



Test Report No.: W7L-211220W001RF01



# FCC TEST REPORT (PART 22)

Applicant:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA

Manufacturer or Supplier:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Product:	FE3NA0031
Brand Name:	Continental
Model Name:	FE3NA0031
FCC ID:	LHJ-FE3NA0031
Date of tests:	Dec. 20, 2021 ~ Jan. 16, 2022

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: Jan. 17, 2022	Date: Jan. 17, 2022

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-211220W001RF01	Original release	Jan. 17, 2022

## 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 (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±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	Apr. 22,21	Apr. 21,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Feb. 14,20	Feb. 13,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
3m Semi-anechoic Chamber	ETS-LINDGREN	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	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36months 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>	FE3NA0031	
<b>BRAND NAME</b>	Continental	
<b>MODEL NAME</b>	FE3NA0031	
<b>NOMINAL VOLTAGE</b>	EUT 4.0V	
<b>MODULATION TYPE</b>	<b>GSM/GPRS/EDGE</b>	GMSK, 8PSK
	<b>WCDMA</b>	QPSK
	<b>LTE</b>	QPSK, 16QAM
<b>FREQUENCY RANGE</b>	<b>GSM/GPRS/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>MAX. ERP POWER</b>	<b>GSM/GPRS</b>	1380.38mW
	<b>EDGE</b>	345.94mW
	<b>WCDMA</b>	179.47mW
	<b>LTE Band 5 (Channel Bandwidth: 1.4MHz)</b>	148.94mW
	<b>LTE Band 5 (Channel Bandwidth: 3MHz)</b>	144.88mW
	<b>LTE Band 5 (Channel Bandwidth: 5MHz)</b>	145.21mW
	<b>LTE Band 5 (Channel Bandwidth: 10MHz)</b>	146.89mW
<b>EMISSION DESIGNATOR GOGN</b>	<b>GSM/GPRS</b>	245KGXW
	<b>EDGE</b>	242KGXW
	<b>WCDMA</b>	4M16F9W
	<b>LTE Band 5 (Channel Bandwidth: 1.4MHz)</b>	QPSK: 1M09G7D
		16QAM: 1M09W7D
	<b>LTE Band 5 (Channel Bandwidth: 3MHz)</b>	QPSK: 2M70G7D
16QAM: 2M69W7D		
<b>LTE Band 5</b>	QPSK: 4M51G7D	



	<b>(Channel Bandwidth: 5MHz)</b>	16QAM: 4M50W7D
	<b>LTE Band 5 (Channel Bandwidth: 10MHz)</b>	QPSK: 8M99G7D
		16QAM: 8M98W7D
<b>ANTENNA TYPE</b>	Dipole Antenna with 0.82dBi gain for GSM850/ WCDMA V/LTE B5	
<b>HW VERSION</b>	P1.5	
<b>SW VERSION</b>	MODEMSA415M_01.11.22	
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	N/A	
<b>EXTREME TEMPERATURE</b>	-30-75 °C	
<b>EXTREME VOLTAGE</b>	EUT 3.8V - EUT 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.

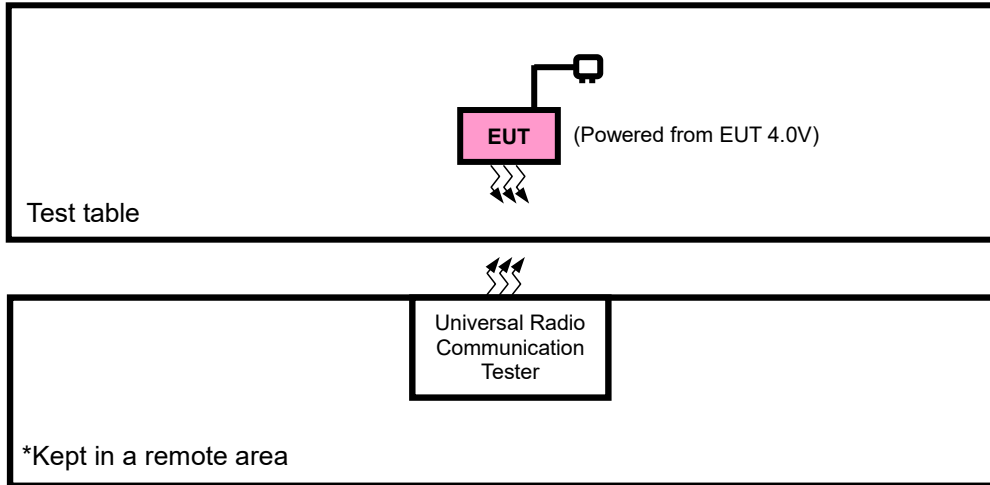
<b>MODULATION MODE</b>	<b>TX FUNCTION</b>
<b>GSM/GPRS/EDGE</b>	1TX/1RX
<b>WCDMA</b>	1TX/1RX
<b>LTE</b>	1TX/1RX

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





## 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 + DC Source 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, 190, 251	GSM,EDGE
A	FREQUENCY STABILITY	128 to 251	128, 190, 251	GSM,EDGE
A	OCCUPIED BANDWIDTH	128 to 251	128, 190, 251	GSM,EDGE
A	BAND EDGE	128 to 251	128, 251	GSM,EDGE
A	CONDCUDETED EMISSION	128 to 251	128, 190, 251	GSM,EDGE
A	RADIATED EMISSION	128 to 251	128, 190, 251	GSM,EDGE
A	PEAK TO AVERAGE RATIO	128 to 251	128, 190, 251	GSM,EDGE

### WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
A	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	CONDCUDETED 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



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**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	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
A	BAND EDGE	20407 to 20643	20407	1.4 MHz	QPSK,16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
		20407 to 20643	20643	1.4 MHz	QPSK,16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK,16QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
		20415 to 20635	20635	3 MHz	QPSK,16QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		20425 to 20625	20425	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
		20425 to 20625	20625	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20450 to 20600	20450	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
		20450 to 20600	20600	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset



A	CONDCUDED EMISSION	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20525	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20525	10MHz	QPSK	1 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset 50 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	EUT 4.0V	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	EUT 4.0V	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	EUT 4.0V	James Fu
BAND EDGE	23deg. C, 70%RH	EUT 4.0V	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	EUT 4.0V	James Fu
RADIATED EMISSION	23deg. C, 70%RH	EUT 4.0V	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	EUT 4.0V	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:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

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;

$G_{\text{T}}$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

$L_{\text{C}}$  = 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.

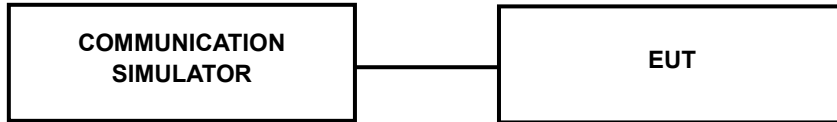




### 3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



### 3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850			Max. Tune-up Power
	Channel	128	190	
Frequency	824.2	836.6	848.8	
GPRS (GMSK, 1Tx-slot)	32.69	<b>32.73</b>	32.53	33.5
GPRS (GMSK, 2Tx-slot)	30.43	30.48	30.45	30.5
GPRS (GMSK, 3Tx-slot)	28.93	28.94	28.90	29.0
GPRS (GMSK, 4Tx-slot)	27.46	27.43	27.48	27.5
EDGE (8PSK, 1Tx-slot)	26.72	26.66	26.49	27.5
EDGE (8PSK, 2Tx-slot)	25.13	25.19	24.83	25.5
EDGE (8PSK, 3Tx-slot)	24.17	24.12	24.17	24.5
EDGE (8PSK, 4Tx-slot)	23.10	23.17	23.03	23.5

Band	WCDMA V			Max. Tune-up Power
	Channel	4132	4182	
Frequency	826.4	836.4	846.6	
RMC 12.2K	23.72	23.80	23.87	24.5
HSDPA Subtest-1	22.71	22.82	22.85	23.5
HSDPA Subtest-2	22.72	22.85	22.90	23.5
HSDPA Subtest-3	22.46	22.56	22.57	23.0
HSDPA Subtest-4	22.46	22.55	22.68	23.0
DC-HSDPA Subtest-1	22.61	22.70	22.75	23.5
DC-HSDPA Subtest-2	22.41	22.52	22.55	23.5
DC-HSDPA Subtest-3	22.15	22.28	22.33	23.0
DC-HSDPA Subtest-4	22.16	22.26	22.27	23.0
HSUPA Subtest-1	22.68	22.82	22.82	23.5
HSUPA Subtest-2	20.79	20.83	20.91	21.5
HSUPA Subtest-3	21.70	21.84	21.84	22.5
HSUPA Subtest-4	20.74	20.78	20.86	21.5
HSUPA Subtest-5	22.70	22.81	22.84	23.5



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**LTE Band 5**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20407	Mid CH 20525	High CH 20643	MPR
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz	
5/ 1.4	QPSK	1	0	22.80	22.81	22.95	0
		1	2	22.74	22.64	22.87	0
		1	5	22.78	22.69	22.91	0
		3	0	22.91	22.87	23.06	0
		3	1	22.91	22.96	22.99	0
		3	3	22.85	22.80	22.99	0
		6	0	21.89	21.87	22.01	1
	16QAM	1	0	22.20	22.19	22.37	1
		1	2	22.01	22.00	22.16	1
		1	5	22.19	22.09	22.35	1
		3	0	21.86	21.86	21.97	1
		3	1	21.87	21.97	22.02	1
		3	3	21.86	21.86	22.06	1
		6	0	20.87	20.89	21.01	2



**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20415	Mid CH 20525	High CH 20635	MPR
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz	
5/ 3	QPSK	1	0	22.82	22.83	22.94	0
		1	7	22.70	22.65	22.87	0
		1	14	22.74	22.69	22.91	0
		8	0	21.90	21.90	22.06	1
		8	3	21.84	21.96	22.01	1
		8	7	21.82	21.87	22.03	1
		15	0	21.86	21.88	21.95	1
	16QAM	1	0	22.17	22.25	22.40	1
		1	7	21.98	22.03	22.14	1
		1	14	22.22	22.09	22.35	1
		8	0	20.82	20.87	20.97	2
		8	3	20.92	20.92	21.05	2
		8	7	20.88	20.84	21.02	2
		15	0	20.87	20.83	21.04	2



Band/BW	Modulation	RB Size	RB Offset	Low CH 20425	Mid CH 20525	High CH 20625	MPR
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz	
5/ 5	QPSK	1	0	22.83	22.78	22.95	0
		1	12	22.75	22.62	22.87	0
		1	24	22.75	22.68	22.95	0
		12	0	21.93	21.90	22.03	1
		12	6	21.84	21.97	22.02	1
		12	13	21.86	21.83	22.04	1
		25	0	21.84	21.91	21.98	1
	16QAM	1	0	22.18	22.21	22.40	1
		1	12	21.95	22.06	22.13	1
		1	24	22.22	22.09	22.34	1
		12	0	20.82	20.85	20.94	2
		12	6	20.89	20.96	21.01	2
		12	13	20.83	20.86	21.05	2
		25	0	20.87	20.84	21.01	2



**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

Band/BW	Modulation	RB Size	RB Offset	Low CH 20450	Mid CH 20525	High CH 20600	MPR
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz	
5/ 10	QPSK	1	0	22.88	22.85	<b>23.00</b>	0
		1	24	22.77	22.70	22.89	0
		1	49	22.80	22.76	22.96	0
		25	0	21.97	21.95	22.08	1
		25	12	21.92	21.98	22.07	1
		25	25	21.90	21.88	22.05	1
		50	0	21.90	21.93	22.03	1
	16QAM	1	0	22.25	22.26	22.42	1
		1	24	22.03	22.08	22.18	1
		1	49	22.24	22.17	22.36	1
		25	0	20.90	20.91	21.02	2
		25	12	20.95	20.98	21.07	2
		25	25	20.90	20.91	21.07	2
		50	0	20.93	20.91	21.06	2

**ERP POWER (dBm)**

**GSM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	32.69	0.82	31.36	1367.73	7
190	836.6	32.73	0.82	31.4	<b>1380.38</b>	7
251	848.8	32.53	0.82	31.2	1318.26	7

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

**EDGE**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	26.72	0.82	25.39	<b>345.94</b>	7
190	836.6	26.66	0.82	25.33	341.19	7
251	848.8	26.49	0.82	25.16	328.1	7

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

**WCDMA**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
4132	826.4	23.72	0.82	22.39	173.38	7
4182	836.4	23.8	0.82	22.47	176.6	7
4233	846.6	23.87	0.82	22.54	179.47	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	22.91	0.82	21.58	143.88	7
20525	836.5	22.96	0.82	21.63	145.55	7
20643	848.3	23.06	0.82	21.73	<b>148.94</b>	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	22.2	0.82	20.87	122.18	7
20525	836.5	22.19	0.82	20.86	121.9	7
20643	848.3	22.37	0.82	21.04	127.06	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	22.82	0.82	21.49	140.93	7
20525	836.5	22.83	0.82	21.5	141.25	7
20635	847.5	22.94	0.82	21.61	<b>144.88</b>	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	22.22	0.82	20.89	122.74	7
20525	836.5	22.25	0.82	20.92	123.59	7
20635	847.5	22.4	0.82	21.07	127.94	7



**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	22.83	0.82	21.5	141.25	7
20525	836.5	22.78	0.82	21.45	139.64	7
20625	846.5	22.95	0.82	21.62	<b>145.21</b>	7

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	22.22	0.82	20.89	122.74	7
20525	836.5	22.21	0.82	20.88	122.46	7
20625	846.5	22.4	0.82	21.07	127.94	7

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	22.88	0.82	21.55	142.89	7
20525	836.5	22.85	0.82	21.52	141.91	7
20600	844.0	23	0.82	21.67	<b>146.89</b>	7

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T-Lc</sub> (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	22.25	0.82	20.92	123.59	7
20525	836.5	22.26	0.82	20.93	123.88	7
20600	844.0	22.42	0.82	21.09	128.53	7

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



## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

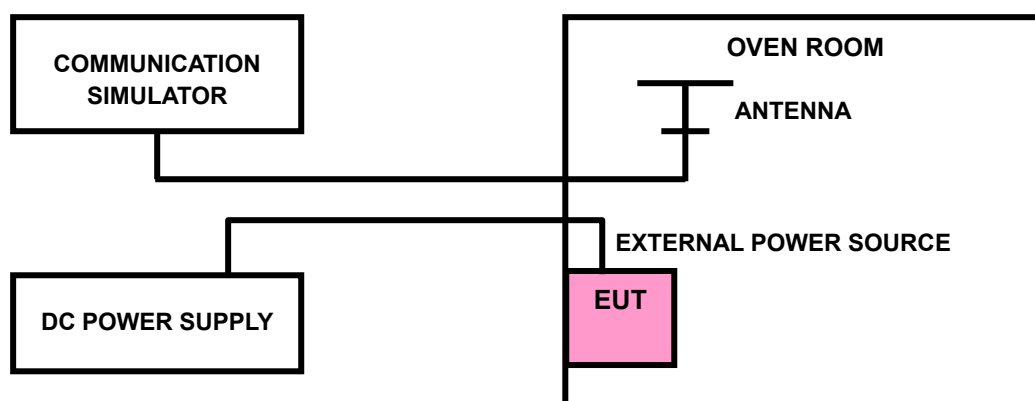
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

### 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





Test Report No.: W7L-211220W001RF01

### 3.2.4 TEST RESULTS

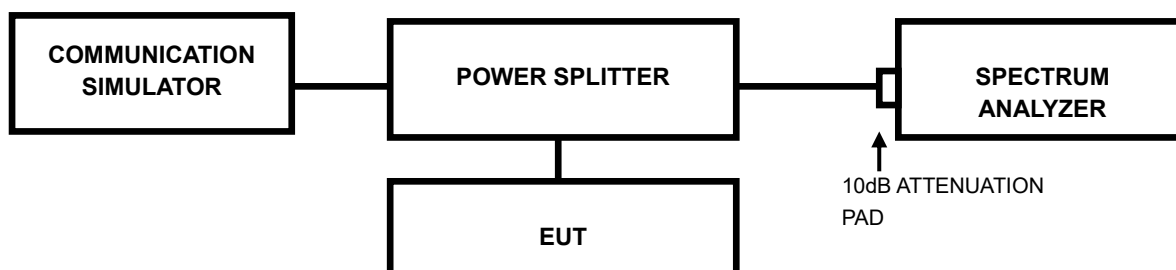
Please Refer to Appendix A Of this test report.

### 3.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

#### 3.3.2 TEST SETUP





**BUREAU**  
**VERITAS**

**Test Report No.: W7L-211220W001RF01**

### 3.3.3 TEST RESULTS

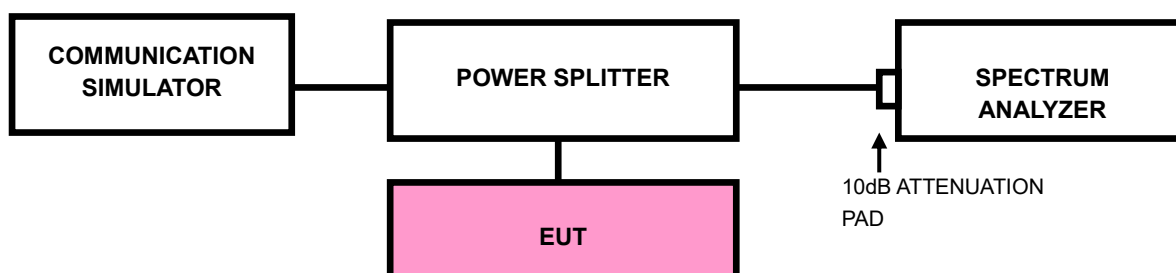
Please Refer to Appendix A Of this test report.

### 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





**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

### 3.4.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/EDGE/LTE bandwidth for (1.4M/3M/5M/10M/15M/20M)1RB/0RB&1RB/MAXRB).
- c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is  $\geq 1\% \cdot \text{EBW}$  kHz and VBW of the spectrum is  $3 \cdot \text{RBW}$  kHz. (LTE bandwidth 1.4M/3M/5M/10M/15M/20MHz).
- e. Record the max trace plot into the test report.

### 3.4.4 TEST RESULTS

Please Refer to Appendix A Of this test report.

### 3.5 CONDUCTED SPURIOUS EMISSIONS

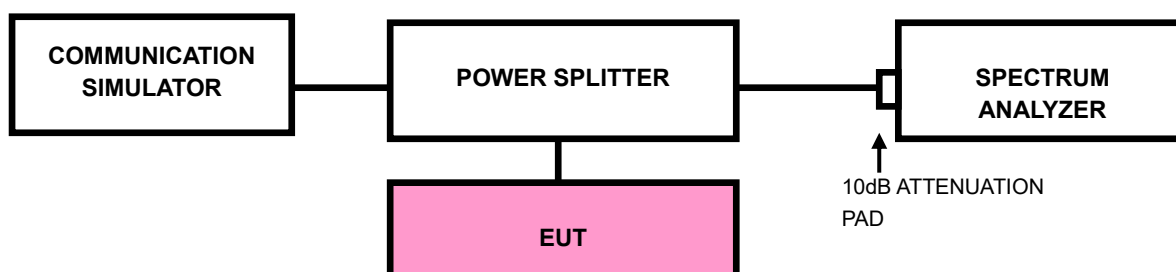
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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.

