Certificate #6613.01

VARIANT FCC TEST REPORT

(PART 24)

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

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland
Product:	Smartphone
Brand Name:	HMD
Model Name:	TA-1590
FCC ID:	2AJOTTA-1590
Date of tests:	Jan. 02, 2024 ~ Feb. 19, 2024

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

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
Xu Hanwen	Sun Peibo
Date: Feb. 19, 2024	Date: Feb. 19, 2024

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2311090109RF02	Original release	Jan. 30, 2024
PSU-NQN2402040109RF02	For FCC ID 2AJOTTA-1590 that it is involved in two product models N159V and TA-1590, the difference of N159V and TA-1590 is only model name, memory and software customization applications. For HW, the TA-1590 product has only 6+128 memory, the memory of the N159V product is 3+64, hardware is the same except the memory, and there is no change of the hardware version number. For SW, on the basis of N159V, some customized applications of TA-1590 on the software are removed, and the software version number is changed. So this report data is copied from the report PSU-NQN2311090109RF02(model:N159V, FCC ID: 2AJOTTA-1590).	Feb. 19, 2024

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	Coduncted 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

NOTE: For FCC ID 2AJOTTA-1590 that it is involved in two product models N159V and TA-1590, the difference of N159V and TA-1590 is only model name, memory and software customization applications. For HW, the TA-1590 product has only 6+128 memory, the memory of the N159V product is 3+64, hardware is the same except the memory, and there is no change of the hardware version number. For SW, on the basis of N159V, some customized applications of TA-1590 on the software are removed, and the software version number is changed. So this report data is copied from the report PSU-NQN2311090109RF02(model:N159V, FCC ID: 2AJOTTA-1590).

***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.

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

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
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
Vector Signal Generator	R&S	SMBV100B	102176	Feb.15,24	Feb.14,26
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.15,24	Feb.14,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-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
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	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.27,23	Apr.26,24
CABLE	R&S	W12.14	N/A	Oct.27,23	Apr.26,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Oct.27,23	Apr.26,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Oct.27,23	Apr.26,24

NOTE:

1. The calibration interval of the above test instruments is 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.
4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Smartphone	
BRAND NAME*	HMD	
MODEL NAME*	TA-1590	
NOMINAL VOLTAGE*	5.0Vdc (adapter) 3.87Vdc (battery)	
MODULATION TYPE*	**GSM:** GMSK **EDGE:** 8PSK **WCDMA:** HSDPA/HSUPA/DC-HSDPA **LTE Band 2/25:** 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**	696.63mW
	EDGE	269.77mW
	WCDMA	99.77mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	95.72mW
	LTE Band 2 Channel Bandwidth: 3MHz	93.97mW
	LTE Band 2 Channel Bandwidth: 5MHz	95.06mW
	LTE Band 2 Channel Bandwidth: 10MHz	95.94mW
	LTE Band 2 Channel Bandwidth: 15MHz	93.97mW
	LTE Band 2 Channel Bandwidth: 20MHz	96.61mW

EMISSION DESIGNATOR	**GSM**	247KGXW
	EDGE	246KG7W
	WCDMA	4M15F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
		64QAM: 1M09W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M69W7D
		64QAM: 2M69W7D
EMISSION DESIGNATOR	**LTE Band 2 Channel Bandwidth: 5MHz**	QPSK: 4M49G7D
		16QAM: 4M49W7D
		64QAM: 4M48W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 8M96G7D
		16QAM: 8M95W7D
		64QAM: 8M95W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M4W7D
		64QAM: 13M4W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
ANTENNA TYPE*	PIFA Antenna with -3.7dBi gain for GSM1900/ WCDMA II/ LTE B2	
HW VERSION*	V 1.0	
SW VERSION*	00US_0_100	
I/O PORTS*	Refer to user's manual	
CABLE SUPPLIED*	USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter	
EXTREME TEMPERATURE*	-20 ~ 60 ℃	
EXTREME VOLTAGE*	3.4V ~ 4.45V	

NOTE:

1. ***Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information , Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

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

4. For the product of TA-1590(FCC ID 2AJOTTA-1590), the following components are different between the first and second supply, other parameters are the same.

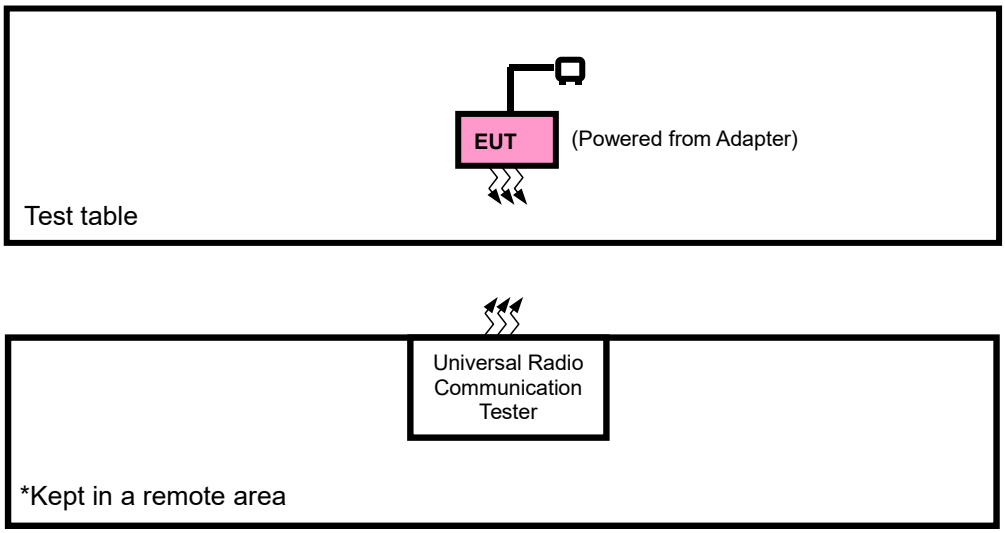
component		First supply		Second supply	
		Supplier	Spec	Supplier	Spec
PCBA	Charger IC	SGMICRO	3.78A Single Cell Switching Battery Charger IC	Unisemi	3.78A Single Cell Switching Battery Charger IC
LCM	LCD	TCL	LCD a-Si TFT;720*1612	Icetron	LCD a-Si TFT;720*1612
Front camera	Camera	Union Image	5M;FF	Imaging	5M;FF
CAM	Camera	Union Image	13 AF	Sunwin	13 AF
	Camera	SEGA	2M	Imaging	2M
Acoustic	Vibrator	KunWang	0830	HONGZHIFA	0830
	FPC	XINYE	Speaker FPC: 32.1*11.46*0.15	Lat	Speaker FPC: 32.1*11.46*0.15
LED		Runlite	White LED;500mA;1500mA	latticepower	White LED;500mA;1500mA
Battery		gaoyuan	4000mAh;3.87V;4.45V	highpower	4000mAh;3.87V;4.45V
antenna		Haitong	Omni-directional,Linear,antenna shrapnel	Kexinhuacheng	Omni-directional,Linear,antenna shrapnel
MIC		Gettop	L2.75xW1.85xH0.9 mm	goertek	L2.75xW1.85xH0.9 mm
Data cable		Saibao	5V2A	TorchWay	5V2A

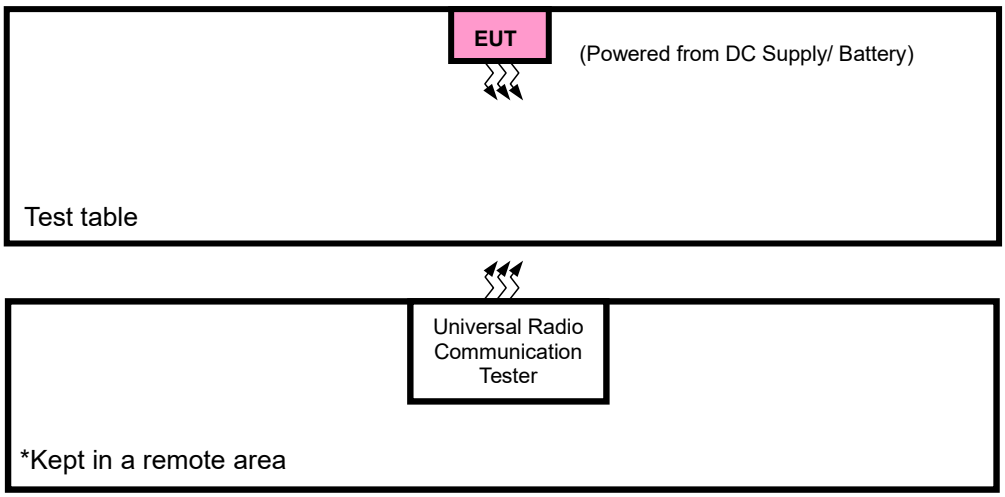
List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	Gaoyuan	N/A	CH426385	Power Rating: 15.48Wh
Battery 2	Highpower	N/A	CH426385	Power Rating: 15.48Wh
AC Adapter	BaiJunDa	BaiJunDa	HAD-010U	I/P: 100-240Vac, O/P: 4.8~5.4Vdc, 2.0A
USB Cable 1	Saibao	N/A	SZN-A036A	Signal Line, 1.0meter 5V 2A
USB Cable 2	TorchWay	N/A	JWUB1651-ZN01H	Signal Line, 1.0meter 5V 2A

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	DC Source	HYELEC	HY3010B	551016	N/A

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

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case in EIRP and radiated emission was found when positioned on X-plane for GSM/EDGE/ LTE. Following channel(s) was (were) selected for the final test as listed below:

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

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	CONDCUDETED 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	CONDCUDETED 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	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 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 6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset

A	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		18615 to 19185	18615	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		18625 to 19175	18625	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		18650 to 19150	18650	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		18675 to 19125	18675	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		18700 to 19100	26140	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			26590	20MHz	QPSK,16QAM, 64QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDCUDETED 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	18900	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	18650,18900,19150	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

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

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 5V By Adapter	Hanwen Xu
FREQUENCY STABILITY	23deg. C, 61%RH	DC 3.85V By DC Supply	Hanwen Xu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC5V By Adapter	Hanwen Xu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 5V By Adapter	Hanwen Xu
BAND EDGE	23deg. C, 61%RH	DC5V By Adapter	Hanwen Xu
CONDCUDETED EMISSION	23deg. C, 61%RH	DC5V By Adapter	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Hanwen Xu

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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

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

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{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.

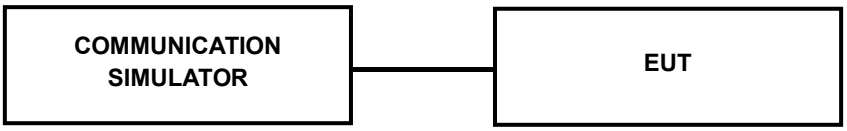
CONDUCTED POWER MEASUREMENT:

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

3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900		
Channel	512	661	810
Frequency	1850.2	1880	1909.8
GSM	30.04	29.93	29.92
GPRS (GMSK, 1Tx-slot)	29.84	29.97	**30.09**
GPRS (GMSK, 2Tx-slot)	27.89	27.83	28.08
GPRS (GMSK, 3Tx-slot)	26.79	26.76	26.93
GPRS (GMSK, 4Tx-slot)	25.62	25.54	25.84
EDGE (8PSK, 1Tx-slot)	25.44	25.76	25.97
EDGE (8PSK, 2Tx-slot)	24.16	24.22	24.45
EDGE (8PSK, 3Tx-slot)	23.07	23.12	23.37
EDGE (8PSK, 4Tx-slot)	21.78	21.76	21.88

Band	WCDMA II		
Channel	9262	9400	9538
Frequency	1852.4	1880	1907.6
RMC 12.2K	23.56	23.52	**23.69**
HSDPA Subtest-1	22.63	22.52	22.66
HSDPA Subtest-2	22.61	22.56	22.57
HSDPA Subtest-3	22.23	22.00	22.15
HSDPA Subtest-4	22.20	22.04	22.19
DC-HSDPA Subtest-1	22.40	22.40	22.47
DC-HSDPA Subtest-2	22.47	22.50	22.53
DC-HSDPA Subtest-3	22.14	21.91	21.95
DC-HSDPA Subtest-4	22.22	21.90	22.09
HSUPA Subtest-1	22.56	22.39	22.55
HSUPA Subtest-2	21.63	21.52	21.51
HSUPA Subtest-3	22.13	21.90	21.92
HSUPA Subtest-4	21.58	21.50	21.50
HSUPA Subtest-5	22.63	22.50	22.52

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz
2/ 1.4	QPSK	1	0	23.24	23.21	23.23
		1	2	23.41	**23.51**	23.35
		1	5	23.08	23.01	22.94
		3	0	23.02	23.10	23.04
		3	1	23.12	23.15	**23.20**
		3	3	23.13	23.09	23.11
		6	0	22.37	22.45	22.32
	16QAM	1	0	22.38	22.42	22.39
		1	2	22.67	22.74	22.61
		1	5	22.28	22.33	22.11
		3	0	22.24	22.38	22.34
		3	1	22.52	22.41	22.49
		3	3	22.18	22.33	22.20
		6	0	21.25	21.39	21.37
	64QAM	1	0	21.17	21.27	21.22
		1	2	21.46	21.40	21.50
		1	5	21.14	21.07	21.12
		3	0	21.22	21.23	21.14
		3	1	21.30	21.28	21.42
		3	3	21.12	21.16	21.25
		6	0	20.26	20.21	20.33

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz
2/ 3	QPSK	1	0	23.13	23.27	**23.43**
		1	7	23.35	23.42	23.36
		1	14	23.04	23.07	23.11
		8	0	22.31	22.49	22.36
		8	3	**22.51**	22.33	22.46
		8	7	22.28	22.31	22.31
		15	0	22.34	22.38	22.36
	16QAM	1	0	22.34	22.33	22.34
		1	7	22.63	22.75	22.60
		1	14	22.32	22.38	22.11
		8	0	21.31	21.39	21.39
		8	3	21.51	21.56	21.46
		8	7	21.27	21.35	21.35
		15	0	21.34	21.42	21.48
	64QAM	1	0	21.12	21.28	21.26
		1	7	21.52	21.38	21.43
		1	14	21.07	21.05	21.06
		8	0	20.34	20.46	20.36
		8	3	20.42	20.39	20.53
		8	7	20.22	20.30	20.30
		15	0	20.28	20.35	20.35

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz
2/ 5	QPSK	1	0	23.16	23.23	23.21
		1	12	23.36	**23.48**	23.35
		1	24	23.07	23.16	23.09
		12	0	22.38	**22.49**	22.36
		12	6	22.42	22.45	22.43
		12	13	22.23	22.27	22.34
		25	0	22.38	22.33	22.36
	16QAM	1	0	22.41	22.33	22.37
		1	12	22.75	22.65	22.72
		1	24	22.28	22.39	22.14
		12	0	21.26	21.33	21.36
		12	6	21.49	21.45	21.53
		12	13	21.28	21.37	21.35
		25	0	21.33	21.41	21.38
	64QAM	1	0	21.14	21.34	21.21
		1	12	21.56	21.45	21.45
		1	24	21.06	21.07	21.13
		12	0	20.29	20.37	20.38
		12	6	20.46	20.39	20.52
		12	13	20.19	20.31	20.36
		25	0	20.37	20.35	20.36

Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz
2/ 10	QPSK	1	0	23.21	23.15	23.29
		1	24	23.33	**23.52**	23.38
		1	49	23.09	23.11	22.92
		25	0	22.40	**22.53**	22.40
		25	12	22.43	22.47	22.47
		25	25	22.23	22.38	22.31
		50	0	22.39	22.36	22.33
	16QAM	1	0	22.35	22.34	22.37
		1	24	22.69	22.65	22.66
		1	49	22.25	22.37	22.13
		25	0	21.36	21.37	21.27
		25	12	21.44	21.56	21.47
		25	25	21.19	21.33	21.31
		50	0	21.28	21.41	21.37
	64QAM	1	0	21.23	21.28	21.25
		1	24	21.45	21.34	21.44
		1	49	21.07	21.13	21.04
		25	0	20.29	20.45	20.31
		25	12	20.38	20.39	20.57
		25	25	20.23	20.29	20.34
		50	0	20.32	20.34	20.32

Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz
2/ 15	QPSK	1	0	23.20	23.28	23.27
		1	37	**23.43**	23.39	23.34
		1	74	22.99	23.05	22.90
		36	0	22.28	22.42	22.38
		36	19	22.51	22.51	22.48
		36	39	22.29	22.24	22.31
		75	0	22.32	22.42	22.35
	16QAM	1	0	22.36	22.40	22.34
		1	37	22.66	22.77	22.69
		1	74	22.25	22.29	22.22
		36	0	21.34	21.46	21.30
		36	19	21.45	21.43	21.53
		36	39	21.25	21.31	21.32
		75	0	21.22	21.32	21.45
	64QAM	1	0	21.22	21.30	21.17
		1	37	21.46	21.46	21.50
		1	74	21.02	21.18	21.13
		36	0	20.24	20.43	20.42
		36	19	20.34	20.35	20.53
		36	39	20.33	20.22	20.32
		75	0	20.30	20.22	20.36

Band/BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz
2/ 20	QPSK	1	0	23.28	23.29	23.36
		1	50	23.42	23.55	23.49
		1	99	23.01	23.08	23.02
		50	0	22.41	22.56	22.49
		50	25	22.56	**22.62**	22.56
		50	50	22.33	22.39	22.38
		100	0	22.42	22.46	22.44
	16QAM	1	0	22.44	22.48	22.46
		1	50	22.76	22.78	22.74
		1	99	22.35	22.43	22.23
		50	0	21.38	21.48	21.42
		50	25	21.56	21.58	21.55
		50	50	21.33	21.41	21.37
		100	0	21.36	21.43	21.50
	64QAM	1	0	21.24	21.35	21.32
		1	50	21.58	21.48	21.56
		1	99	21.12	21.19	21.14
		50	0	20.37	20.48	20.43
		50	25	20.48	20.47	20.58
		50	50	20.34	20.35	20.43
		100	0	20.41	20.36	20.45

EIRP POWER (dBm)

GSM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	30.04	-1.66	28.38	688.65	2
661	1880.0	29.97	-1.66	28.31	677.64	2
810	1909.8	30.09	-1.66	28.43	696.63	2

EDGE

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	25.64	-1.66	23.98	250.03	2
661	1880.0	25.76	-1.66	24.1	257.04	2
810	1909.8	25.97	-1.66	24.31	269.77	2

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
9262	1852.4	23.56	-3.7	19.86	96.83	2
9400	1880	23.52	-3.7	19.82	95.94	2
9538	1907.6	23.69	-3.7	19.99	99.77	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	23.41	-3.7	19.71	93.54	2
18900	1880.0	23.51	-3.7	19.81	95.72	2
19193	1909.3	23.35	-3.7	19.65	92.26	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	22.67	-3.7	18.97	78.89	2
18900	1880.0	22.74	-3.7	19.04	80.17	2
19193	1909.3	22.61	-3.7	18.91	77.8	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	21.46	-3.7	17.76	59.7	2
18900	1880.0	21.4	-3.7	17.7	58.88	2
19193	1908.3	21.5	-3.7	17.8	60.26	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	23.35	-3.7	19.65	92.26	2
18900	1880.0	23.42	-3.7	19.72	93.76	2
19185	1908.5	23.43	-3.7	19.73	93.97	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	22.63	-3.7	18.93	78.16	2
18900	1880.0	22.75	-3.7	19.05	80.35	2
19185	1908.5	22.6	-3.7	18.9	77.62	2

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.52	-3.7	17.82	60.53	2
18900	1880.0	21.38	-3.7	17.68	58.61	2
19185	1908.5	21.43	-3.7	17.73	59.29	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	23.36	-3.7	19.66	92.47	2
18900	1880.0	23.48	-3.7	19.78	95.06	2
19175	1907.5	23.35	-3.7	19.65	92.26	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	22.75	-3.7	19.05	80.35	2
18900	1880.0	22.65	-3.7	18.95	78.52	2
19175	1907.5	22.72	-3.7	19.02	79.8	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.56	-3.7	17.86	61.09	2
18900	1880.0	21.45	-3.7	17.75	59.57	2
19175	1907.5	21.45	-3.7	17.75	59.57	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	23.33	-3.7	19.63	91.83	2
18900	1880.0	23.52	-3.7	19.82	95.94	2
19150	1905.0	23.38	-3.7	19.68	92.9	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	22.69	-3.7	18.99	79.25	2
18900	1880.0	22.65	-3.7	18.95	78.52	2
19150	1905.0	22.66	-3.7	18.96	78.7	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	21.45	-3.7	17.75	59.57	2
18900	1880.0	21.34	-3.7	17.64	58.08	2
19150	1905.0	21.44	-3.7	17.74	59.43	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.43	-3.7	19.73	93.97	2
18900	1880.0	23.39	-3.7	19.69	93.11	2
19125	1902.5	23.34	-3.7	19.64	92.04	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	22.66	-3.7	18.96	78.7	2
18900	1880.0	22.77	-3.7	19.07	80.72	2
19125	1902.5	22.69	-3.7	18.99	79.25	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.46	-3.7	17.76	59.7	2
18900	1880.0	21.46	-3.7	17.76	59.7	2
19125	1902.5	21.5	-3.7	17.8	60.26	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	23.42	-3.7	19.72	93.76	2
18900	1880	23.55	-3.7	19.85	96.61	2
19100	1900	23.49	-3.7	19.79	95.28	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	22.76	-3.7	19.06	80.54	2
18900	1880	22.78	-3.7	19.08	80.91	2
19100	1900	22.74	-3.7	19.04	80.17	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.58	-3.7	17.88	61.38	2
18900	1880	21.48	-3.7	17.78	59.98	2
19100	1900	21.56	-3.7	17.86	61.09	2

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

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

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

3.2.2 TEST PROCEDURE

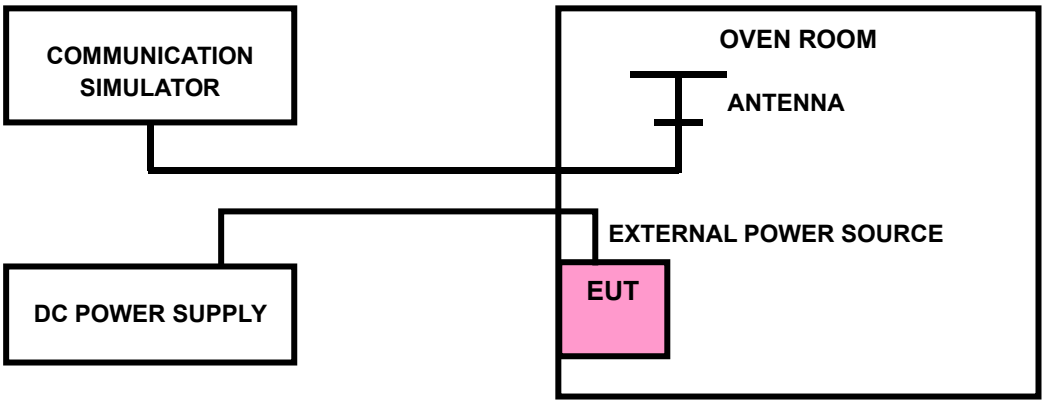
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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 ±0.5℃ 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



3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

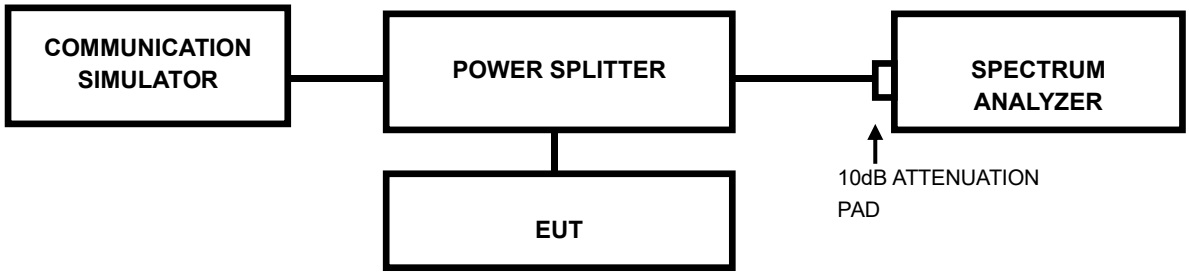
Note: VL = Low voltage(3.4V); VN/NV = Normal voltage(3.85V); VH = High voltage(4.45V);
NT = Normal temperature (25℃)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

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

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

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

3.3.4 TEST RESULTS

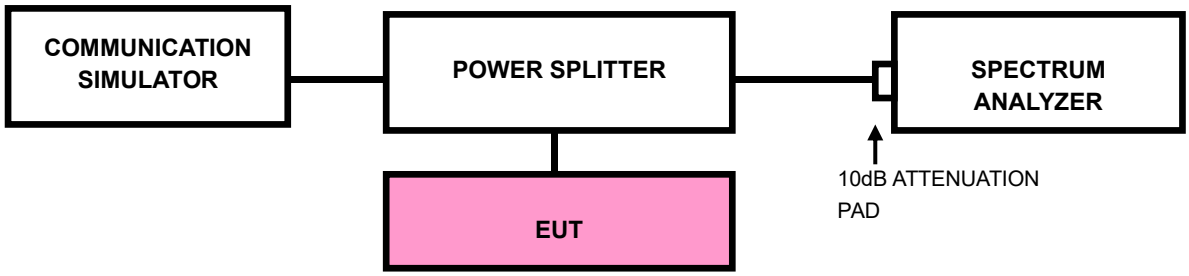
Please Refer to Appendix Of this test report.

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) ≧ 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 ≧3 x 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.

