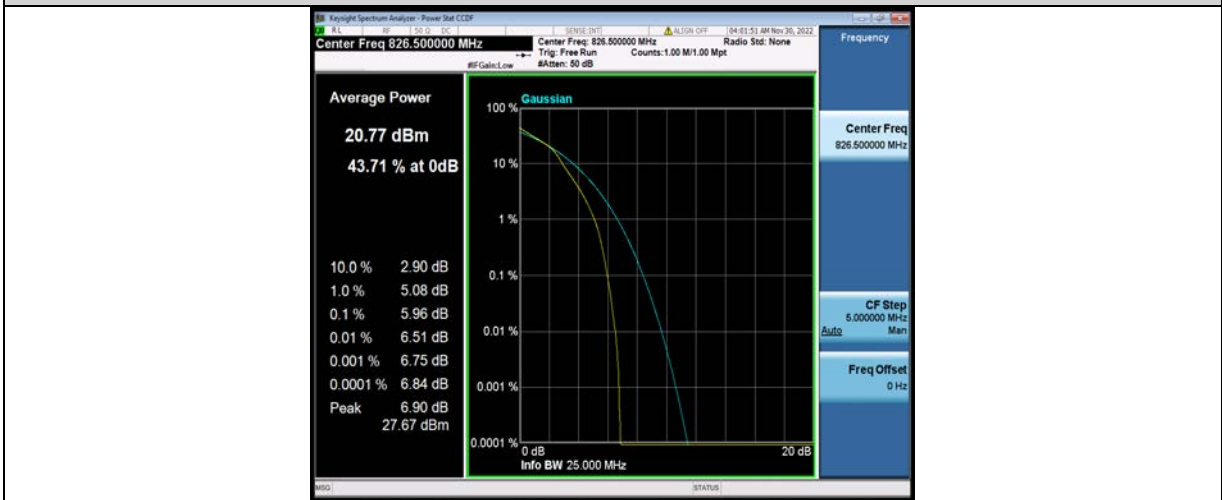
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Band26-5MHz-16QAM-26815-25RB#0

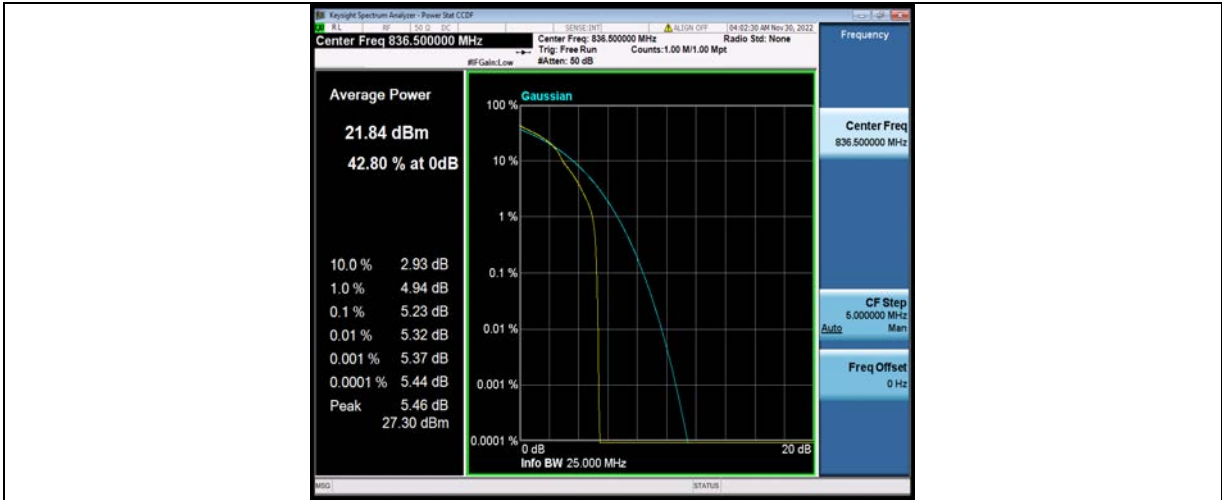


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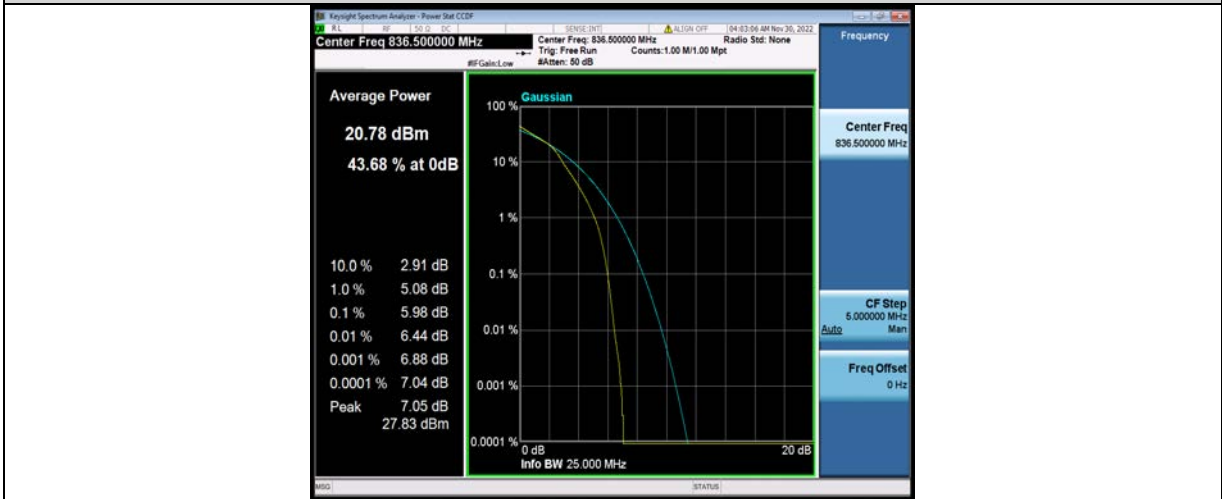


BUREAU VERITAS

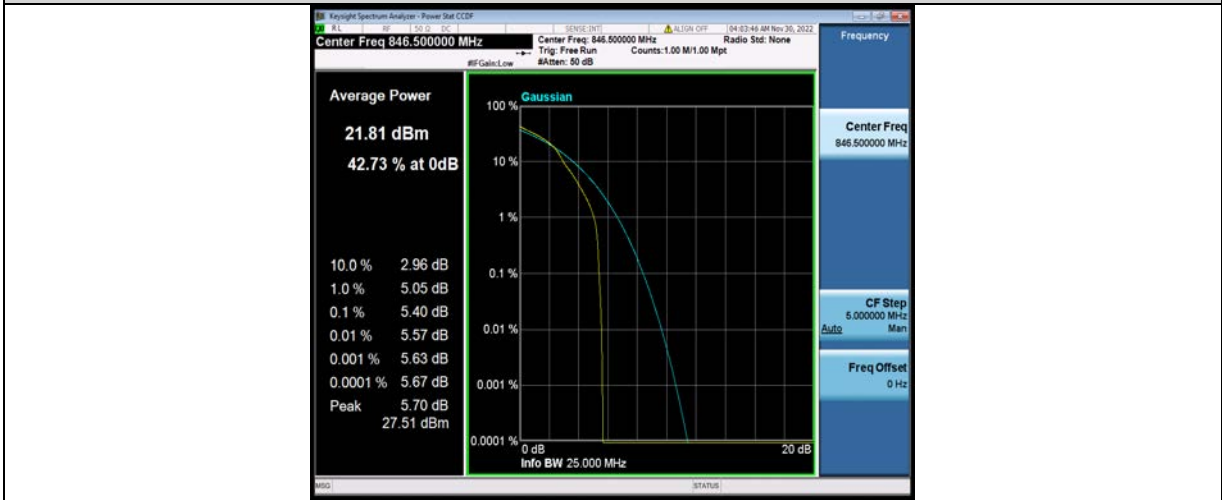
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Band26-5MHz-16QAM-26915-25RB#0