#### 3.5.1 TEST SETUP





**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

### 3.5.2 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 A 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.

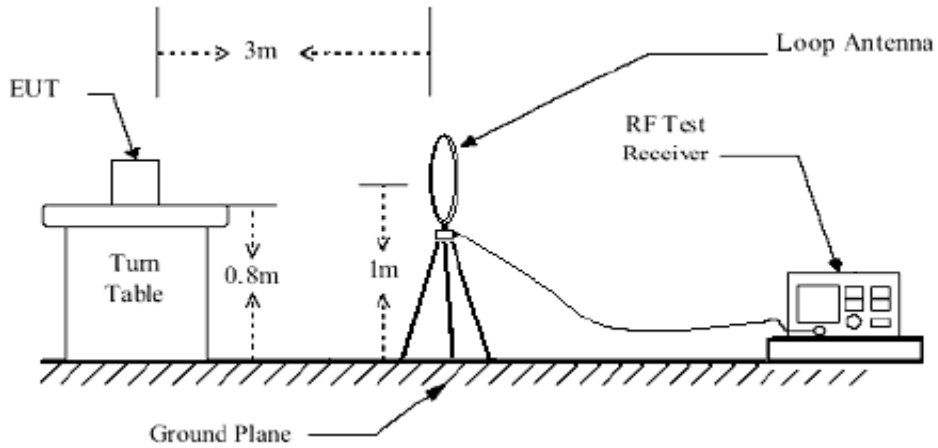
#### 3.6.3 DEVIATION FROM TEST STANDARD

No deviation

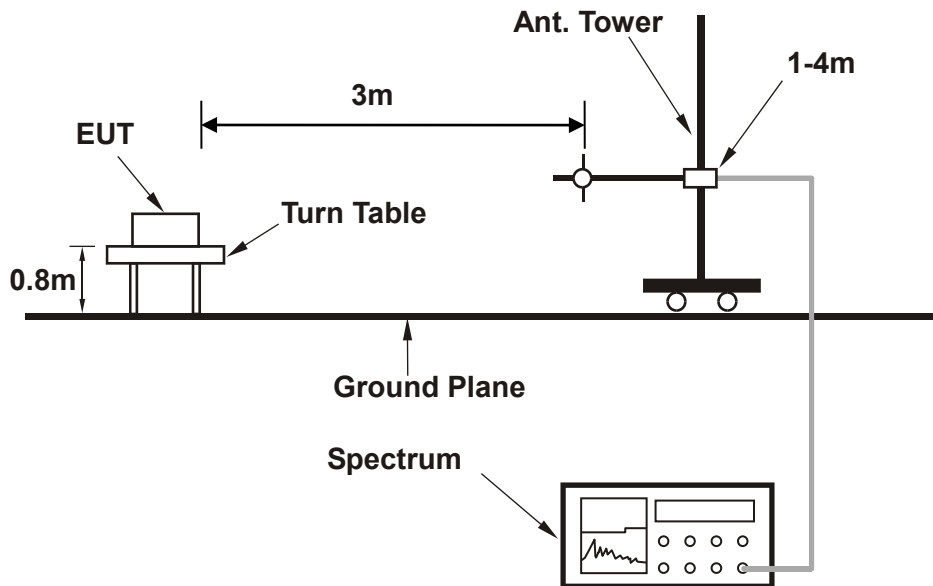


### 3.6.4 TEST SETUP

#### < Frequency Range below 30MHz >

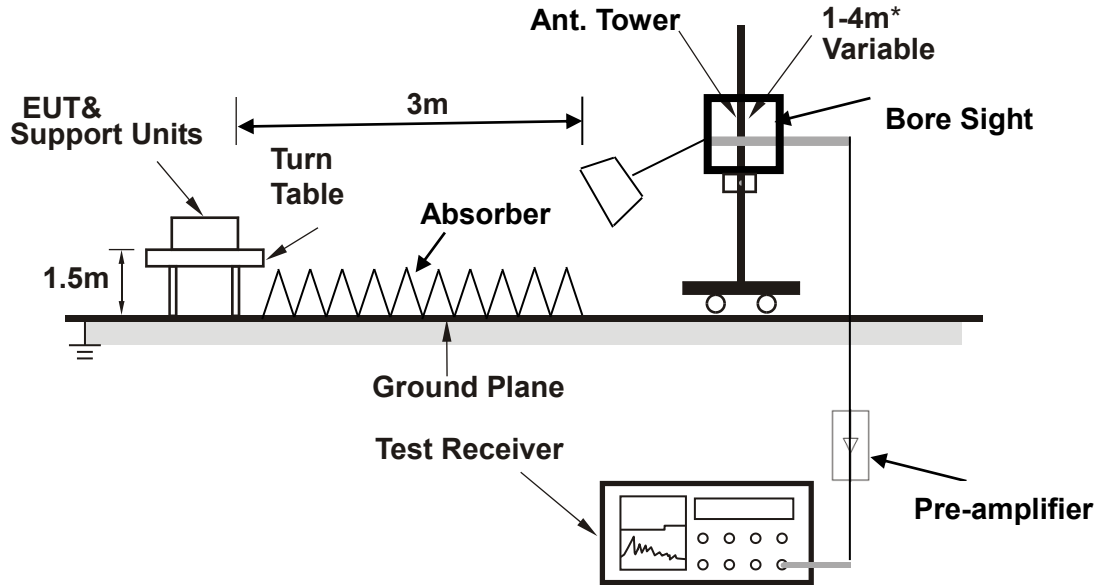


#### < Frequency Range 30MHz~1GHz >





<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

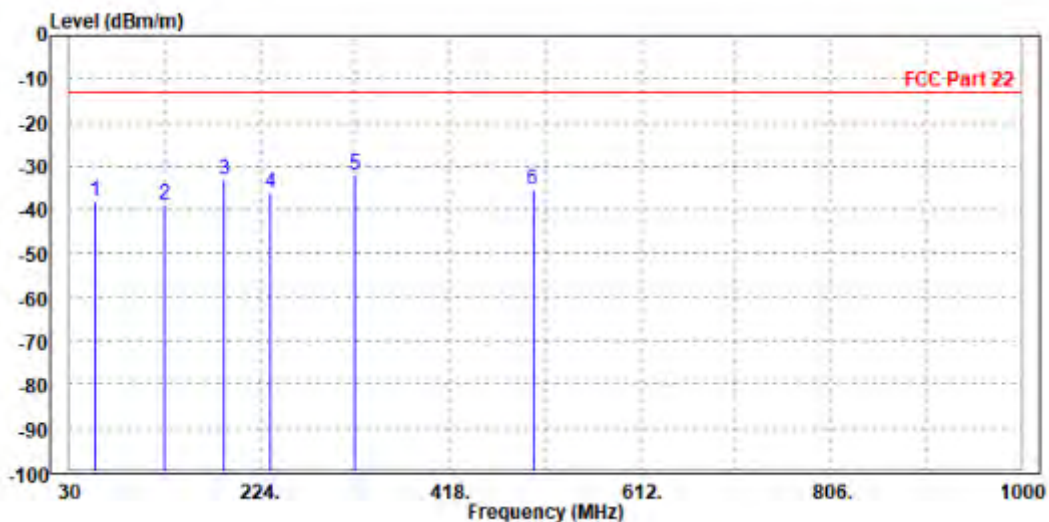
30 MHz – 1GHz data:

EDGE

CHANNEL BANDWIDTH: 128 ~ 251

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	56.190	-38.05	-46.03	-13.00	-25.05	7.98	Peak	Horizontal
2	127.000	-38.97	-46.52	-13.00	-25.97	7.55	Peak	Horizontal
3	188.110	-32.94	-43.46	-13.00	-19.94	10.52	Peak	Horizontal
4	234.670	-35.93	-48.46	-13.00	-22.93	12.53	Peak	Horizontal
5 PP	321.000	-31.98	-46.59	-13.00	-18.98	14.61	Peak	Horizontal
6	502.390	-35.51	-54.26	-13.00	-22.51	18.75	Peak	Horizontal



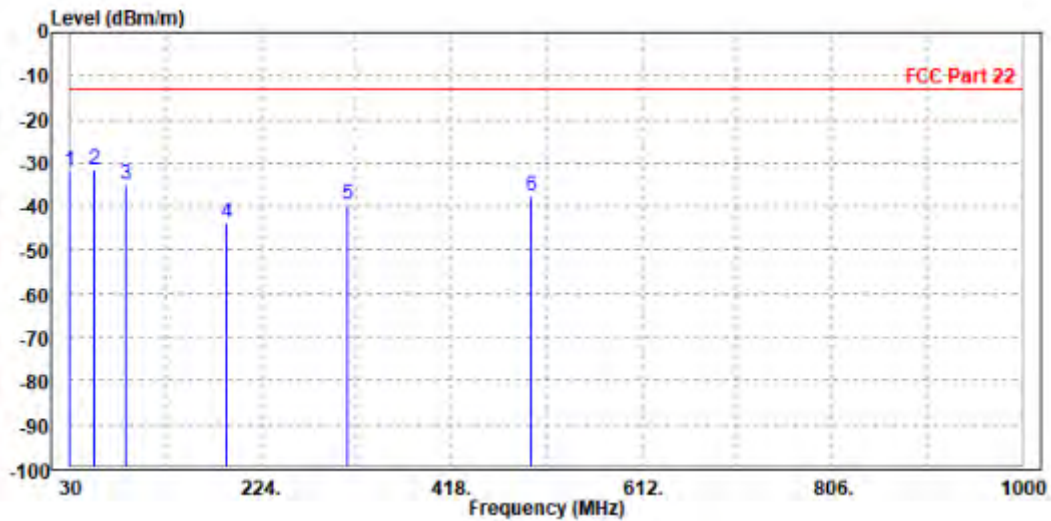


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	30.000	-31.84	-52.04	-13.00	-18.84	20.20	Peak	Vertical
2 PP	54.250	-31.71	-40.24	-13.00	-18.71	8.53	Peak	Vertical
3	87.230	-35.09	-43.53	-13.00	-22.09	8.44	Peak	Vertical
4	189.080	-43.64	-54.48	-13.00	-30.64	10.84	Peak	Vertical
5	313.240	-39.53	-54.82	-13.00	-26.53	15.29	Peak	Vertical
6	499.480	-37.48	-56.57	-13.00	-24.48	19.09	Peak	Vertical





**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

**ABOVE 1GHz DATA**

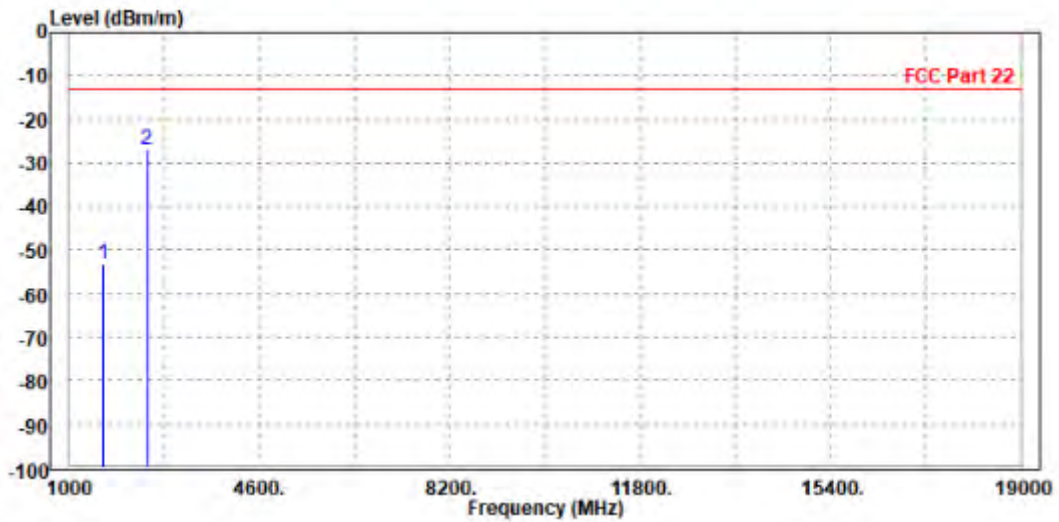
**Note:** For higher frequency, the emission is too low to be detected.

**GPRS850**

**CH 128:**

<b>MODE</b>	TX channel 128	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1648.000	-53.08	-56.33	-13.00	-40.08	3.25	Peak	Horizontal
2 PP	2472.600	-27.09	-35.11	-13.00	-14.09	8.02	Peak	Horizontal



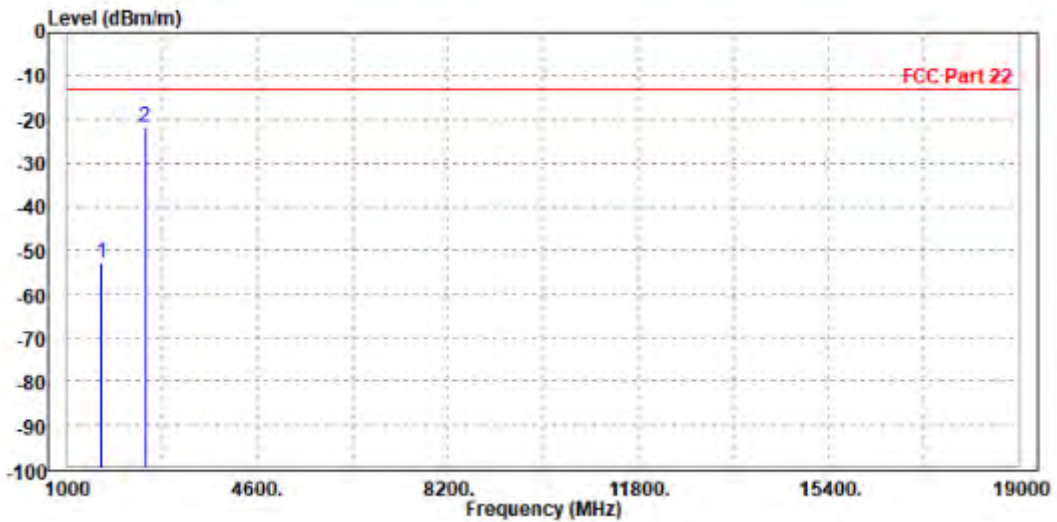


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 128	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.85	-56.23	-13.00	-39.85	3.38	Peak	Vertical
2 PP	2472.600	-21.74	-28.78	-13.00	-8.74	7.04	Peak	Vertical





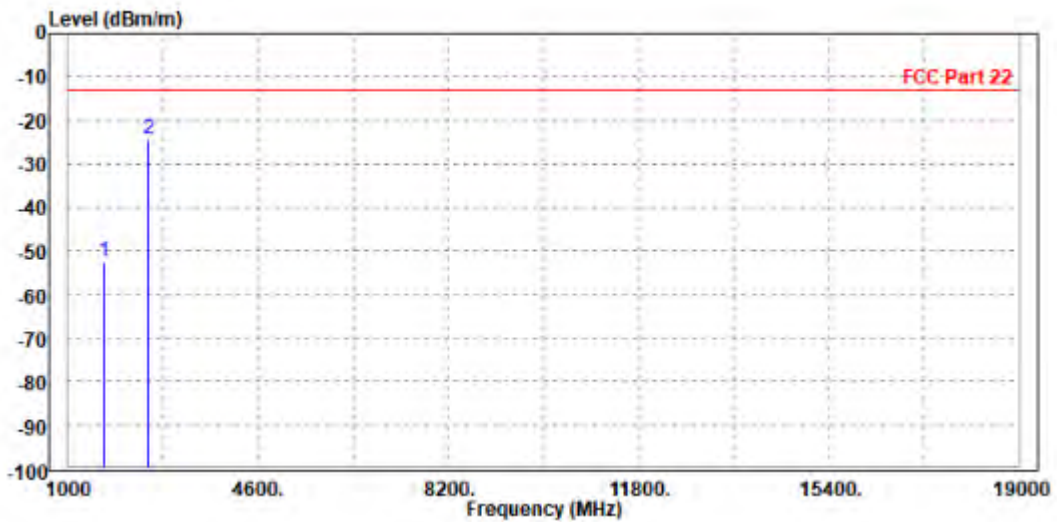
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

CH 190:

<b>MODE</b>	TX channel 190	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.64	-56.11	-13.00	-39.64	3.47	Peak	Horizontal
2 PP	2509.200	-24.15	-32.21	-13.00	-11.15	8.06	Peak	Horizontal





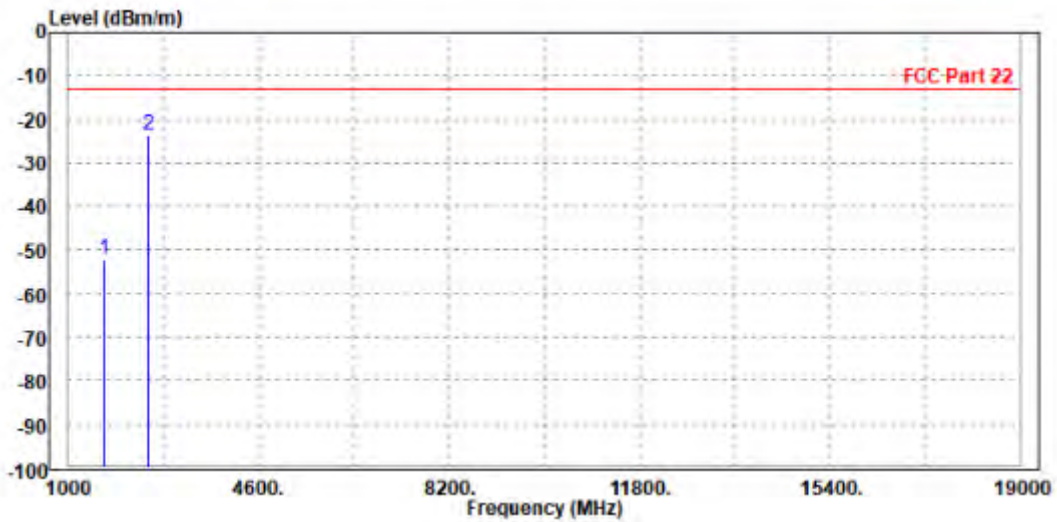


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 190	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.01	-55.55	-13.00	-39.01	3.54	Peak	Vertical
2 PP	2509.200	-23.61	-30.71	-13.00	-10.61	7.10	Peak	Vertical





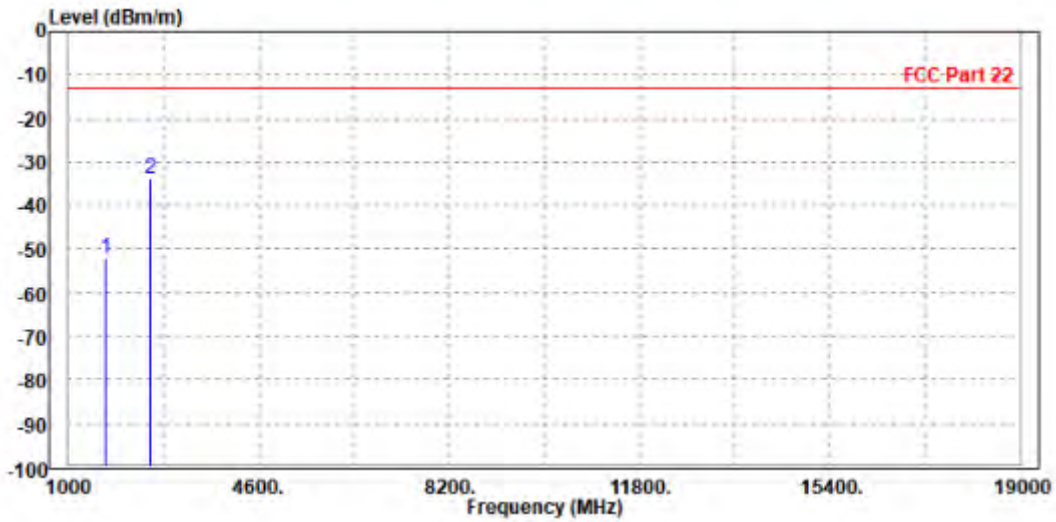
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

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>	EUT 4.0V
<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	-52.02	-55.93	-13.00	-39.02	3.91	Peak	Horizontal
2 PP	2546.400	-34.00	-42.11	-13.00	-21.00	8.11	Peak	Horizontal



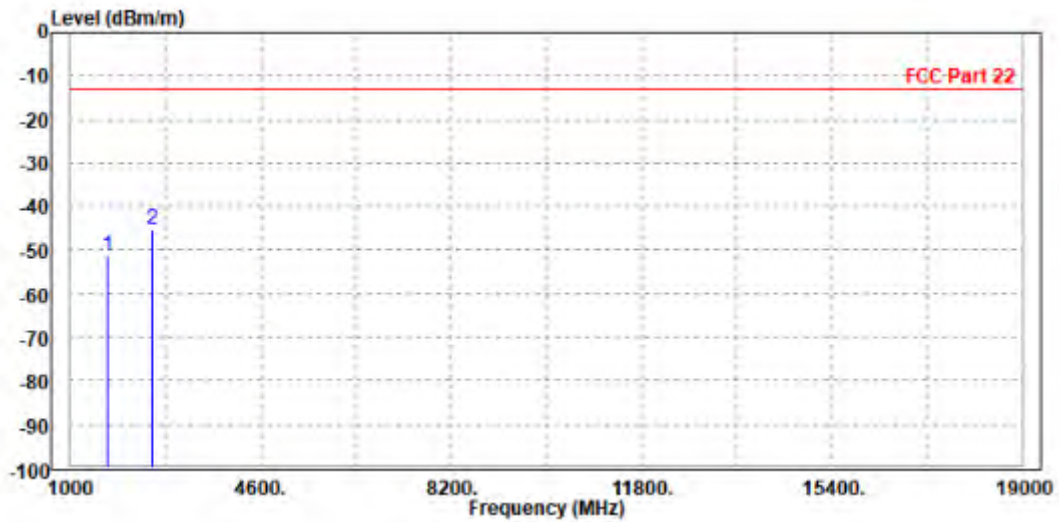


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1702.000	-51.43	-55.30	-13.00	-38.43	3.87	Peak	Vertical
2 PP	2546.400	-45.08	-52.30	-13.00	-32.08	7.22	Peak	Vertical





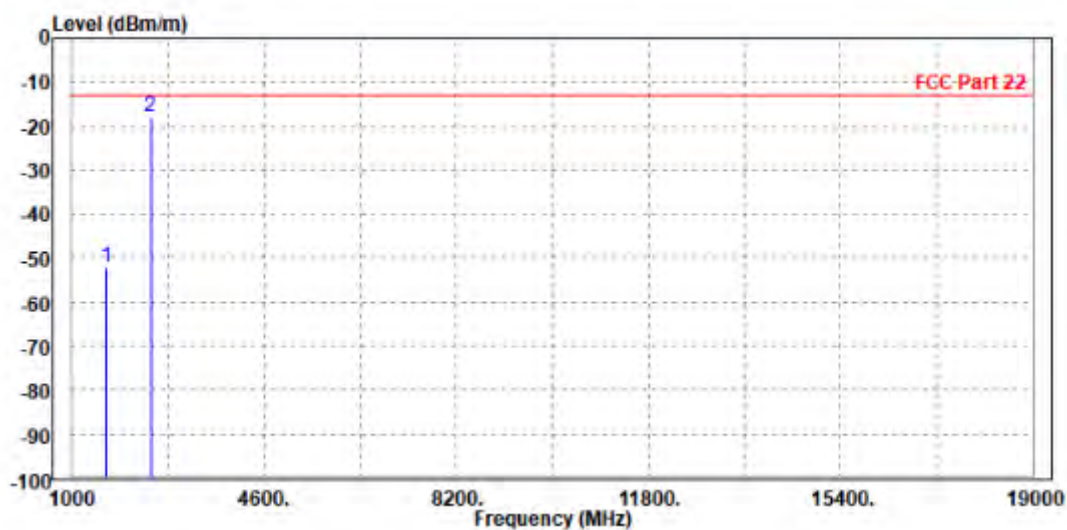
Test Report No.: W7L-211220W001RF01

EDGE 850:

CH 128:

<b>MODE</b>	TX channel 128	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1648.000	-51.90	-55.15	-13.00	-38.90	3.25	Peak	Horizontal
2 PP	2472.000	-17.85	-25.87	-13.00	-4.85	8.02	Peak	Horizontal



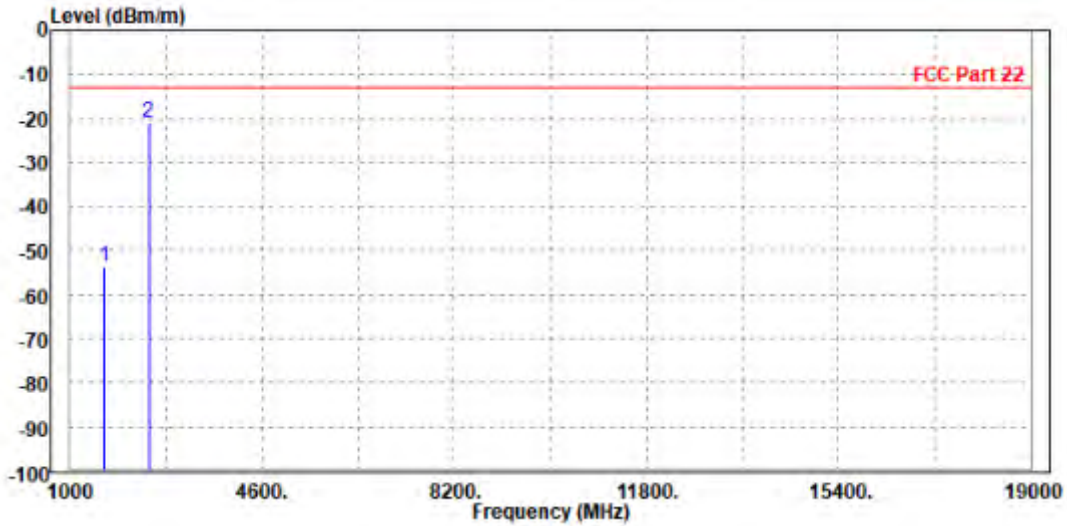


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 128	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-53.54	-56.92	-13.00	-40.54	3.38	Peak	Vertical
2 PP	2472.000	-20.74	-27.78	-13.00	-7.74	7.04	Peak	Vertical





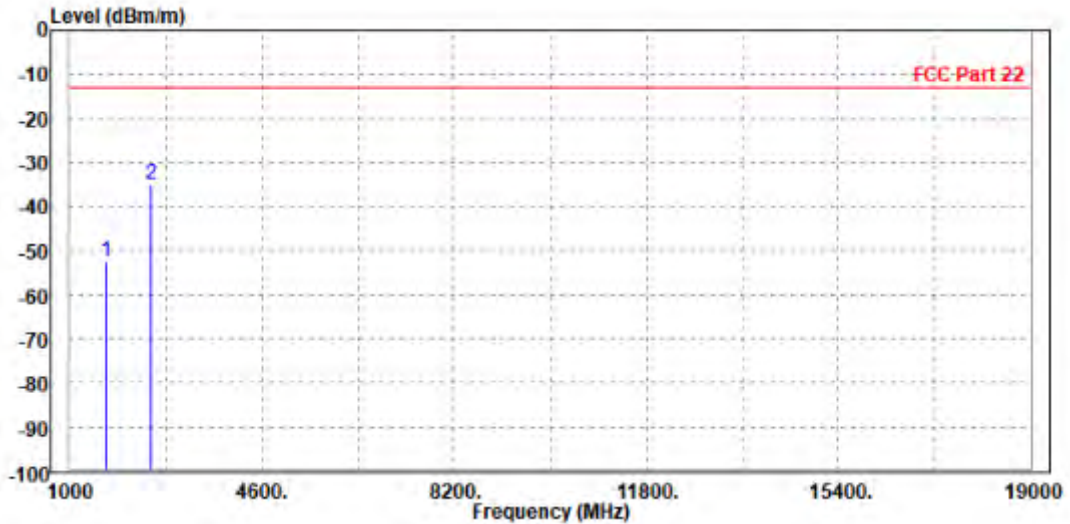
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

**CH 190:**

<b>MODE</b>	TX channel 190	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.31	-55.78	-13.00	-39.31	3.47	Peak	Horizontal
2	PP 2512.000	-34.95	-43.01	-13.00	-21.95	8.06	Peak	Horizontal



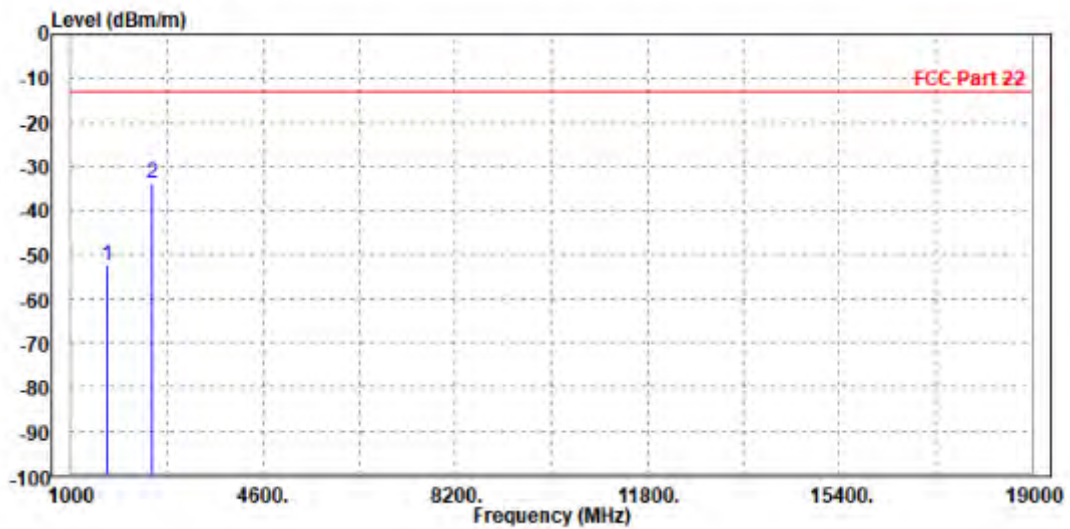


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 190	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.33	-55.87	-13.00	-39.33	3.54	Peak	Vertical
2 PP	2512.000	-33.88	-40.99	-13.00	-20.88	7.11	Peak	Vertical





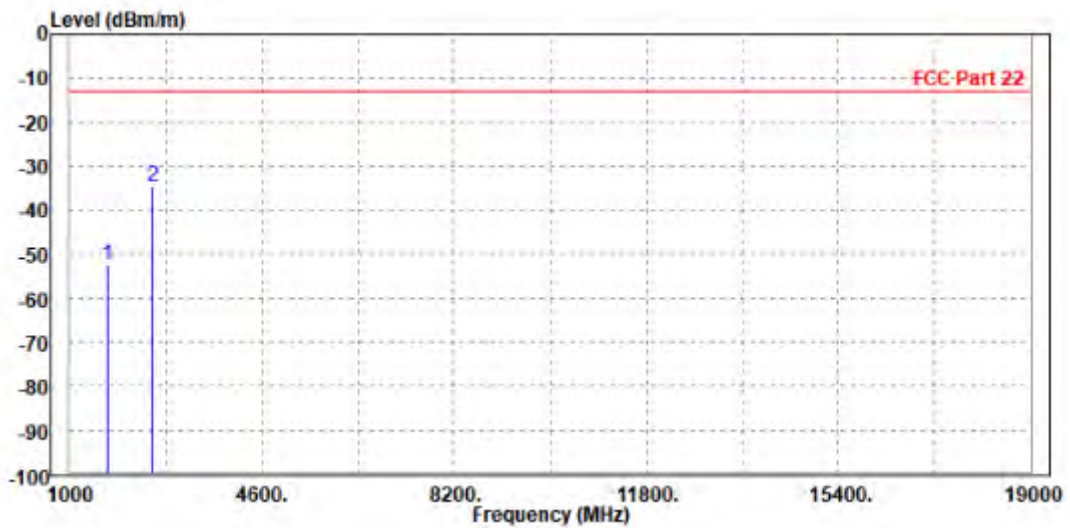
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

**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>	EUT 4.0V
<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	-52.37	-56.28	-13.00	-39.37	3.91	Peak	Horizontal
2 PP	2548.000	-34.64	-42.75	-13.00	-21.64	8.11	Peak	Horizontal





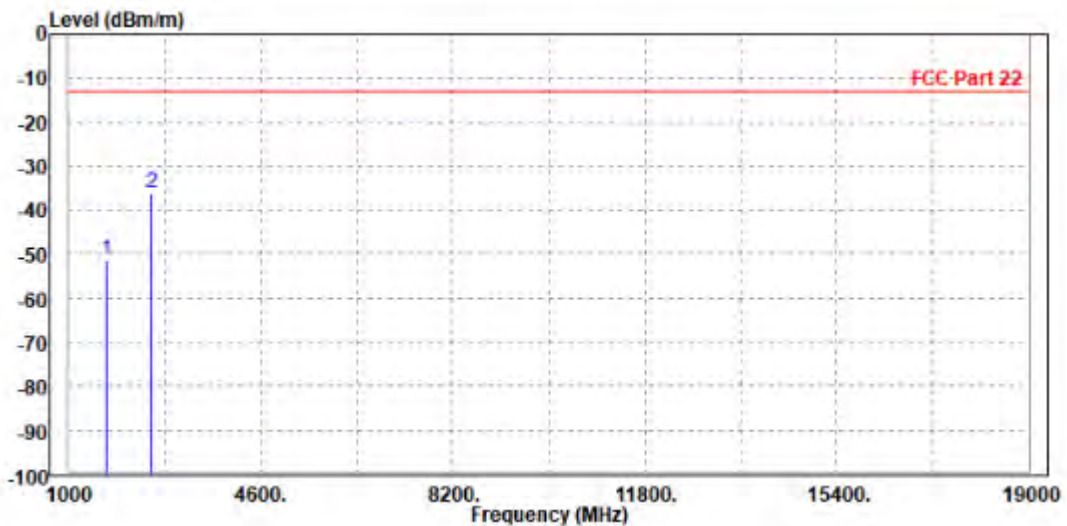


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 251	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1702.000	-51.50	-55.37	-13.00	-38.50	3.87	Peak	Vertical
2	2548.000	-36.04	-43.26	-13.00	-23.04	7.22	Peak	Vertical





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VERITAS**

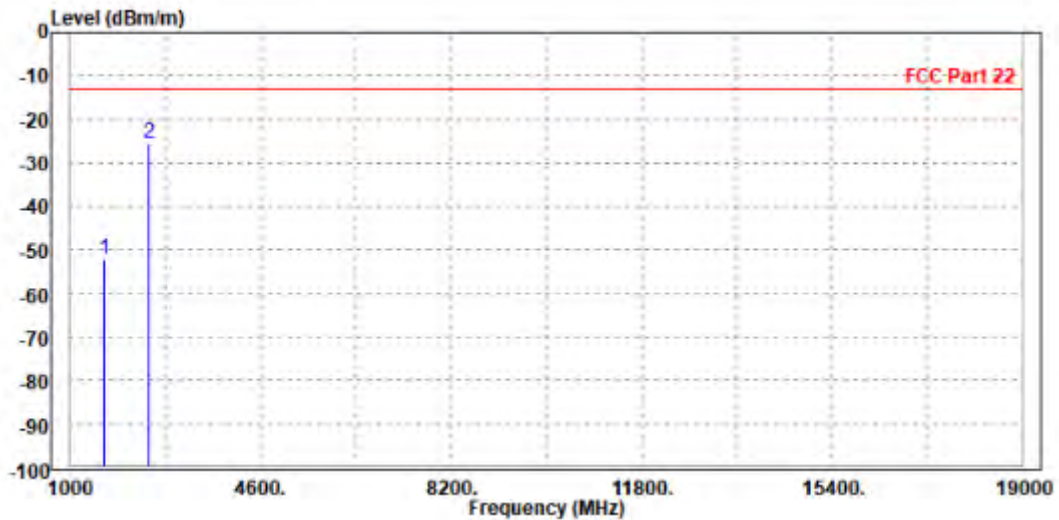
Test Report No.: W7L-211220W001RF01

WCDMA Band V:

CH 4132:

<b>MODE</b>	TX channel 4132	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1648.000	-52.17	-55.42	-13.00	-39.17	3.25	Peak	Horizontal
2 PP	2479.200	-25.40	-33.43	-13.00	-12.40	8.03	Peak	Horizontal



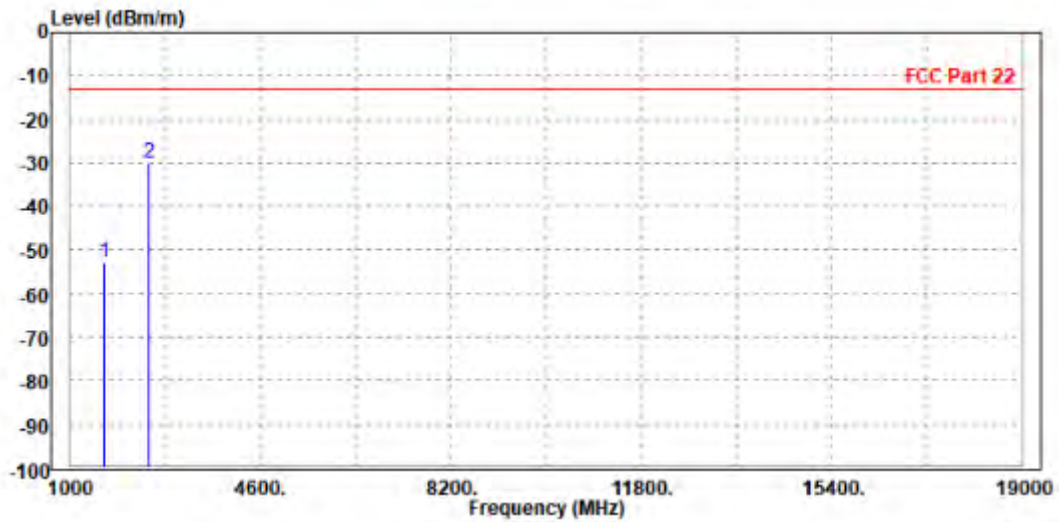


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 4132	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1652.800	-52.95	-56.38	-13.00	-39.95	3.43	Peak	Vertical
2 PP	2479.200	-29.99	-37.04	-13.00	-16.99	7.05	Peak	Vertical

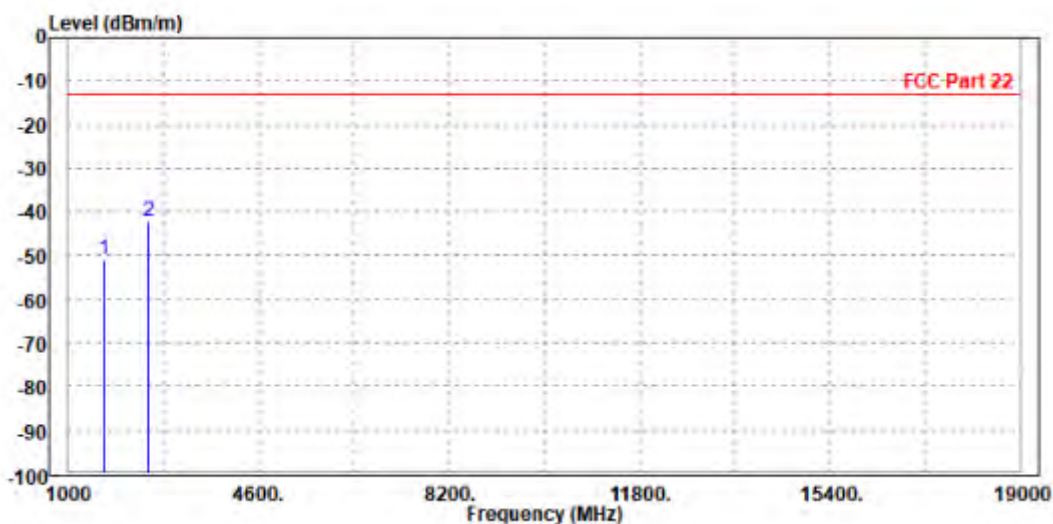




CH 4182:

<b>MODE</b>	TX channel 4182	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-50.87	-54.34	-13.00	-37.87	3.47	Peak	Horizontal
2 PP	2509.200	-42.07	-50.13	-13.00	-29.07	8.06	Peak	Horizontal



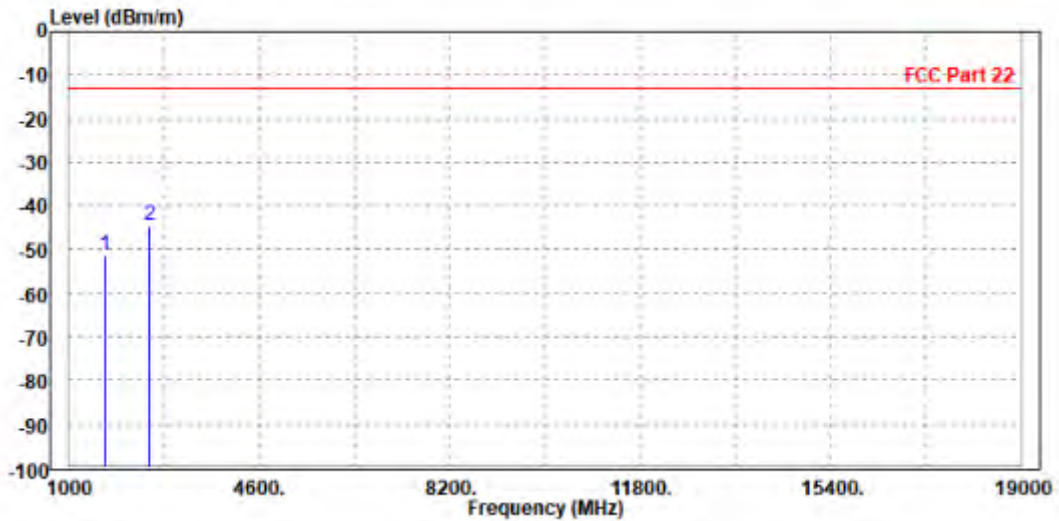


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 4182	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-51.48	-55.02	-13.00	-38.48	3.54	Peak	Vertical
2 PP	2509.200	-44.63	-51.73	-13.00	-31.63	7.10	Peak	Vertical



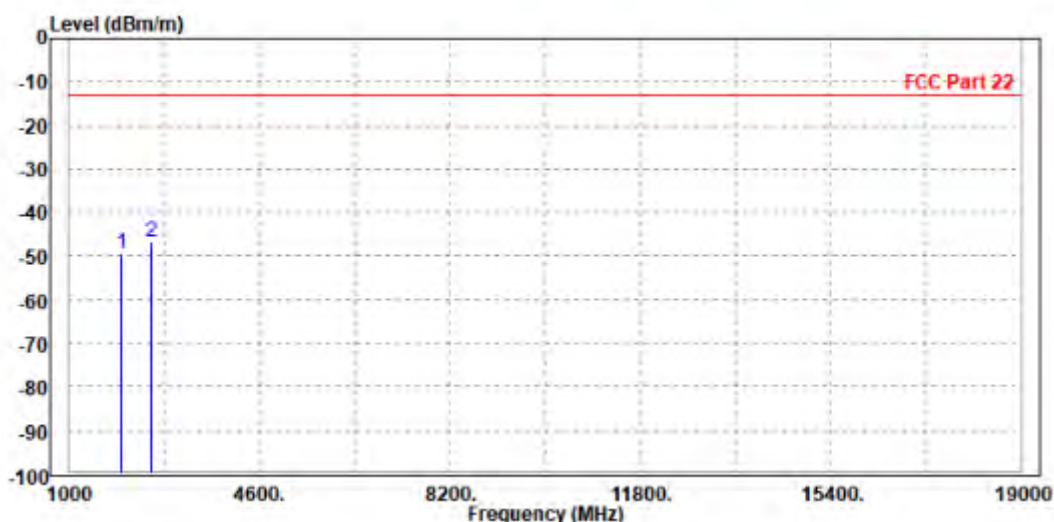


Test Report No.: W7L-211220W001RF01

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>	EUT 4.0V
<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	PoI/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1972.000	-49.53	-56.74	-13.00	-36.53	7.21	Peak	Horizontal
2 PP	2539.800	-46.92	-55.02	-13.00	-33.92	8.10	Peak	Horizontal



