

FCC TEST REPORT (PART 24)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	Mobile phone
Brand Name:	NOKIA
Model Name:	TA-1542
FCC ID:	2AJOTTA-1542
Date of tests:	Feb. 02, 2023 ~ Mar. 02, 2023

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

- FCC PART 24, Subpart E**
 FCC PART 2
 ANSI/TIA/EIA-603-D
 ANSI/TIA/EIA-603-E
 ANSI C63.26-2015

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

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Approved by Peibo Sun
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Chao Wu

Date: Mar. 02, 2023

Sun Peibo

Date: Mar. 02, 2023

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P23010016RF02	Original release	Mar. 02, 2023



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	Test lab*
§2.1046	Coducted Output Power	Compliance	A
§24.232(c)	Equivalent Isotropic Radiated Power	Compliance	A
§2.1055 §24.235	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§24.232(d)	Peak to average ratio	Compliance	A
§24.238(a)(b)	Band Edge Measurements	Compliance	A
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	Compliance	A
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	Compliance	A/B

NOTE:

1. This report refers to the data of W7L-P23010015RF01(model:TA-1558, FCC ID: 2AJOTTA-1558), the difference of TA-1558 and TA-1542 is TA-1542 change model name, TA-1558 is dual card, TA-1542 is single card, and functions are realized through softwareIn. The test data of this report is copied from the report W7L-P23010015RF01(model:TA-1558, FCC ID: 2AJOTTA-1558).
2. For radiation spurious testing, the GSM1900 is in Lab B and the other Band are in Lab A.



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***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

Lab B:

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

Lab Address:

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park,
Nanshan District, Shenzhen, Guangdong, China

Accredited Test Lab Cert 3939.01

The FCC Site Registration No. is 525120; The Designation No. is CN1171.



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
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions & Radiated Power (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GMHz ~18GMHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GMHz ~40GMHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

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.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EM C-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EM C-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Oct.31,22	Apr.29,23
CABLE	R&S	W12.14	N/A	Oct.31,22	Apr.29,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Oct.31,22	Apr.29,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Oct.31,22	Apr.29,23
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24



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Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 20,23	Feb. 19,24
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
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,23	Feb. 13,24
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
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 20,23	Feb.19,24
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn- CT0001143-121 6	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 Meter	Anritsu	ML2495A	1506002	Feb. 21,23	Feb. 20,24
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 Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 18,22	Feb. 17,23
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 17,23	Feb. 16,24
Base station R&S CMW500	Rohde&Schwa rz	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 6 months or 12 months or 24 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.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile phone	
BRAND NAME	NOKIA	
MODEL NAME	TA-1542	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TYPE	GSM/EDGE: GMSK,8PSK WCDMA: HSUPA, HSDPA,DC-HSDPA,HSPA+ LTE Band 2: QPSK,16QAM, 64QAM	
FREQUENCY RANGE	GSM/EDGE	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	MAX. EIRP POWER	GSM
EDGE		261.22mW
WCDMA		120.5mW
LTE Band 2 Channel Bandwidth: 1.4MHz		108.14mW
LTE Band 2 Channel Bandwidth: 3MHz		108.14mW
LTE Band 2 Channel Bandwidth: 5MHz		109.14mW
LTE Band 2 Channel Bandwidth: 10MHz		108.89mW
LTE Band 2 Channel Bandwidth: 15MHz		109.65mW
LTE Band 2 Channel Bandwidth: 20MHz		109.9mW



EMISSION DESIGNATOR	GSM	245KGXW	
	EDGE	245KG7W	
	WCDMA	4M15F9W	
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D	
		16QAM: 1M10W7D	
		64QAM: 1M10W7D	
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M73G7D	
		16QAM: 2M75W7D	
		64QAM: 2M74W7D	
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M49G7D	
		16QAM: 4M52W7D	
		64QAM: 4M50W7D	
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 9M09G7D	
16QAM: 9M06W7D			
64QAM: 9M06W7D			
LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M5G7D		
	16QAM: 13M5W7D		
	64QAM: 13M5W7D		
LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 18M5G7D		
	16QAM: 18M5W7D		
	64QAM: 18M4W7D		
ANTENNA TYPE	Fixed Internal Antenna with -2.5dBi gain for GSM1900/WCDMA II / LTE B2		
HW VERSION	SPR_S63Q0		
SW VERSION	00WW_0_122		
I/O PORTS	Refer to user's manual		
CABLE SUPPLIED	USB cable1: non-shielded cable, with w/o ferrite core, 1 meter USB cable2: non-shielded cable, with w/o ferrite core, 1 meter USB cable3: non-shielded cable, with w/o ferrite core, 1 meter Earphone: non-shielded cable, with w/o ferrite core, 1.2 meter		
EXTREME TEMPERATURE	-20-60°C		
EXTREME VOLTAGE	EUT 3.4V - EUT 4.4V		

NOTE:

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

MODULATION MODE	TX FUNCTION
GSM/EDGE	1TX/1RX



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WCDMA	1TX/1RX
LTE	1TX/1RX

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- The product of TA-1542(FCC ID: 2AJOTTA-1542), only the following manufacturer of key parts is different between the first and second supply, other parameters are the same. The details are as follows:

NO.	Change Description		specifications	first supplier	specifications	second supplier
1	PCBA	64GB EMMC	FEMDNN064G-A3A56 BWCTARV11X64G	Longsys	FEMDNN064G-A3A56 BWCTARV11X64G	Biwin
		128GB EMMC	FEMDNN128G-A3A56 BWCTAKJ21X128G	Longsys	FEMDNN128G-A3A56 BWCTAKJ21X128G	Biwin
		3GB LPDDR	FLXC4003G-50 BWMEXX32H2A-24Gb-X	Longsys	FLXC4003G-50 BWMEXX32H2A-24Gb-X	Biwin
		4GB LPDDR	FLXC2004G-30 BWMZCX32H2A-32G-X	Longsys	FLXC2004G-30 BWMZCX32H2A-32G-X	Biwin
		PCB	/	KINGSHINE	/	wuzhu
2	LCM	LCD	6.517 HKC, 360min,400typ, 2.5D	TCL	6.517 HKC, 360min,400typ, 2.5D	Lia
3	Front camera	Camera	8M FF COM	Lianhe	8M FF COM	Shijia
4	Macro CAM	Camera	2M FF	Shijia	2M FF	Lianhe
5	Acoustic	Speaker	1712 1W	Dong Sheng	1712 1W	Xin Rongda
		Vibrator	1027 FPC	Chao Yin	1027 FPC	Kai Long
		Receiver	0809	Dong Sheng	0809	Xin Rongda
		Glass rear cover	Glass, monochrome printing or film	Kaimao	Glass, monochrome printing or film	Longqin gxiangrui
		FPC	/	Lante	/	Kaihong xin
6	Battery		5000MAH	Gaoyuan	5000MAH	Fenghua
7	Data cable		2A typeC	Yuwei	2A typeC	Juwei



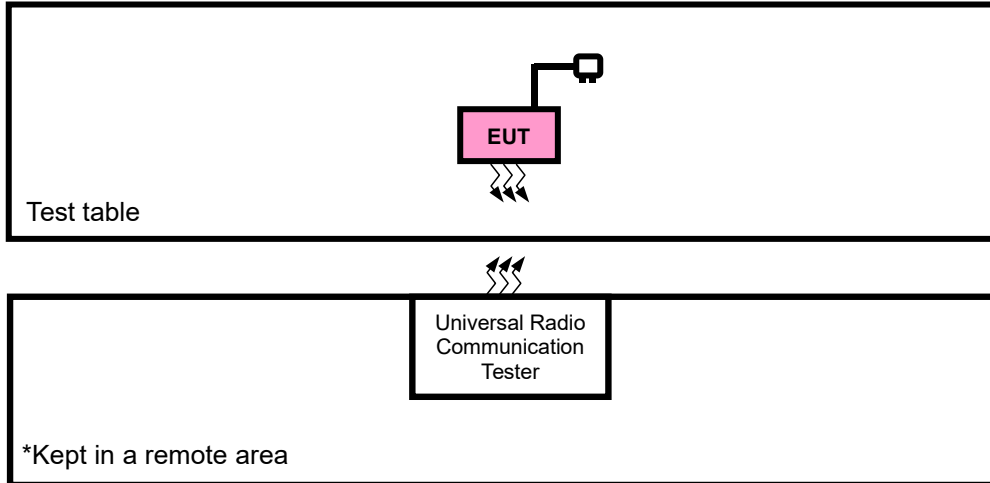
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List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
LCD Panel 1	HKC	MianYang HKC Optoelectronics Technology Co., Ltd.	QM065HS03-1	6.517
LCD Panel 2	BOE	BOE	BV065WBQ-L1B	6.517
Battery 1	Nokia	Guangdong Fenghua New Energy Co.,Ltd.	WT510	Capacity : 3.85 Vdc, 4900mAh
Battery 2	Nokia	HUNAN GAOYUAN BATTERY Co., Ltd.	WT510	Capacity : 3.85 Vdc, 4900mAh
AC Adapter	Nokia	SHENZHEN BAIJUNDA ELECTRONICS.,LTD	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
Earphone	Juwei Electronics Co., LTD	Juwei Electronics Co., LTD	JWEP1252-H21H	Signal Line, 1.2meter
USB Cable 1	Juwei Electronics Co., LTD	Juwei Electronics Co., LTD	JWUB1536-H21H	Signal Line, 1.0meter
USB Cable 2	Yu Wei	Dongguan Yuwei Electronic Technology Co., Ltd.	CH2212TC	Signal Line, 1.0meter
USB Cable 3	Sai bao	Saibao (Jiangxi) Industrial Co., Ltd	SHM1-A003A	Signal Line, 1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST





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	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

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

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + GSM/WCDMA/LTE
B	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	EIRP	512 to 810	512, 661, 810	GSM/EDGE
B	FREQUENCY STABILITY	512 to 810	512, 661, 810	GSM/EDGE
A	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM/EDGE
A	PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM/EDGE
A	BAND EDGE	512 to 810	512, 810	GSM/EDGE
A	CONDCUDED EMISSION	512 to 810	512, 661, 810	GSM/EDGE
A	RADIATED EMISSION	512 to 810	512, 661, 810	GSM/EDGE

WCDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
B	FREQUENCY STABILITY	9262 to 9538	9262, 9400, 9538	WCDMA
A	OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
A	PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9538	WCDMA
A	BAND EDGE	9262 to 9538	9262, 9538	WCDMA
A	CONDCUDED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA
A	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA



LTE BAND 2 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM · 64QAM	Full RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset



BUREAU
VERITAS

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		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
A	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19193	1.4MHz	QPSK,16QAM · 64QAM	1 RB / 5 RB Offset Full RB / 0 RB Offset		
		18615 to 19185	18615	3MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19185	3MHz	QPSK,16QAM · 64QAM	1 RB / 14 RB Offset Full RB / 0 RB Offset		
		18625 to 19175	18625	5MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19175	5MHz	QPSK,16QAM · 64QAM	1 RB / 24 RB Offset Full RB / 0 RB Offset		
		18650 to 19150	18650	10MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19150	10MHz	QPSK,16QAM · 64QAM	1 RB / 49 RB Offset Full RB / 0 RB Offset		
		18675 to 19125	18675	15MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19125	15MHz	QPSK,16QAM · 64QAM	1 RB / 74 RB Offset Full RB / 0 RB Offset		
		18700 to 19100	18700	20MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset Full RB / 0 RB Offset		
			19100	20MHz	QPSK,16QAM · 64QAM	1 RB / 99 RB Offset Full RB / 0 RB Offset		
		A	CONDCUDET ED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
				18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
				18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
				18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset
18675 to 19125	18675, 18900, 19125			15MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset		
18700 to 19100	18700, 18900, 19100			20MHz	QPSK,16QAM · 64QAM	1 RB / 0 RB Offset		
A	RADIATED EMISSION	18607 to 19193	18607,18900,19193	1.4MHz	QPSK	1 RB / 0 RB Offset		
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset		
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset		
		18650 to 19150	18900	10MHz	QPSK	1 RB / 0 RB Offset		
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset		
		18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset		



TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 5V By Adapter	Chao Wu
FREQUENCY STABILITY	23deg. C, 61%RH	DC 5V By Adapter	Chao Wu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC5V By Adapter	Chao Wu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 5V By Adapter	Chao Wu
BAND EDGE	23deg. C, 61%RH	DC5V By Adapter	Chao Wu
CONDCUDED EMISSION	23deg. C, 61%RH	DC5V By Adapter	Chao Wu/Jace Hu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Chao Wu

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

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 24

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 and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP 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_{Meas} , typically dBW or dBm);

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

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

L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

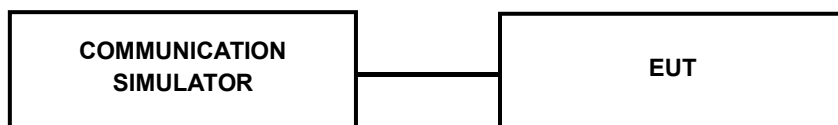
The EUT was set up for the maximum power with GPRS/WCDMA/LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900			Max. Tune-up Power
	512	661	810	
Channel	1850.2	1880	1909.8	
Frequency				
GSM	29.68	29.93	29.90	31.00
GPRS 1Tx Slot	29.75	29.95	29.97	31.00
GPRS 2Tx Slot	27.89	27.76	27.83	28.50
GPRS 3Tx Slot	26.37	26.24	26.28	27.00
GPRS 4Tx Slot	24.35	24.30	24.29	25.00
EDGE 1Tx Slot	26.23	26.67	26.66	27.50
EDGE 2Tx Slot	24.79	25.48	25.28	26.50
EDGE 3Tx Slot	22.52	23.37	23.06	24.00
EDGE 4Tx Slot	19.30	20.25	20.12	21.00

Band	WCDMA II			Max. Tune-up Power
	9262	9400	9538	
Channel	1852.4	1880	1907.6	
Frequency				
RMC 12.2K	23.21	23.26	23.31	24.00
HSDPA Subtest-1	22.63	22.68	22.73	23.50
HSDPA Subtest-2	22.62	22.67	22.72	23.50
HSDPA Subtest-3	22.11	22.16	22.21	23.00
HSDPA Subtest-4	22.10	22.15	22.20	23.00
DC-HSDPA Subtest-1	22.55	22.62	22.65	23.50
DC-HSDPA Subtest-2	22.54	22.61	22.64	23.50
DC-HSDPA Subtest-3	22.12	22.10	22.15	23.00
DC-HSDPA Subtest-4	22.11	22.09	22.14	23.00
HSUPA Subtest-1	22.59	22.64	22.69	23.50
HSUPA Subtest-2	21.58	21.63	21.68	22.50
HSUPA Subtest-3	22.06	22.12	22.17	23.00
HSUPA Subtest-4	21.55	21.61	21.66	22.50
HSUPA Subtest-5	22.54	22.60	22.65	23.50
HSPA+ Subtest-1	21.30	21.37	21.42	22.00



Test Report No.: W7L-P23010016RF02

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193	MPR
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz	
2/ 1.4	QPSK	1	0	23.58	23.67	23.67	0
		1	2	23.68	23.70	23.73	0
		1	5	23.71	23.74	23.74	0
		3	0	23.58	23.67	23.71	0
		3	1	23.72	23.63	23.63	0
		3	3	23.63	23.53	23.62	0
		6	0	22.66	22.66	22.67	1
	16QAM	1	0	22.29	22.29	22.36	1
		1	2	22.50	22.31	22.63	1
		1	5	22.43	22.36	22.70	1
		3	0	22.83	22.76	22.86	1
		3	1	22.73	22.82	22.88	1
		3	3	22.76	22.81	22.86	1
		6	0	21.65	21.77	21.84	2
	64QAM	1	0	21.90	21.99	21.94	2
		1	2	21.81	21.97	21.96	2
		1	5	21.92	22.03	22.02	2
		3	0	21.87	21.89	21.93	2
		3	1	21.94	21.94	21.92	2
		3	3	21.96	21.90	21.98	2
		6	0	20.85	20.88	20.97	3



Test Report No.: W7L-P23010016RF02

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185	MPR
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz	
2/3	QPSK	1	0	23.60	23.69	23.66	0
		1	7	23.64	23.71	23.73	0
		1	14	23.67	23.74	23.74	0
		8	0	22.57	22.70	22.71	1
		8	3	22.65	22.63	22.65	1
		8	7	22.60	22.60	22.66	1
		15	0	22.63	22.67	22.61	1
	16QAM	1	0	22.26	22.35	22.39	1
		1	7	22.47	22.34	22.61	1
		1	14	22.46	22.36	22.70	1
		8	0	21.79	21.77	21.86	2
		8	3	21.78	21.77	21.91	2
		8	7	21.78	21.79	21.82	2
		15	0	21.65	21.71	21.87	2
	64QAM	1	0	21.96	22.02	21.88	2
		1	7	21.84	21.91	21.95	2
		1	14	21.93	22.05	22.02	2
		8	0	20.90	20.93	20.94	3
		8	3	20.98	20.88	20.97	3
		8	7	20.93	20.94	20.94	3
		15	0	20.87	20.85	21.01	3



Test Report No.: W7L-P23010016RF02

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175	MPR
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz	
2 / 5	QPSK	1	0	23.61	23.64	23.67	0
		1	12	23.69	23.68	23.73	0
		1	24	23.68	23.73	23.78	0
		12	0	22.60	22.70	22.68	1
		12	6	22.65	22.64	22.66	1
		12	13	22.64	22.56	22.67	1
		25	0	22.61	22.70	22.64	1
	16QAM	1	0	22.27	22.31	22.39	1
		1	12	22.44	22.37	22.60	1
		1	24	22.46	22.36	22.69	1
		12	0	21.79	21.75	21.83	2
		12	6	21.75	21.81	21.87	2
		12	13	21.73	21.81	21.85	2
		25	0	21.65	21.72	21.84	2
	64QAM	1	0	21.90	21.99	21.94	2
		1	12	21.81	21.97	21.95	2
		1	24	21.86	22.10	22.02	2
		12	0	20.91	20.90	20.93	3
		12	6	20.92	20.95	20.96	3
		12	13	20.97	20.93	20.91	3
		25	0	20.83	20.91	20.99	3



Test Report No.: W7L-P23010016RF02

Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150	MPR
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz	
2/ 10	QPSK	1	0	23.58	23.67	23.67	0
		1	24	23.69	23.68	23.74	0
		1	49	23.65	23.77	23.74	0
		25	0	22.61	22.69	22.71	1
		25	12	22.71	22.58	22.66	1
		25	25	22.62	22.53	22.66	1
		50	0	22.66	22.70	22.61	1
	16QAM	1	0	22.27	22.28	22.35	1
		1	24	22.49	22.33	22.63	1
		1	49	22.46	22.37	22.66	1
		25	0	21.81	21.73	21.89	2
		25	12	21.79	21.75	21.92	2
		25	25	21.72	21.82	21.82	2
		50	0	21.69	21.71	21.88	2
	64QAM	1	0	21.89	22.00	21.91	2
		1	24	21.86	21.93	21.99	2
		1	49	21.92	22.04	21.99	2
		25	0	20.89	20.87	20.99	3
		25	12	20.99	20.94	20.90	3
		25	25	20.96	20.90	20.93	3
		50	0	20.88	20.87	21.00	3



Test Report No.: W7L-P23010016RF02

Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125	MPR
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz	
2/ 15	QPSK	1	0	23.65	23.67	23.64	0
		1	37	23.67	23.73	23.69	0
		1	74	23.71	23.80	23.75	0
		36	0	22.58	22.70	22.72	1
		36	19	22.72	22.63	22.66	1
		36	39	22.60	22.54	22.66	1
		75	0	22.66	22.68	22.66	1
	16QAM	1	0	22.31	22.35	22.35	1
		1	37	22.48	22.34	22.63	1
		1	74	22.42	22.42	22.68	1
		36	0	21.85	21.73	21.90	2
		36	19	21.73	21.79	21.88	2
		36	39	21.77	21.80	21.85	2
		75	0	21.70	21.74	21.81	2
	64QAM	1	0	21.91	22.01	21.92	2
		1	37	21.87	21.92	21.96	2
		1	74	21.88	22.03	22.02	2
		36	0	20.94	20.93	20.93	3
		36	19	20.93	20.88	20.92	3
		36	39	20.99	20.97	20.95	3
		75	0	20.87	20.85	21.01	3



Test Report No.: W7L-P23010016RF02

Band/BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100	MPR
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz	
2/ 20	QPSK	1	0	23.66	23.71	23.72	0
		1	50	23.71	23.76	23.75	0
		1	99	23.73	23.81	23.79	0
		50	0	22.64	22.75	22.73	1
		50	25	22.73	22.65	22.71	1
		50	50	22.68	22.61	22.68	1
		100	0	22.67	22.72	22.69	1
	16QAM	1	0	22.34	22.36	22.41	1
		1	50	22.52	22.39	22.65	1
		1	99	22.48	22.44	22.71	1
		50	0	21.87	21.81	21.91	2
		50	25	21.81	21.83	21.93	2
		50	50	21.80	21.86	21.87	2
		100	0	21.71	21.79	21.89	2
	64QAM	1	0	21.97	22.04	21.96	2
		1	50	21.89	21.99	22.01	2
		1	99	21.94	22.11	22.04	2
		50	0	20.95	20.95	21.01	3
		50	25	21.00	20.96	20.98	3
		50	50	21.01	20.98	20.99	3
		100	0	20.89	20.93	21.02	3



Test Report No.: W7L-P23010016RF02

EIRP POWER (dBm)

GSM 1900

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	29.75	-2.5	27.25	530.88	2
661	1880	29.95	-2.5	27.45	555.9	2
810	1909.8	29.97	-2.5	27.47	558.47	2

EDGE 1900

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	26.23	-2.5	23.73	236.05	2
661	1880	26.67	-2.5	24.17	261.22	2
810	1909.8	26.66	-2.5	24.16	260.62	2

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
9662	1852.4	23.21	-2.5	20.71	117.76	2
9800	1880	23.26	-2.5	20.76	119.12	2
9938	1907.6	23.31	-2.5	20.81	120.5	2



LTE BAND 2

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	23.72	-3.4	20.32	107.65	2
18900	1880	23.74	-3.4	20.34	108.14	2
19193	1909.3	23.74	-3.4	20.34	108.14	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	22.83	-3.4	19.43	87.7	2
18900	1880	22.82	-3.4	19.42	87.5	2
19193	1909.3	22.88	-3.4	19.48	88.72	2

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	21.96	-3.4	18.56	71.78	2
18900	1880	22.03	-3.4	18.63	72.95	2
19193	1909.3	22.02	-3.4	18.62	72.78	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	23.67	-3.4	20.27	106.41	2
18900	1880	23.74	-3.4	20.34	108.14	2
19185	1908.5	23.74	-3.4	20.34	108.14	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	22.47	-3.4	19.07	80.72	2
18900	1880	22.36	-3.4	18.96	78.7	2
19185	1908.5	22.7	-3.4	19.3	85.11	2



CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.96	-3.4	18.56	71.78	2
18900	1880	22.05	-3.4	18.65	73.28	2
19185	1908.5	22.02	-3.4	18.62	72.78	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	23.69	-3.4	20.29	106.91	2
18900	1880	23.73	-3.4	20.33	107.89	2
19175	1907.5	23.78	-3.4	20.38	109.14	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	22.46	-3.4	19.06	80.54	2
18900	1880	22.37	-3.4	18.97	78.89	2
19175	1907.5	22.69	-3.4	19.29	84.92	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.9	-3.4	18.5	70.79	2
18900	1880	22.1	-3.4	18.7	74.13	2
19175	1907.5	22.02	-3.4	18.62	72.78	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	23.69	-3.4	20.29	106.91	2
18900	1880	23.77	-3.4	20.37	108.89	2
19150	1905	23.74	-3.4	20.34	108.14	2



Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	22.49	-3.4	19.09	81.1	2
18900	1880	22.37	-3.4	18.97	78.89	2
19150	1905	22.66	-3.4	19.26	84.33	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	21.92	-3.4	18.52	71.12	2
18900	1880	22.04	-3.4	18.64	73.11	2
19150	1905	21.99	-3.4	18.59	72.28	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.71	-3.4	20.31	107.4	2
18900	1880	23.8	-3.4	20.4	109.65	2
19125	1902.5	23.75	-3.4	20.35	108.39	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	22.48	-3.4	19.08	80.91	2
18900	1880	22.42	-3.4	19.02	79.8	2
19125	1902.5	22.68	-3.4	19.28	84.72	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.91	-3.4	18.51	70.96	2
18900	1880	22.03	-3.4	18.63	72.95	2
19125	1902.5	22.02	-3.4	18.62	72.78	2



Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	23.73	-3.4	20.33	107.89	2
18900	1880	23.81	-3.4	20.41	109.9	2
19100	1900	23.79	-3.4	20.39	109.4	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	22.52	-3.4	19.12	81.66	2
18900	1880	22.44	-3.4	19.04	80.17	2
19100	1900	22.71	-3.4	19.31	85.31	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.97	-3.4	18.57	71.94	2
18900	1880	22.11	-3.4	18.71	74.3	2
19100	1900	22.04	-3.4	18.64	73.11	2

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

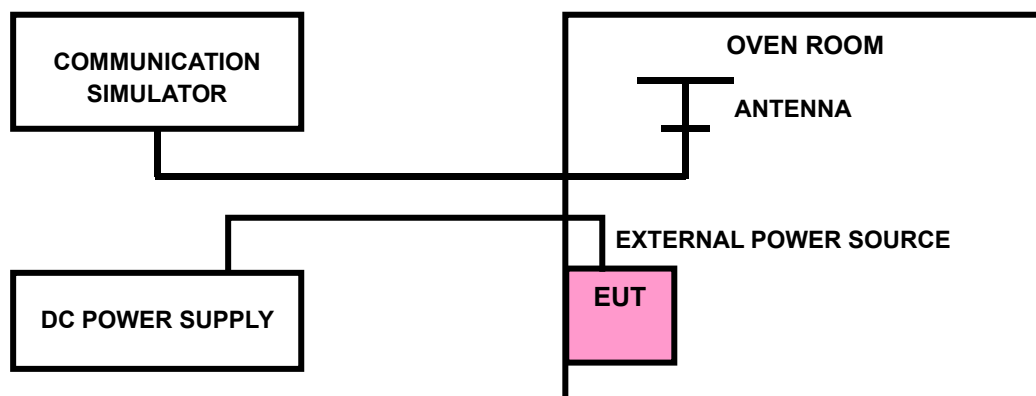
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.2.2 TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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-P23010016RF02

3.2.4 TEST RESULTS

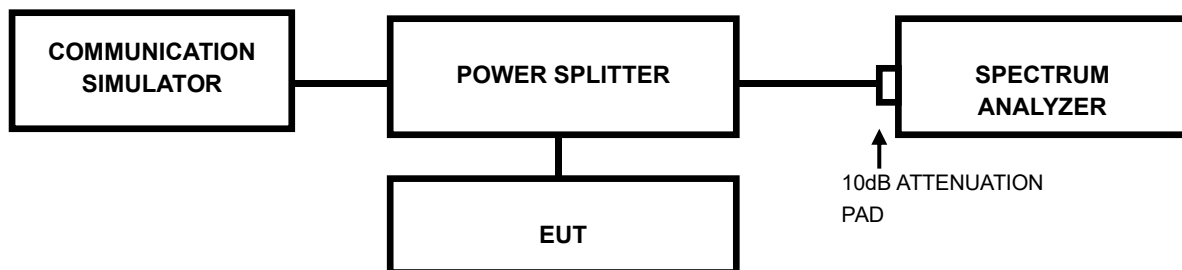
Please Refer to Appendix Of this test report.

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





Test Report No.: W7L-P23010016RF02

3.3.3 TEST RESULTS

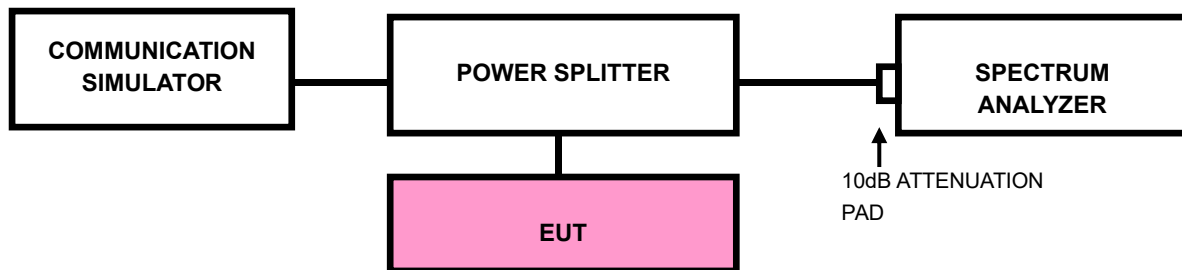
Please Refer to Appendix Of this test report.

3.4 BAND EDGE MEASUREMENTC

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 ≥ 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.
- a. Record the max trace plot into the test report.

3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

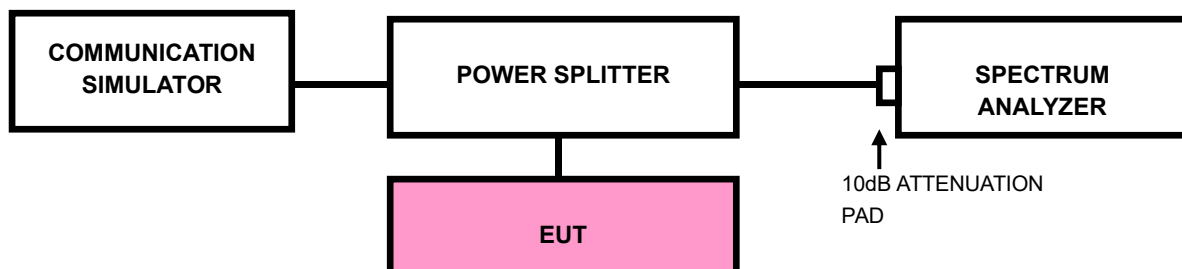
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 -13dBm .

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 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP





Test Report No.: W7L-P23010016RF02

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 -13dBm .

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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$

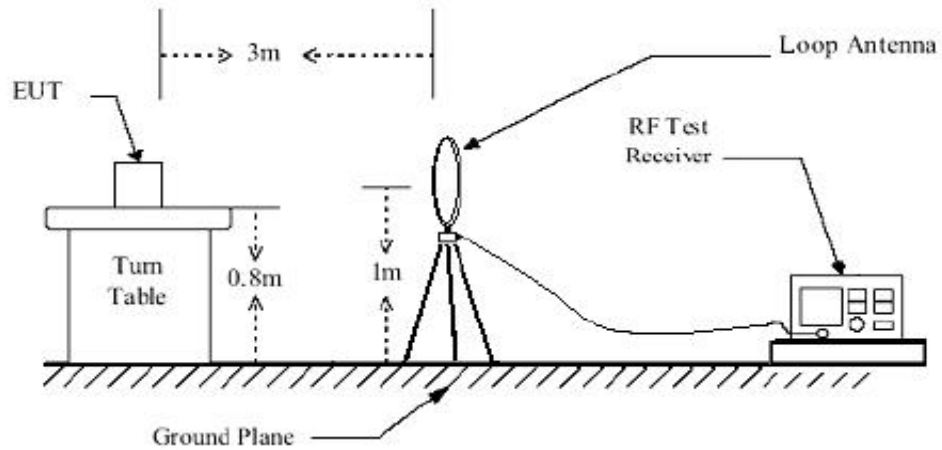
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

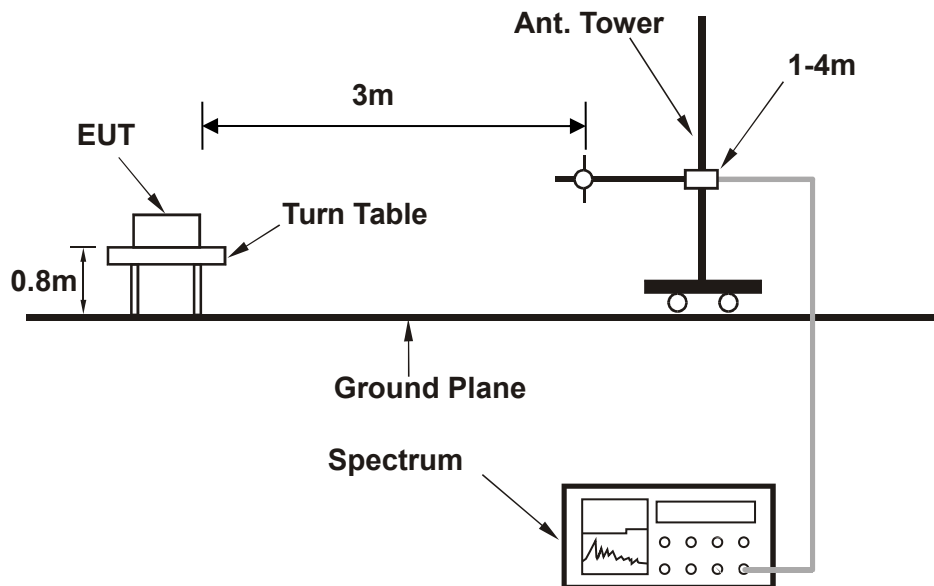
No deviation

3.6.4 TEST SETUP

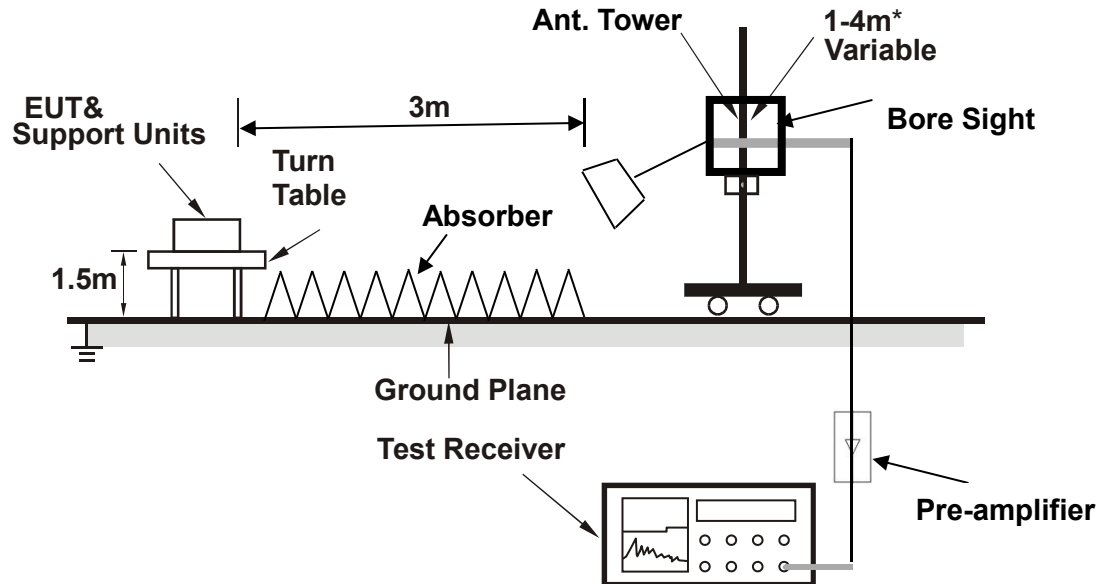
< Frequency Range below 30MHz >



< 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).



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Test Report No.: W7L-P23010016RF02

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

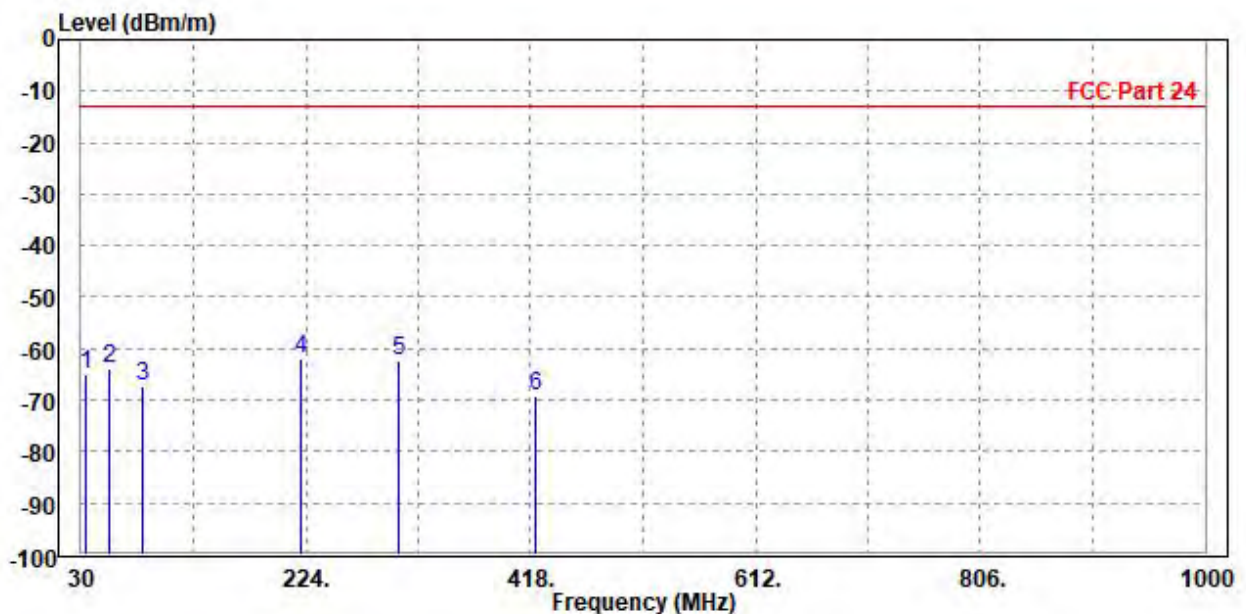
30 MHz – 1GHz data:

EDGE 1900

CHANNEL BANDWIDTH: 512~810

MODE	TX channel 661	FREQUENCY RANGE	Below 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	33.880	-65.20	-53.97	-13.00	-52.20	-11.23	Peak	Horizontal
2	55.220	-63.97	-46.07	-13.00	-50.97	-17.90	Peak	Horizontal
3	82.380	-67.30	-45.88	-13.00	-54.30	-21.42	Peak	Horizontal
4 PP	219.150	-62.12	-46.98	-13.00	-49.12	-15.14	Peak	Horizontal
5	303.540	-62.33	-49.95	-13.00	-49.33	-12.38	Peak	Horizontal
6	422.850	-69.35	-59.73	-13.00	-56.35	-9.62	Peak	Horizontal

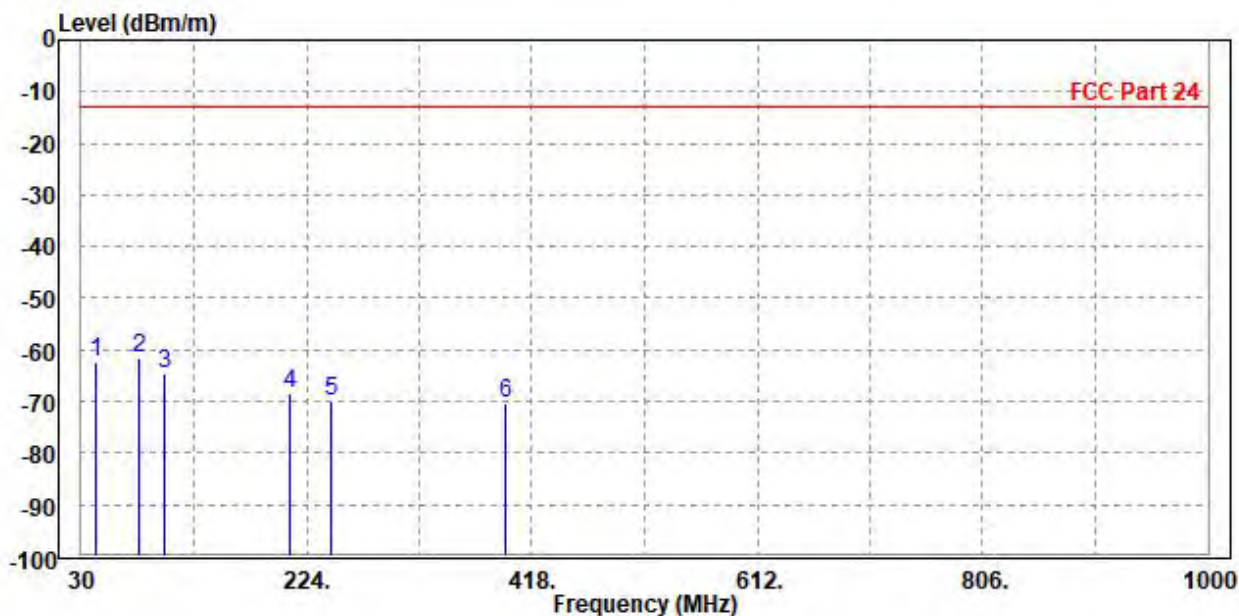




Test Report No.: W7L-P23010016RF02

MODE	TX channel 661	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	42.610	-62.24	-37.16	-13.00	-49.24	-25.08	Peak	Vertical
2 PP	80.440	-61.64	-42.64	-13.00	-48.64	-19.00	Peak	Vertical
3	101.780	-64.46	-57.35	-13.00	-51.46	-7.11	Peak	Vertical
4	209.450	-68.55	-51.36	-13.00	-55.55	-17.19	Peak	Vertical
5	244.370	-69.79	-55.69	-13.00	-56.79	-14.10	Peak	Vertical
6	394.720	-70.41	-61.31	-13.00	-57.41	-9.10	Peak	Vertical





Test Report No.: W7L-P23010016RF02

ABOVE 1GHz

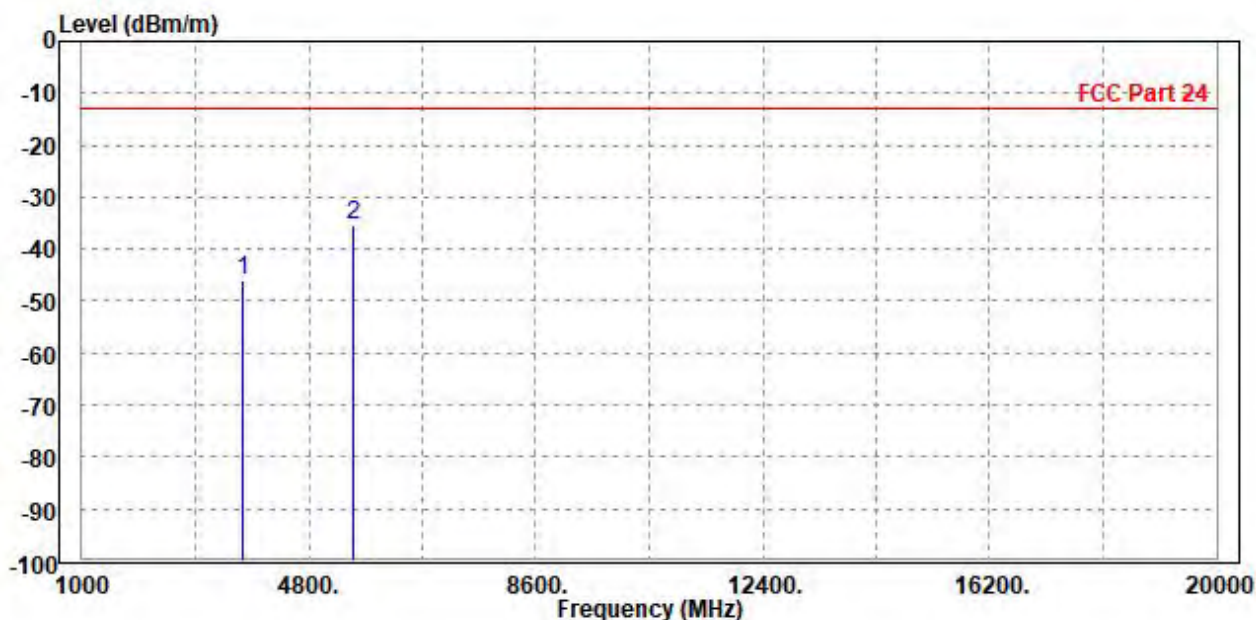
Note: For higher frequency, the emission is too low to be detected.