Band26-5MHz-16QAM-27015-1RB#0

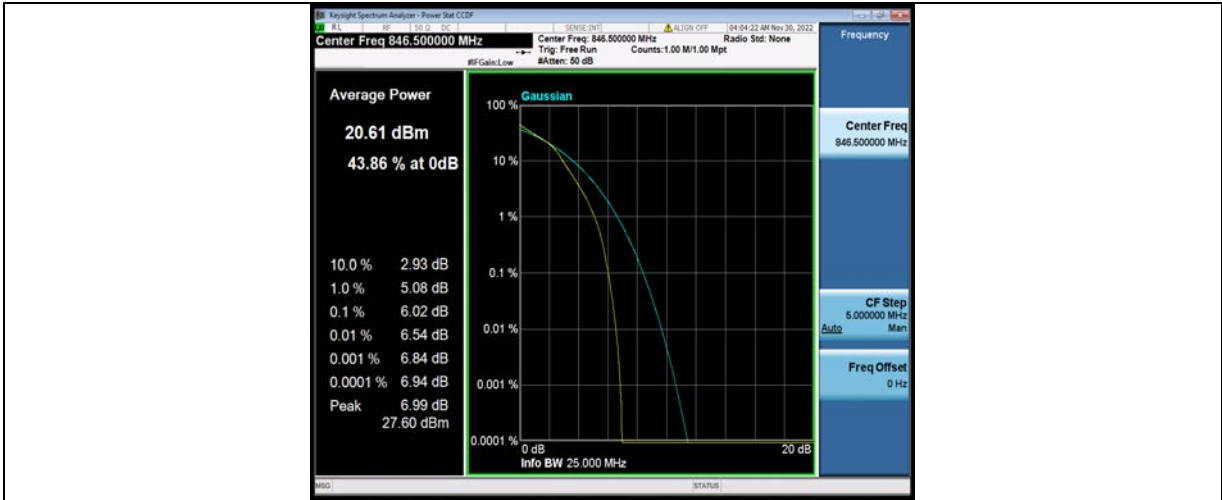


Band26-5MHz-16QAM-27015-25RB#0

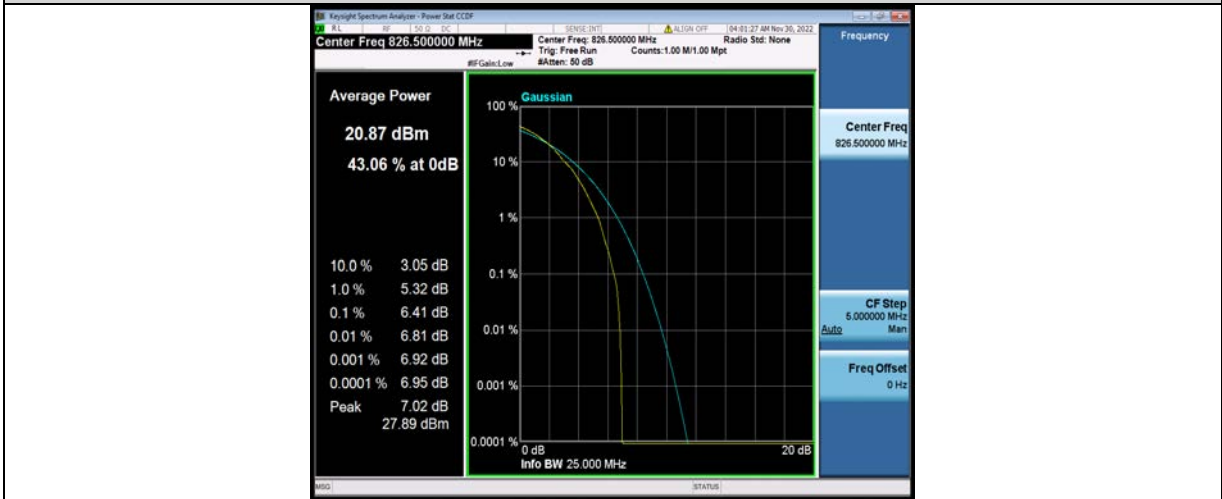


BUREAU VERITAS

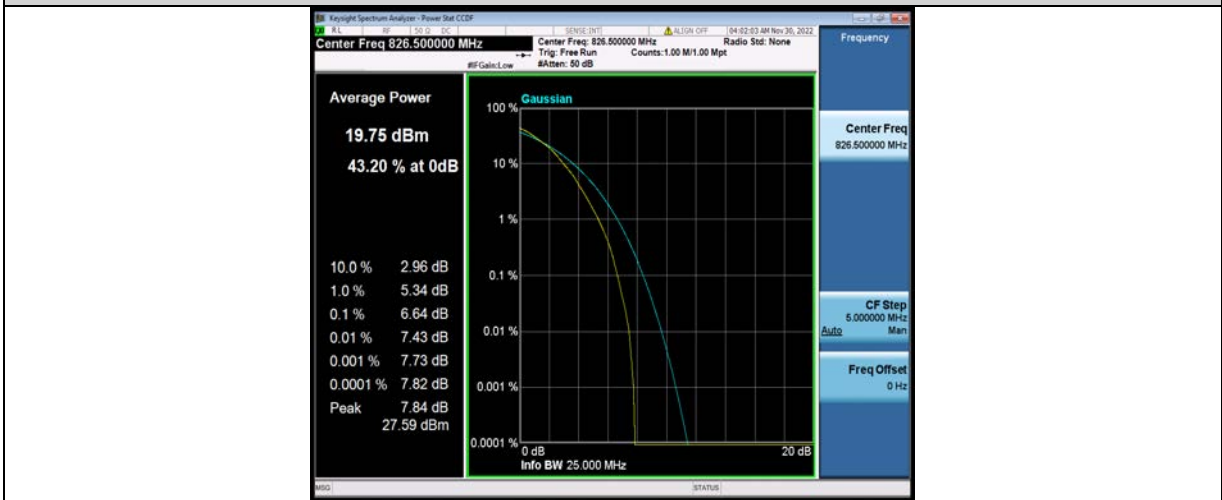
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Band26-5MHz-64QAM-26815-1RB#0