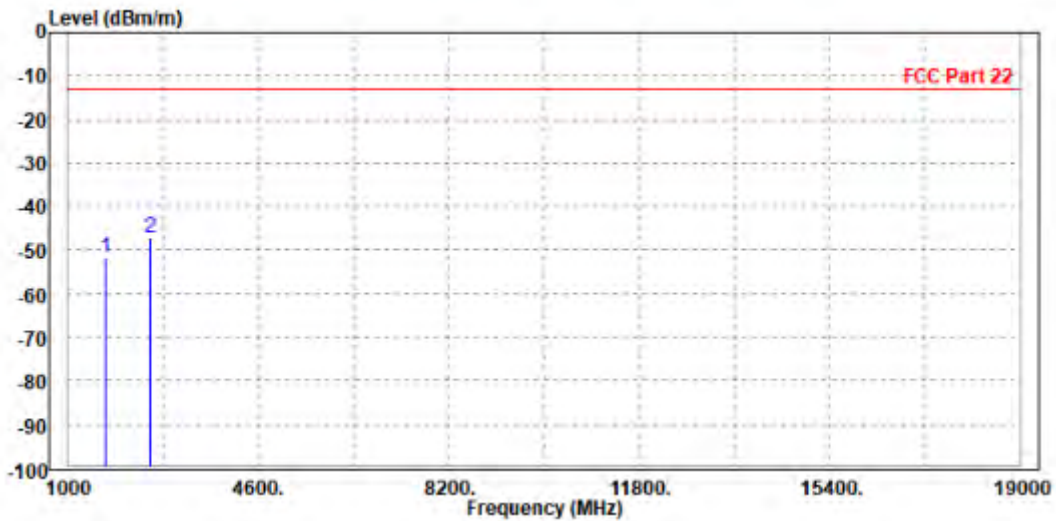


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 4233	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-51.77	-55.56	-13.00	-38.77	3.79	Peak	Vertical
2 PP	2539.800	-47.13	-54.33	-13.00	-34.13	7.20	Peak	Vertical





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VERITAS**

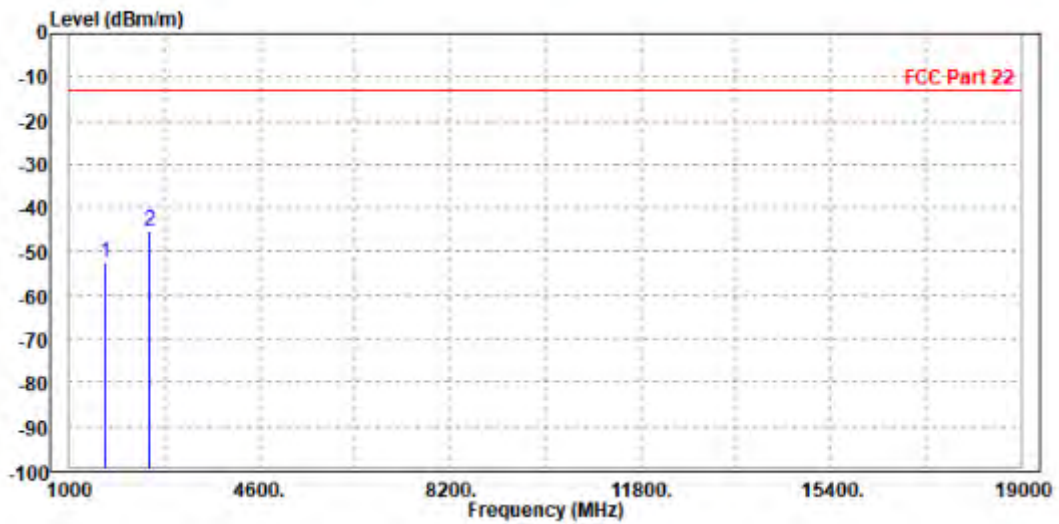
Test Report No.: W7L-211220W001RF01

LTE Band 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.60	-56.07	-13.00	-39.60	3.47	Peak	Horizontal
2 PP	2509.500	-45.14	-53.20	-13.00	-32.14	8.06	Peak	Horizontal





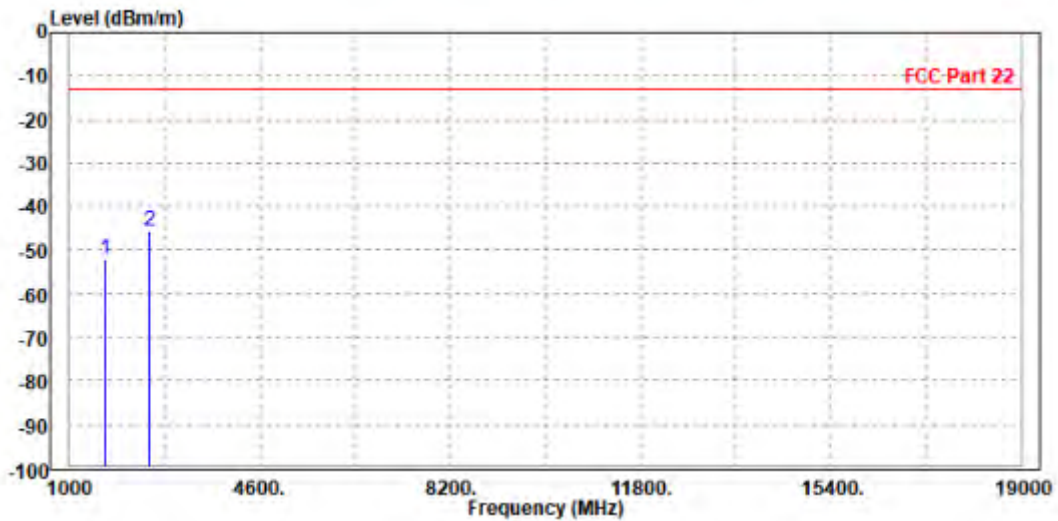


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.06	-55.60	-13.00	-39.06	3.54	Peak	Vertical
2 PP	2509.500	-45.47	-52.57	-13.00	-32.47	7.10	Peak	Vertical





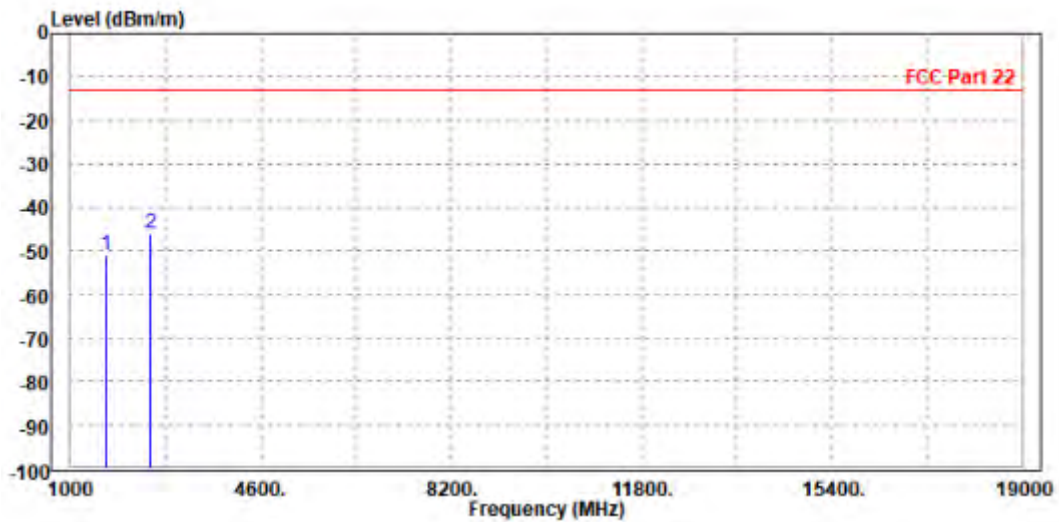
BUREAU VERITAS

Test Report No.: W7L-211220W001RF01

CHANNEL BANDWIDTH: 3MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
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	-51.12	-54.59	-13.00	-38.12	3.47	Peak	Horizontal
2 PP	2509.500	-45.97	-54.03	-13.00	-32.97	8.06	Peak	Horizontal



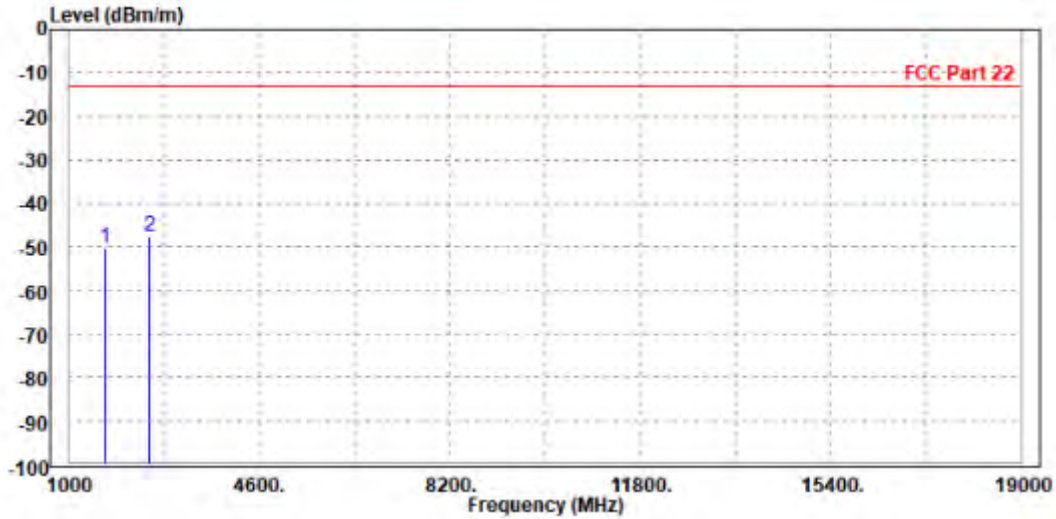


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-50.33	-53.87	-13.00	-37.33	3.54	Peak	Vertical
2	PP 2509.500	-47.63	-54.73	-13.00	-34.63	7.10	Peak	Vertical





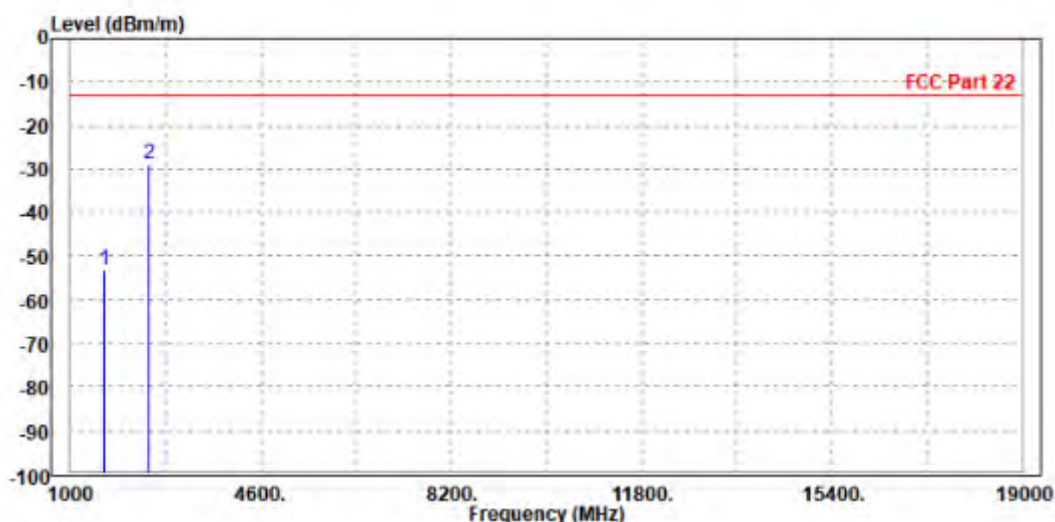
Test Report No.: W7L-211220W001RF01

CHANNEL BANDWIDTH: 5MHz / QPSK

CH20425:

<b>MODE</b>	TX channel 20425	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1648.000	-53.33	-56.58	-13.00	-40.33	3.25	Peak	Horizontal
2 PP	2479.500	-29.02	-37.05	-13.00	-16.02	8.03	Peak	Horizontal



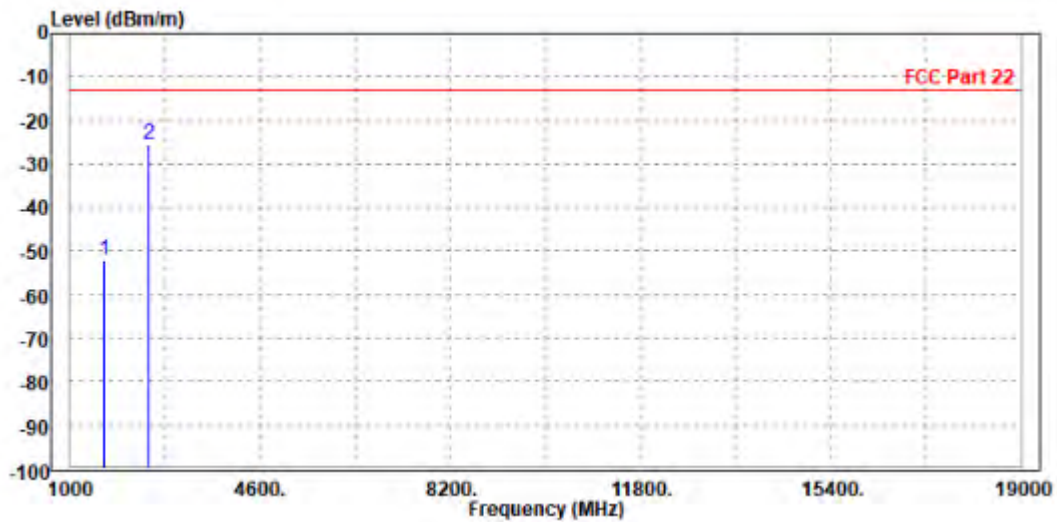


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 20425	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-51.98	-55.36	-13.00	-38.98	3.38	Peak	Vertical
2 PP	2479.500	-25.62	-32.67	-13.00	-12.62	7.05	Peak	Vertical





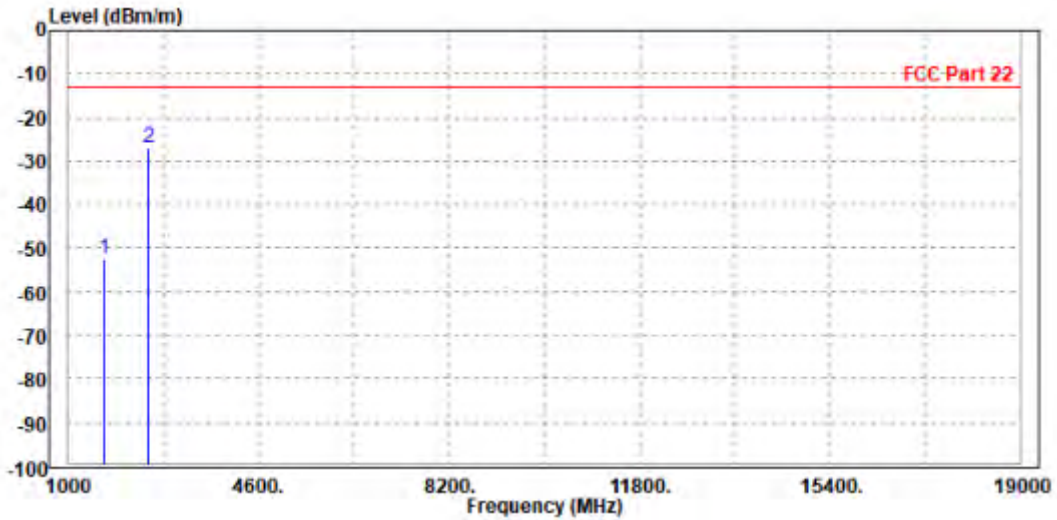
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

CH20525:

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.51	-55.98	-13.00	-39.51	3.47	Peak	Horizontal
2 PP	2509.500	-26.82	-34.88	-13.00	-13.82	8.06	Peak	Horizontal



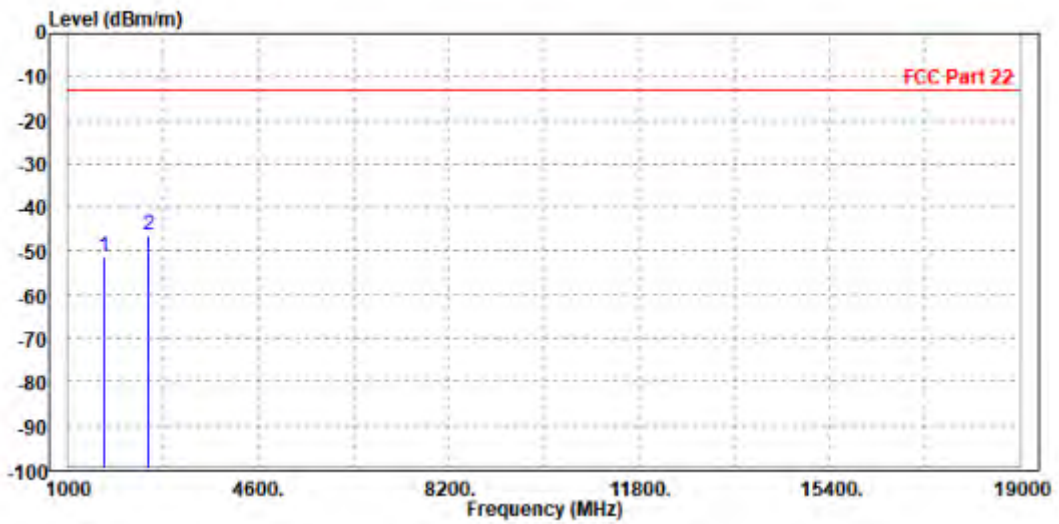


**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-51.46	-55.00	-13.00	-38.46	3.54	Peak	Vertical
2 PP	2509.500	-46.21	-53.31	-13.00	-33.21	7.10	Peak	Vertical





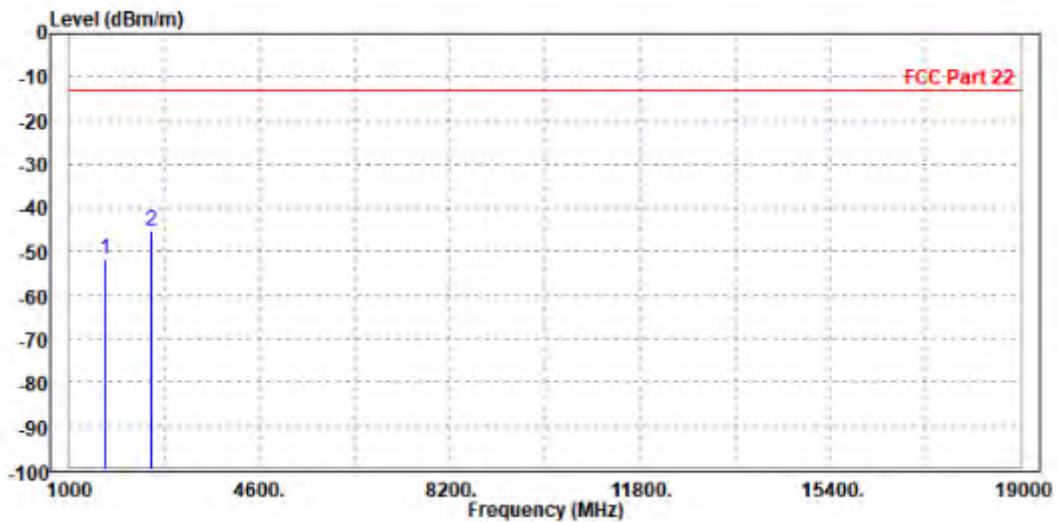
**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

**CH20625:**

<b>MODE</b>	TX channel 20625	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	1684.000	-51.63	-55.32	-13.00	-38.63	3.69	Peak	Horizontal
2 PP	2539.500	-45.21	-53.31	-13.00	-32.21	8.10	Peak	Horizontal





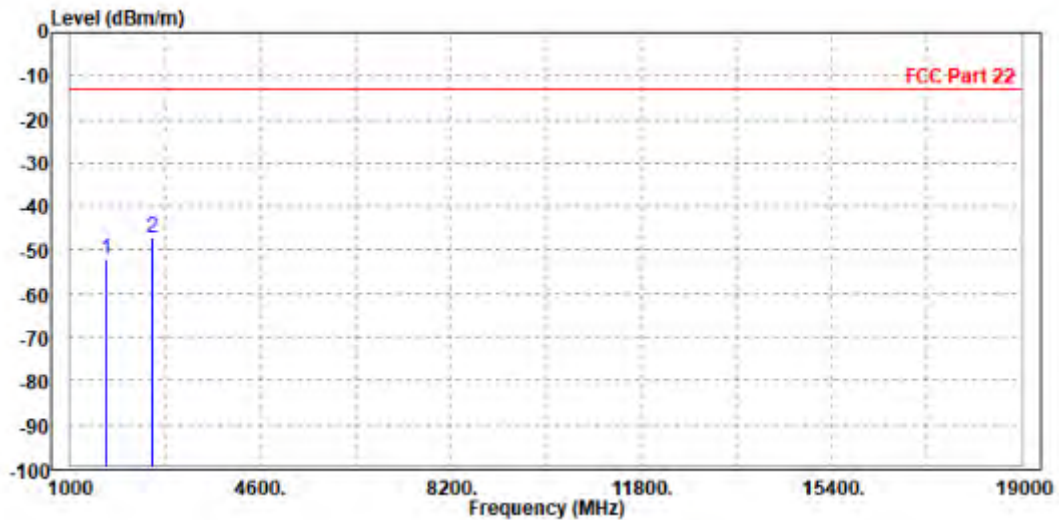


**BUREAU  
VERITAS**

Test Report No.: W7L-211220W001RF01

<b>MODE</b>	TX channel 20625	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.12	-55.83	-13.00	-39.12	3.71	Peak	Vertical
2 PP	2539.500	-47.03	-54.23	-13.00	-34.03	7.20	Peak	Vertical