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

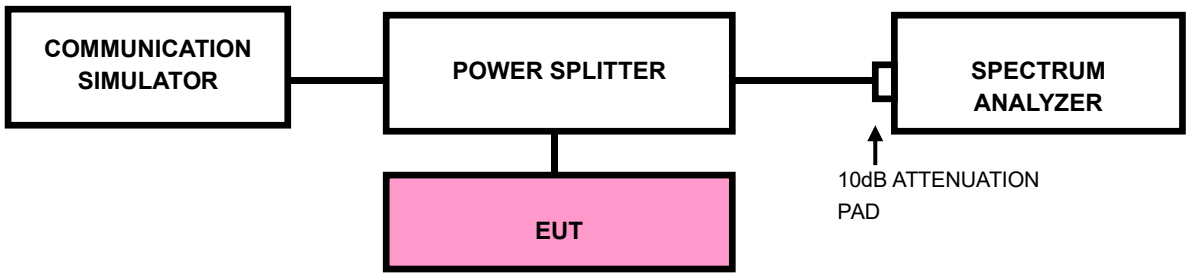
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

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 30MHz 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



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. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

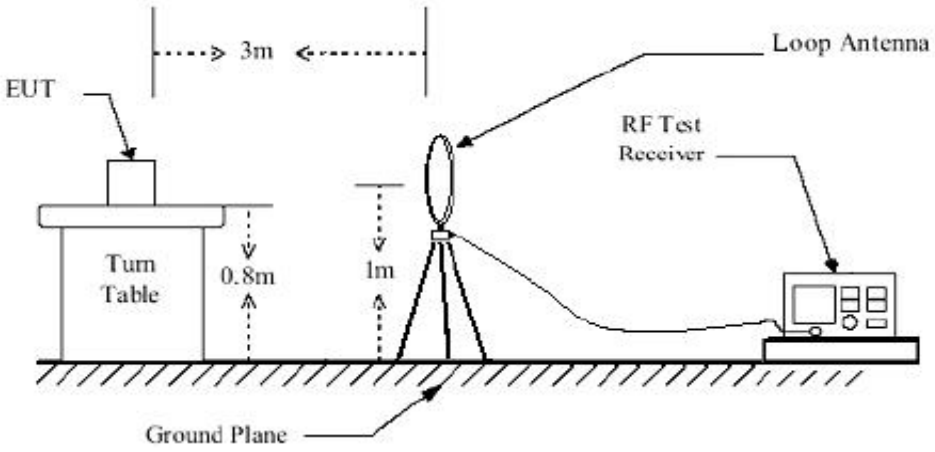
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

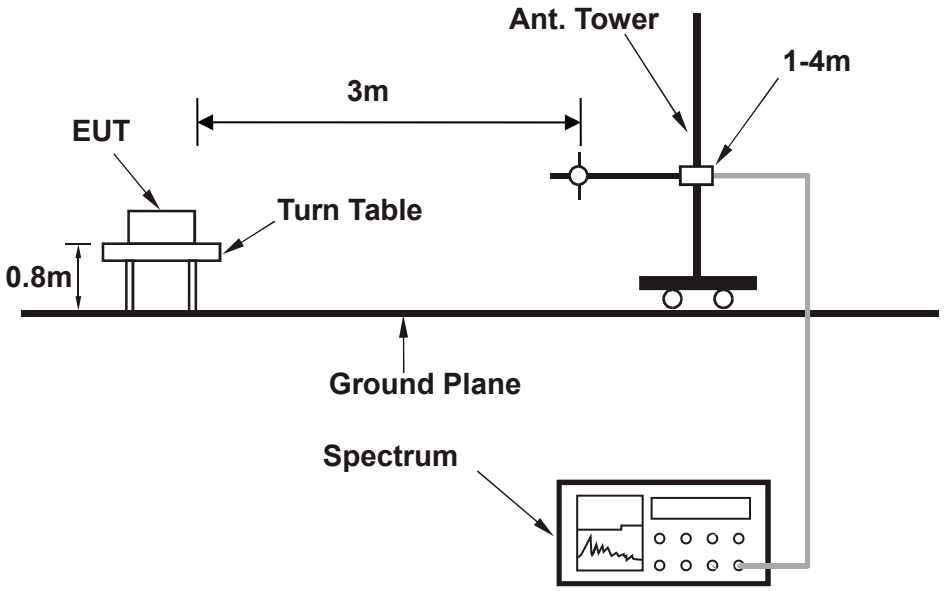
No deviation

3.6.4 TEST SETUP

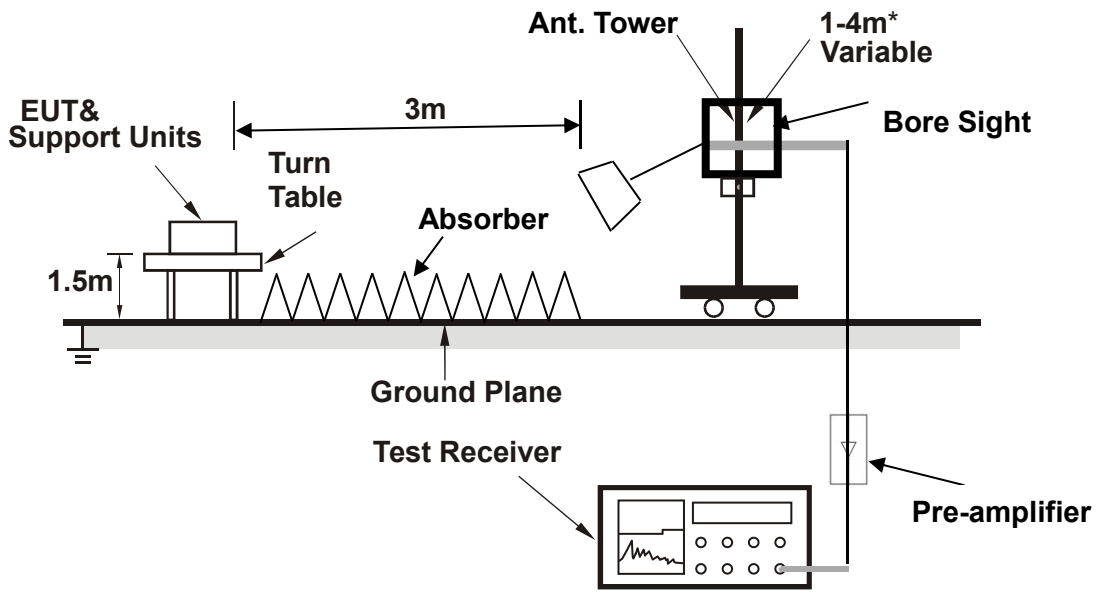
< Frequency Range below 30MHz >



< 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).

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.

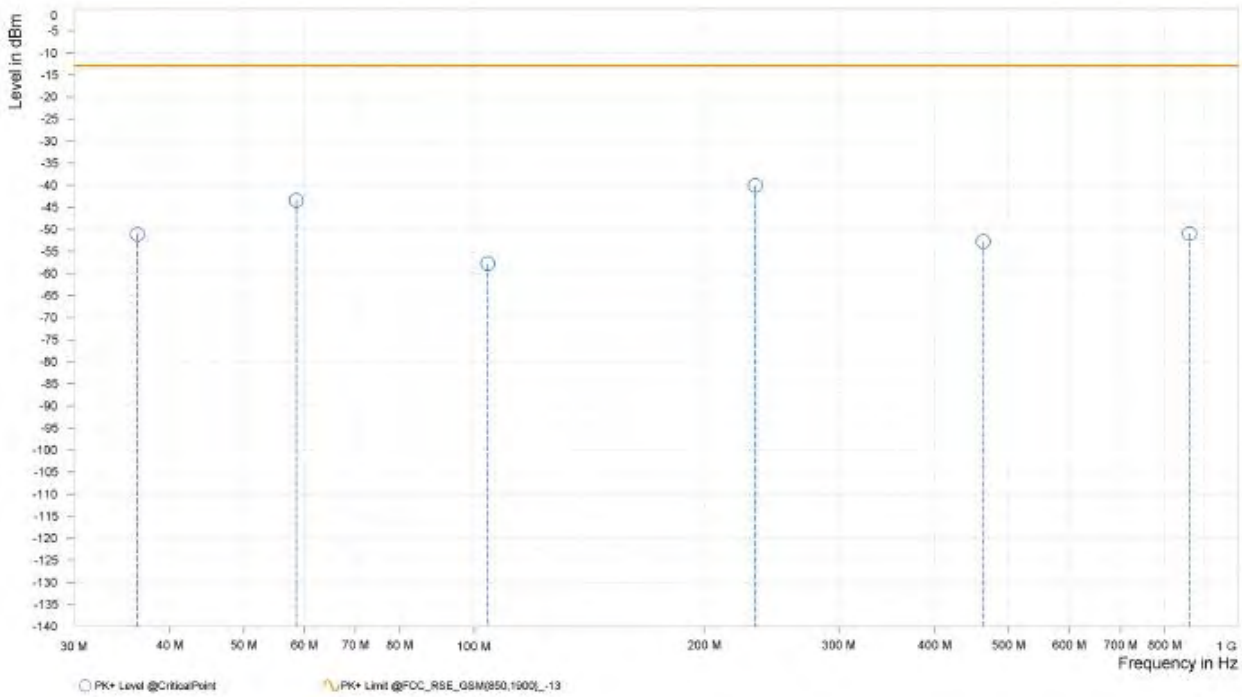
BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

GSM 1900: CH 661

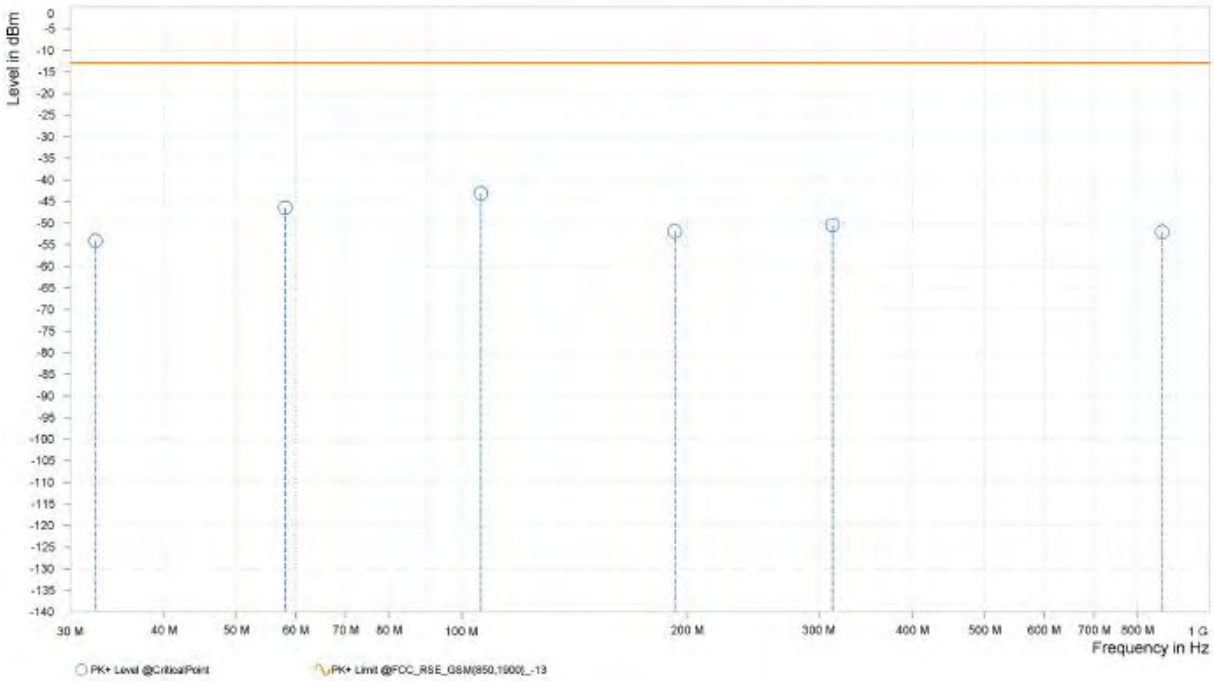
MODE	TX channel 661	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	36.305	-51.12	-13.00	38.12	5.98	H	296.2	2.00
1	58.615	-43.42	-13.00	30.42	3.31	H	359	2.00
1	104.205	-57.77	-13.00	44.77	-4.05	H	277.8	1.00
1	233.215	-40.08	-13.00	27.08	8.96	H	88.2	2.00
1	463.105	-52.79	-13.00	39.79	7.62	H	68.6	1.00
1	861.775	-50.96	-13.00	37.96	13.91	H	296.2	2.00



MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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]
1	32.425	-54.08	-13.00	41.08	-1.76	V	66.2	1.00
1	58.130	-46.48	-13.00	33.48	3.30	V	359.1	1.00
1	106.145	-43.11	-13.00	30.11	11.11	V	66.2	1.00
1	192.475	-51.88	-13.00	38.88	-0.63	V	353.8	1.00
1	312.755	-50.49	-13.00	37.49	4.78	V	88.2	2.00
1	862.745	-52.06	-13.00	39.06	13.45	V	1	2.00



ABOVE 1GHz DATA

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

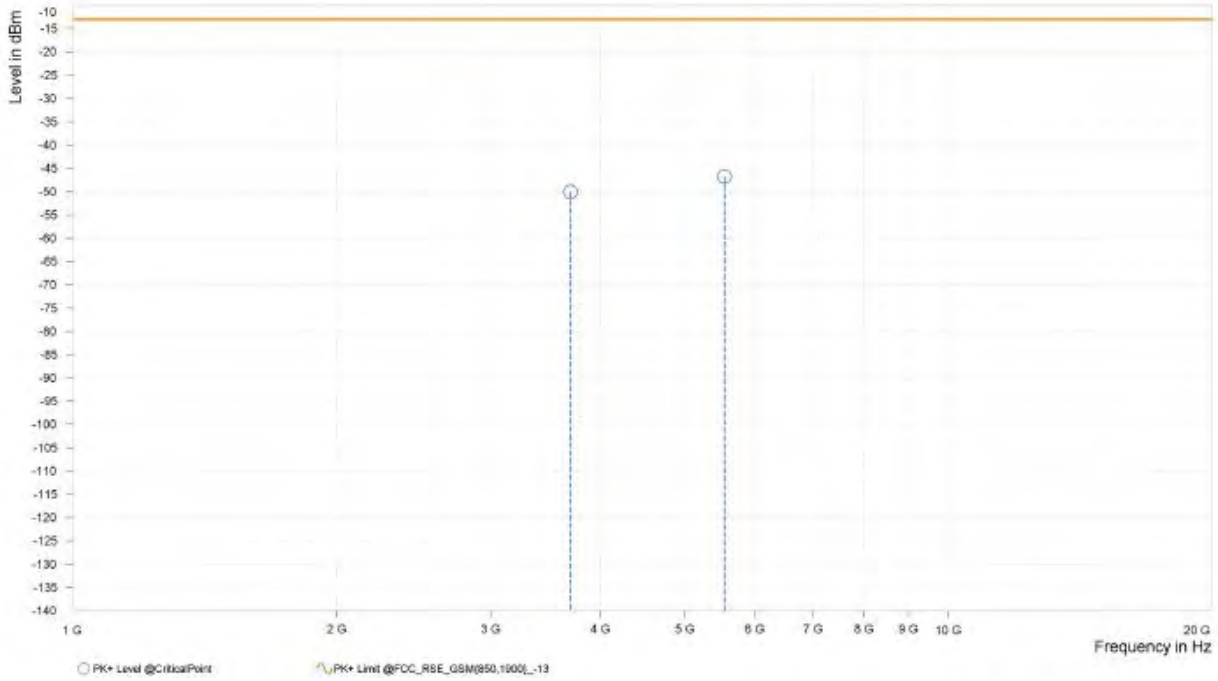
WORST-CASE DATA

GSM 1900:

CH 512

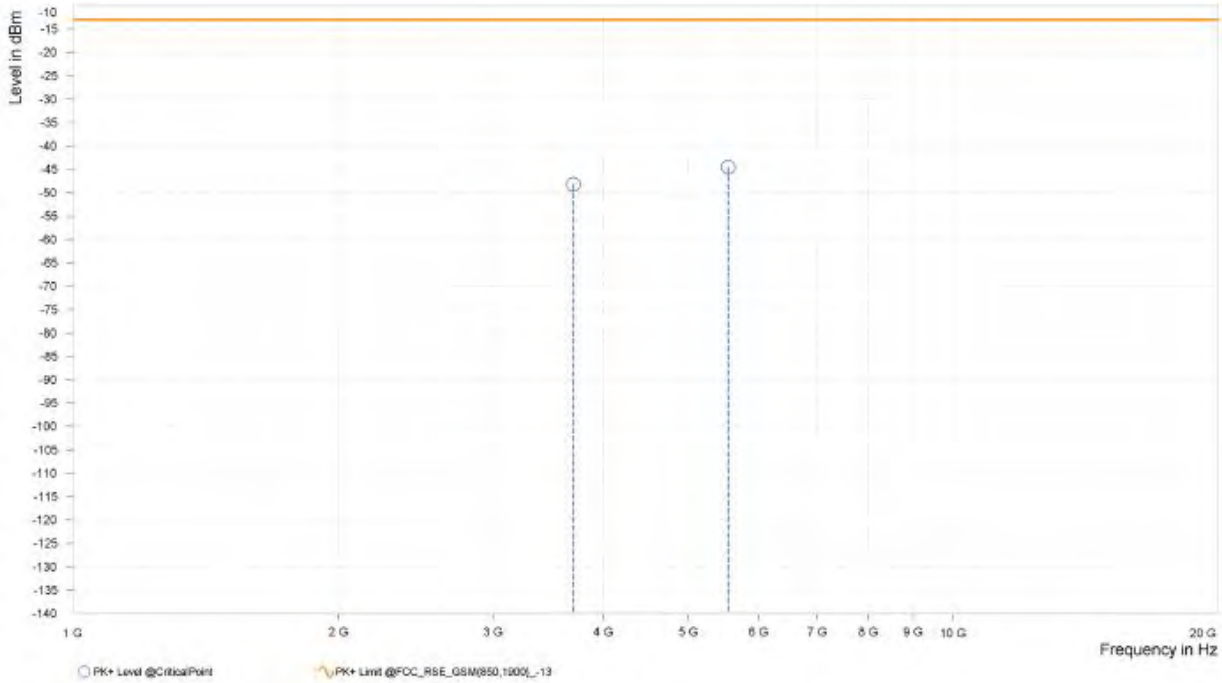
MODE	TX channel 512	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,700.500	-50.03	-13.00	37.03	22.48	H	0.8	2.00
4	5,550.500	-46.81	-13.00	33.81	25.81	H	359.1	1.00



MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

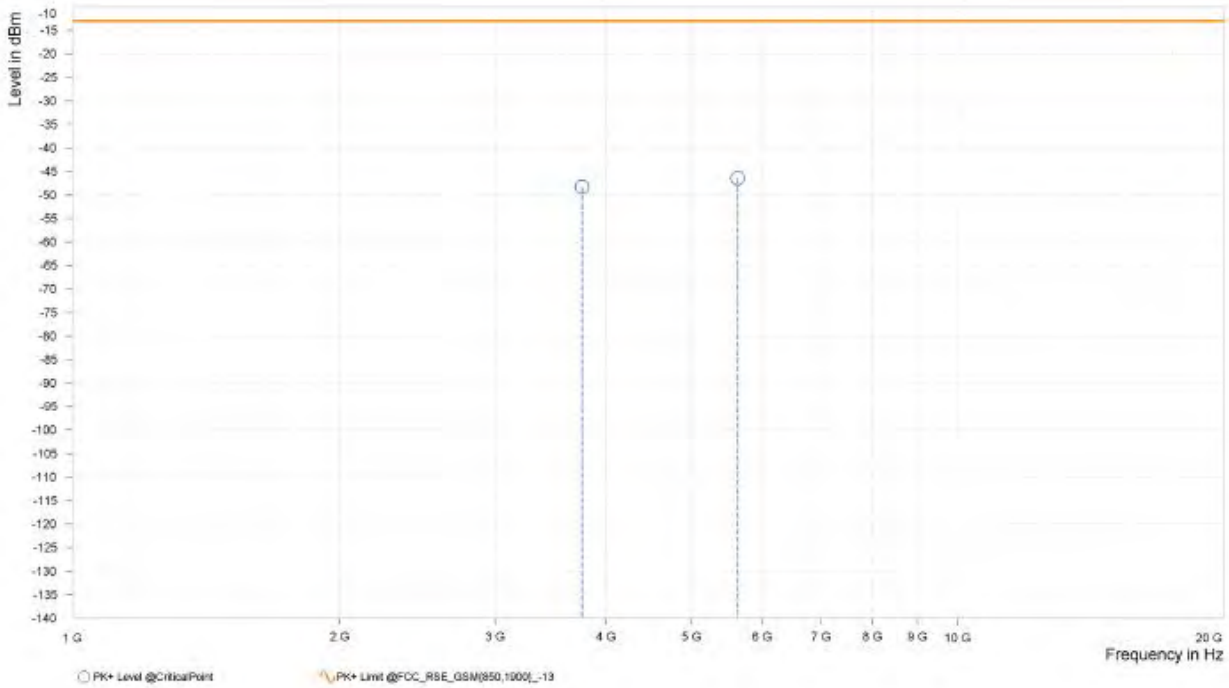
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,700.500	-48.22	-13.00	35.22	23.07	V	1	1.00
4	5,550.500	-44.57	-13.00	31.57	26.51	V	1	1.00



CH 661

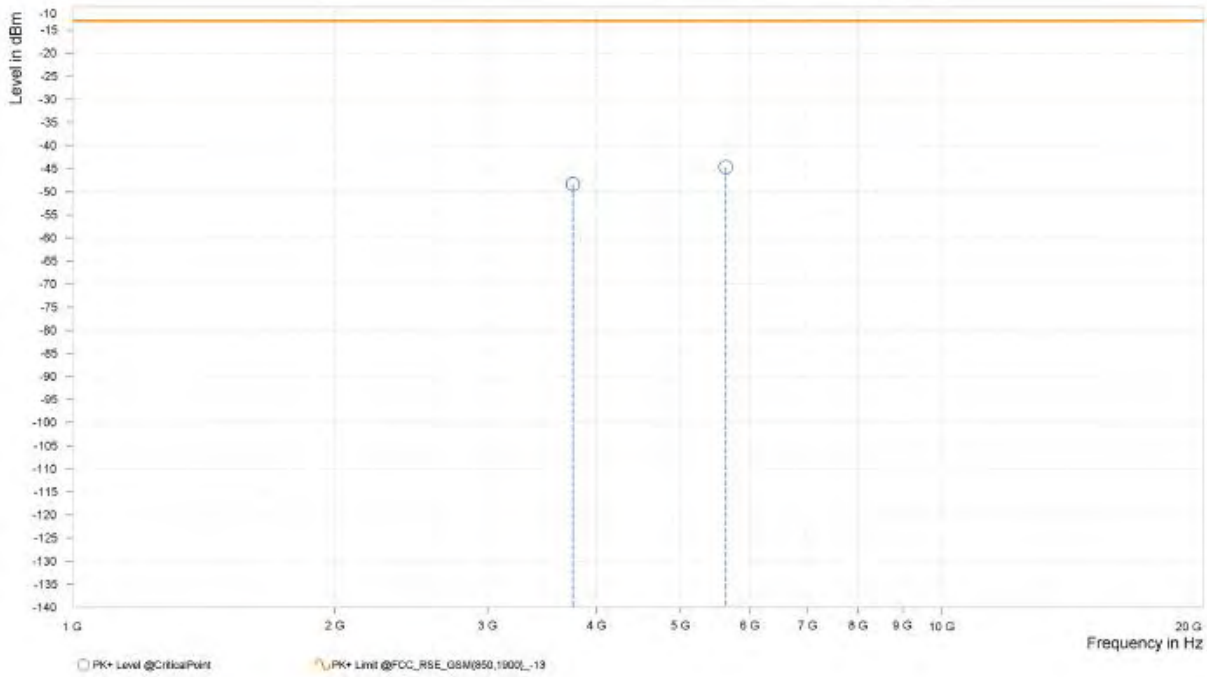
MODE	TX channel 661	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-48.33	-13.00	35.33	23.12	H	359	1.00
4	5,640.000	-46.39	-13.00	33.39	26.20	H	107.2	2.00



MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

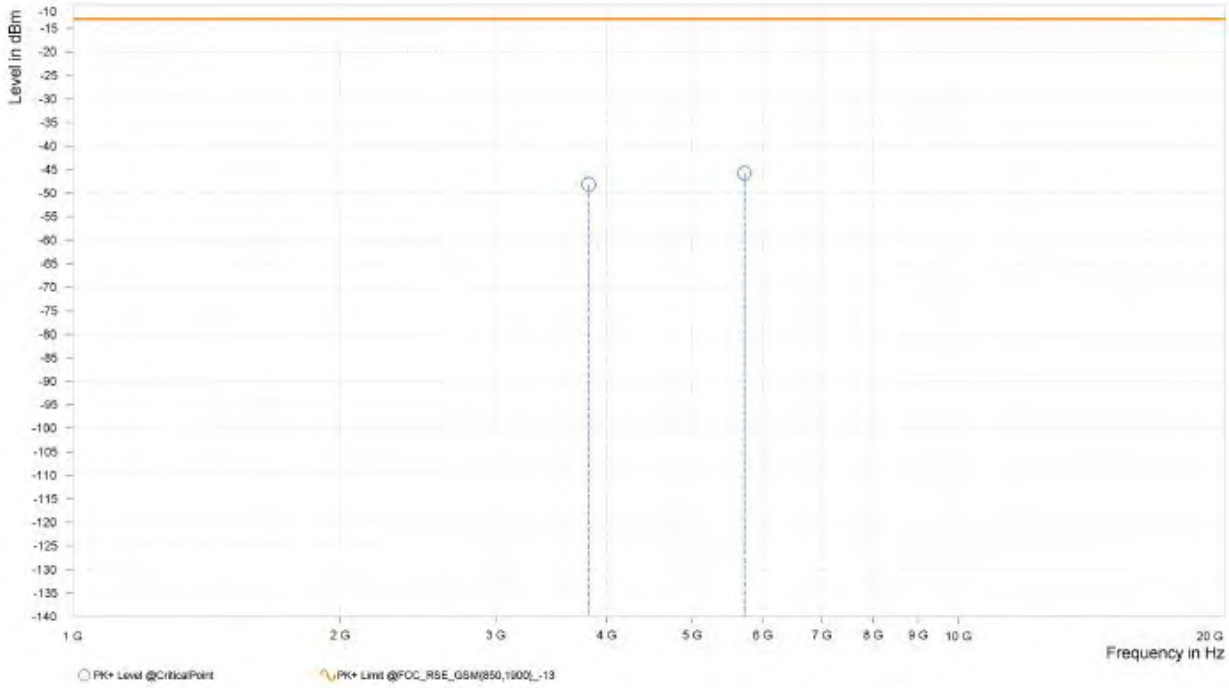
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-48.38	-13.00	35.38	23.61	V	246.7	1.00
4	5,640.000	-44.72	-13.00	31.72	26.55	V	359	2.00



CH 810

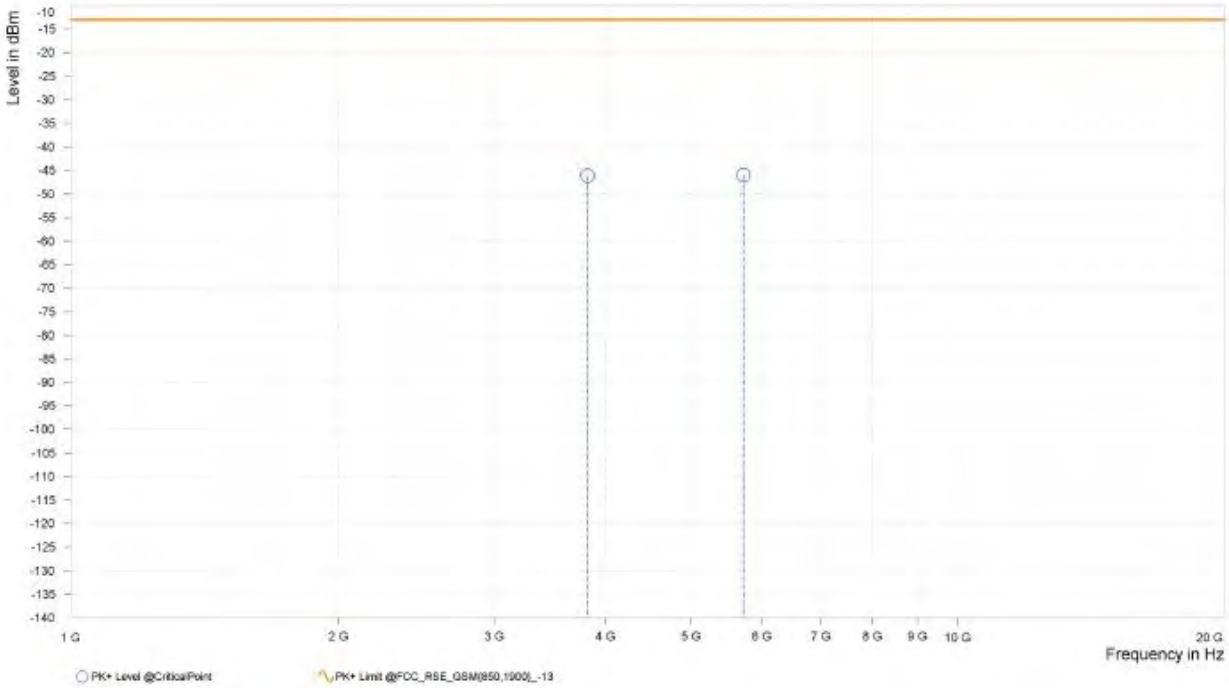
MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,820.000	-48.14	-13.00	35.14	23.26	H	246.8	1.00
4	5,730.000	-45.79	-13.00	32.79	26.76	H	112	2.00



MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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	3,820.000	-46.11	-13.00	33.11	23.61	V	109.7	2.00
4	5,730.000	-45.97	-13.00	32.97	27.22	V	247.9	1.00