Band26-5MHz-64QAM-26815-25RB#0



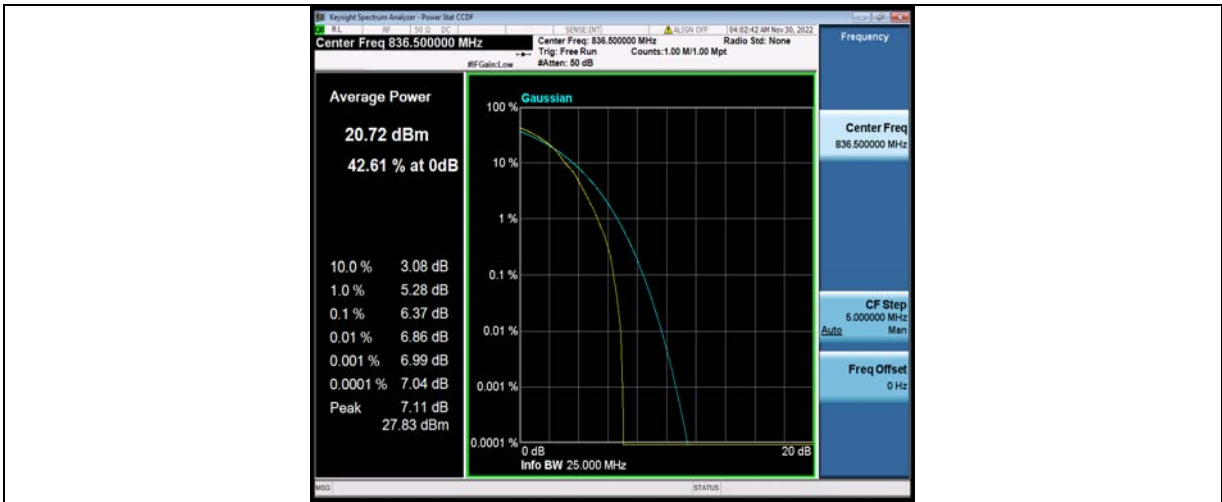
Band26-5MHz-64QAM-26915-1RB#0



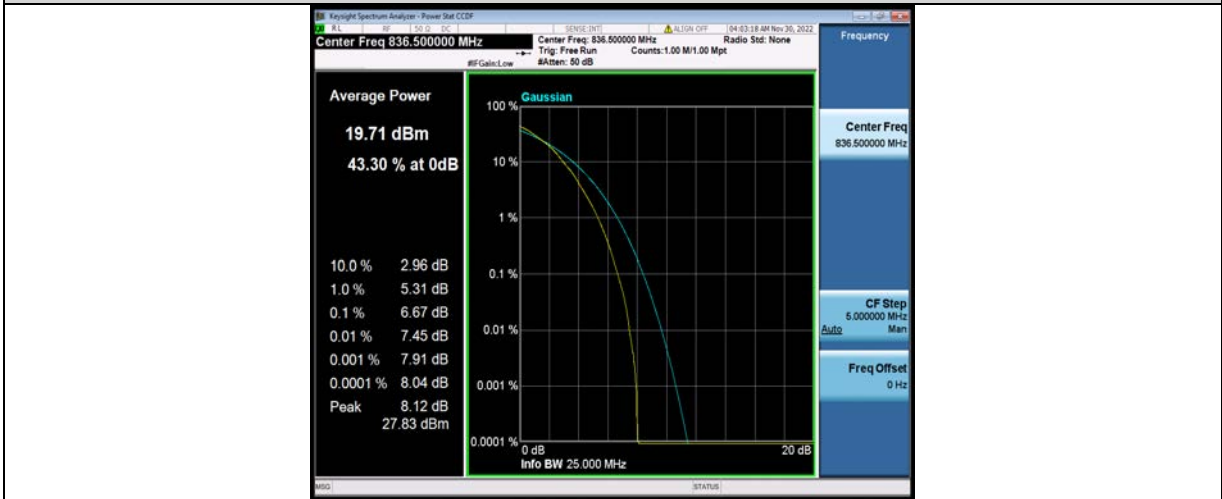


BUREAU VERITAS

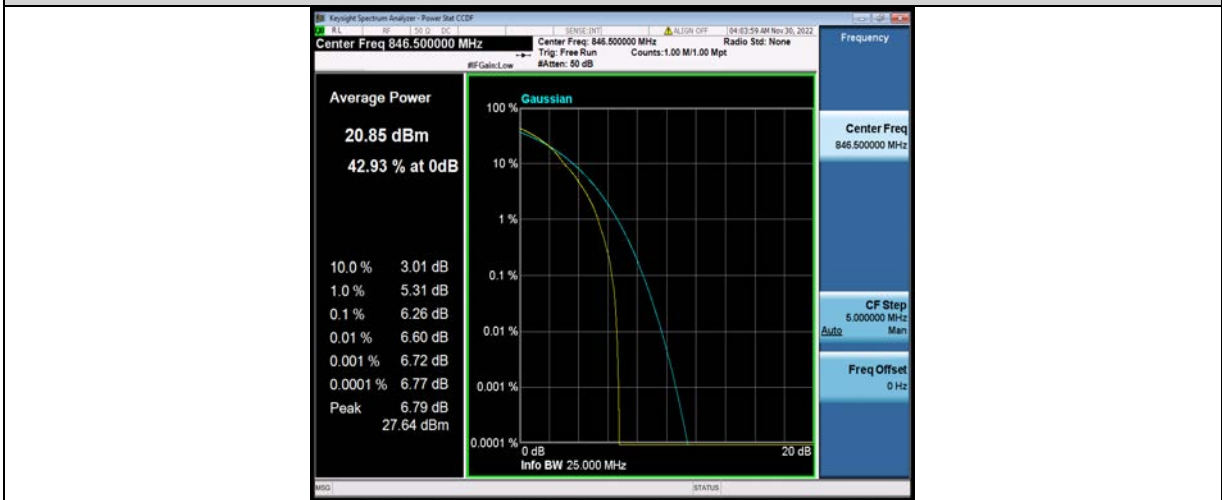
### Test Report No.: W7L-P23100014RF04



Band26-5MHz-64QAM-26915-25RB#0



Band26-5MHz-64QAM-27015-1RB#0

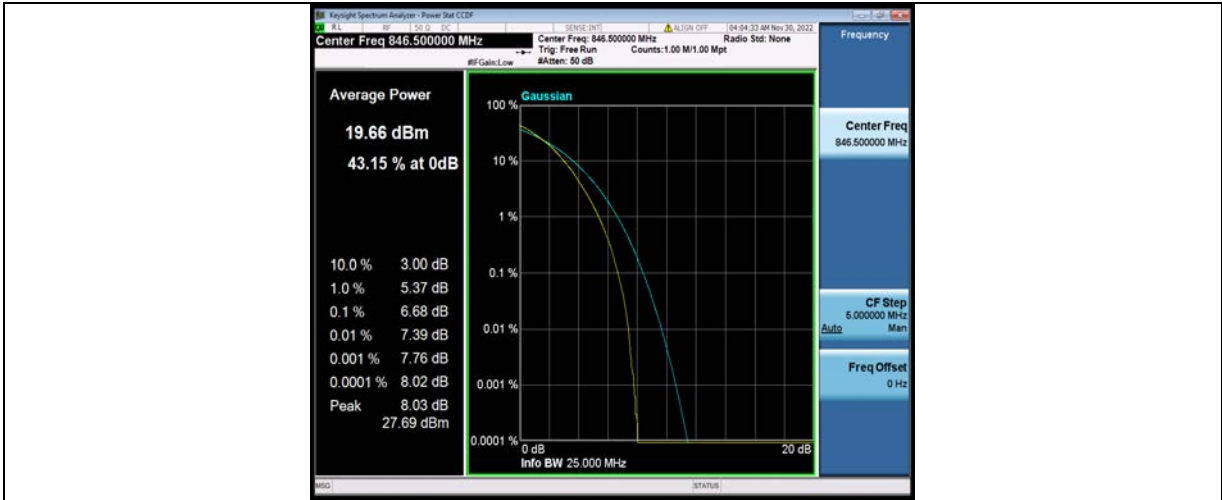


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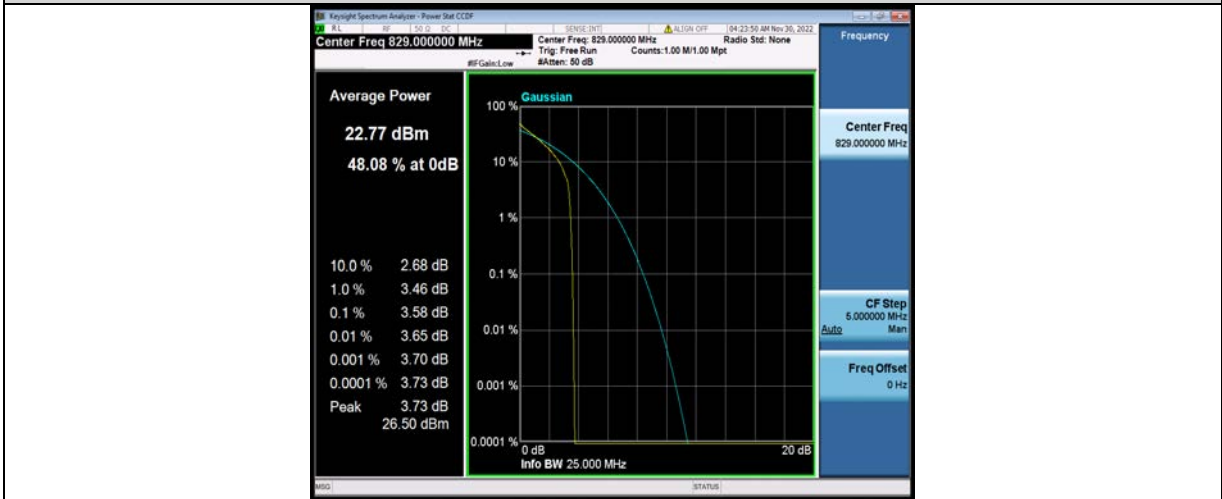


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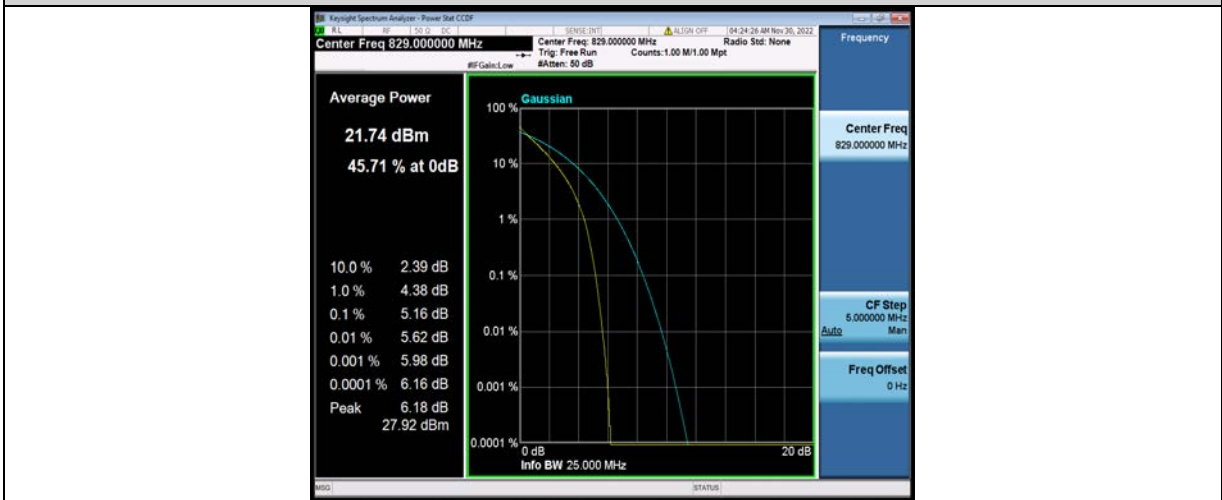
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Band26-10MHz-QPSK-26840-1RB#0