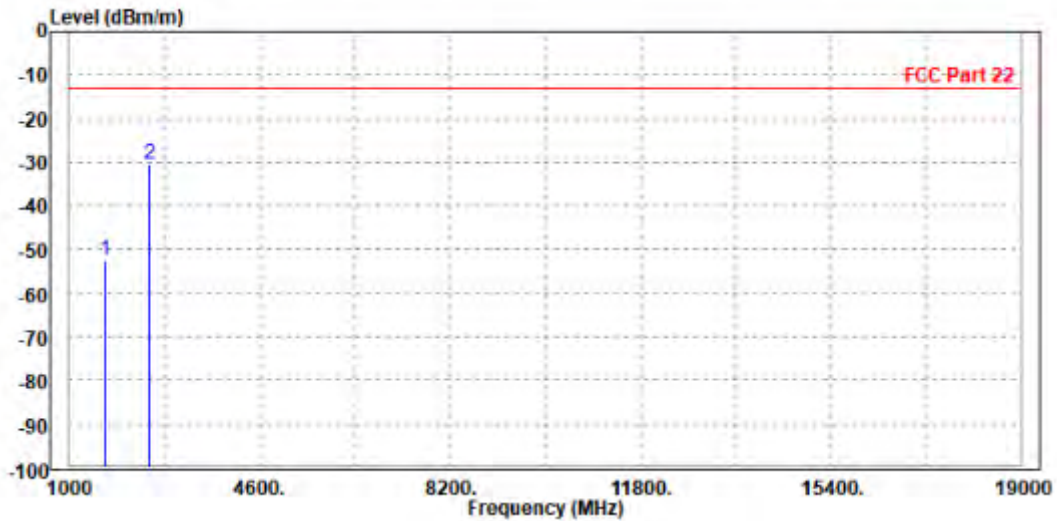
**BUREAU  
VERITAS**

**Test Report No.: W7L-211220W001RF01**

**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.33	-55.80	-13.00	-39.33	3.47	Peak	Horizontal
2	PP 2509.500	-30.26	-38.32	-13.00	-17.26	8.06	Peak	Horizontal



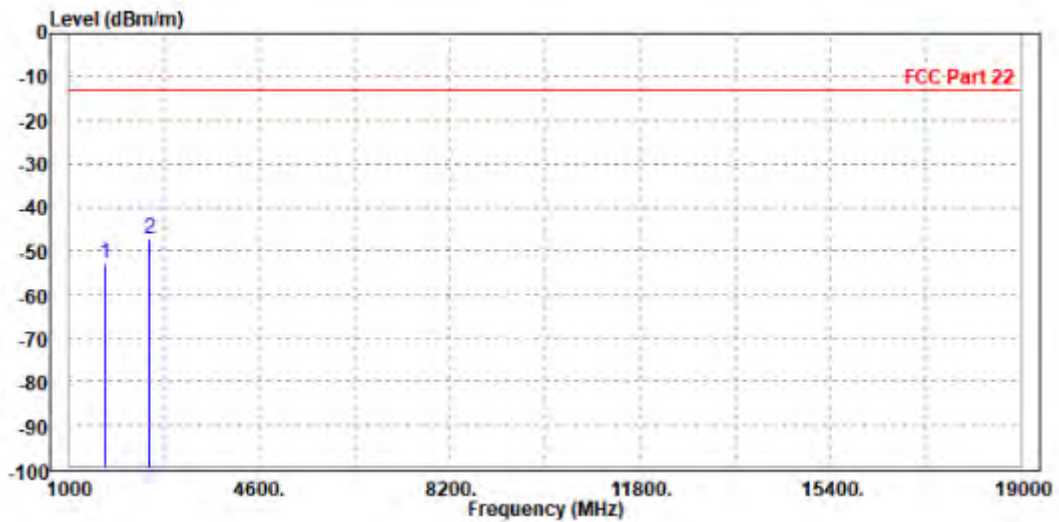


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VERITAS**

**Test Report No.: W7L-211220W001RF01**

<b>MODE</b>	TX channel 20525	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70%RH	<b>INPUT POWER</b>	EUT 4.0V
<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	-52.81	-56.35	-13.00	-39.81	3.54	Peak	Vertical
2 PP	2509.500	-47.28	-54.38	-13.00	-34.28	7.10	Peak	Vertical

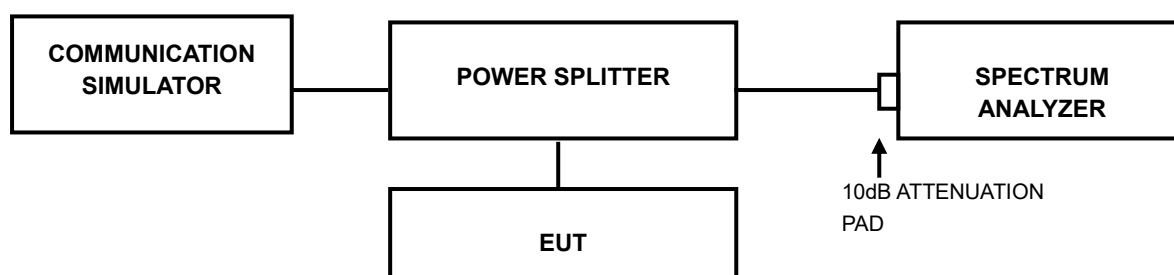


### 3.7 PEAK TO AVERAGE RATIO

#### 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%.

#### 3.7.4 TEST RESULTS

Please Refer to Appendix A Of this test report.



Test Report No.: W7L-211220W001RF01

## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 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-211220W001RF01

## **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.



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Test Report No.: W7L-211220W001RF01

## 7 APPENDIX A:

### GSM850

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

##### Test Result

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	128	2.65	13	PASS
GSM850	190	2.64	13	PASS
GSM850	251	2.67	13	PASS
EGPRS850	128	5.58	13	PASS
EGPRS850	190	5.6	13	PASS
EGPRS850	251	5.66	13	PASS

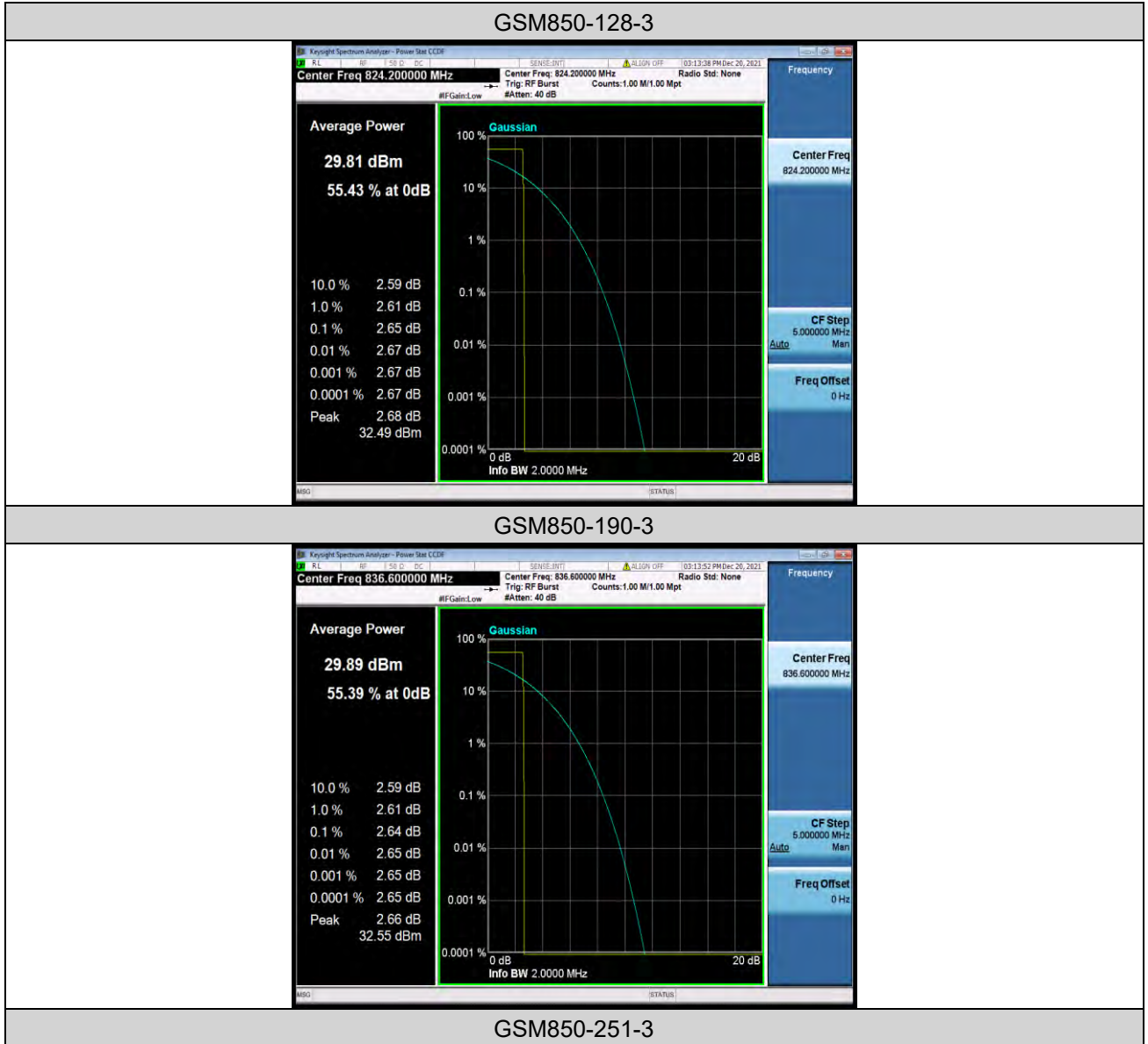




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Test Report No.: W7L-211220W001RF01

## Test Graphs



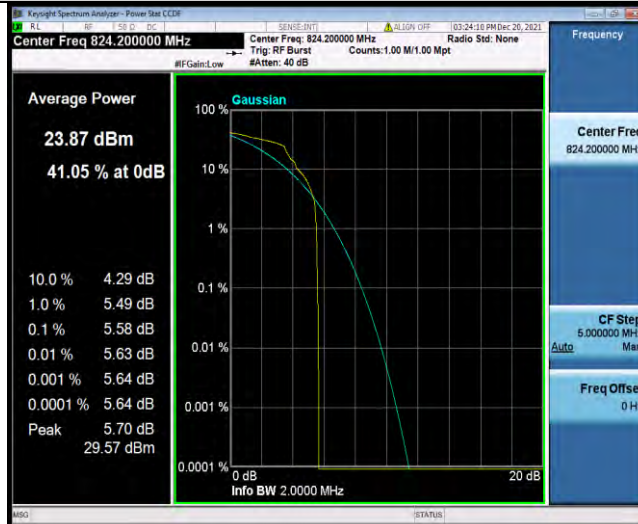


BUREAU VERITAS

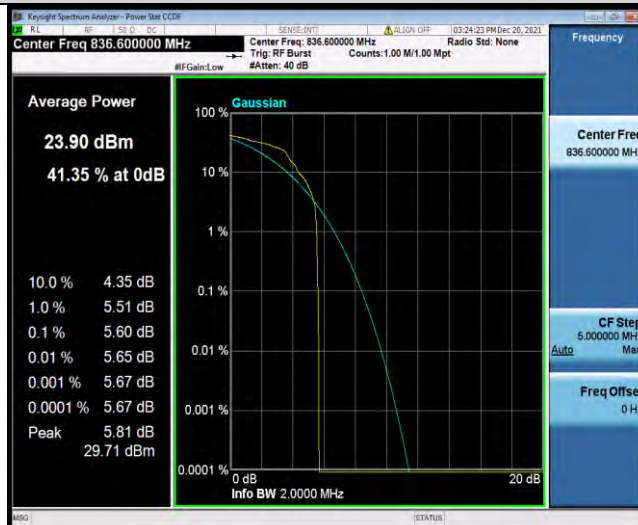
Test Report No.: W7L-211220W001RF01



EGPRS850-128-8



EGPRS850-190-8

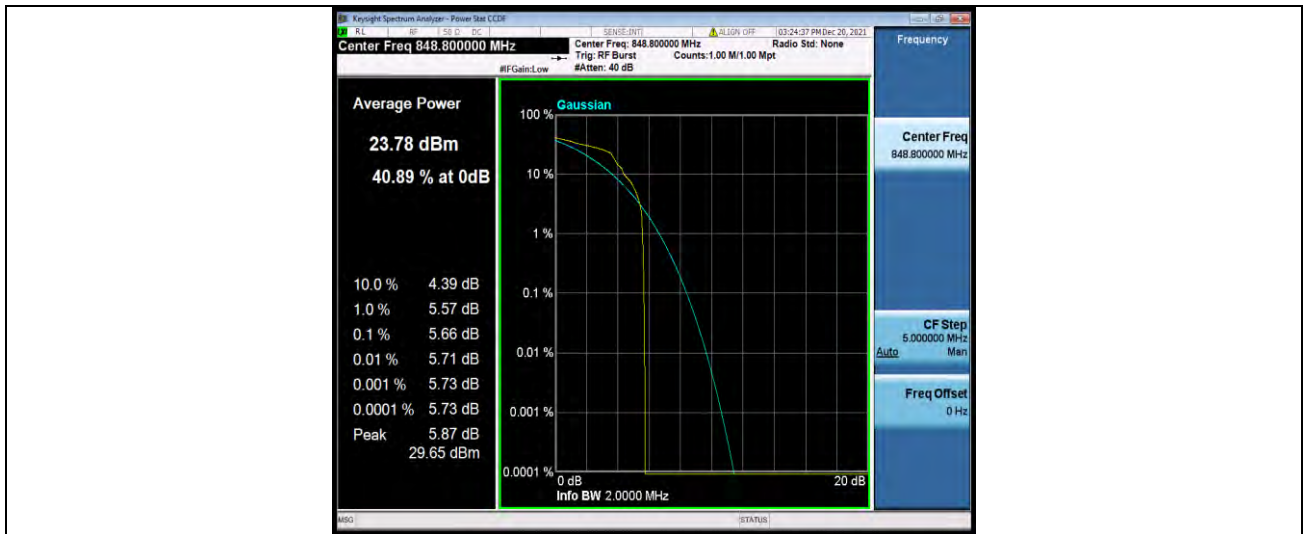


EGPRS850-251-8



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Test Report No.: W7L-211220W001RF01

## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

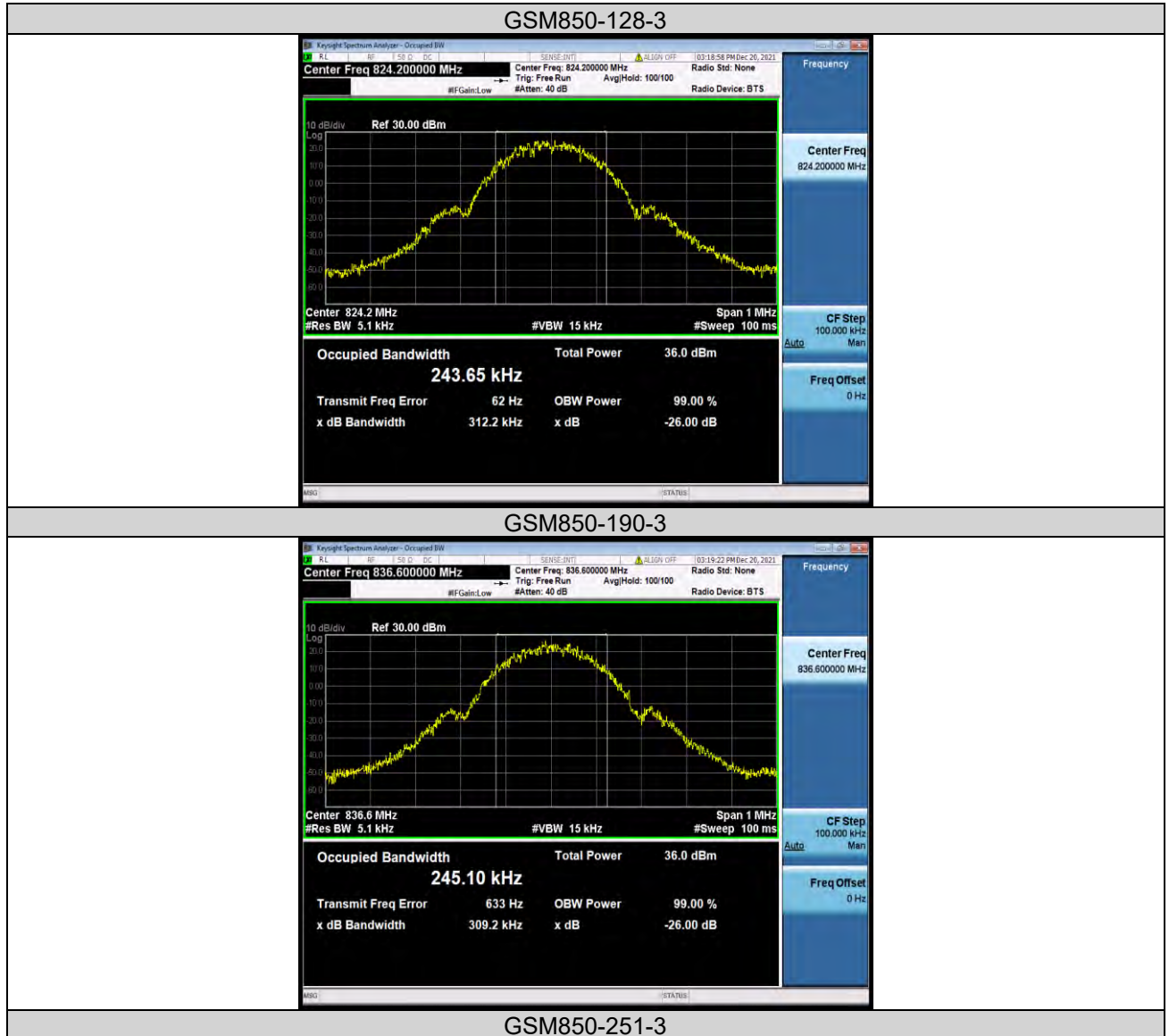
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM850	128	0.24365	0.3122	---	PASS
GSM850	190	0.24510	0.3092	---	PASS
GSM850	251	0.24202	0.3102	---	PASS
EGPRS850	128	0.23900	0.3009	---	PASS
EGPRS850	190	0.24212	0.3031	---	PASS
EGPRS850	251	0.24163	0.3056	---	PASS



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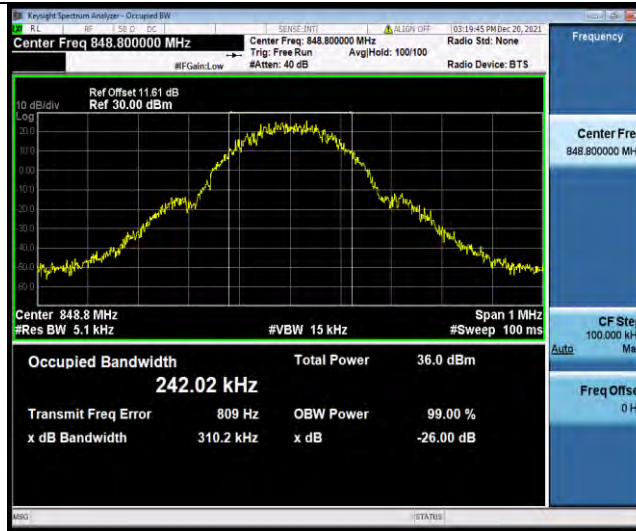
## Test Graphs



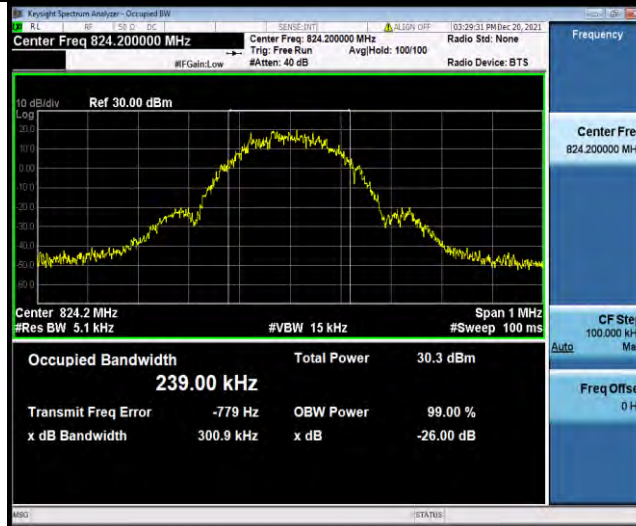


BUREAU VERITAS

Test Report No.: W7L-211220W001RF01



EGPRS850-128-8



EGPRS850-190-8



EGPRS850-251-8



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Test Report No.: W7L-211220W001RF01





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VERITAS**

Test Report No.: W7L-211220W001RF01

## BAND EDGE

### Test Result

Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM850	128	823.98	-27.66	-13	PASS
GSM850	251	849.02	-28.53	-13	PASS
EGPRS850	128	823.98	-18.90	-13	PASS
EGPRS850	251	849.04	-23.63	-13	PASS