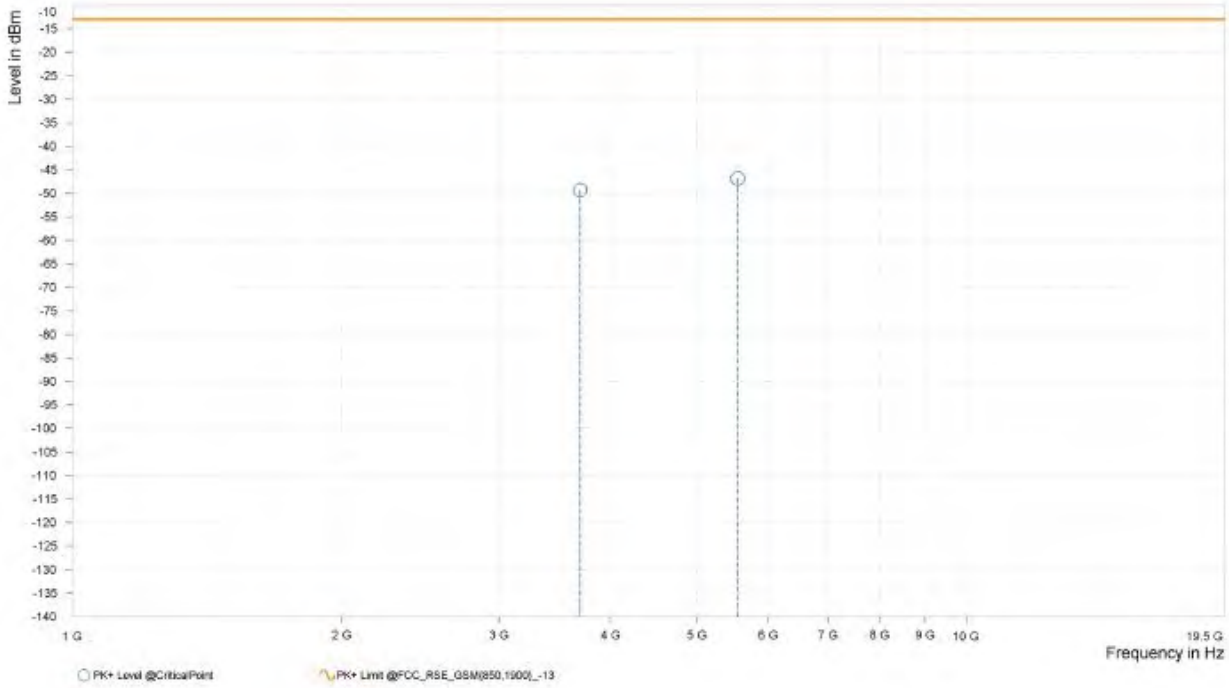


EDGE 1900:

CH 512

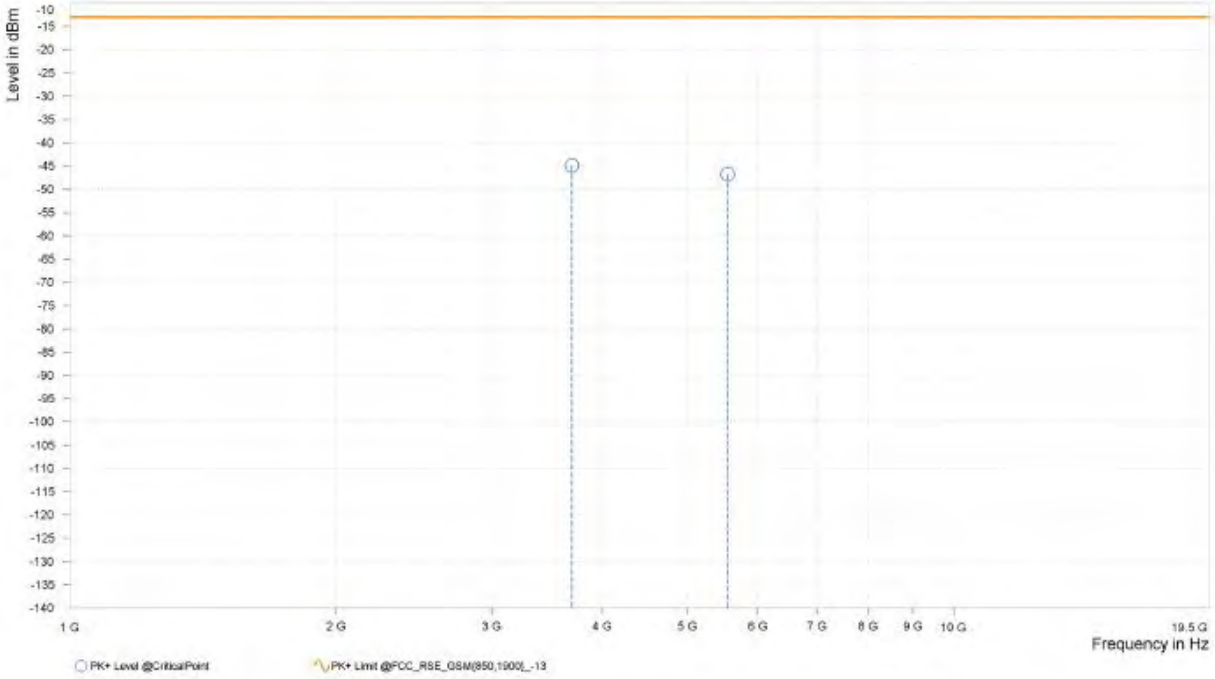
MODE	TX channel 512	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,700.400	-49.31	-13.00	36.31	22.48	H	0.9	2.00
4	5,550.600	-46.83	-13.00	33.83	25.81	H	108.4	2.00



MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

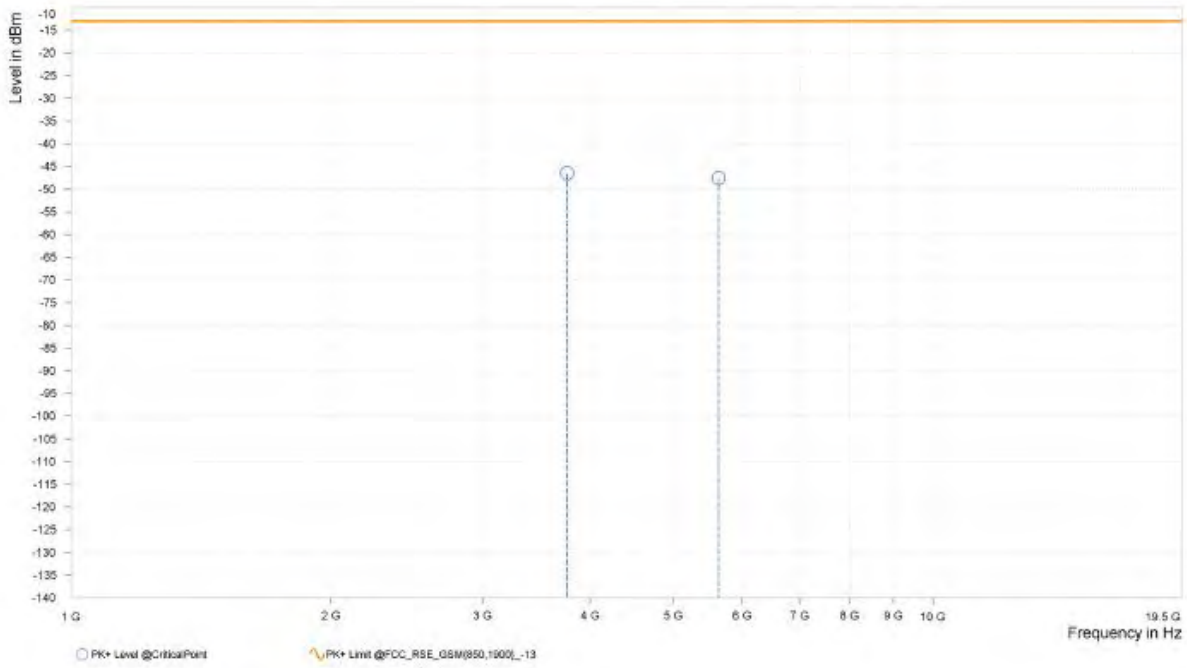
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,700.400	-44.89	-13.00	31.89	23.07	V	1	1.00
4	5,550.600	-46.78	-13.00	33.78	26.51	V	107.2	2.00



CH 661

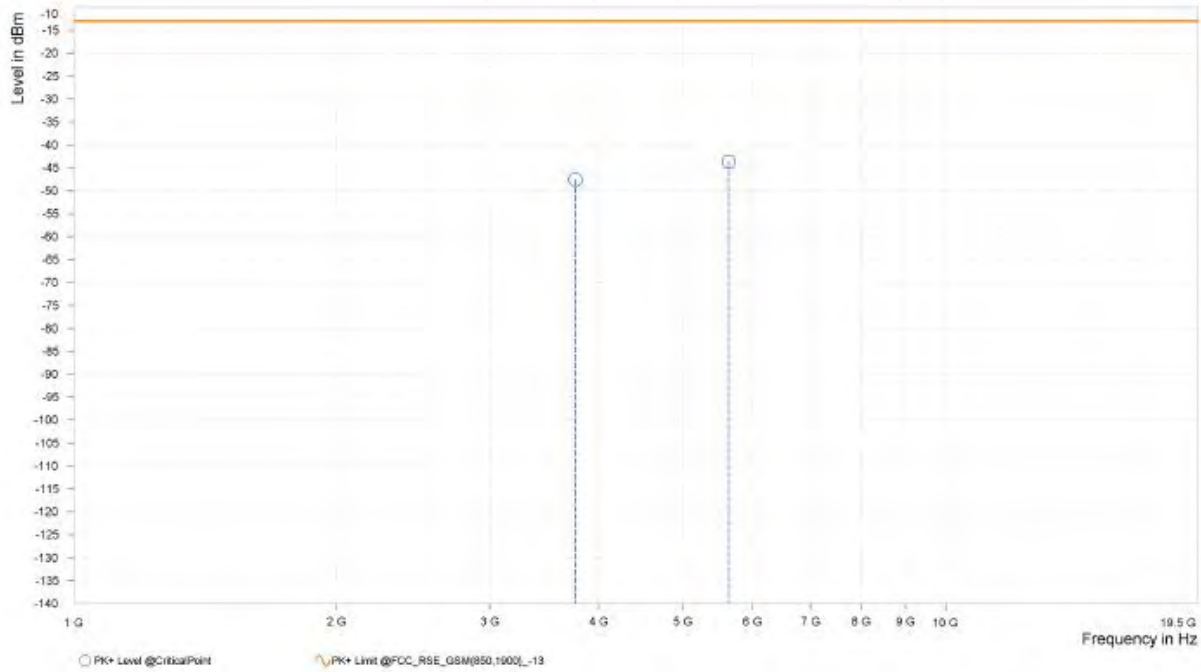
MODE	TX channel 661	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-46.52	-13.00	33.52	23.12	H	0.9	2.00
4	5,640.000	-47.60	-13.00	34.60	26.20	H	359	2.00



MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

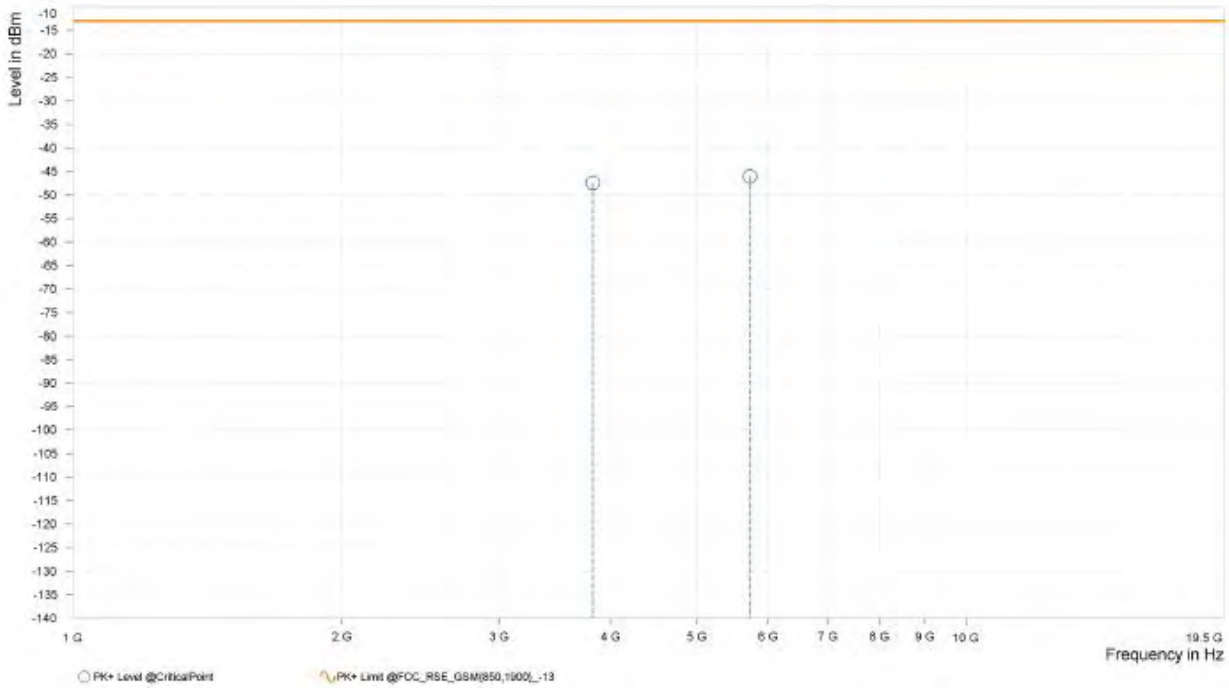
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-47.56	-13.00	34.56	23.61	V	269.4	1.00
4	5,640.000	-43.65	-13.00	30.65	26.55	V	359	2.00



CH 810

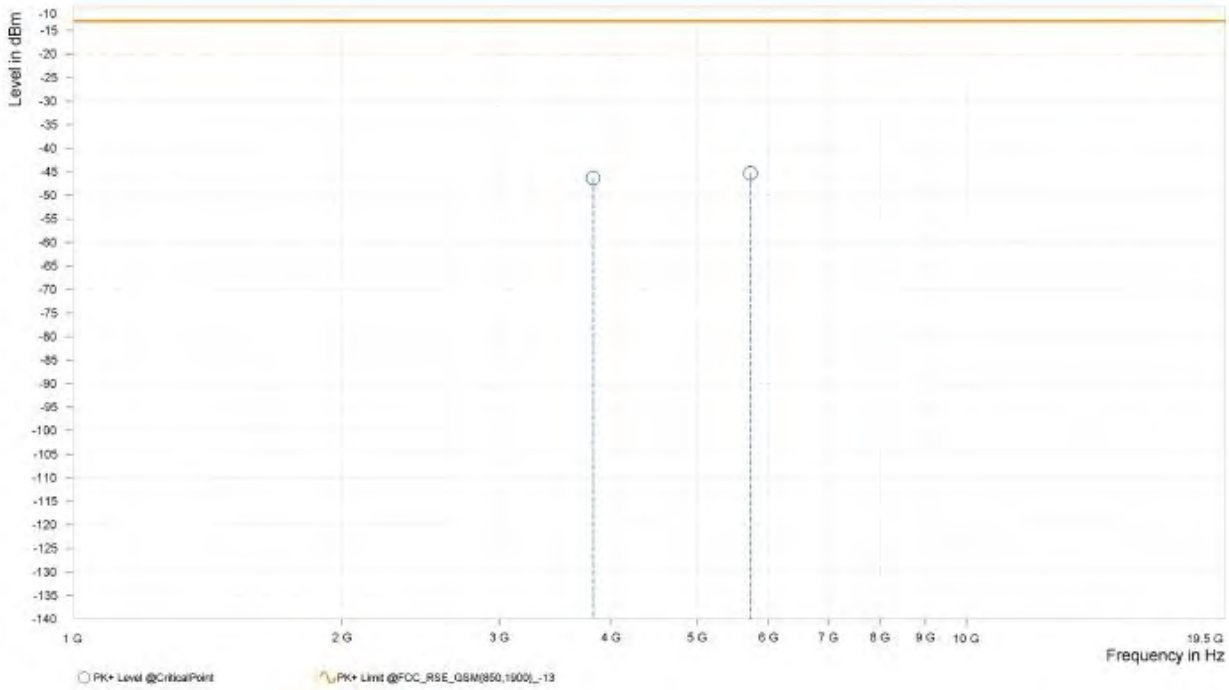
MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,819.600	-47.45	-13.00	34.45	23.26	H	106	2.00
4	5,729.400	-46.04	-13.00	33.04	26.75	H	252.7	1.00



MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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	3,819.600	-46.32	-13.00	33.32	23.61	V	0.9	2.00
4	5,729.400	-45.35	-13.00	32.35	27.21	V	252.6	1.00

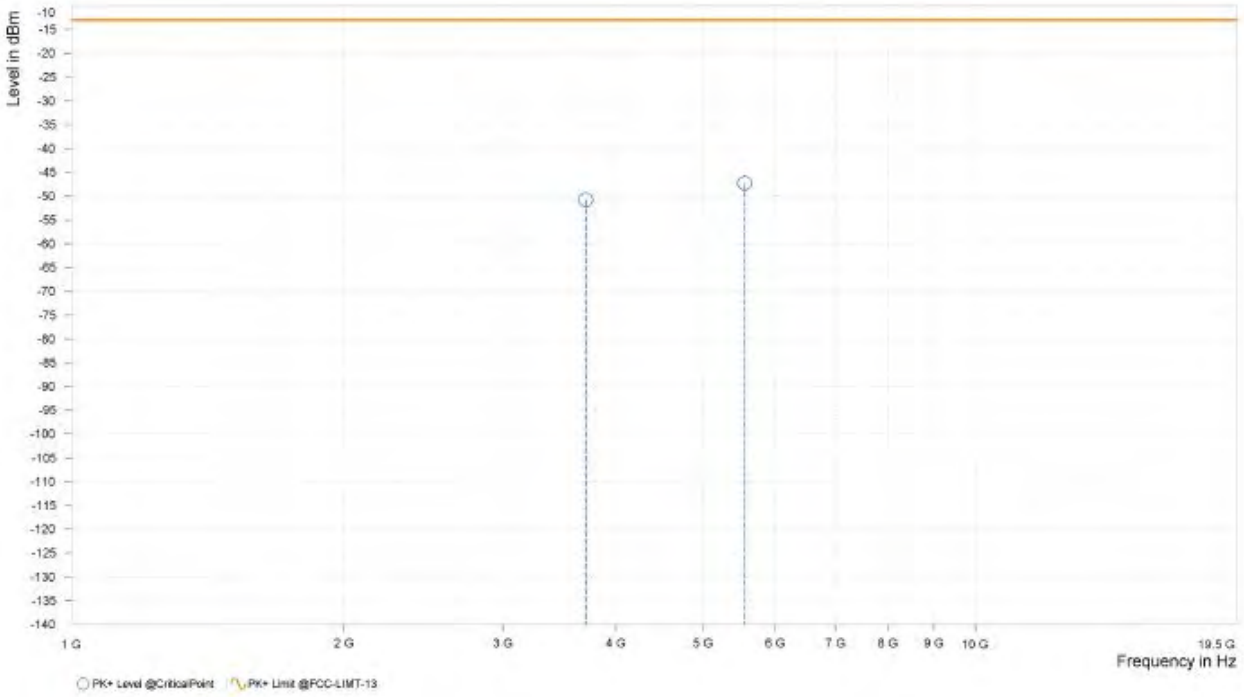


WCDMA Band II

CH 9262

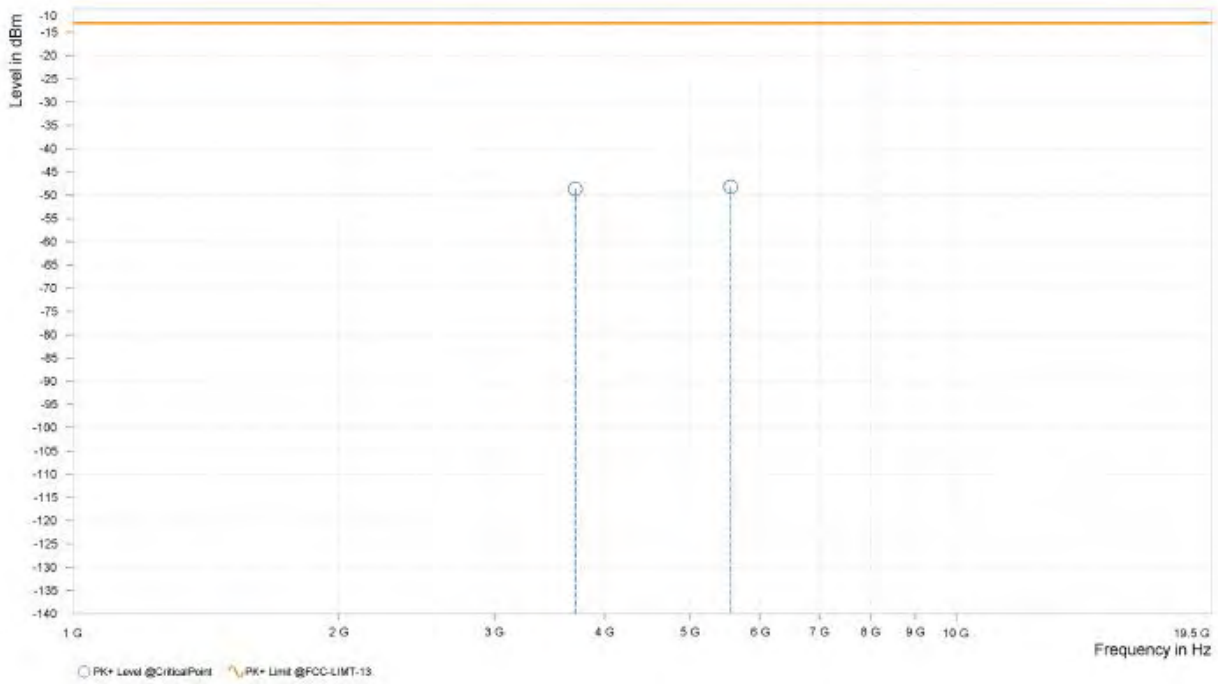
MODE	TX channel 9262	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,704.800	-50.79	-13.00	37.79	22.50	H	359	1.00
4	5,557.200	-47.29	-13.00	34.29	25.79	H	190.9	2.00



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

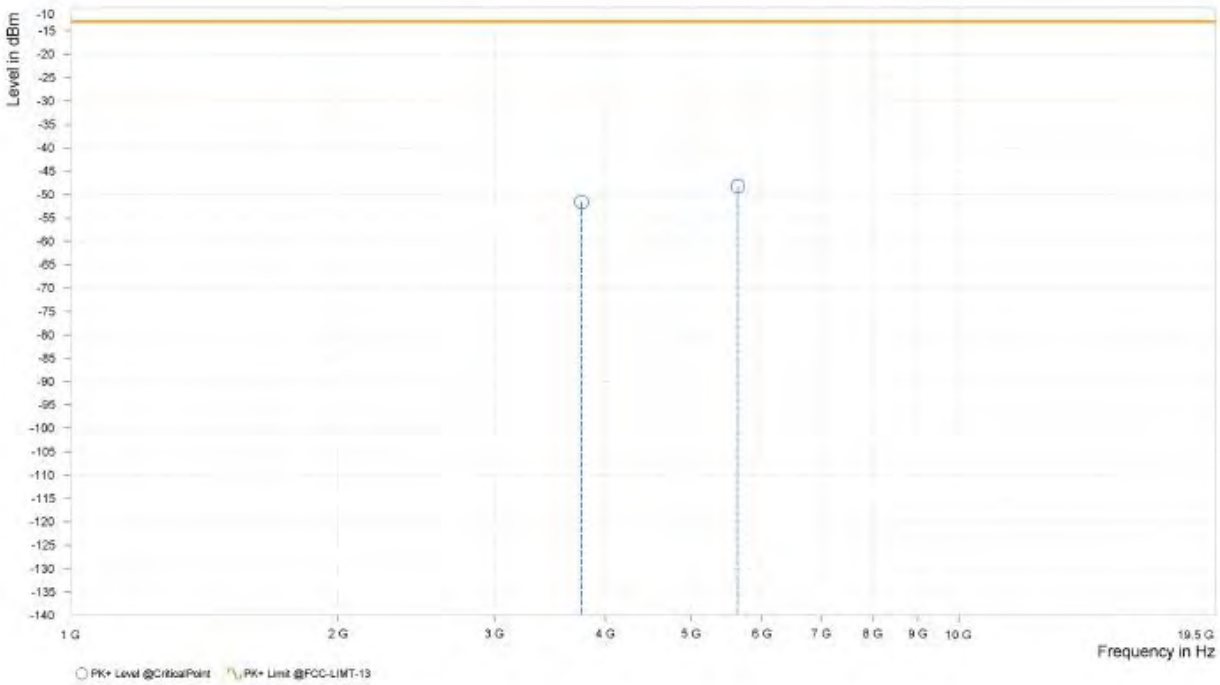
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,704.800	-48.66	-13.00	35.66	23.10	V	1	1.00
4	5,557.200	-48.26	-13.00	35.26	26.49	V	359	1.00



CH 9400

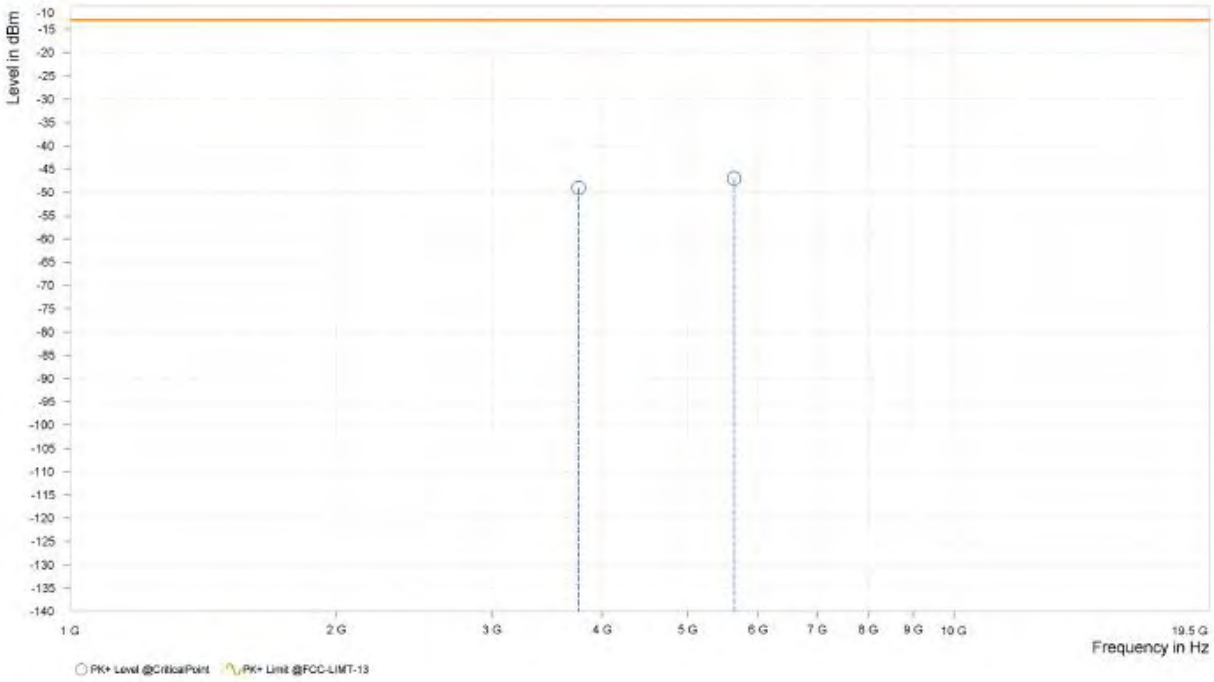
MODE	TX channel 9400	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-51.61	-13.00	38.61	23.12	H	172.6	1.00
4	5,640.000	-48.24	-13.00	35.24	26.20	H	8.8	2.00