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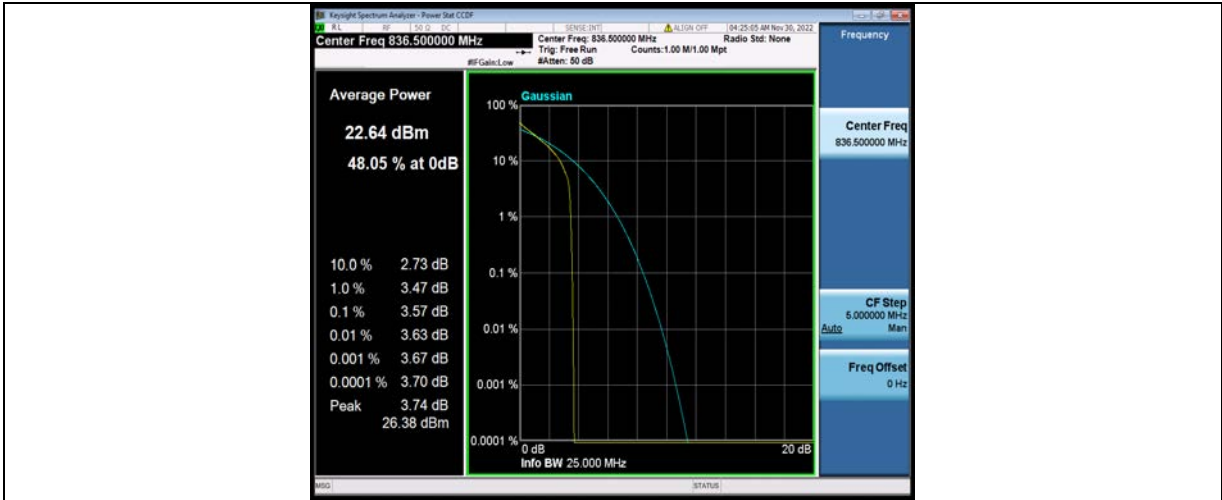


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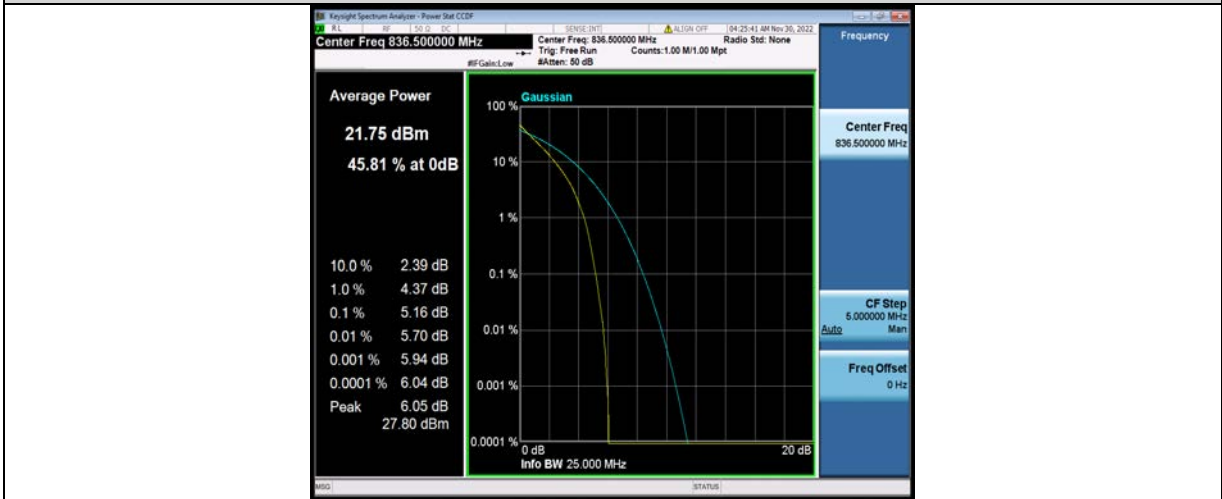


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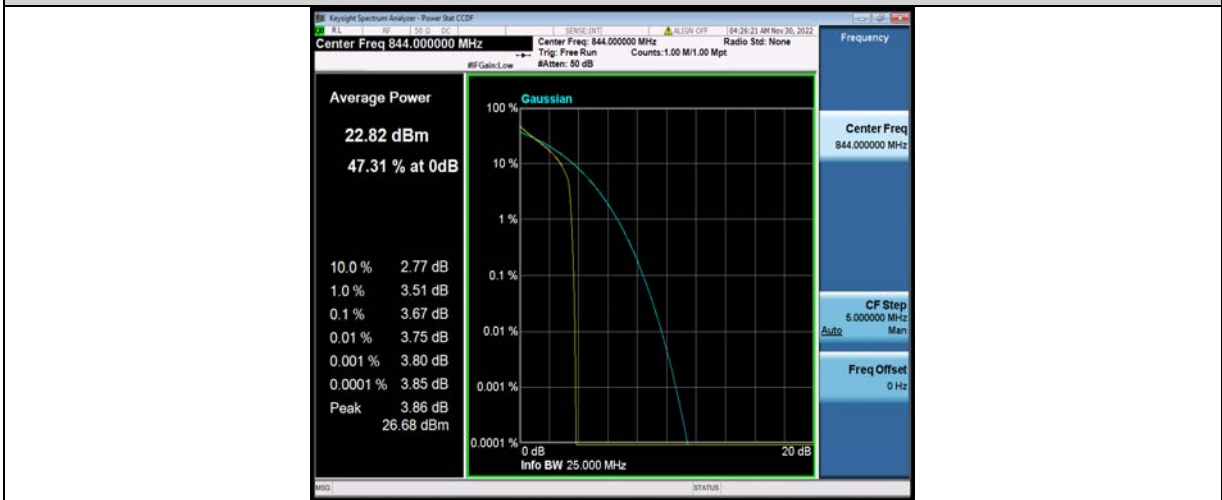
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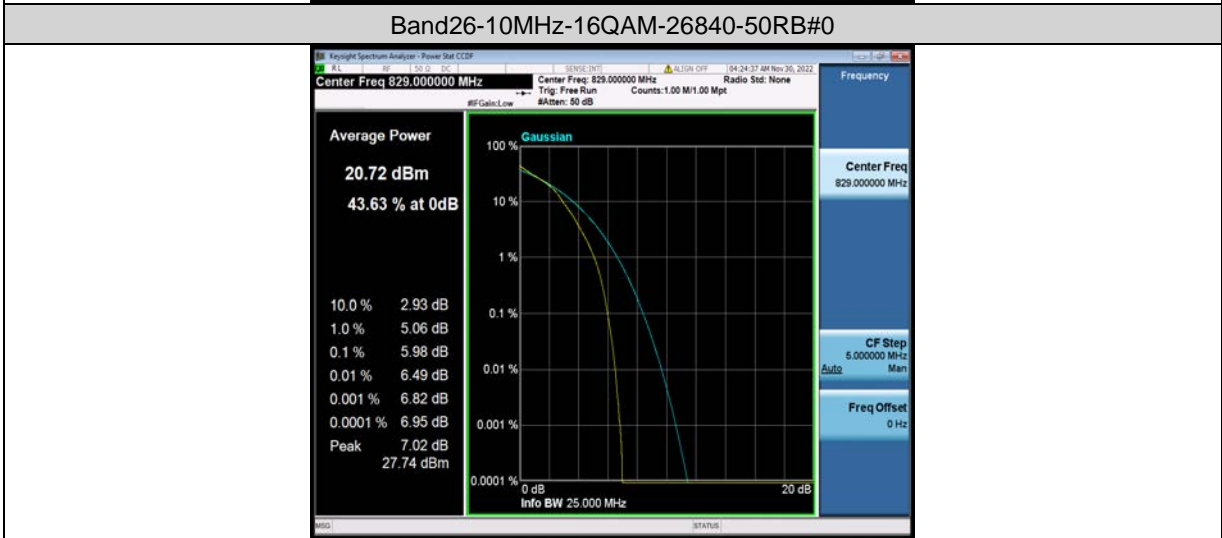
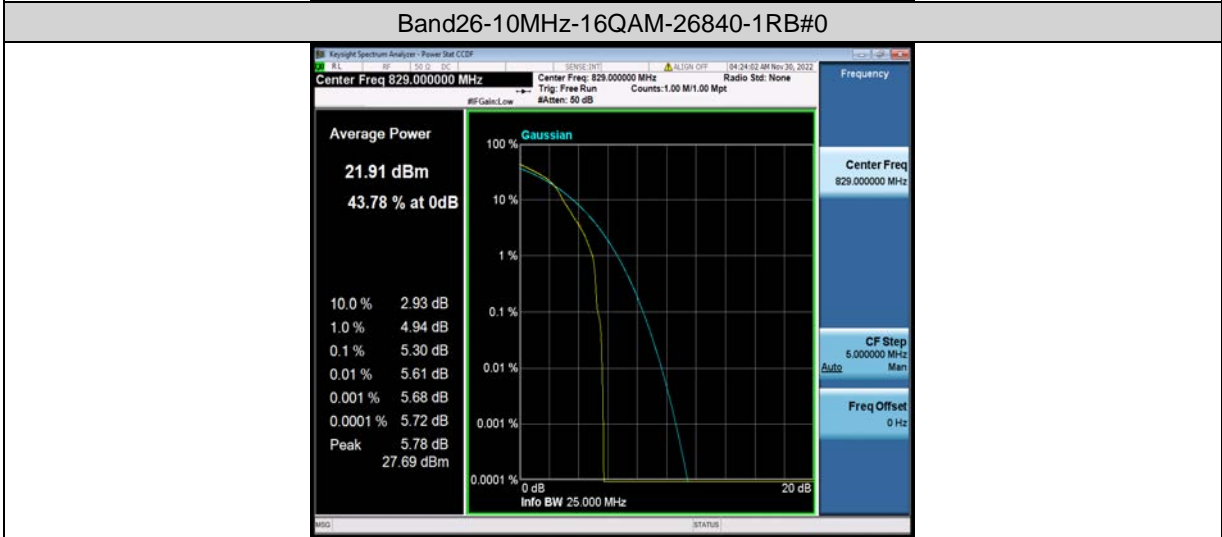
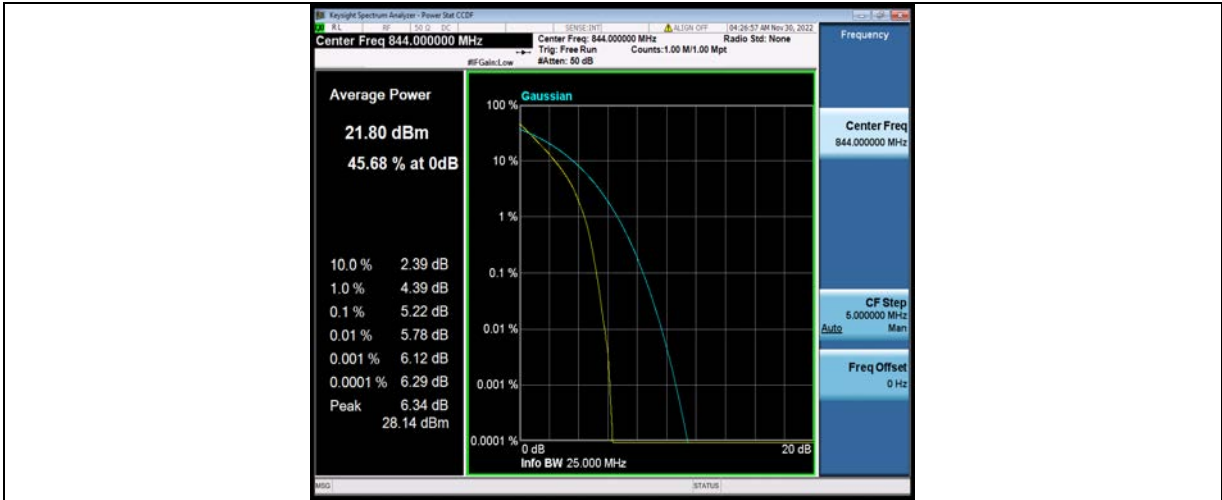