GSM 1900:

CH 512

MODE	TX channel 512	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	3698.000	-46.01	-53.84	-13.00	-33.01	7.83	Peak	Horizontal
2 PP	5550.600	-35.42	-45.99	-13.00	-22.42	10.57	Peak	Horizontal

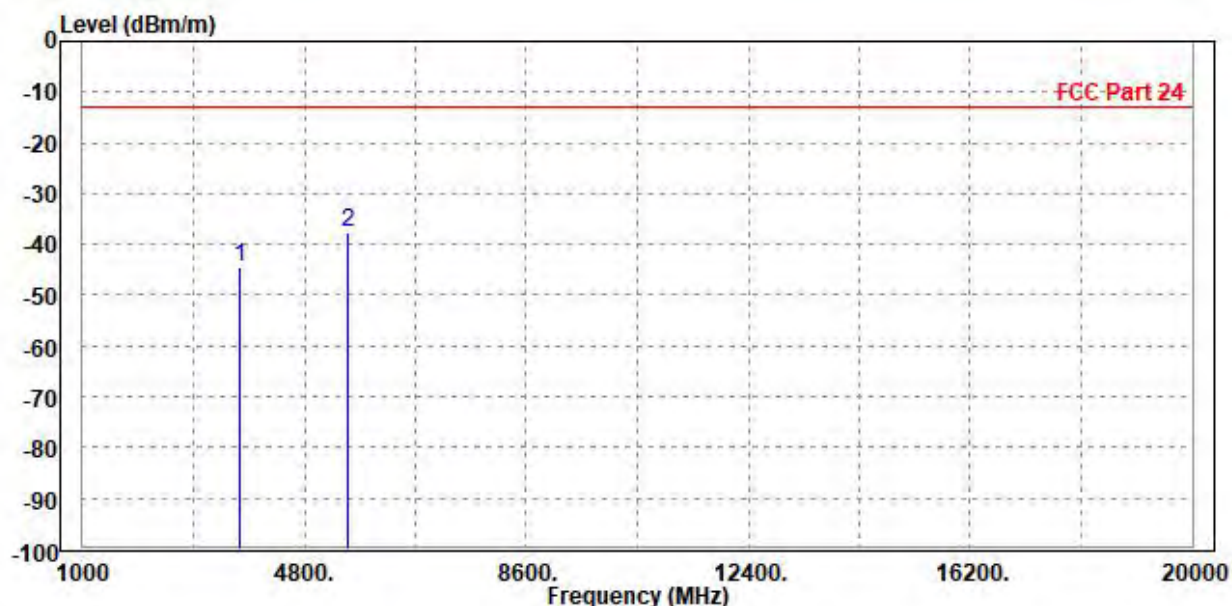




Test Report No.: W7L-P23010016RF02

MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3700.400	-44.58	-52.19	-13.00	-31.58	7.61	Peak	Vertical
2 PP	5560.000	-37.73	-48.63	-13.00	-24.73	10.90	Peak	Vertical



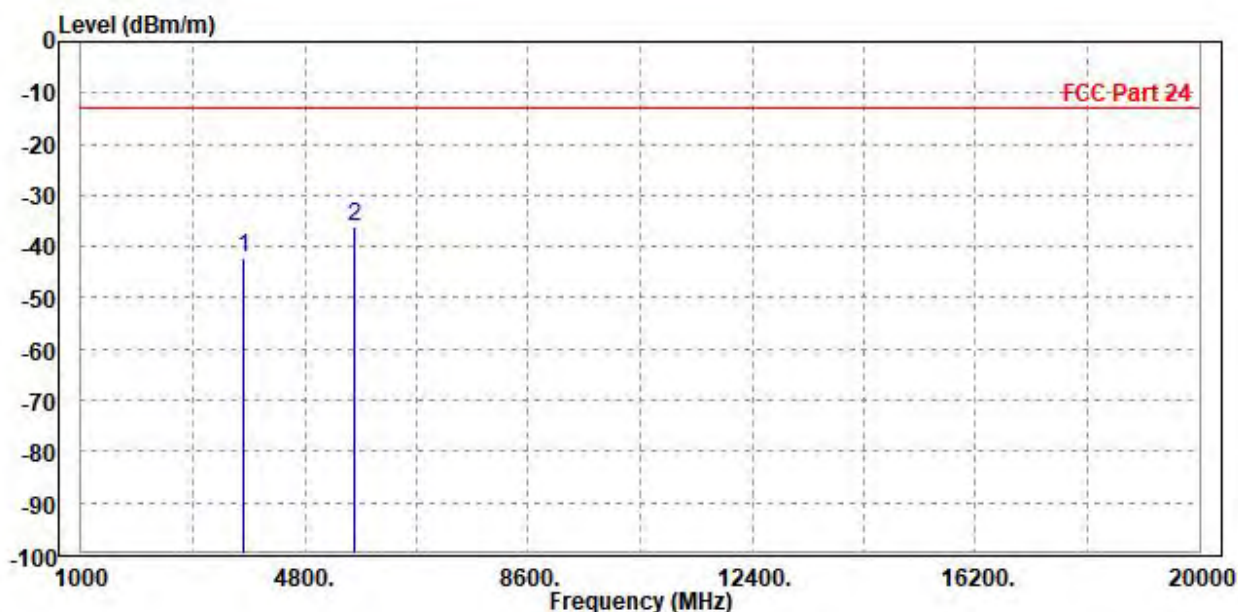


Test Report No.: W7L-P23010016RF02

CH 661

MODE	TX channel 661	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	3760.000	-42.15	-50.14	-13.00	-29.15	7.99	Peak	Horizontal
2 PP	5636.000	-36.30	-47.03	-13.00	-23.30	10.73	Peak	Horizontal

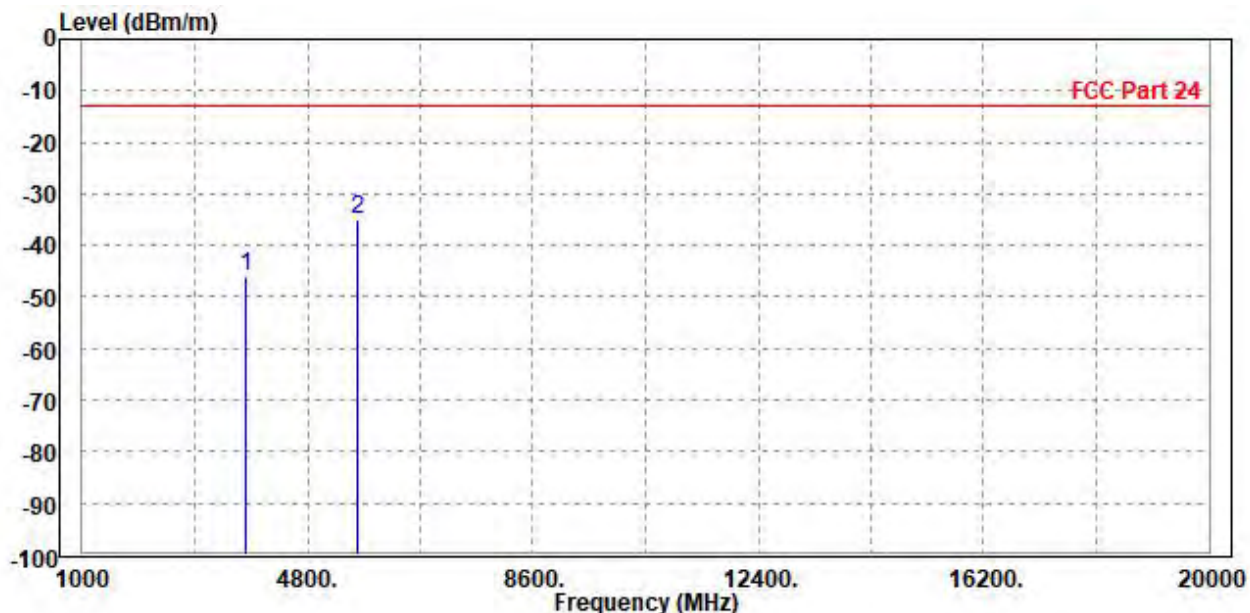




Test Report No.: W7L-P23010016RF02

MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3755.000	-45.83	-53.52	-13.00	-32.83	7.69	Peak	Vertical
2 PP	5640.000	-34.87	-46.00	-13.00	-21.87	11.13	Peak	Vertical





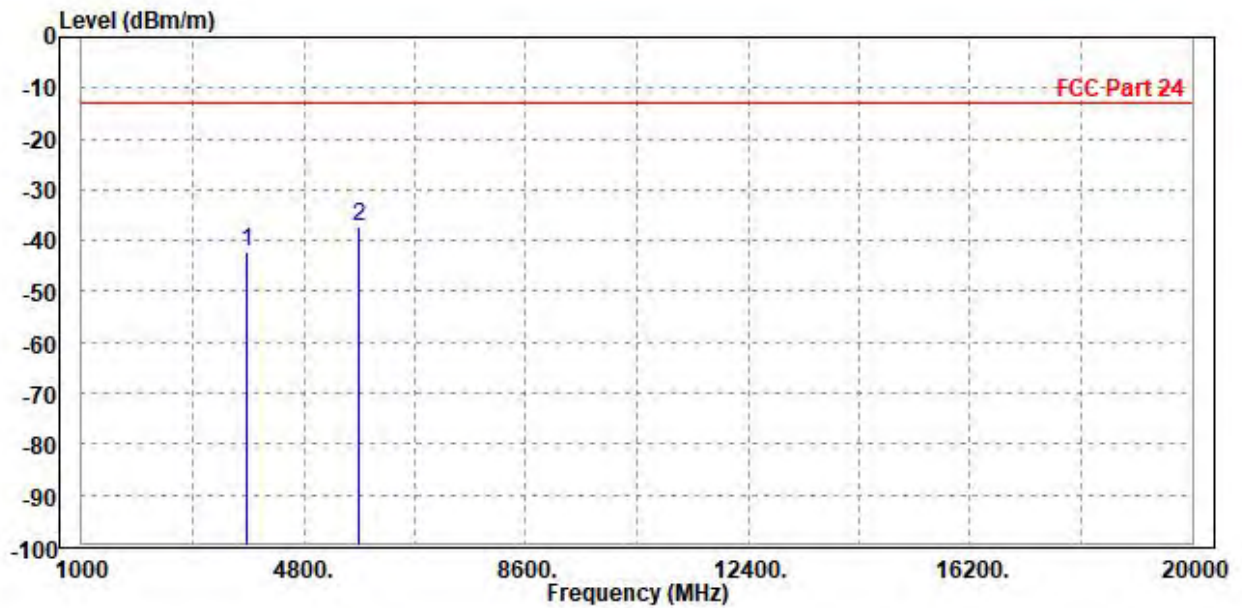
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Test Report No.: W7L-P23010016RF02

CH 810

MODE	TX channel 810	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	3819.600	-42.30	-50.44	-13.00	-29.30	8.14	Peak	Horizontal
2 PP	5731.000	-37.20	-48.11	-13.00	-24.20	10.91	Peak	Horizontal

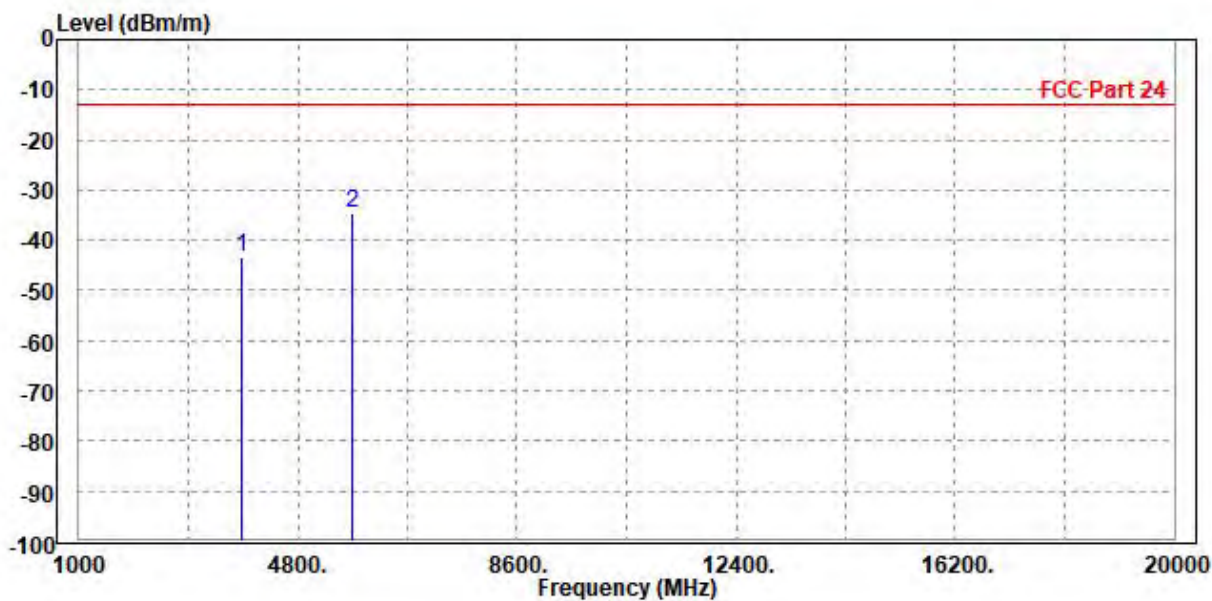




Test Report No.: W7L-P23010016RF02

MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3812.000	-43.42	-51.19	-13.00	-30.42	7.77	Peak	Vertical
2 PP	5729.400	-34.51	-45.89	-13.00	-21.51	11.38	Peak	Vertical





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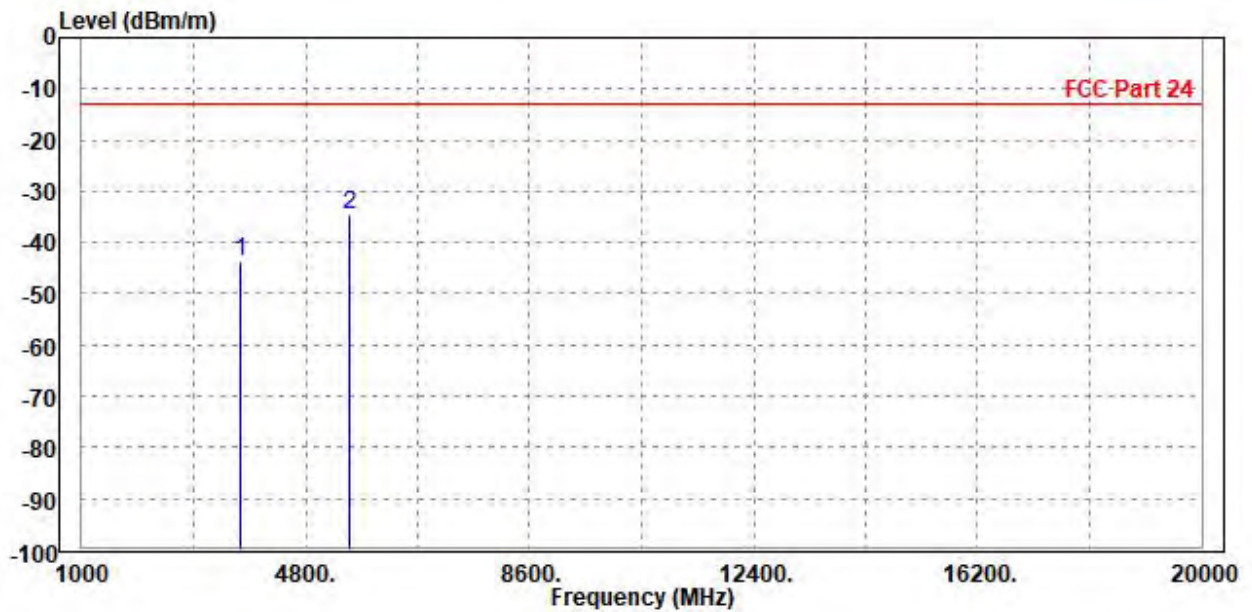
Test Report No.: W7L-P23010016RF02

EDGE 1900:

CH 512

MODE	TX channel 512	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	3700.400	-43.55	-51.39	-13.00	-30.55	7.84	Peak	Horizontal
2 PP	5560.000	-34.53	-45.12	-13.00	-21.53	10.59	Peak	Horizontal

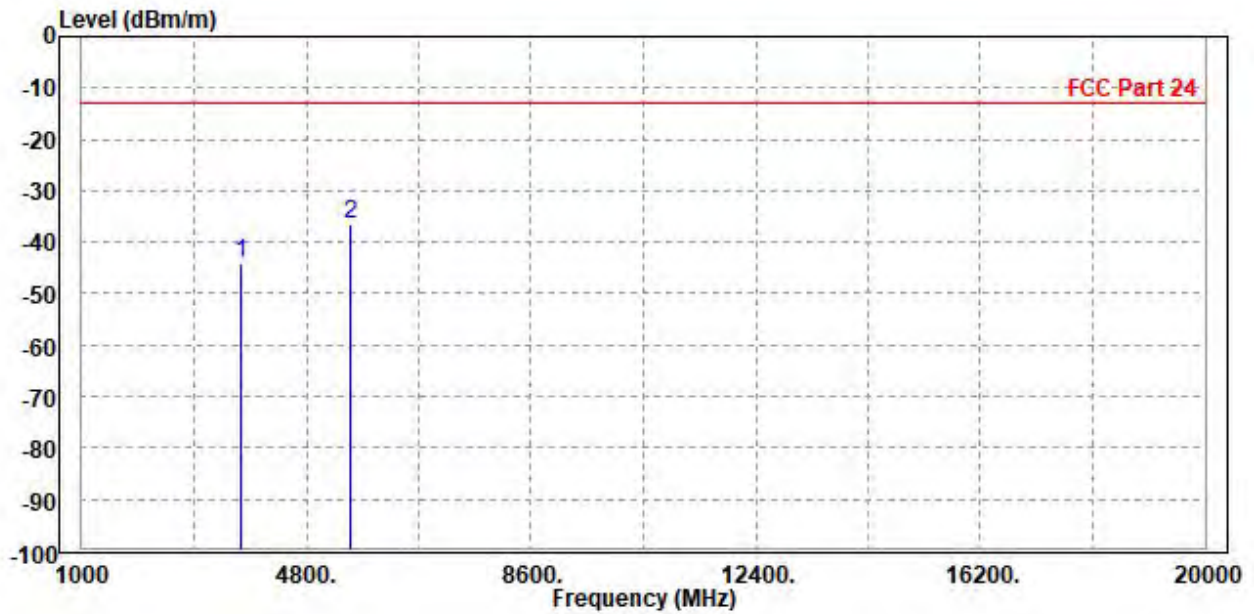




Test Report No.: W7L-P23010016RF02

MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3698.000	-43.94	-51.55	-13.00	-30.94	7.61	Peak	Vertical
2 PP	5550.600	-36.45	-47.32	-13.00	-23.45	10.87	Peak	Vertical



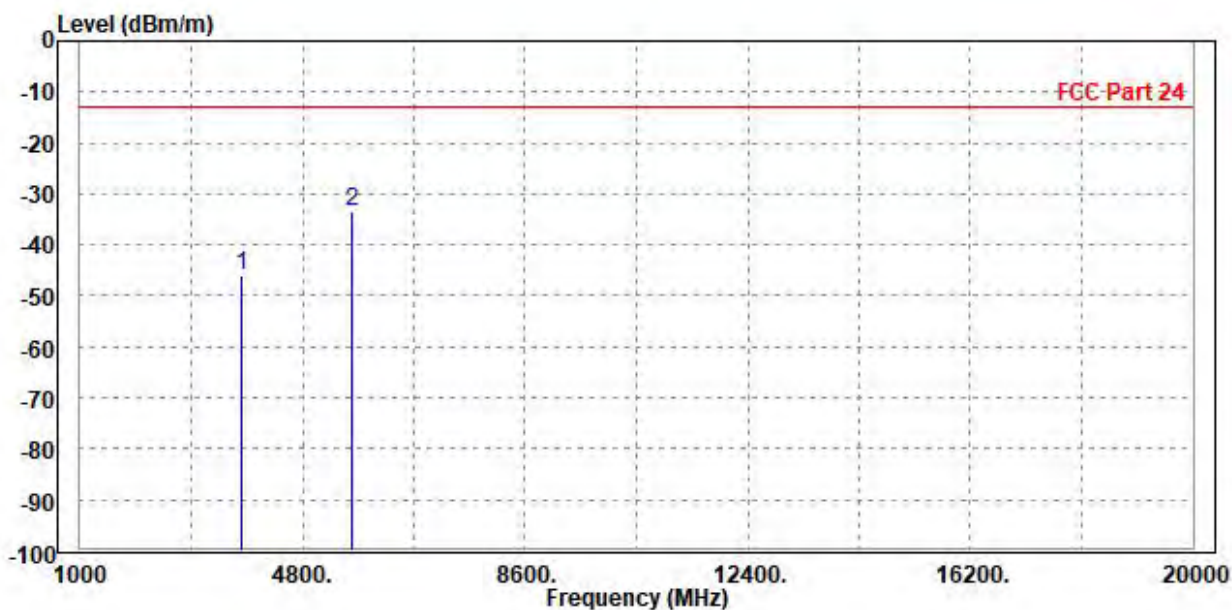


Test Report No.: W7L-P23010016RF02

CH 661

MODE	TX channel 661	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	3755.000	-45.82	-53.80	-13.00	-32.82	7.98	Peak	Horizontal
2 PP	5640.000	-33.42	-44.16	-13.00	-20.42	10.74	Peak	Horizontal

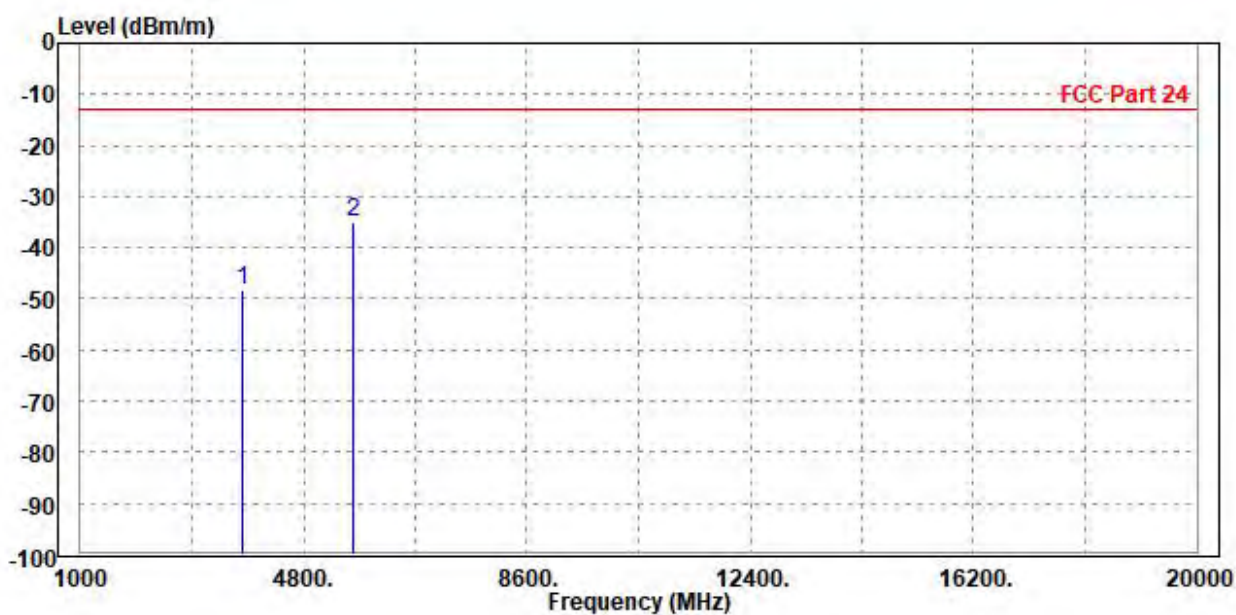




Test Report No.: W7L-P23010016RF02

MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3760.000	-48.10	-55.80	-13.00	-35.10	7.70	Peak	Vertical
2 PP	5636.000	-34.87	-45.99	-13.00	-21.87	11.12	Peak	Vertical



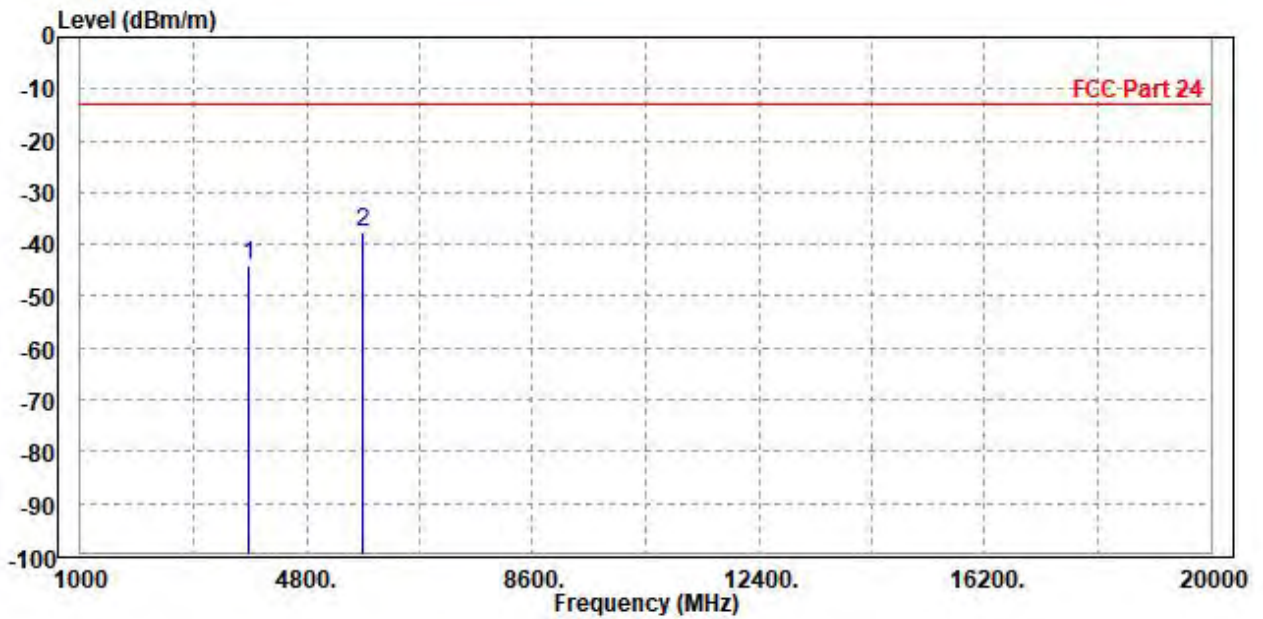


Test Report No.: W7L-P23010016RF02

CH 810

MODE	TX channel 810	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	3812.000	-44.05	-52.17	-13.00	-31.05	8.12	Peak	Horizontal
2 PP	5731.000	-37.56	-48.47	-13.00	-24.56	10.91	Peak	Horizontal

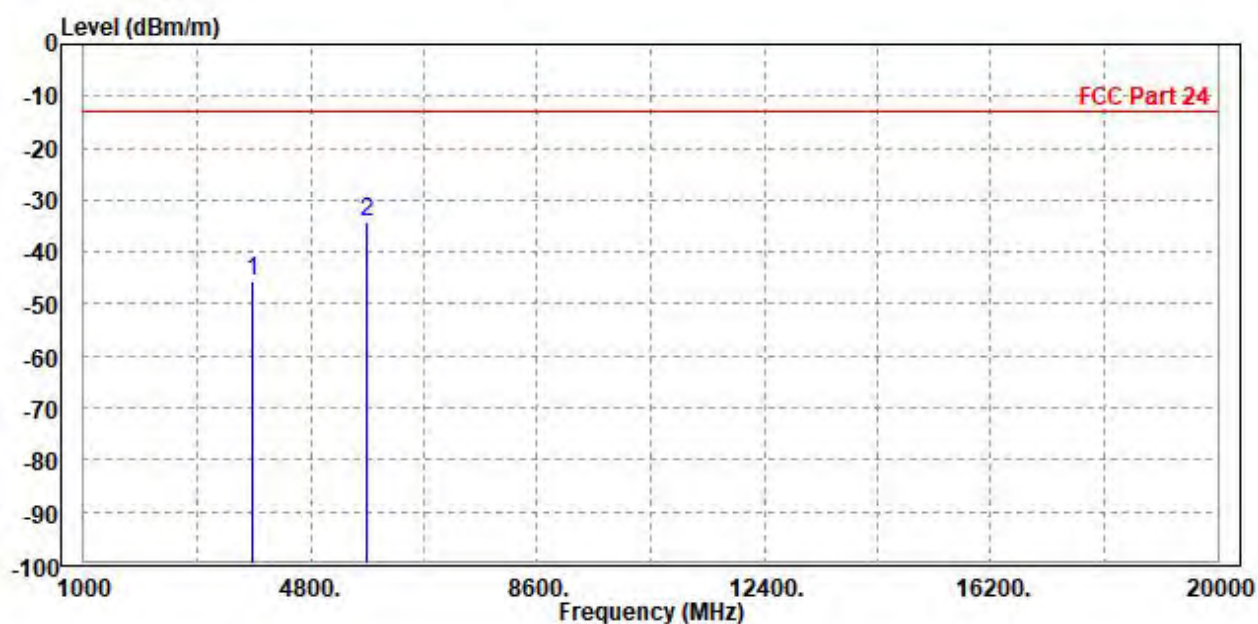




Test Report No.: W7L-P23010016RF02

MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL 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	3812.000	-45.57	-53.34	-13.00	-32.57	7.77	Peak	Vertical
2 PP	5731.000	-34.34	-45.73	-13.00	-21.34	11.39	Peak	Vertical





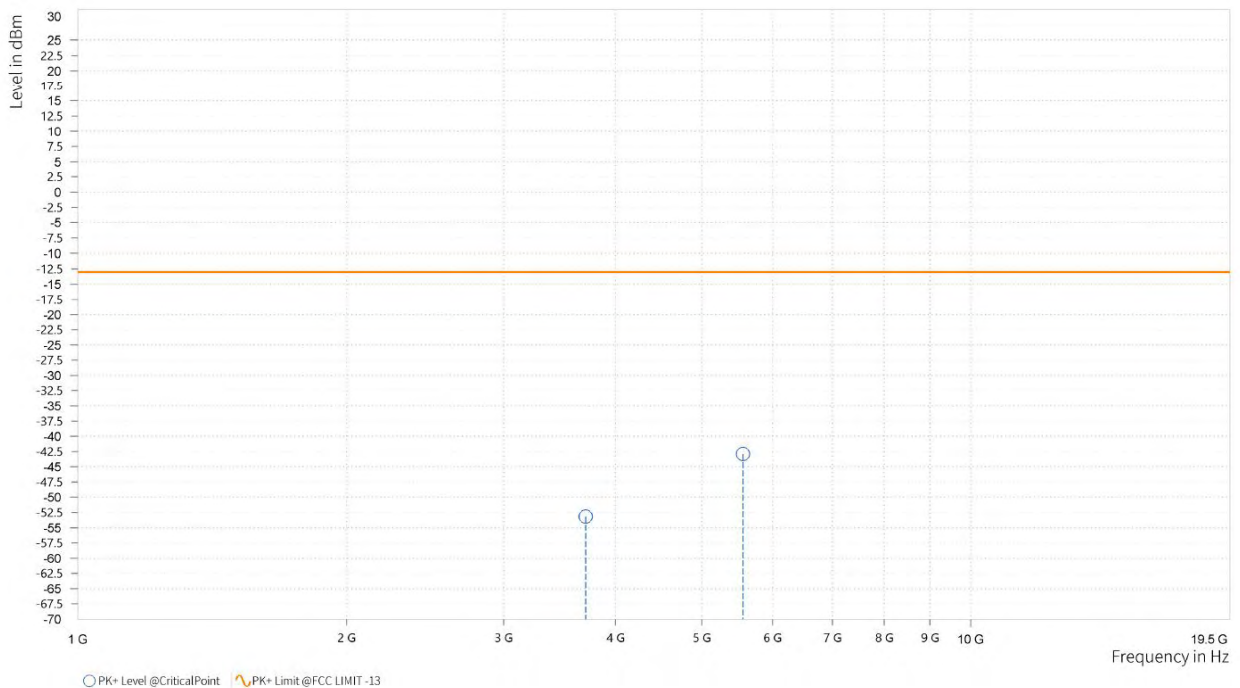
Test Report No.: W7L-P23010016RF02

WCDMA Band II

CH 9262

MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,704.000	-53.18	-13.00	40.18	22.68	H	359.1	1
4	5,560.000	-42.90	-13.00	29.90	26.58	H	1	1

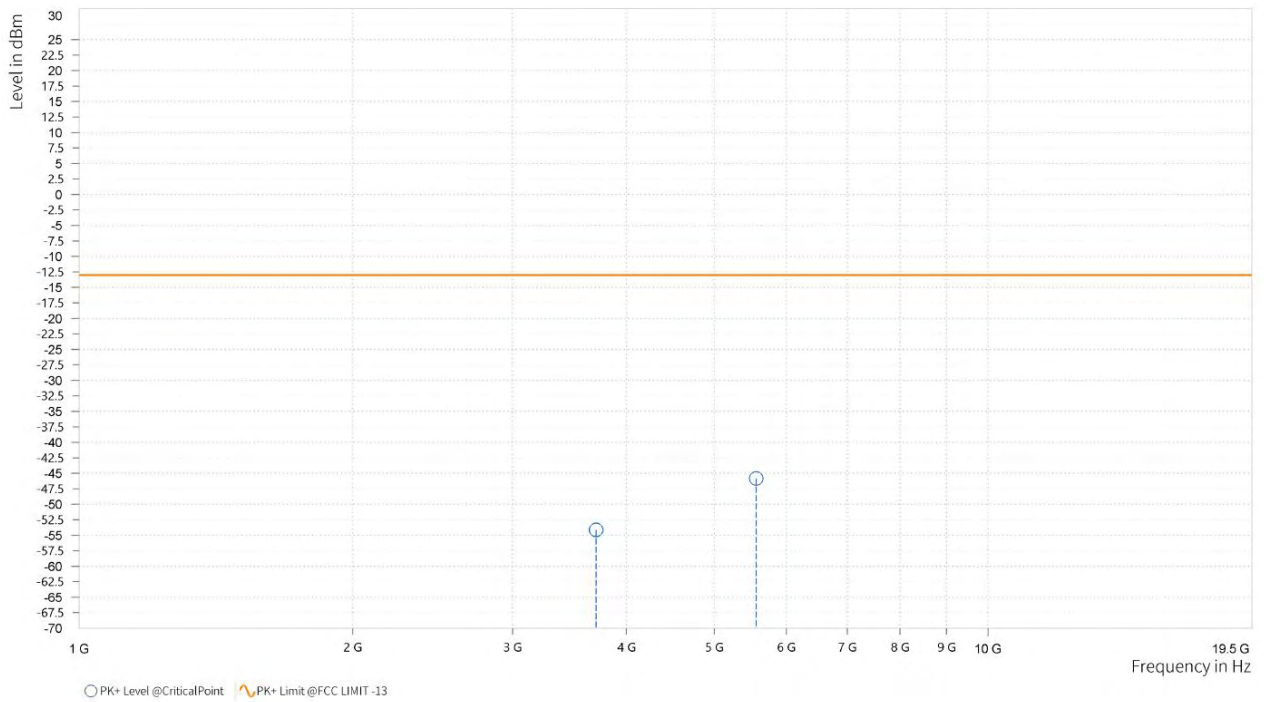




Test Report No.: W7L-P23010016RF02

MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,705.000	-54.15	-13.00	41.15	22.67	V	359.1	1
4	5,560.000	-45.82	-13.00	32.82	25.83	V	199.2	1

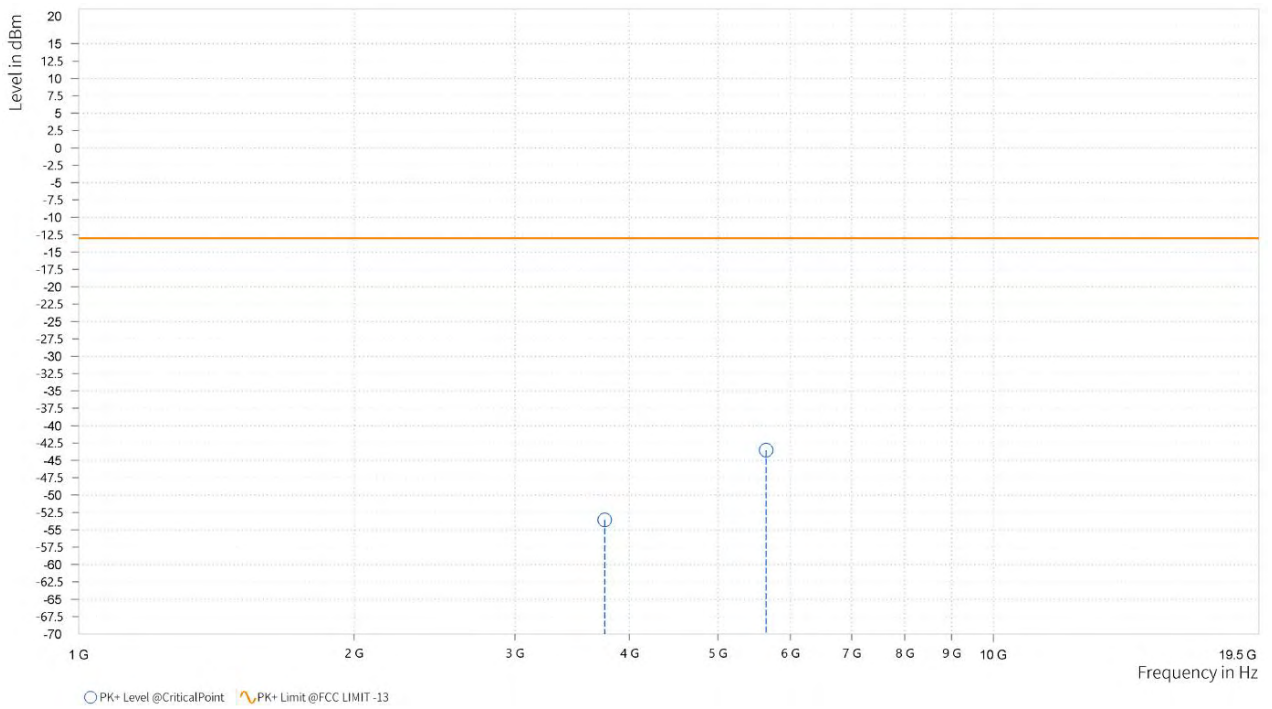




CH 9400

MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,759.500	-53.59	-13.00	40.59	23.53	H	359	1
4	5,644.000	-43.54	-13.00	30.54	26.44	H	359	1

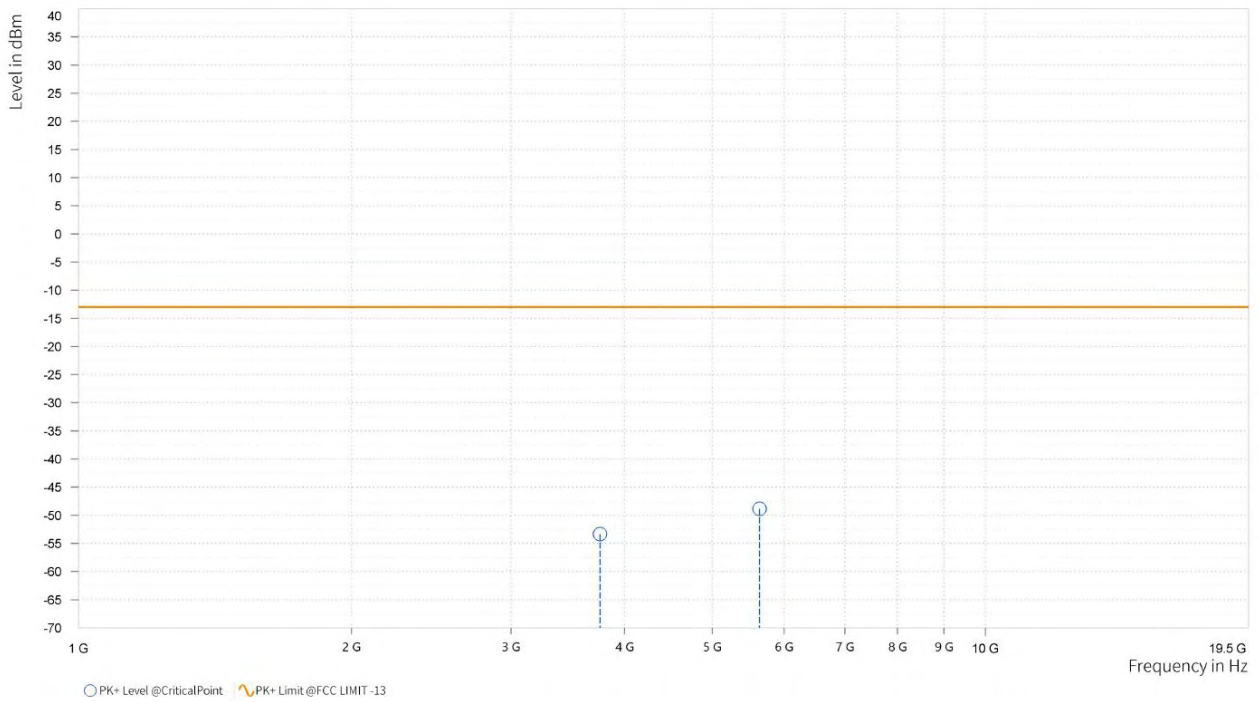




Test Report No.: W7L-P23010016RF02

MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-53.34	-13.00	40.34	23.42	V	1	2
4	5,637.000	-48.87	-13.00	35.87	25.64	V	359	2



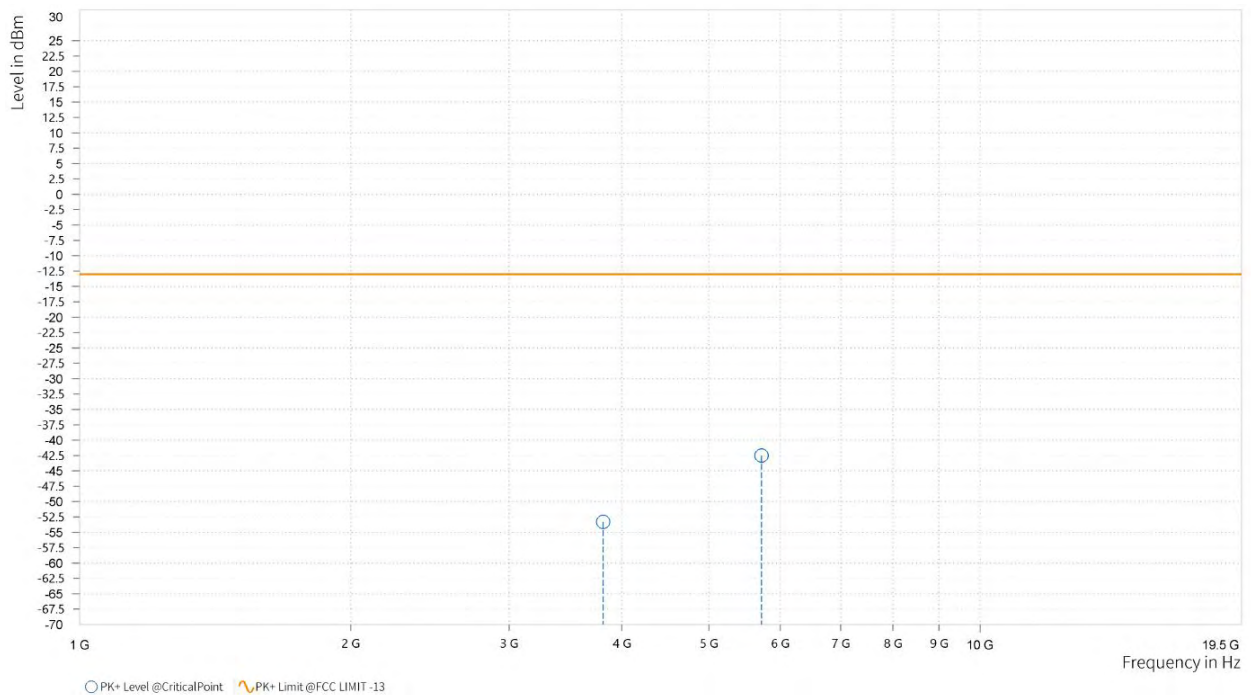


Test Report No.: W7L-P23010016RF02

CH 9538

MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,815.000	-53.28	-13.00	40.28	23.53	H	192	1
4	5,719.000	-42.53	-13.00	29.53	27.05	H	1	1

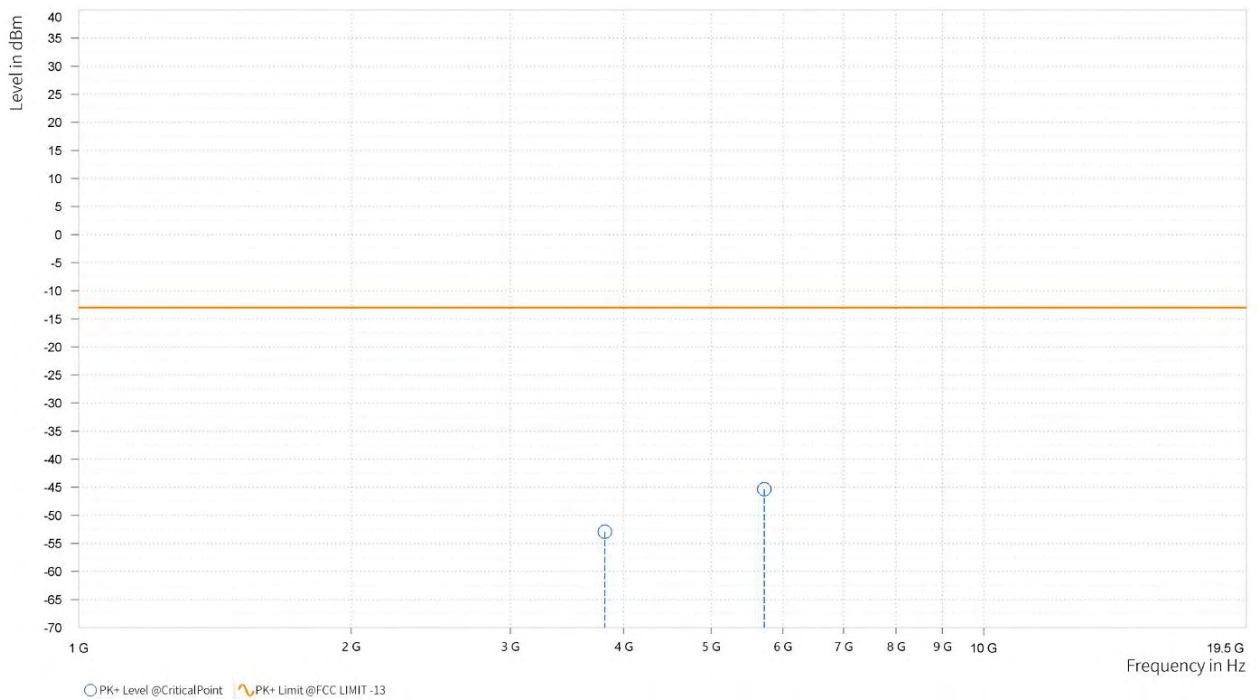




Test Report No.: W7L-P23010016RF02

MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,814.500	-52.94	-13.00	39.94	23.32	V	359.1	1
4	5,720.500	-45.34	-13.00	32.34	26.22	V	0.9	2





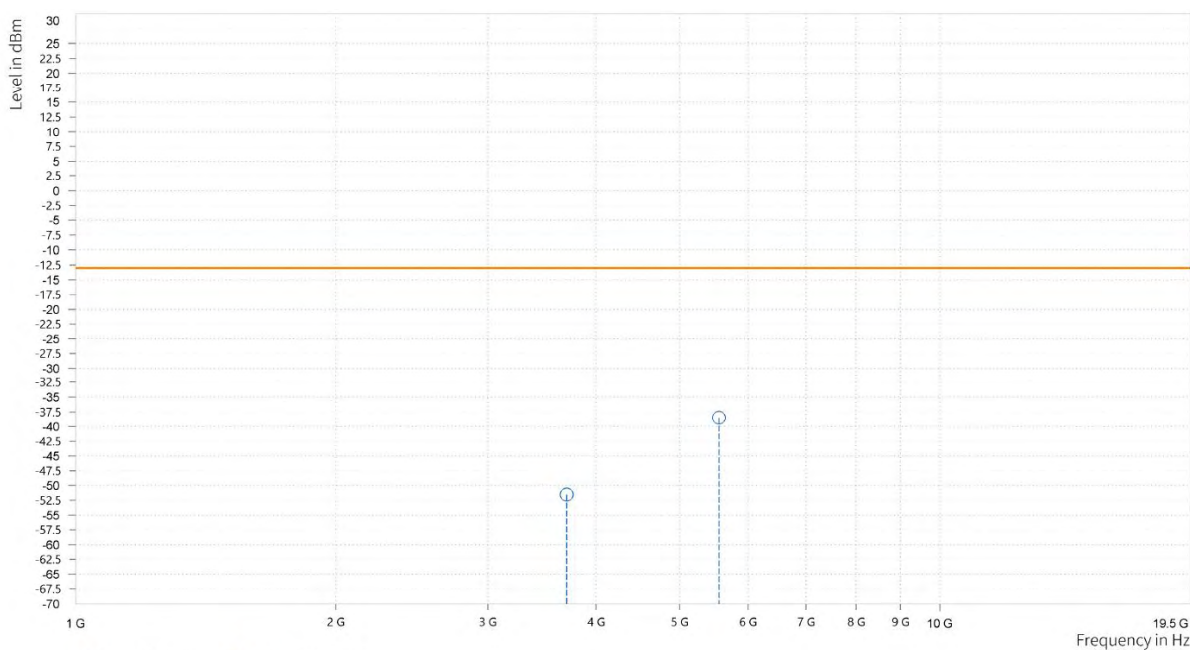
LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH 18607

MODE	TX channel 18607	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,699.500	-51.54	-13.00	38.54	22.64	H	182.4	1
4	5,551.000	-38.48	-13.00	25.48	26.61	H	151.2	2

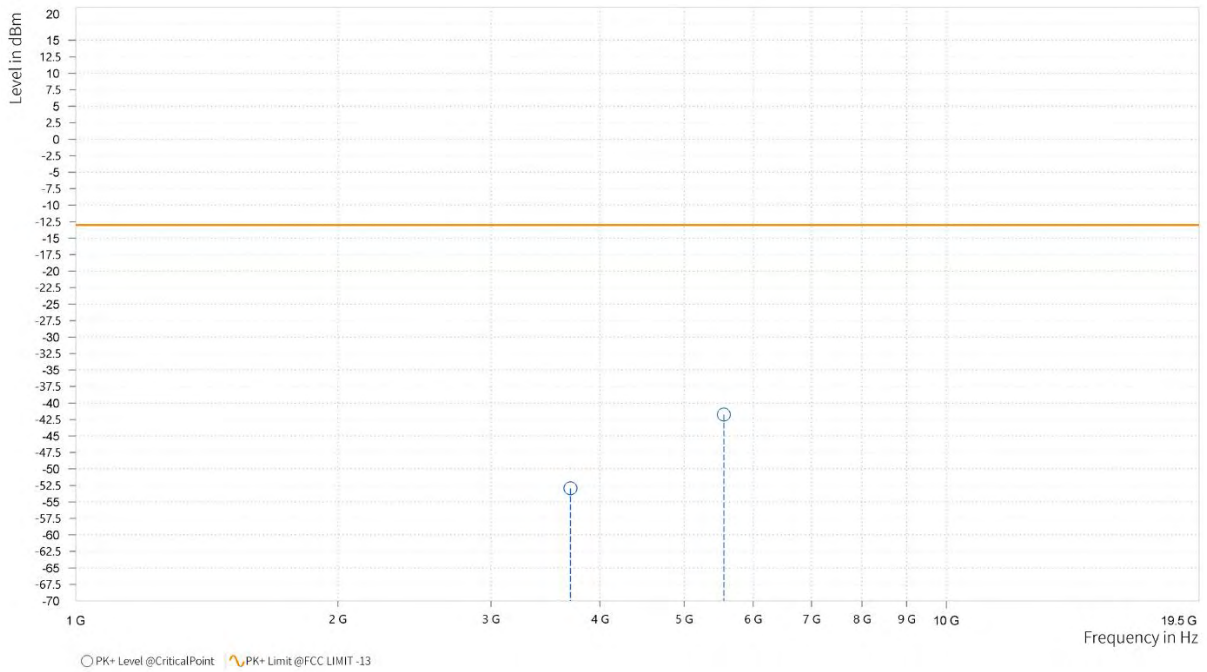




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18607	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,700.500	-52.93	-13.00	39.93	22.58	V	359.1	1
4	5,551.000	-41.74	-13.00	28.74	25.84	V	196.8	1