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

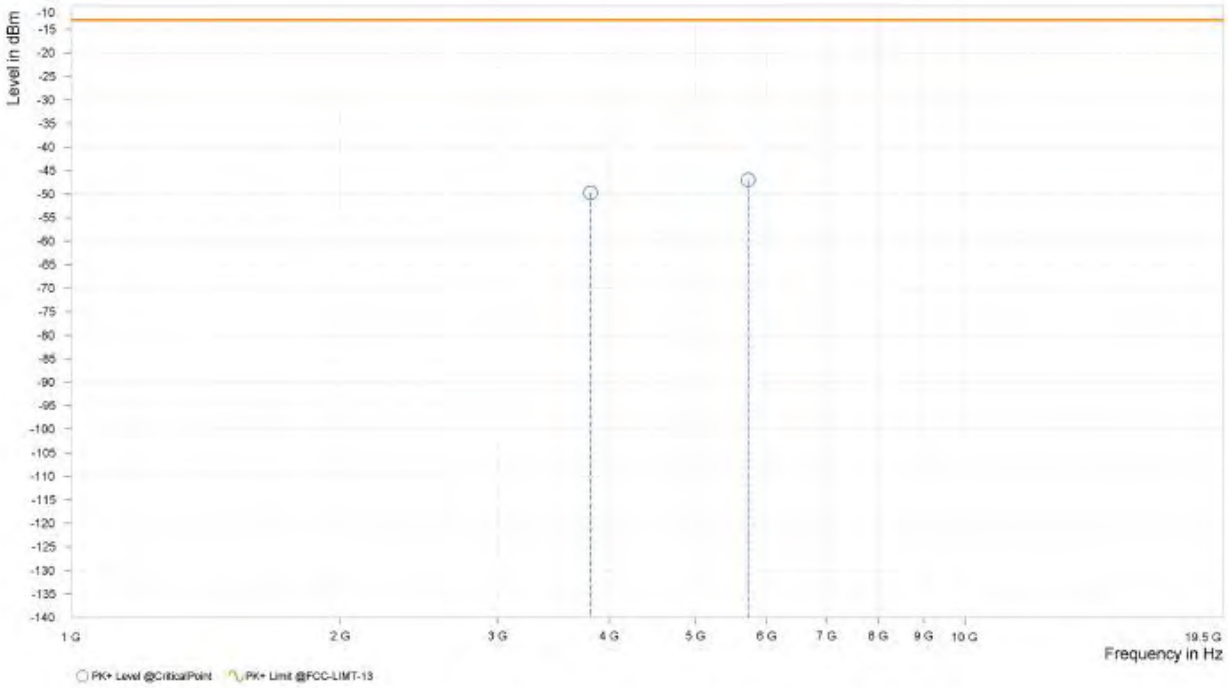
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,760.000	-49.05	-13.00	36.05	23.61	V	353.4	1.00
4	5,640.000	-46.98	-13.00	33.98	26.55	V	1	2.00



CH 9538

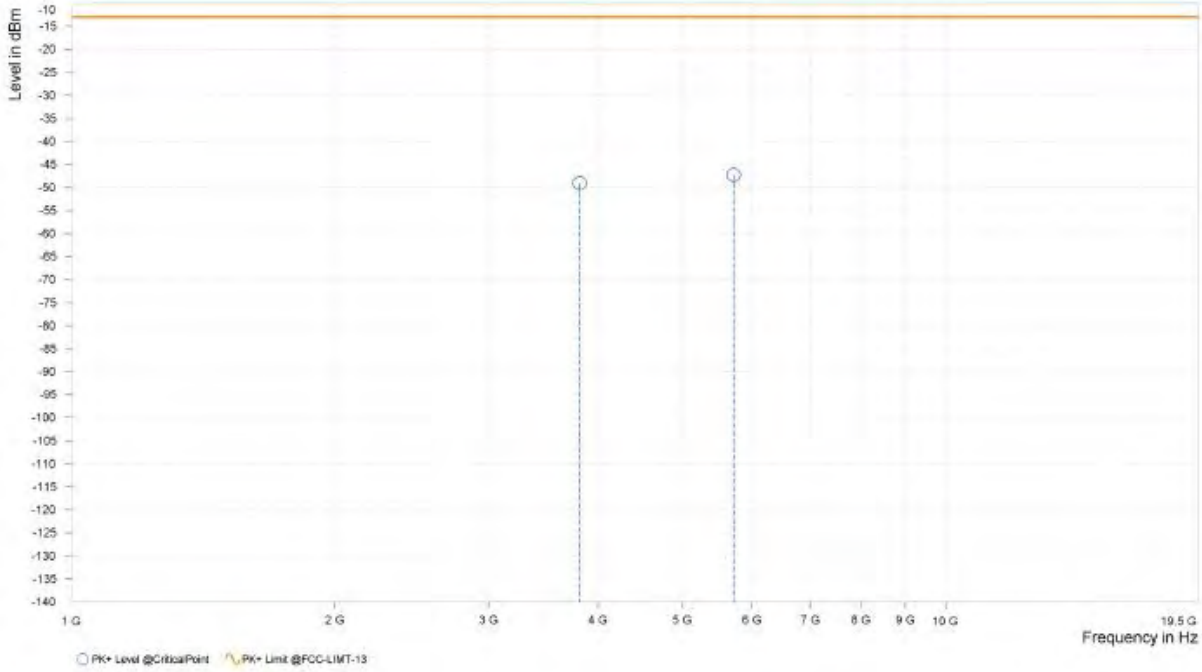
MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,815.200	-49.73	-13.00	36.73	23.25	H	1	1.00
4	5,722.800	-46.99	-13.00	33.99	26.63	H	351.1	1.00



MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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	3,815.200	-49.12	-13.00	36.12	23.58	V	351.8	1.00
4	5,722.800	-47.29	-13.00	34.29	27.08	V	351.8	1.00

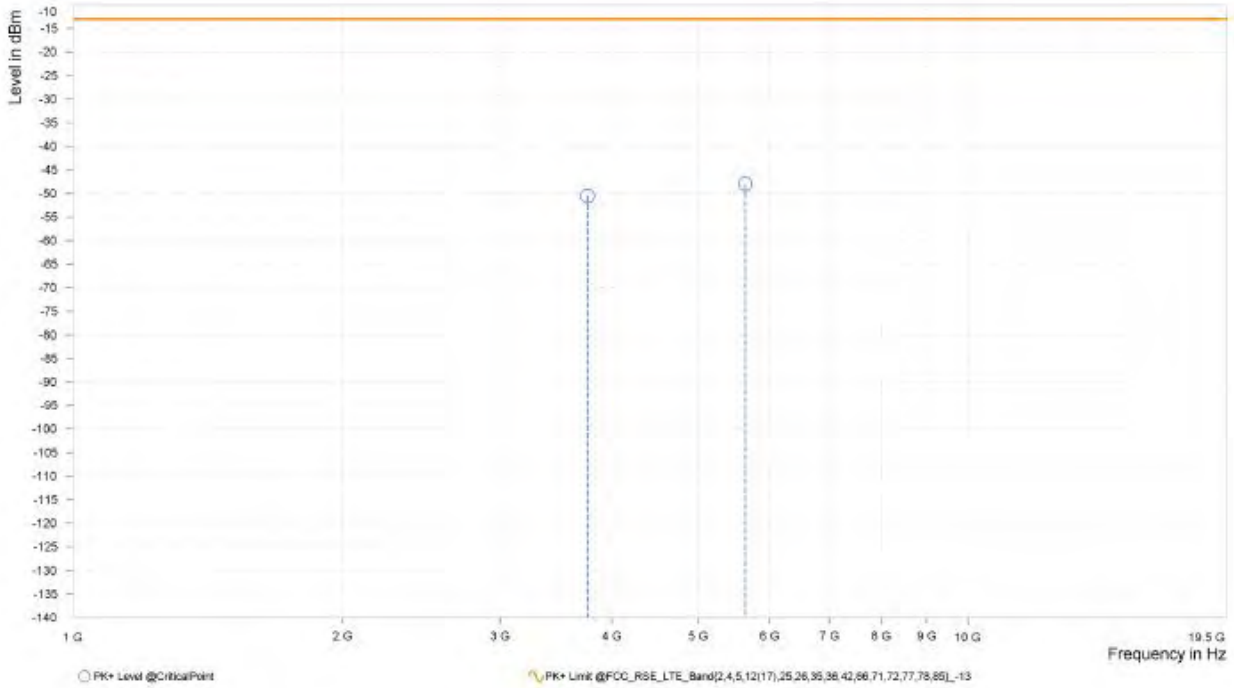


LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

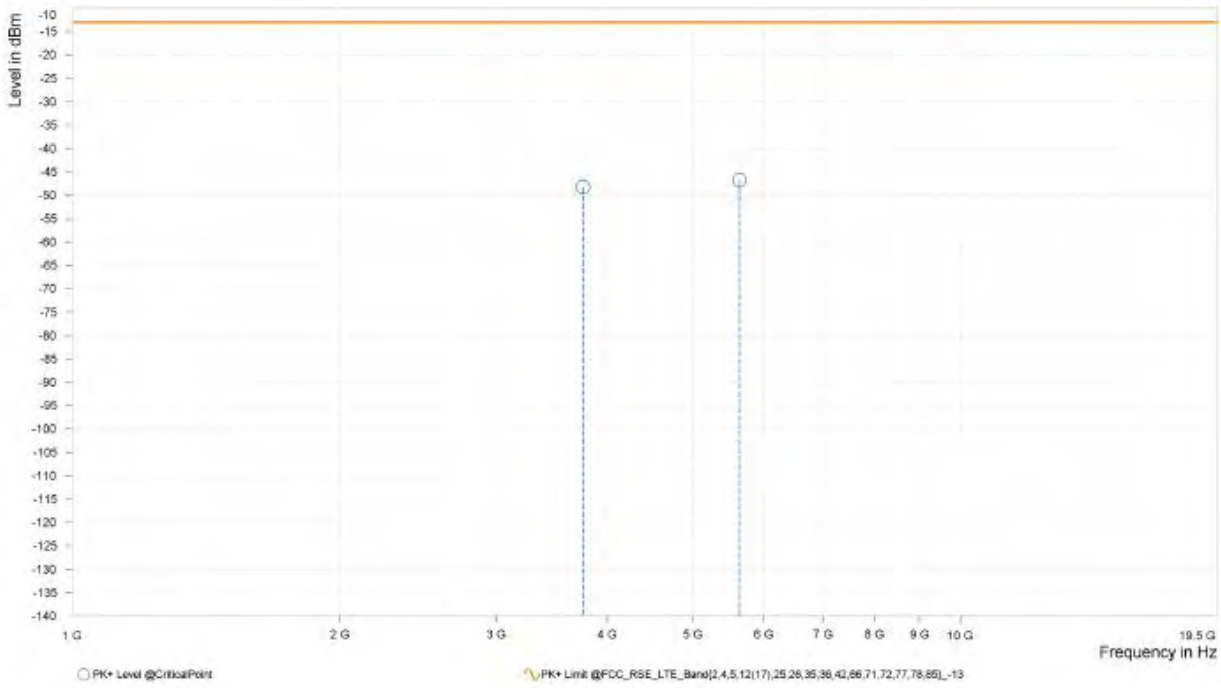
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,758.740	-50.51	-13.00	37.51	23.10	H	0.9	2.00
4	5,638.110	-48.02	-13.00	35.02	26.22	H	1	1.00



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

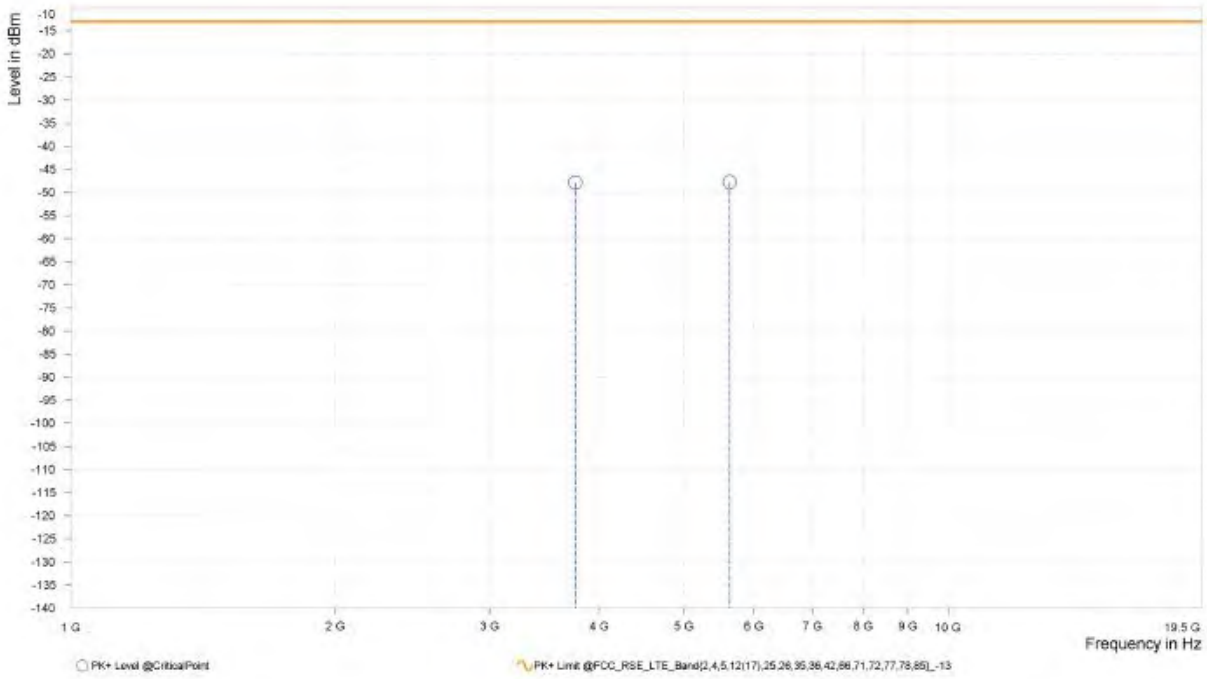
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,758.740	-48.24	-13.00	35.24	23.61	V	359.1	1.00
4	5,638.110	-46.76	-13.00	33.76	26.56	V	359	2.00



CHANNEL BANDWIDTH: 3MHz / QPSK

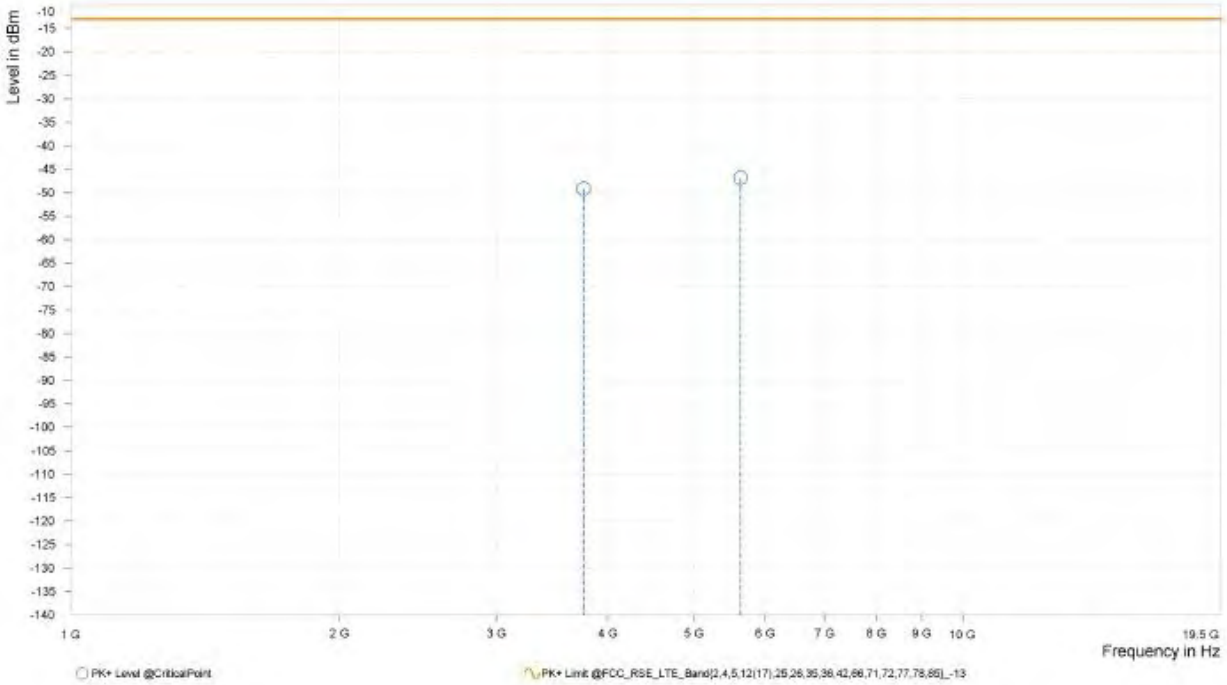
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,757.300	-47.84	-13.00	34.84	23.09	H	244.3	1.00
4	5,635.950	-47.71	-13.00	34.71	26.24	H	358.9	1.00



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

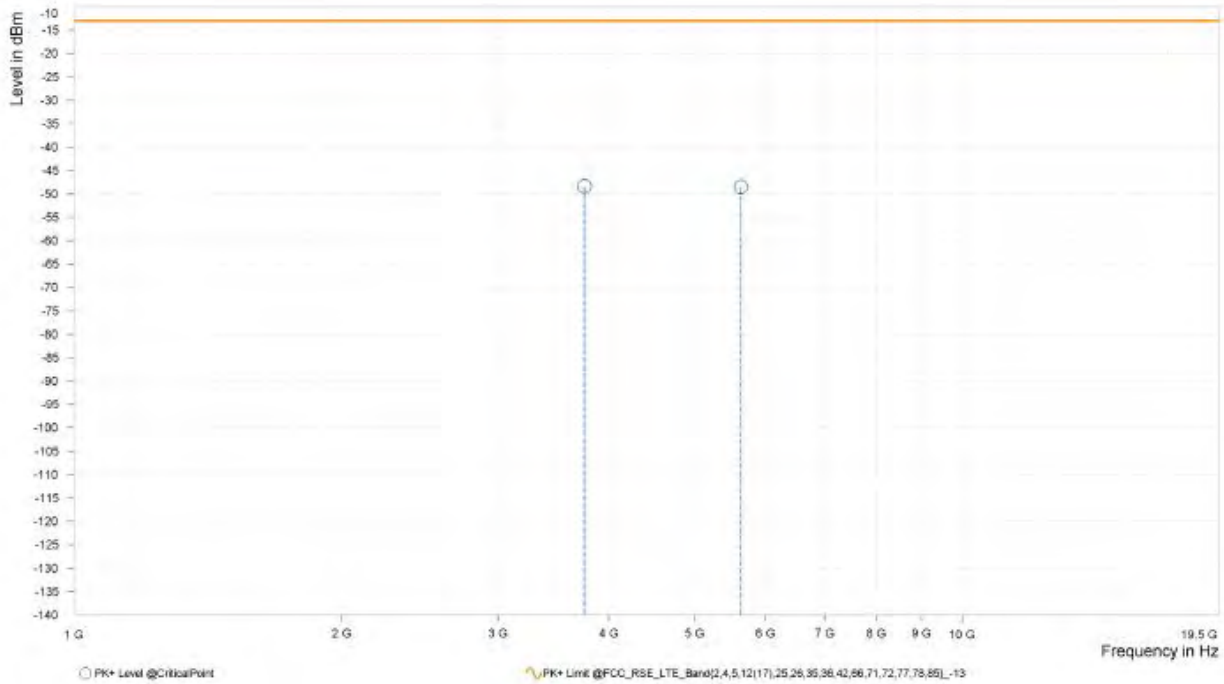
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,757.300	-49.17	-13.00	36.17	23.61	V	205.3	2.00
4	5,635.950	-46.88	-13.00	33.88	26.58	V	52.2	2.00



CHANNEL BANDWIDTH: 5MHz / QPSK

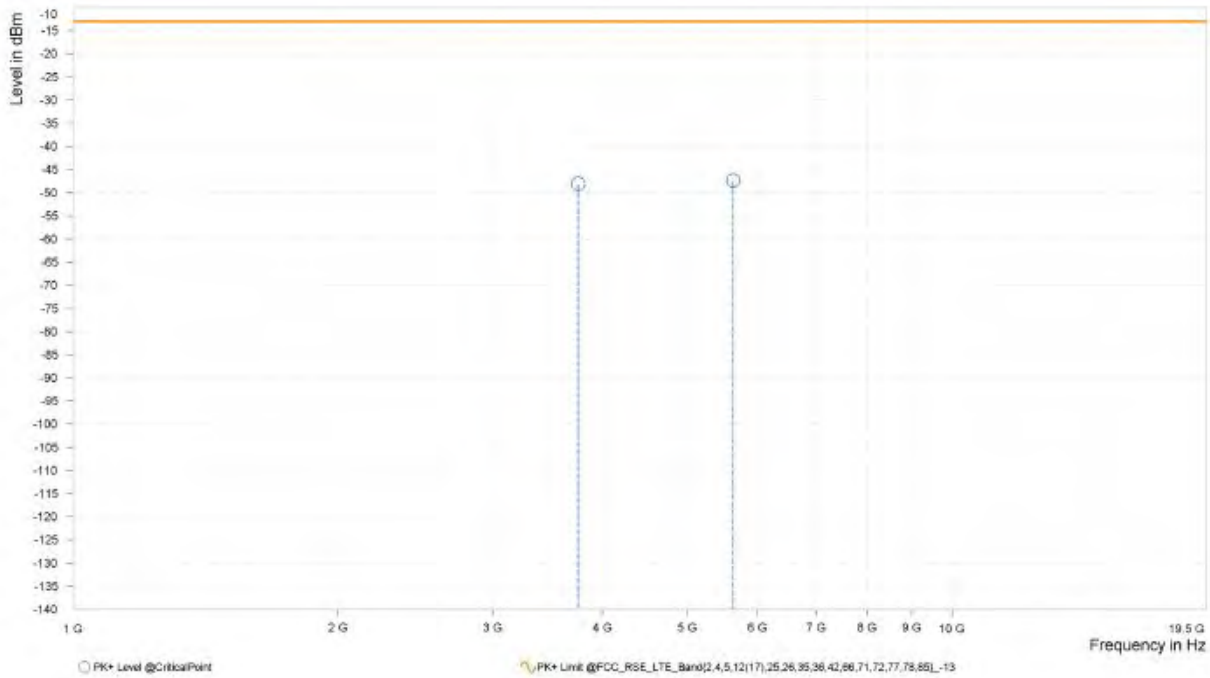
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,755.500	-48.38	-13.00	35.38	23.06	H	359	1.00
4	5,633.250	-48.52	-13.00	35.52	26.26	H	155.8	1.00



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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	-48.09	-13.00	35.09	23.61	V	359.1	1.00
4	5,633.250	-47.37	-13.00	34.37	26.60	V	42.7	2.00

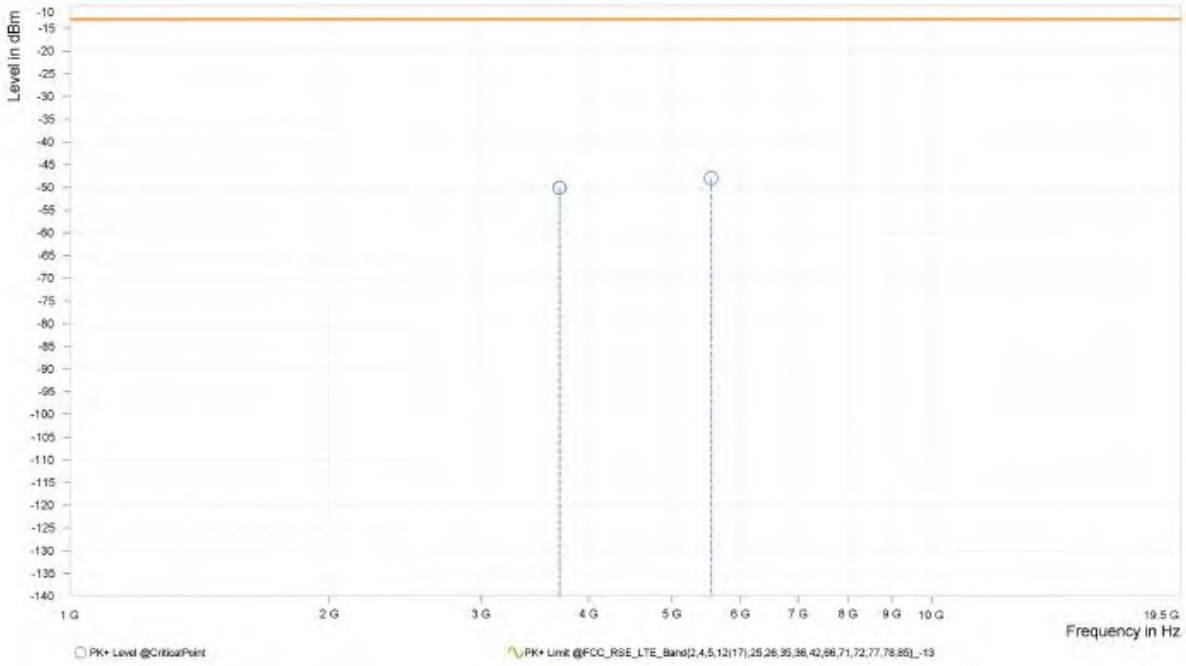


CHANNEL BANDWIDTH: 10MHz / QPSK

CH18650

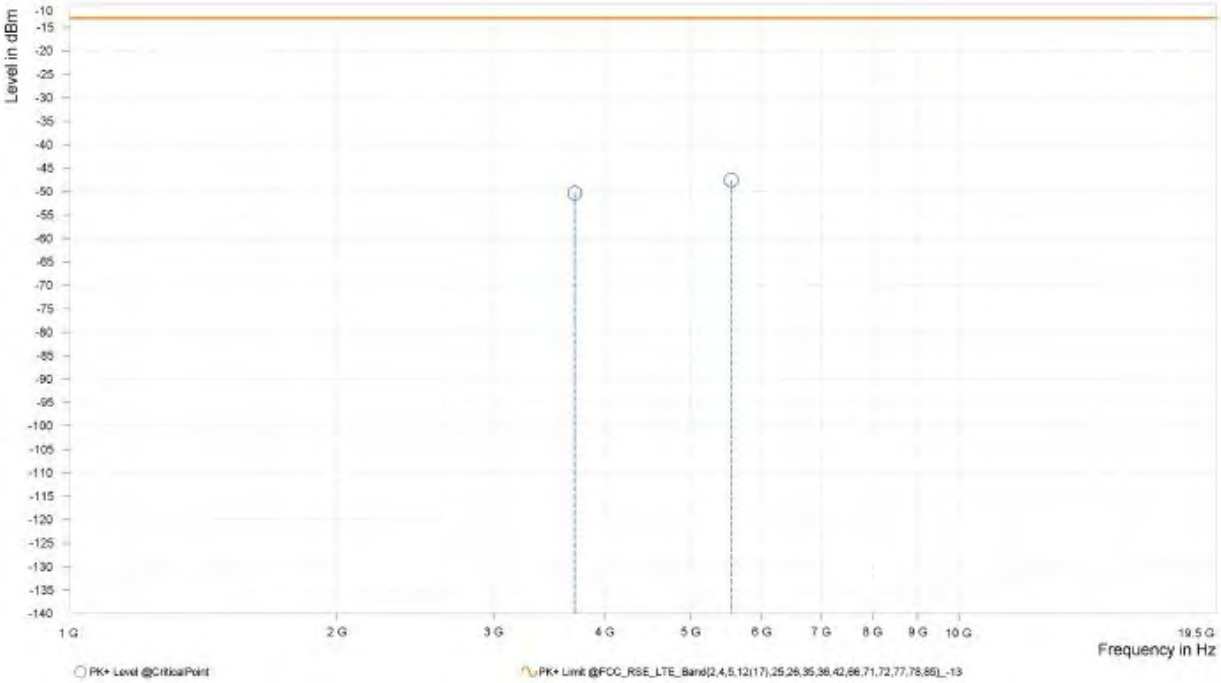
MODE	TX channel 18650	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,701.000	-50.11	-13.00	37.11	22.48	H	358.7	1.00
4	5,551.500	-47.99	-13.00	34.99	25.81	H	316.1	1.00