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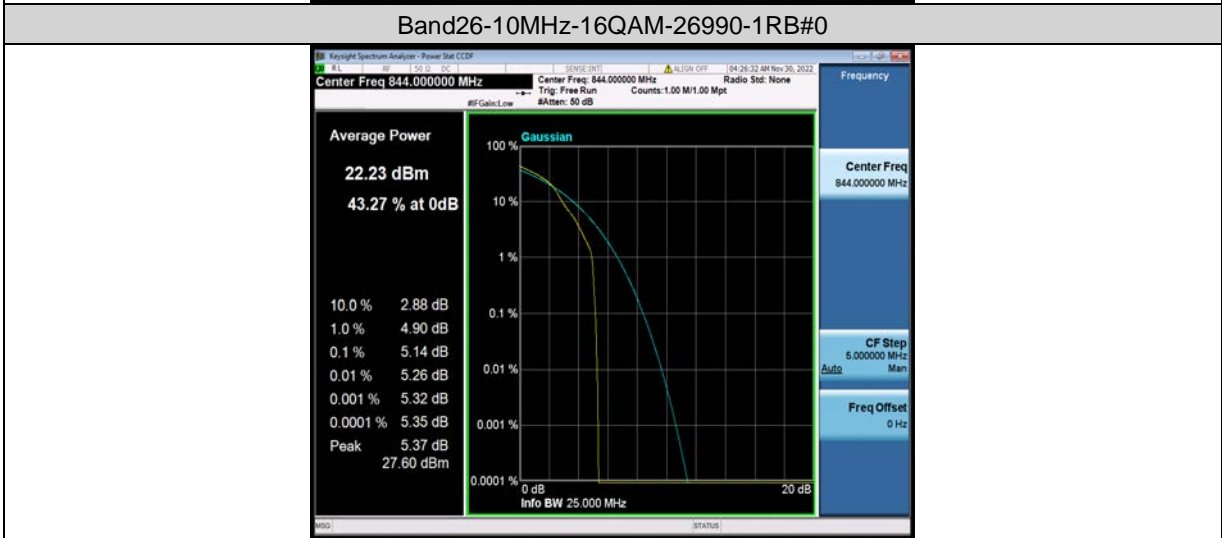
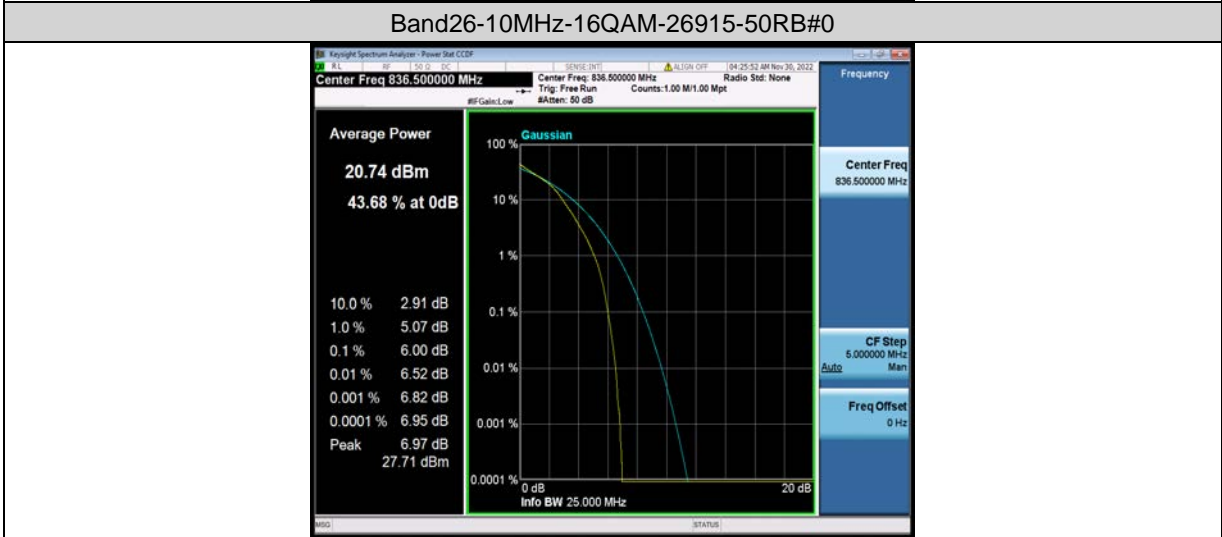
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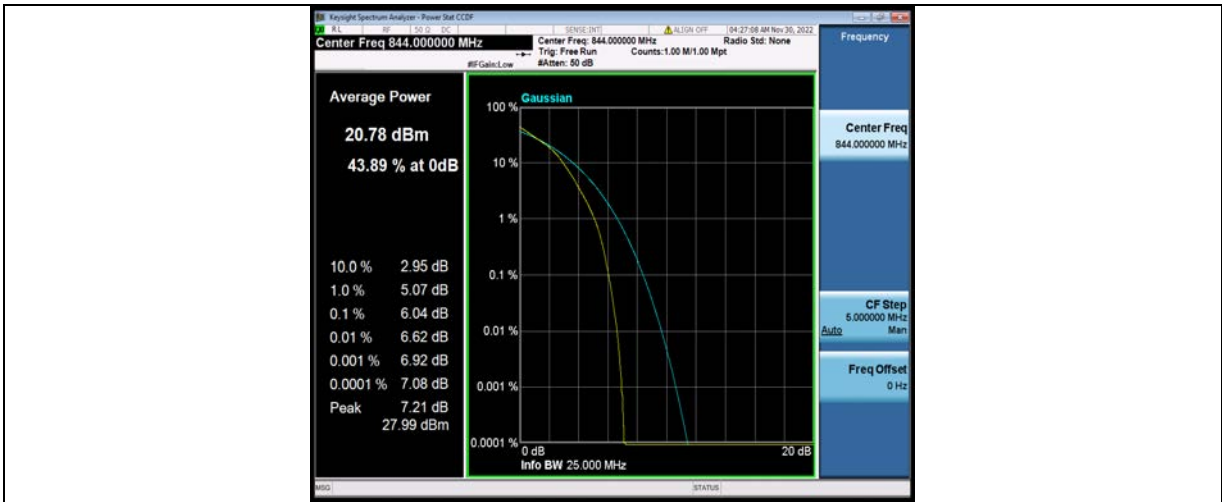
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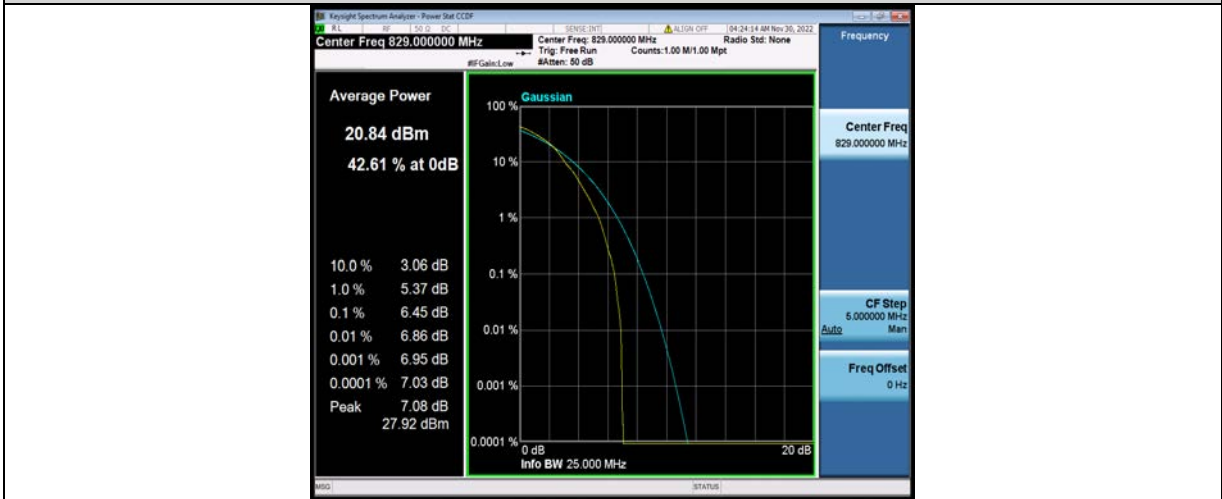