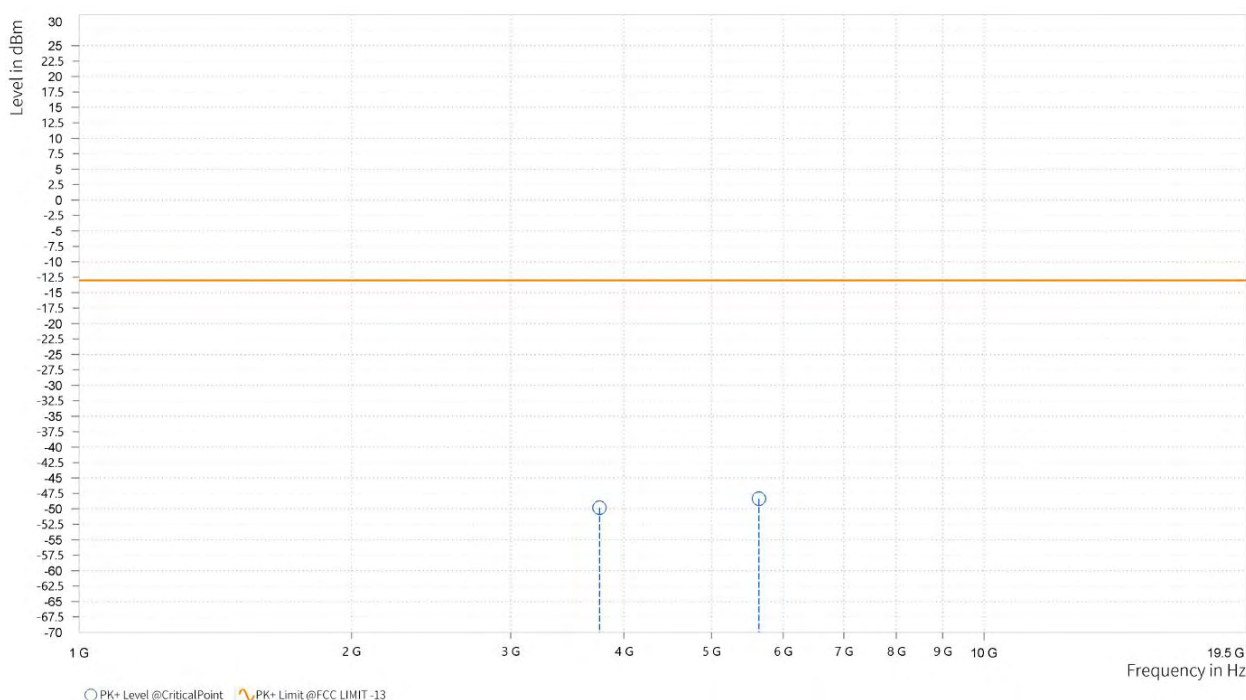


Test Report No.: W7L-P23010016RF02

CH18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,759.000	-49.82	-13.00	36.82	23.53	H	176.3	2
4	5,638.500	-48.34	-13.00	35.34	26.46	H	184.8	1

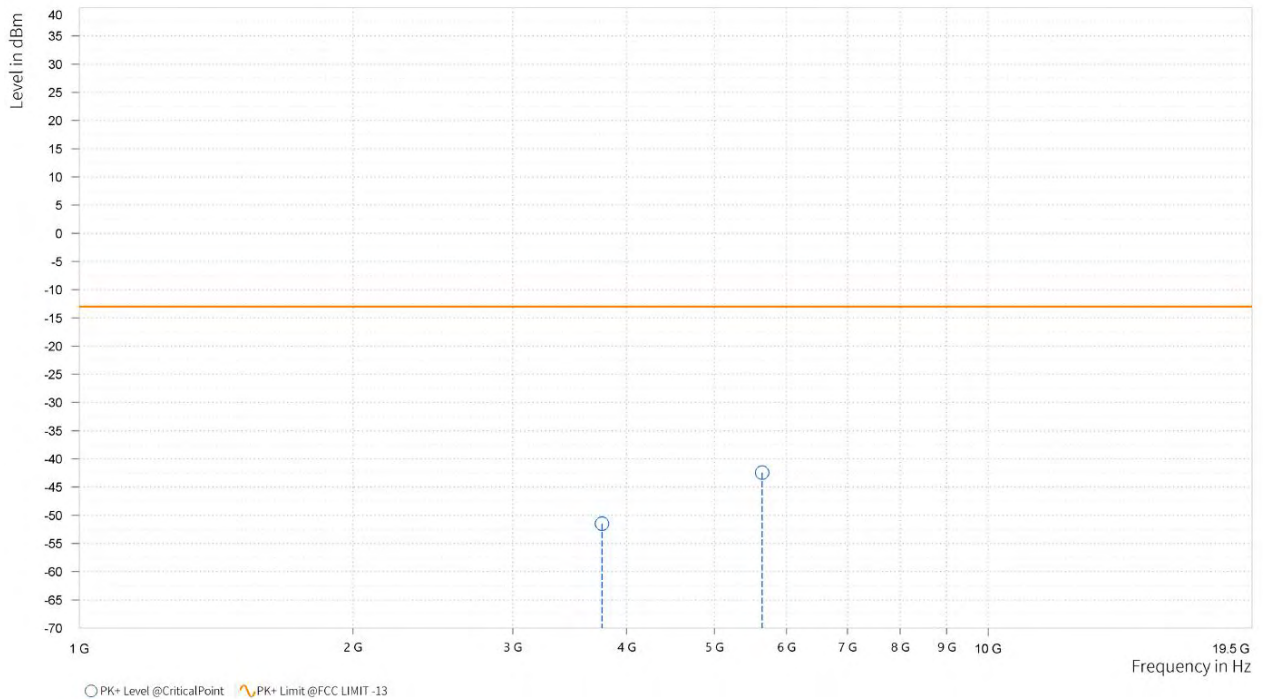




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,759.500	-51.50	-13.00	38.50	23.42	V	117.8	2
4	5,638.500	-42.44	-13.00	29.44	25.64	V	359.1	1



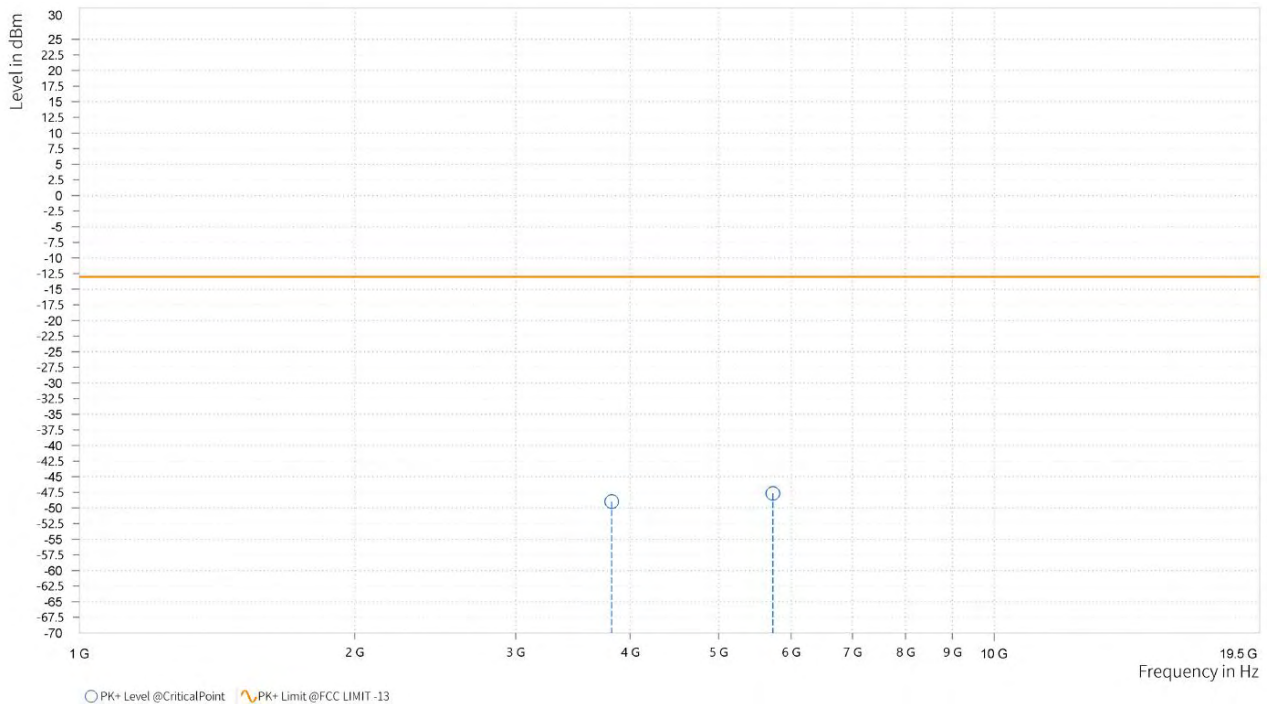


Test Report No.: W7L-P23010016RF02

CH19193

MODE	TX channel 19193	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,818.500	-48.97	-13.00	35.97	23.55	H	183.6	1
4	5,728.000	-47.66	-13.00	34.66	27.09	H	150	2

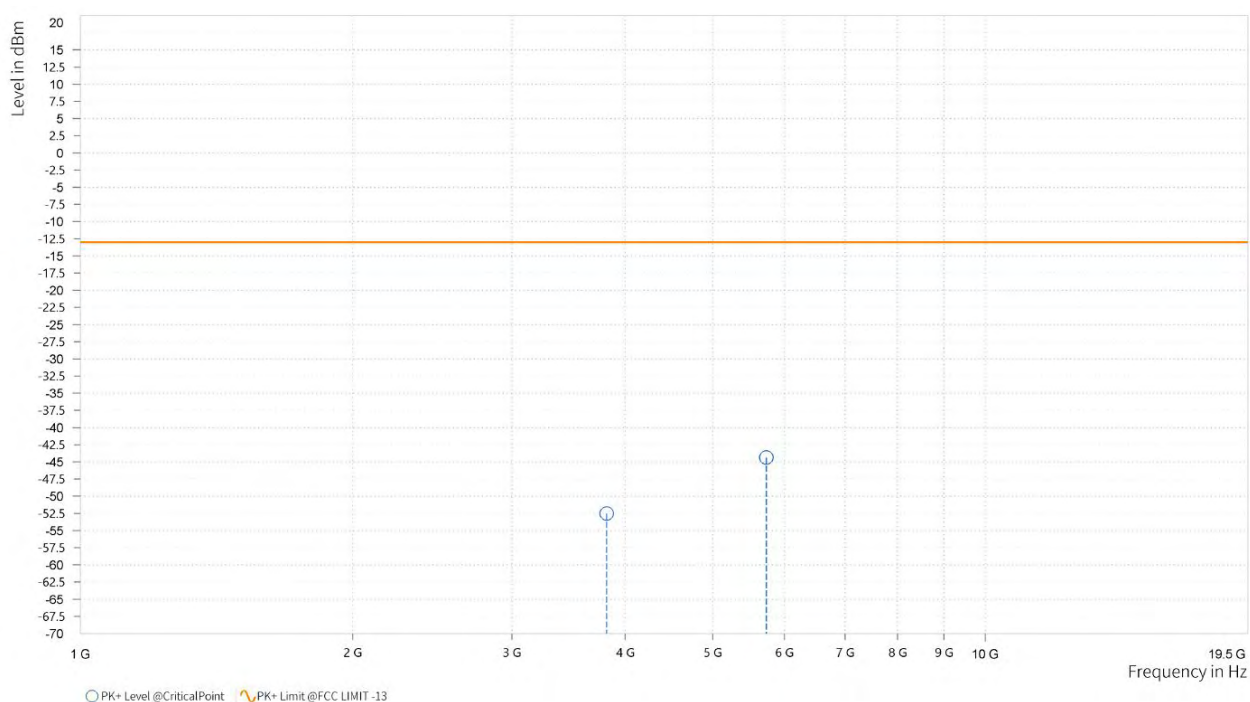




Test Report No.: W7L-P23010016RF02

MODE	TX channel 19193	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,817.000	-52.53	-13.00	39.53	23.32	V	1	1
4	5,728.000	-44.36	-13.00	31.36	26.23	V	196.8	1





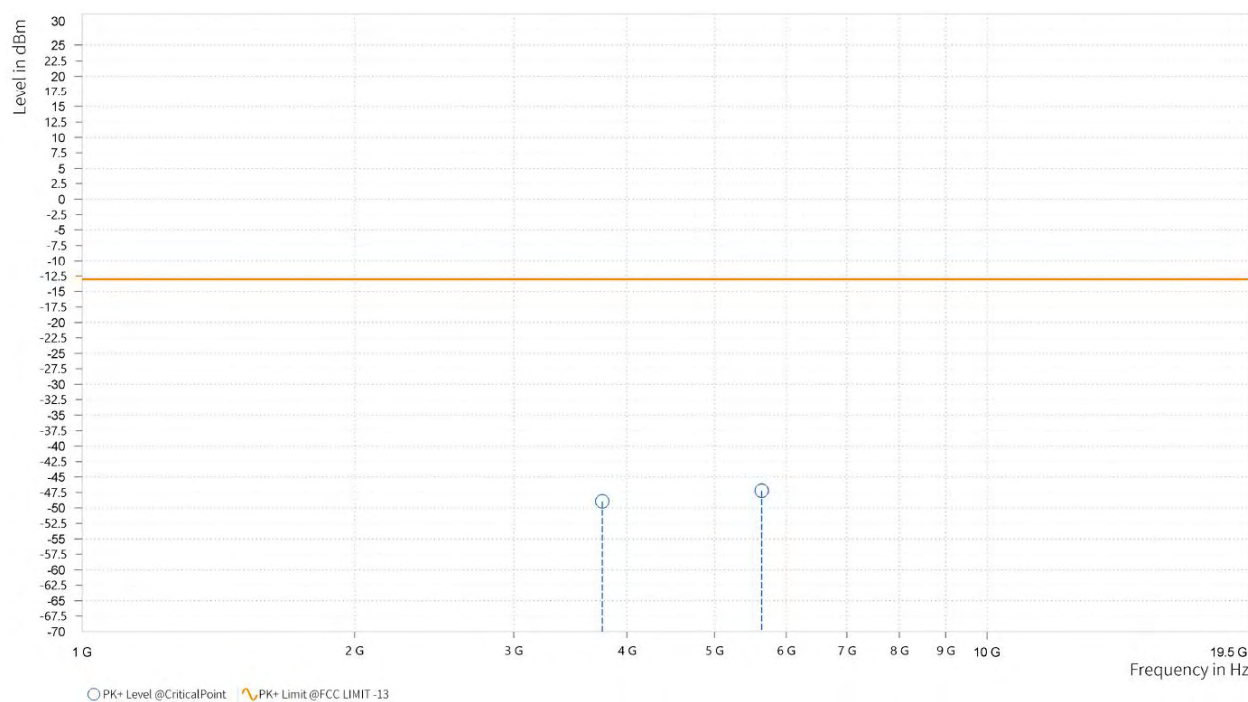
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 3MHz / QPSK

CH18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,757.000	-48.93	-13.00	35.93	23.54	H	176.3	2
4	5,637.000	-47.22	-13.00	34.22	26.46	H	184.8	1

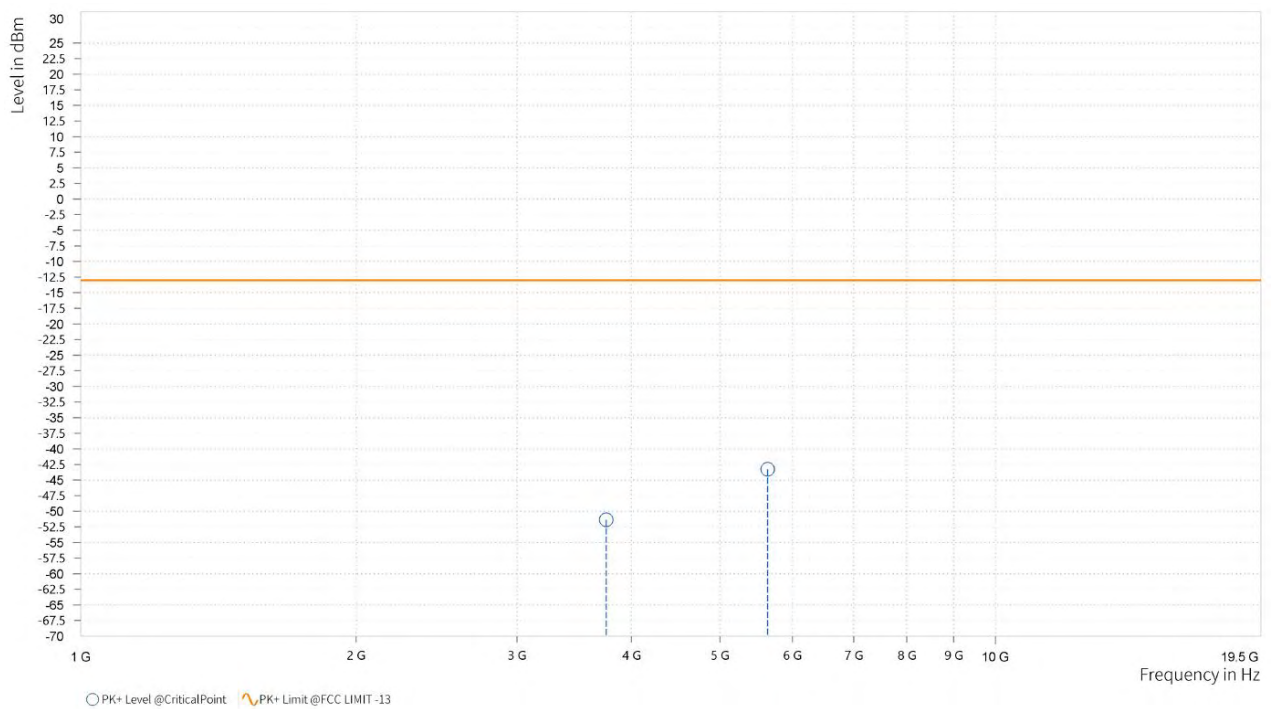




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,754.500	-51.35	-13.00	38.35	23.44	V	199.2	1
4	5,636.500	-43.28	-13.00	30.28	25.64	V	1	1





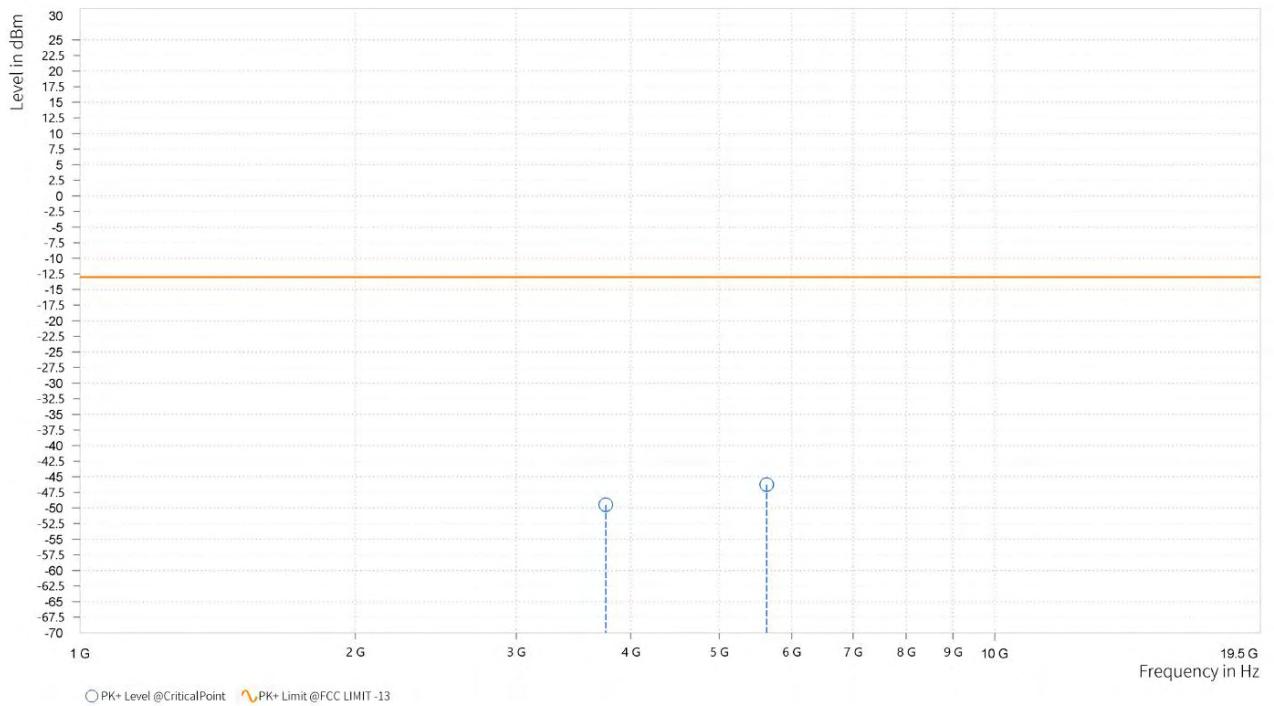
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 5MHz / QPSK

CH18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,755.500	-49.48	-13.00	36.48	23.55	H	175.2	2
4	5,633.500	-46.26	-13.00	33.26	26.47	H	183.6	1

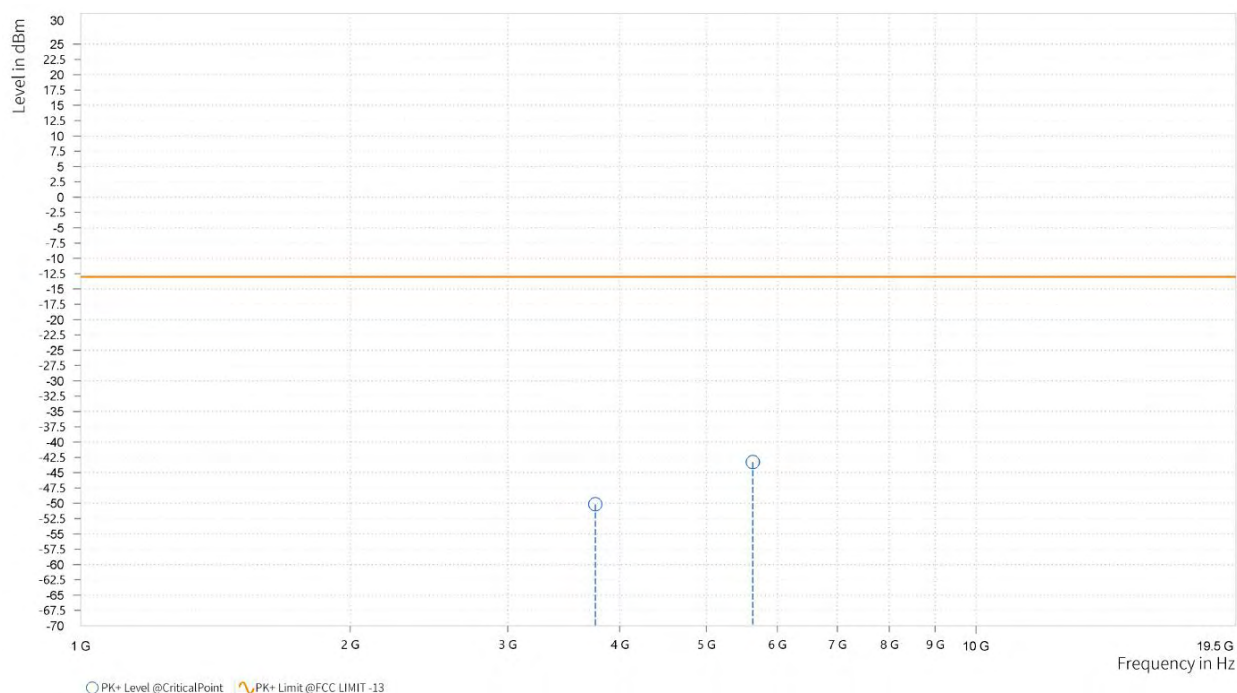




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,755.500	-50.15	-13.00	37.15	23.44	V	1	1
4	5,633.500	-43.27	-13.00	30.27	25.64	V	359	1





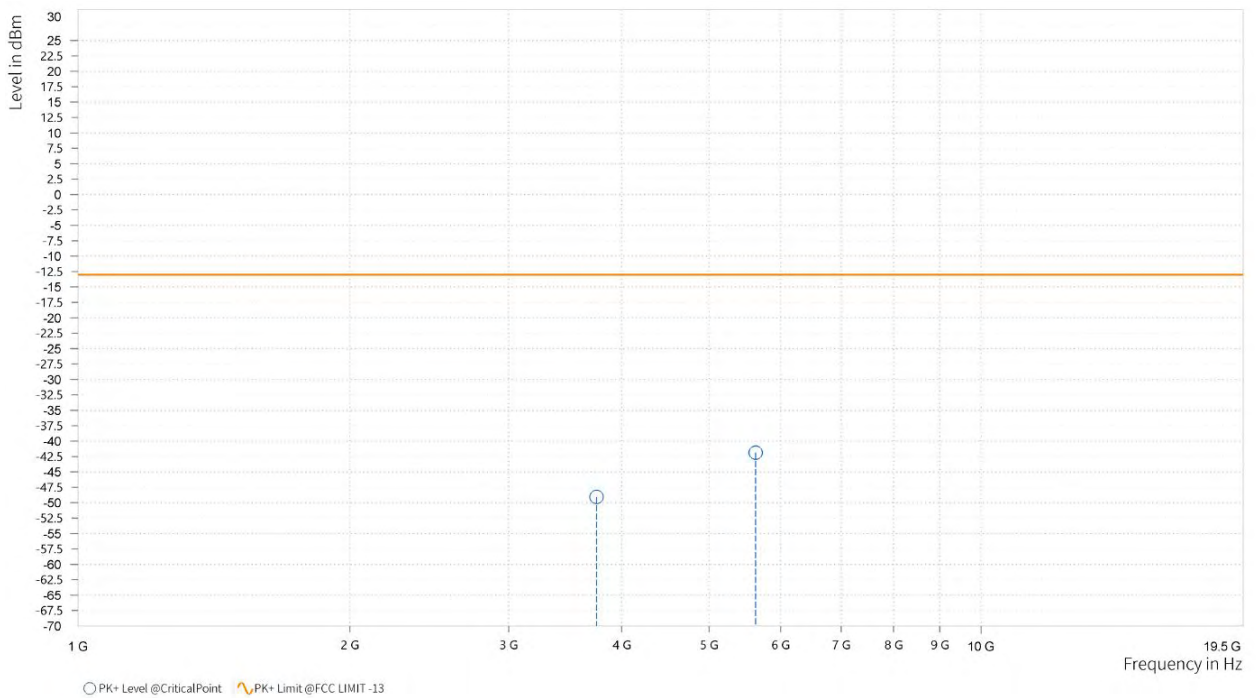
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 10MHz / QPSK

CH 18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,751.000	-49.05	-13.00	36.05	23.56	H	163.2	2
4	5,627.000	-41.88	-13.00	28.88	26.49	H	0.9	2

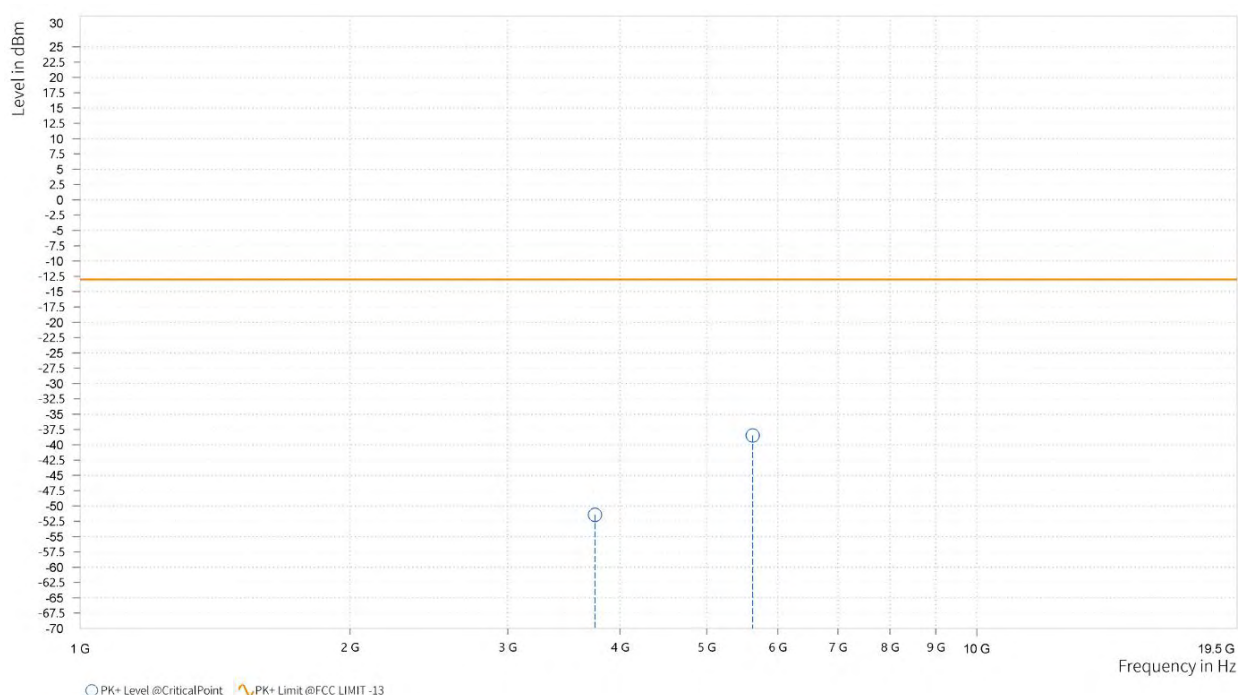




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,751.000	-51.45	-13.00	38.45	23.43	V	0.9	2
4	5,626.500	-38.50	-13.00	25.50	25.67	V	1	1



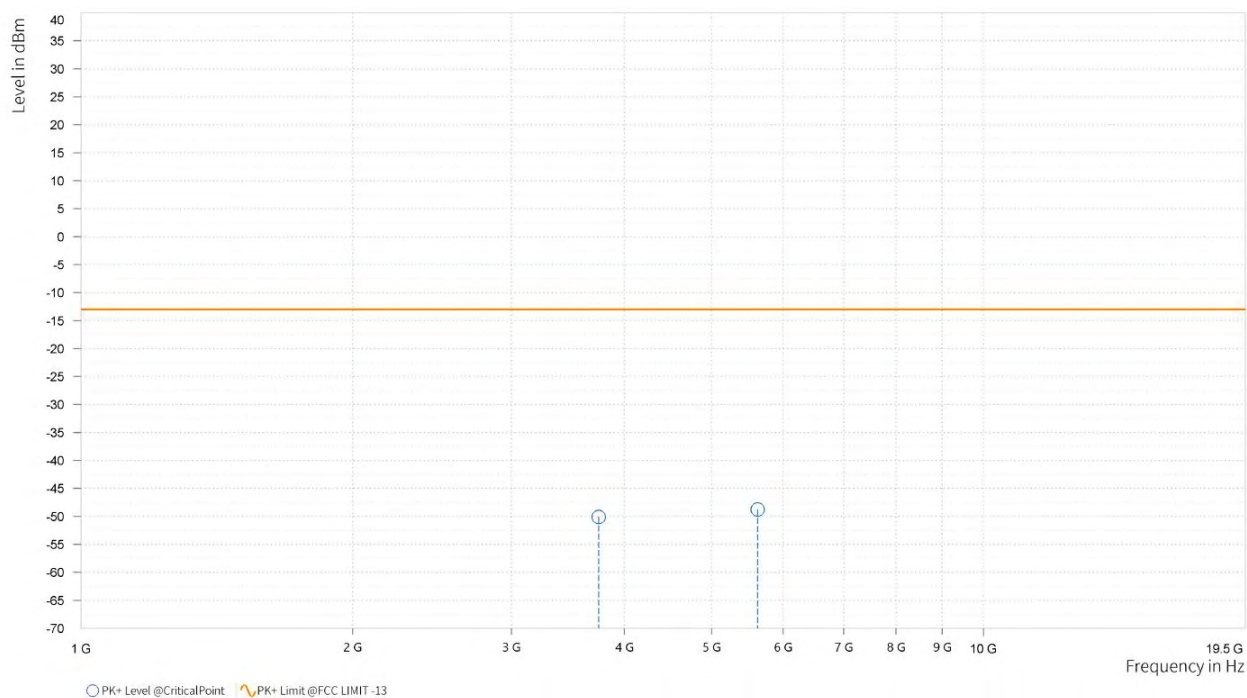


Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 15MHz / QPSK

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,747.000	-50.12	-13.00	37.12	23.56	H	359.1	1
4	5,620.000	-48.75	-13.00	35.75	26.52	H	359.1	1

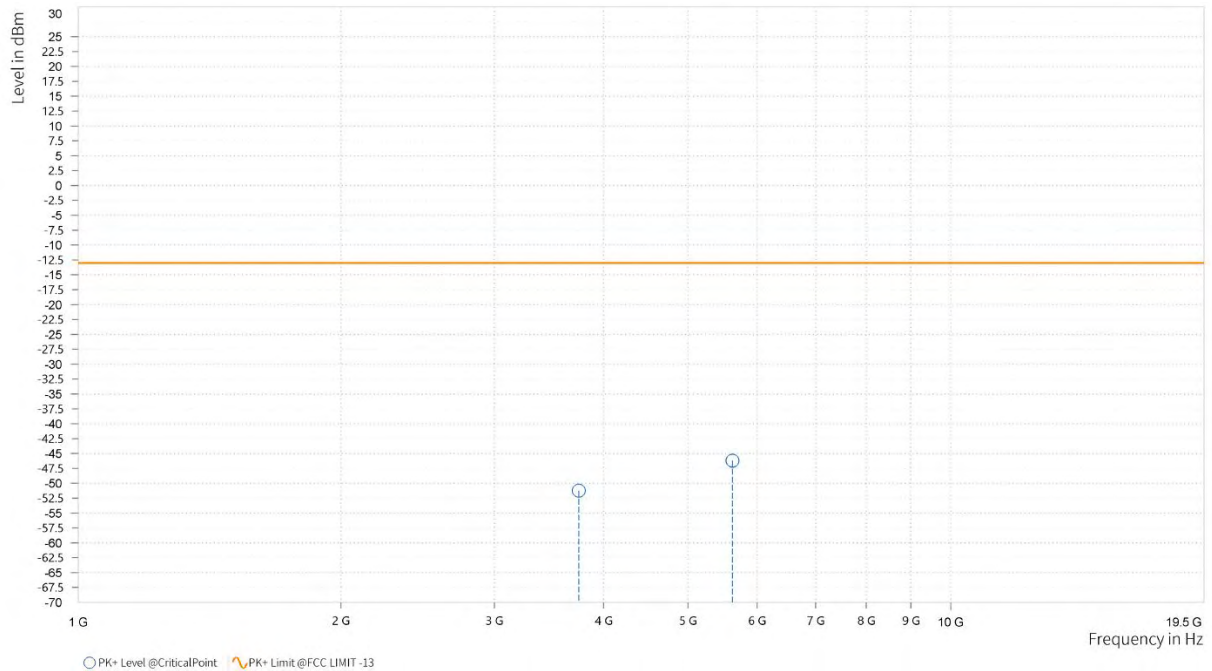




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,747.000	-51.24	-13.00	38.24	23.43	V	359	2
4	5,620.000	-46.19	-13.00	33.19	25.70	V	1	1





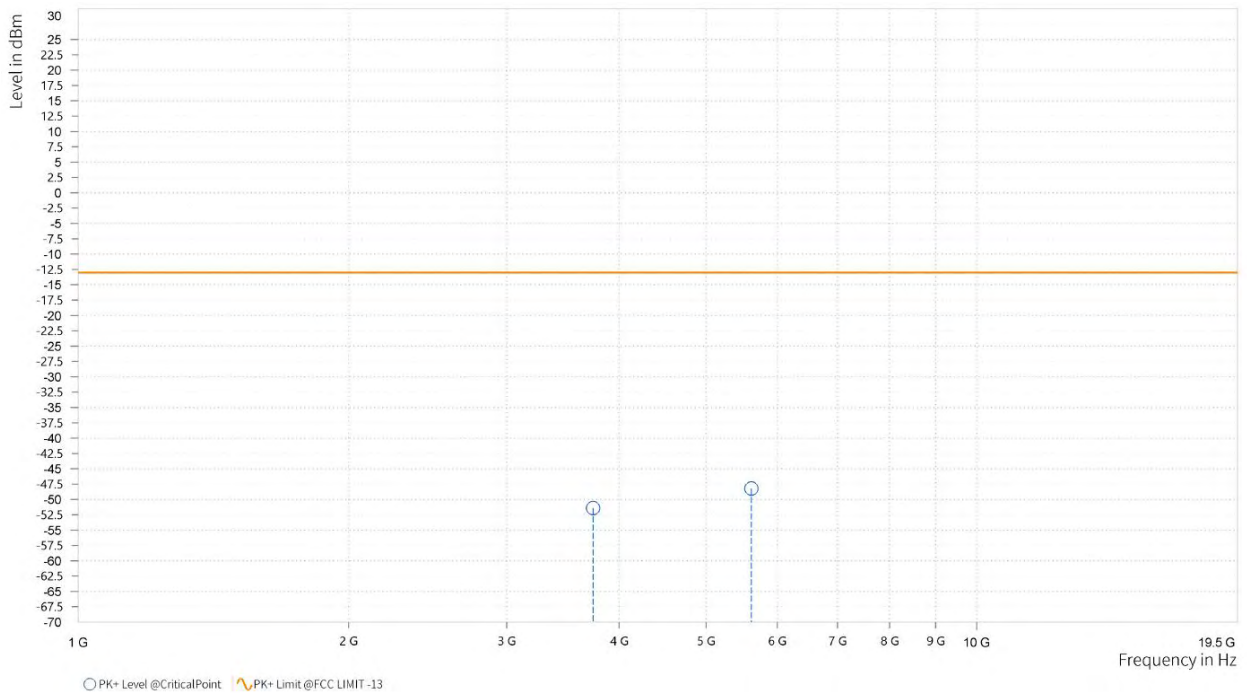
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 20MHz / QPSK

CH18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,741.500	-51.41	-13.00	38.41	23.45	H	160.8	2
4	5,613.000	-48.21	-13.00	35.21	26.54	H	186	1

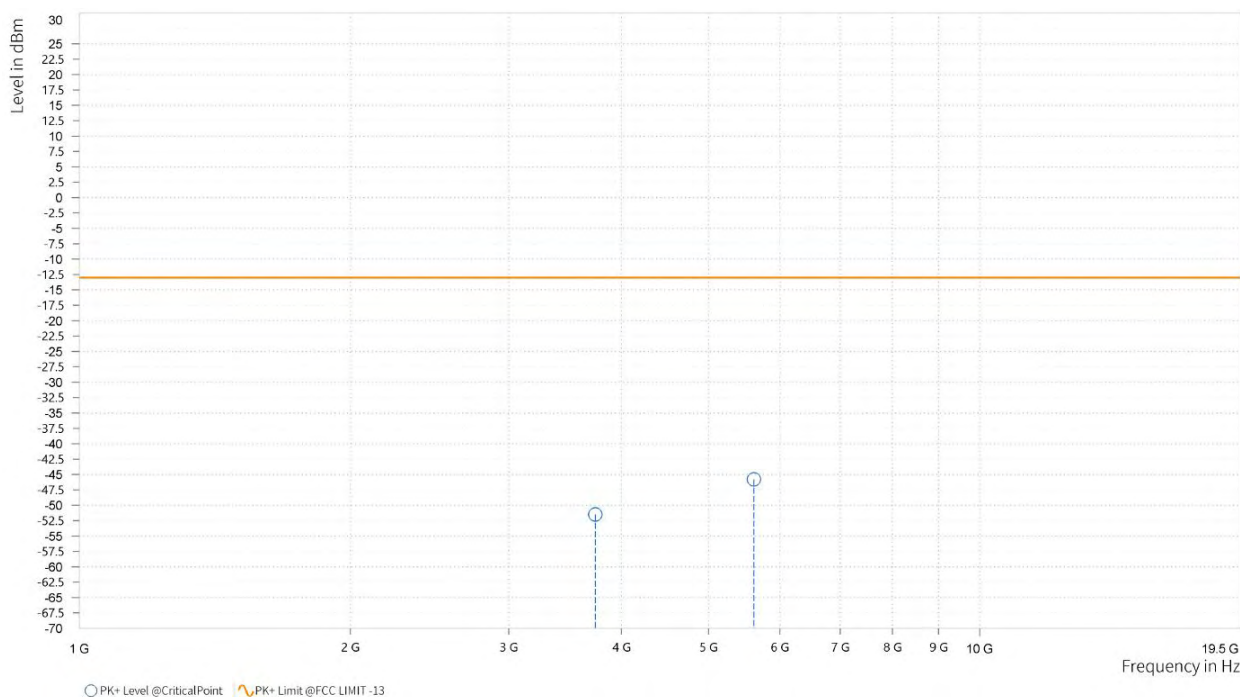




Test Report No.: W7L-P23010016RF02

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,742.500	-51.49	-13.00	38.49	23.36	V	359	2
4	5,613.000	-45.77	-13.00	32.77	25.74	V	1	1

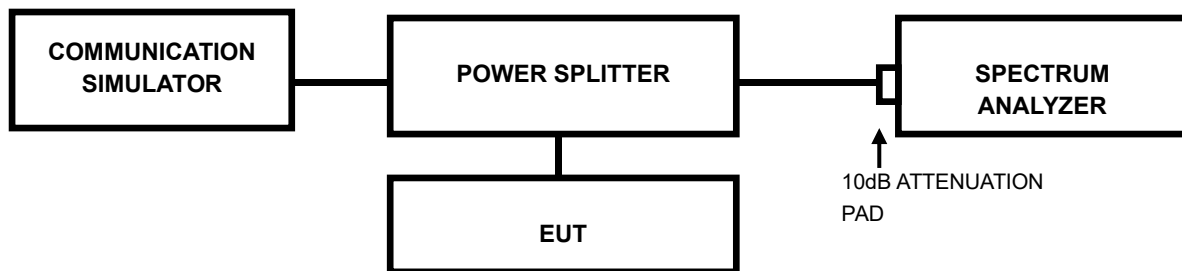


3.7 PEAK TO AVERAGE RATIO

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%.



Test Report No.: W7L-P23010016RF02

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



Test Report No.: W7L-P23010016RF02

4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 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:

Suzhou EMC/RF Lab:

Tel: +86 (0557) 368 1008



Test Report No.: W7L-P23010016RF02

5 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.



APPENDIX

GSM1900

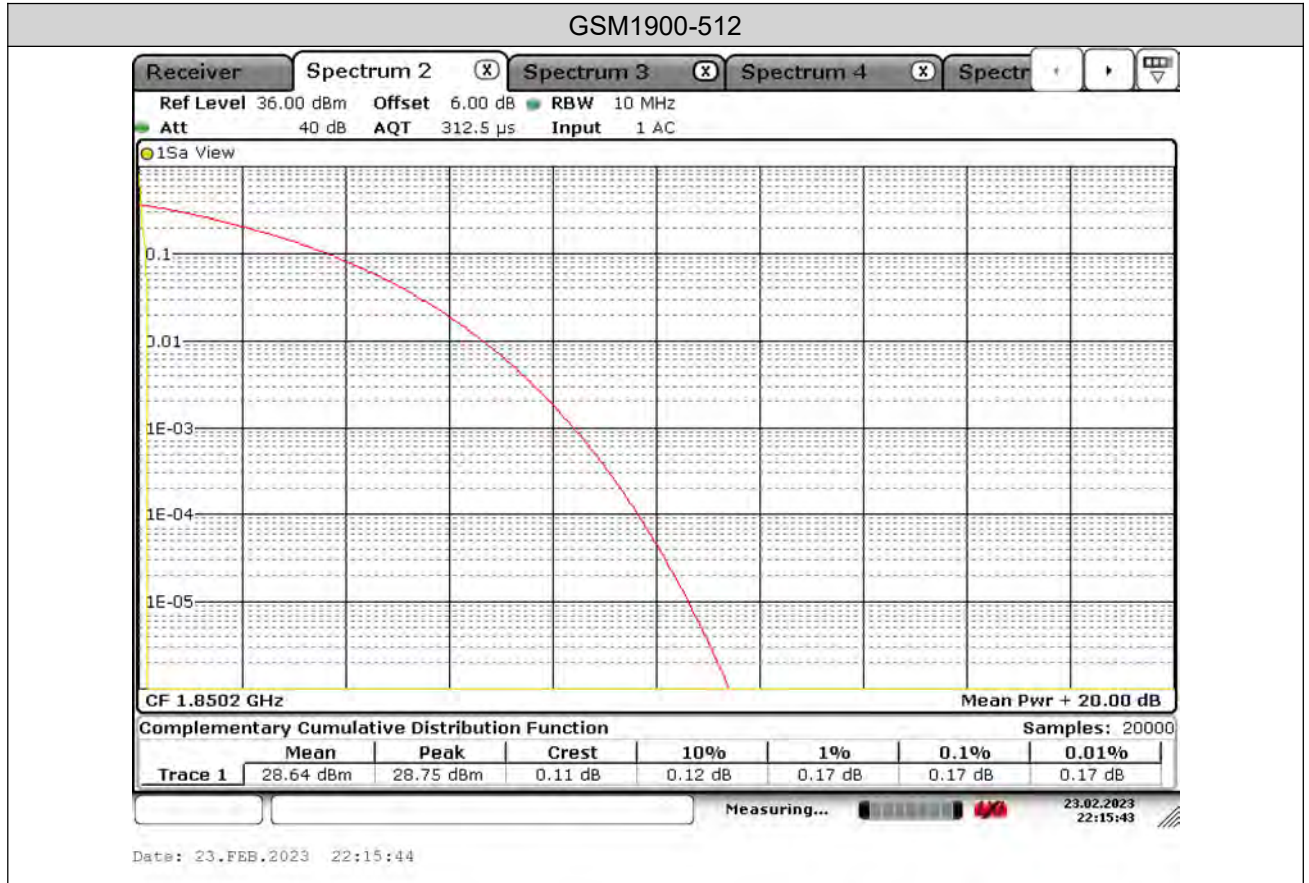
PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM1900	512	0.17	13	PASS
GSM1900	661	0.17	13	PASS
GSM1900	810	0.12	13	PASS
EGPRS1900	512	0.17	13	PASS
EGPRS1900	661	0.12	13	PASS
EGPRS1900	810	0.14	13	PASS



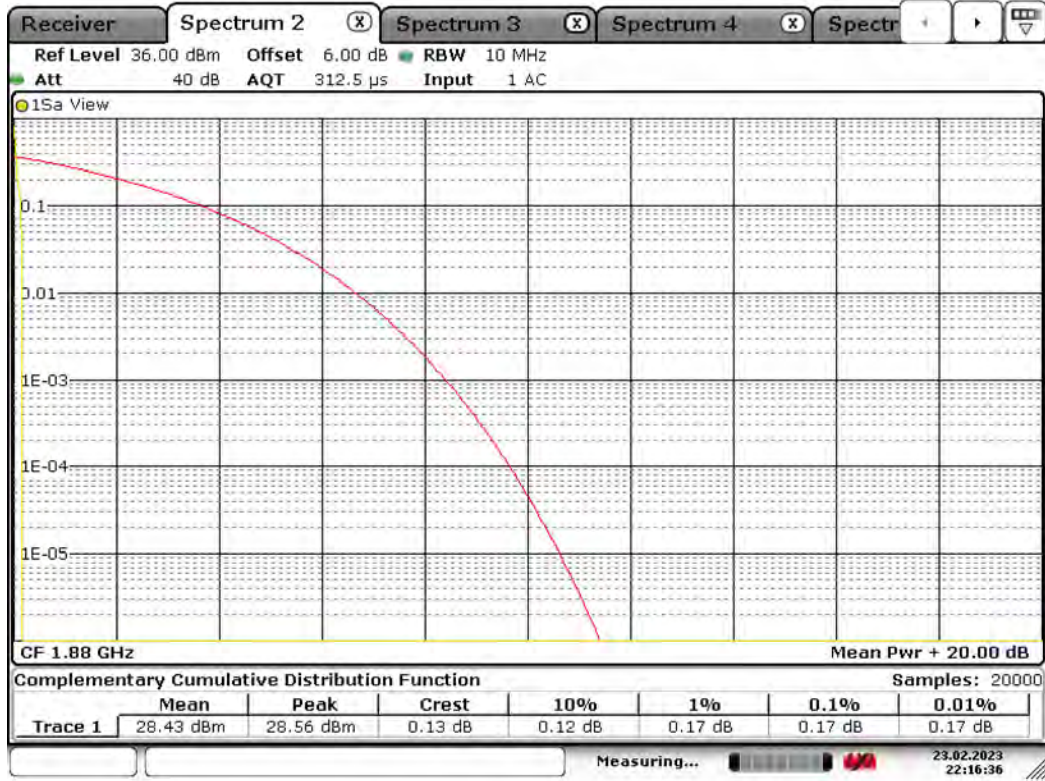
Test Graphs





Test Report No.: W7L-P23010016RF02

GSM1900-661



Date: 23.FEB.2023 22:16:36

GSM1900-810



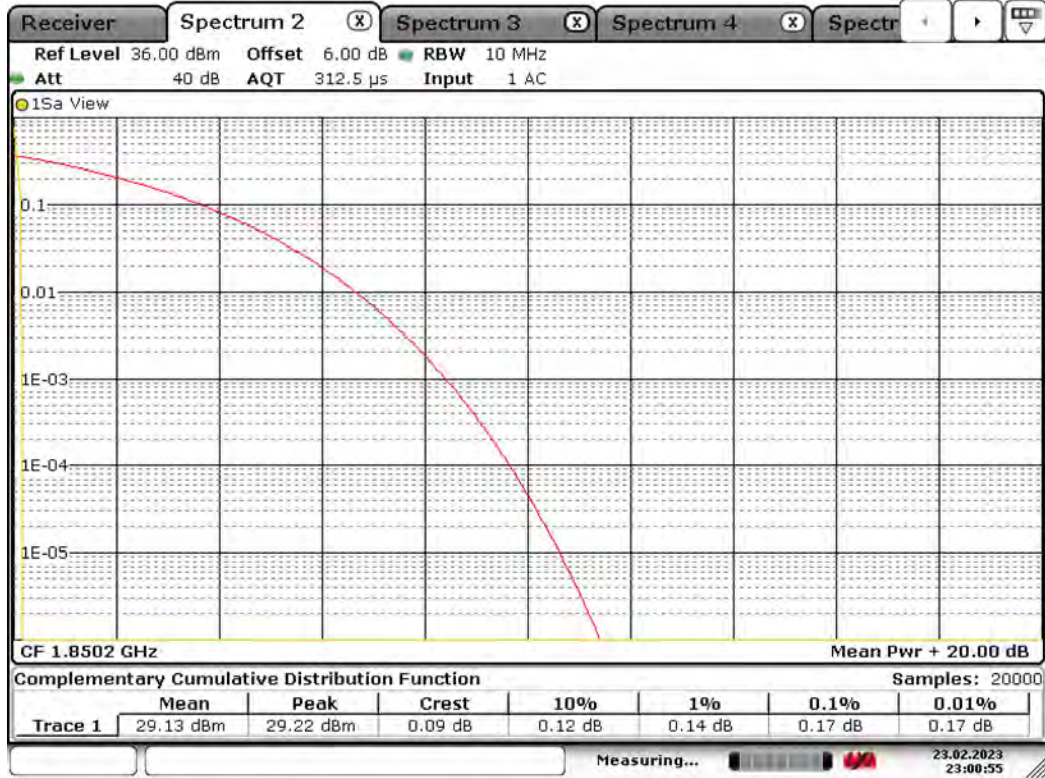
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BUREAU VERITAS