MODE	TX channel 18650	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

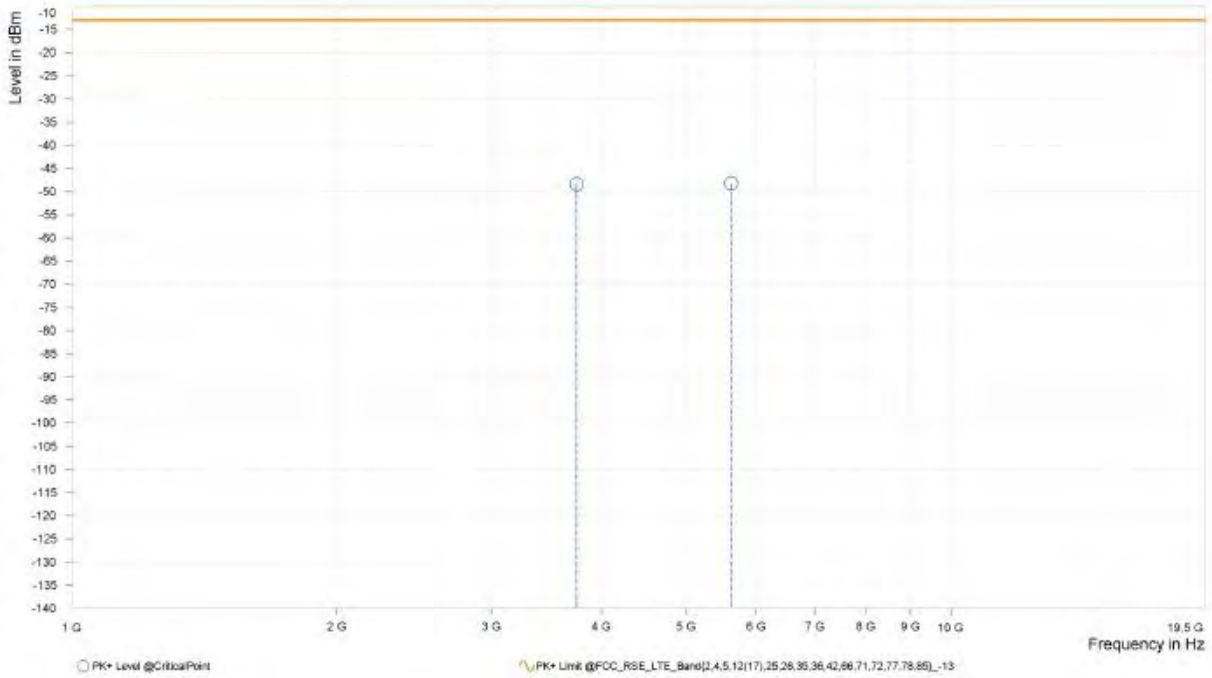
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,701.000	-50.30	-13.00	37.30	23.08	V	359.1	1.00
4	5,551.500	-47.59	-13.00	34.59	26.51	V	359.1	1.00



CH18900

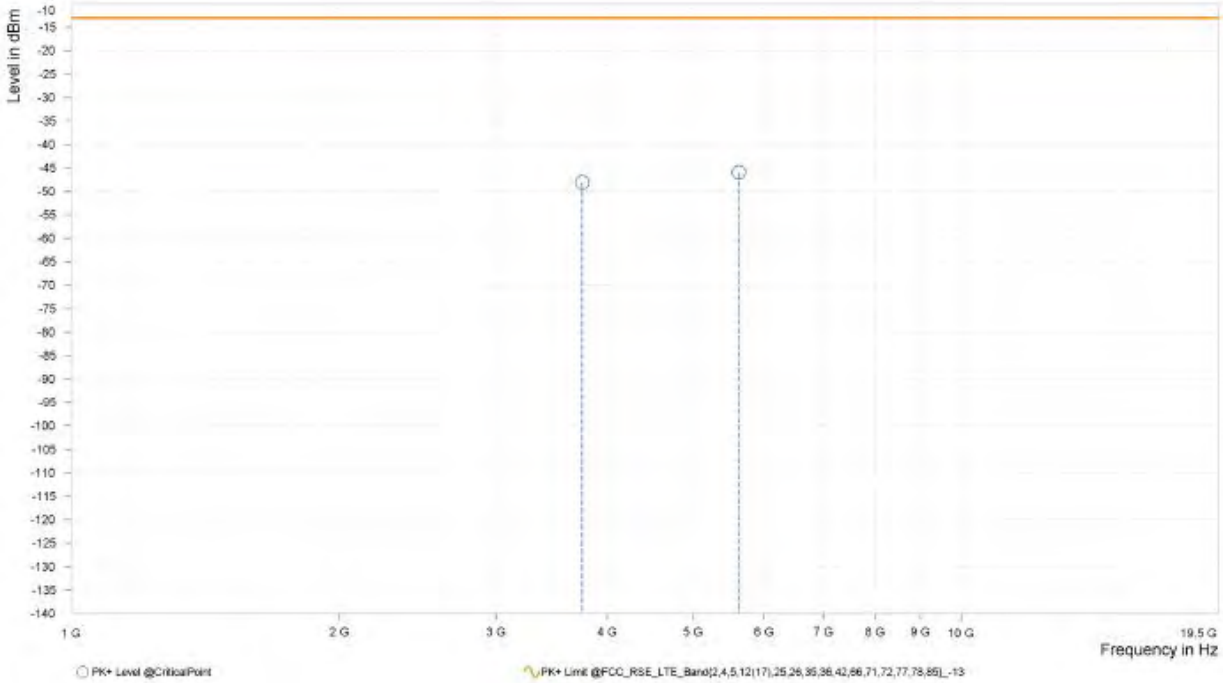
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,751.000	-48.43	-13.00	35.43	22.99	H	155.8	1.00
4	5,626.500	-48.24	-13.00	35.24	26.24	H	1	1.00



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

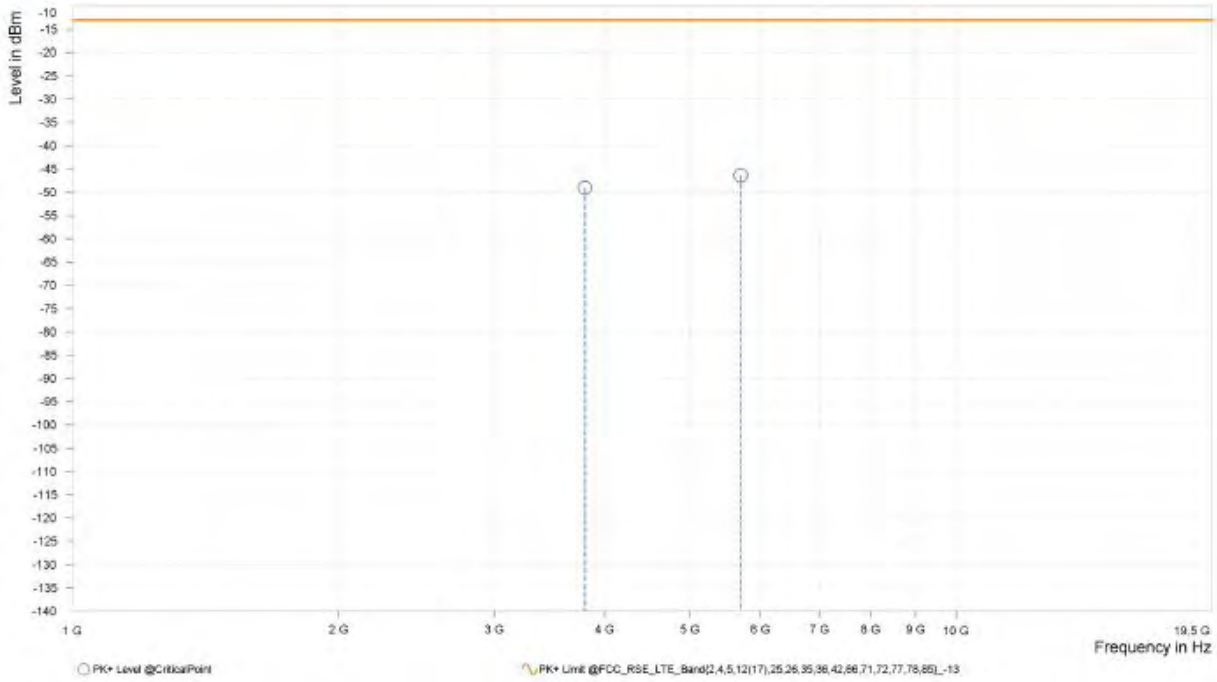
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,751.000	-48.05	-13.00	35.05	23.60	V	1	1.00
4	5,626.500	-45.93	-13.00	32.93	26.60	V	359	1.00



CH19150

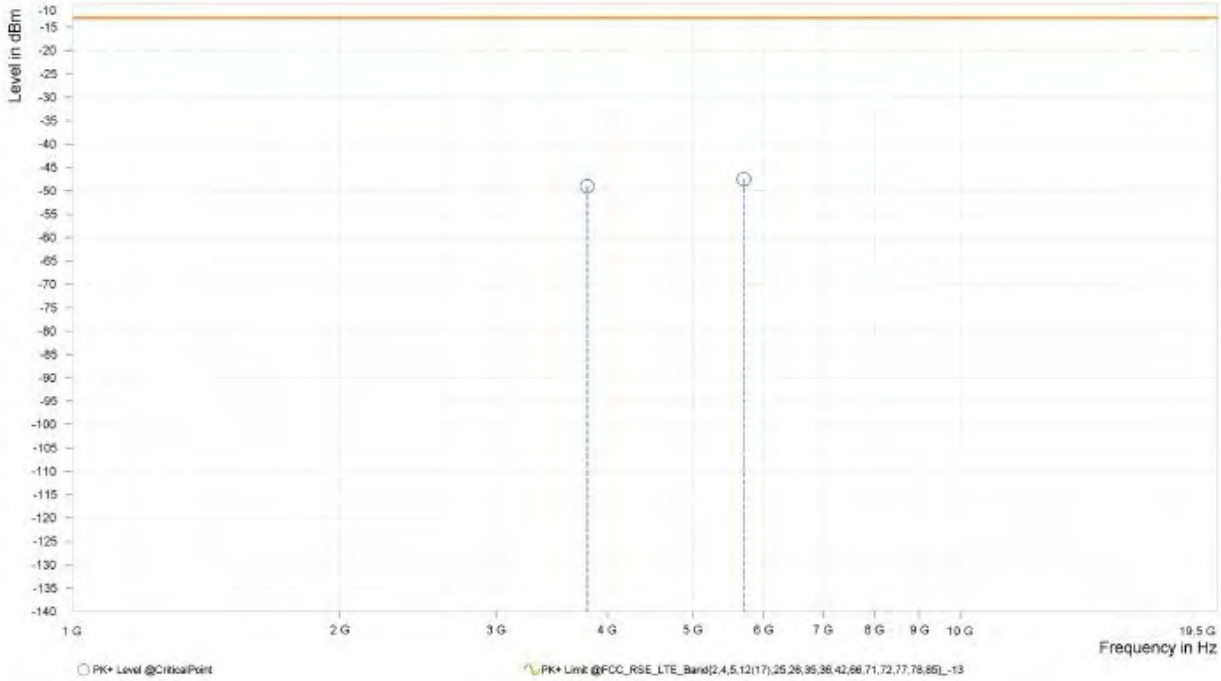
MODE	TX channel 19150	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,801.000	-49.05	-13.00	36.05	23.35	H	157	1.00
4	5,701.500	-46.33	-13.00	33.33	26.46	H	157	1.00



MODE	TX channel 19150	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

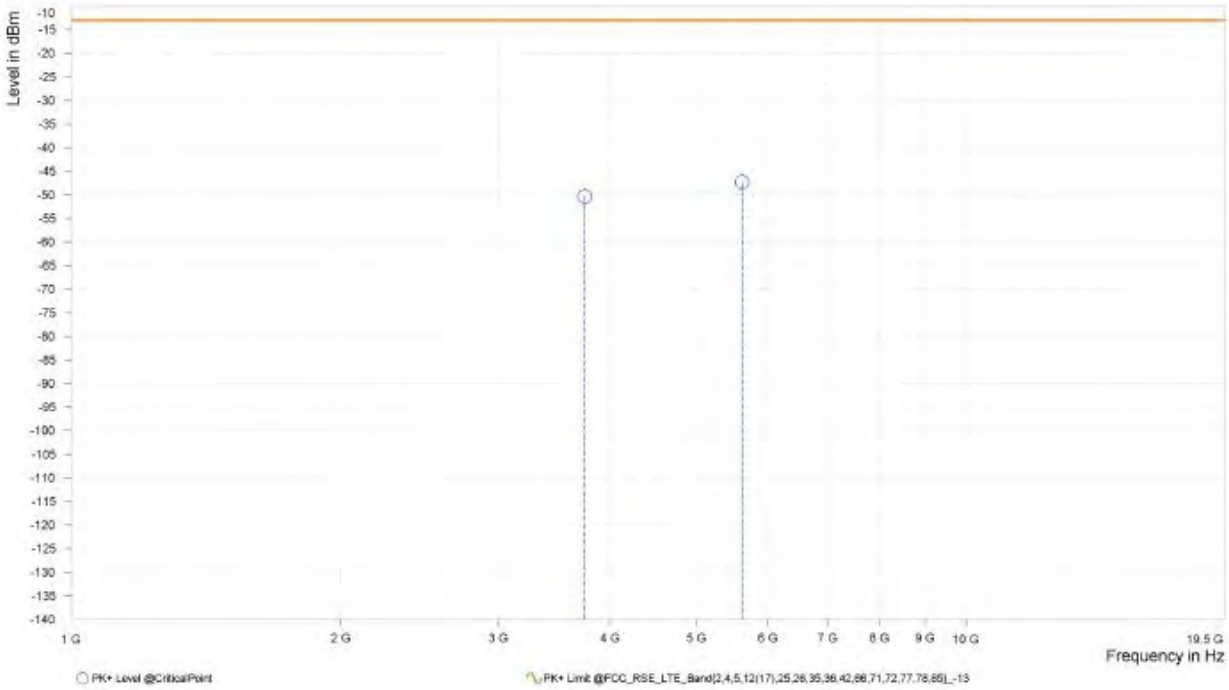
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,801.000	-49.01	-13.00	36.01	23.61	V	1	1.00
4	5,701.500	-47.49	-13.00	34.49	26.90	V	309	1.00



CHANNEL BANDWIDTH: 15MHz / QPSK

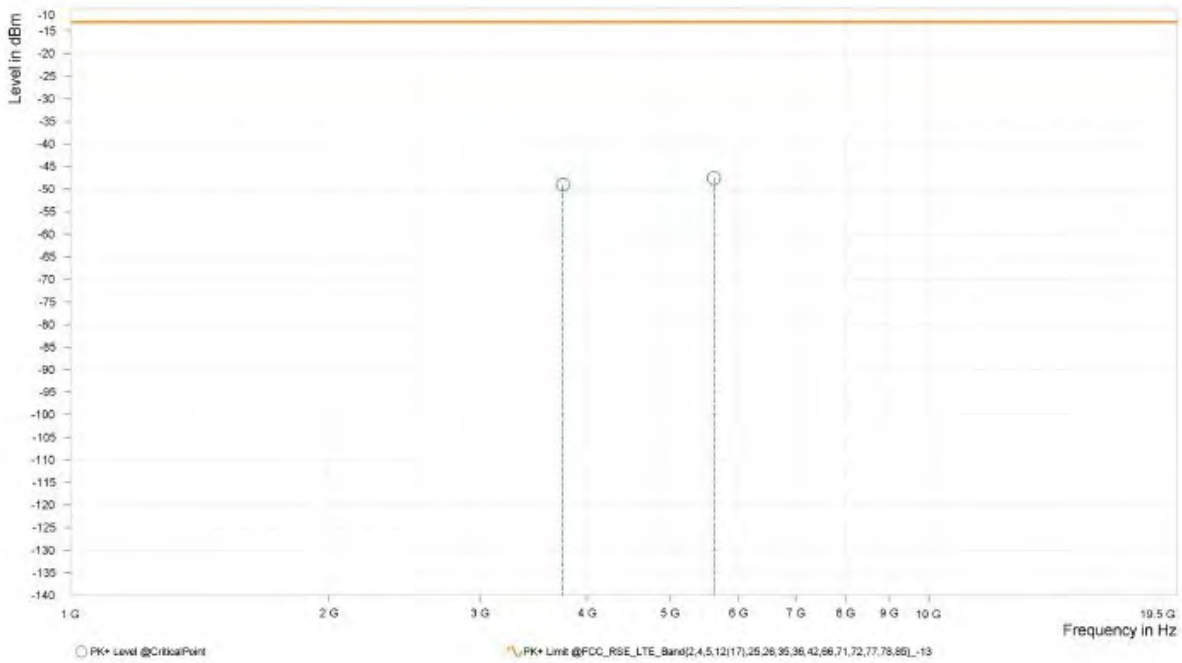
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,746.500	-50.30	-13.00	37.30	22.89	H	1.4	2.00
4	5,619.500	-47.31	-13.00	34.31	26.16	H	195.3	1.00



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

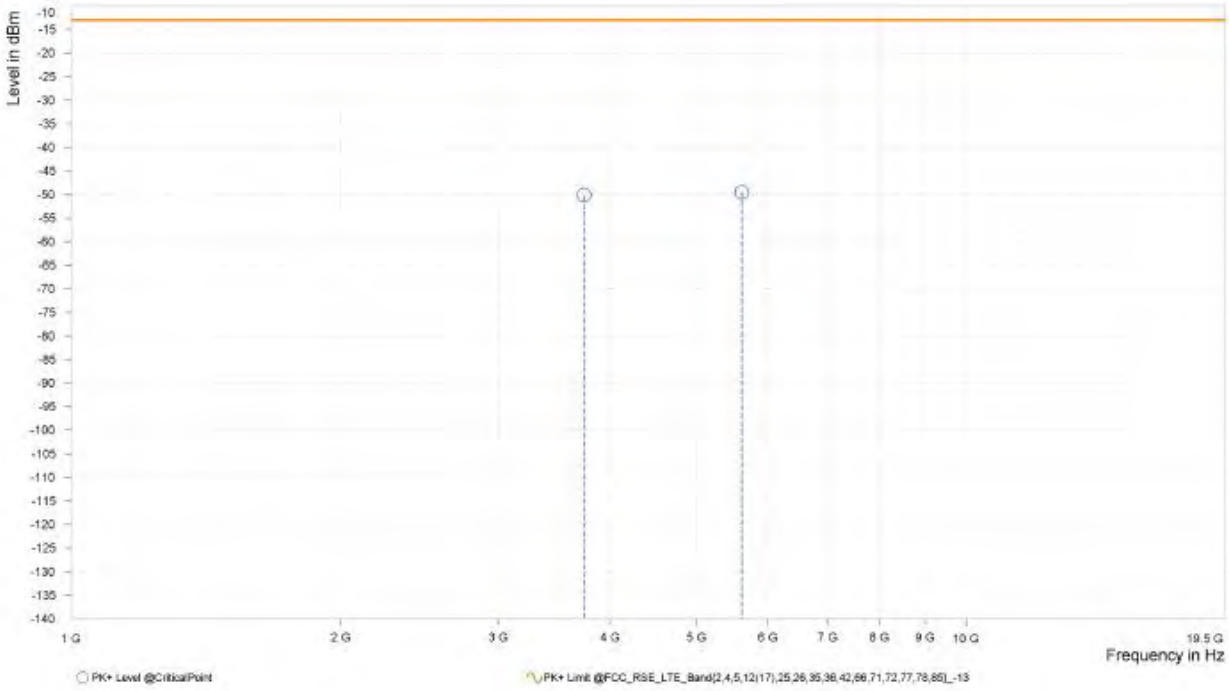
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,746.500	-49.02	-13.00	36.02	23.54	V	359	2.00
4	5,619.500	-47.57	-13.00	34.57	26.56	V	1.7	2.00



CHANNEL BANDWIDTH: 20MHz / QPSK

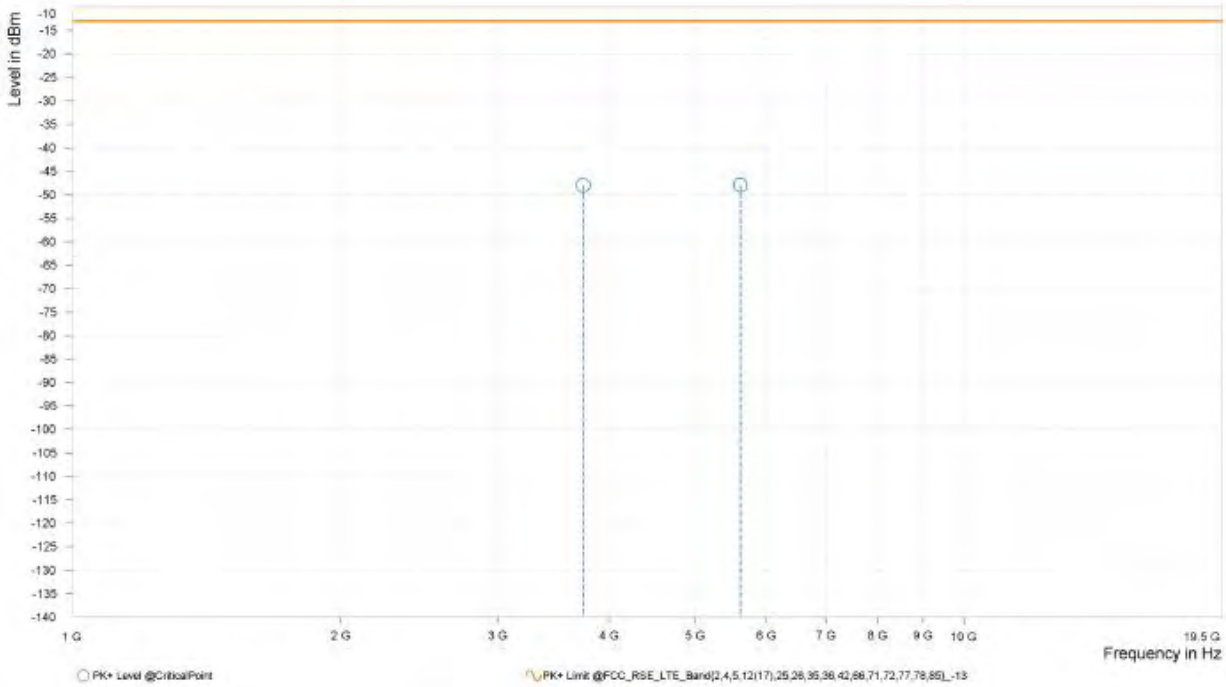
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,742.000	-50.11	-13.00	37.11	22.81	H	359.1	1.00
4	5,613.000	-49.51	-13.00	36.51	26.03	H	176.2	1.00



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
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	3,742.000	-47.98	-13.00	34.98	23.46	V	359	2.00
4	5,613.000	-47.93	-13.00	34.93	26.48	V	177.4	1.00

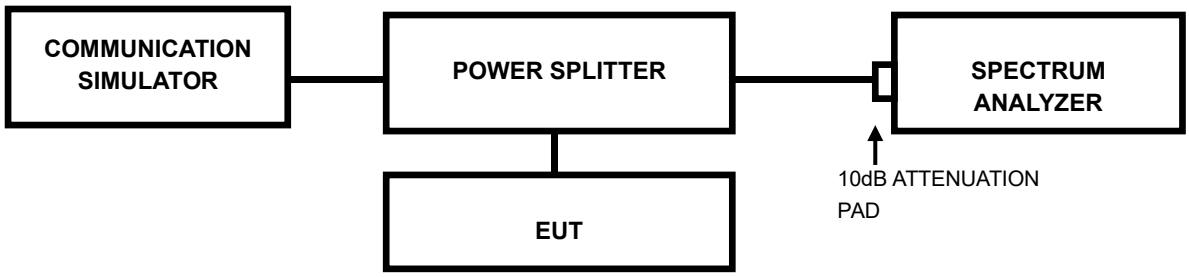


3.7 PEAK TO AVERAGE RATIO

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 ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.

4 INFORMATION ON THE TESTING LABORATORIES

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

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

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Email: customerservice.sw@bureauveritas.com
Web Site: www.adt.com.tw

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

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.

6 Appendix

GSM 1900

PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM1900	512	2.77	13	PASS
GSM1900	661	2.77	13	PASS
GSM1900	810	2.79	13	PASS
EGPRS1900	512	5.84	13	PASS
EGPRS1900	661	5.78	13	PASS
EGPRS1900	810	5.88	13	PASS

Test Graphs

GSM1900-512

GSM1900-661

GSM1900-810

EGPRS1900-512

EGPRS1900-661

EGPRS1900-810

Spectrum Analyzer 1
Power Stat CCDF
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corr CCorr
Freq Ref: Int (S)
Atten: 40 dB
Trig: RF Burst
#IF Gain: Low
Center Freq: 1.909800000 GHz
Counts: 1.00 M/1.00 Mpt
Radio Std: None
Frequency
Center Frequency
1.909800000 GHz
Settings
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 Metrics
Average Power
21.88 dBm
39.39 % at 0 dB
10.0 % 4.50 dB
1.0 % 5.75 dB
0.1 % 5.88 dB
0.01 % 5.95 dB
0.001 % 6.00 dB
0.0001 % 6.00 dB
Peak 6.28 dB
28.16 dBm
2 Graph
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0.00 dB
20.00 dB
Info BW 2.0000 MHz
Jan 20, 2024
5:46:05 PM

26DB BANDWIDTH AND OCCUPIED BANDWIDTH

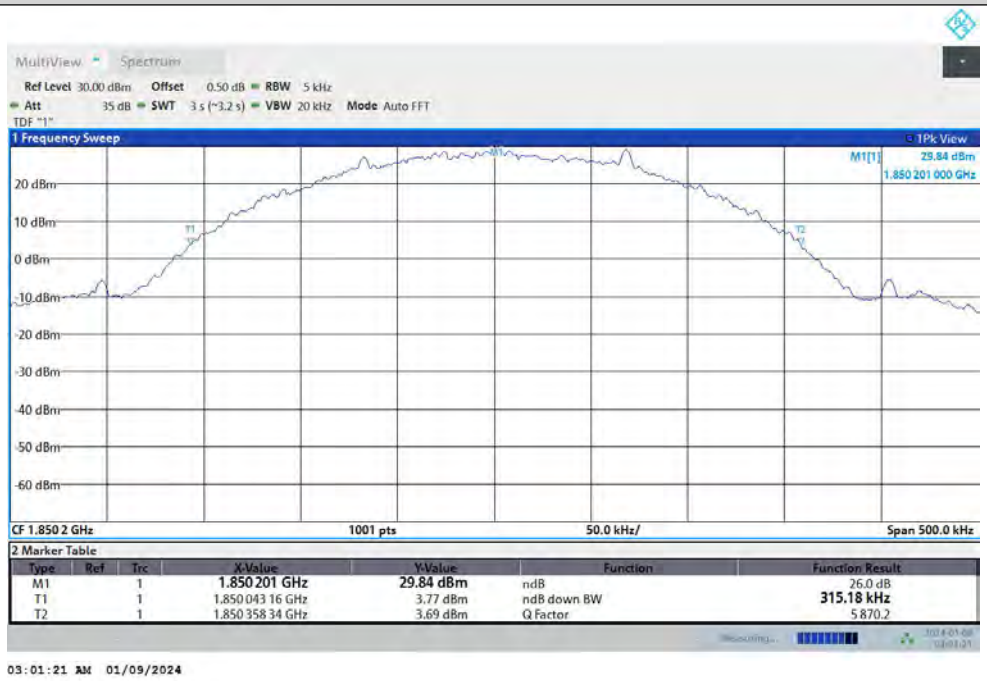
Test Result

Band	Channel	Occupied Bandwidth (KHz)	26dB Bandwidth (KHz)	Limit (MHz)	Verdict
GSM1900	512	245.025	315.180	---	PASS
GSM1900	661	246.999	318.680	---	PASS
GSM1900	810	246.232	320.680	---	PASS
EGPRS1900	512	243.831	312.690	---	PASS
EGPRS1900	661	246.039	312.690	---	PASS
EGPRS1900	810	244.696	311.690	---	PASS