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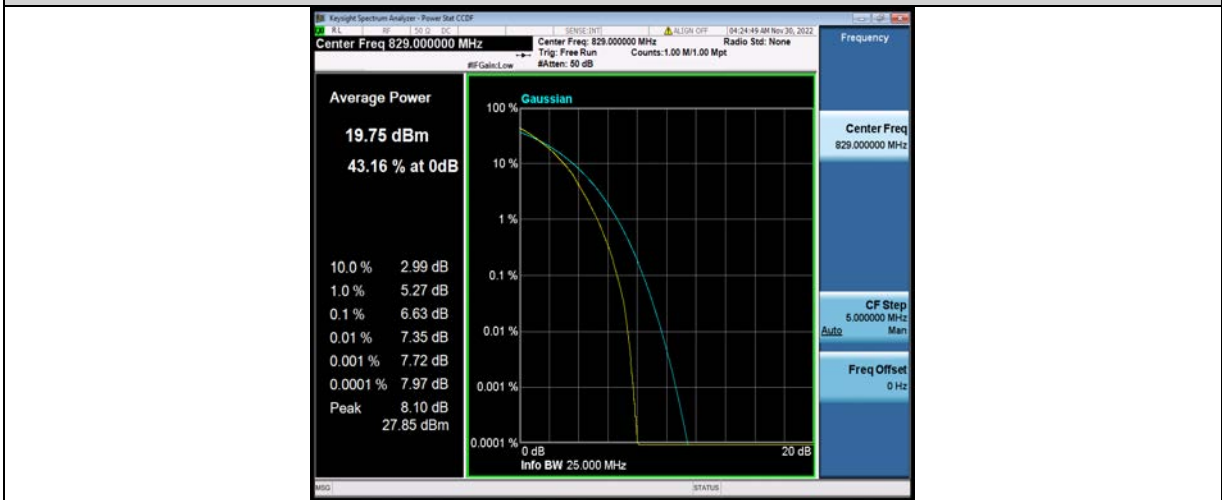
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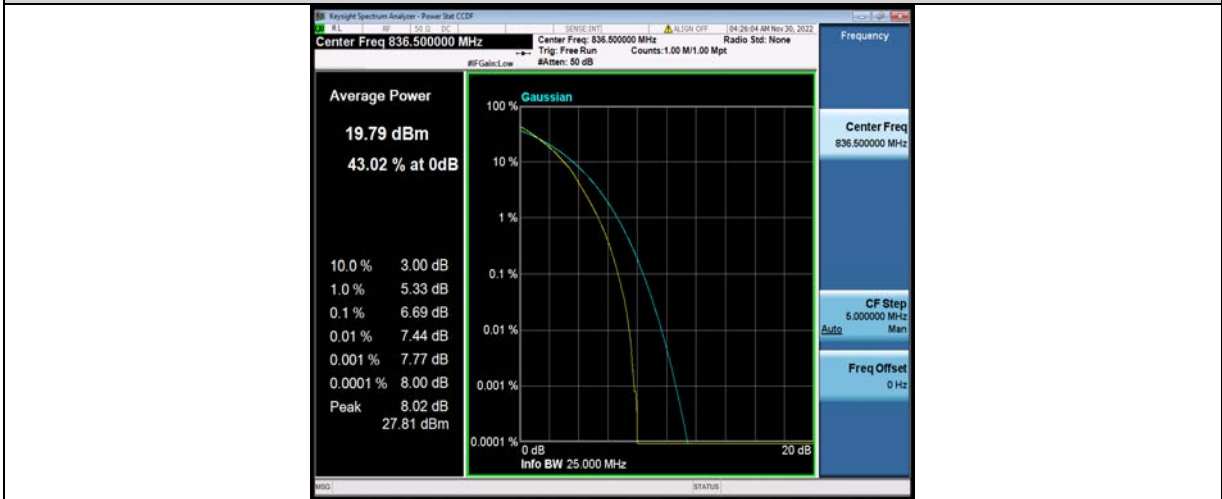


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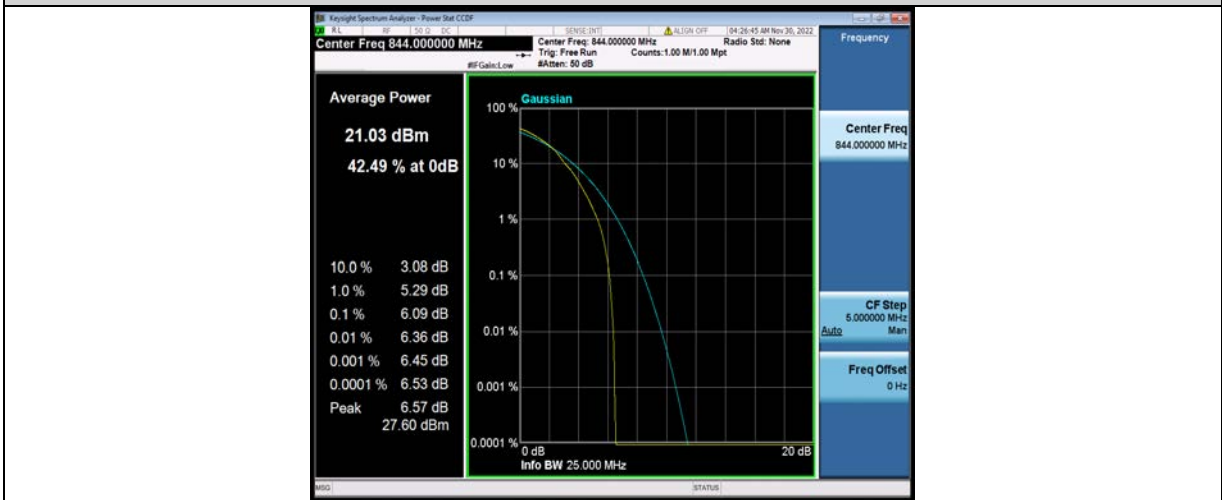
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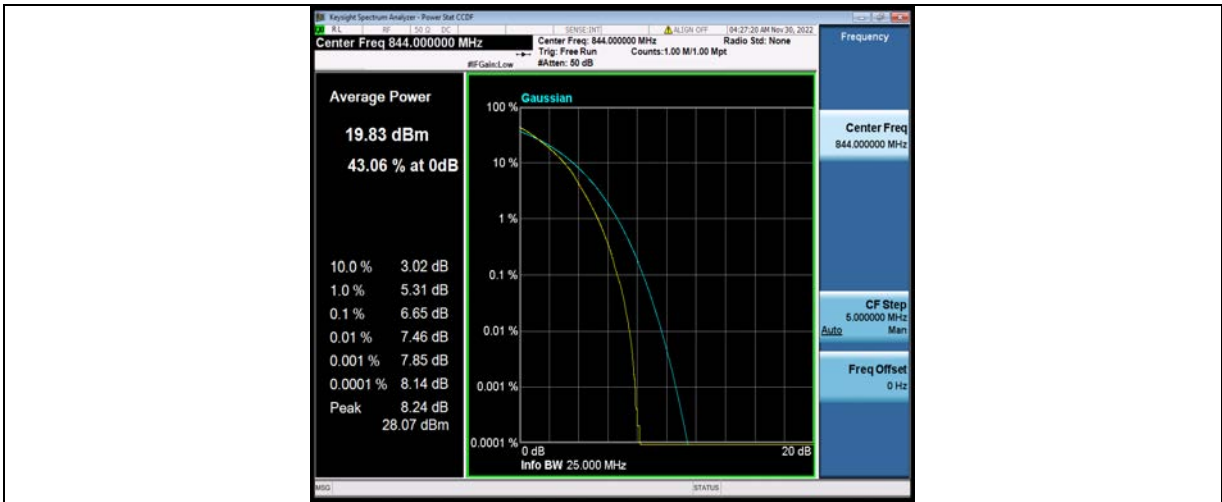