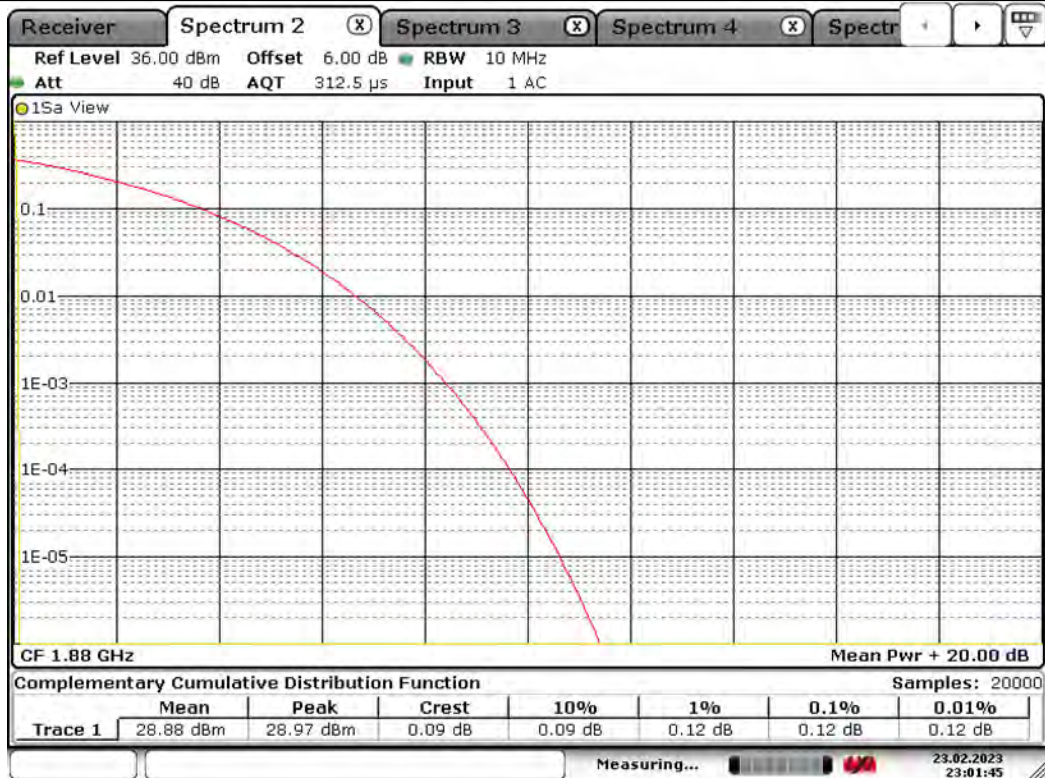
Test Report No.: W7L-P23010016RF02

EGPRS1900-512



Date: 23.FEB.2023 23:00:55

EGPRS1900-661



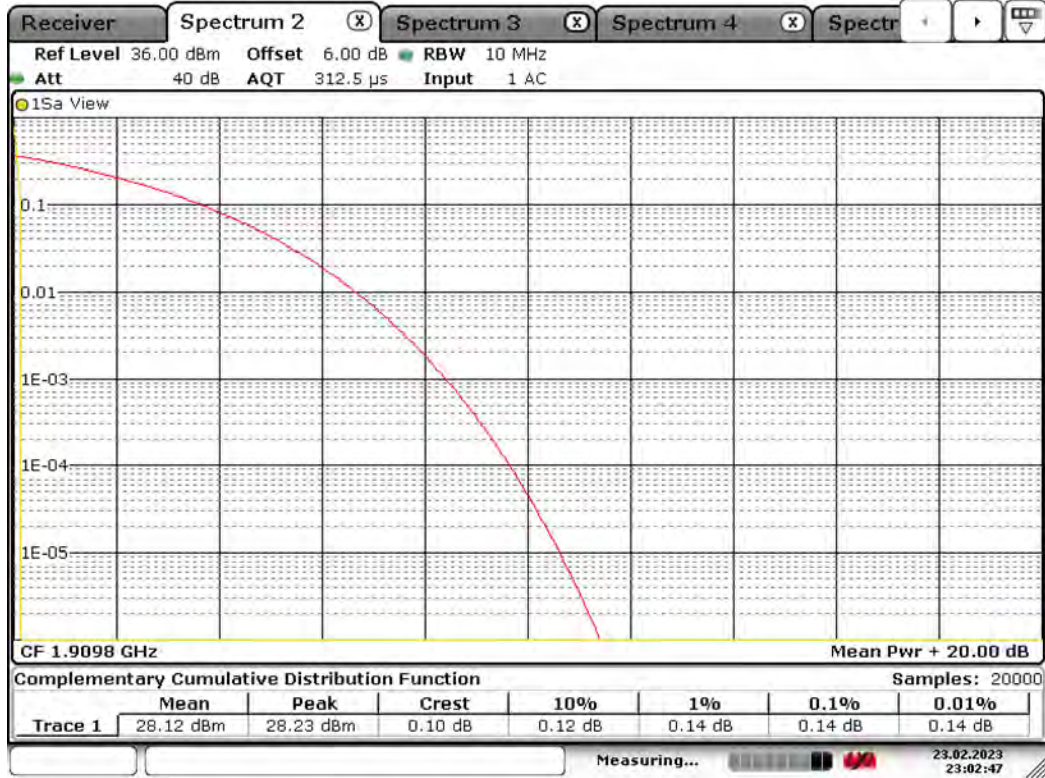
Date: 23.FEB.2023 23:01:45



BUREAU VERITAS

Test Report No.: W7L-P23010016RF02

EGPRS1900-810



Date: 23.FEB.2023 23:02:48



26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

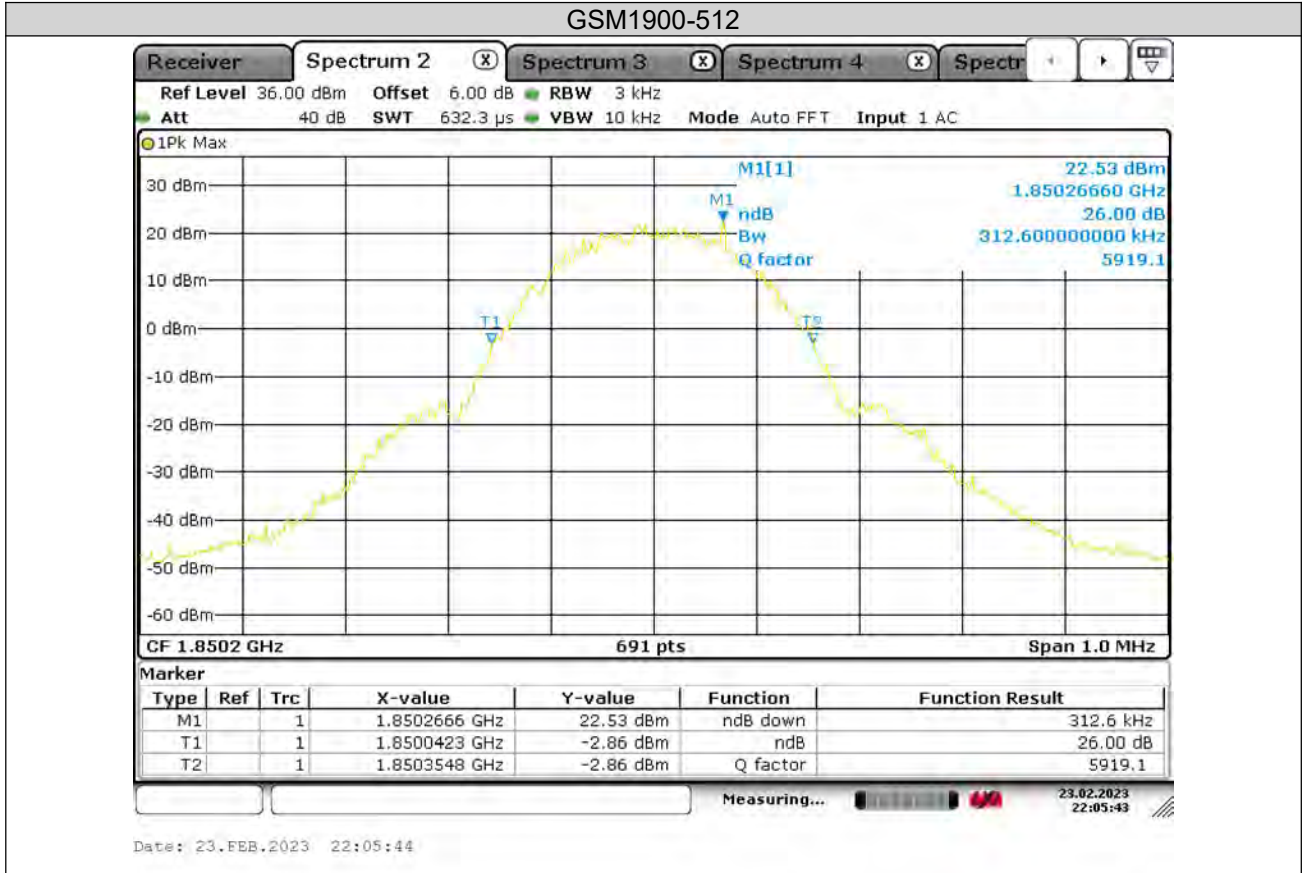
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM1900	512	0.2431	0.3126	---	PASS
GSM1900	661	0.2446	0.3126	---	PASS
GSM1900	810	0.2417	0.3126	---	PASS
EGPRS1900	512	0.2446	0.3140	---	PASS
EGPRS1900	661	0.2446	0.3126	---	PASS
EGPRS1900	810	0.2431	0.3169	---	PASS

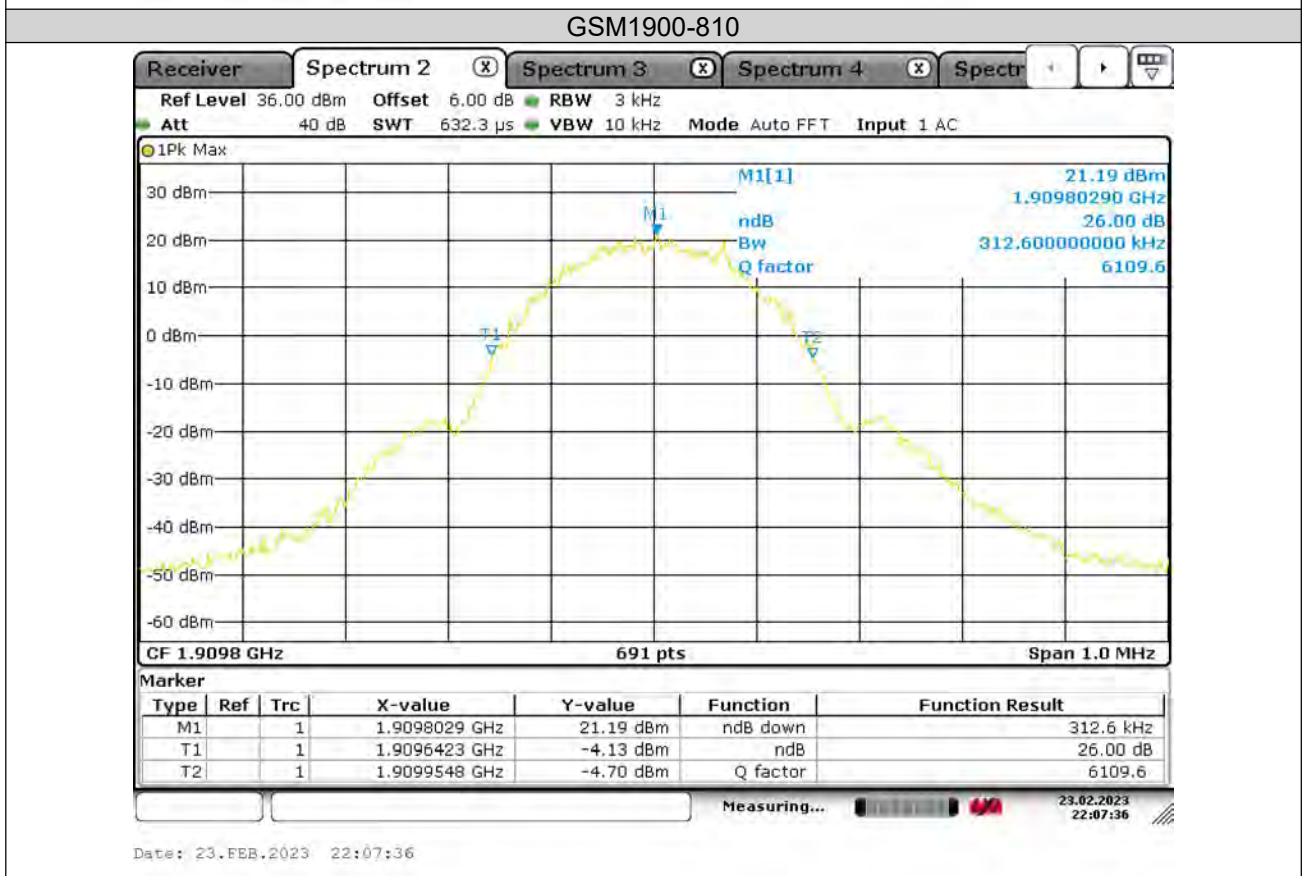
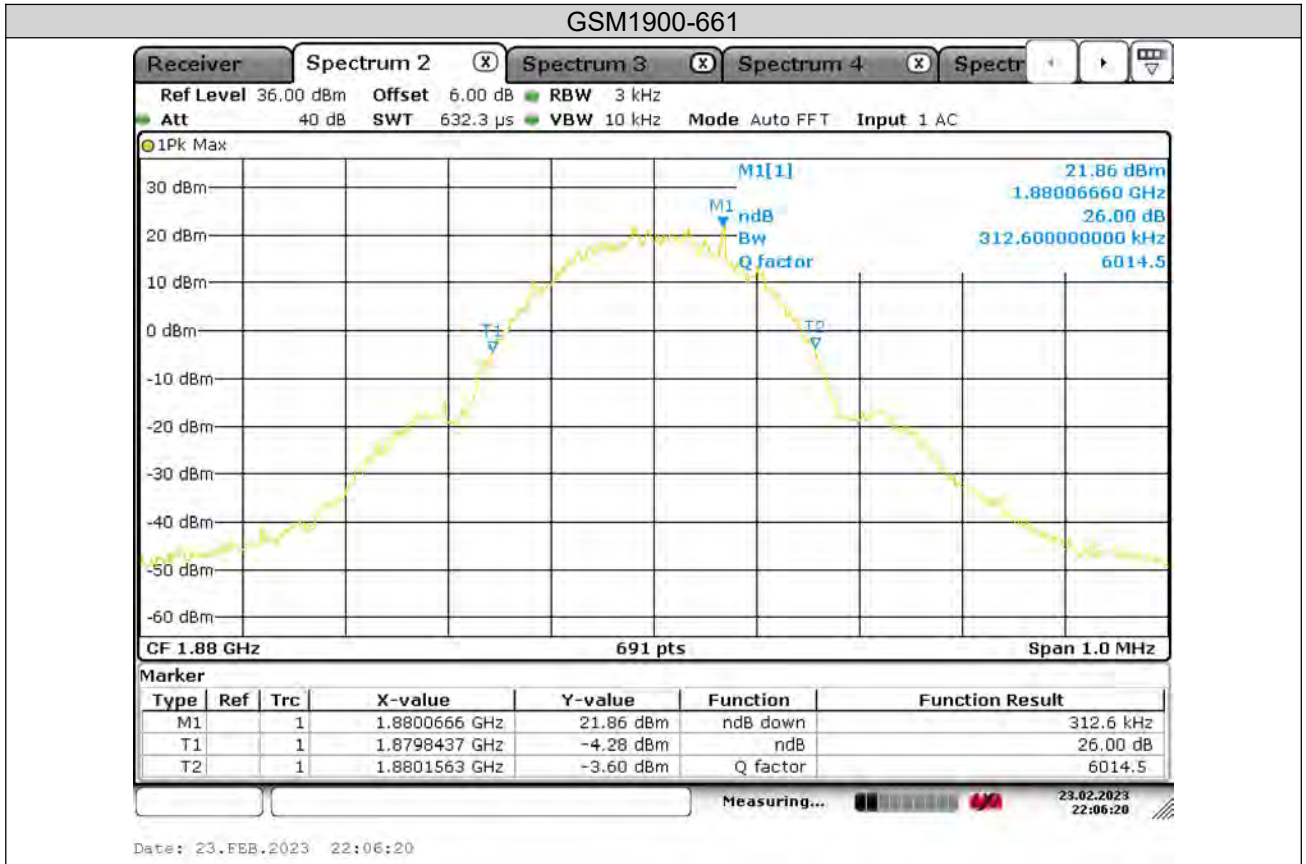


Test Graphs

26dB Bandwidth

GSM1900-512



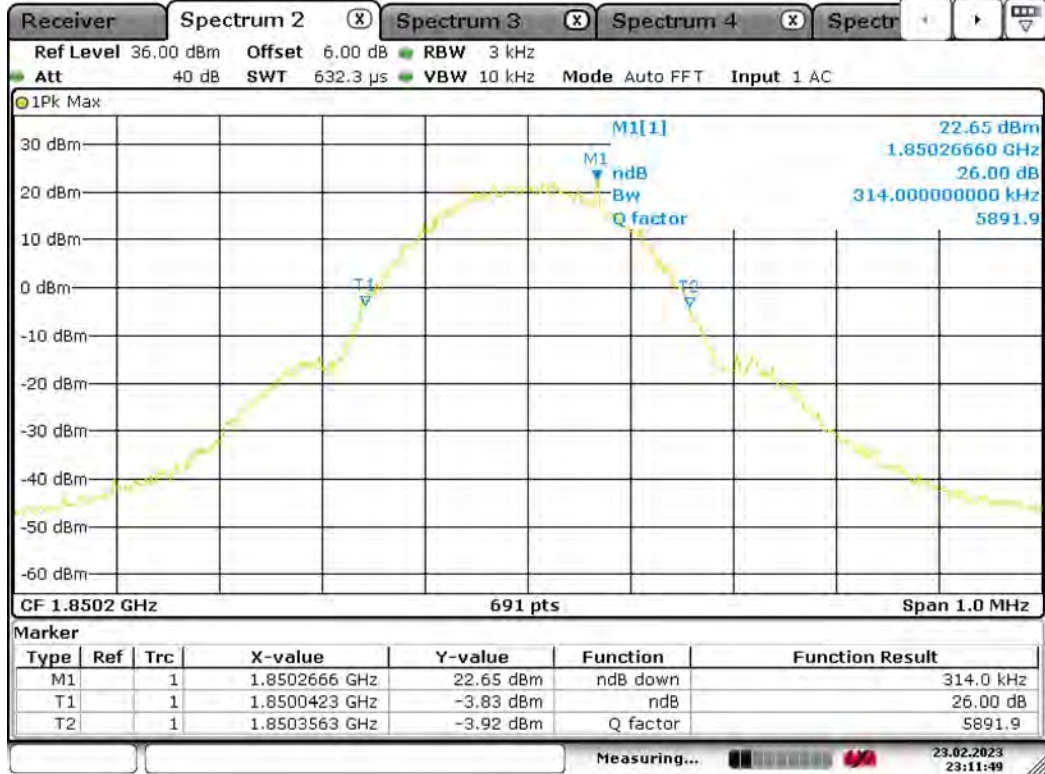




BUREAU
VERITAS

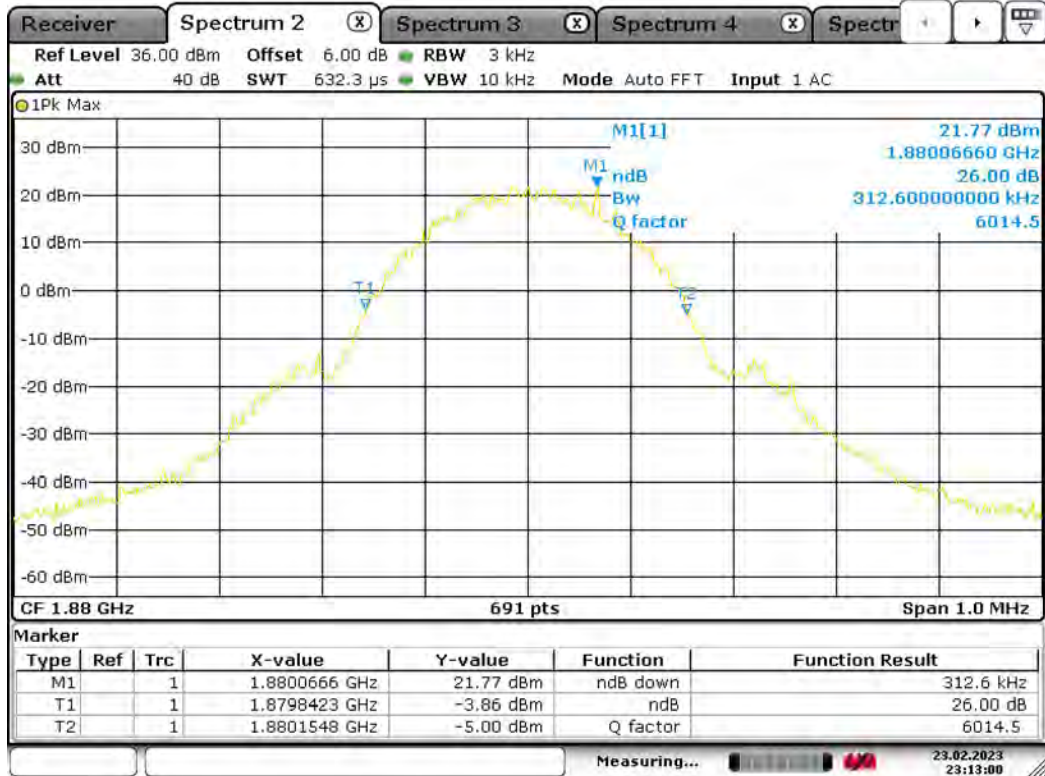
Test Report No.: W7L-P23010016RF02

EGPRS1900-512



Date: 23.FEB.2023 23:11:49

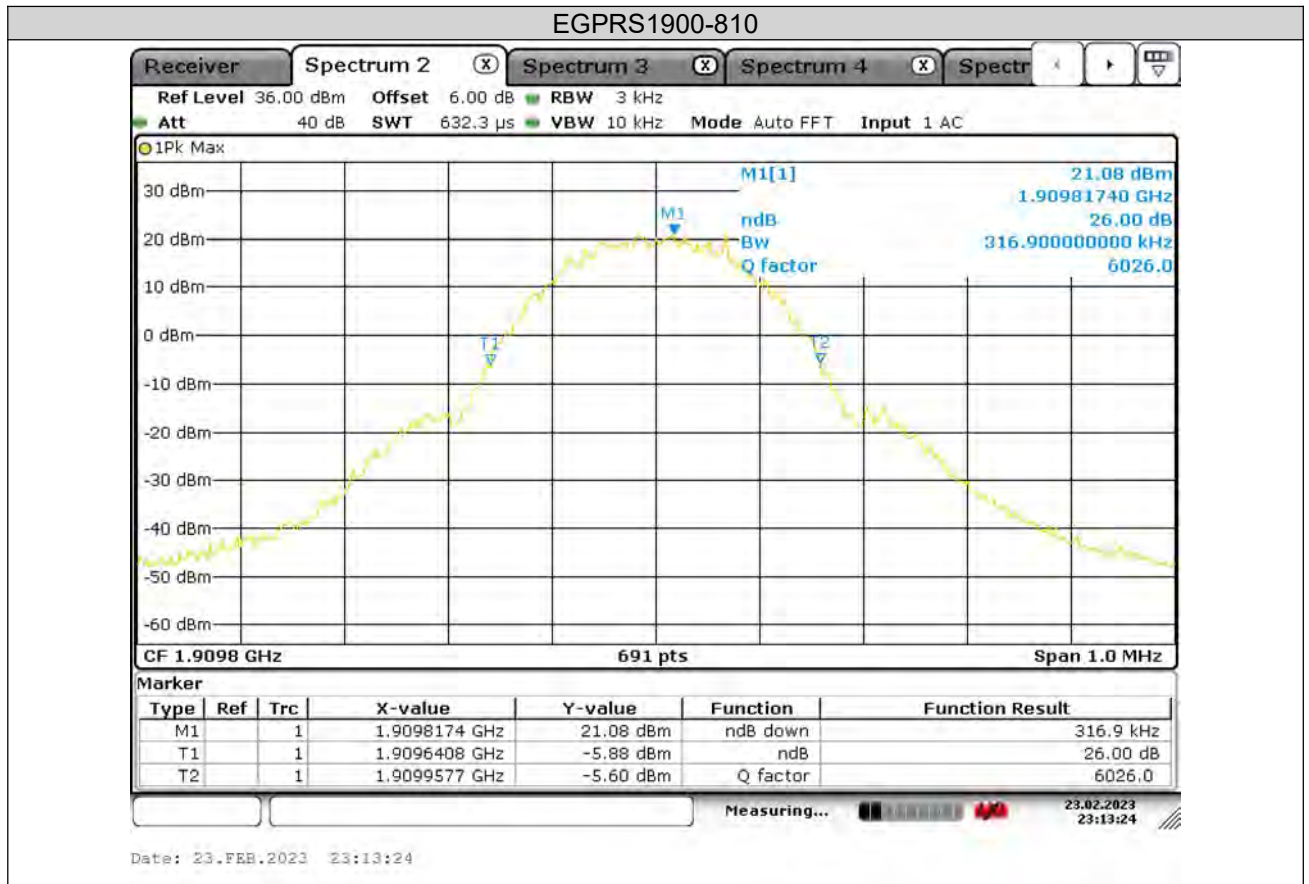
EGPRS1900-661



Date: 23.FEB.2023 23:13:00



Test Report No.: W7L-P23010016RF02

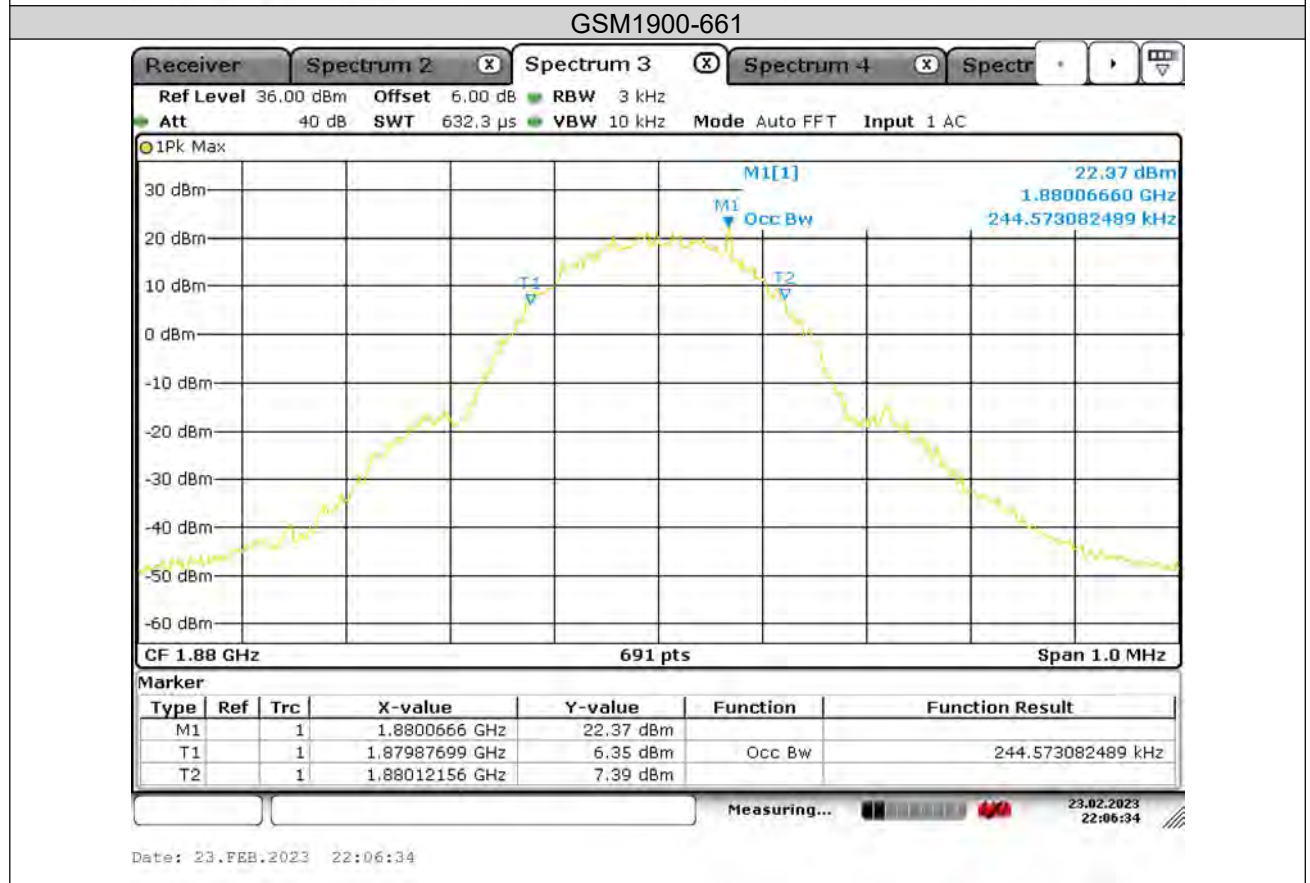
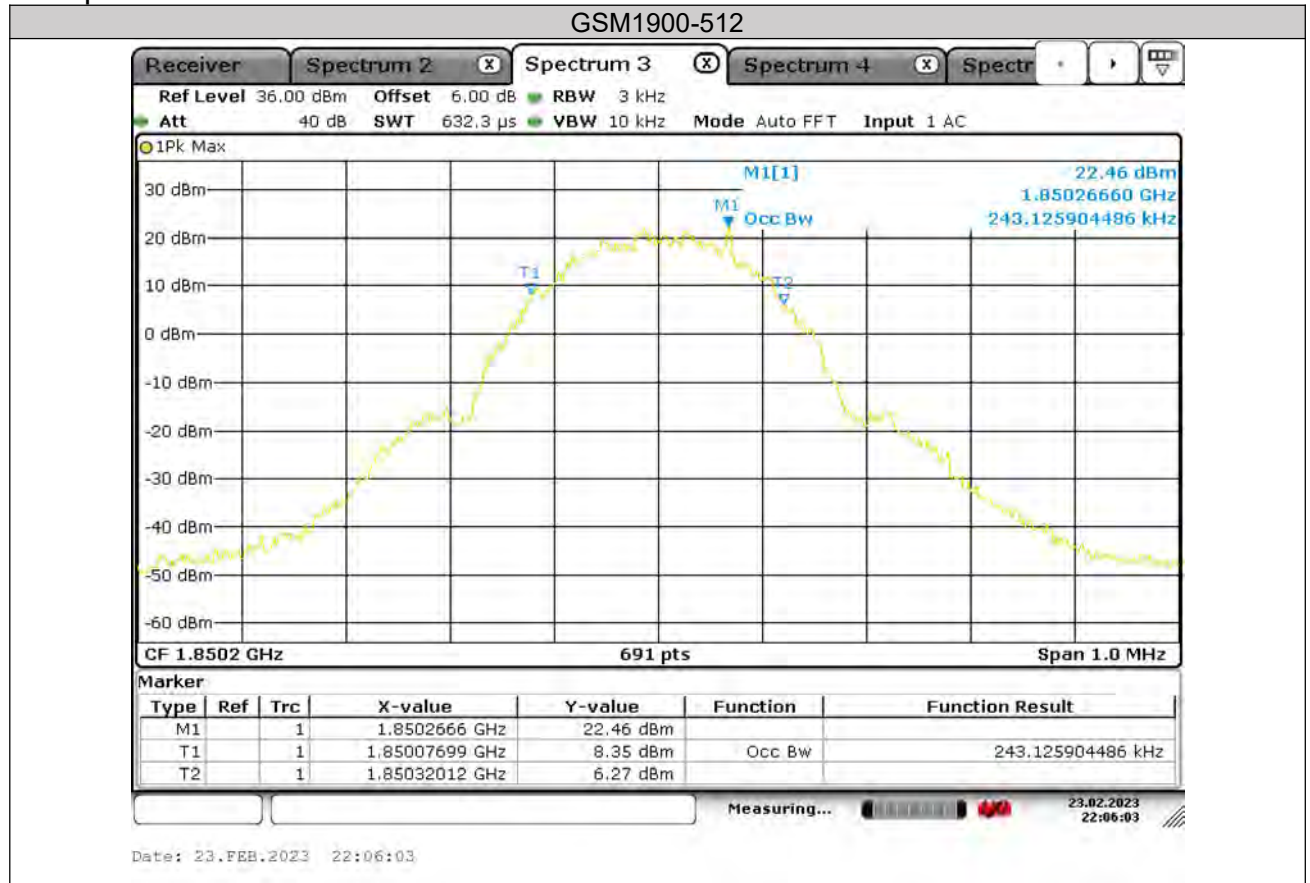




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VERITAS

Test Report No.: W7L-P23010016RF02

Occupied Bandwidth

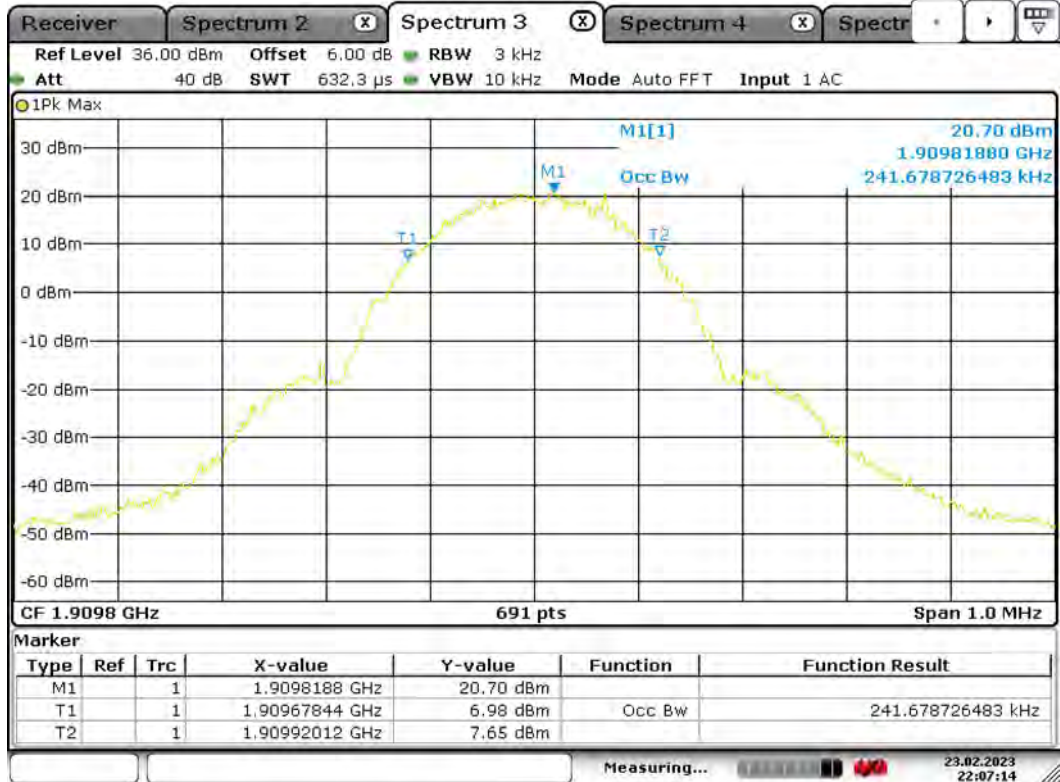




BUREAU VERITAS

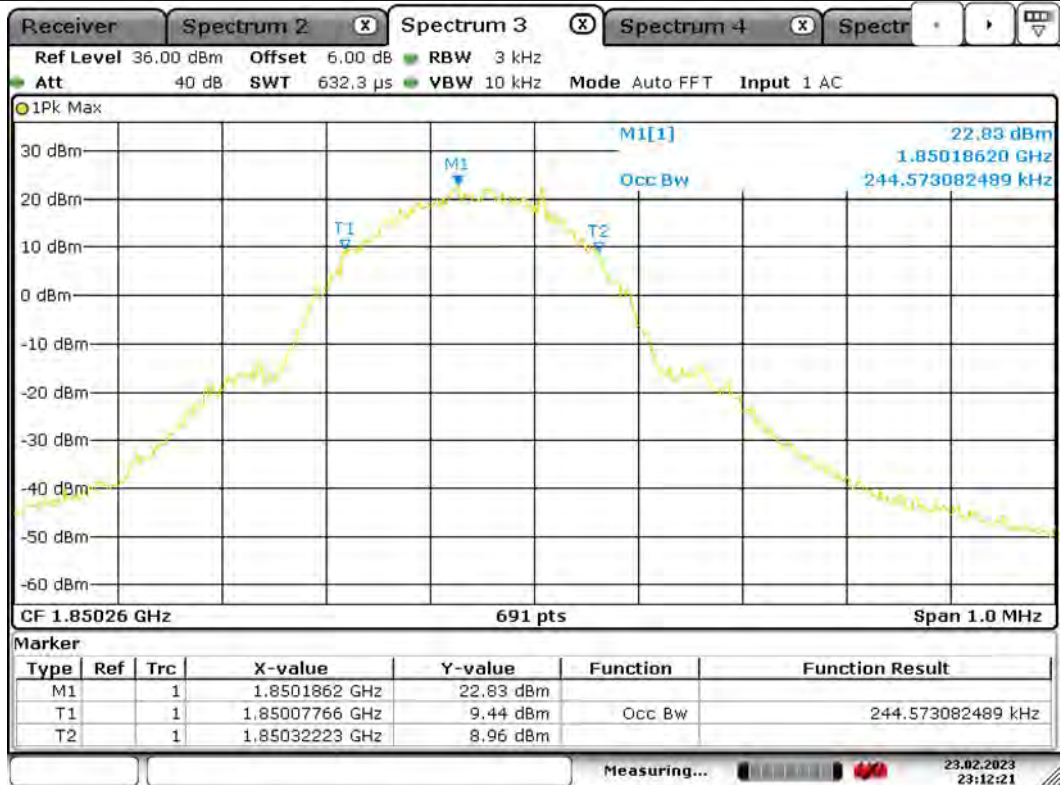
Test Report No.: W7L-P23010016RF02

GSM1900-810

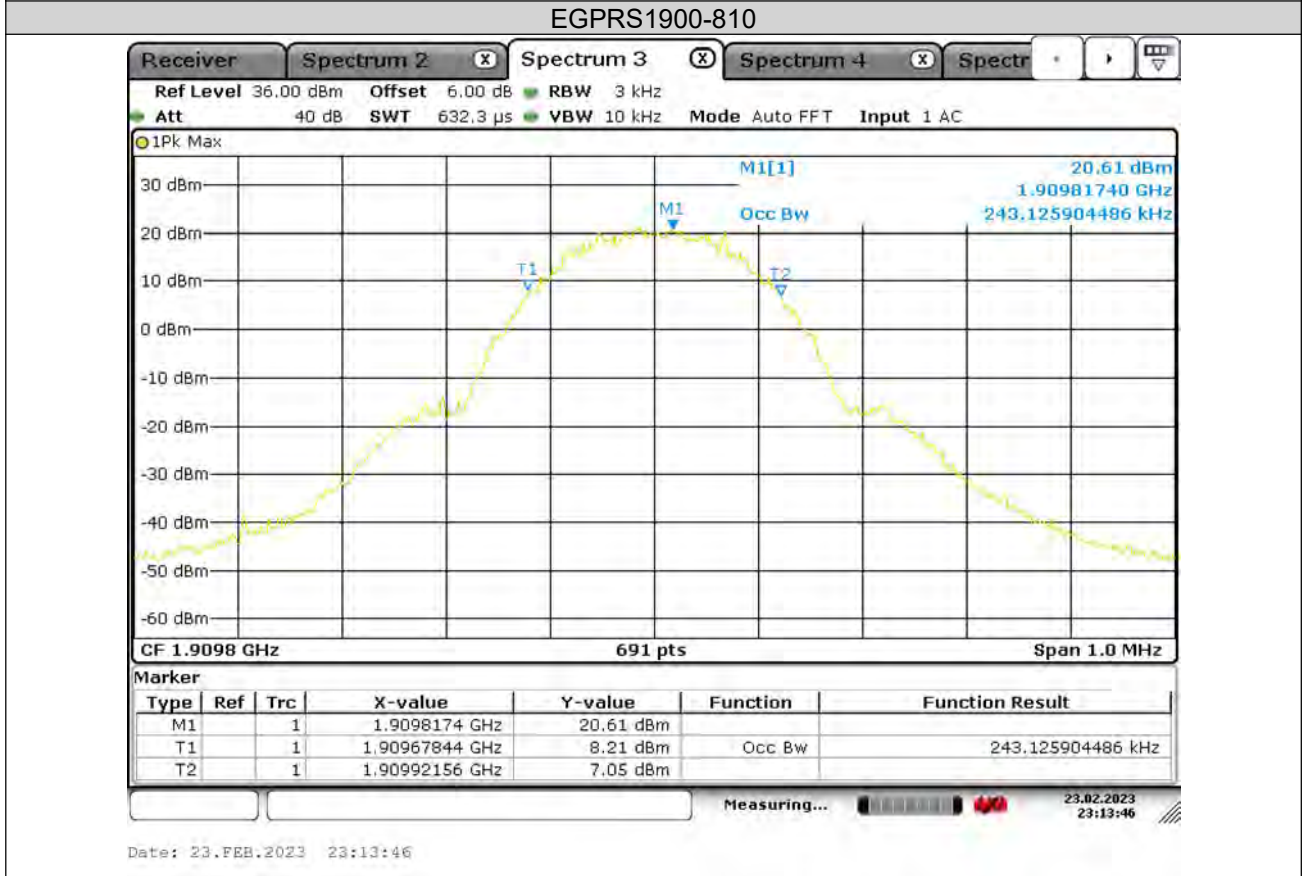
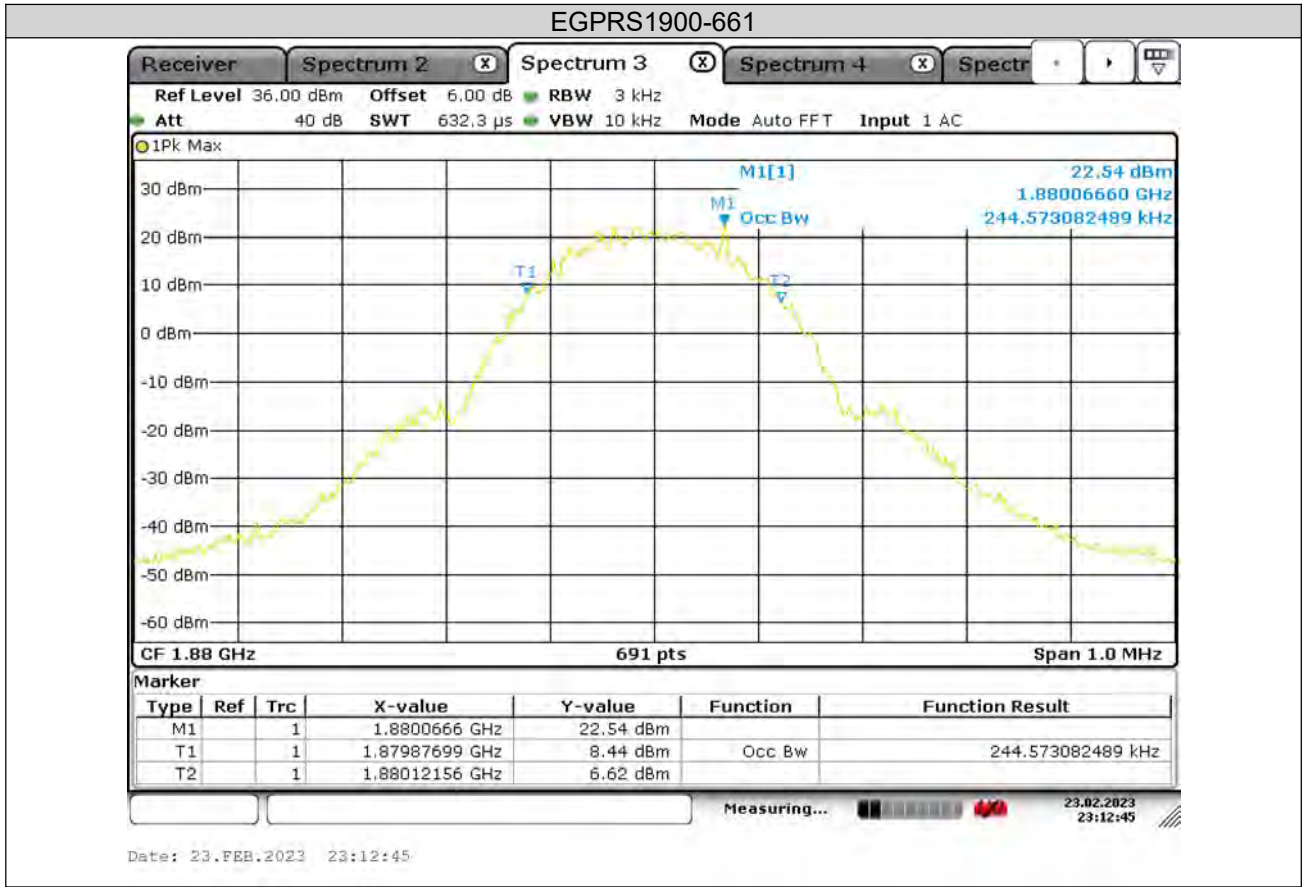


Date: 23.FEB.2023 22:07:14

EGPRS1900-512



Date: 23.FEB.2023 23:12:21





Test Report No.: W7L-P23010016RF02

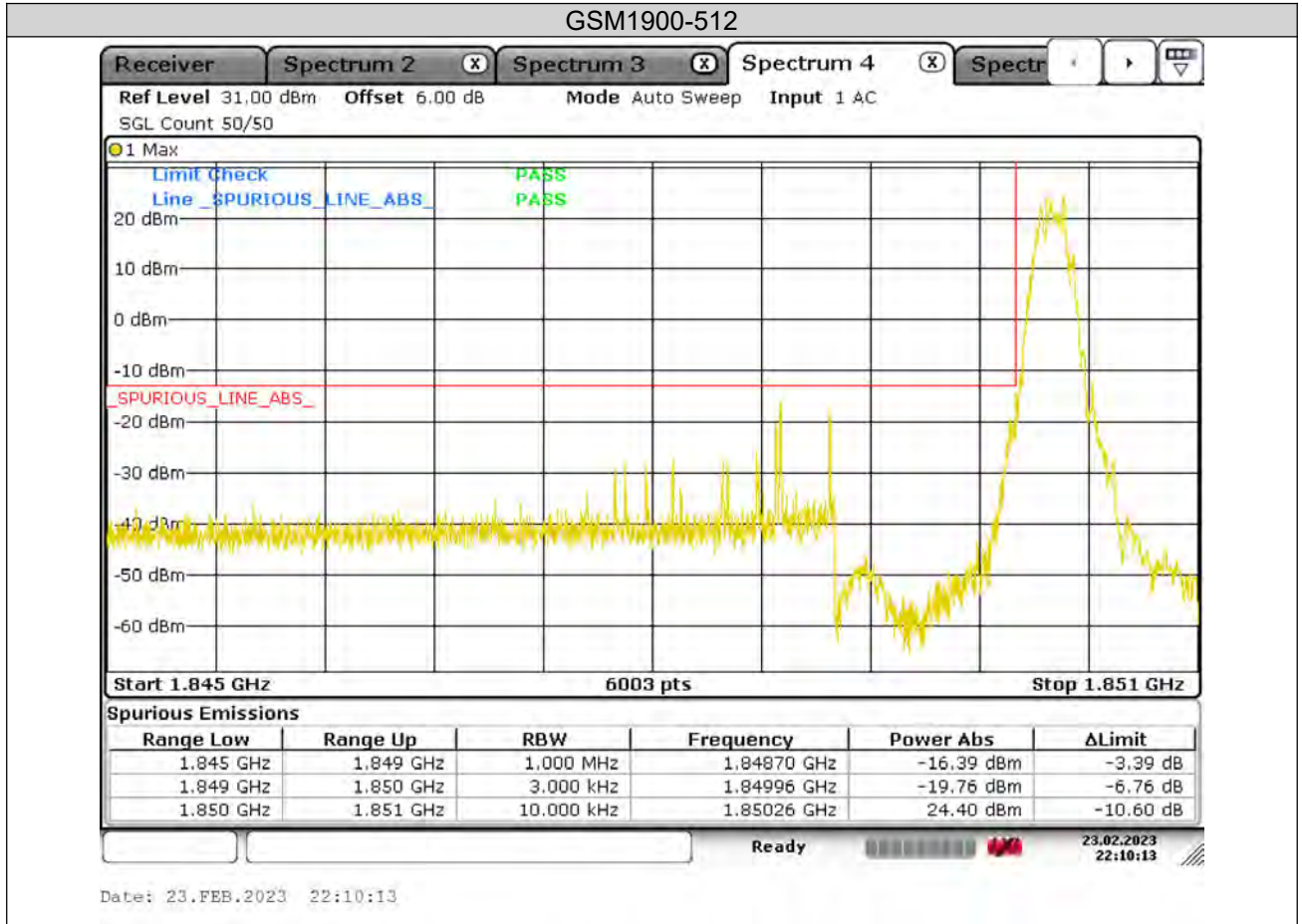
BAND EDGE

Test Result

Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM1900	512	1848.70	-16.39	-13	PASS
GSM1900	810	1911.22	-15.12	-13	PASS
EGPRS1900	512	1848.96	-16.50	-13	PASS
EGPRS1900	810	1911.24	-18.27	-13	PASS