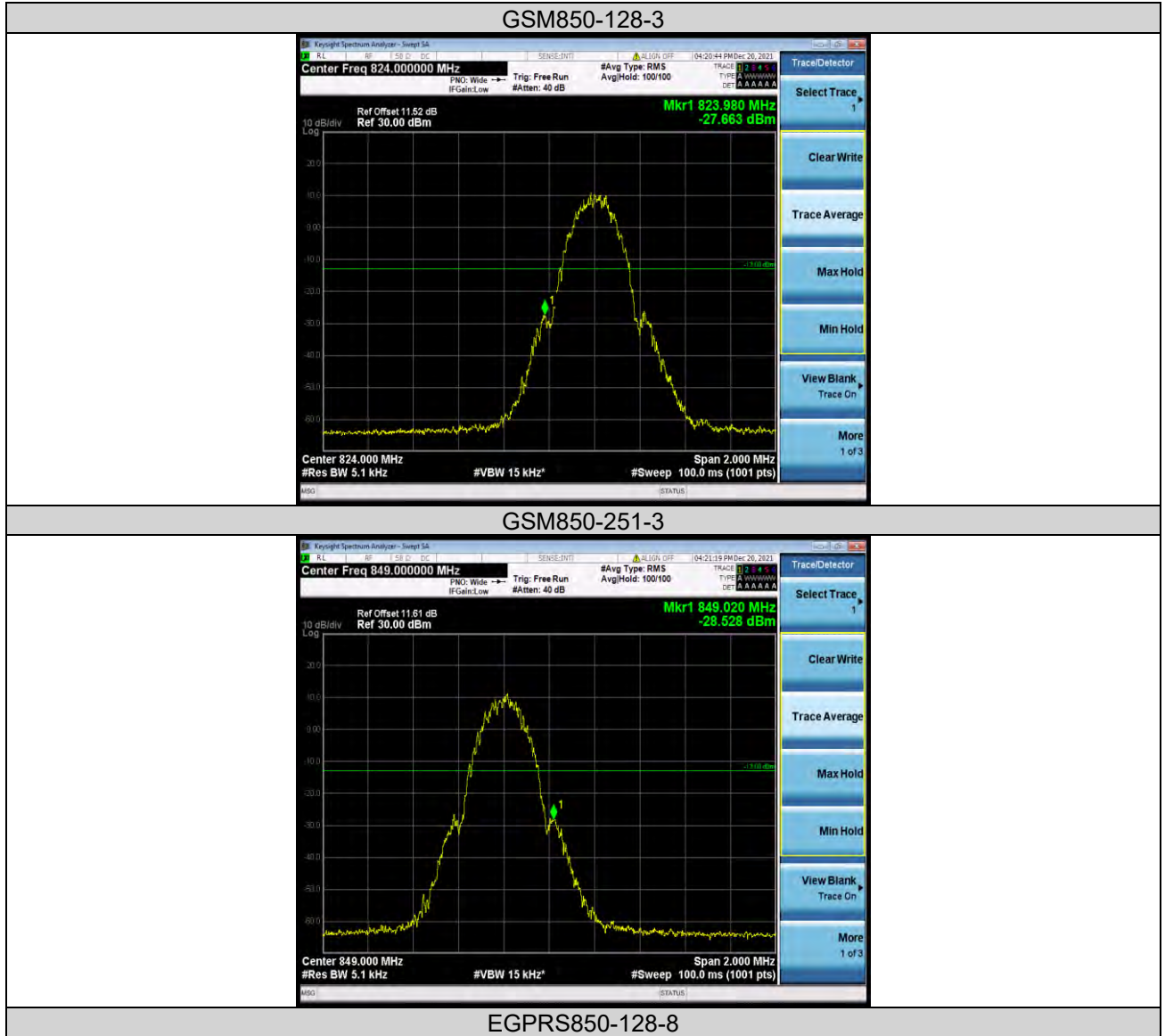




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VERITAS

Test Report No.: W7L-211220W001RF01

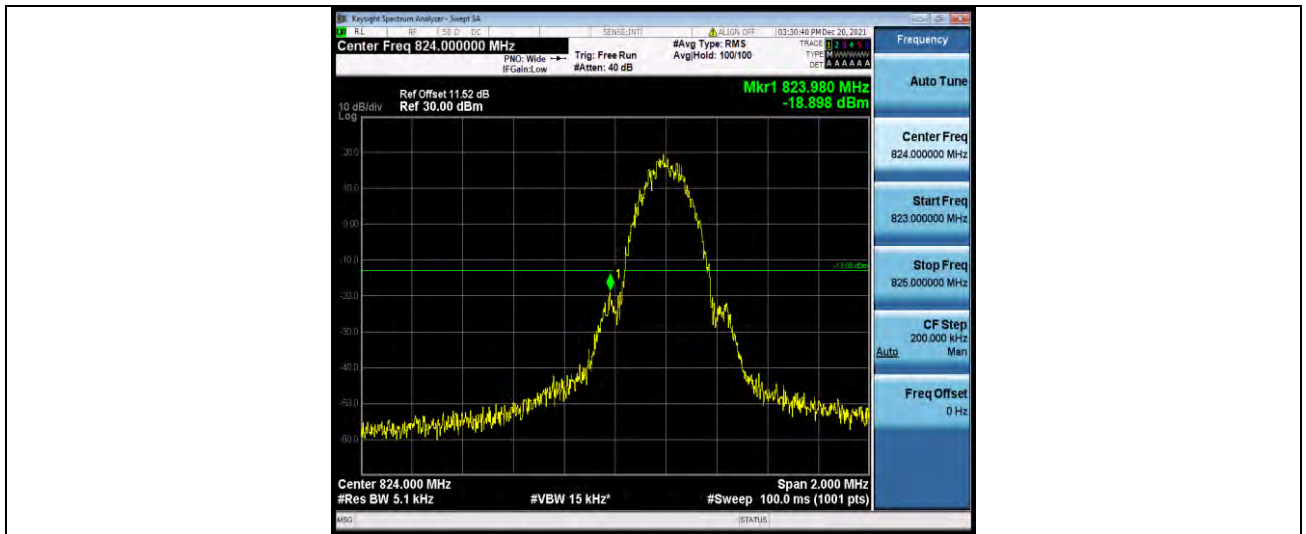
## Test Graphs



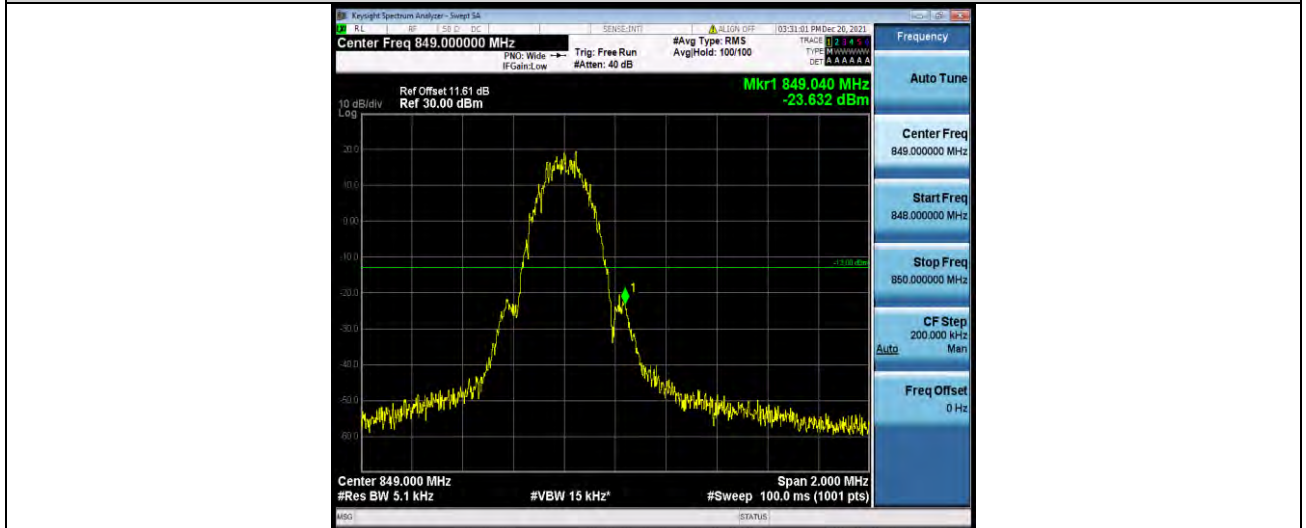


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Test Report No.: W7L-211220W001RF01



EGPRS850-251-8





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## CONDUCTED SPURIOUS EMISSION

### Test Result

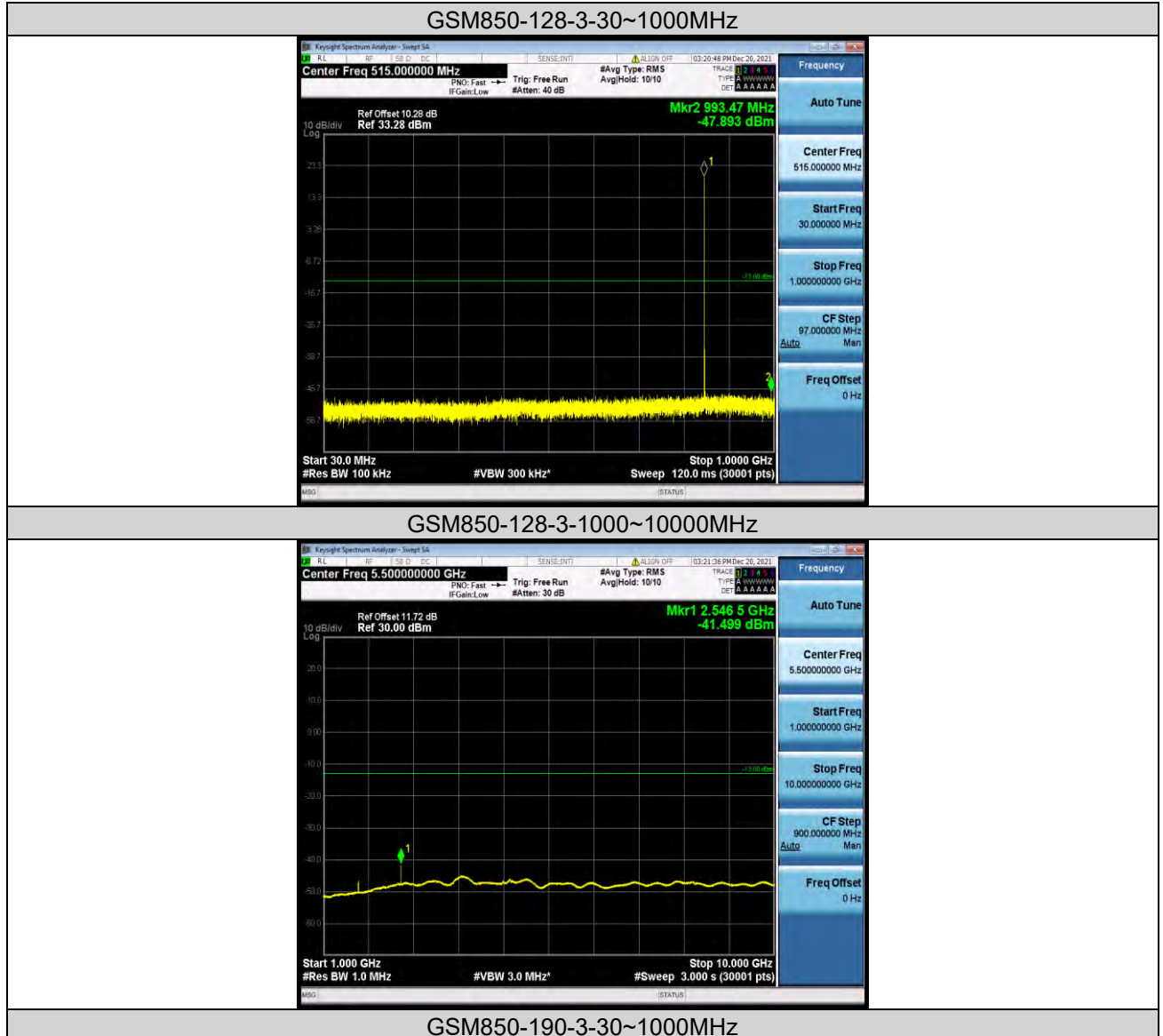
Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM850	128	30~1000MHz	993.47	-47.89	-13	PASS
GSM850	128	1000~10000MHz	2546.5	-41.5	-13	PASS
GSM850	190	30~1000MHz	957.13	-48.48	-13	PASS
GSM850	190	1000~10000MHz	2546.8	-42.28	-13	PASS
GSM850	251	30~1000MHz	963.79	-58.44	-13	PASS
GSM850	251	1000~10000MHz	2546.8	-41.21	-13	PASS
EGPRS850	128	30~1000MHz	950.95	-47.74	-13	PASS
EGPRS850	128	1000~10000MHz	3790.6	-45	-13	PASS
EGPRS850	190	30~1000MHz	703.6	-48.05	-13	PASS
EGPRS850	190	1000~10000MHz	3820.9	-44.93	-13	PASS
EGPRS850	251	30~1000MHz	994.96	-48.17	-13	PASS
EGPRS850	251	1000~10000MHz	3795.1	-44.98	-13	PASS



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Test Report No.: W7L-211220W001RF01

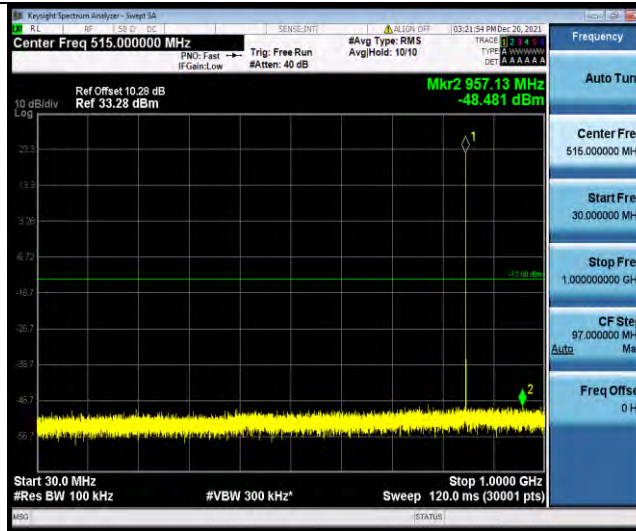
## Test Graphs





BUREAU VERITAS

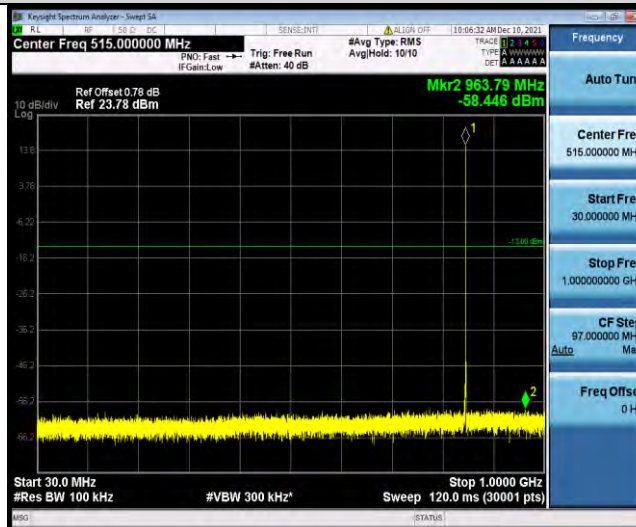
Test Report No.: W7L-211220W001RF01



GSM850-190-3-1000~10000MHz



GSM850-251-3-30~1000MHz

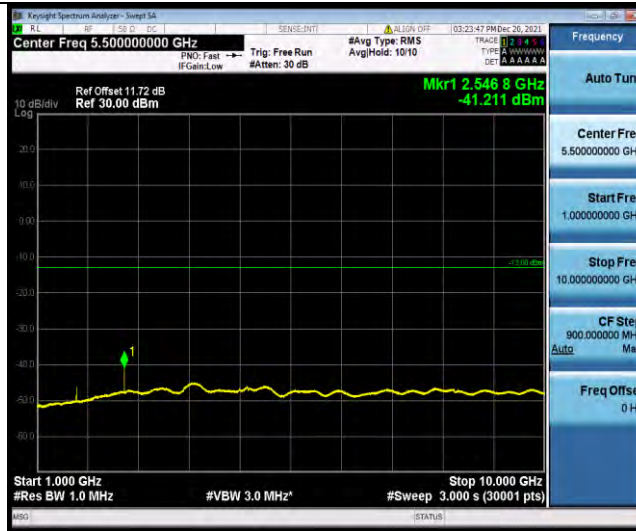


GSM850-251-3-1000~10000MHz

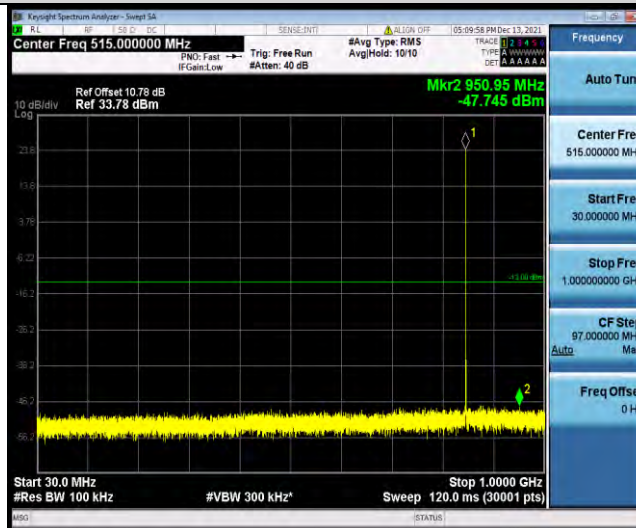


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Test Report No.: W7L-211220W001RF01