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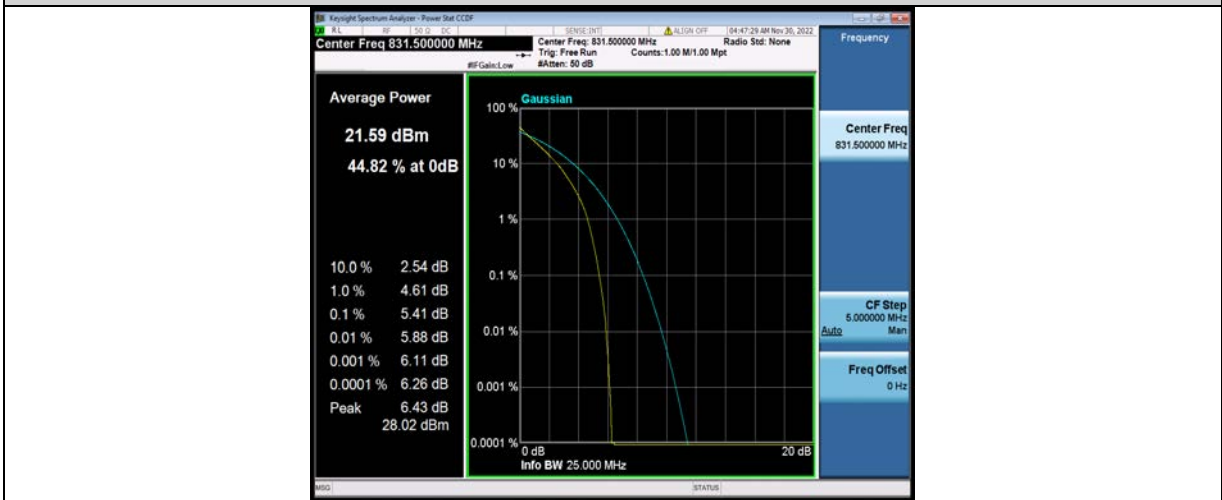
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Band26-15MHz-QPSK-26865-1RB#0



Band26-15MHz-QPSK-26865-75RB#0



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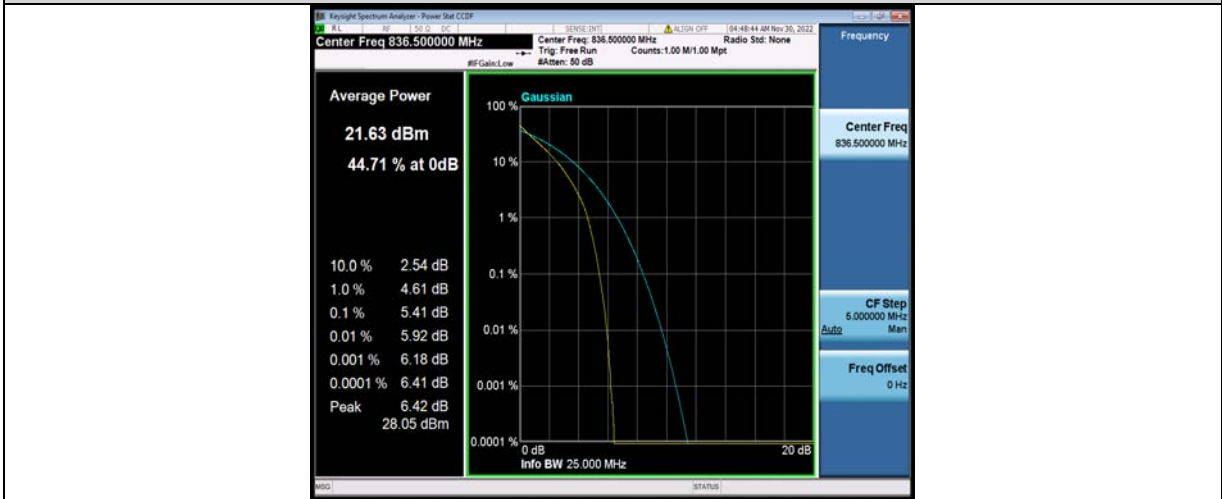


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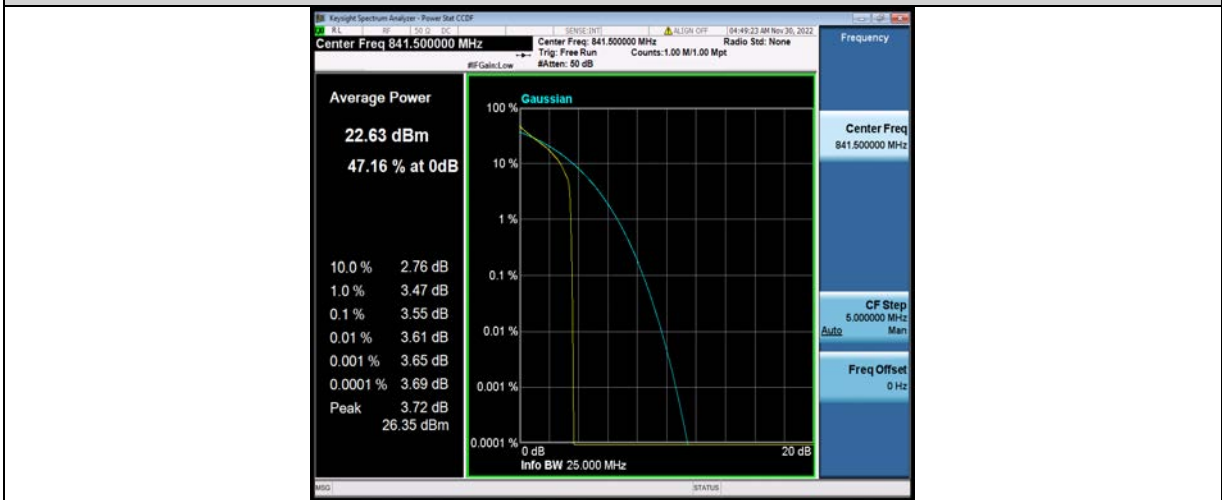
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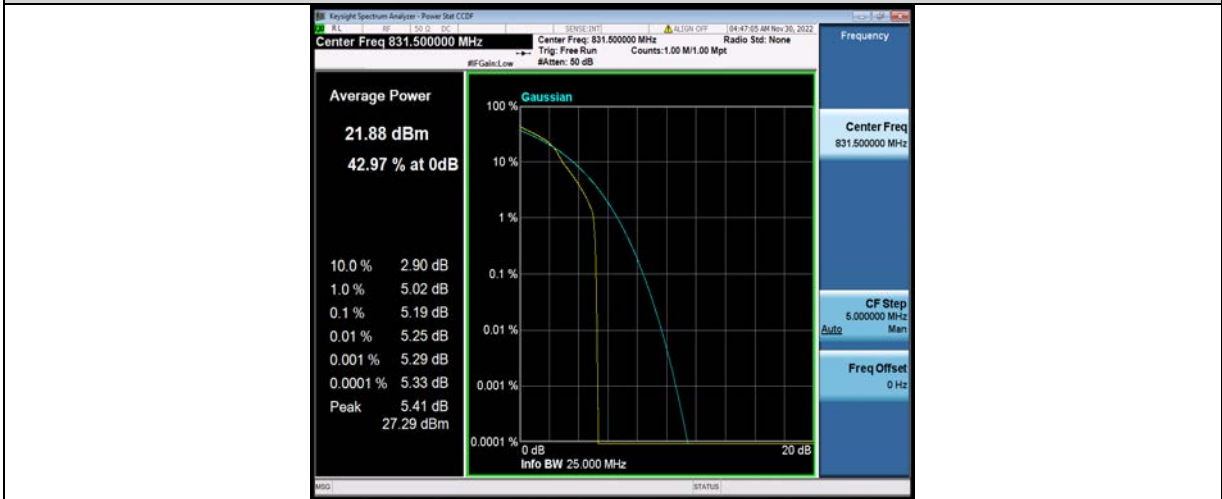