Test Graphs

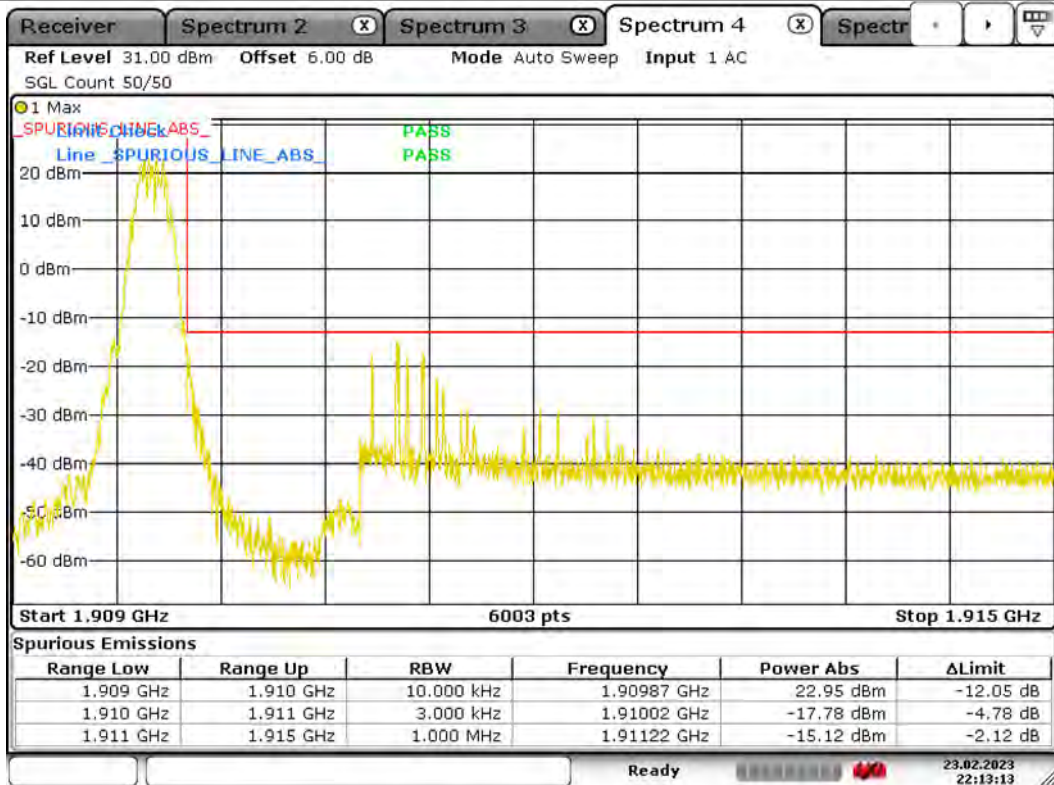




BUREAU VERITAS

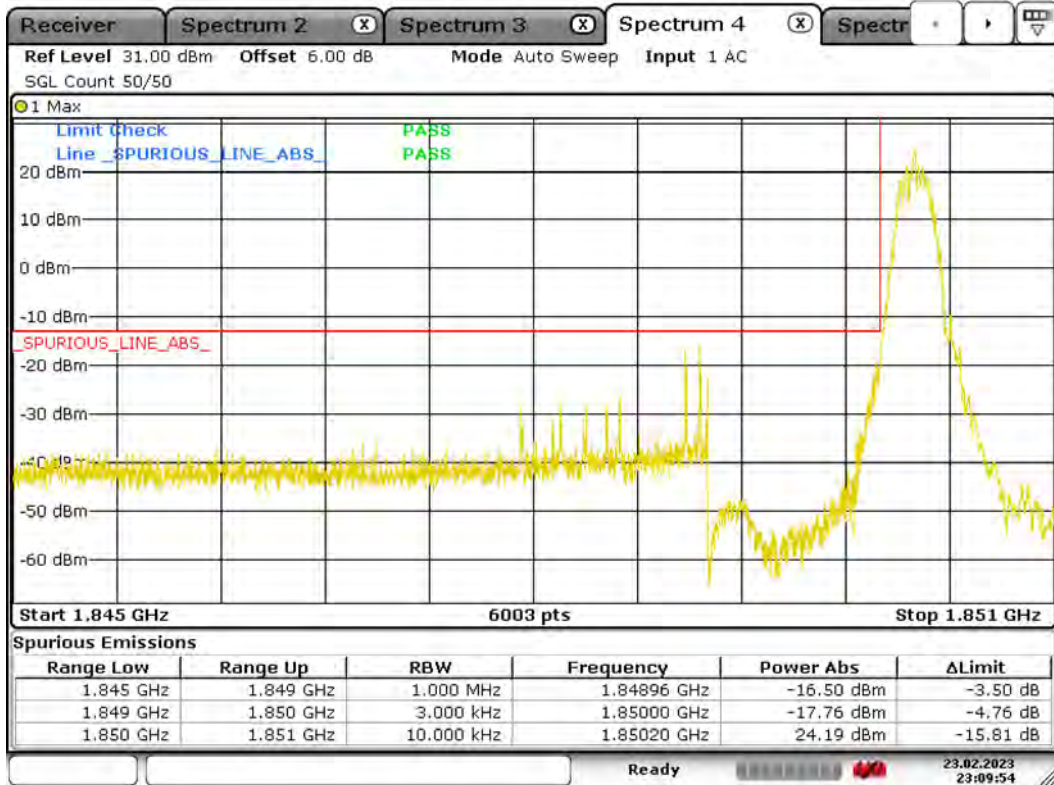
Test Report No.: W7L-P23010016RF02

GSM1900-810



Date: 23.FEB.2023 22:13:13

EGPRS1900-512



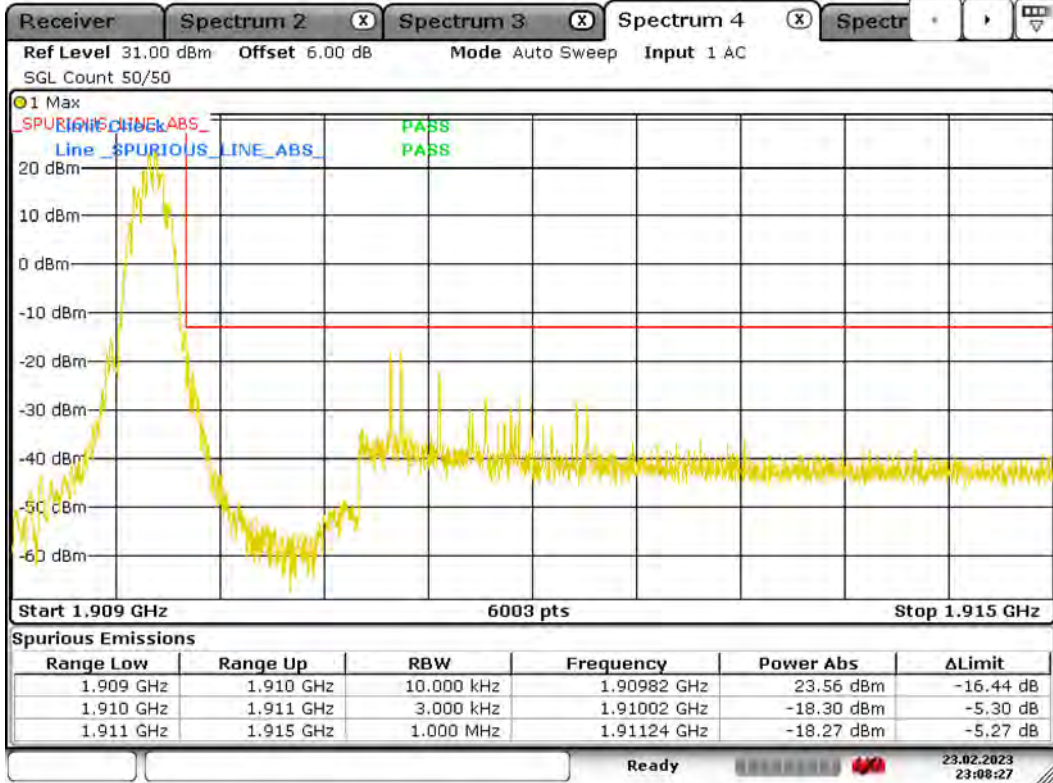
Date: 23.FEB.2023 23:09:54



BUREAU
VERITAS

Test Report No.: W7L-P23010016RF02

EGPRS1900-810



Date: 23.FEB.2023 23:08:27



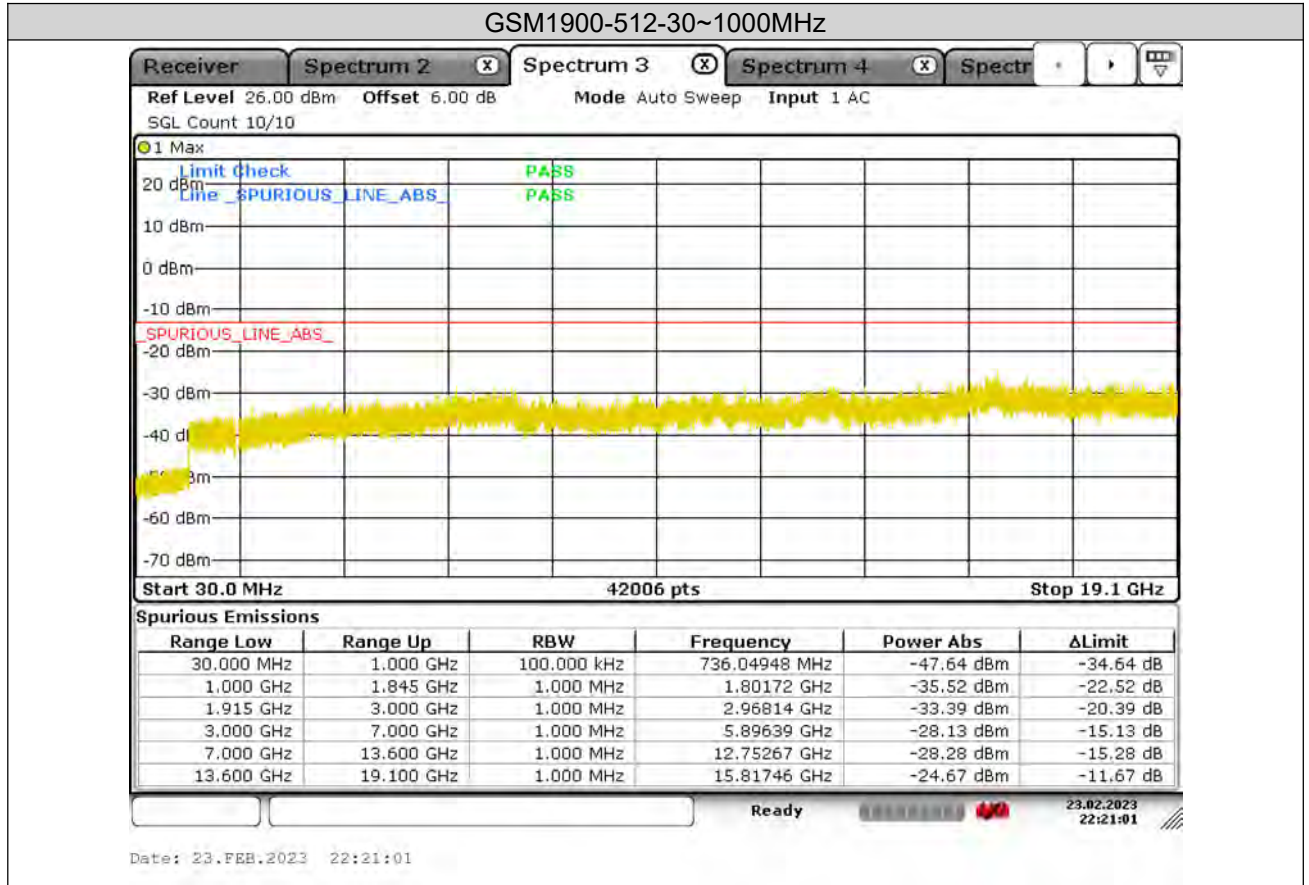
CONDUCTED SPURIOUS EMISSION

Test Result

Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM1900	512	30~1000MHz	736.04948	-47.64	-13	PASS
GSM1900	512	1000~3000MHz	2968.14	-33.39	-13	PASS
GSM1900	512	3000~19100MHz	15817.46	-24.67	-13	PASS
GSM1900	661	30~1000MHz	988.6082	-47.22	-13	PASS
GSM1900	661	1000~3000MHz	2895.46	-33.58	-13	PASS
GSM1900	661	3000~19100MHz	15795	-26.57	-13	PASS
GSM1900	810	30~1000MHz	929.46777	-46.96	-13	PASS
GSM1900	810	1000~3000MHz	2890.04	-33.43	-13	PASS
GSM1900	810	3000~19100MHz	15822.96	-26.21	-13	PASS
EGPRS1900	512	30~1000MHz	901.35182	-47.43	-13	PASS
EGPRS1900	512	1000~3000MHz	2590.65	-33.77	-13	PASS
EGPRS1900	512	3000~19100MHz	15733.59	-25.96	-13	PASS
EGPRS1900	661	30~1000MHz	944.98001	-46.06	-13	PASS
EGPRS1900	661	1000~3000MHz	2479.91	-33.47	-13	PASS
EGPRS1900	661	3000~19100MHz	16823.42	-26.39	-13	PASS
EGPRS1900	810	30~1000MHz	918.8031	-47.00	-13	PASS
EGPRS1900	810	1000~3000MHz	2982.78	-33.79	-13	PASS
EGPRS1900	810	3000~19100MHz	15816.09	-26.34	-13	PASS

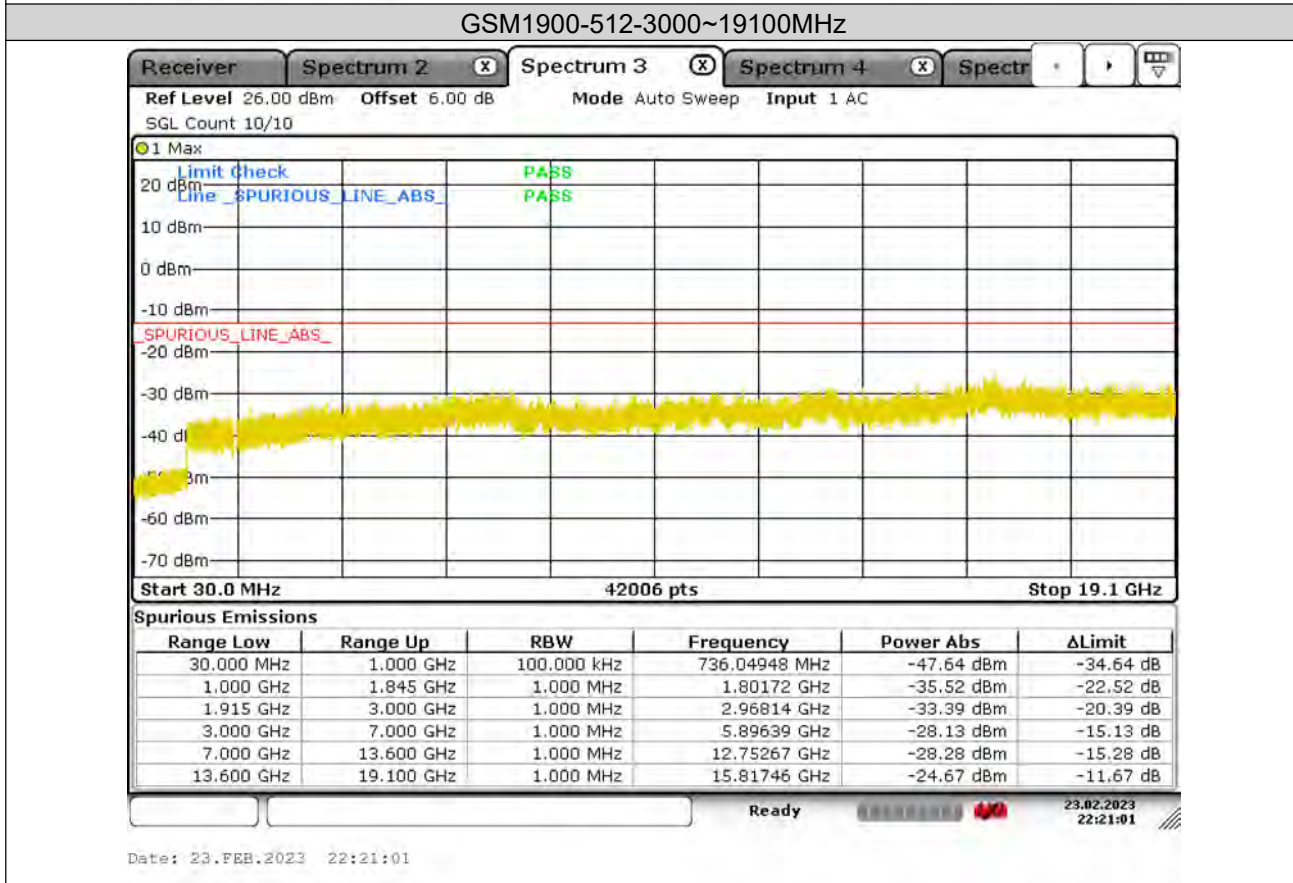
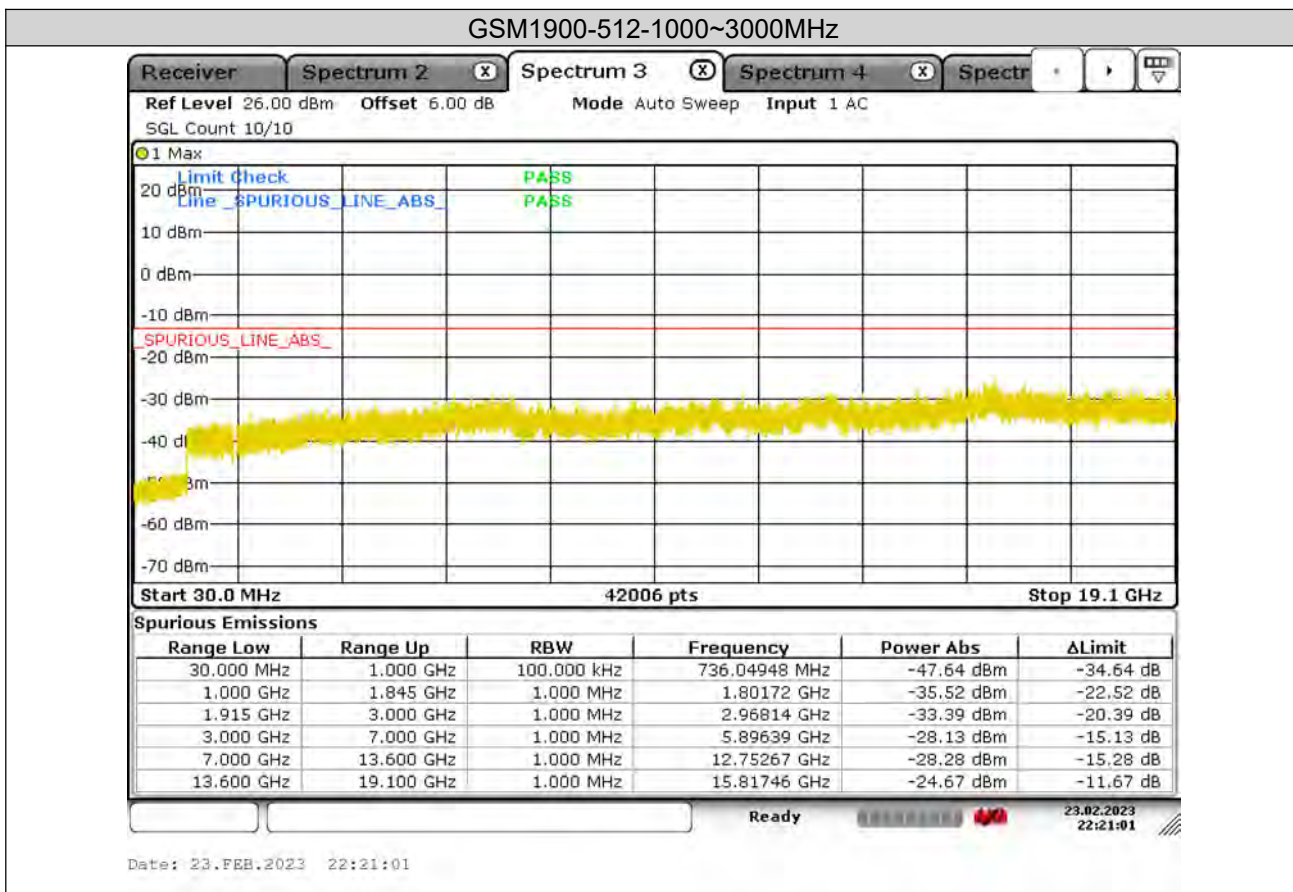