EGPRS850-128-8-30~1000MHz



EGPRS850-128-8-1000~10000MHz

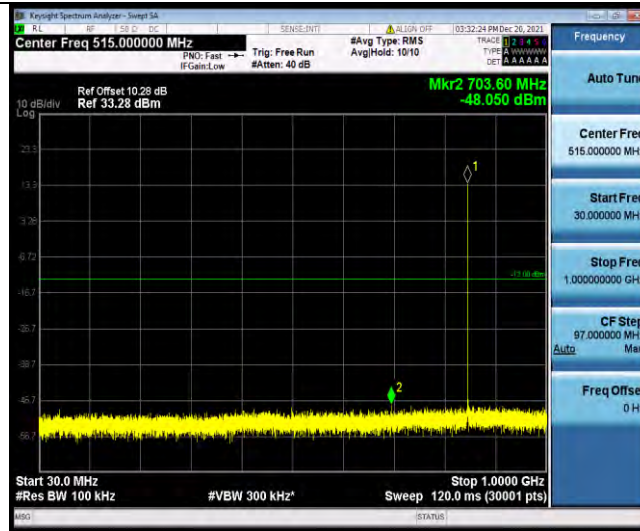


EGPRS850-190-8-30~10000MHz



BUREAU VERITAS

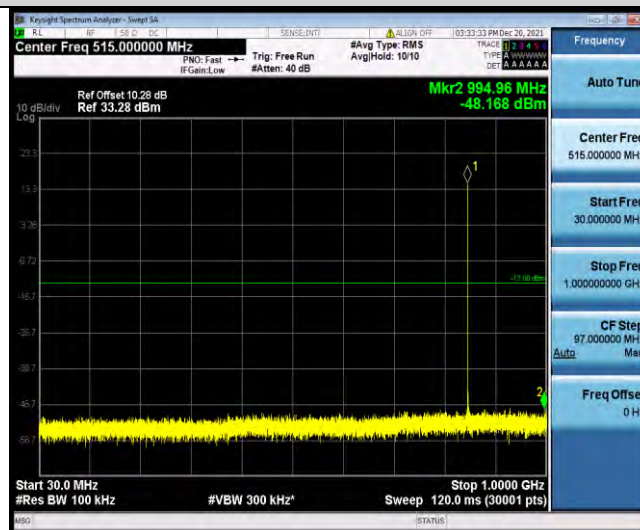
Test Report No.: W7L-211220W001RF01



EGPRS850-190-8-1000~10000MHz



EGPRS850-251-8-30~1000MHz

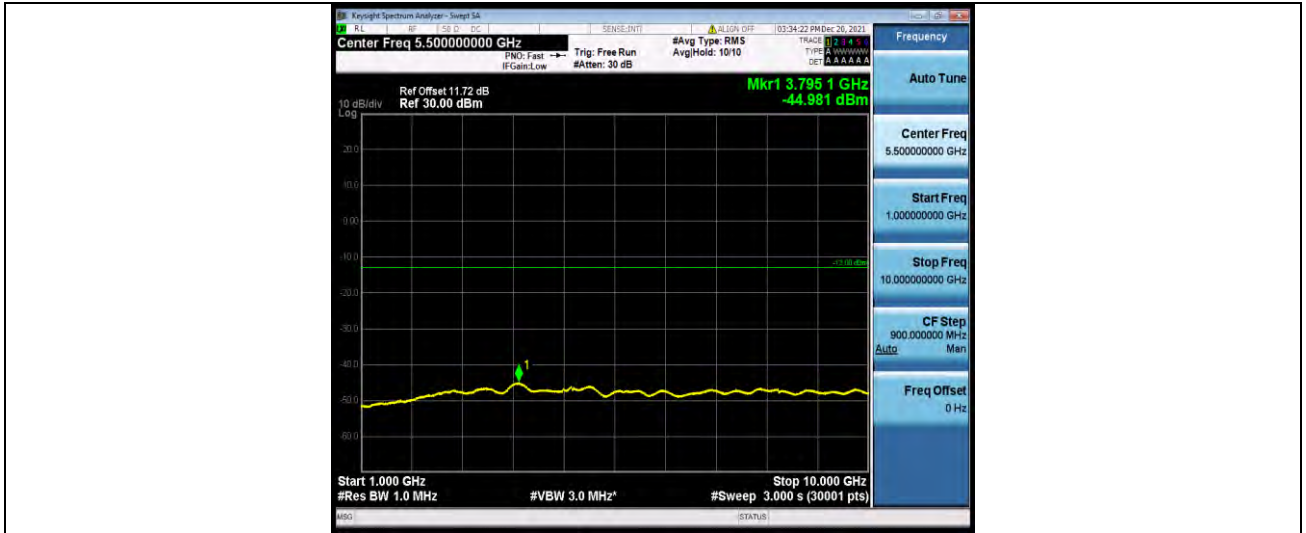


EGPRS850-251-8-1000~10000MHz



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VERITAS

Test Report No.: W7L-211220W001RF01







## FREQUENCY STABILITY

### Test Result

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	VL	NT	23.60	0.028634	±2.5	PASS
GSM850	128	VN	NT	22.60	0.027421	±2.5	PASS
GSM850	128	VH	NT	26.15	0.031728	±2.5	PASS
GSM850	190	VL	NT	24.99	0.029871	±2.5	PASS
GSM850	190	VN	NT	27.86	0.033301	±2.5	PASS
GSM850	190	VH	NT	27.38	0.032728	±2.5	PASS
GSM850	251	VL	NT	25.44	0.029972	±2.5	PASS
GSM850	251	VN	NT	25.93	0.030549	±2.5	PASS
GSM850	251	VH	NT	25.57	0.030125	±2.5	PASS
EGPRS850	128	VL	NT	29.64	0.035962	±2.5	PASS
EGPRS850	128	VN	NT	24.96	0.030284	±2.5	PASS
EGPRS850	128	VH	NT	28.19	0.034203	±2.5	PASS
EGPRS850	190	VL	NT	20.21	0.024157	±2.5	PASS
EGPRS850	190	VN	NT	23.41	0.027982	±2.5	PASS
EGPRS850	190	VH	NT	19.50	0.023309	±2.5	PASS
EGPRS850	251	VL	NT	23.76	0.027992	±2.5	PASS
EGPRS850	251	VN	NT	25.28	0.029783	±2.5	PASS
EGPRS850	251	VH	NT	27.02	0.031833	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	128	NV	-30	26.22	0.031813	±2.5	PASS
GSM850	128	NV	-20	27.02	0.032783	±2.5	PASS
GSM850	128	NV	-10	21.70	0.026329	±2.5	PASS
GSM850	128	NV	0	19.82	0.024048	±2.5	PASS
GSM850	128	NV	10	20.92	0.025382	±2.5	PASS
GSM850	128	NV	20	20.37	0.024715	±2.5	PASS
GSM850	128	NV	30	23.15	0.028088	±2.5	PASS
GSM850	128	NV	40	23.41	0.028403	±2.5	PASS
GSM850	128	NV	50	23.79	0.028864	±2.5	PASS



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GSM850	190	NV	-30	28.22	0.033732	±2.5	PASS
GSM850	190	NV	-20	19.40	0.023189	±2.5	PASS
GSM850	190	NV	-10	23.44	0.028018	±2.5	PASS
GSM850	190	NV	0	18.92	0.022615	±2.5	PASS
GSM850	190	NV	10	23.79	0.028437	±2.5	PASS
GSM850	190	NV	20	20.73	0.024779	±2.5	PASS
GSM850	190	NV	30	25.15	0.030062	±2.5	PASS
GSM850	190	NV	40	28.70	0.034306	±2.5	PASS
GSM850	190	NV	50	25.28	0.030218	±2.5	PASS
GSM850	251	NV	-30	28.48	0.033553	±2.5	PASS
GSM850	251	NV	-20	25.54	0.030090	±2.5	PASS
GSM850	251	NV	-10	22.41	0.026402	±2.5	PASS
GSM850	251	NV	0	24.96	0.029406	±2.5	PASS
GSM850	251	NV	10	19.21	0.022632	±2.5	PASS
GSM850	251	NV	20	23.02	0.027121	±2.5	PASS
GSM850	251	NV	30	26.15	0.030808	±2.5	PASS
GSM850	251	NV	40	27.77	0.032717	±2.5	PASS
GSM850	251	NV	50	20.53	0.024187	±2.5	PASS
EGPRS850	128	NV	-30	24.41	0.029617	±2.5	PASS
EGPRS850	128	NV	-20	28.31	0.034348	±2.5	PASS
EGPRS850	128	NV	-10	28.73	0.034858	±2.5	PASS
EGPRS850	128	NV	0	28.48	0.034555	±2.5	PASS
EGPRS850	128	NV	10	23.47	0.028476	±2.5	PASS
EGPRS850	128	NV	20	25.15	0.030514	±2.5	PASS
EGPRS850	128	NV	30	23.63	0.028670	±2.5	PASS
EGPRS850	128	NV	40	19.63	0.023817	±2.5	PASS
EGPRS850	128	NV	50	29.96	0.036350	±2.5	PASS
EGPRS850	190	NV	-30	24.09	0.028795	±2.5	PASS
EGPRS850	190	NV	-20	26.12	0.031222	±2.5	PASS
EGPRS850	190	NV	-10	17.50	0.020918	±2.5	PASS
EGPRS850	190	NV	0	20.79	0.024851	±2.5	PASS
EGPRS850	190	NV	10	20.95	0.025042	±2.5	PASS
EGPRS850	190	NV	20	23.25	0.027791	±2.5	PASS
EGPRS850	190	NV	30	28.61	0.034198	±2.5	PASS
EGPRS850	190	NV	40	20.40	0.024384	±2.5	PASS



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EGPRS85 0	190	NV	50	23.86	0.028520	±2.5	PASS
EGPRS85 0	251	NV	-30	22.76	0.026814	±2.5	PASS
EGPRS85 0	251	NV	-20	24.25	0.028570	±2.5	PASS
EGPRS85 0	251	NV	-10	20.15	0.023739	±2.5	PASS
EGPRS85 0	251	NV	0	22.15	0.026096	±2.5	PASS
EGPRS85 0	251	NV	10	24.92	0.029359	±2.5	PASS
EGPRS85 0	251	NV	20	18.85	0.022208	±2.5	PASS
EGPRS85 0	251	NV	30	25.89	0.030502	±2.5	PASS
EGPRS85 0	251	NV	40	19.02	0.022408	±2.5	PASS
EGPRS85 0	251	NV	50	21.05	0.024800	±2.5	PASS



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## WCDMA BAND5

### PEAK-TO-AVERAGE RATIO

#### Test Result

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band5	4132	3.07	13	PASS
Band5	4182	2.87	13	PASS
Band5	4233	3.13	13	PASS



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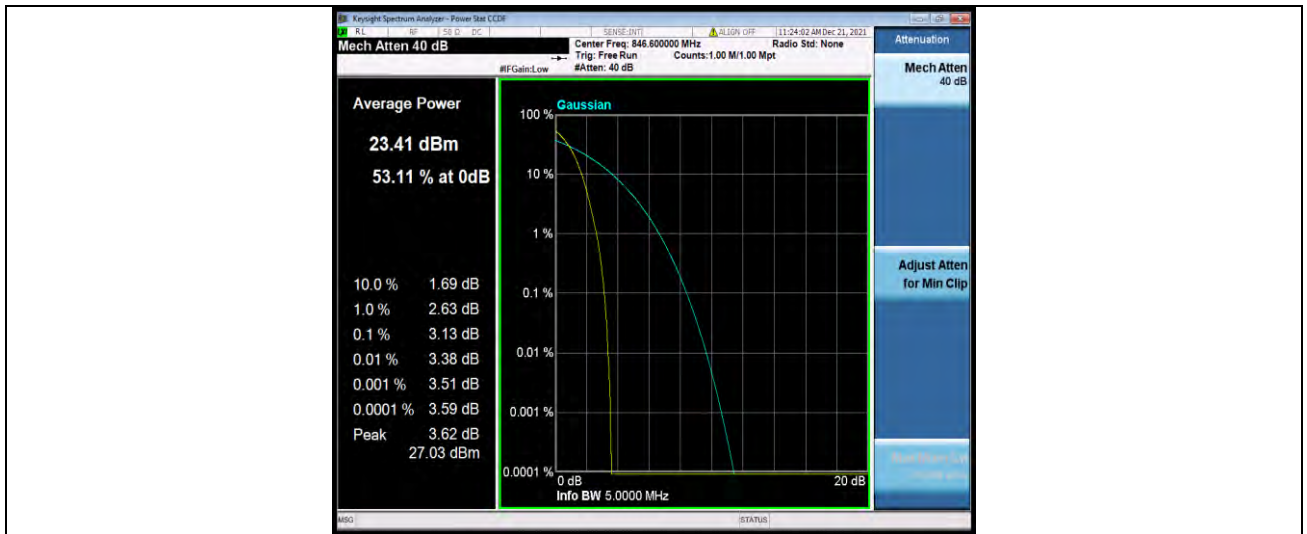
### Test Graphs





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Test Report No.: W7L-211220W001RF01

## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

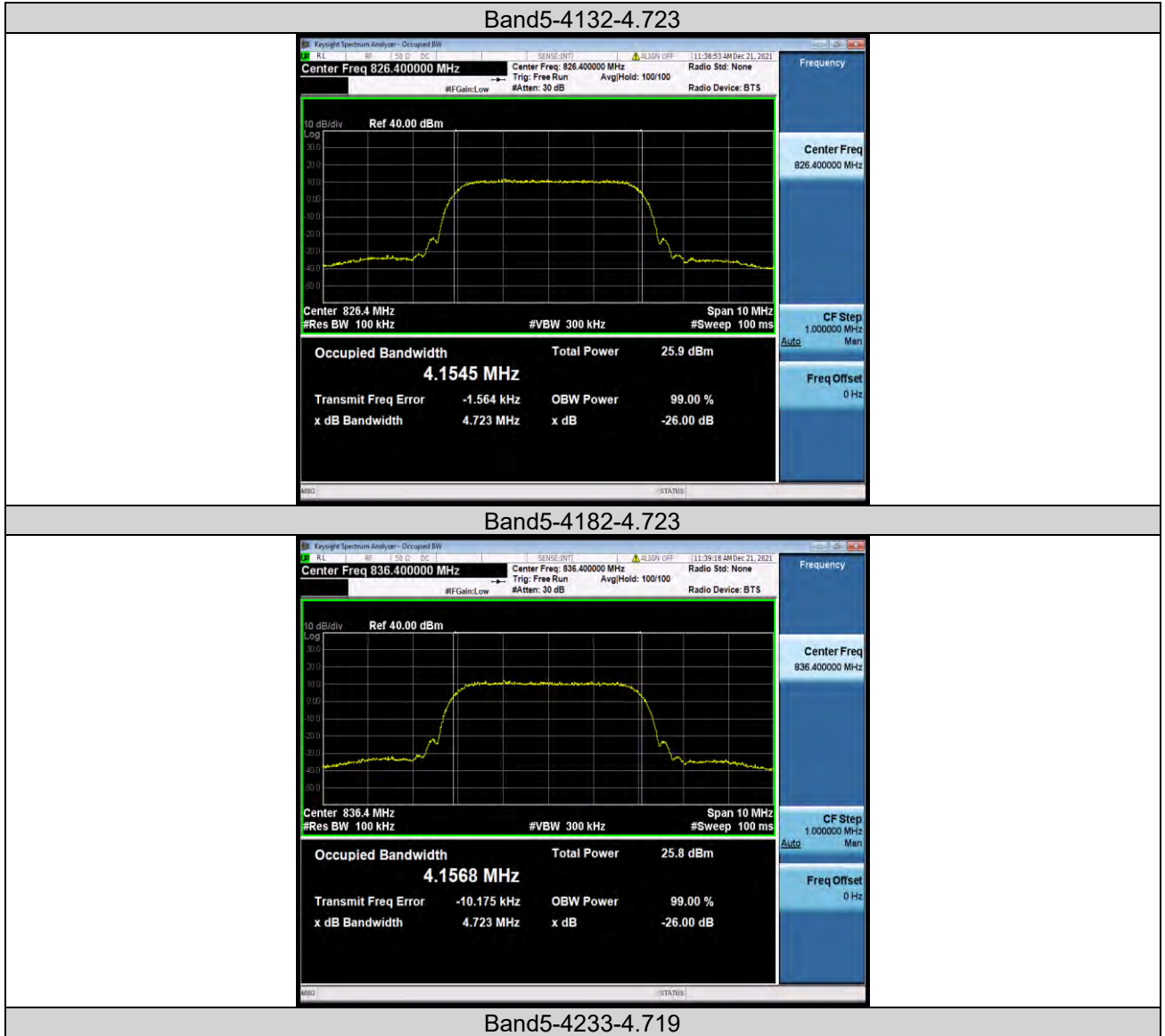
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(MHz)	Verdict
Band5	4132	4.1545	4.723	---	PASS
Band5	4182	4.1568	4.723	---	PASS
Band5	4233	4.1445	4.719	---	PASS



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Test Report No.: W7L-211220W001RF01

## Test Graphs

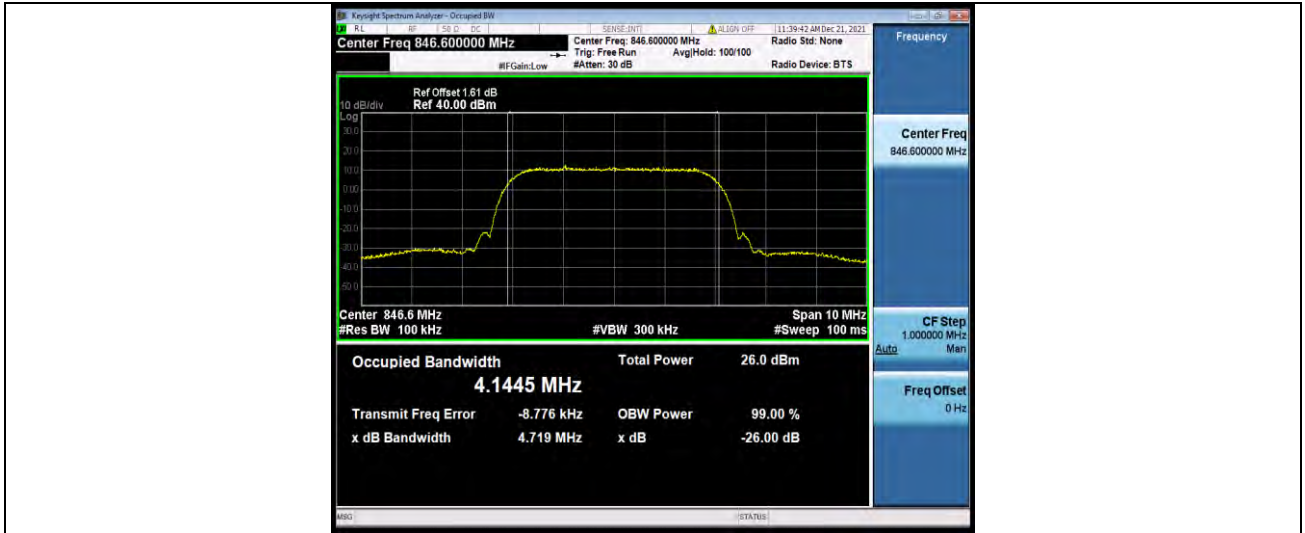






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**Test Report No.: W7L-211220W001RF01**



**BAND EDGE**

**Test Result**

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band5	4132	823.86	-27.28	-13	PASS
Band5	4233	849.00	-27.51	-13	PASS



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Test Report No.: W7L-211220W001RF01

## Test Graphs





Test Report No.: W7L-211220W001RF01

## CONDUCTED SPURIOUS EMISSION

### Test Result

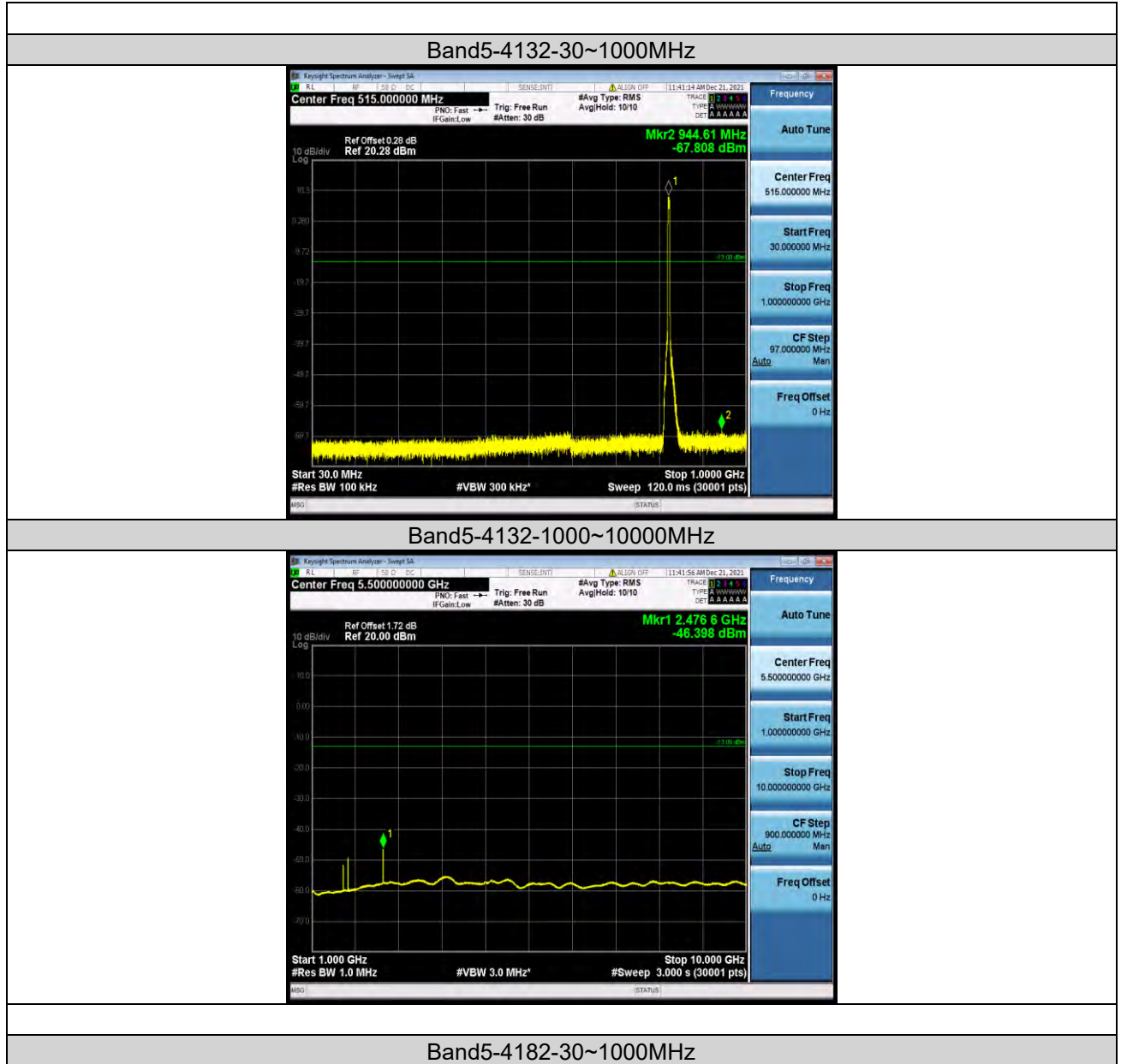
Band	Channel	Frequency Range (Mhz)	Frequency (dBm)	Result (dBm)	Limit (dBm)	Verdict
Band5	4132	30~1000MHz	944.61	-67.81	-13	PASS
Band5	4132	1000~10000MHz	2476.6	-46.4	-13	PASS
Band5	4182	30~1000MHz	954.28	-68.13	-13	PASS
Band5	4182	1000~10000MHz	2506.6	-45.78	-13	PASS
Band5	4233	30~1000MHz	984.58	-59.12	-13	PASS
Band5	4233	1000~10000MHz	3801.4	-45.04	-13	PASS



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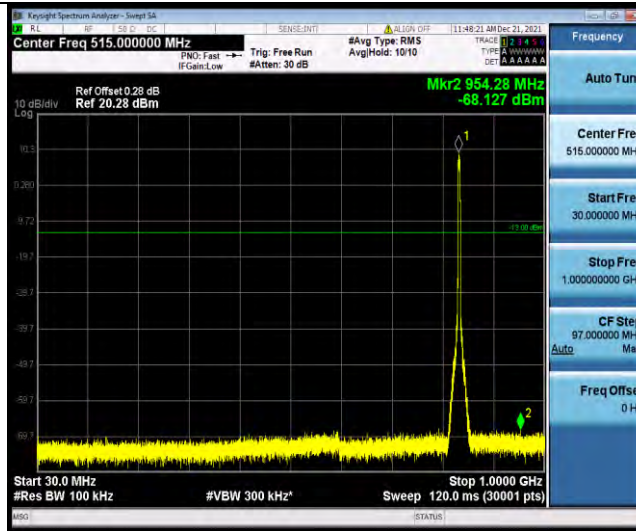
## Test Graphs