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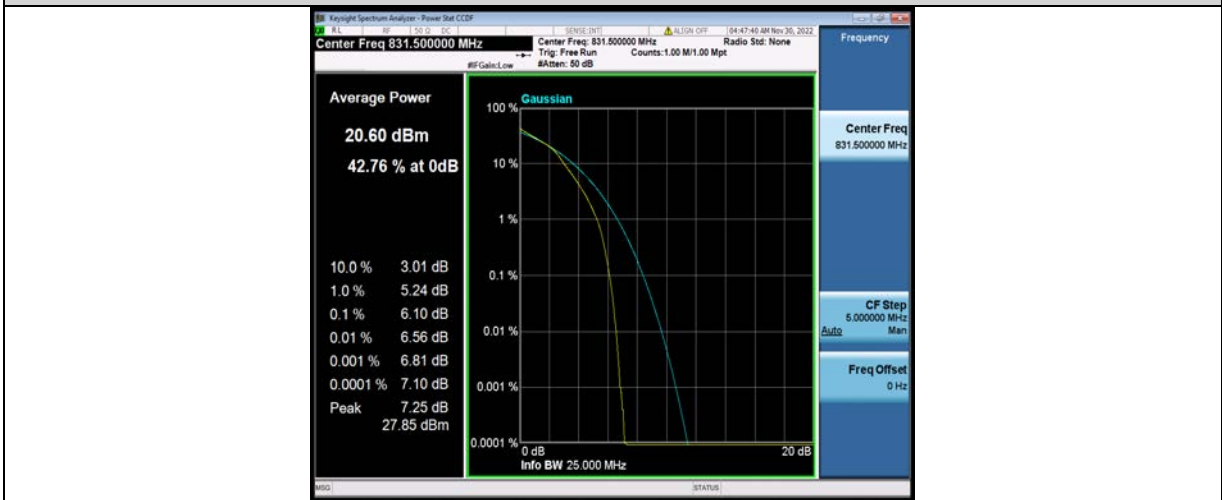
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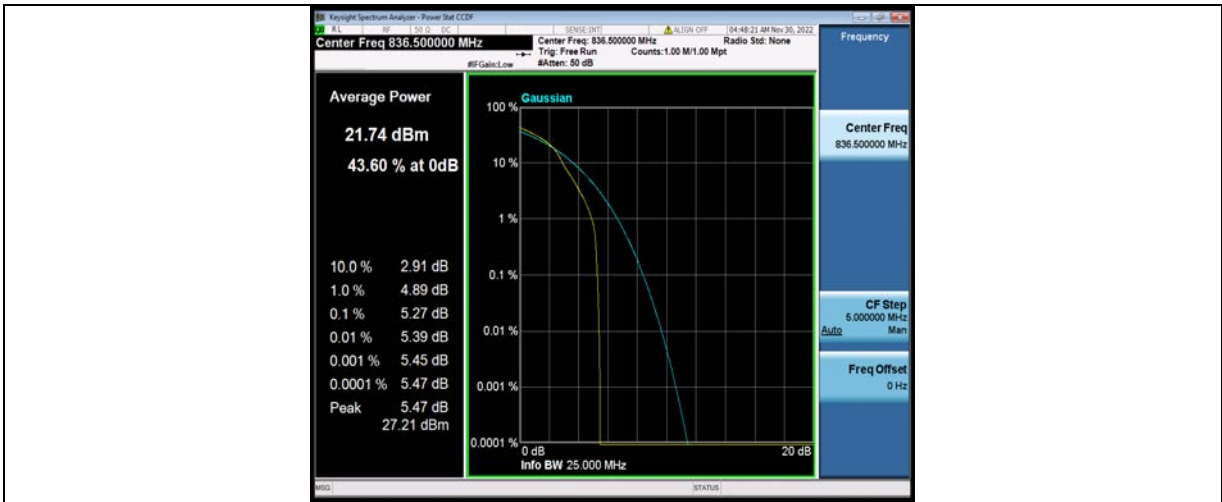


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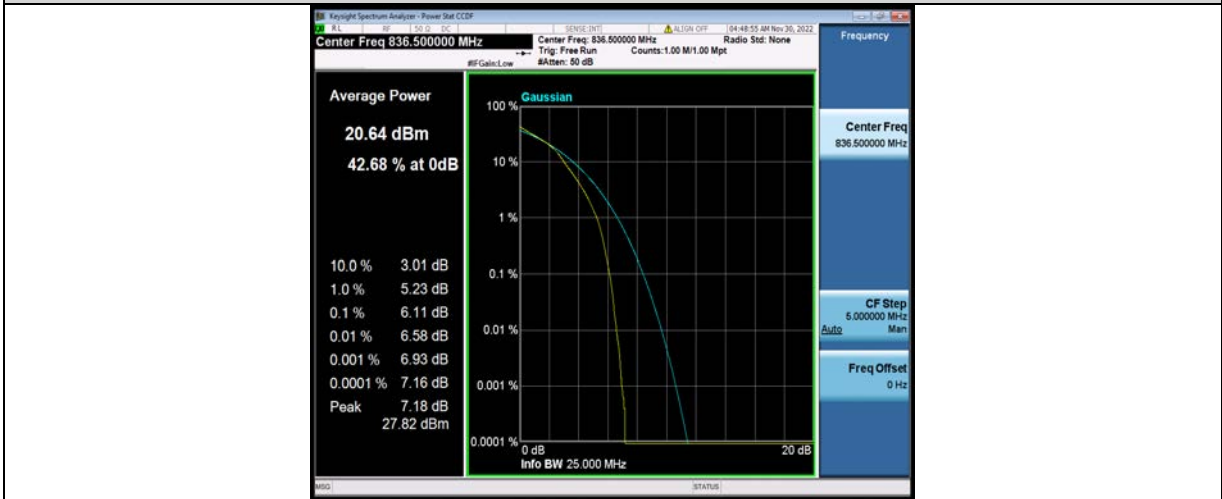


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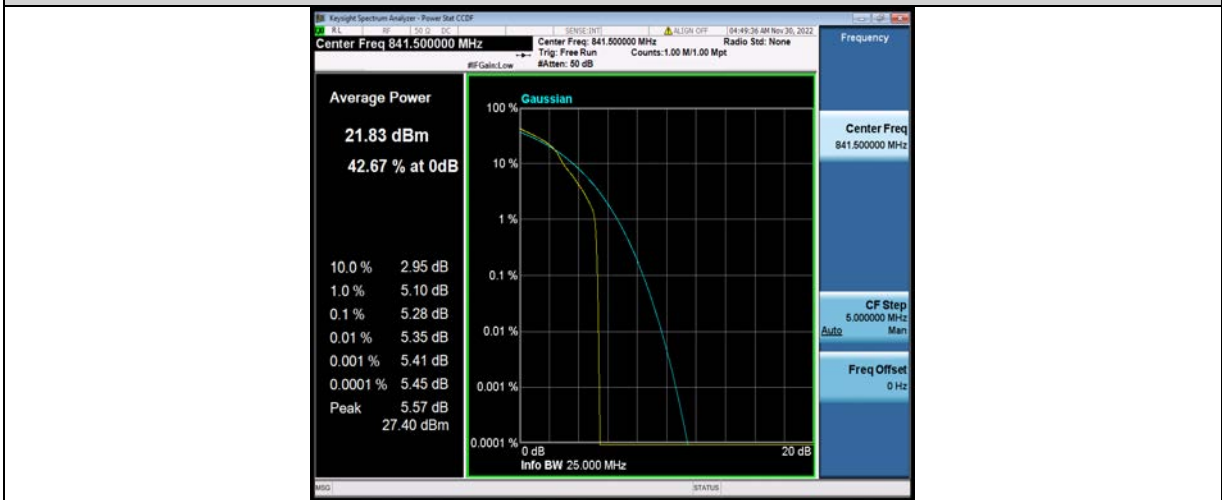
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