Test Graphs





Test Report No.: W7L-P23010016RF02

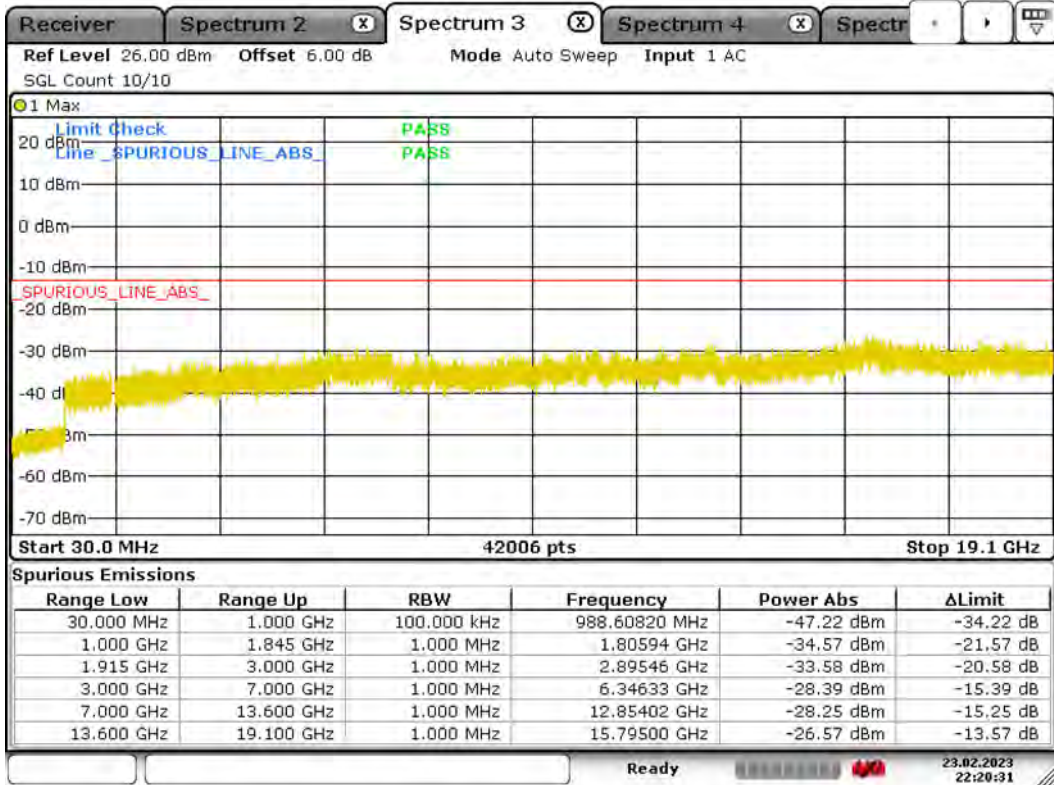




BUREAU VERITAS

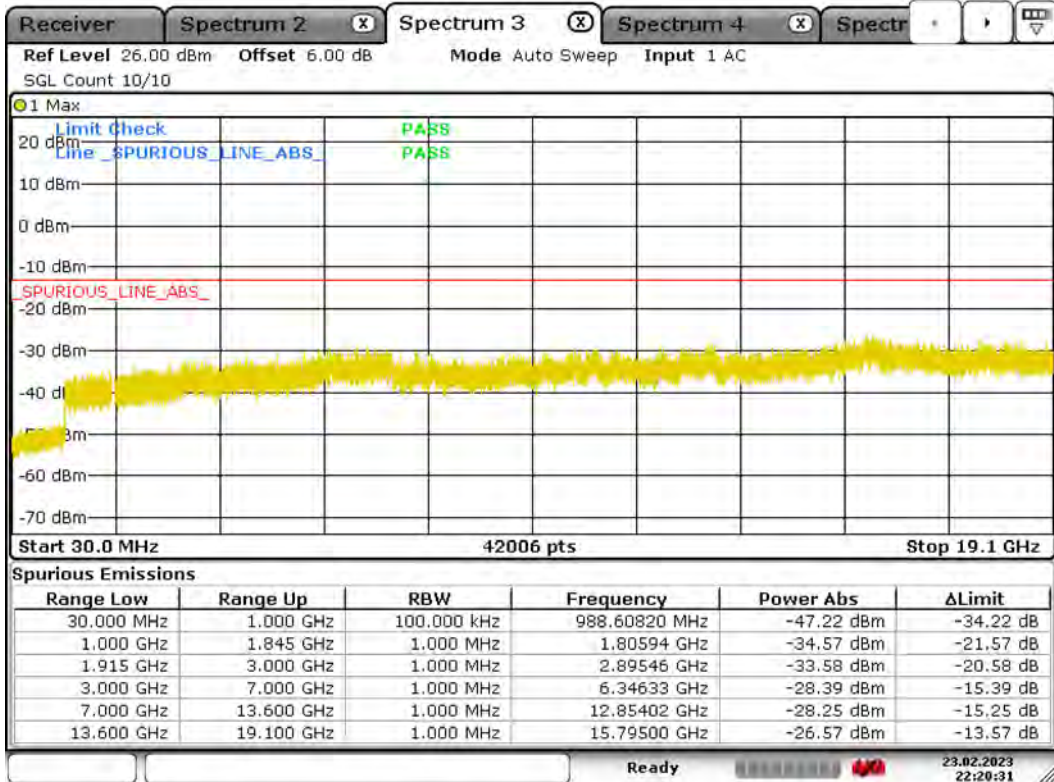
Test Report No.: W7L-P23010016RF02

GSM1900-661-30~1000MHz



Date: 23.FEB.2023 22:20:31

GSM1900-661-1000~3000MHz



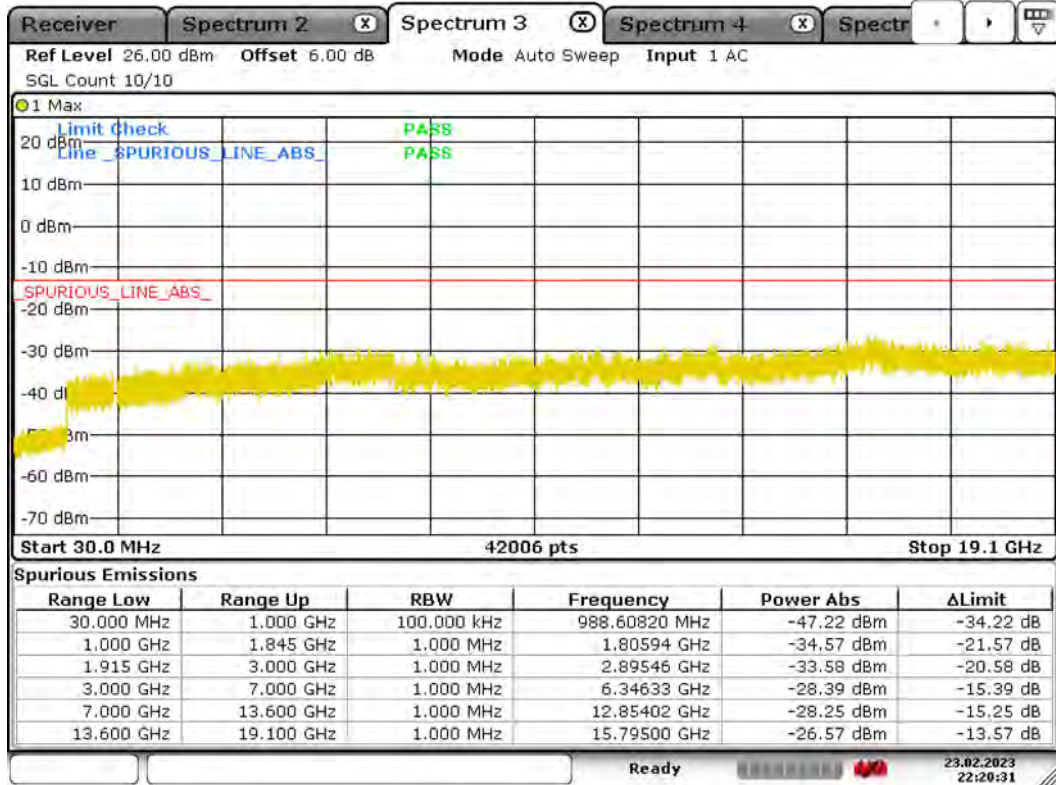
Date: 23.FEB.2023 22:20:31



BUREAU VERITAS

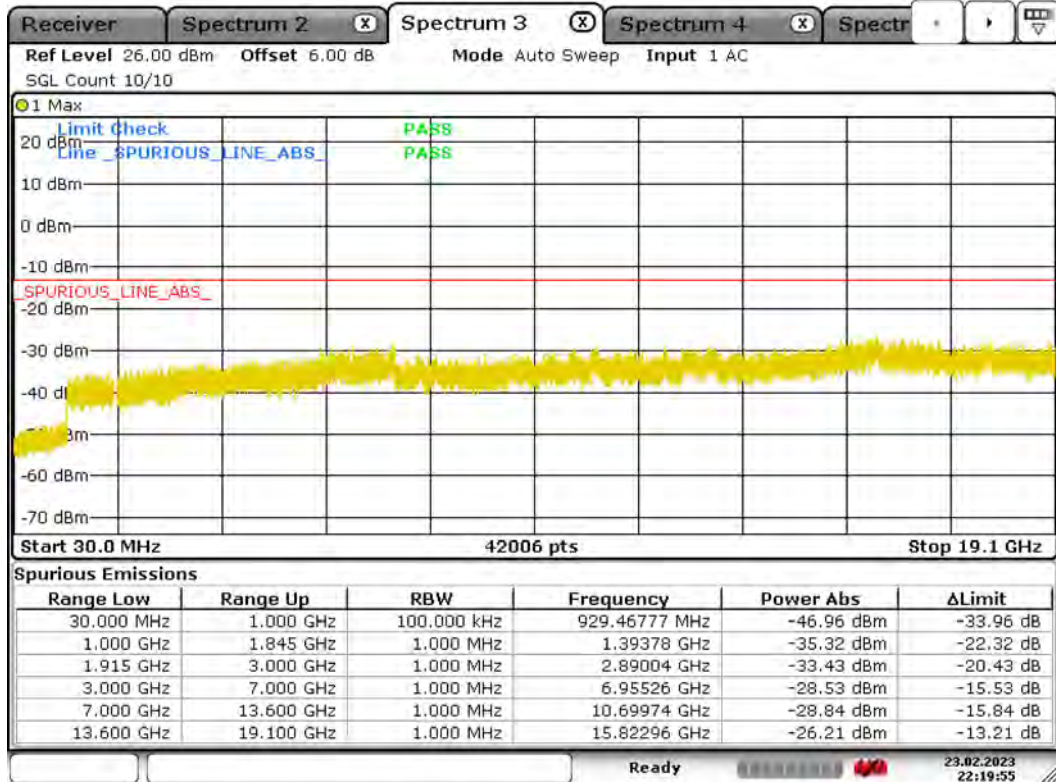
Test Report No.: W7L-P23010016RF02

GSM1900-661-3000~19100MHz



Date: 23.FEB.2023 22:20:31

GSM1900-810-30~1000MHz



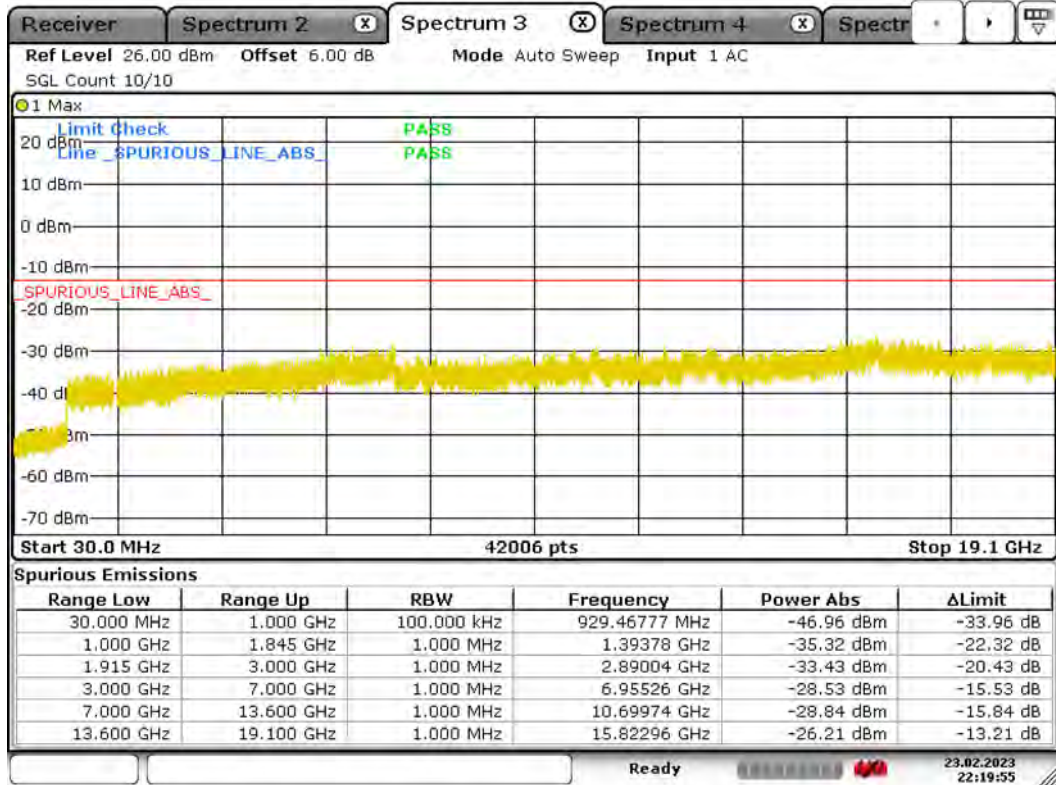
Date: 23.FEB.2023 22:19:55



BUREAU VERITAS

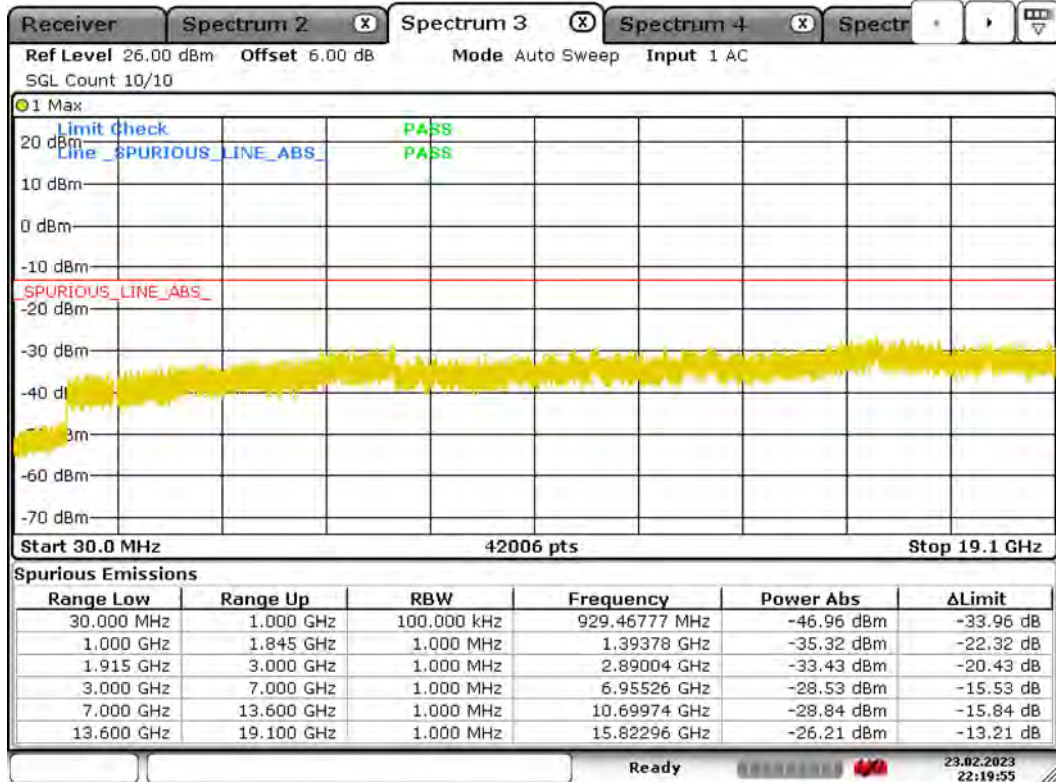
Test Report No.: W7L-P23010016RF02

GSM1900-810-1000~3000MHz



Date: 23.FEB.2023 22:19:55

GSM1900-810-3000~19100MHz



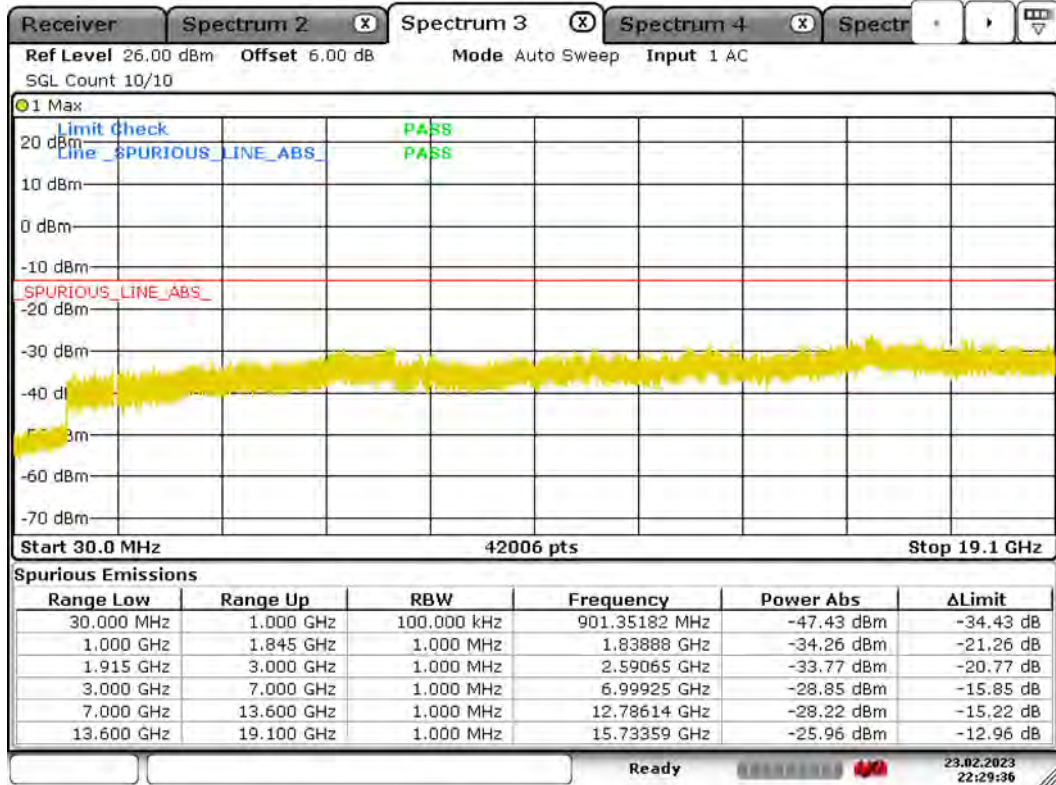
Date: 23.FEB.2023 22:19:55



BUREAU VERITAS

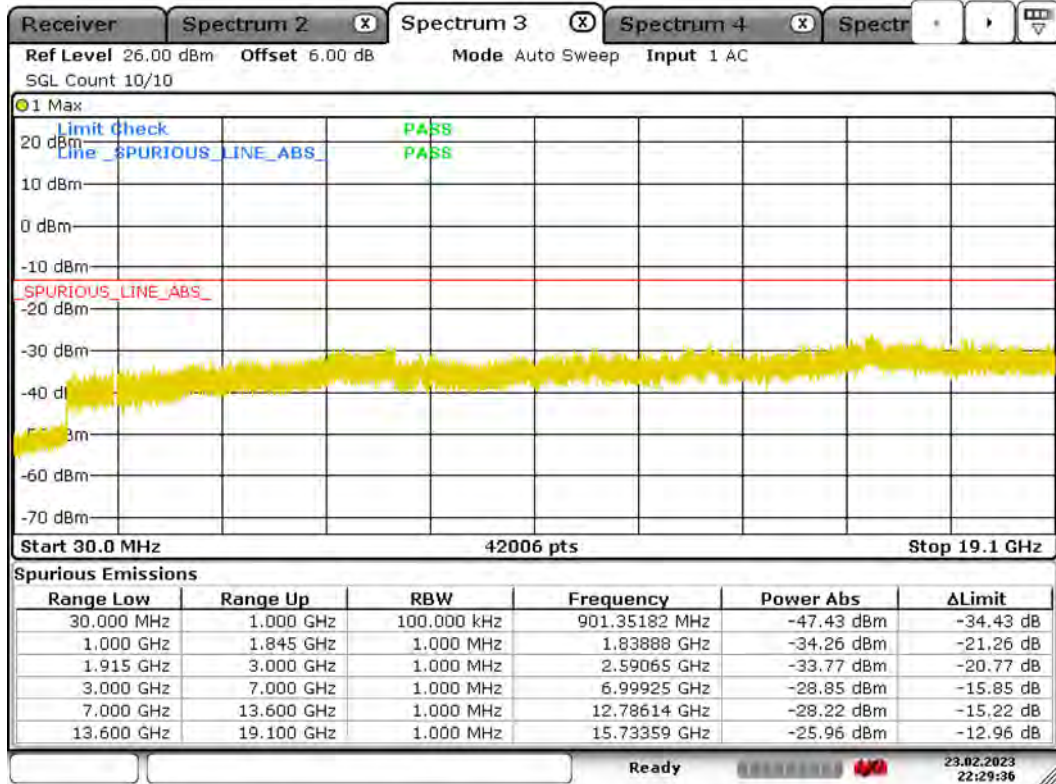
Test Report No.: W7L-P23010016RF02

EGPRS1900-512-30~1000MHz



Date: 23.FEB.2023 22:29:36

EGPRS1900-512-1000~3000MHz



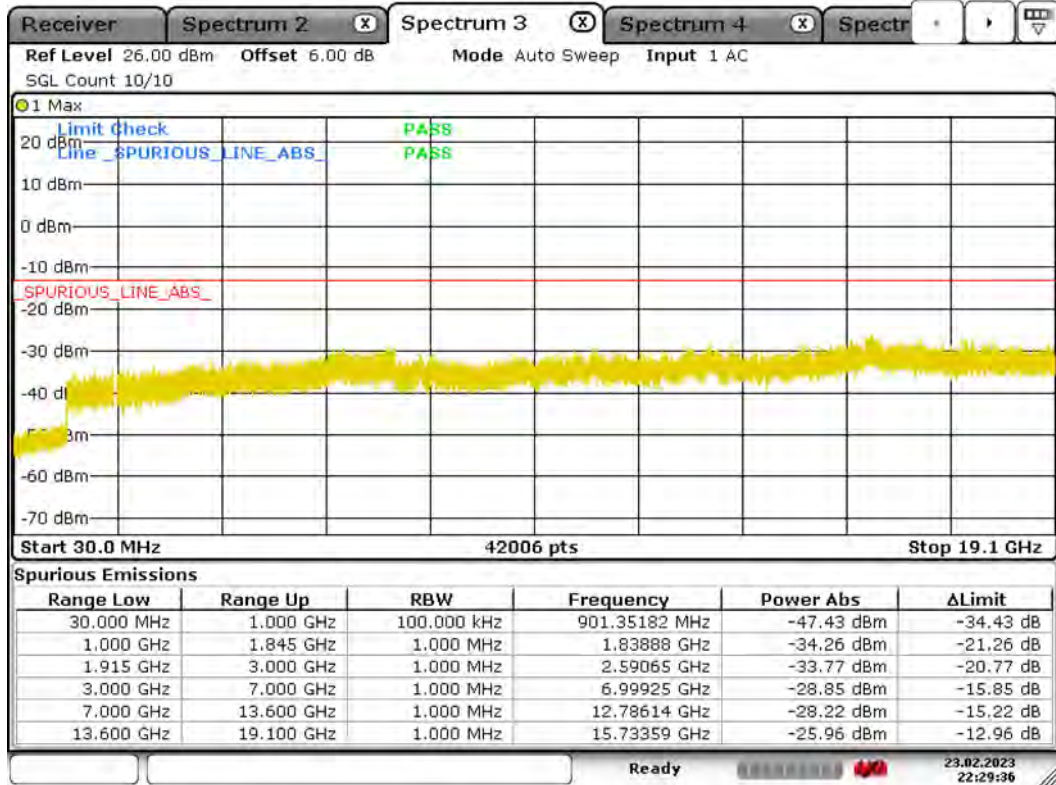
Date: 23.FEB.2023 22:29:36



BUREAU VERITAS

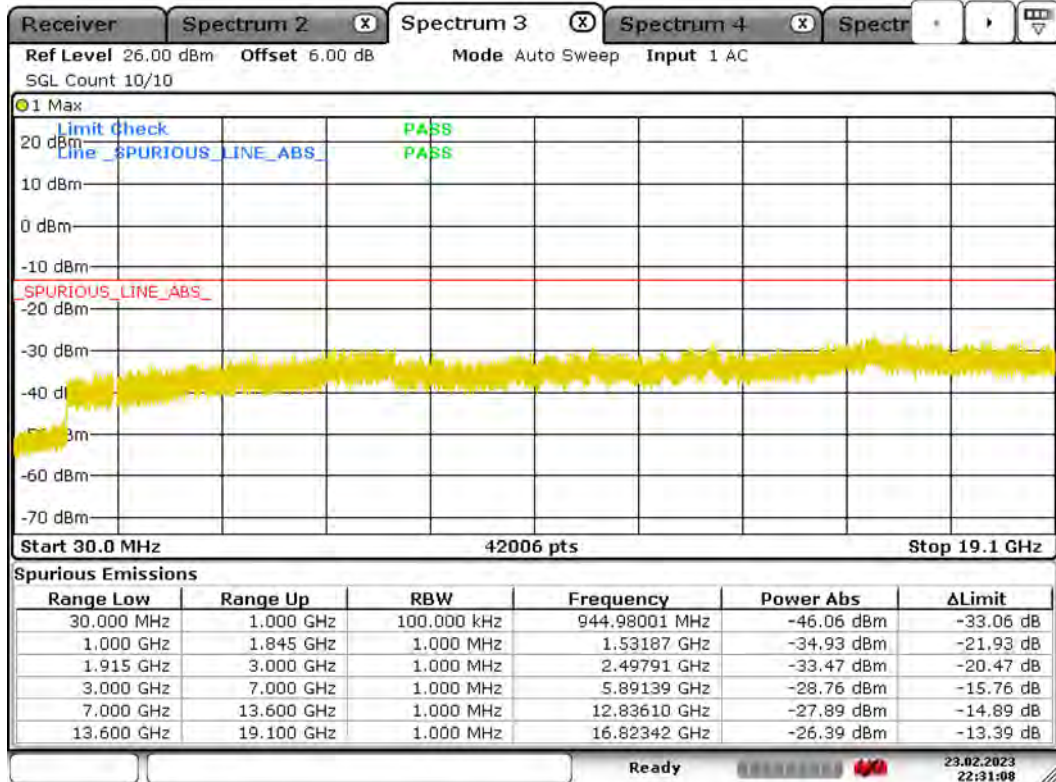
Test Report No.: W7L-P23010016RF02

EGPRS1900-512-3000~19100MHz



Date: 23.FEB.2023 22:29:36

EGPRS1900-661-30~1000MHz



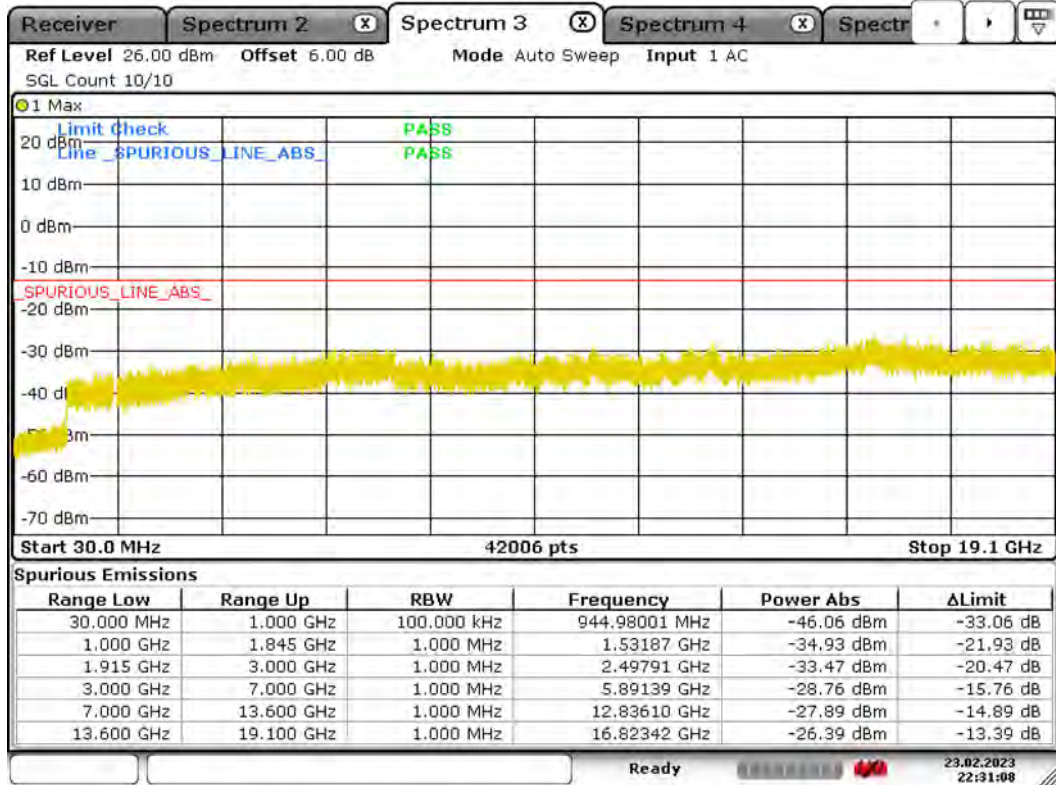
Date: 23.FEB.2023 22:31:08



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VERITAS

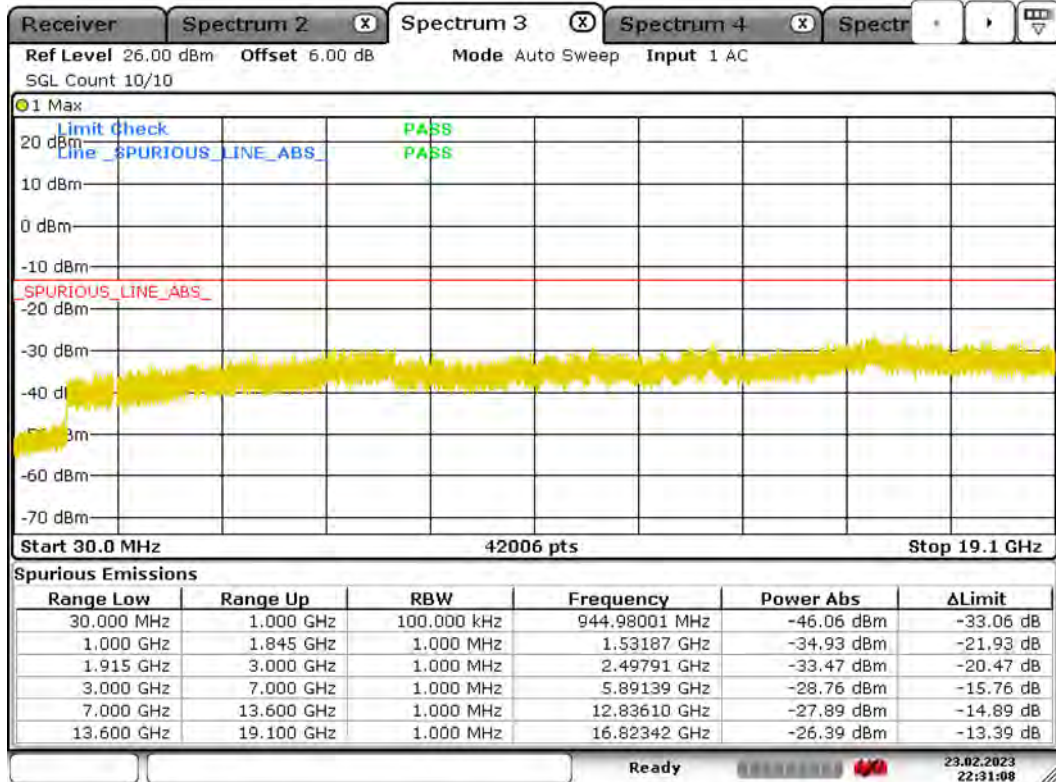
Test Report No.: W7L-P23010016RF02

EGPRS1900-661-1000~3000MHz



Date: 23.FEB.2023 22:31:08

EGPRS1900-661-3000~19100MHz



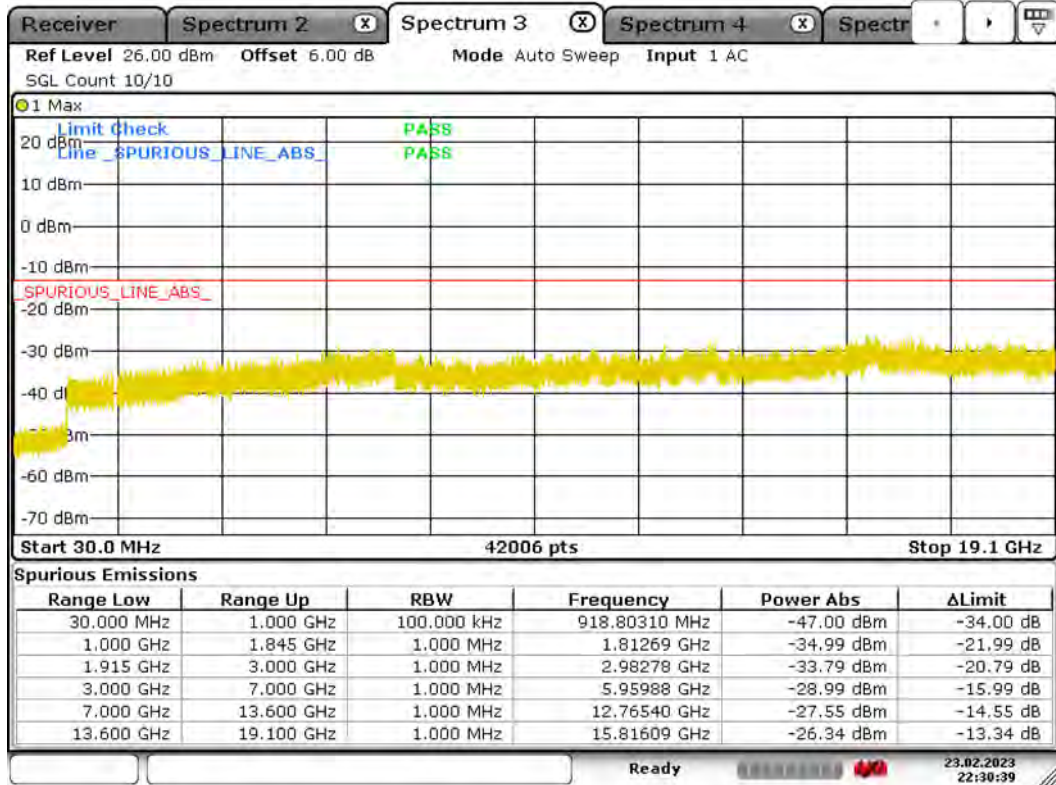
Date: 23.FEB.2023 22:31:08



BUREAU VERITAS

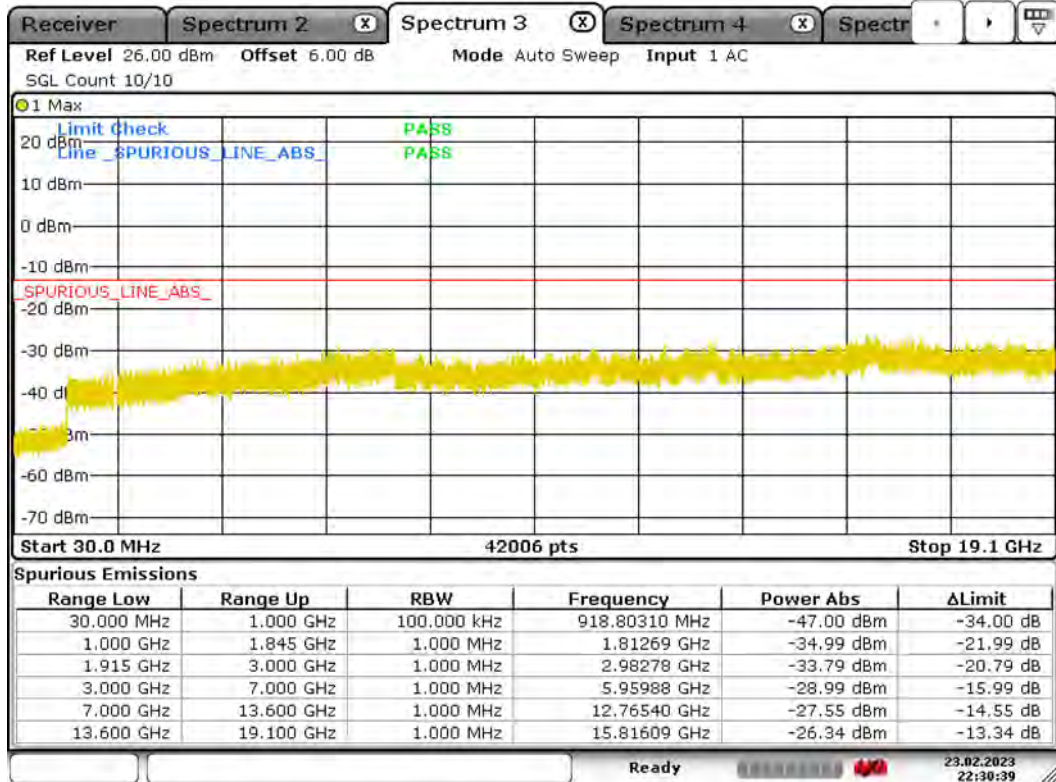
Test Report No.: W7L-P23010016RF02

EGPRS1900-810-30~1000MHz



Date: 23.FEB.2023 22:30:39

EGPRS1900-810-1000~3000MHz



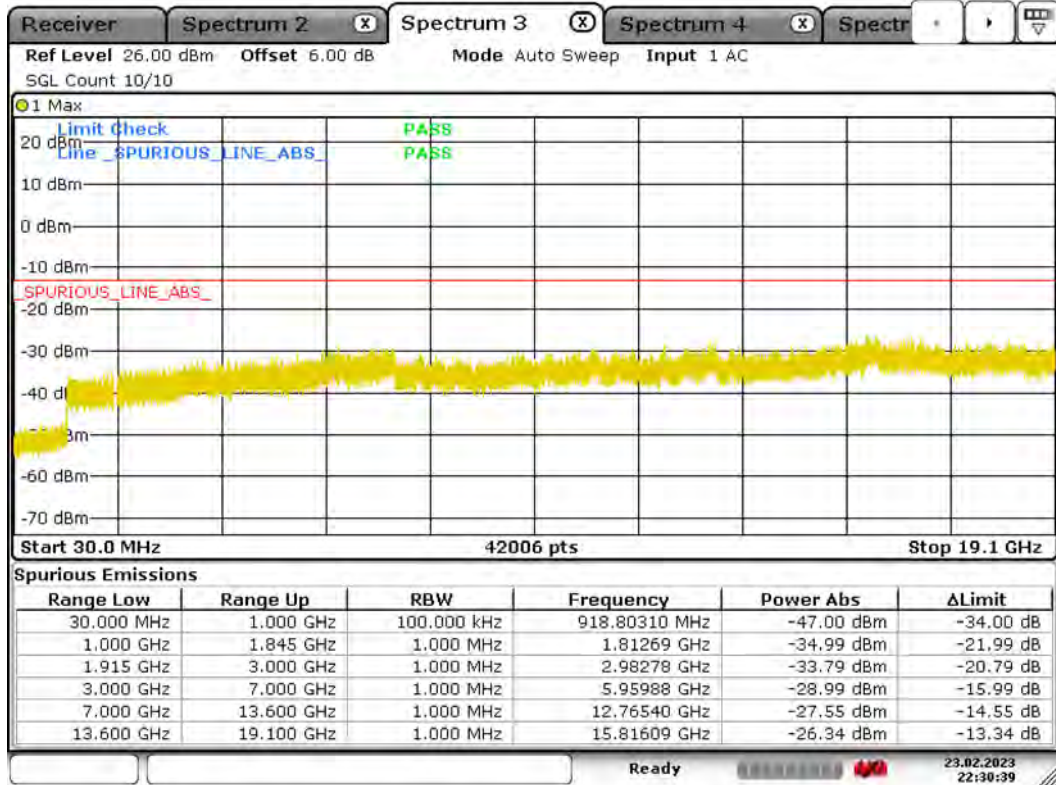
Date: 23.FEB.2023 22:30:39



BUREAU
VERITAS

Test Report No.: W7L-P23010016RF02

EGPRS1900-810-3000~19100MHz



Date: 23.FEB.2023 22:30:39



FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	VL	NT	-3.91	-0.002113	±2.5	PASS
GSM1900	512	VN	NT	-5.22	-0.002821	±2.5	PASS
GSM1900	512	VH	NT	1.22	0.000659	±2.5	PASS
GSM1900	661	VL	NT	-2.72	-0.001447	±2.5	PASS
GSM1900	661	VN	NT	9.79	0.005207	±2.5	PASS
GSM1900	661	VH	NT	-1	-0.000532	±2.5	PASS
GSM1900	810	VL	NT	-4.62	-0.002419	±2.5	PASS
GSM1900	810	VN	NT	2.35	0.001230	±2.5	PASS
GSM1900	810	VH	NT	2.09	0.001094	±2.5	PASS
EGPRS1900	512	VL	NT	-5.41	-0.002924	±2.5	PASS
EGPRS1900	512	VN	NT	-3.35	-0.001811	±2.5	PASS
EGPRS1900	512	VH	NT	-9.8	-0.005297	±2.5	PASS
EGPRS1900	661	VL	NT	-1.79	-0.000952	±2.5	PASS
EGPRS1900	661	VN	NT	-0.11	-0.000059	±2.5	PASS
EGPRS1900	661	VH	NT	-4.37	-0.002324	±2.5	PASS
EGPRS1900	810	VL	NT	1.92	0.001005	±2.5	PASS
EGPRS1900	810	VN	NT	6.28	0.003288	±2.5	PASS
EGPRS1900	810	VH	NT	4.74	0.002482	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
EGPRS850	251	NV	50	7.92	0.004281	±2.5	PASS
GSM1900	512	NV	-30	-7.87	-0.004254	±2.5	PASS
GSM1900	512	NV	-20	6.16	0.003329	±2.5	PASS
GSM1900	512	NV	-10	-3.91	-0.002113	±2.5	PASS
GSM1900	512	NV	0	-7.42	-0.004010	±2.5	PASS
GSM1900	512	NV	10	-5.58	-0.003016	±2.5	PASS
GSM1900	512	NV	20	-8.9	-0.004810	±2.5	PASS
GSM1900	512	NV	30	-6.41	-0.003464	±2.5	PASS
GSM1900	512	NV	40	-9.45	-0.005108	±2.5	PASS
GSM1900	512	NV	50	8.71	0.004633	±2.5	PASS
GSM1900	661	NV	-30	2.88	0.001532	±2.5	PASS
GSM1900	661	NV	-20	9.95	0.005293	±2.5	PASS
GSM1900	661	NV	-10	3.9	0.002074	±2.5	PASS
GSM1900	661	NV	0	5.26	0.002798	±2.5	PASS
GSM1900	661	NV	10	1.47	0.000782	±2.5	PASS
GSM1900	661	NV	20	2.85	0.001516	±2.5	PASS
GSM1900	661	NV	30	4.81	0.002559	±2.5	PASS
GSM1900	661	NV	40	-9.17	-0.004878	±2.5	PASS



BUREAU
VERITAS

Test Report No.: W7L-P23010016RF02

GSM1900	661	NV	50	3.69	0.001932	±2.5	PASS
GSM1900	810	NV	-30	-4.35	-0.002278	±2.5	PASS
GSM1900	810	NV	-20	6.55	0.003430	±2.5	PASS
GSM1900	810	NV	-10	1.15	0.000602	±2.5	PASS
GSM1900	810	NV	0	4.44	0.002325	±2.5	PASS
GSM1900	810	NV	10	3.49	0.001827	±2.5	PASS
GSM1900	810	NV	20	0.03	0.000016	±2.5	PASS
GSM1900	810	NV	30	-0.72	-0.000377	±2.5	PASS
GSM1900	810	NV	40	-3.73	-0.001953	±2.5	PASS
GSM1900	810	NV	50	1.4	0.000757	±2.5	PASS
EGPRS1900	512	NV	-30	4.48	0.002421	±2.5	PASS
EGPRS1900	512	NV	-20	7.8	0.004216	±2.5	PASS
EGPRS1900	512	NV	-10	0.78	0.000422	±2.5	PASS
EGPRS1900	512	NV	0	6.76	0.003654	±2.5	PASS
EGPRS1900	512	NV	10	-4.43	-0.002394	±2.5	PASS
EGPRS1900	512	NV	20	-1.18	-0.000638	±2.5	PASS
EGPRS1900	512	NV	30	3.29	0.001778	±2.5	PASS
EGPRS1900	512	NV	40	-2.95	-0.001594	±2.5	PASS
EGPRS1900	512	NV	50	8.38	0.004457	±2.5	PASS
EGPRS1900	661	NV	-30	7.48	0.003979	±2.5	PASS
EGPRS1900	661	NV	-20	7.67	0.004080	±2.5	PASS
EGPRS1900	661	NV	-10	3.14	0.001670	±2.5	PASS
EGPRS1900	661	NV	0	9.77	0.005197	±2.5	PASS
EGPRS1900	661	NV	10	1.42	0.000755	±2.5	PASS
EGPRS1900	661	NV	20	-3.96	-0.002106	±2.5	PASS
EGPRS1900	661	NV	30	0.76	0.000404	±2.5	PASS
EGPRS1900	661	NV	40	3.94	0.002096	±2.5	PASS
EGPRS1900	661	NV	50	0.19	0.000099	±2.5	PASS
EGPRS1900	810	NV	-30	-8.47	-0.004435	±2.5	PASS
EGPRS1900	810	NV	-20	2.75	0.001440	±2.5	PASS
EGPRS1900	810	NV	-10	-3.33	-0.001744	±2.5	PASS
EGPRS1900	810	NV	0	4.11	0.002152	±2.5	PASS
EGPRS1900	810	NV	10	-9.44	-0.004943	±2.5	PASS
EGPRS1900	810	NV	20	7.88	0.004126	±2.5	PASS
EGPRS1900	810	NV	30	-6.42	-0.003362	±2.5	PASS
EGPRS1900	810	NV	40	2.32	0.001215	±2.5	PASS
EGPRS1900	810	NV	50	2.5	0.001309	±2.5	PASS



Test Report No.: W7L-P23010016RF02

WCDMA II

PEAK-TO-AVERAGE RATIO

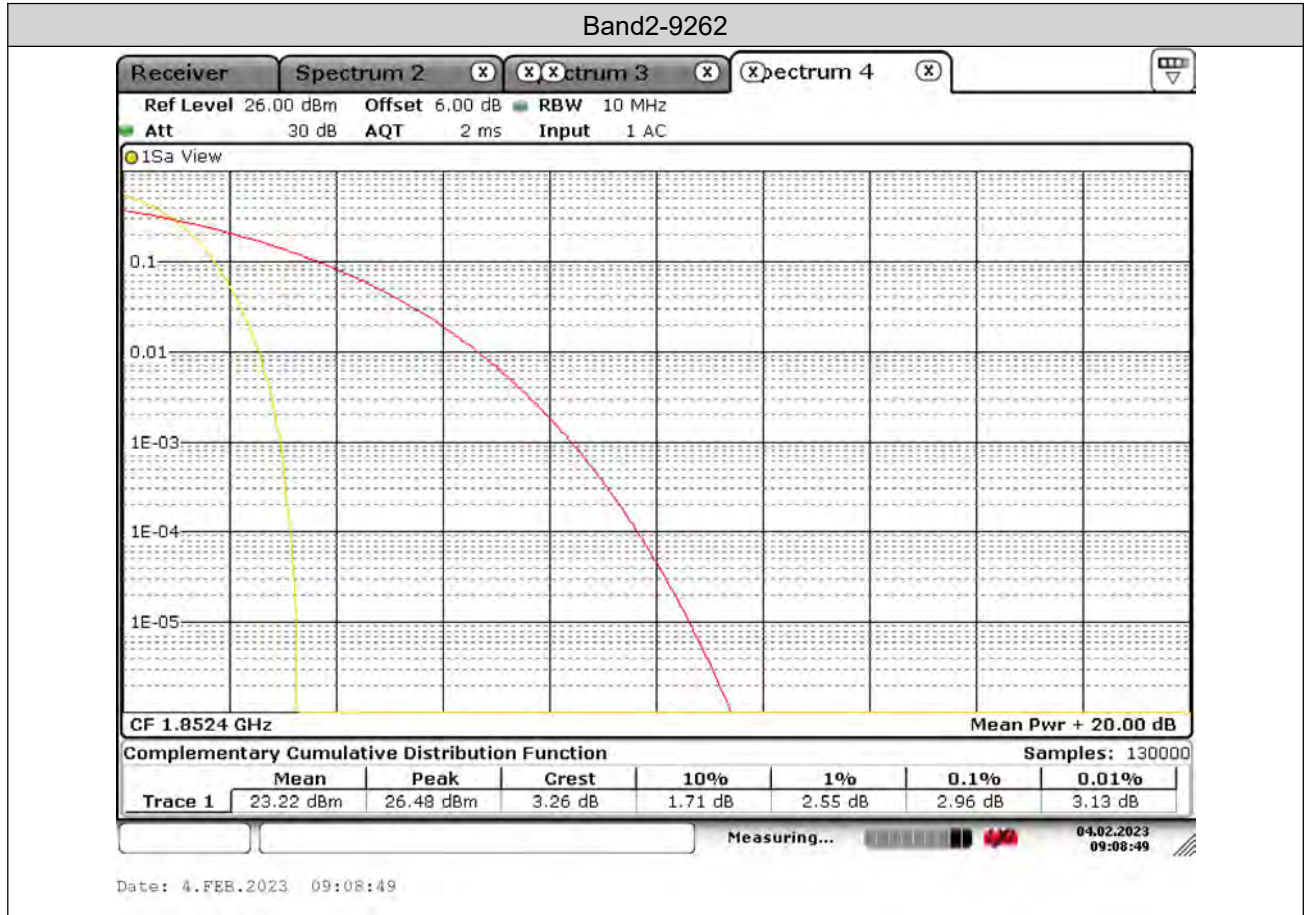
Test Result

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	2.96	13	PASS
Band2	9400	3.07	13	PASS
Band2	9538	2.58	13	PASS



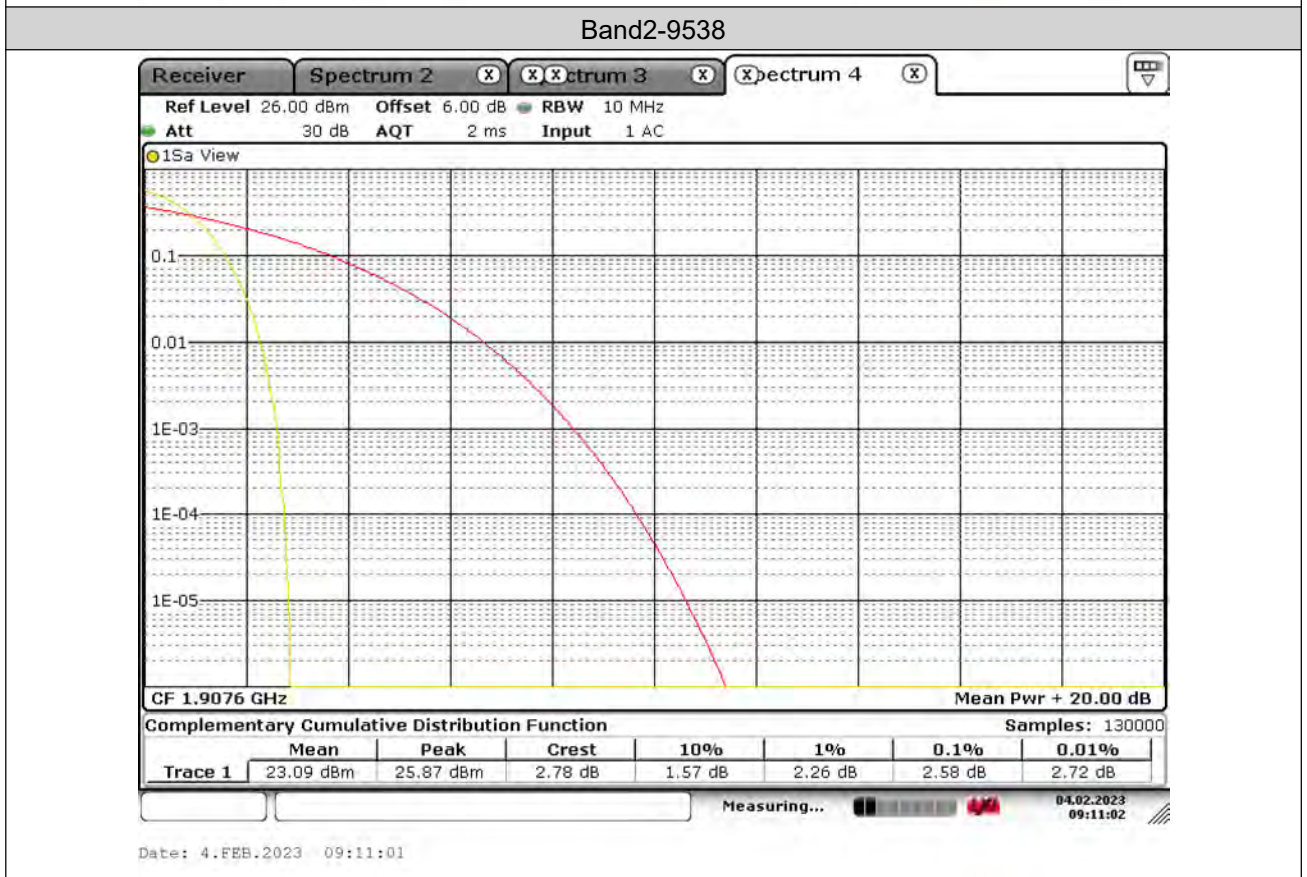
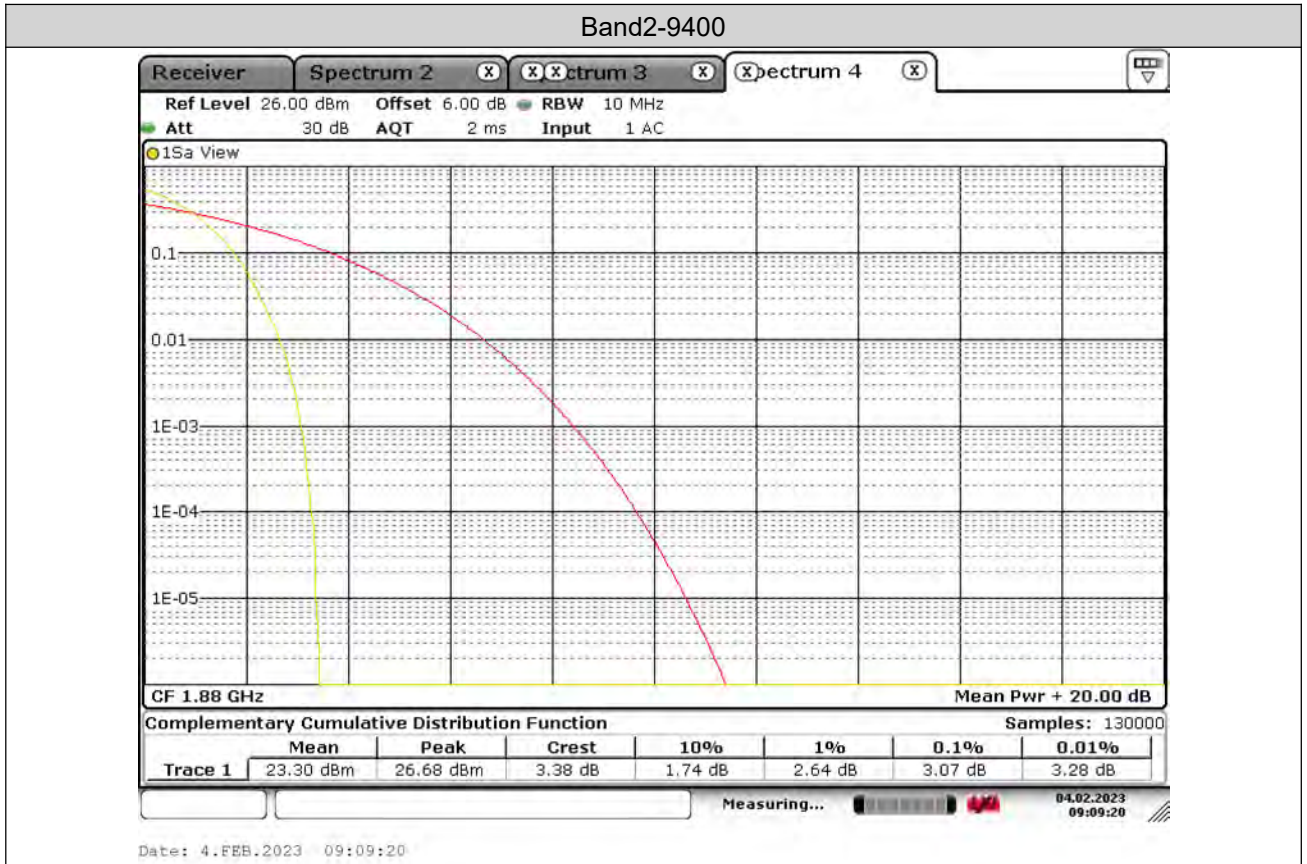
Test Report No.: W7L-P23010016RF02

Test Graphs





Test Report No.: W7L-P23010016RF02





Test Report No.: W7L-P23010016RF02

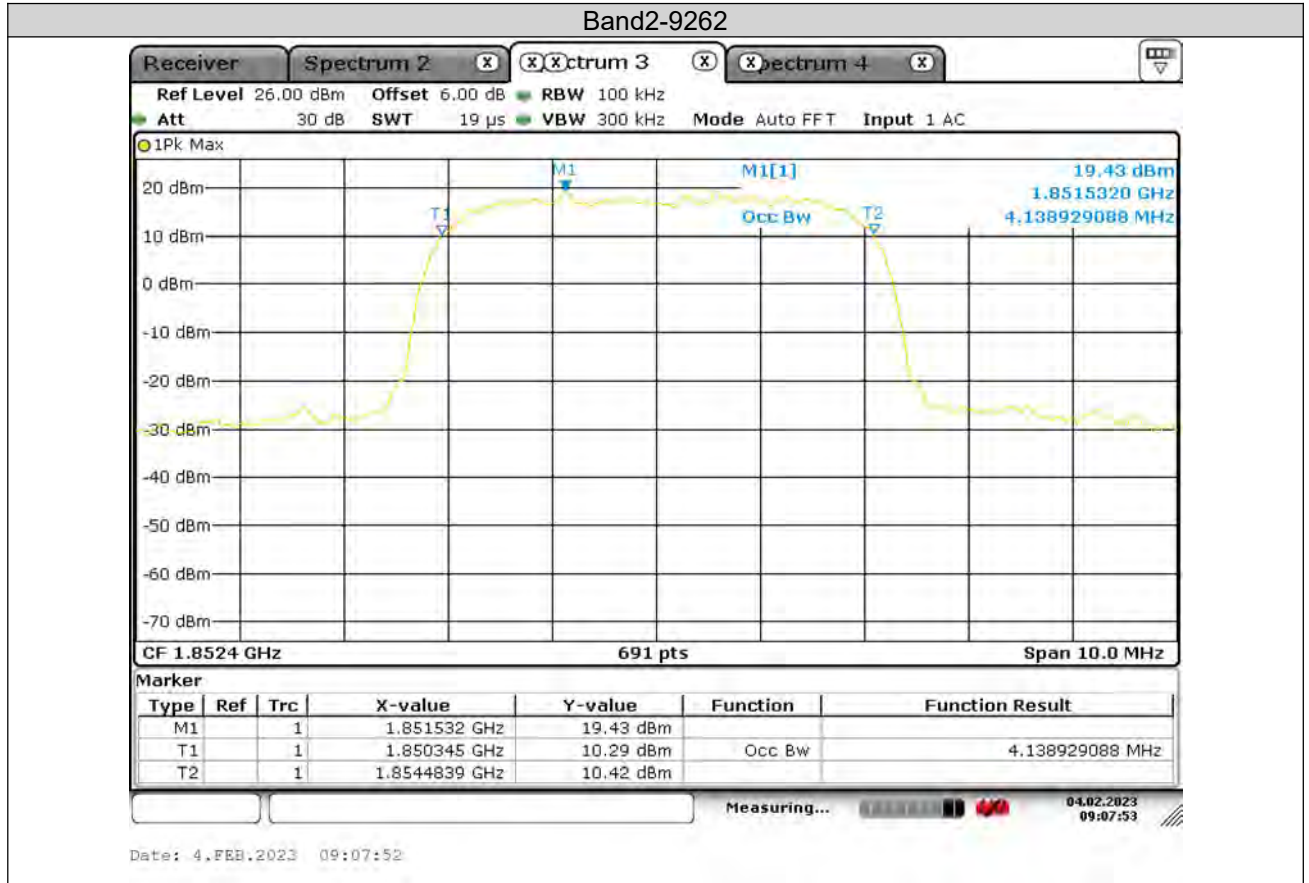
26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band2	9262	4.139	4.674	---	PASS
Band2	9400	4.139	4.674	---	PASS
Band2	9538	4.153	4.689	---	PASS

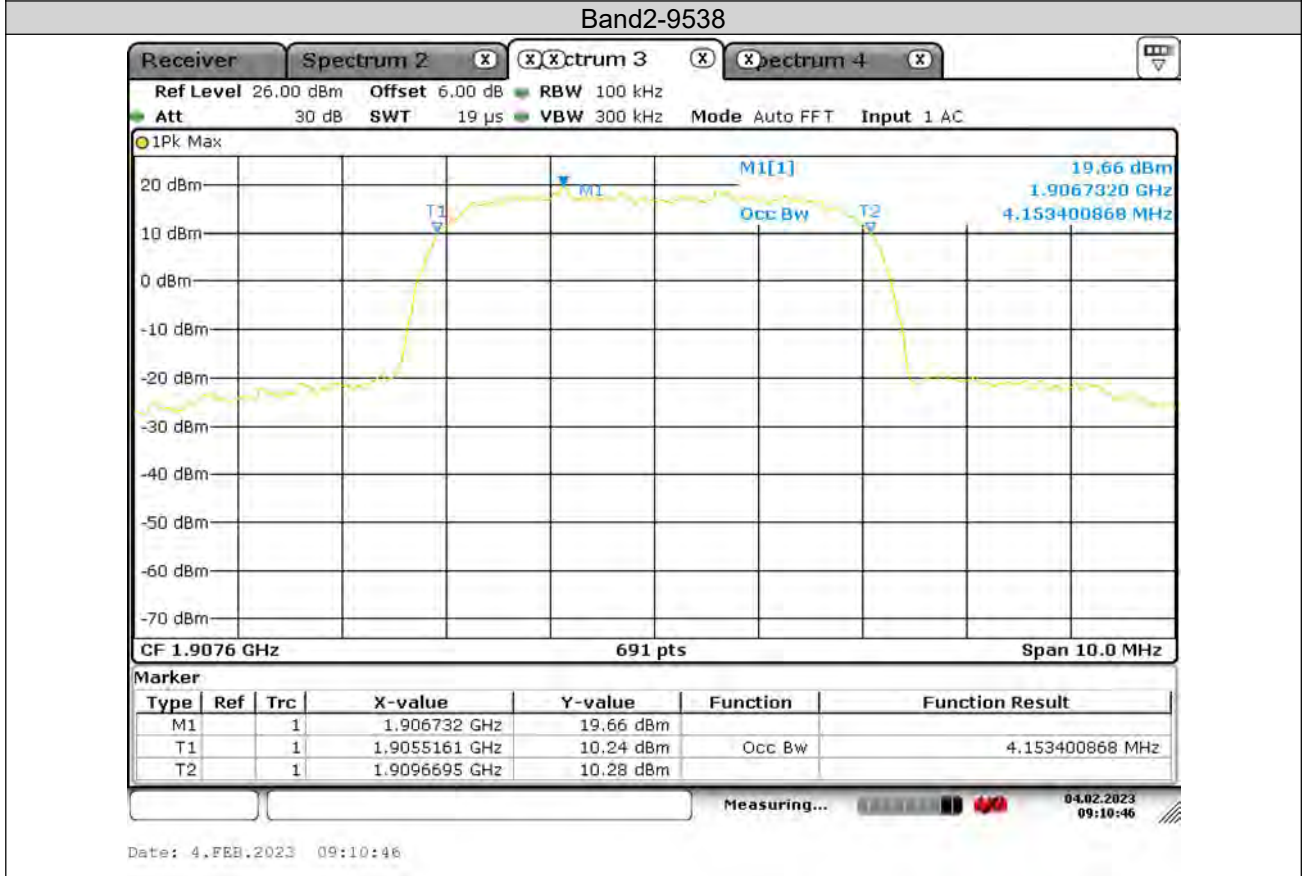
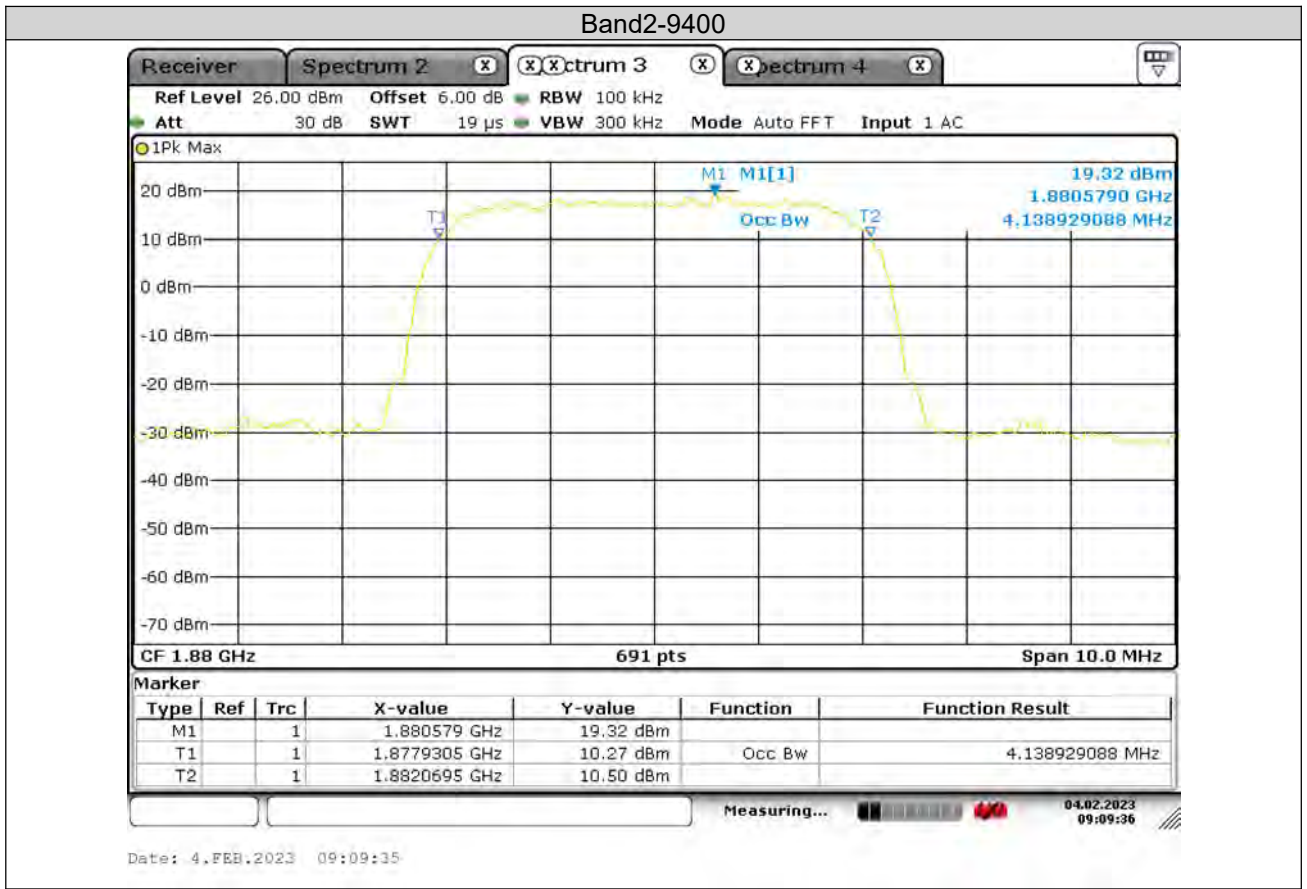


Test Graphs Occupied Bandwidth





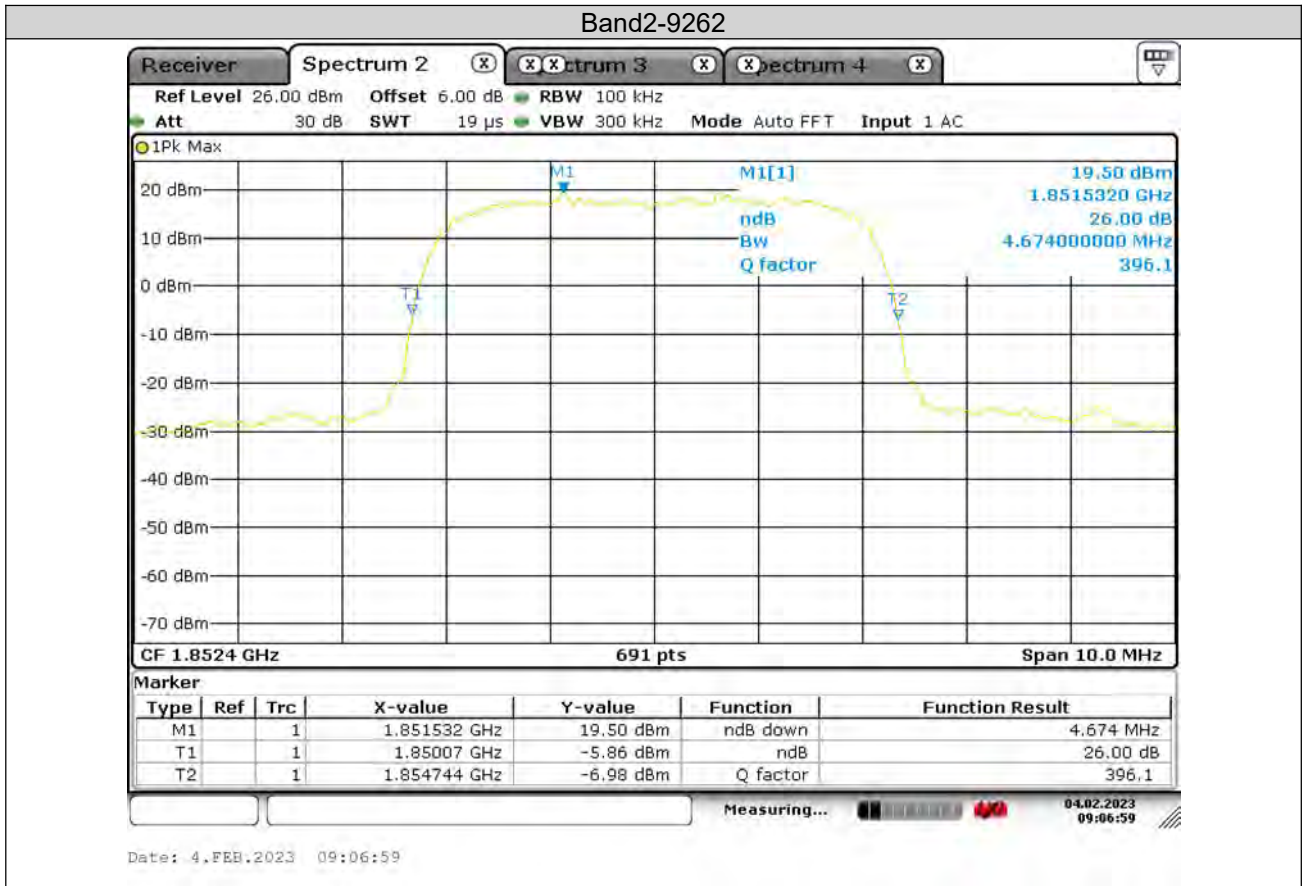
Test Report No.: W7L-P23010016RF02

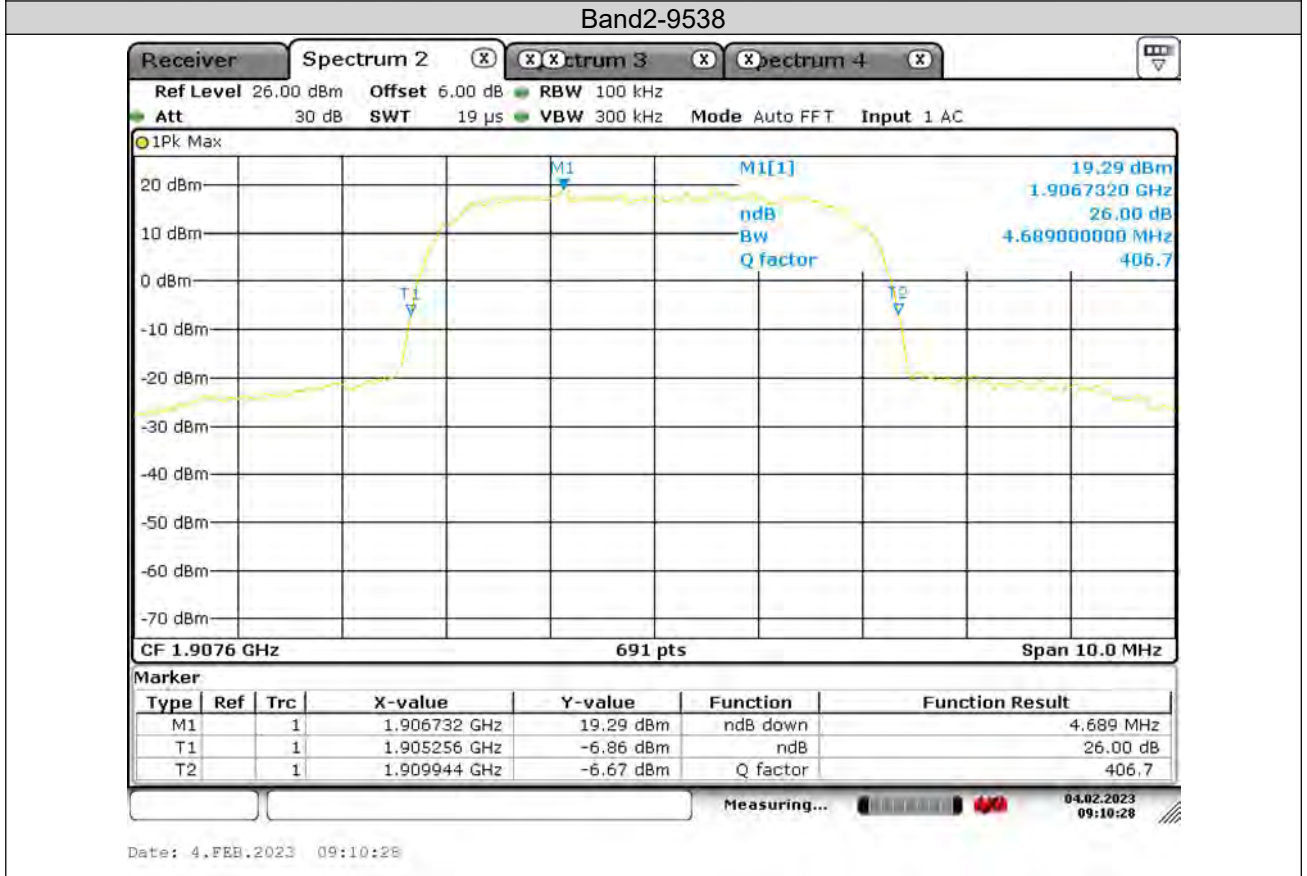
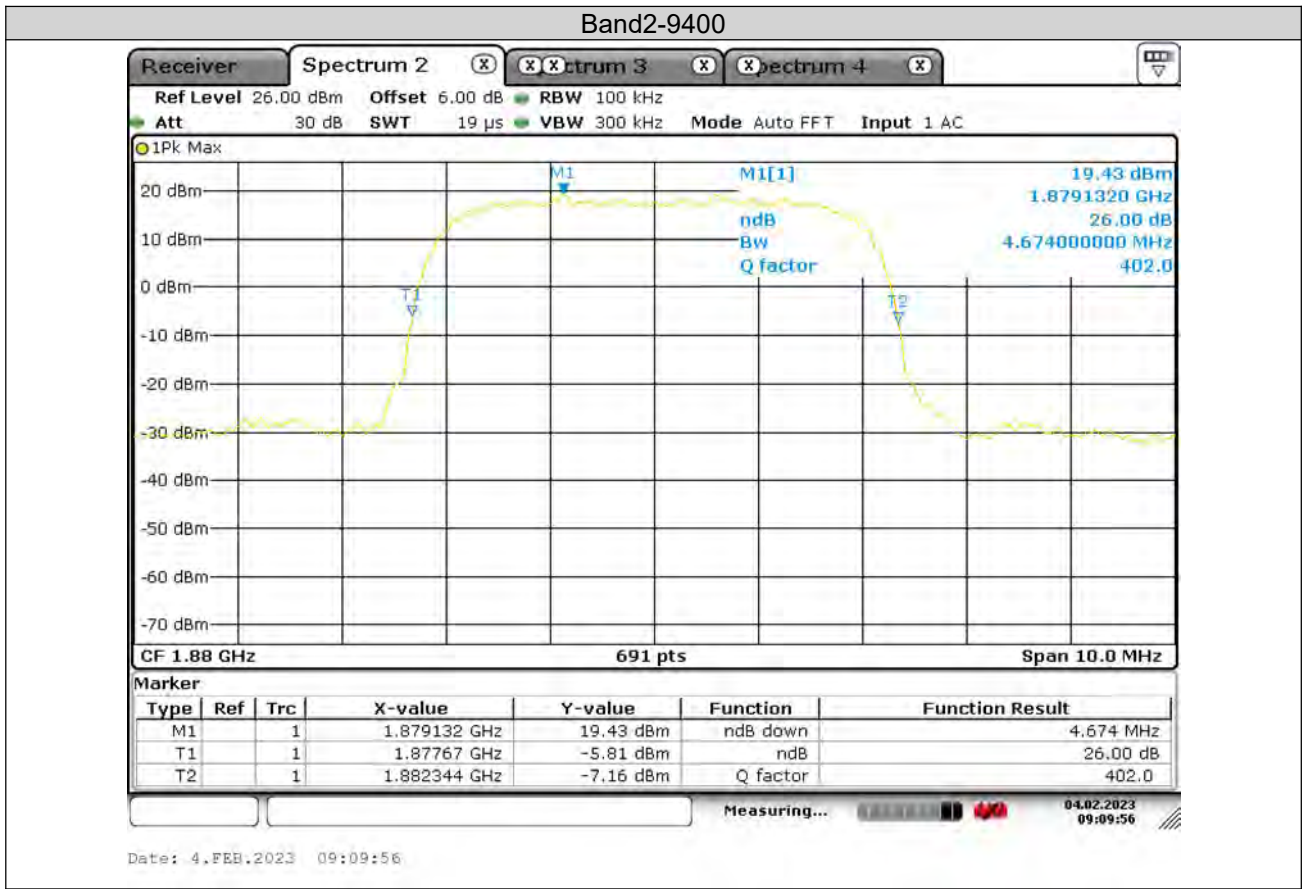