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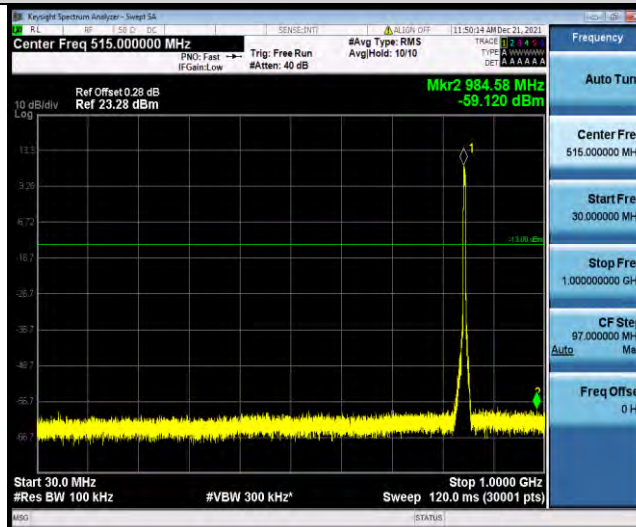
Test Report No.: W7L-211220W001RF01



Band5-4182-1000~10000MHz



Band5-4233-30~1000MHz



Band5-4233-1000~10000MHz



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VERITAS

### Test Report No.: W7L-211220W001RF01





## FREQUENCY STABILITY

### Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	VL	NT	-3.72	-0.004501	±2.5	PASS
Band5	4132	VN	NT	-3.71	-0.004489	±2.5	PASS
Band5	4132	VH	NT	-3.88	-0.004695	±2.5	PASS
Band5	4182	VL	NT	-0.55	-0.000658	±2.5	PASS
Band5	4182	VN	NT	-0.54	-0.000646	±2.5	PASS
Band5	4182	VH	NT	-0.57	-0.000681	±2.5	PASS
Band5	4233	VL	NT	-0.64	-0.000756	±2.5	PASS
Band5	4233	VN	NT	-0.69	-0.000815	±2.5	PASS
Band5	4233	VH	NT	-0.64	-0.000756	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band5	4132	NV	-30	-3.52	-0.004259	±2.5	PASS
Band5	4132	NV	-20	-3.53	-0.004272	±2.5	PASS
Band5	4132	NV	0	-3.55	-0.004296	±2.5	PASS
Band5	4132	NV	10	-3.47	-0.004199	±2.5	PASS
Band5	4132	NV	20	-3.40	-0.004114	±2.5	PASS
Band5	4182	NV	-30	-0.55	-0.000658	±2.5	PASS
Band5	4182	NV	-20	-0.53	-0.000634	±2.5	PASS
Band5	4182	NV	0	-0.56	-0.000670	±2.5	PASS
Band5	4182	NV	10	-0.46	-0.000550	±2.5	PASS
Band5	4182	NV	20	-0.43	-0.000514	±2.5	PASS
Band5	4233	NV	-30	-0.64	-0.000756	±2.5	PASS
Band5	4233	NV	-20	-0.80	-0.000945	±2.5	PASS
Band5	4233	NV	0	-0.70	-0.000827	±2.5	PASS
Band5	4233	NV	10	-0.66	-0.000780	±2.5	PASS
Band5	4233	NV	20	-0.59	-0.000697	±2.5	PASS



### LTE BAND5

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

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band5	1.4MHz	QPSK	20407	1RB#0	3.79	13	PASS
Band5	1.4MHz	QPSK	20407	6RB#0	5.19	13	PASS
Band5	1.4MHz	QPSK	20525	1RB#0	3.77	13	PASS
Band5	1.4MHz	QPSK	20525	6RB#0	5.39	13	PASS
Band5	1.4MHz	QPSK	20643	1RB#0	3.90	13	PASS
Band5	1.4MHz	QPSK	20643	6RB#0	5.38	13	PASS
Band5	1.4MHz	16QAM	20407	1RB#0	5.59	13	PASS
Band5	1.4MHz	16QAM	20407	6RB#0	6.03	13	PASS
Band5	1.4MHz	16QAM	20525	1RB#0	5.53	13	PASS
Band5	1.4MHz	16QAM	20525	6RB#0	6.16	13	PASS
Band5	1.4MHz	16QAM	20643	1RB#0	5.65	13	PASS
Band5	1.4MHz	16QAM	20643	6RB#0	6.26	13	PASS
Band5	3MHz	QPSK	20415	1RB#0	3.50	13	PASS
Band5	3MHz	QPSK	20415	15RB#0	5.16	13	PASS
Band5	3MHz	QPSK	20525	1RB#0	3.57	13	PASS
Band5	3MHz	QPSK	20525	15RB#0	5.26	13	PASS
Band5	3MHz	QPSK	20635	1RB#0	3.63	13	PASS
Band5	3MHz	QPSK	20635	15RB#0	5.27	13	PASS
Band5	3MHz	16QAM	20415	1RB#0	5.41	13	PASS
Band5	3MHz	16QAM	20415	15RB#0	5.99	13	PASS
Band5	3MHz	16QAM	20525	1RB#0	5.25	13	PASS
Band5	3MHz	16QAM	20525	15RB#0	6.07	13	PASS
Band5	3MHz	16QAM	20635	1RB#0	5.40	13	PASS
Band5	3MHz	16QAM	20635	15RB#0	6.13	13	PASS
Band5	5MHz	QPSK	20425	1RB#0	3.56	13	PASS
Band5	5MHz	QPSK	20425	25RB#0	5.30	13	PASS
Band5	5MHz	QPSK	20525	1RB#0	3.55	13	PASS
Band5	5MHz	QPSK	20525	25RB#0	5.35	13	PASS
Band5	5MHz	QPSK	20625	1RB#0	3.60	13	PASS
Band5	5MHz	QPSK	20625	25RB#0	5.36	13	PASS
Band5	5MHz	16QAM	20425	1RB#0	5.32	13	PASS
Band5	5MHz	16QAM	20425	25RB#0	6.05	13	PASS
Band5	5MHz	16QAM	20525	1RB#0	5.16	13	PASS
Band5	5MHz	16QAM	20525	25RB#0	6.06	13	PASS
Band5	5MHz	16QAM	20625	1RB#0	5.33	13	PASS
Band5	5MHz	16QAM	20625	25RB#0	6.14	13	PASS
Band5	10MHz	QPSK	20450	1RB#0	3.48	13	PASS
Band5	10MHz	QPSK	20450	50RB#0	5.25	13	PASS
Band5	10MHz	QPSK	20525	1RB#0	3.48	13	PASS
Band5	10MHz	QPSK	20525	50RB#0	5.27	13	PASS
Band5	10MHz	QPSK	20600	1RB#0	3.65	13	PASS





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Band5	10MHz	QPSK	20600	50RB#0	5.37	13	PASS
Band5	10MHz	16QAM	20450	1RB#0	5.34	13	PASS
Band5	10MHz	16QAM	20450	50RB#0	6.02	13	PASS
Band5	10MHz	16QAM	20525	1RB#0	5.29	13	PASS
Band5	10MHz	16QAM	20525	50RB#0	6.05	13	PASS
Band5	10MHz	16QAM	20600	1RB#0	5.44	13	PASS
Band5	10MHz	16QAM	20600	50RB#0	6.11	13	PASS



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## Test Graphs

Band5-1.4MHz-QPSK-20407-1RB#0



Band5-1.4MHz-QPSK-20407-6RB#0

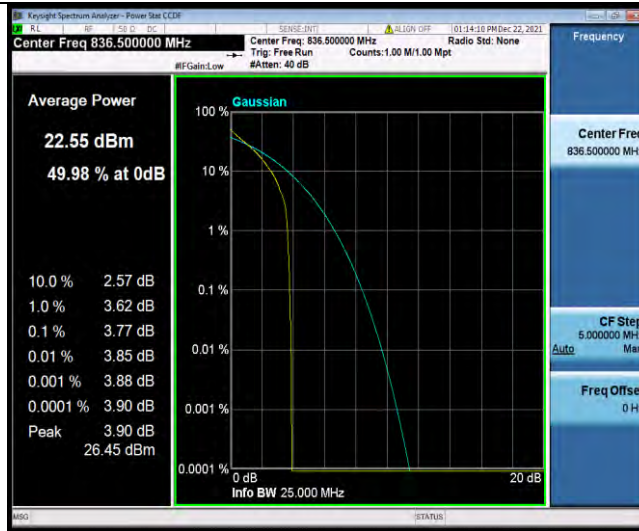


Band5-1.4MHz-QPSK-20525-1RB#0



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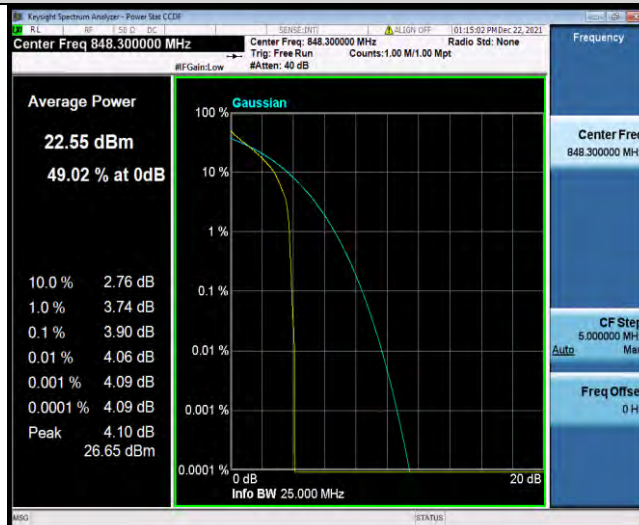
Test Report No.: W7L-211220W001RF01



Band5-1.4MHz-QPSK-20525-6RB#0



Band5-1.4MHz-QPSK-20643-1RB#0

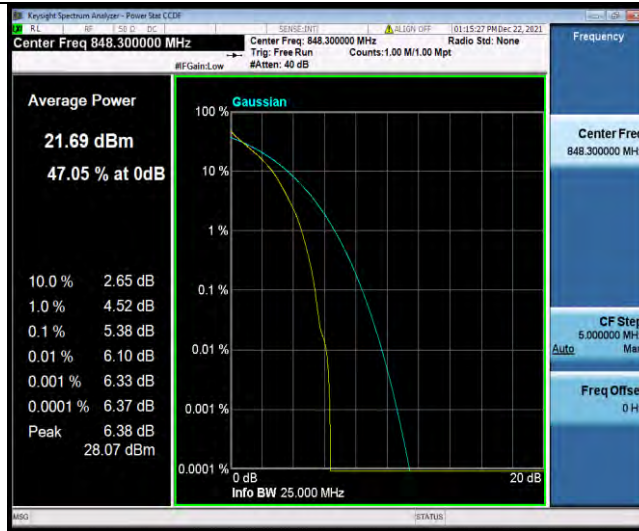


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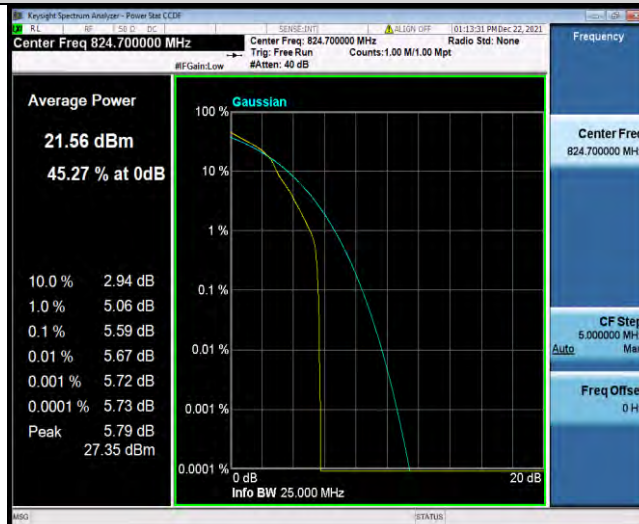


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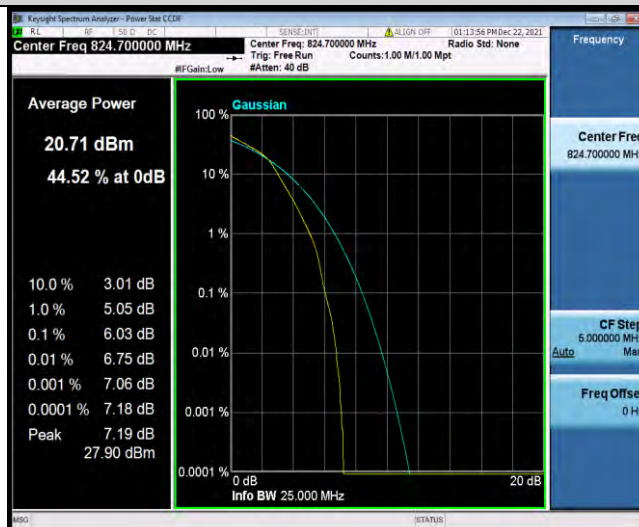
Test Report No.: W7L-211220W001RF01



Band5-1.4MHz-16QAM-20407-1RB#0



Band5-1.4MHz-16QAM-20407-6RB#0

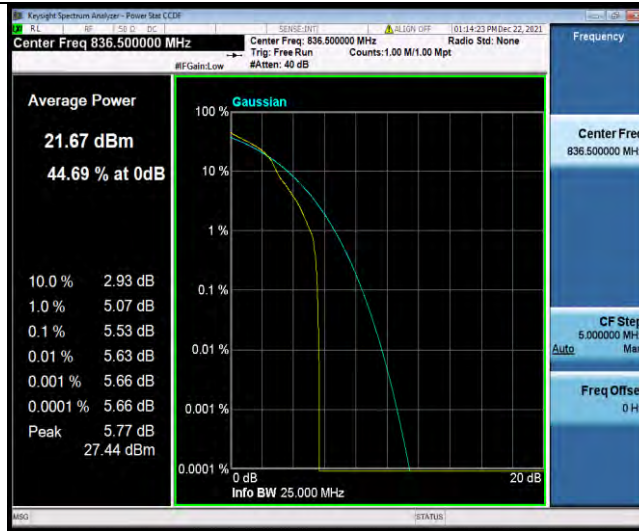


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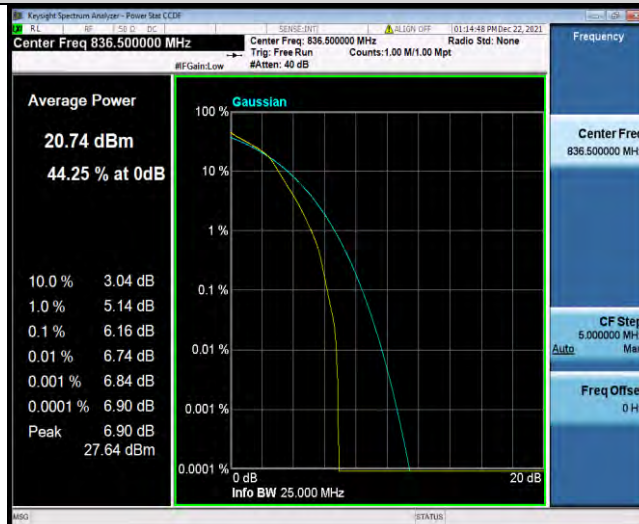


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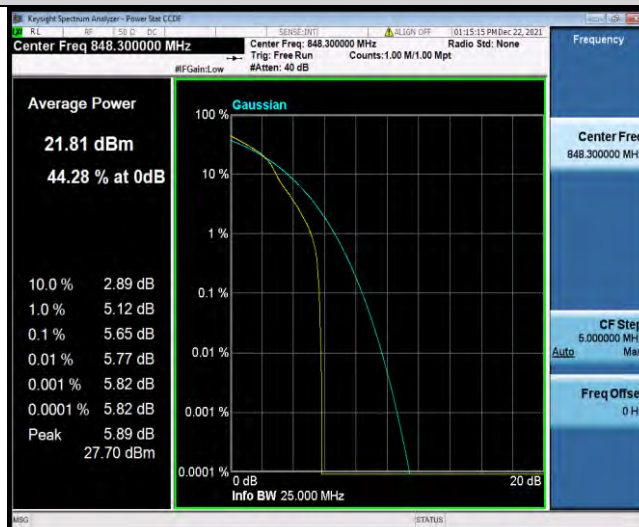
Test Report No.: W7L-211220W001RF01



Band5-1.4MHz-16QAM-20525-6RB#0



Band5-1.4MHz-16QAM-20643-1RB#0



Band5-1.4MHz-16QAM-20643-6RB#0



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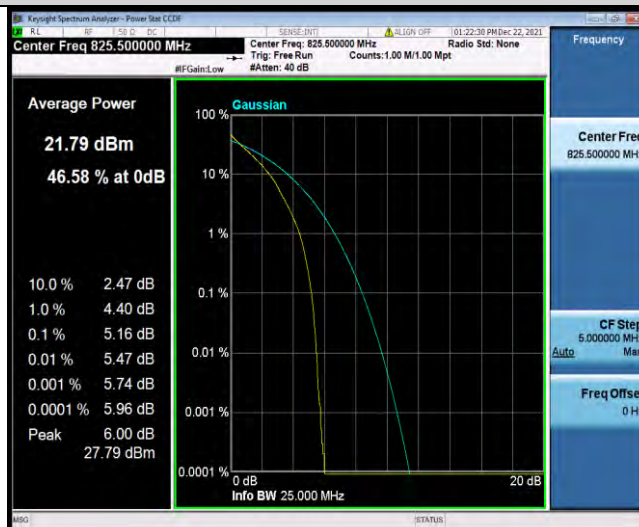
Test Report No.: W7L-211220W001RF01



Band5-3MHz-QPSK-20415-1RB#0



Band5-3MHz-QPSK-20415-15RB#0

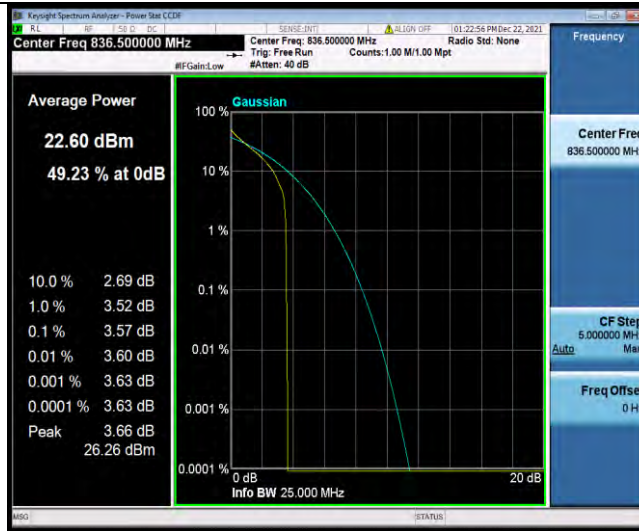


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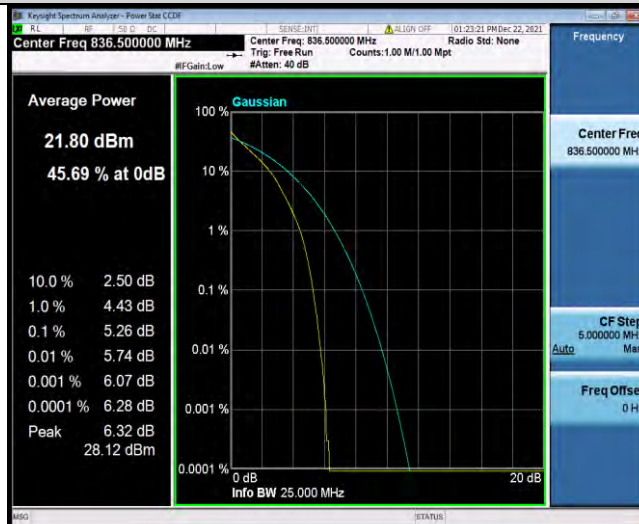


BUREAU VERITAS

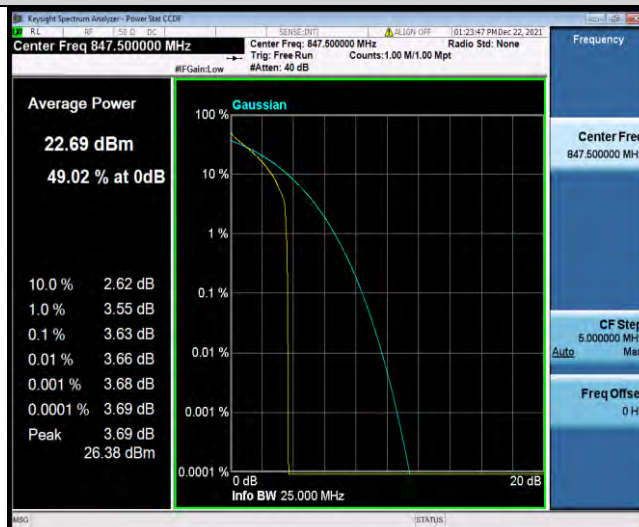
Test Report No.: W7L-211220W001RF01



Band5-3MHz-QPSK-20525-15RB#0



Band5-3MHz-QPSK-20635-1RB#0



Band5-3MHz-QPSK-20635-15RB#0