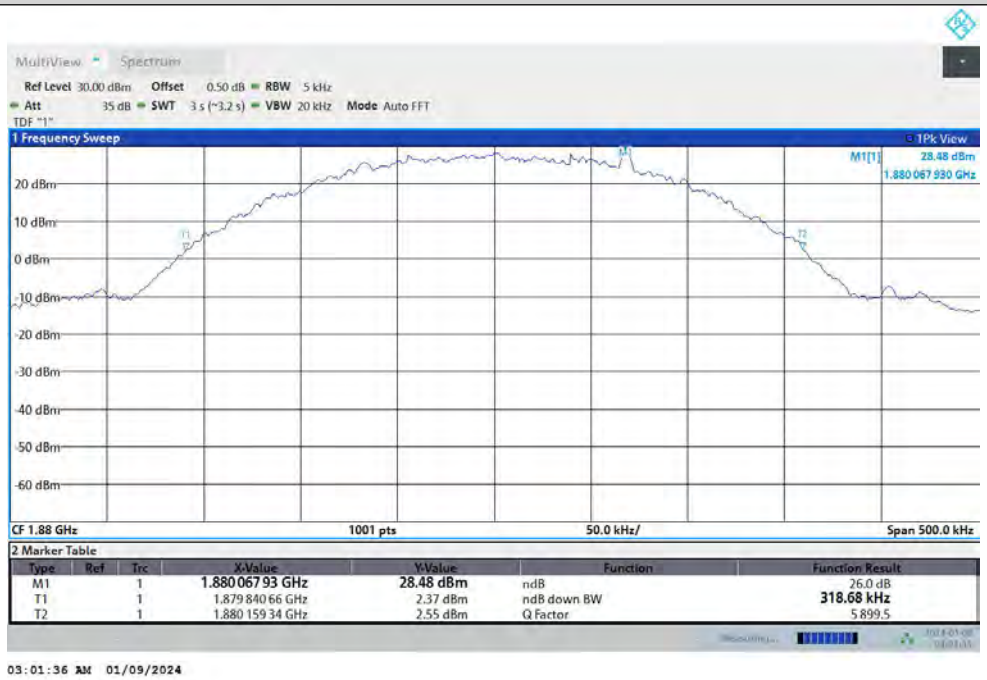
Test Graphs

26dB Bandwidth

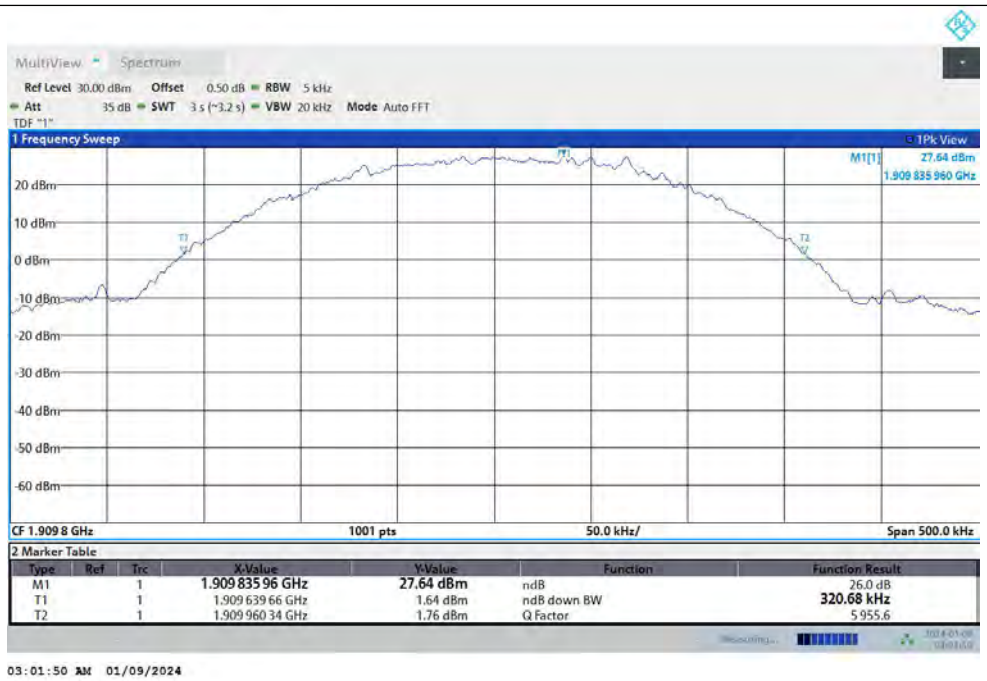
GSM1900-512



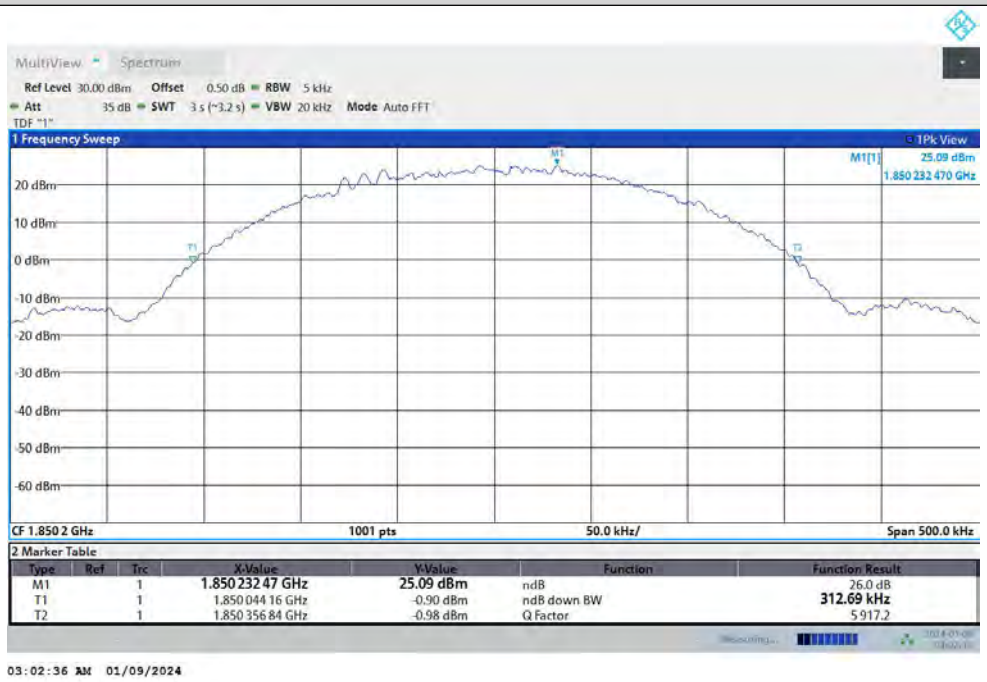
GSM1900-661



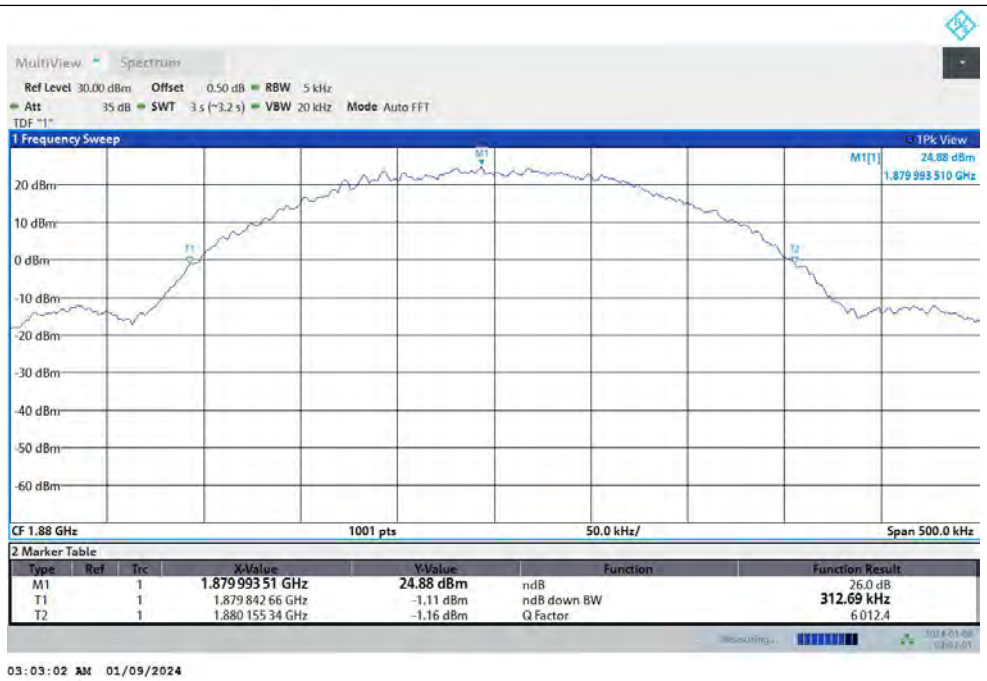
GSM1900-810



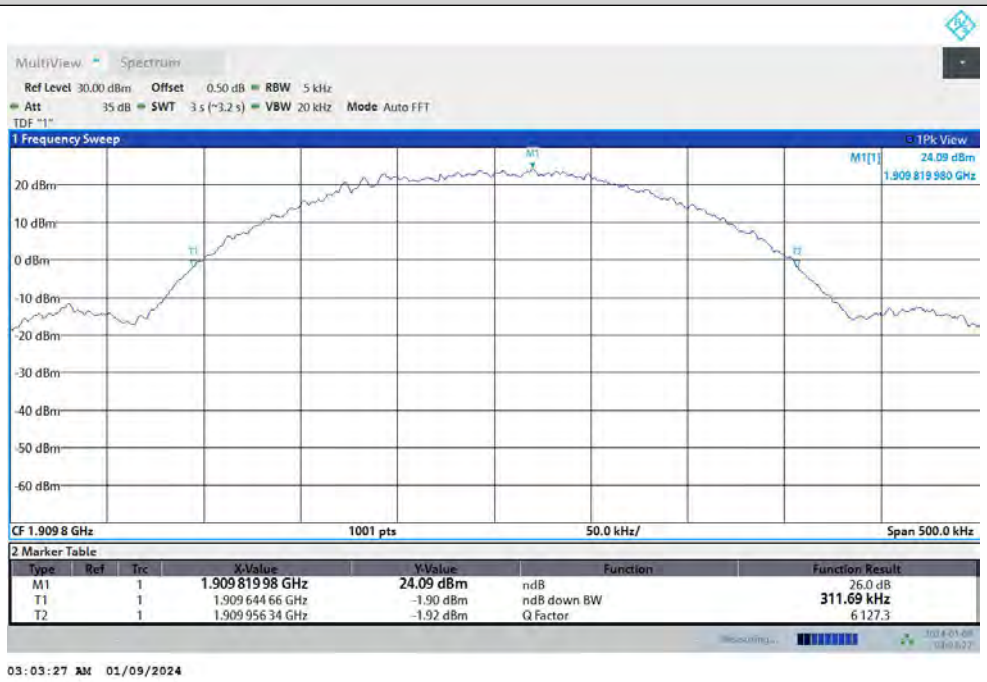
EGPRS1900-512



EGPRS1900-661

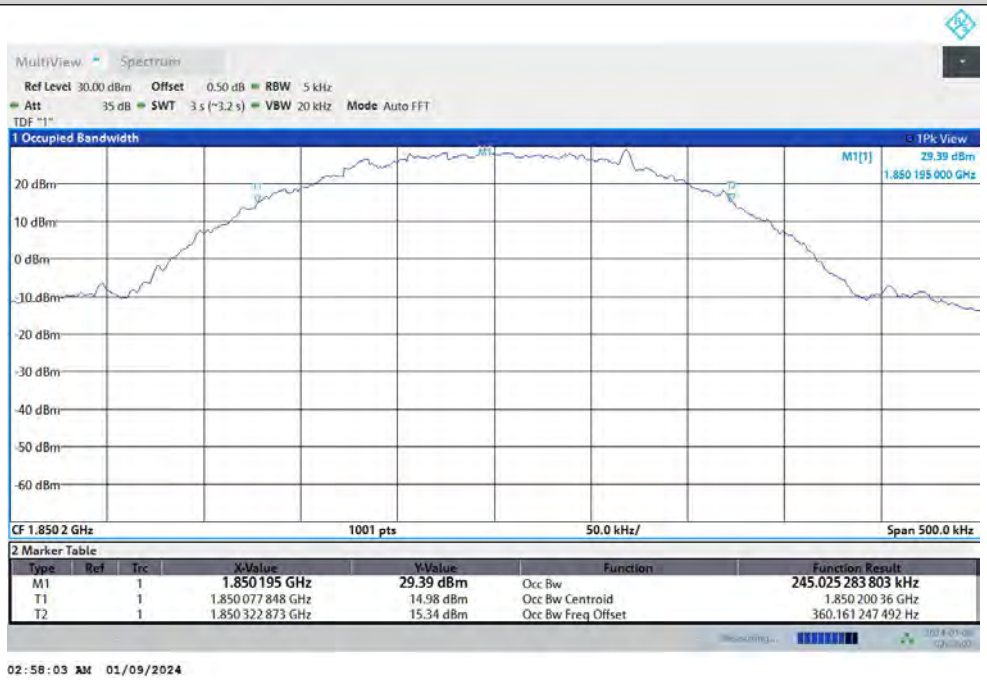


EGPRS1900-810

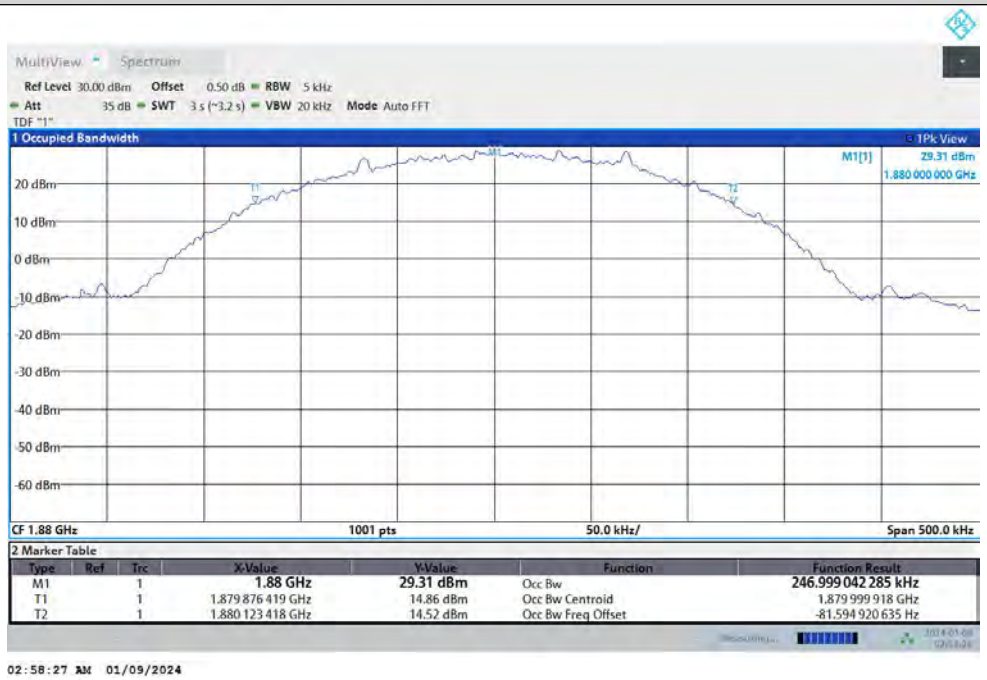


Occupied Bandwidth

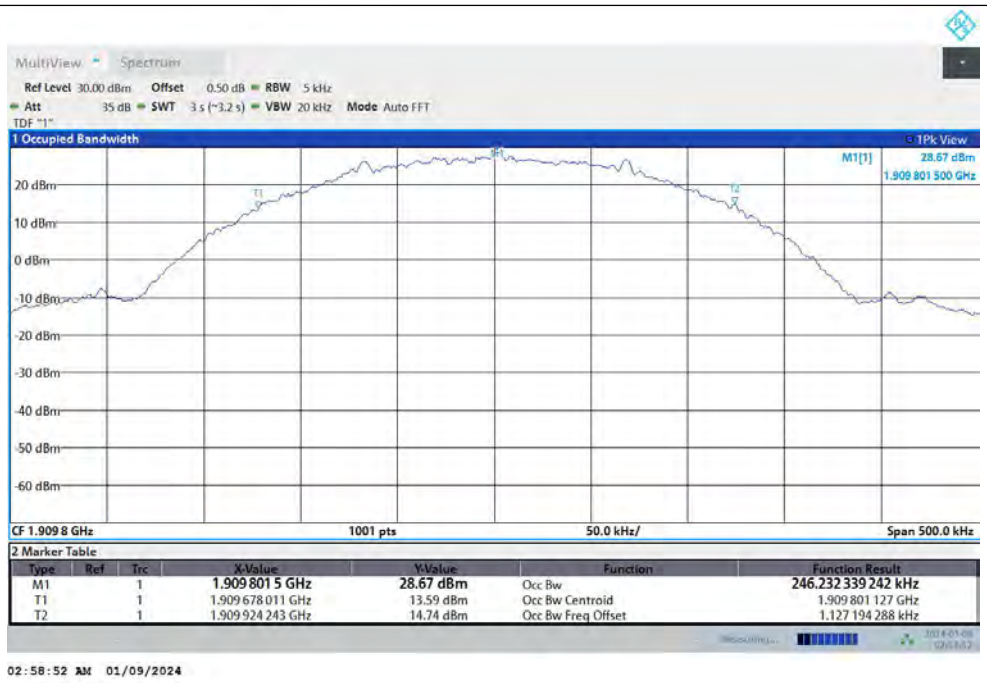
GSM1900-512



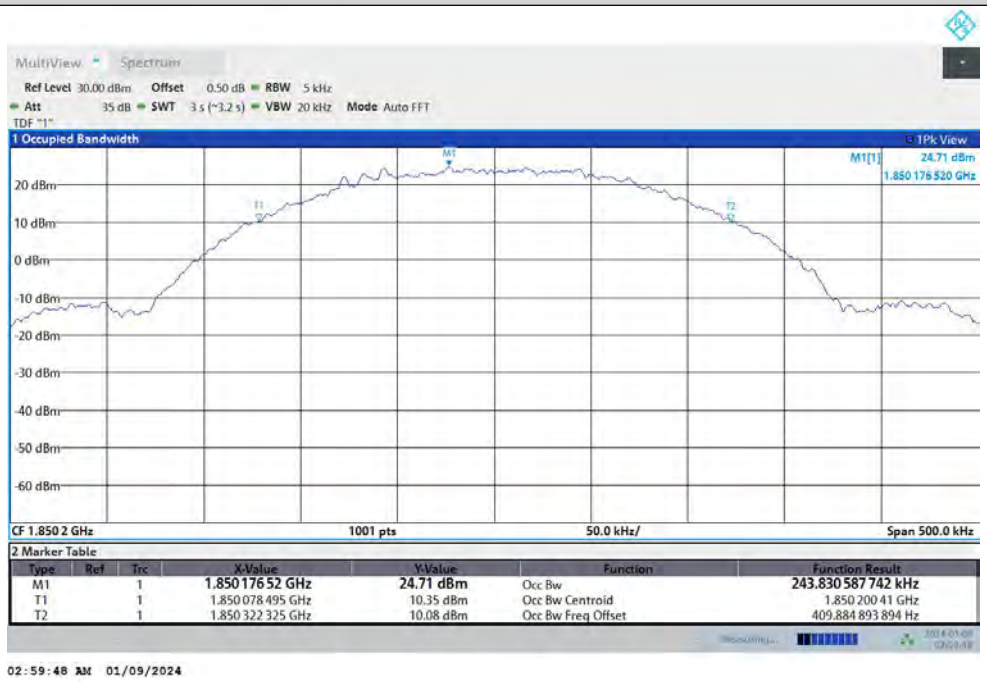
GSM1900-661



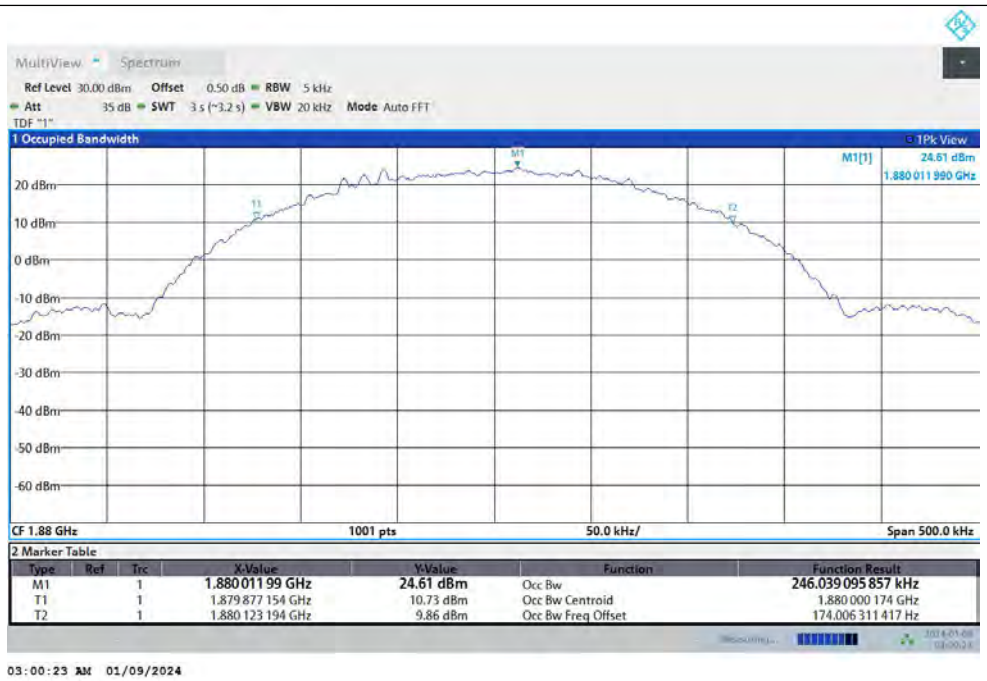
GSM1900-810



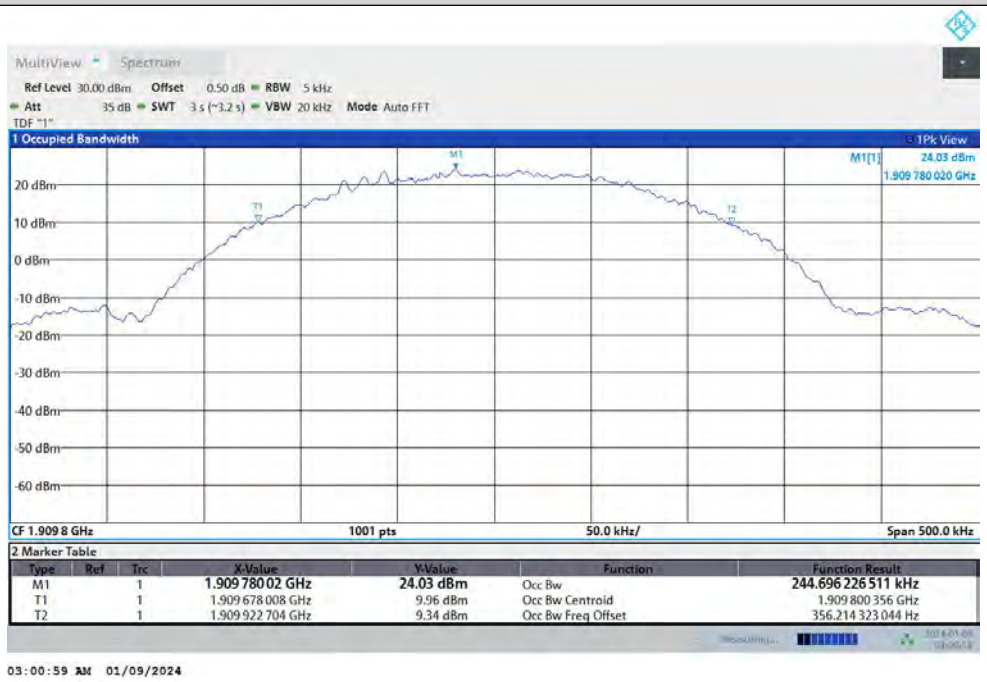
EGPRS1900-512



EGPRS1900-661



EGPRS1900-810



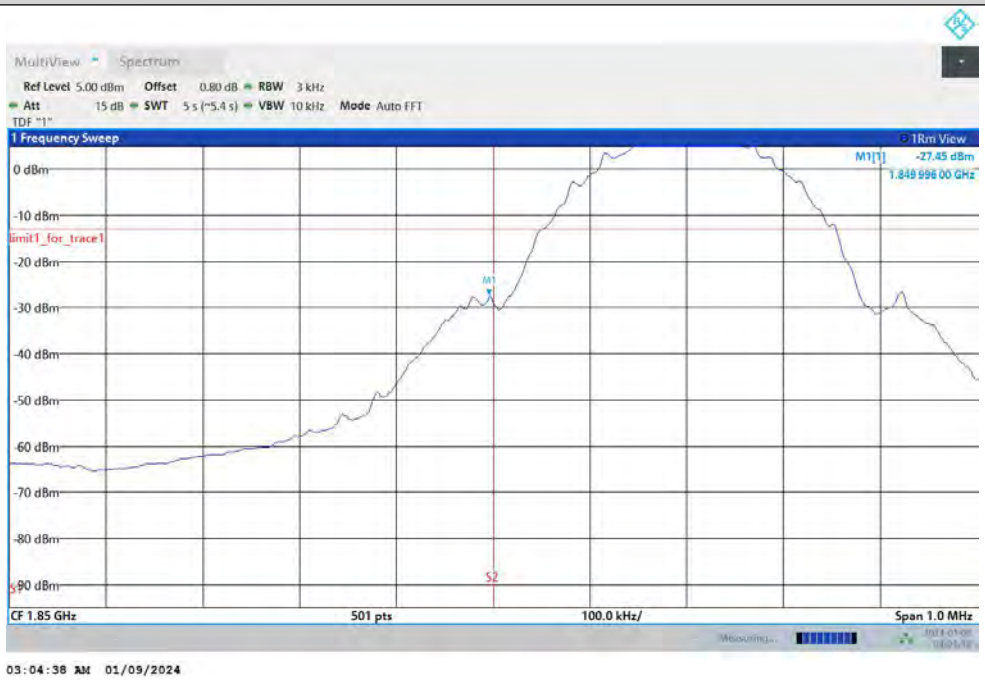
BAND EDGE

Test Result

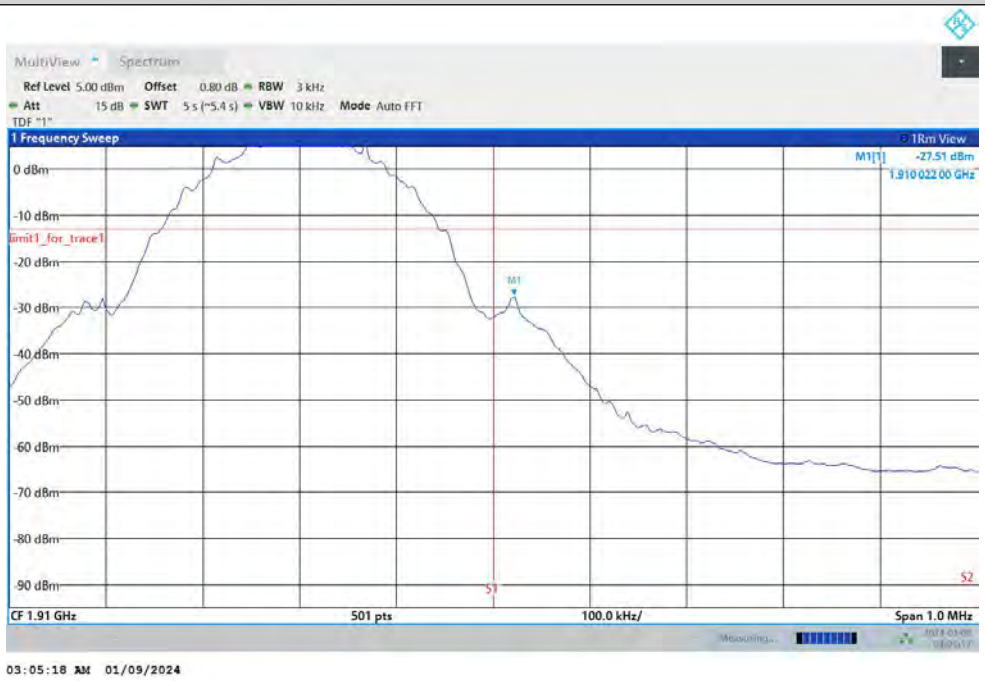
Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM1900	512	1849.996	-27.45	-13	PASS
GSM1900	810	1910.022	-27.51	-13	PASS
EGPRS1900	512	1849.988	-32.66	-13	PASS
EGPRS1900	810	1910.008	-33.97	-13	PASS