Test Report No.: W7L-P23010016RF02

26dB Bandwidth







Test Report No.: W7L-P23010016RF02

BAND EDGE

Test Result

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849	-28.57	-13	PASS
Band2	9538	1911.02	-22.1	-13	PASS

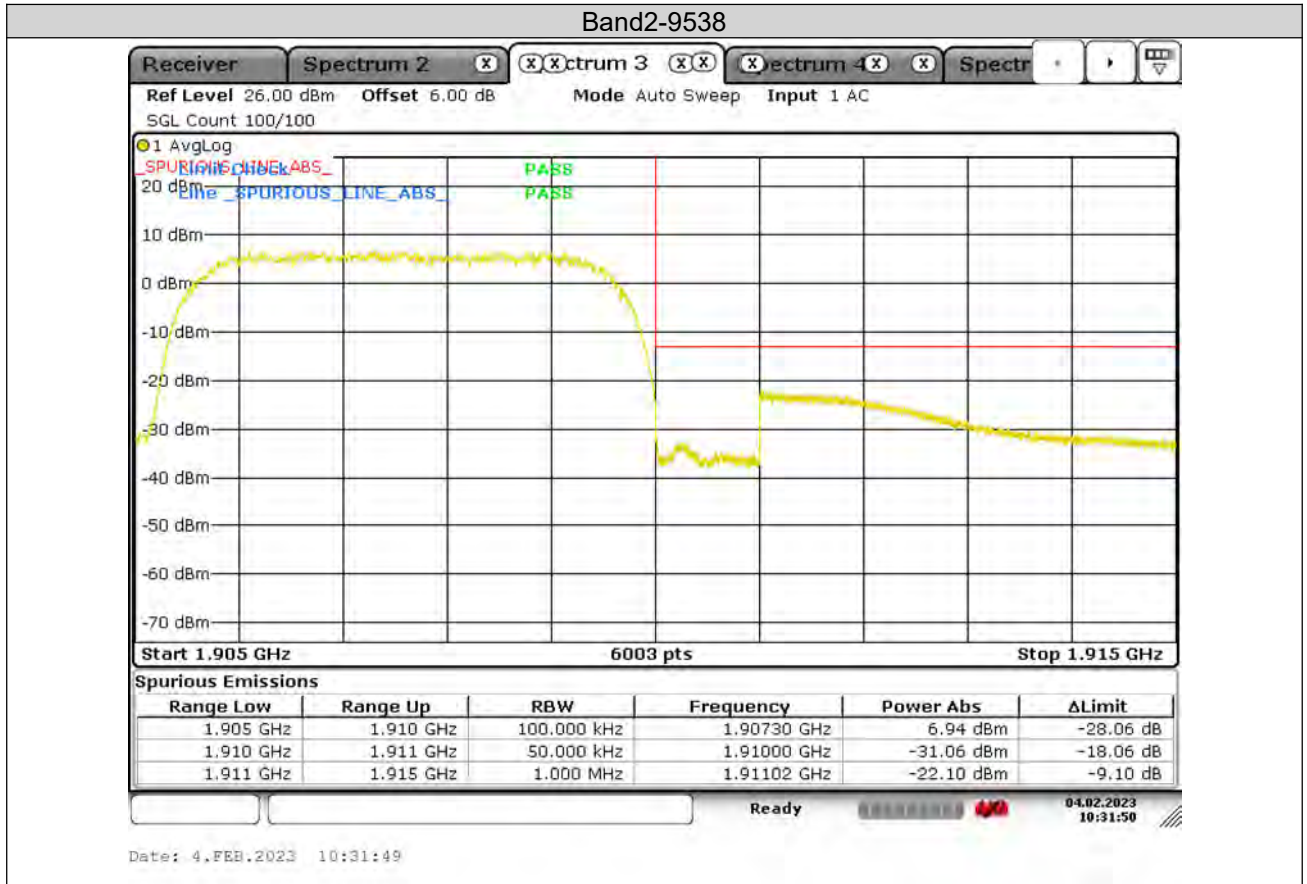


Test Graphs





Test Report No.: W7L-P23010016RF02



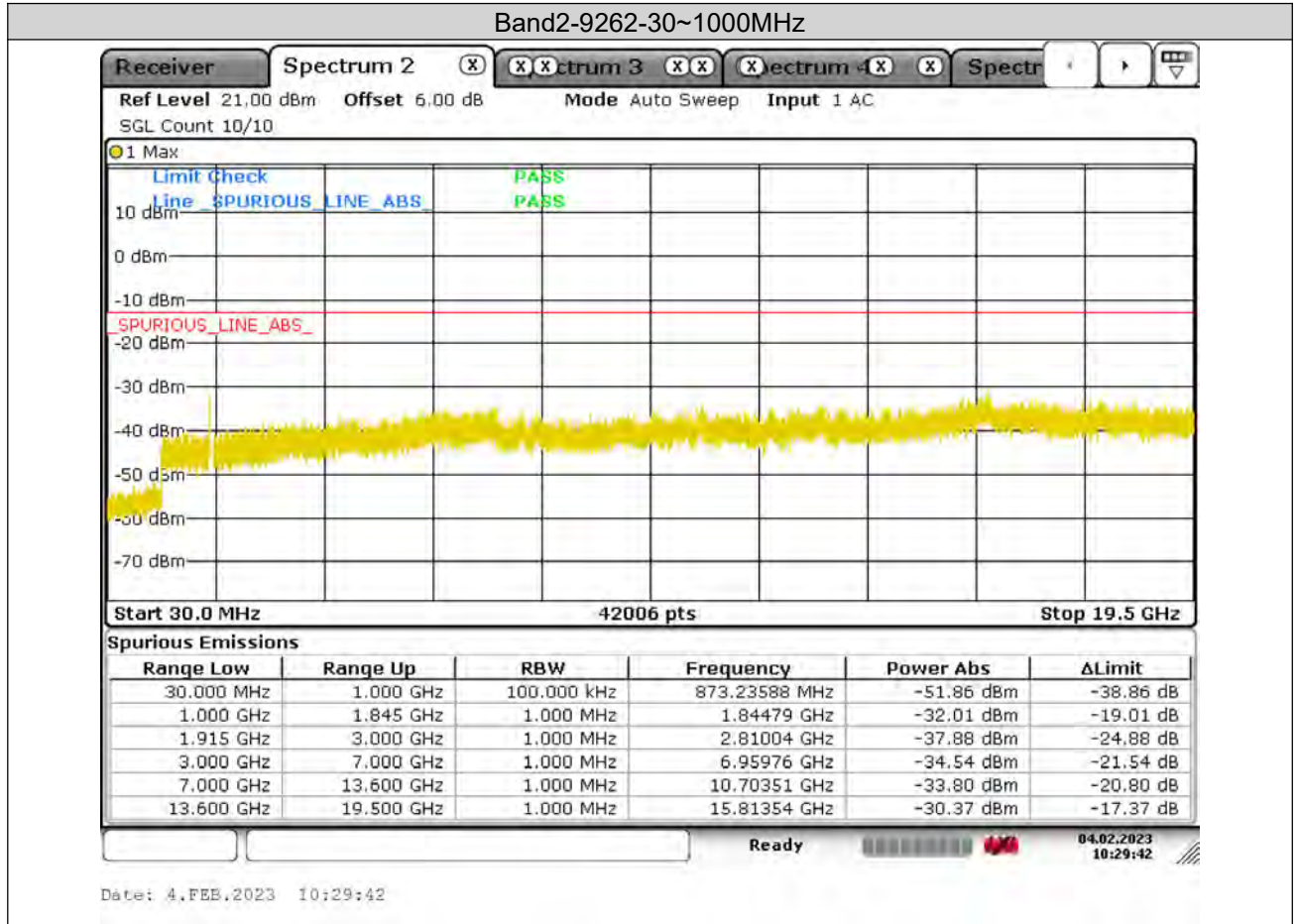


CONDUCTED SPURIOUS EMISSION

Test Result

Band	Channel	Frequency Range (Mhz)	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
Band2	9262	30~1000MHz	873.23588	-51.86	-13	PASS
Band2	9262	1000~3000MHz	1844.79	-32.01	-13	PASS
Band2	9262	3000~19100MHz	15813.54	-30.37	-13	PASS
Band2	9400	30~1000MHz	874.2054	-51.99	-13	PASS
Band2	9400	1000~3000MHz	2448.01	-37.82	-13	PASS
Band2	9400	3000~19100MHz	15822.89	-31.44	-13	PASS
Band2	9538	30~1000MHz	915.4098	-51.88	-13	PASS
Band2	9538	1000~3000MHz	1915.41	-23.48	-13	PASS
Band2	9538	3000~19100MHz	15845.5	-31.15	-13	PASS

Test Graphs

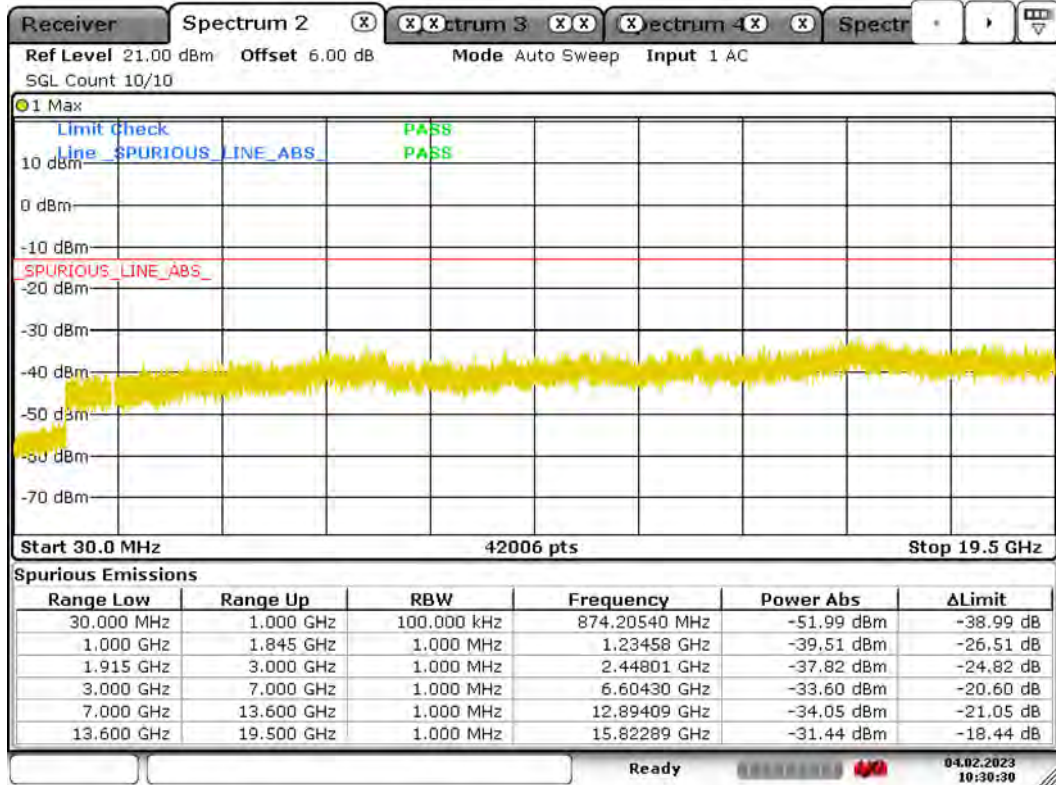




BUREAU VERITAS

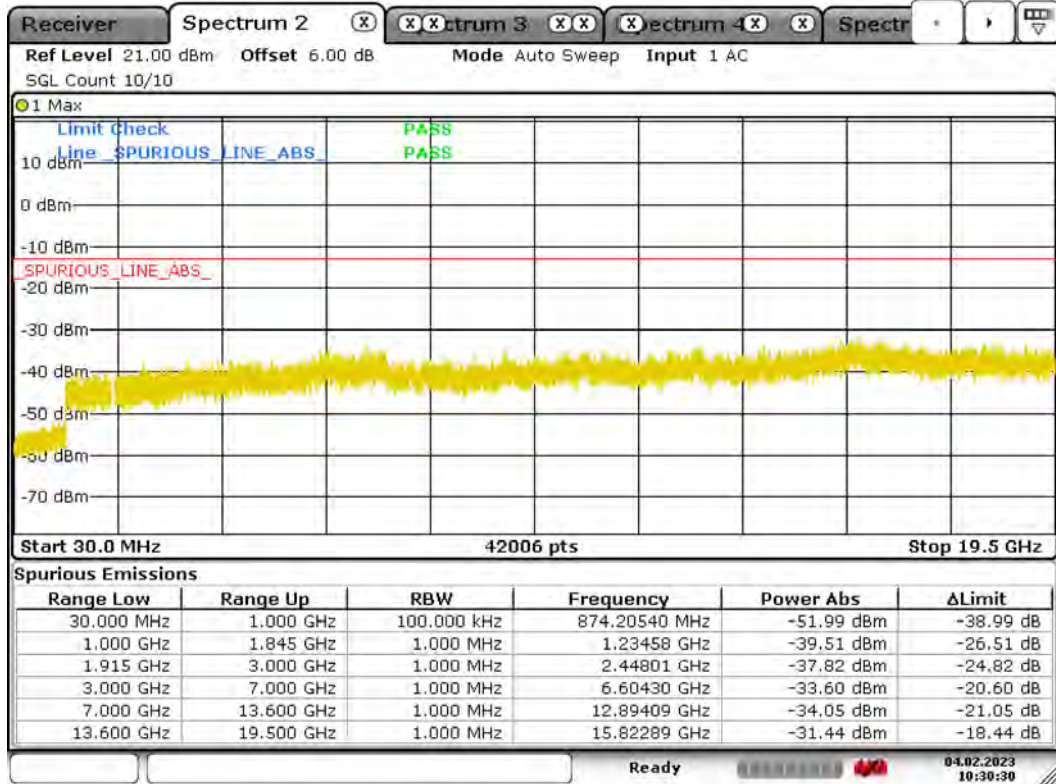
Test Report No.: W7L-P23010016RF02

Band2-9400-30~1000MHz



Date: 4.FEB.2023 10:30:29

Band2-9400-1000~3000MHz



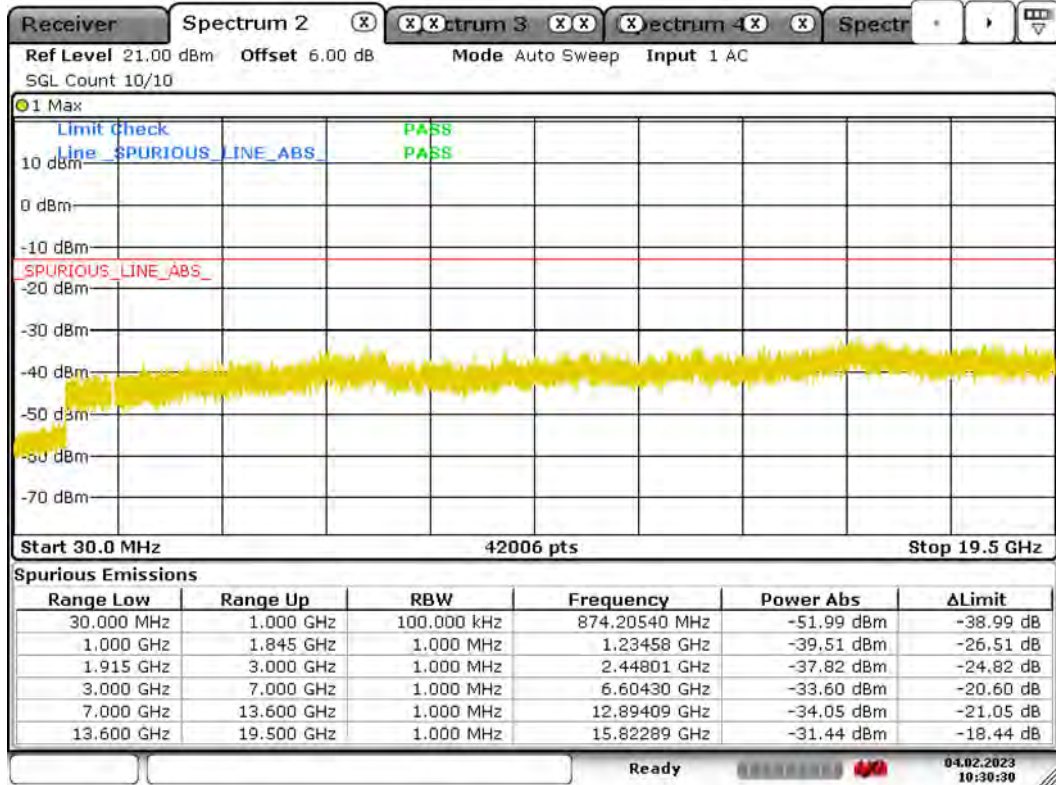
Date: 4.FEB.2023 10:30:29



BUREAU VERITAS

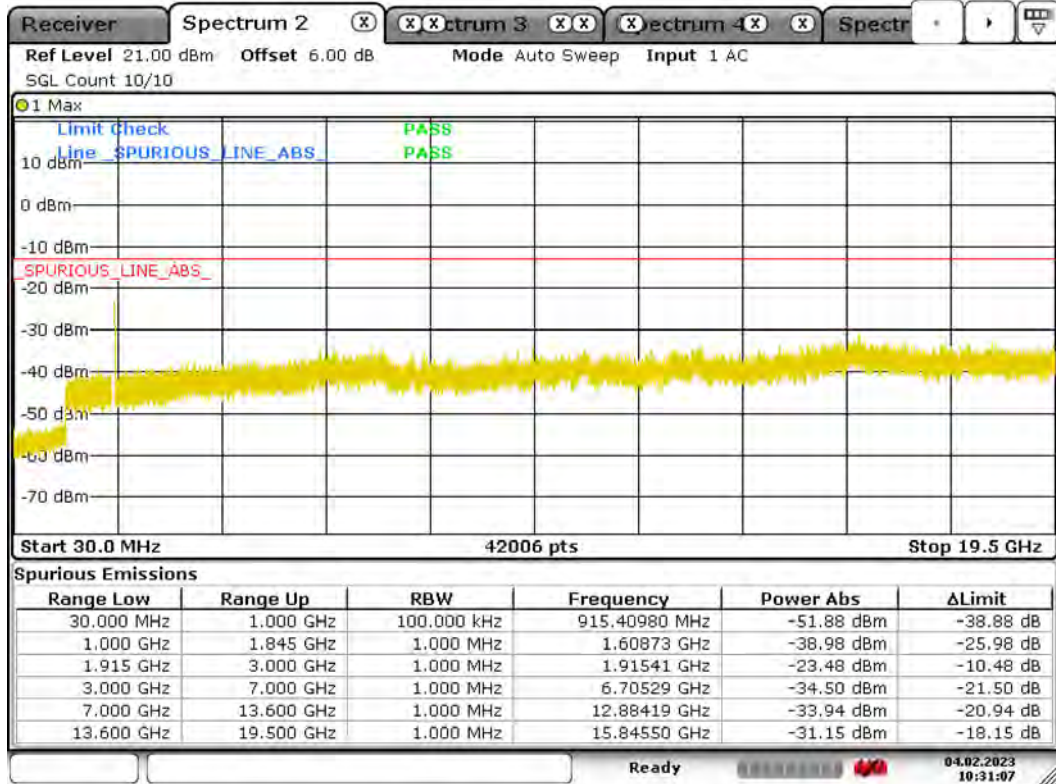
Test Report No.: W7L-P23010016RF02

Band2-9400-3000~19100MHz



Date: 4.FEB.2023 10:30:29

Band2-9538-30~1000MHz



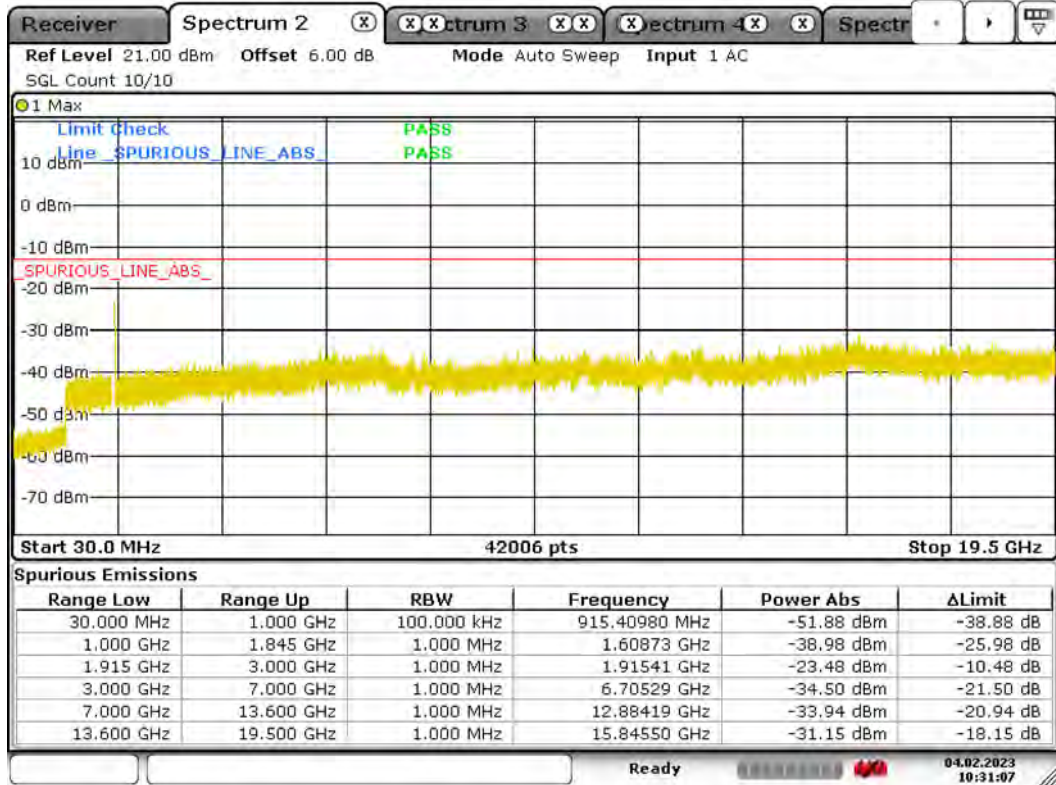
Date: 4.FEB.2023 10:31:07



BUREAU
VERITAS

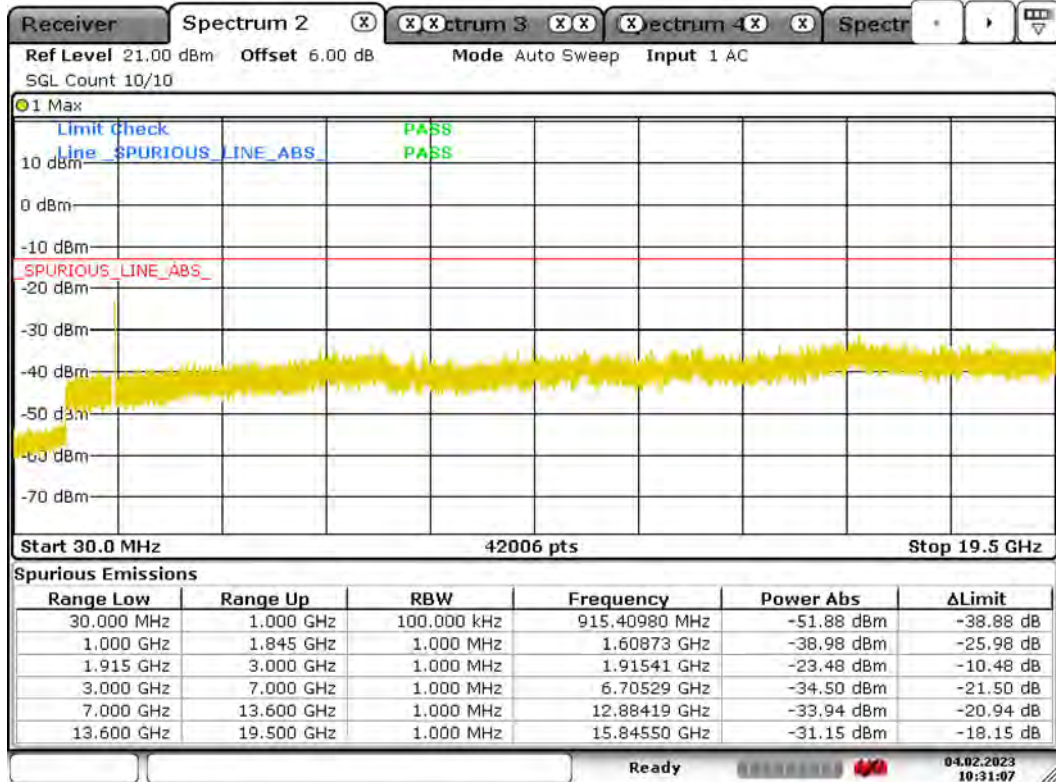
Test Report No.: W7L-P23010016RF02

Band2-9538-1000~3000MHz



Date: 4.FEB.2023 10:31:07

Band2-9538-3000~19100MHz



Date: 4.FEB.2023 10:31:07



FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	VL	NT	-5.7	-0.003077	±2.5	PASS
Band2	9262	VN	NT	-1.91	-0.001031	±2.5	PASS
Band2	9262	VH	NT	-5.31	-0.002867	±2.5	PASS
Band2	9400	VL	NT	4.65	0.002473	±2.5	PASS
Band2	9400	VN	NT	4.81	0.002559	±2.5	PASS
Band2	9400	VH	NT	5.11	0.002718	±2.5	PASS
Band2	9538	VL	NT	-8	-0.004045	±2.5	PASS
Band2	9538	VN	NT	0.18	0.000091	±2.5	PASS
Band2	9538	VH	NT	3.34	0.001689	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	NV	-30	4.6	0.002483	±2.5	PASS
Band2	9262	NV	-20	-8.78	-0.004740	±2.5	PASS
Band2	9262	NV	0	-1.08	-0.000583	±2.5	PASS
Band2	9262	NV	10	2.42	0.001306	±2.5	PASS
Band2	9262	NV	20	7.06	0.003811	±2.5	PASS
Band2	9262	NV	30	6.15	0.003320	±2.5	PASS
Band2	9262	NV	40	6.66	0.003595	±2.5	PASS
Band2	9262	NV	50	1.08	0.000583	±2.5	PASS
Band2	9400	NV	-30	4.99	0.002654	±2.5	PASS
Band2	9400	NV	-20	0.72	0.000383	±2.5	PASS
Band2	9400	NV	0	-9.78	-0.005202	±2.5	PASS
Band2	9400	NV	10	1.9	0.001011	±2.5	PASS
Band2	9400	NV	20	-4.14	-0.002202	±2.5	PASS
Band2	9400	NV	30	8.09	0.004303	±2.5	PASS
Band2	9400	NV	40	9.34	0.004968	±2.5	PASS
Band2	9400	NV	50	-2.05	-0.001090	±2.5	PASS
Band2	9538	NV	-30	-4.49	-0.002270	±2.5	PASS
Band2	9538	NV	-20	4.15	0.002099	±2.5	PASS
Band2	9538	NV	0	-8.06	-0.004076	±2.5	PASS
Band2	9538	NV	10	-6.02	-0.003044	±2.5	PASS
Band2	9538	NV	20	-9.1	-0.004602	±2.5	PASS
Band2	9538	NV	30	9.5	0.004804	±2.5	PASS
Band2	9538	NV	40	-4.86	-0.002458	±2.5	PASS
Band2	9538	NV	50	-1.04	-0.000526	±2.5	PASS



Test Report No.: W7L-P23010016RF02

LTE BAND 2

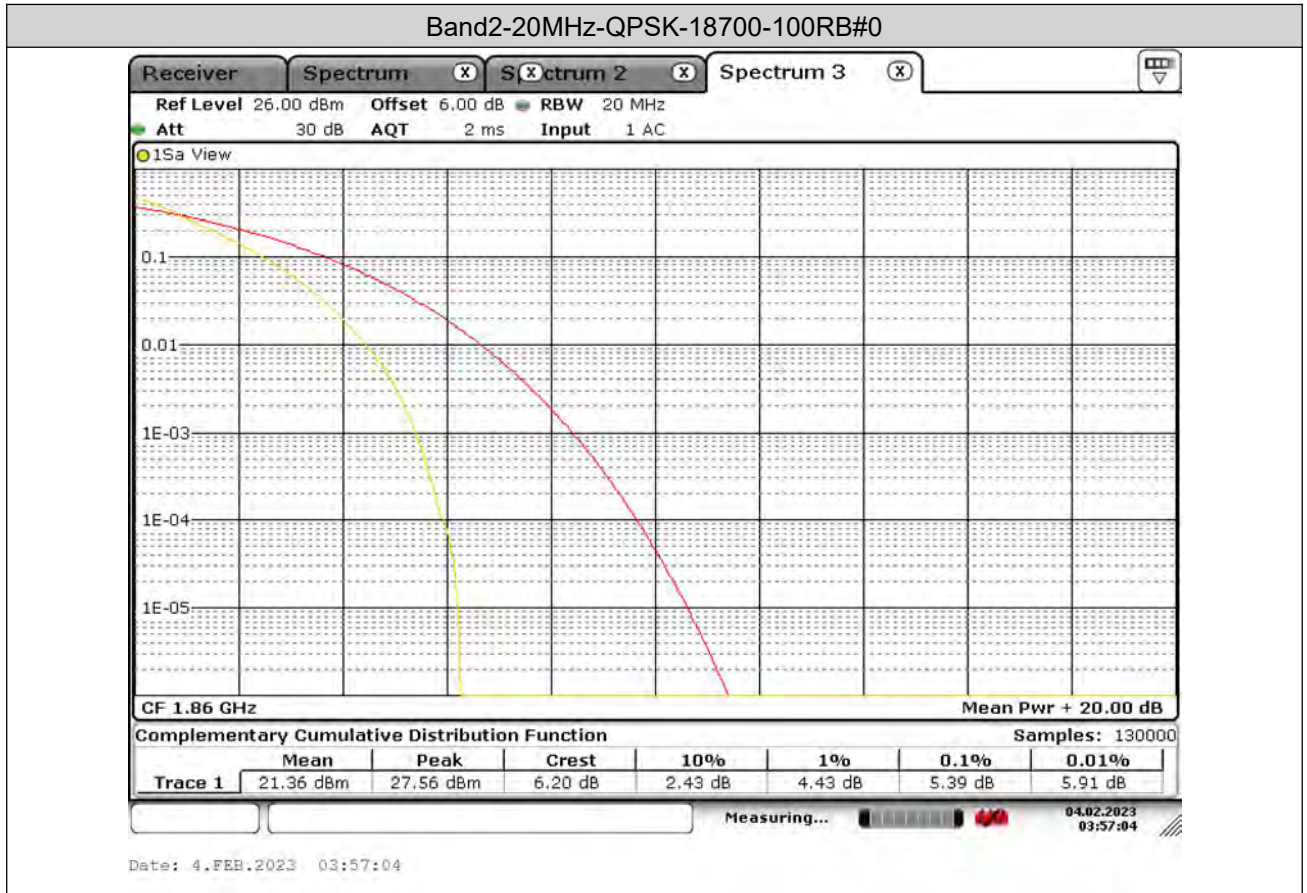
PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band2	20MHz	QPSK	18700	1RB#0	4.55	13	PASS
Band2	20MHz	QPSK	18700	100RB#0	5.39	13	PASS
Band2	20MHz	QPSK	18900	1RB#0	4.75	13	PASS
Band2	20MHz	QPSK	18900	100RB#0	5.54	13	PASS
Band2	20MHz	QPSK	19100	1RB#0	4.58	13	PASS
Band2	20MHz	QPSK	19100	100RB#0	5.28	13	PASS
Band2	20MHz	16QAM	18700	1RB#0	5.62	13	PASS
Band2	20MHz	16QAM	18700	100RB#0	6.29	13	PASS
Band2	20MHz	16QAM	18900	1RB#0	6.03	13	PASS
Band2	20MHz	16QAM	18900	100RB#0	6.43	13	PASS
Band2	20MHz	16QAM	19100	1RB#0	5.16	13	PASS
Band2	20MHz	16QAM	19100	100RB#0	6.12	13	PASS
Band2	20MHz	64QAM	18700	1RB#0	5.94	13	PASS
Band2	20MHz	64QAM	18700	100RB#0	6.55	13	PASS
Band2	20MHz	64QAM	18900	1RB#0	6.58	13	PASS
Band2	20MHz	64QAM	18900	100RB#0	6.64	13	PASS
Band2	20MHz	64QAM	19100	1RB#0	6.26	13	PASS
Band2	20MHz	64QAM	19100	100RB#0	6.52	13	PASS



Test Report No.: W7L-P23010016RF02

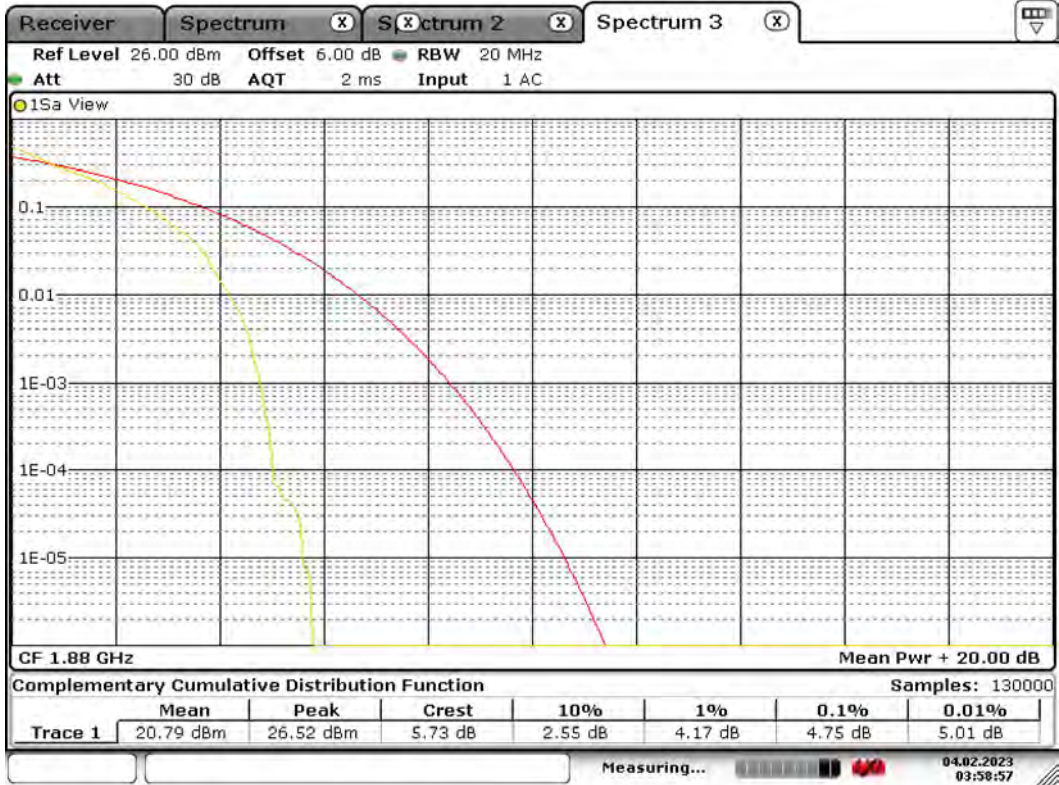




BUREAU VERITAS

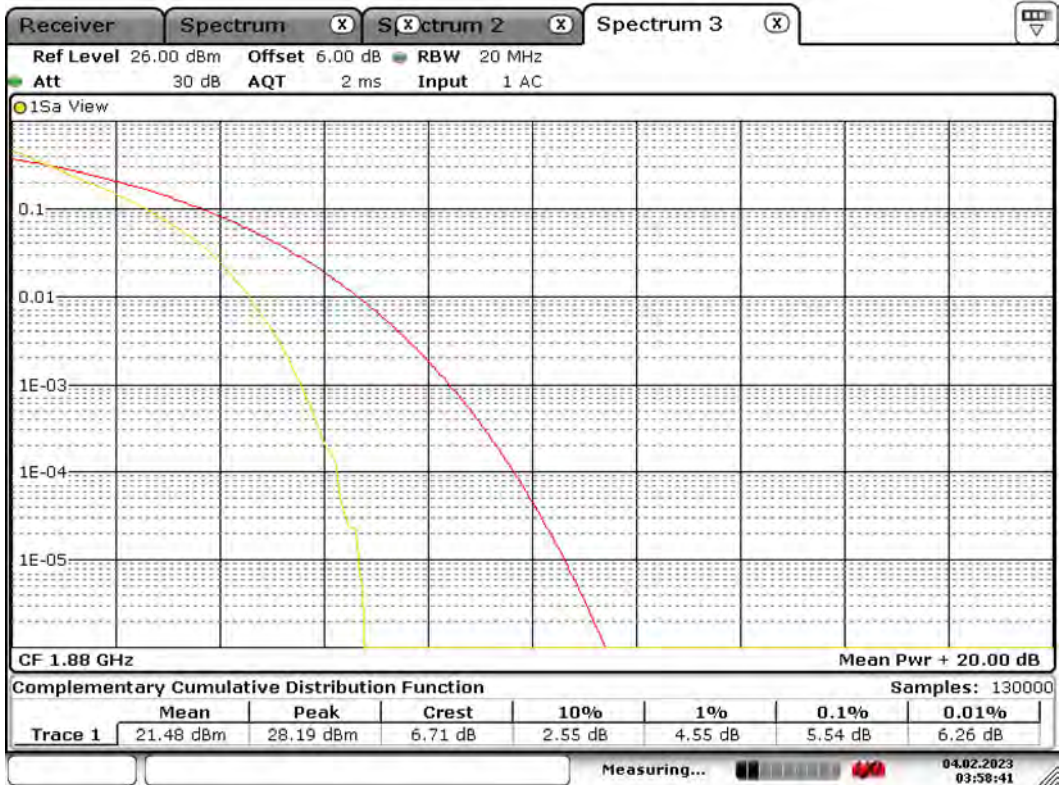
Test Report No.: W7L-P23010016RF02

Band2-20MHz-QPSK-18900-1RB#0



Date: 4.FEB.2023 03:58:57

Band2-20MHz-QPSK-18900-100RB#0



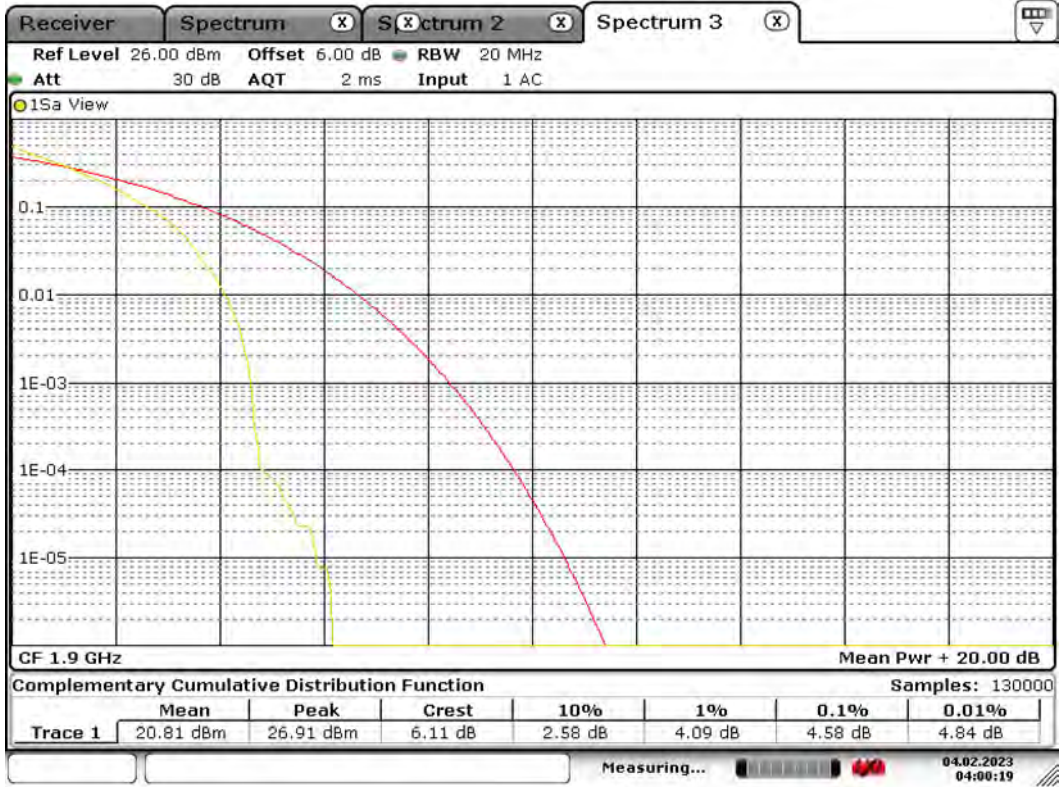
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BUREAU VERITAS

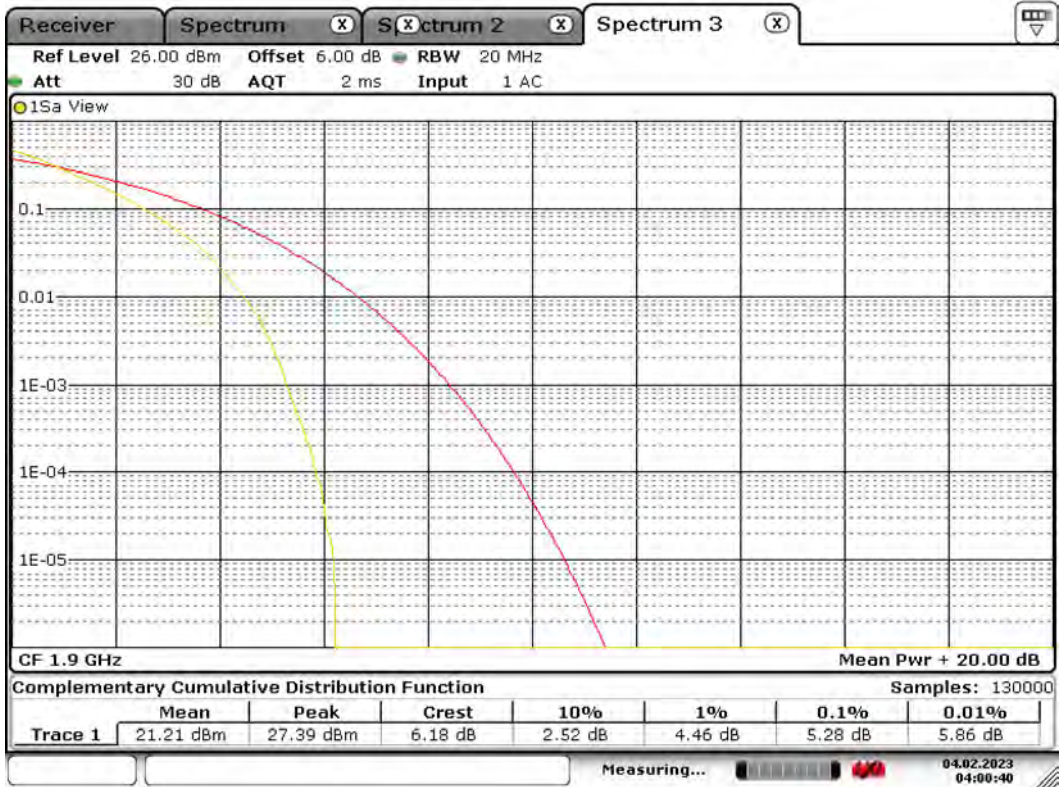
Test Report No.: W7L-P23010016RF02

Band2-20MHz-QPSK-19100-1RB#0



Date: 4.FEB.2023 04:00:20

Band2-20MHz-QPSK-19100-100RB#0



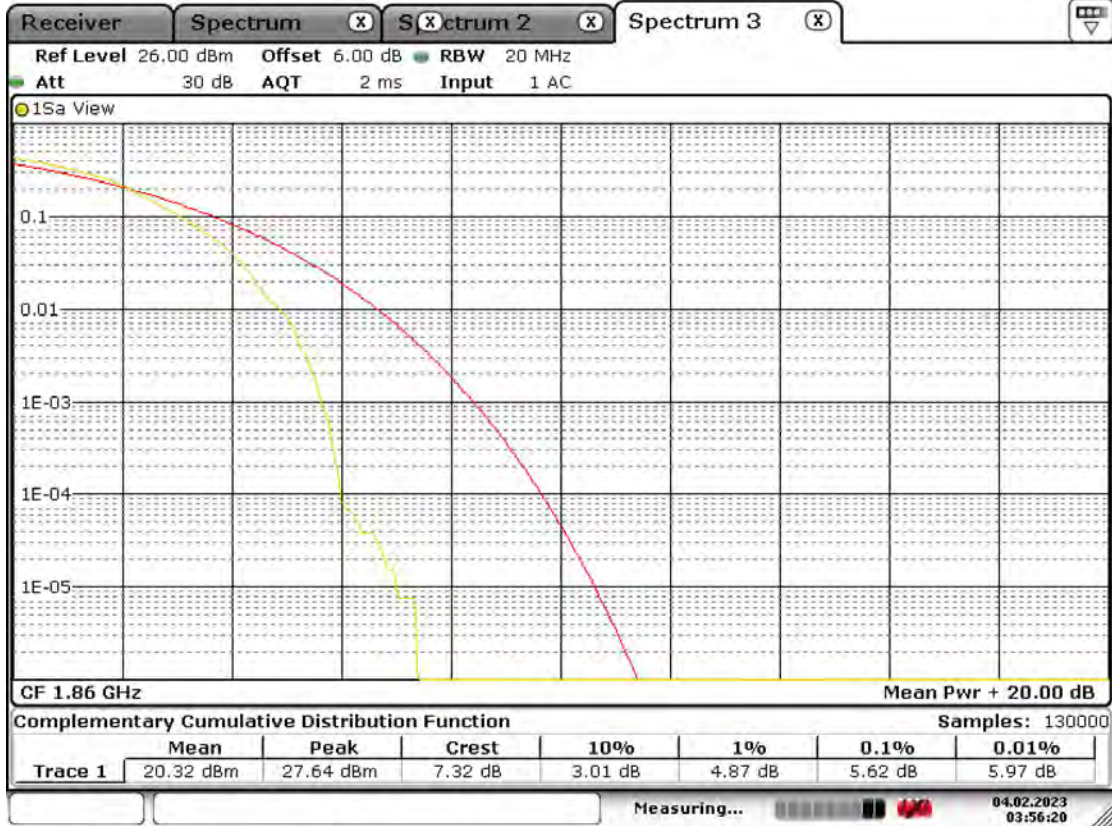
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BUREAU VERITAS