Test Graphs

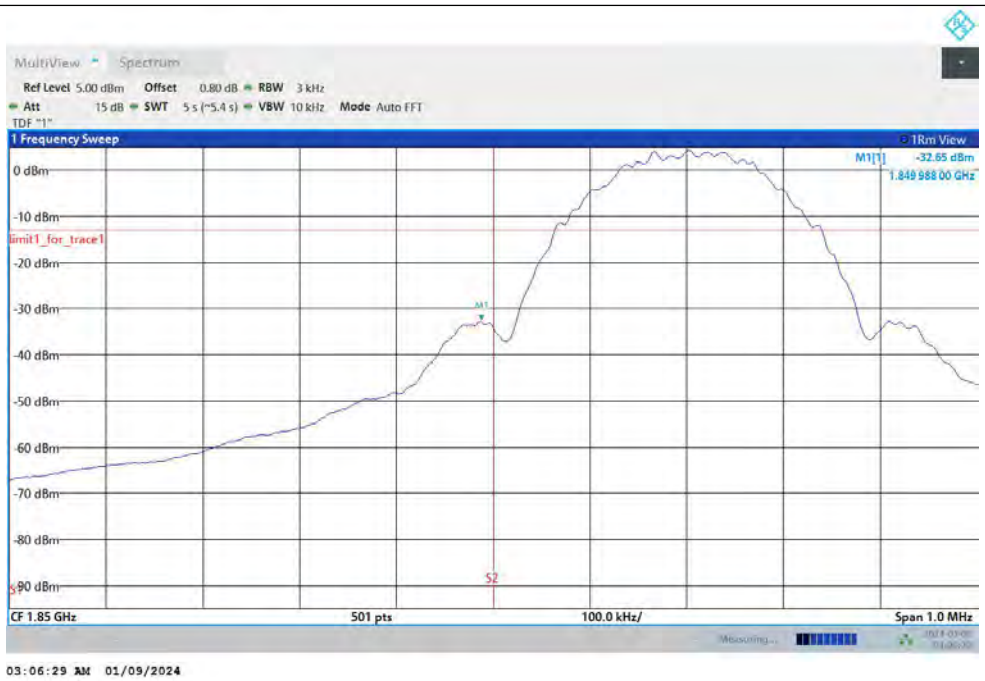
GSM1900-512



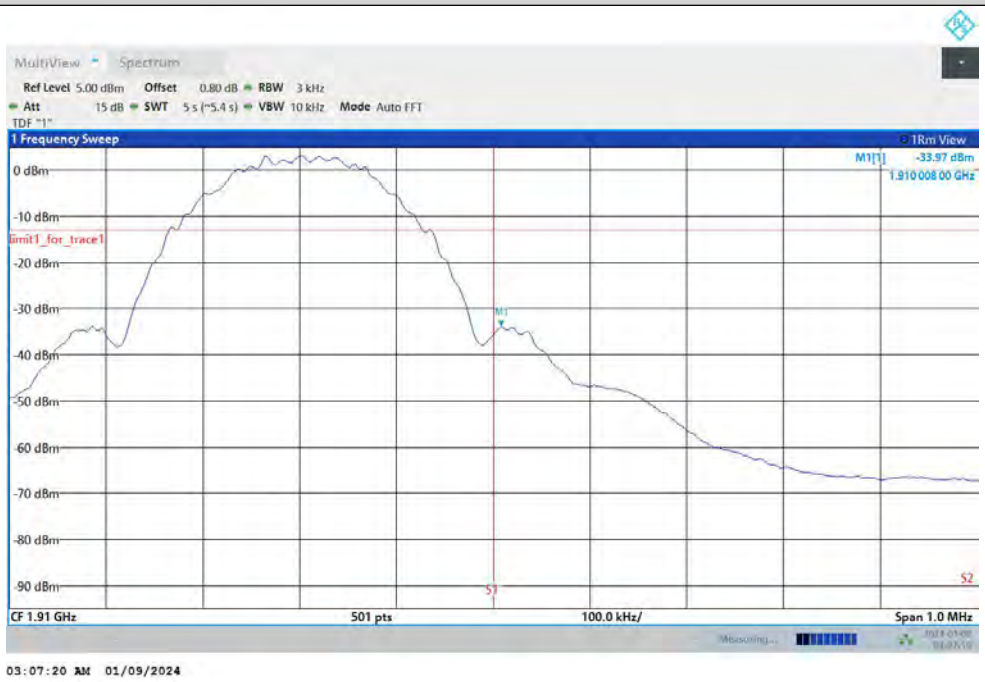
GSM1900-810



EGPRS1900-512



EGPRS1900-810



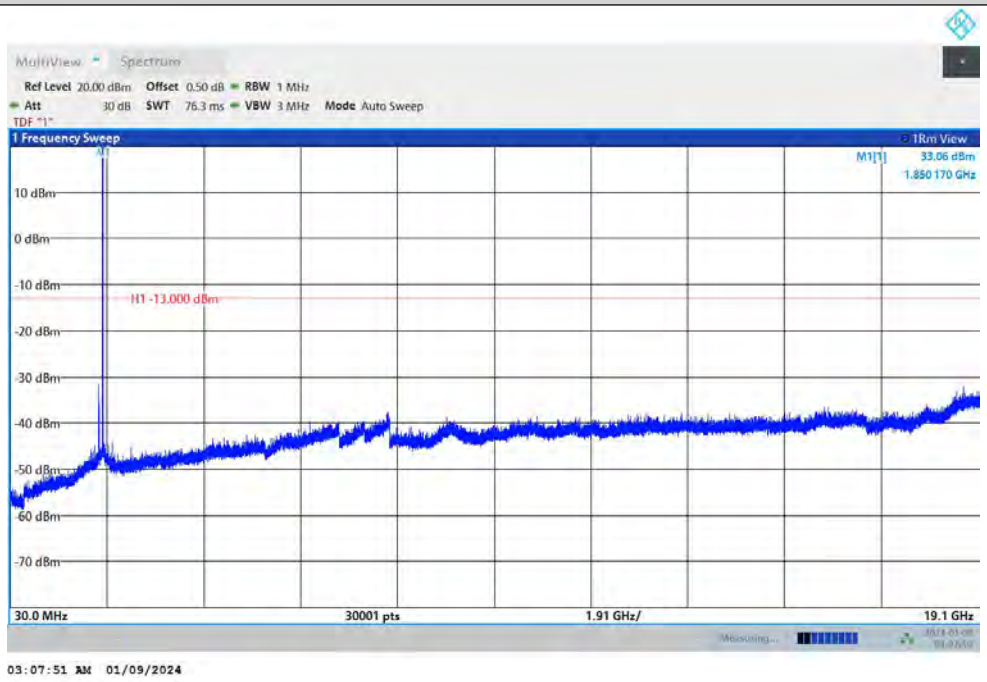
CONDUCTED SPURIOUS EMISSION

Test Result

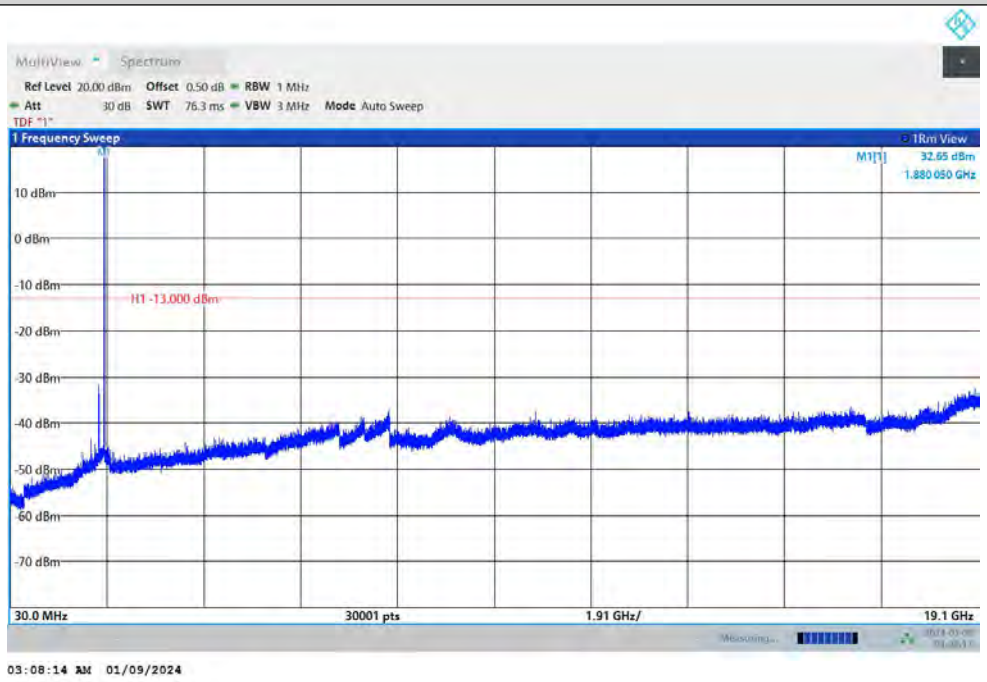
Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM1900	512	30~19100MHz	1766.006	-31.787	-13	PASS
GSM1900	661	30~19100MHz	1766.006	-31.660	-13	PASS
GSM1900	810	30~19100MHz	1766.006	-30.236	-13	PASS
EGPRS1900	512	30~19100MHz	18960.153	-32.723	-13	PASS
EGPRS1900	661	30~19100MHz	18948.711	-33.377	-13	PASS
EGPRS1900	810	30~19100MHz	19084.108	-33.163	-13	PASS

Test Graphs

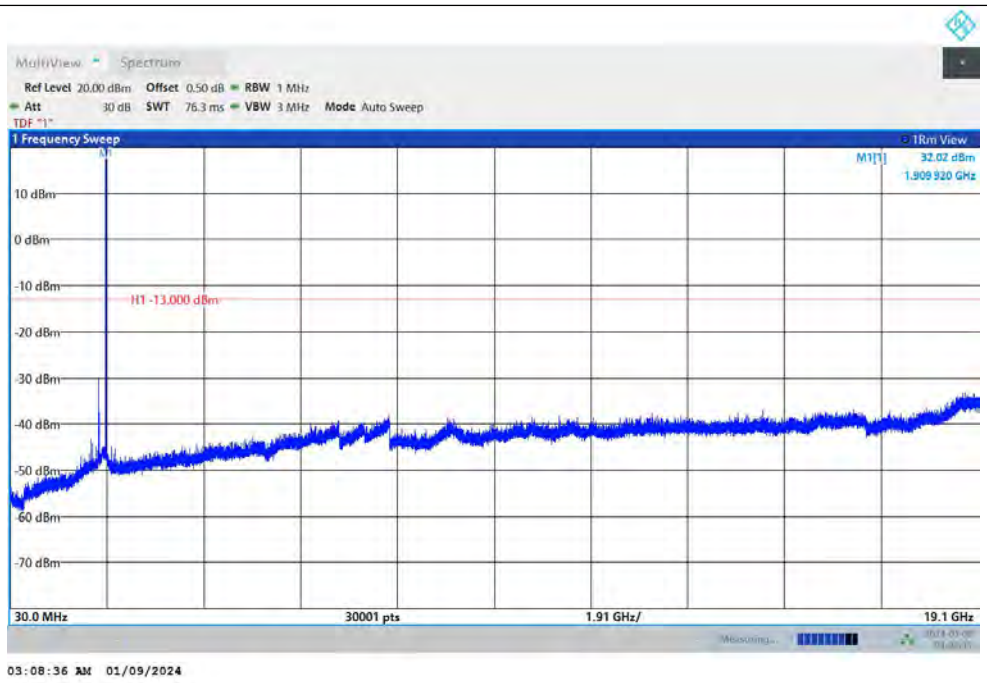
GSM1900-512-30~19100MHz



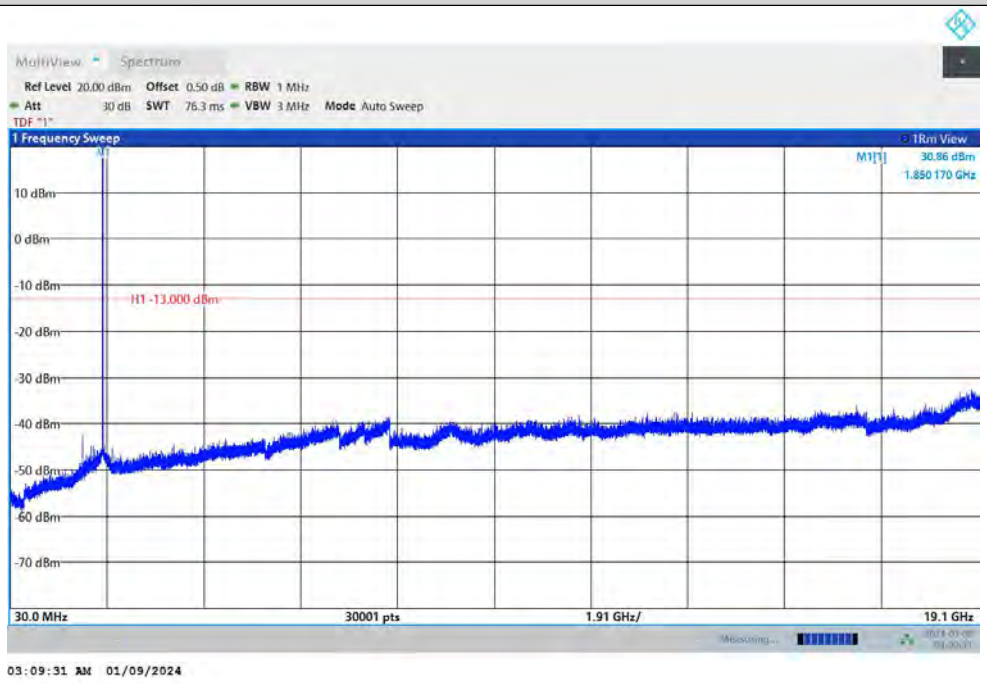
GSM1900-661-30~19100MHz



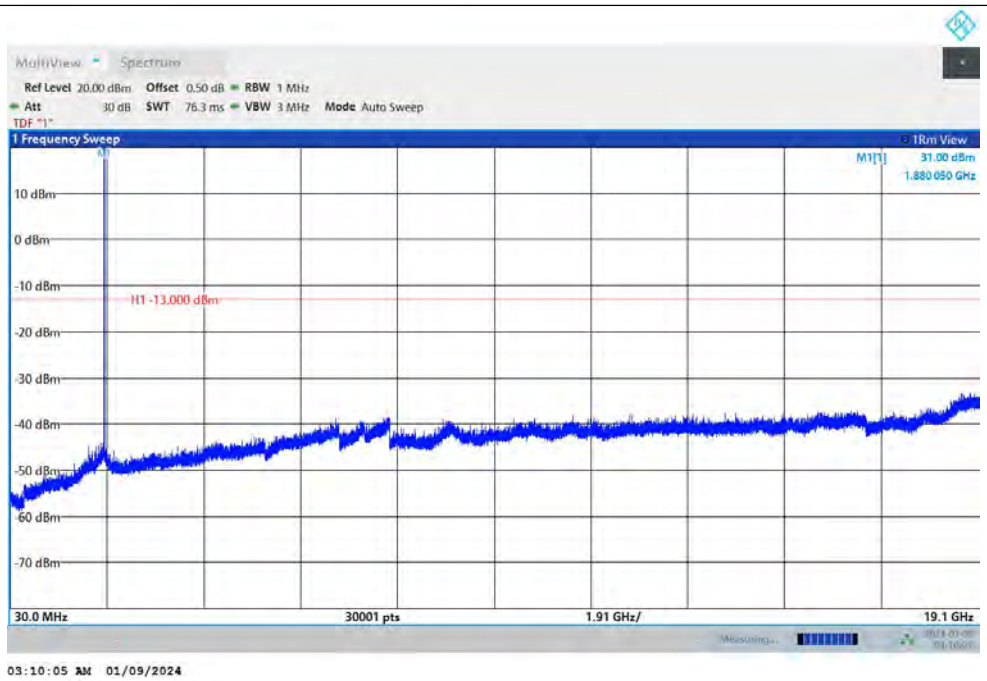
GSM1900-810-30~19100MHz



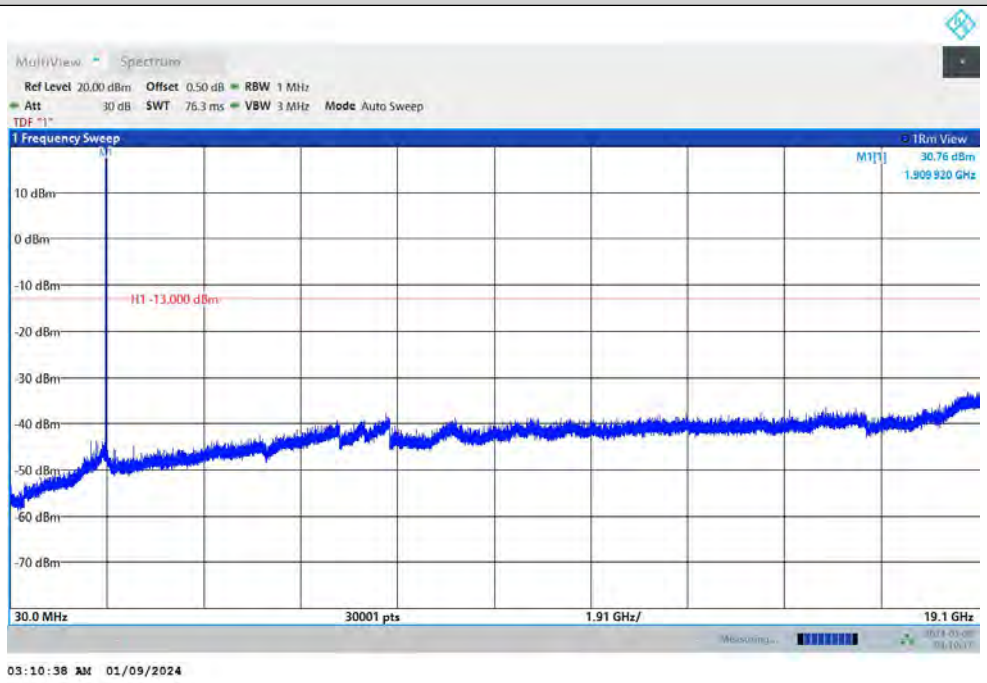
EGPRS1900-512-30~19100MHz



EGPRS1900-661-30~19100MHz



EGPRS1900-810-30~19100MHz



FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	VL	NT	-0.82	-0.000443	±2.5	PASS
GSM1900	512	VN	NT	7.61	0.004113	±2.5	PASS
GSM1900	512	VH	NT	-3.82	-0.002065	±2.5	PASS
GSM1900	661	VL	NT	-3.83	-0.002037	±2.5	PASS
GSM1900	661	VN	NT	-3.57	-0.001899	±2.5	PASS
GSM1900	661	VH	NT	-1.04	-0.000553	±2.5	PASS
GSM1900	810	VL	NT	-7.35	-0.003849	±2.5	PASS
GSM1900	810	VN	NT	-7.36	-0.003854	±2.5	PASS
GSM1900	810	VH	NT	0.9	0.000471	±2.5	PASS
EGPRS1900	512	VL	NT	-6.25	-0.003378	±2.5	PASS
EGPRS1900	512	VN	NT	-8.48	-0.004583	±2.5	PASS
EGPRS1900	512	VH	NT	2.33	0.001259	±2.5	PASS
EGPRS1900	661	VL	NT	-4.17	-0.002218	±2.5	PASS
EGPRS1900	661	VN	NT	4.5	0.002394	±2.5	PASS
EGPRS1900	661	VH	NT	1.45	0.000771	±2.5	PASS
EGPRS1900	810	VL	NT	-2.54	-0.001330	±2.5	PASS
EGPRS1900	810	VN	NT	-0.53	-0.000278	±2.5	PASS
EGPRS1900	810	VH	NT	-5.52	-0.002890	±2.5	PASS

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM1900	512	NV	-30	0.06	0.000032	±2.5	PASS
GSM1900	512	NV	-20	-9.56	-0.005167	±2.5	PASS
GSM1900	512	NV	-10	-2.44	-0.001319	±2.5	PASS
GSM1900	512	NV	0	-9.09	-0.004913	±2.5	PASS
GSM1900	512	NV	10	0.11	0.000059	±2.5	PASS
GSM1900	512	NV	20	-2.57	-0.001389	±2.5	PASS
GSM1900	512	NV	30	6.23	0.003367	±2.5	PASS
GSM1900	512	NV	40	1.41	0.000762	±2.5	PASS
GSM1900	512	NV	50	-8.3	-0.004486	±2.5	PASS
GSM1900	661	NV	-30	1.41	0.000750	±2.5	PASS
GSM1900	661	NV	-20	-2.37	-0.001261	±2.5	PASS
GSM1900	661	NV	-10	-7.83	-0.004165	±2.5	PASS
GSM1900	661	NV	0	2.98	0.001585	±2.5	PASS
GSM1900	661	NV	10	5.43	0.002888	±2.5	PASS
GSM1900	661	NV	20	-9.79	-0.005207	±2.5	PASS
GSM1900	661	NV	30	8.25	0.004388	±2.5	PASS
GSM1900	661	NV	40	-5.23	-0.002782	±2.5	PASS
GSM1900	661	NV	50	-5.27	-0.002803	±2.5	PASS
GSM1900	810	NV	-30	5.26	0.002754	±2.5	PASS
GSM1900	810	NV	-20	2.57	0.001346	±2.5	PASS
GSM1900	810	NV	-10	-0.76	-0.000398	±2.5	PASS
GSM1900	810	NV	0	3.95	0.002068	±2.5	PASS
GSM1900	810	NV	10	-4.38	-0.002293	±2.5	PASS
GSM1900	810	NV	20	-7.59	-0.003974	±2.5	PASS
GSM1900	810	NV	30	-5.62	-0.002943	±2.5	PASS
GSM1900	810	NV	40	-9.19	-0.004812	±2.5	PASS
GSM1900	810	NV	50	-8.65	-0.004529	±2.5	PASS
EGPRS1900	512	NV	-30	1.23	0.000665	±2.5	PASS
EGPRS1900	512	NV	-20	7.05	0.003810	±2.5	PASS
EGPRS1900	512	NV	-10	5.94	0.003210	±2.5	PASS
EGPRS1900	512	NV	0	9.62	0.005199	±2.5	PASS
EGPRS1900	512	NV	10	0.96	0.000519	±2.5	PASS
EGPRS1900	512	NV	20	2.11	0.001140	±2.5	PASS
EGPRS1900	512	NV	30	-1.59	-0.000859	±2.5	PASS
EGPRS1900	512	NV	40	-5.09	-0.002751	±2.5	PASS
EGPRS1900	512	NV	50	5.28	0.002854	±2.5	PASS
EGPRS1900	661	NV	-30	-3.13	-0.001665	±2.5	PASS
EGPRS1900	661	NV	-20	0.89	0.000473	±2.5	PASS
EGPRS1900	661	NV	-10	-7.53	-0.004005	±2.5	PASS
EGPRS1900	661	NV	0	-4.94	-0.002628	±2.5	PASS
EGPRS1900	661	NV	10	3.39	0.001803	±2.5	PASS
EGPRS1900	661	NV	20	-9.23	-0.004910	±2.5	PASS
EGPRS1900	661	NV	30	9.23	0.004910	±2.5	PASS
EGPRS1900	661	NV	40	2.43	0.001293	±2.5	PASS
EGPRS1900	661	NV	50	4.96	0.002638	±2.5	PASS
EGPRS1900	810	NV	-30	5.56	0.002911	±2.5	PASS

EGPRS1900	810	NV	-20	5.24	0.002744	±2.5	PASS
EGPRS1900	810	NV	-10	-2.25	-0.001178	±2.5	PASS
EGPRS1900	810	NV	0	-1.99	-0.001042	±2.5	PASS
EGPRS1900	810	NV	10	3	0.001571	±2.5	PASS
EGPRS1900	810	NV	20	-4.76	-0.002492	±2.5	PASS
EGPRS1900	810	NV	30	9.3	0.004870	±2.5	PASS
EGPRS1900	810	NV	40	-6.02	-0.003152	±2.5	PASS
EGPRS1900	810	NV	50	9.74	0.005100	±2.5	PASS

WCDMA BAND2

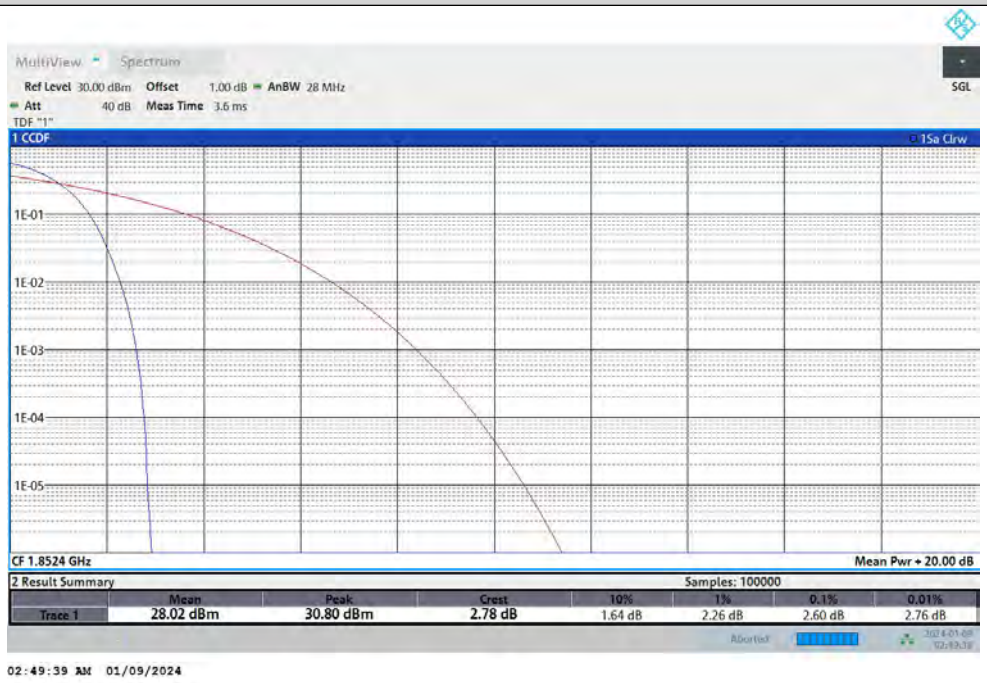
PEAK-TO-AVERAGE RATIO

Test Result

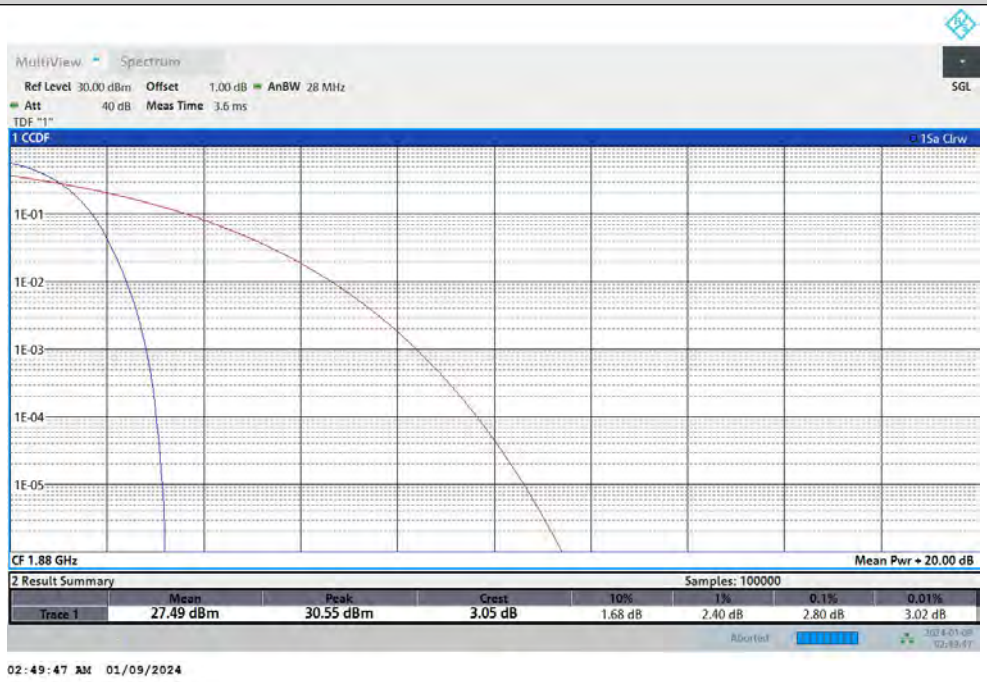
Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band2	9262	2.60	13	PASS
Band2	9400	2.80	13	PASS
Band2	9538	2.76	13	PASS