Test Report No.: W7L-P23010016RF02

Band2-20MHz-16QAM-18700-1RB#0



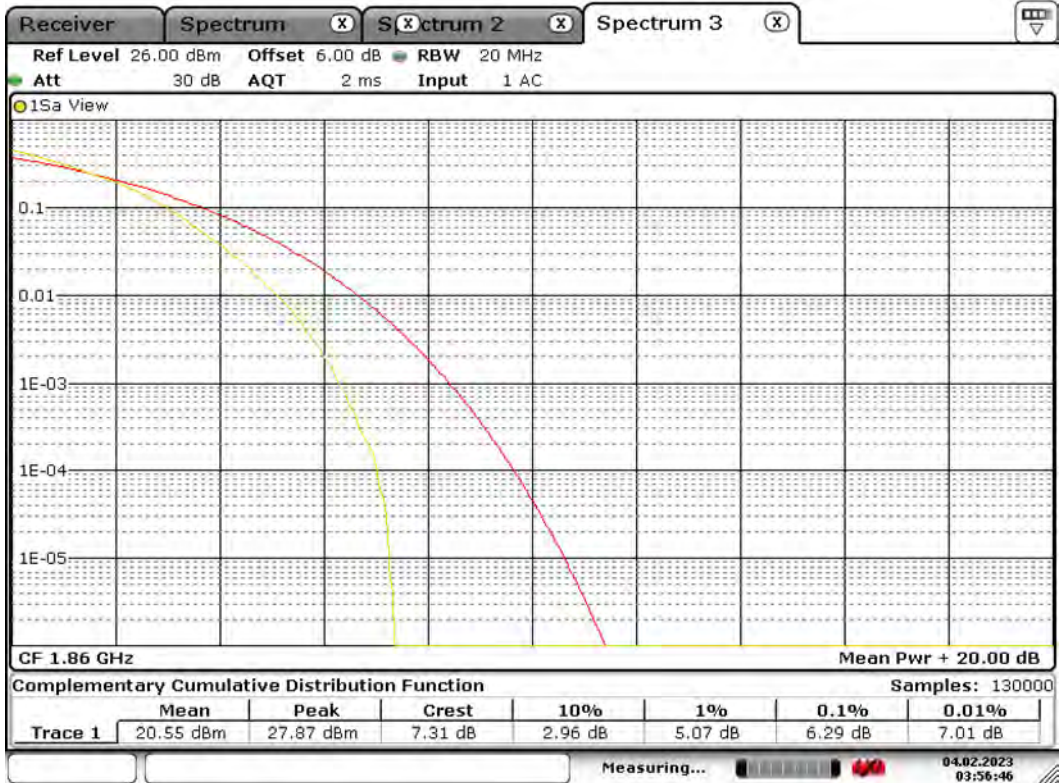
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Band2-20MHz-16QAM-18700-100RB#0



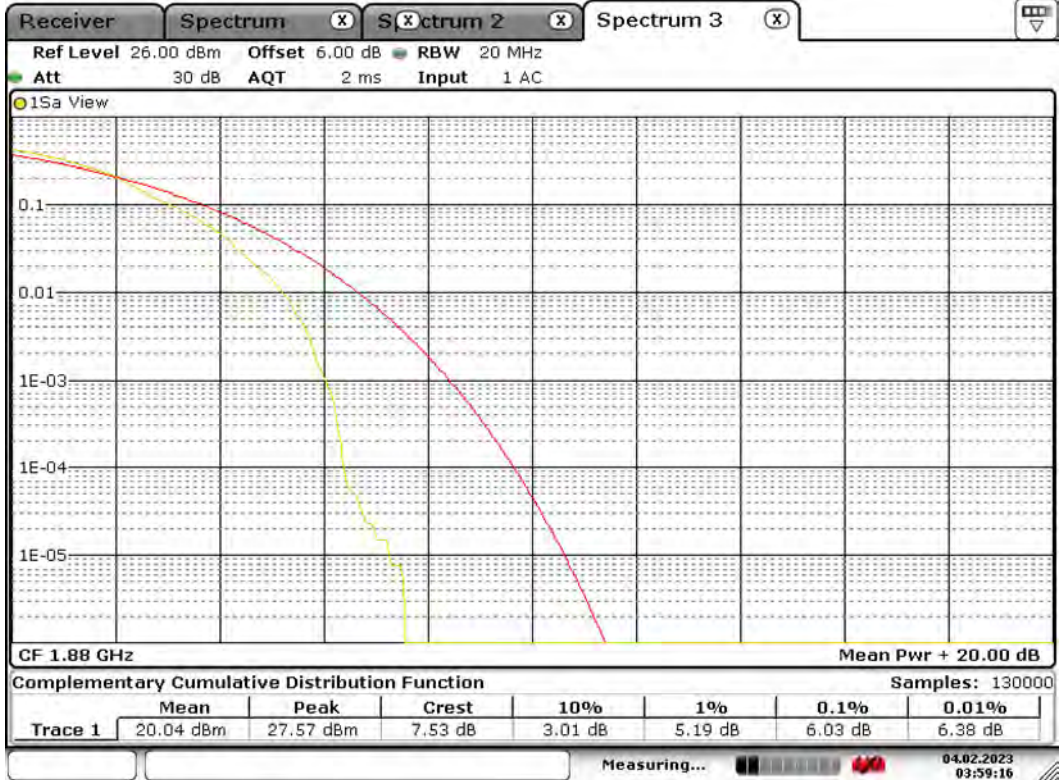
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VERITAS

Test Report No.: W7L-P23010016RF02



Date: 4.FEB.2023 03:56:47

Band2-20MHz-16QAM-18900-1RB#0



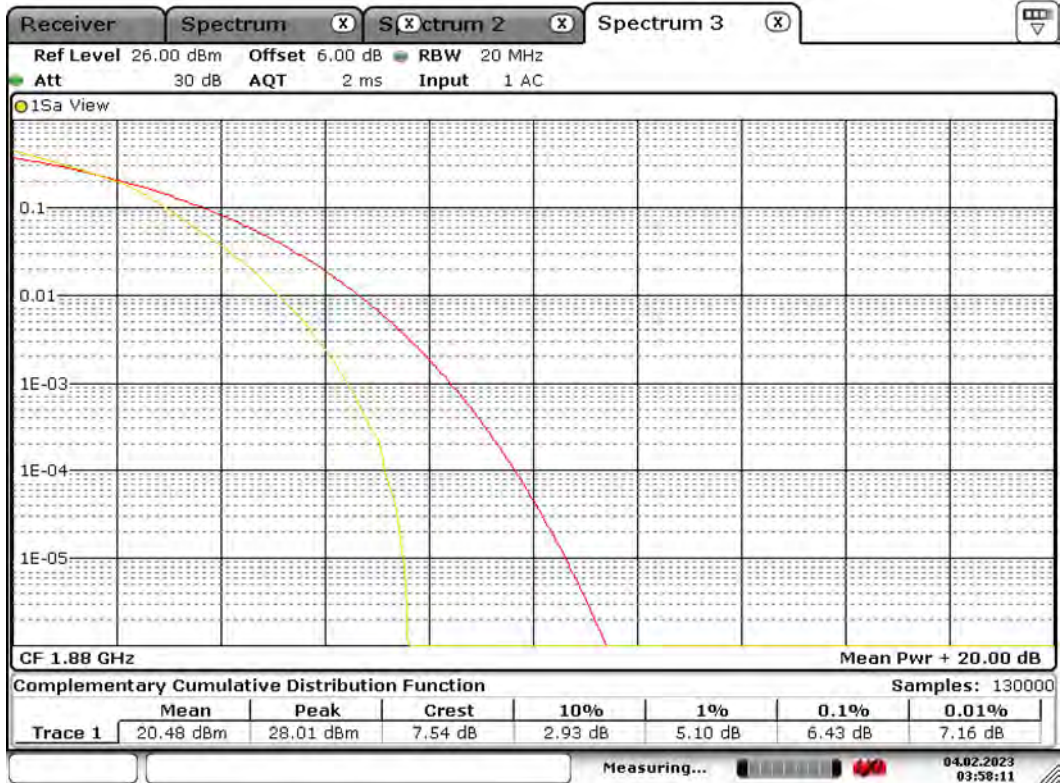
Date: 4.FEB.2023 03:59:16

Band2-20MHz-16QAM-18900-100RB#0

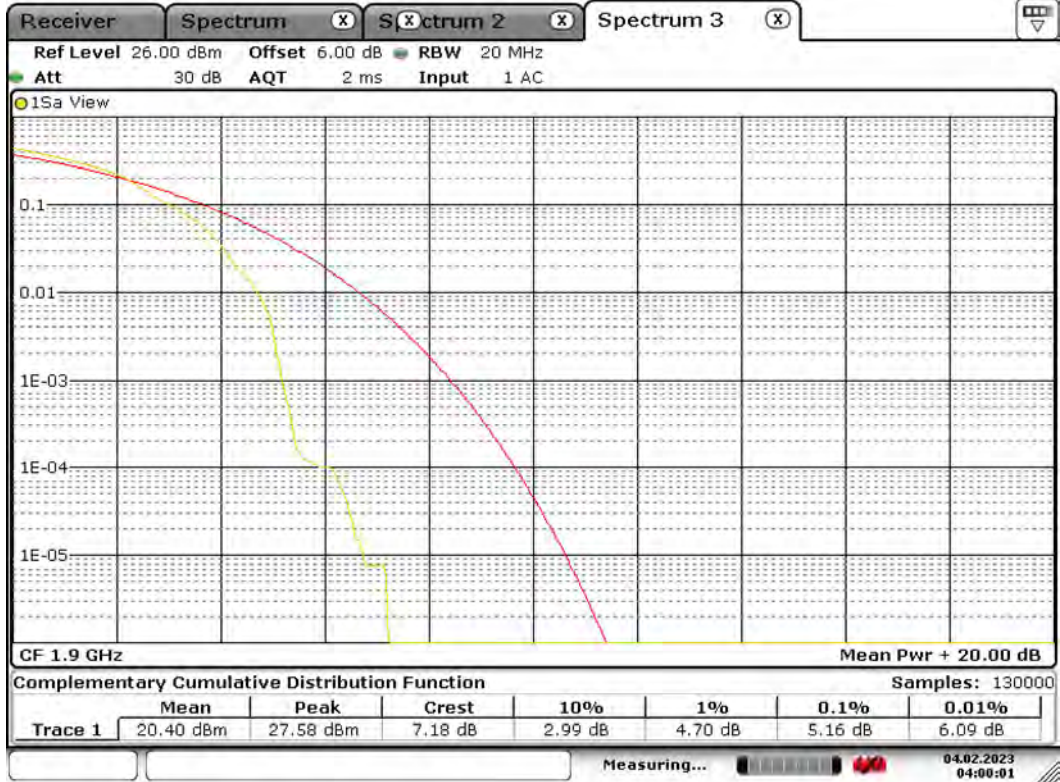


BUREAU VERITAS

Test Report No.: W7L-P23010016RF02



Band2-20MHz-16QAM-19100-1RB#0

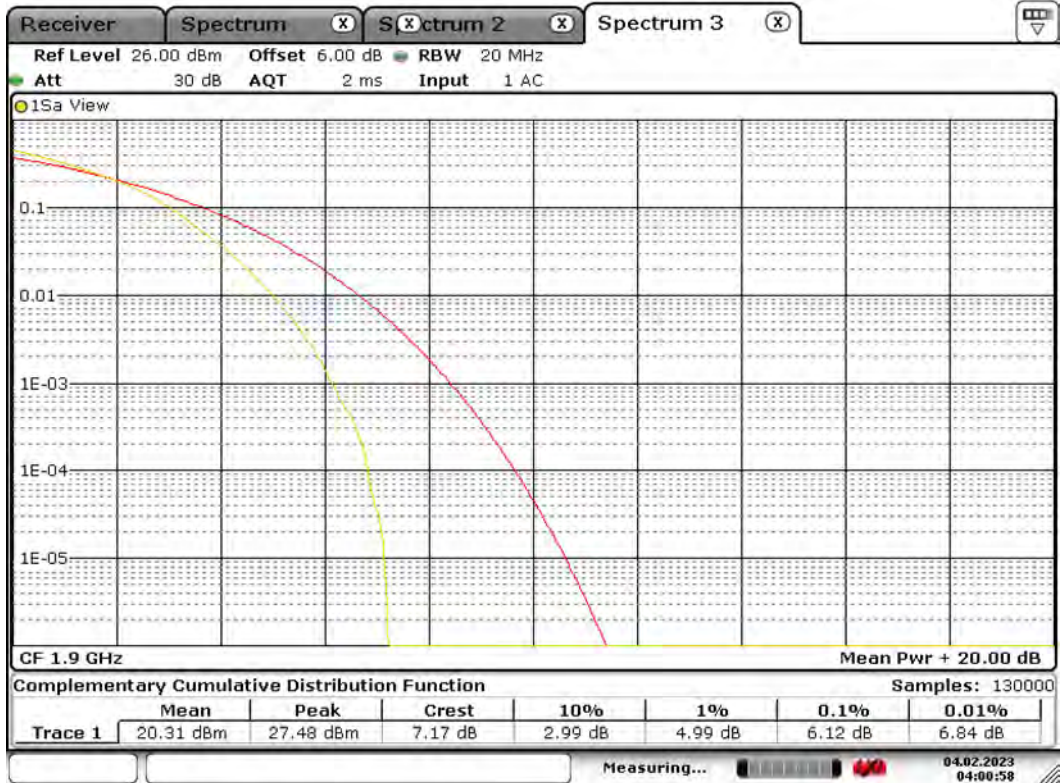


Band2-20MHz-16QAM-19100-100RB#0



BUREAU VERITAS

Test Report No.: W7L-P23010016RF02



Date: 4.FEB.2023 04:00:58

Band2-20MHz-64QAM-18700-1RB#0



Date: 22.FEB.2023 23:48:55

Band2-20MHz-64QAM-18700-100RB#0



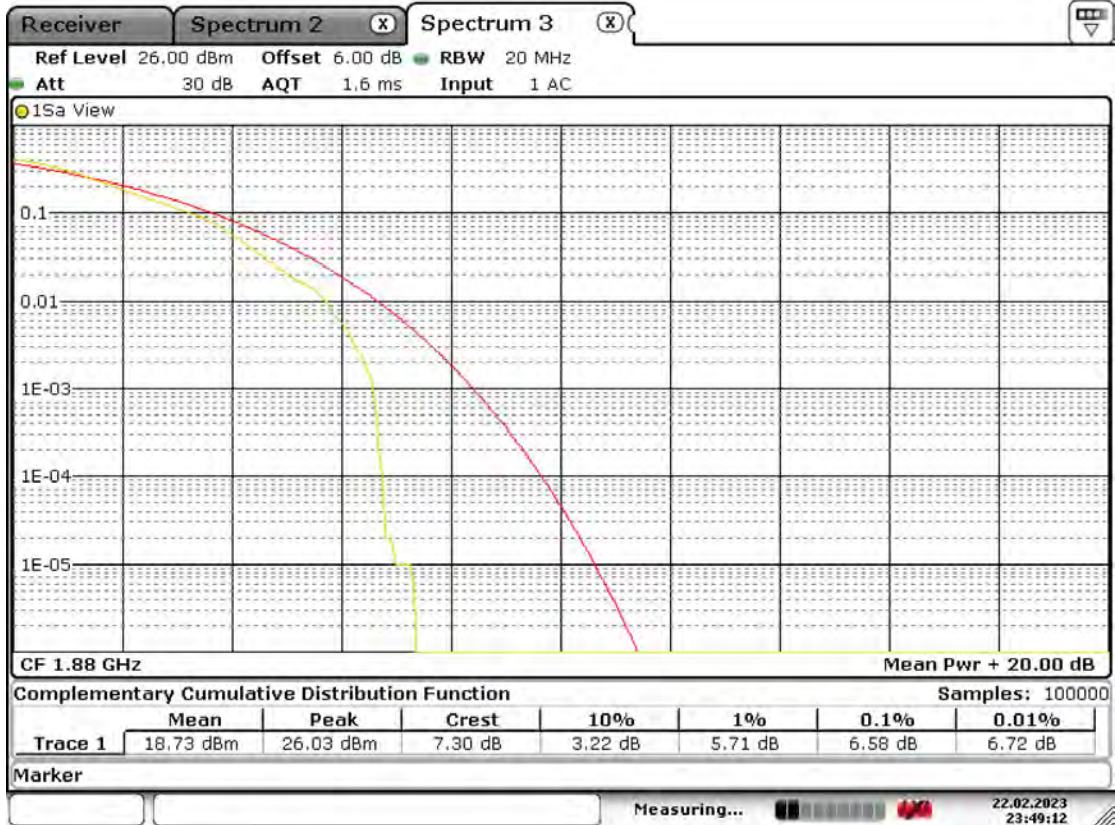
BUREAU VERITAS

Test Report No.: W7L-P23010016RF02



Date: 22.FEB.2023 23:48:31

Band2-20MHz-64QAM-18900-1RB#0



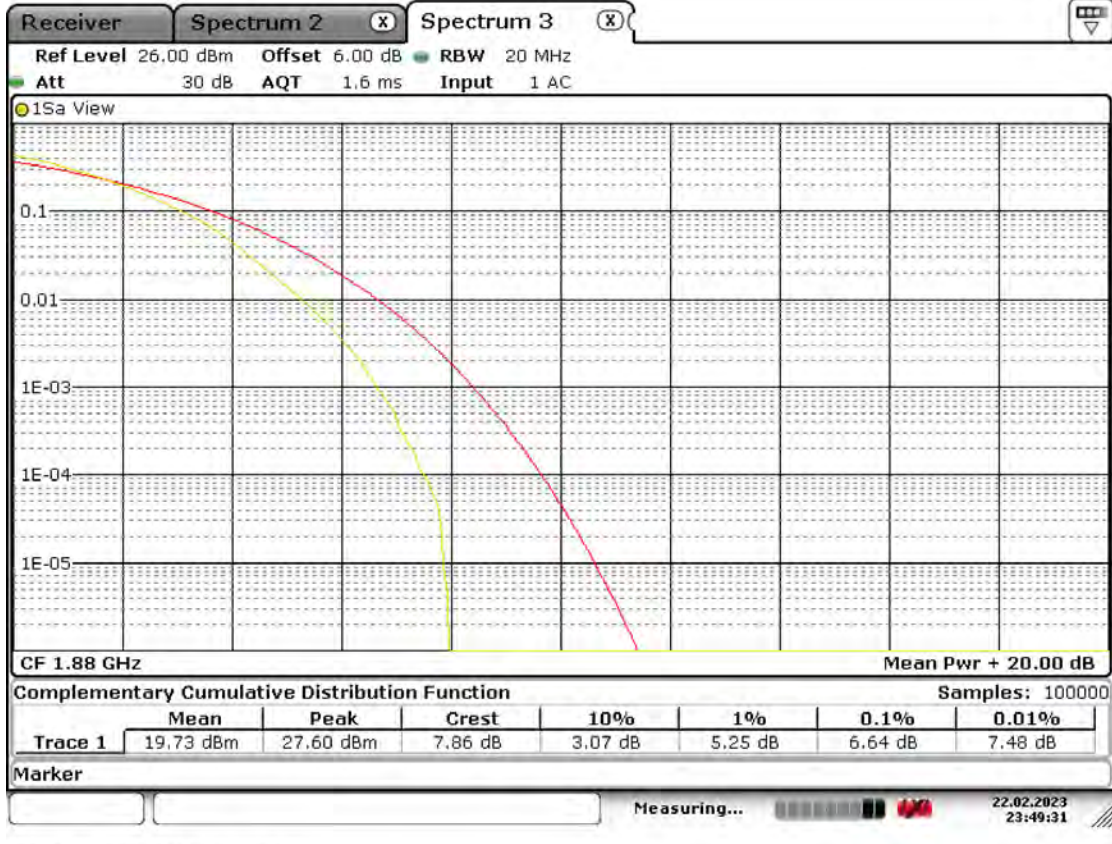
Date: 22.FEB.2023 23:49:12



BUREAU VERITAS

Test Report No.: W7L-P23010016RF02

Band2-20MHz-64QAM-18900-100RB#0



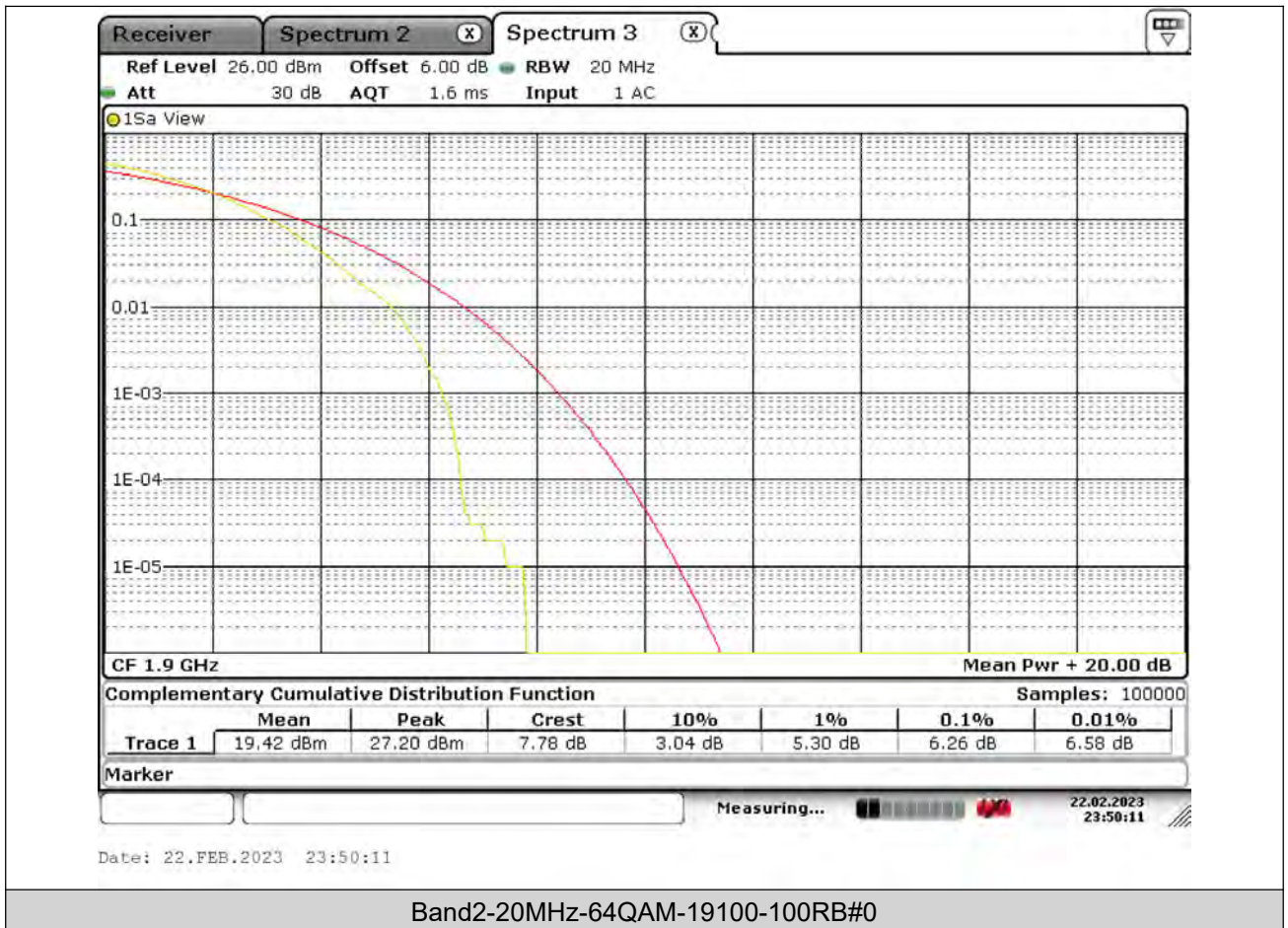
Date: 22.FEB.2023 23:49:31

Band2-20MHz-64QAM-19100-1RB#0



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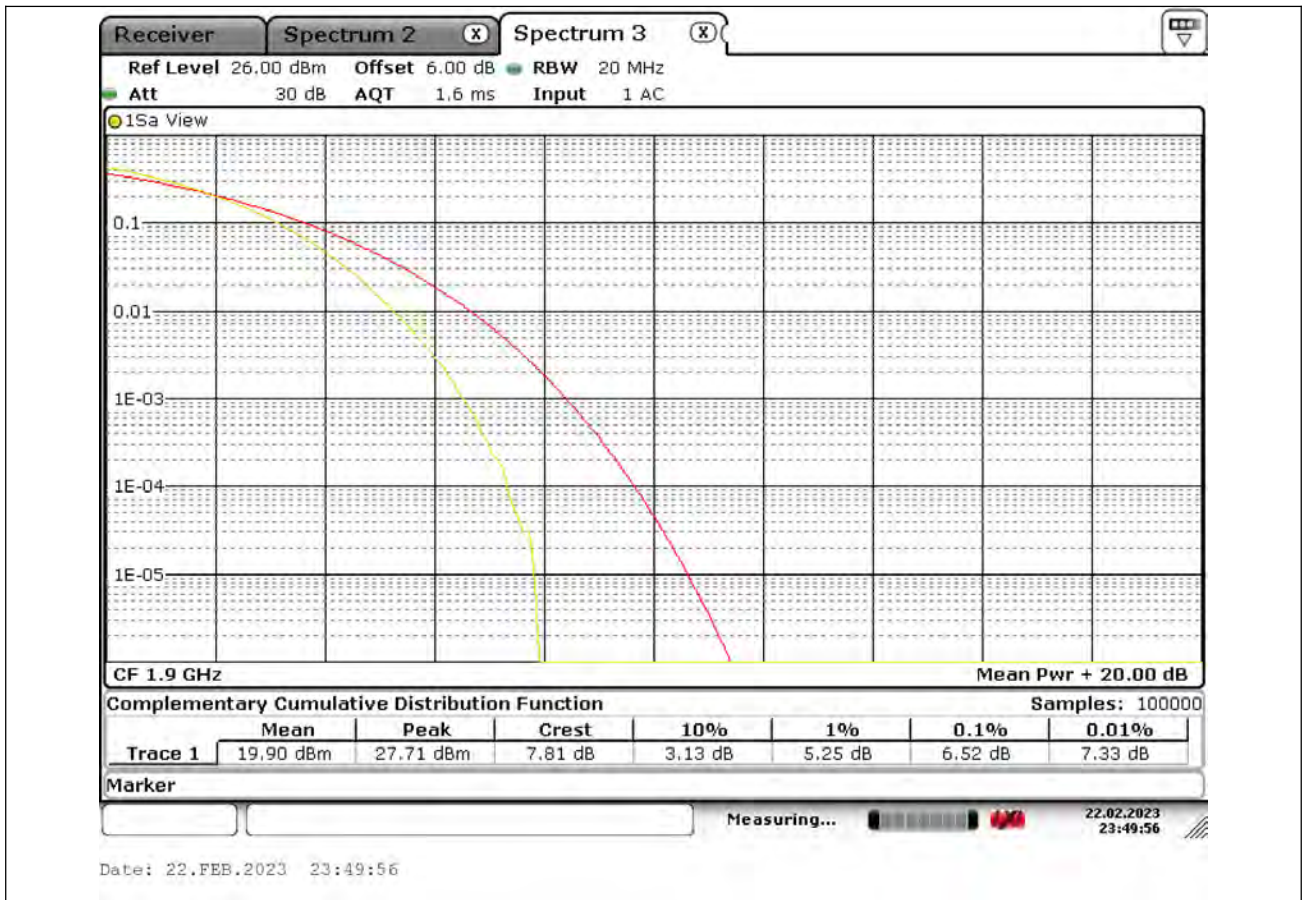
Test Report No.: W7L-P23010016RF02





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Test Report No.: W7L-P23010016RF02





26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band2	1.4MHz	QPSK	18607	6RB#0	1.102	1.248	PASS
Band2	1.4MHz	QPSK	18900	6RB#0	1.094	1.2359	PASS
Band2	1.4MHz	QPSK	19193	6RB#0	1.098	1.2399	PASS
Band2	1.4MHz	16QAM	18607	6RB#0	1.098	1.248	PASS
Band2	1.4MHz	16QAM	18900	6RB#0	1.098	1.2399	PASS
Band2	1.4MHz	16QAM	19193	6RB#0	1.094	1.2399	PASS
Band2	3MHz	QPSK	18615	15RB#0	2.726	3.0564	PASS
Band2	3MHz	QPSK	18900	15RB#0	2.718	3.0738	PASS
Band2	3MHz	QPSK	19185	15RB#0	2.718	3.1085	PASS
Band2	3MHz	16QAM	18615	15RB#0	2.718	3.0738	PASS
Band2	3MHz	16QAM	18900	15RB#0	2.753	3.0391	PASS
Band2	3MHz	16QAM	19185	15RB#0	2.700	3.0825	PASS
Band2	5MHz	QPSK	18625	25RB#0	4.486	4.935	PASS
Band2	5MHz	QPSK	18900	25RB#0	4.486	4.891	PASS
Band2	5MHz	QPSK	19175	25RB#0	4.486	4.863	PASS
Band2	5MHz	16QAM	18625	25RB#0	4.472	4.935	PASS
Band2	5MHz	16QAM	18900	25RB#0	4.515	4.863	PASS
Band2	5MHz	16QAM	19175	25RB#0	4.472	4.891	PASS
Band2	10MHz	QPSK	18650	50RB#0	9.030	9.783	PASS
Band2	10MHz	QPSK	18900	50RB#0	9.059	9.725	PASS
Band2	10MHz	QPSK	19150	50RB#0	9.088	9.783	PASS
Band2	10MHz	16QAM	18650	50RB#0	9.001	9.841	PASS
Band2	10MHz	16QAM	18900	50RB#0	9.030	9.725	PASS
Band2	10MHz	16QAM	19150	50RB#0	9.059	9.957	PASS
Band2	15MHz	QPSK	18675	75RB#0	13.502	14.718	PASS
Band2	15MHz	QPSK	18900	75RB#0	13.459	14.544	PASS
Band2	15MHz	QPSK	19125	75RB#0	13.502	14.588	PASS
Band2	15MHz	16QAM	18675	75RB#0	13.502	14.457	PASS
Band2	15MHz	16QAM	18900	75RB#0	13.459	14.414	PASS
Band2	15MHz	16QAM	19125	75RB#0	13.459	14.414	PASS
Band2	20MHz	QPSK	18700	100RB#0	18.350	20.318	PASS
Band2	20MHz	QPSK	18900	100RB#0	18.466	20.376	PASS
Band2	20MHz	QPSK	19100	100RB#0	18.408	20.203	PASS
Band2	20MHz	16QAM	18700	100RB#0	18.466	20.145	PASS
Band2	20MHz	16QAM	18900	100RB#0	18.408	20.203	PASS
Band2	20MHz	16QAM	19100	100RB#0	18.408	20.203	PASS
Band2	1.4MHz	64QAM	18607	6RB#0	1.102	1.2318	PASS
Band2	1.4MHz	64QAM	18900	6RB#0	1.090	1.2318	PASS
Band2	1.4MHz	64QAM	19193	6RB#0	1.090	1.248	PASS
Band2	3MHz	64QAM	18615	15RB#0	2.726	3.0304	PASS
Band2	3MHz	64QAM	18900	15RB#0	2.709	3.0391	PASS



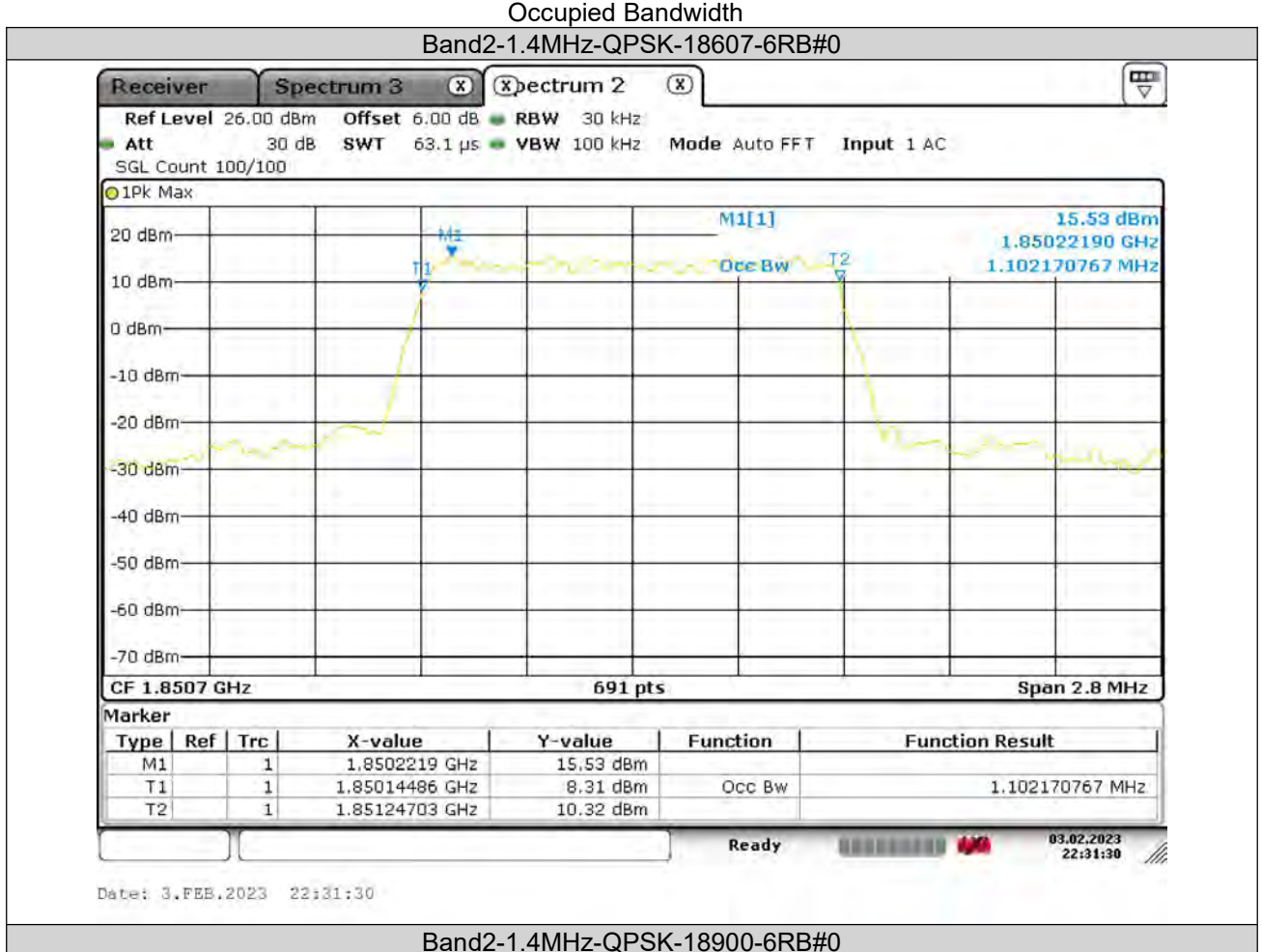
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Test Report No.: W7L-P23010016RF02

Band2	3MHz	64QAM	19185	15RB#0	2.735	3.0825	PASS
Band2	5MHz	64QAM	18625	25RB#0	4.486	4.964	PASS
Band2	5MHz	64QAM	18900	25RB#0	4.501	4.935	PASS
Band2	5MHz	64QAM	19175	25RB#0	4.486	4.949	PASS
Band2	10MHz	64QAM	18650	50RB#0	9.001	9.783	PASS
Band2	10MHz	64QAM	18900	50RB#0	9.030	9.667	PASS
Band2	10MHz	64QAM	19150	50RB#0	9.059	9.986	PASS
Band2	15MHz	64QAM	18675	75RB#0	13.459	14.674	PASS
Band2	15MHz	64QAM	18900	75RB#0	13.459	14.848	PASS
Band2	15MHz	64QAM	19125	75RB#0	13.415	14.457	PASS
Band2	20MHz	64QAM	18700	100RB#0	18.350	20.203	PASS
Band2	20MHz	64QAM	18900	100RB#0	18.408	20.550	PASS
Band2	20MHz	64QAM	19100	100RB#0	18.408	20.145	PASS



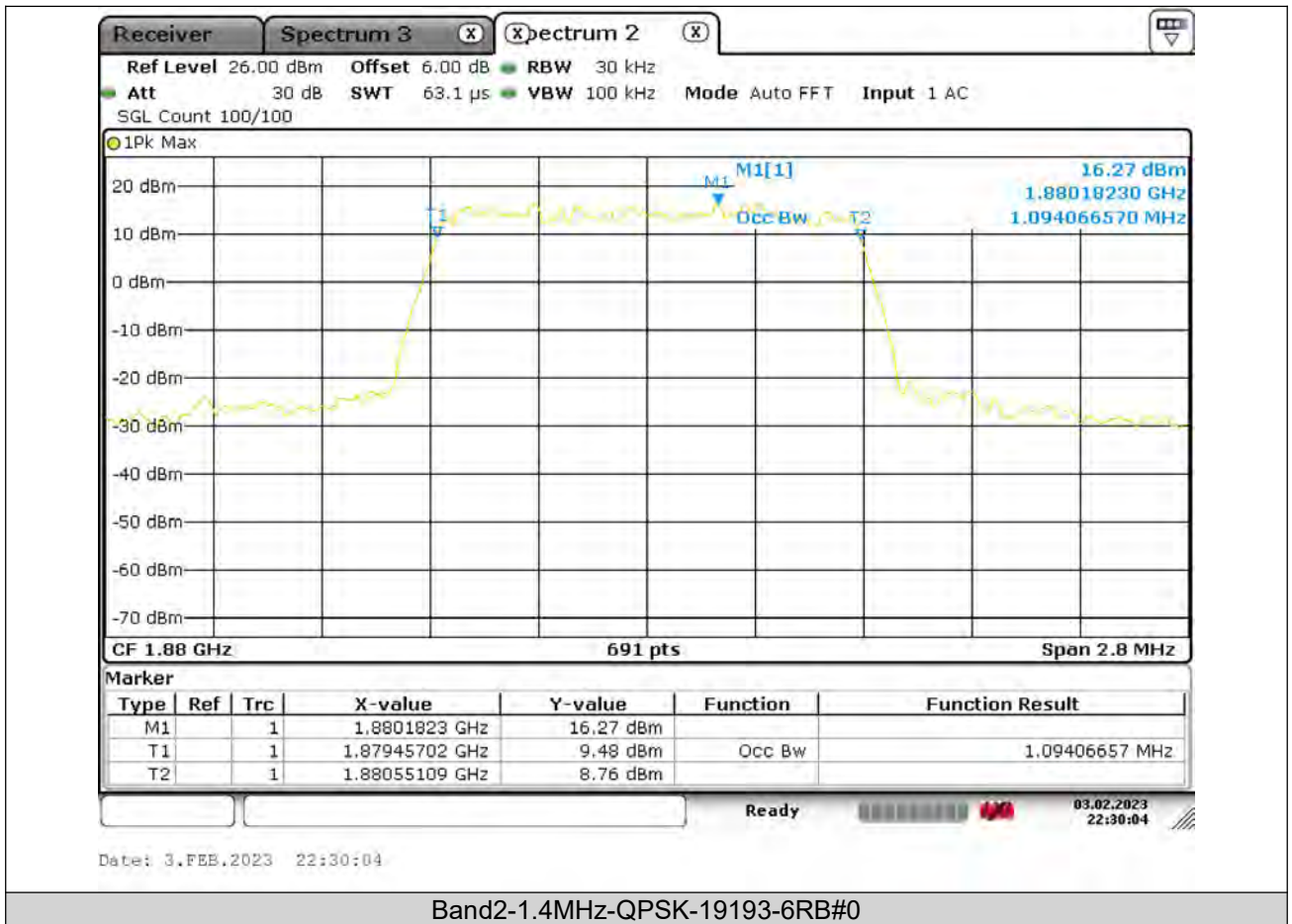
Test Graphs





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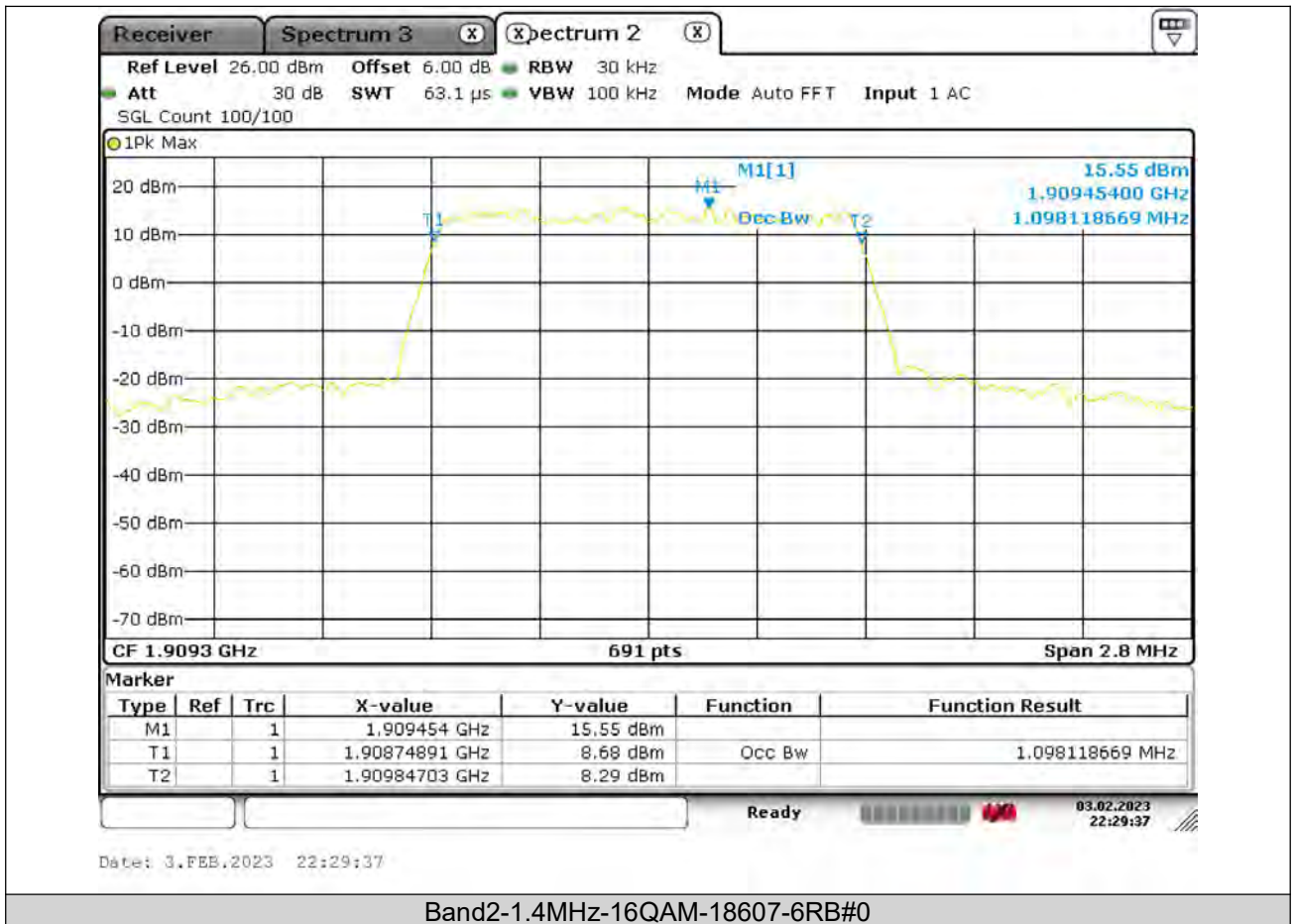
Test Report No.: W7L-P23010016RF02





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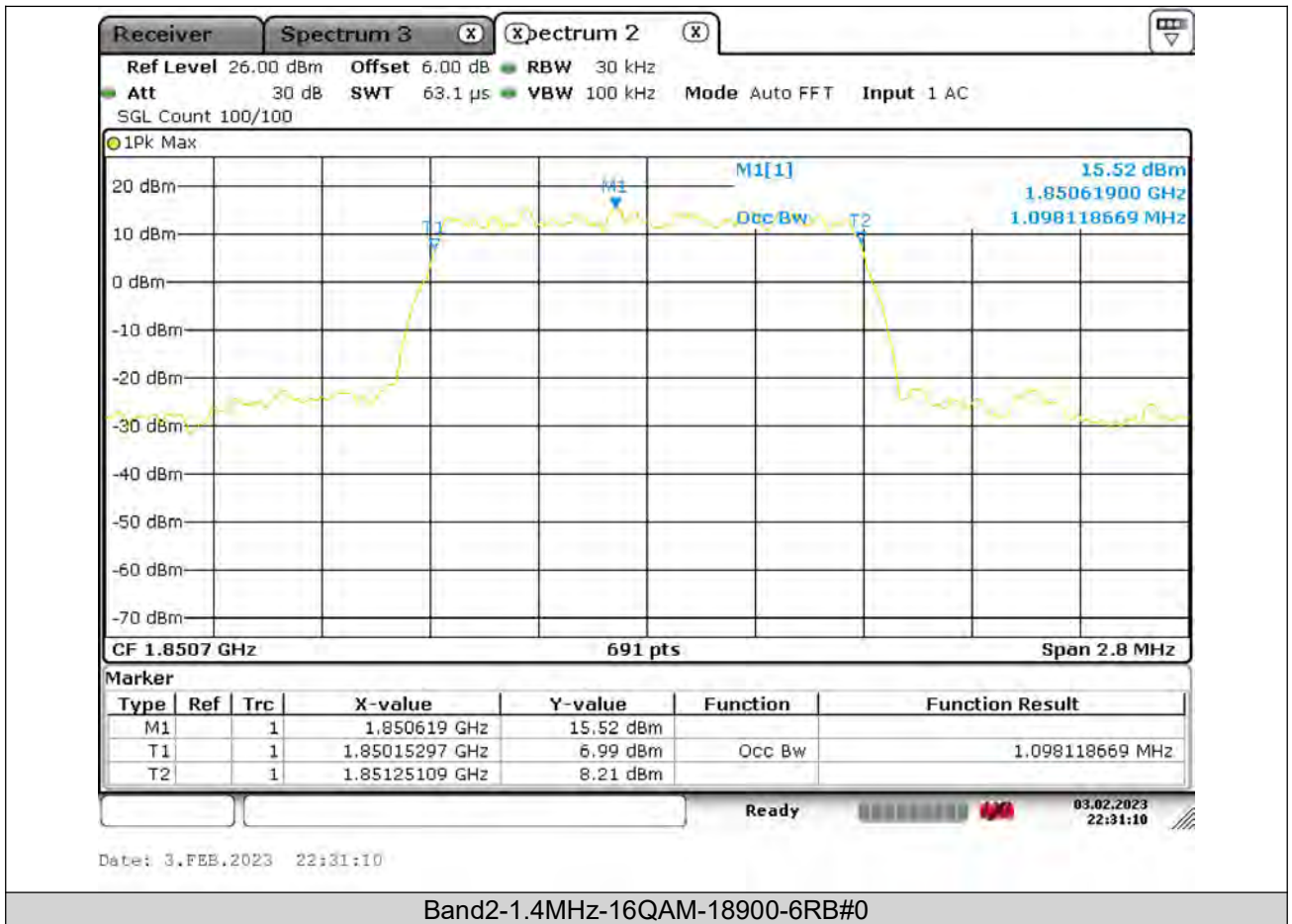
Test Report No.: W7L-P23010016RF02





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Test Report No.: W7L-P23010016RF02





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Test Report No.: W7L-P23010016RF02