Test Graphs

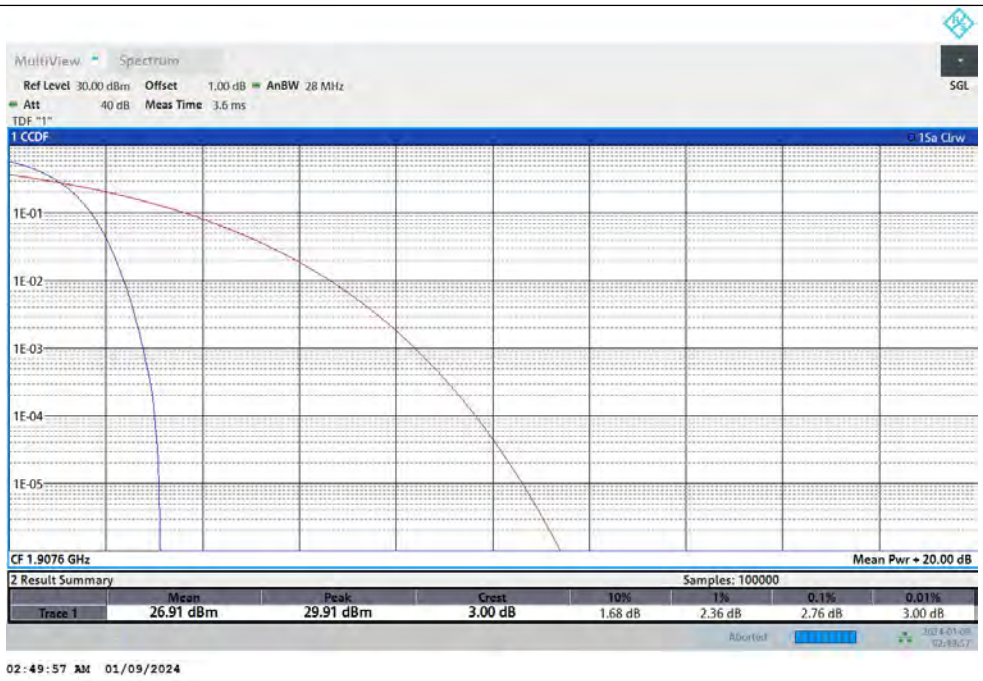
Band2-9262



Band2-9400



Band2-9538


MultiView
Spectrum
Ref Level 30.00 dBm Offset 1.00 dB AnBW 28 MHz
Att 40 dB Meas Time 3.6 ms
TDF "1"
SGL
1 CCDF
1Sa Clrw
1E-01
1E-02
1E-03
1E-04
1E-05
CF 1.9076 GHz
Mean Pwr ÷ 20.00 dB
2 Result Summary
Samples: 100000
Mean Peak Crest 10% 1% 0.1% 0.01%
Trace 1 26.91 dBm 29.91 dBm 3.00 dB 1.68 dB 2.36 dB 2.76 dB 3.00 dB
Aborted
02:49:57 AM 01/09/2024

26DB BANDWIDTH AND OCCUPIED BANDWIDTH

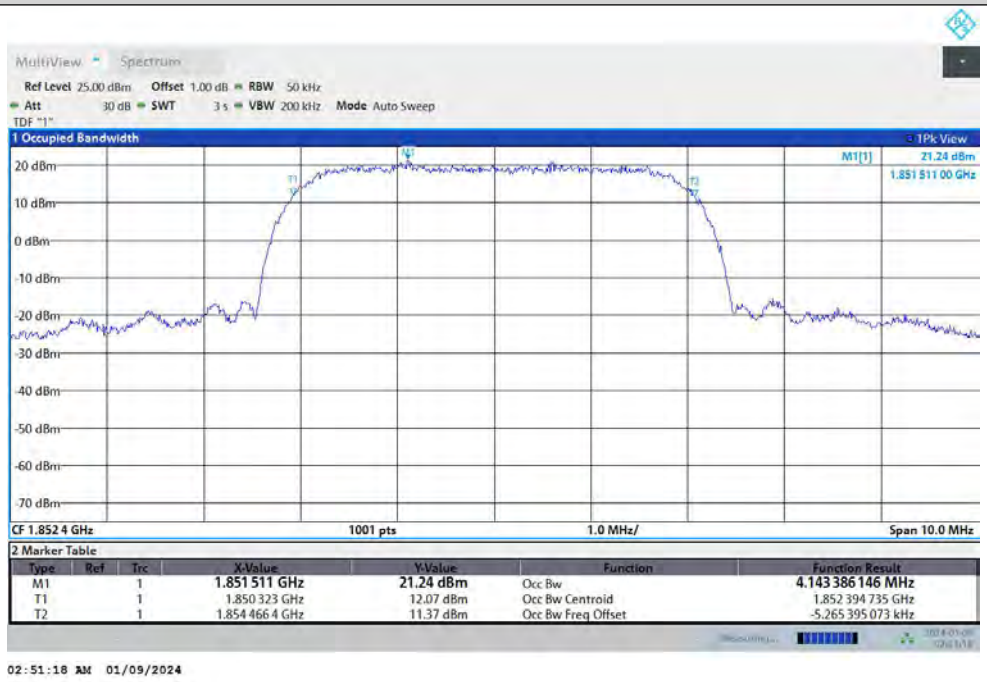
Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band2	9262	4.143	4.70	---	PASS
Band2	9400	4.142	4.70	---	PASS
Band2	9538	4.146	4.71	---	PASS

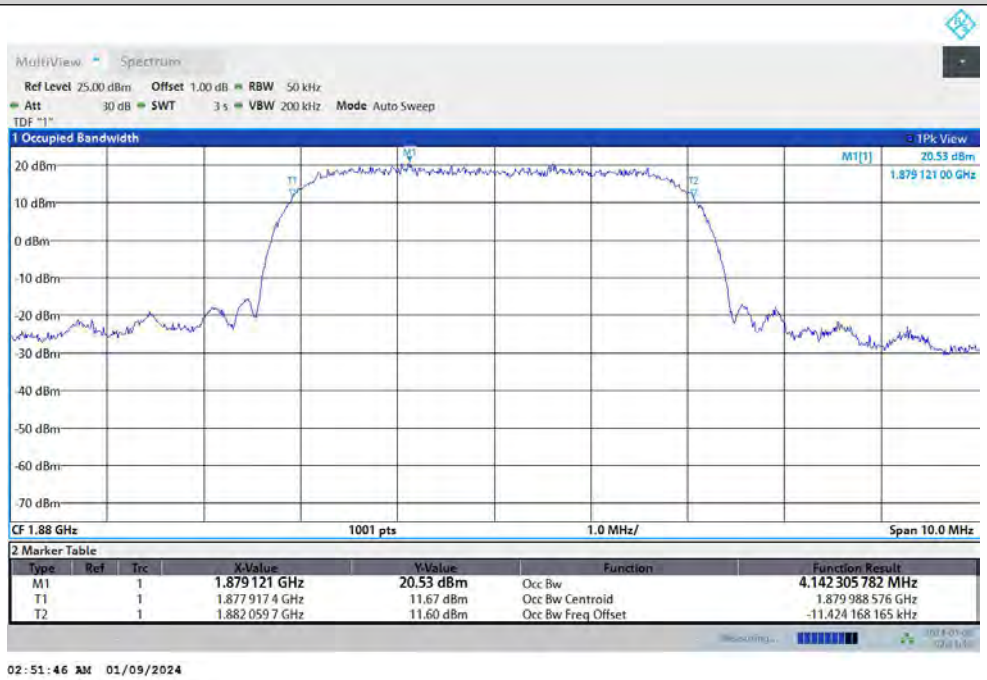
Test Graphs

Occupied Bandwidth

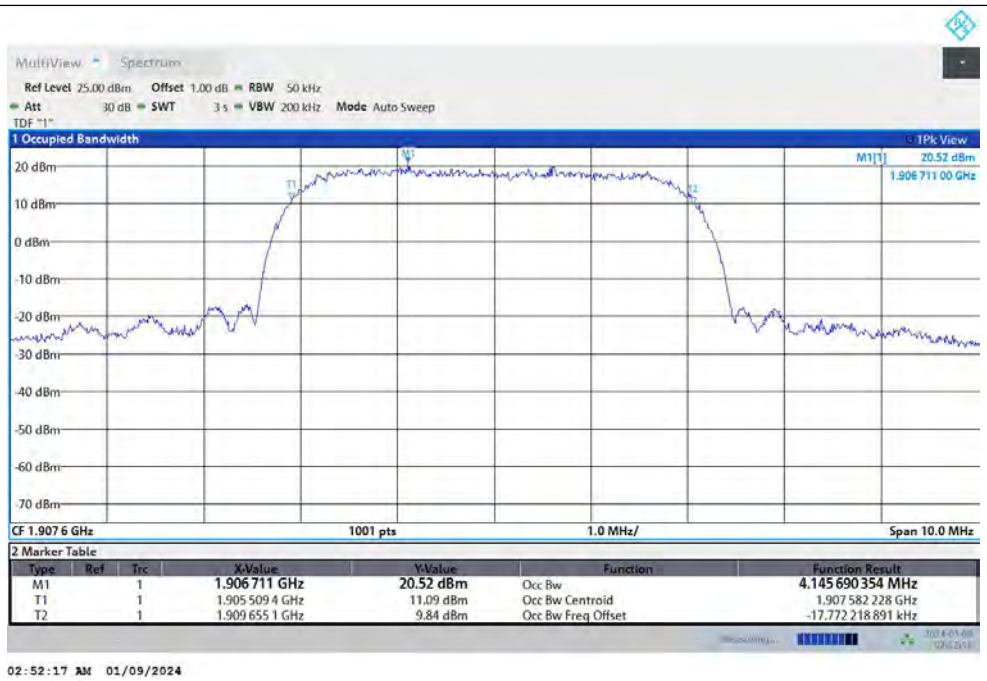
Band2-9262



Band2-9400

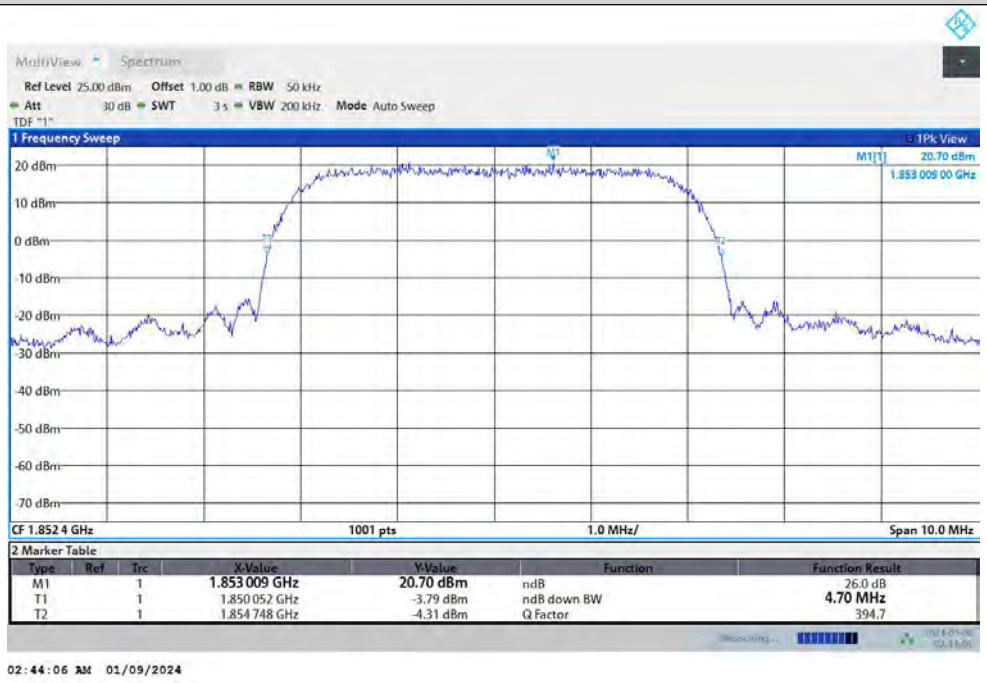


Band2-9538

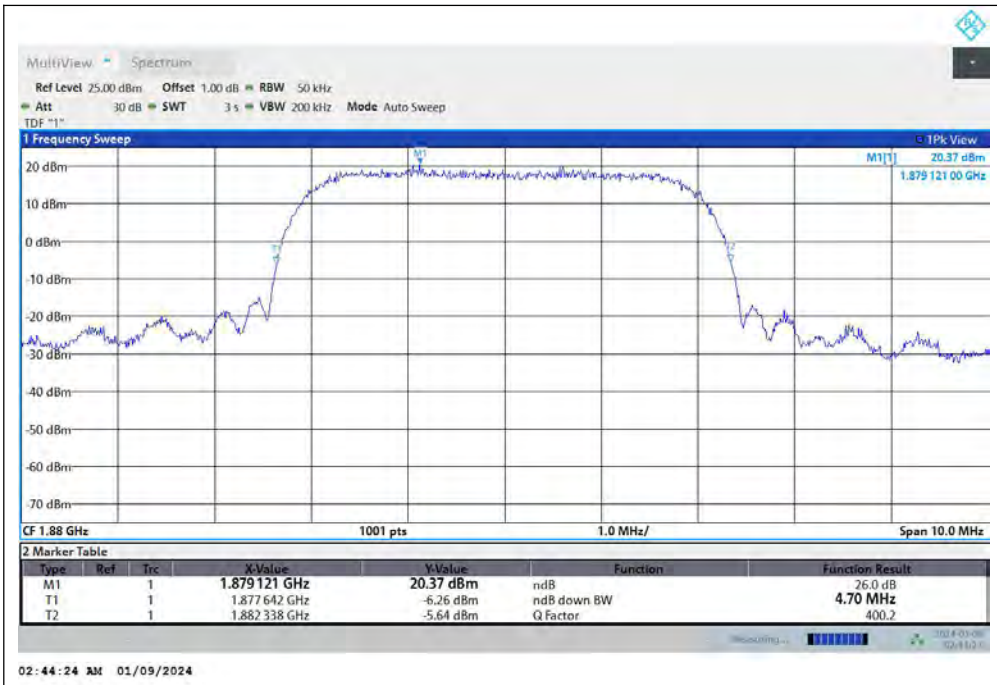


26dB Bandwidth

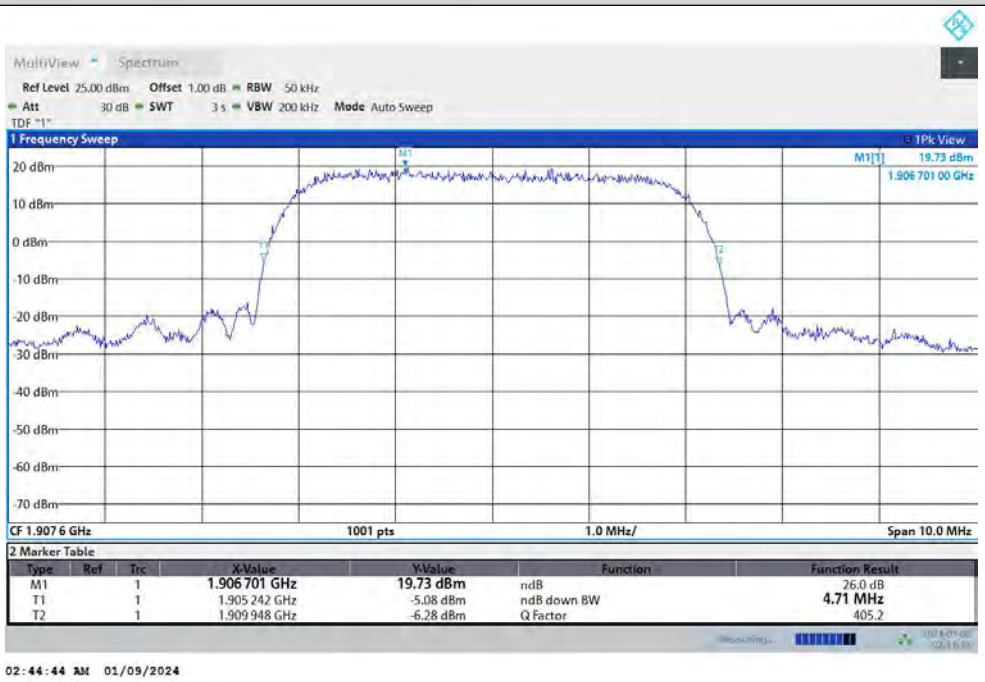
Band2-9262



Band2-9400


MultiView
Spectrum
Ref Level 25.00 dBm Offset 1.00 dB RBW 50 kHz
Att 30 dB SWT 3 s VBW 200 kHz Mode Auto Sweep
TDF "1"
1 Frequency Sweep
1Pk View
M1[1] 20.37 dBm
1.879 121 00 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 1.88 GHz
1001 pts
1.0 MHz/
Span 10.0 MHz
2 Marker Table
Type Ref Trc X-Value Y-Value Function Function Result
M1 1 1.879 121 GHz 20.37 dBm ndB 26.0 dB
T1 1 1.877 642 GHz -6.26 dBm ndB down BW 4.70 MHz
T2 1 1.882 338 GHz -5.64 dBm Q Factor 400.2
02:44:24 AM 01/09/2024

Band2-9538


MultiView
Spectrum
Ref Level 25.00 dBm Offset 1.00 dB RBW 50 kHz
Att 30 dB SWT 3 s VBW 200 kHz Mode Auto Sweep
TDF "1"
1 Frequency Sweep
1Pk View
M1[1] 19.73 dBm
1.906 701 00 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 1.907 6 GHz
1001 pts
1.0 MHz/
Span 10.0 MHz
2 Marker Table
Type Ref Trc X-Value Y-Value Function Function Result
M1 1 1.906 701 GHz 19.73 dBm ndB 26.0 dB
T1 1 1.905 242 GHz -5.08 dBm ndB down BW 4.71 MHz
T2 1 1.909 948 GHz -6.28 dBm Q Factor 405.2
02:44:44 AM 01/09/2024

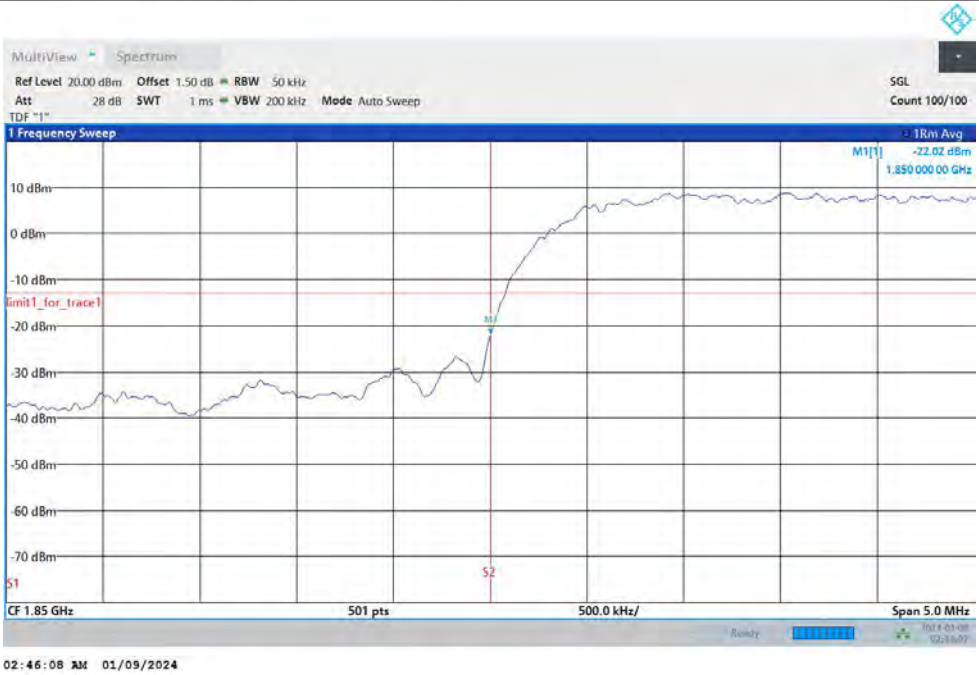
BAND EDGE

Test Result

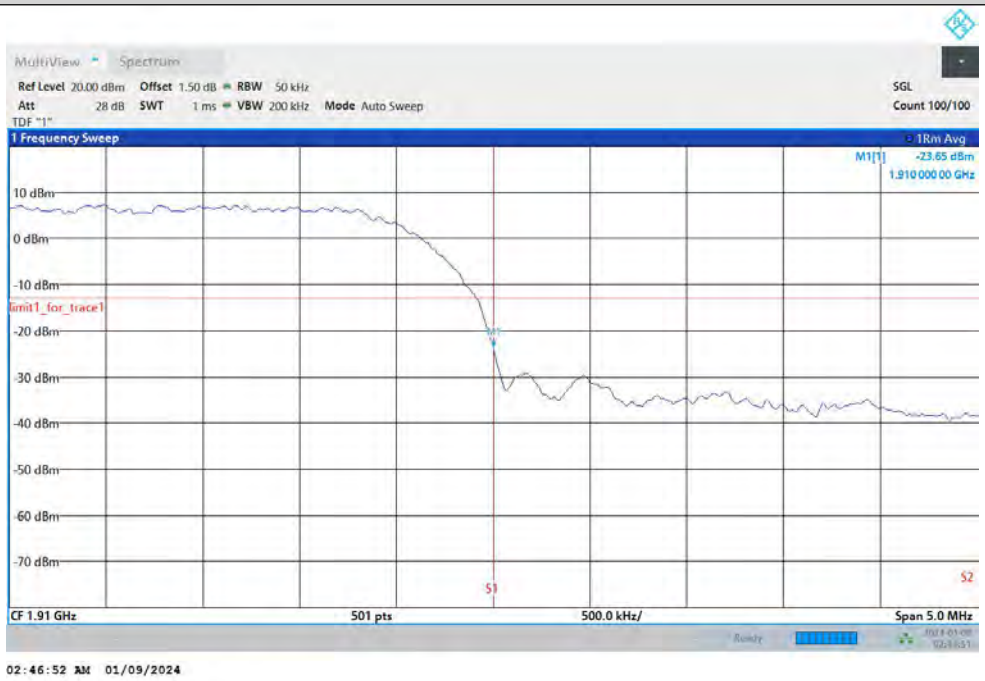
Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1848.99	-22.02	-13	PASS
Band2	9538	1911.03	-23.65	-13	PASS

Test Graphs

Band2-9262



Band2-9538



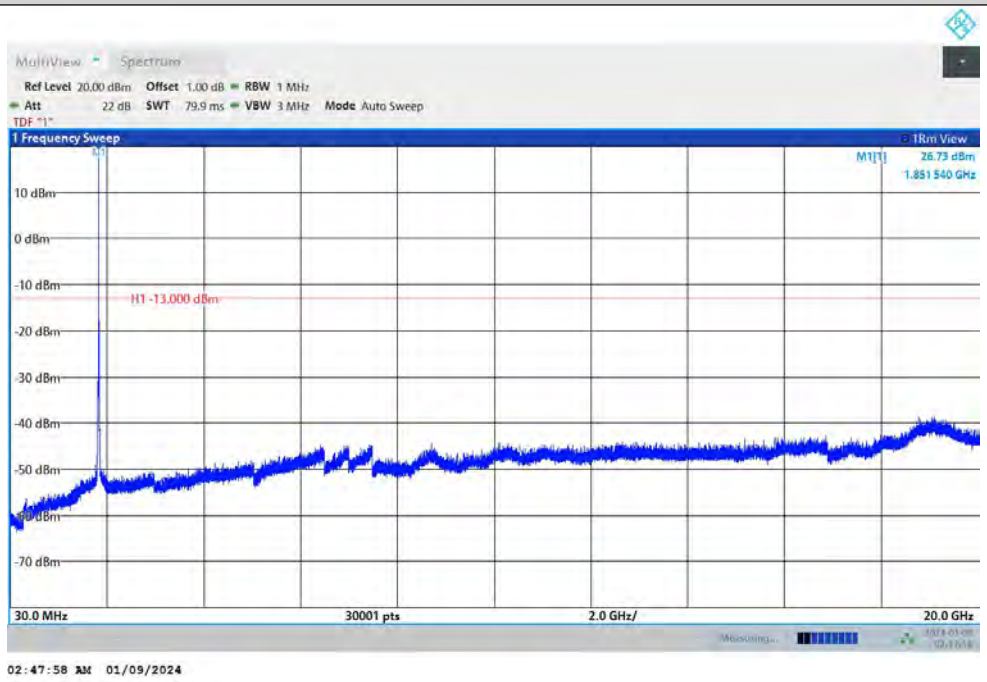
CONDUCTED SPURIOUS EMISSION

Test Result

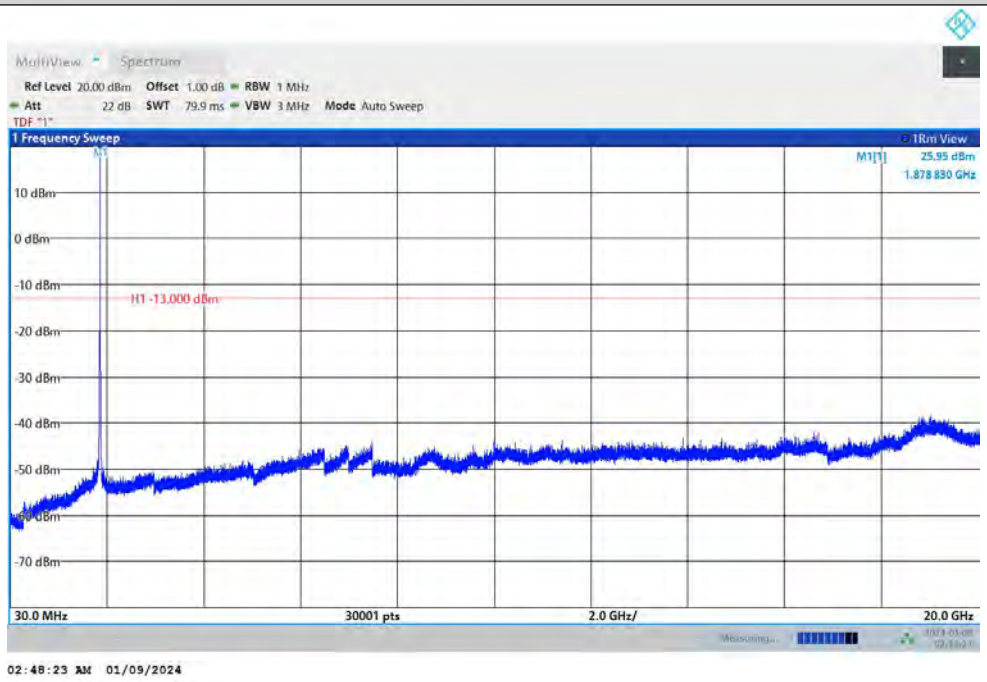
Band	Channel	Frequency Range (Mhz)	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
Band2	9262	30~20000MHz	See Graph	See Graph	-13	PASS
Band2	9400	30~20000MHz	See Graph	See Graph	-13	PASS
Band2	9538	30~20000MHz	See Graph	See Graph	-13	PASS

Test Graphs

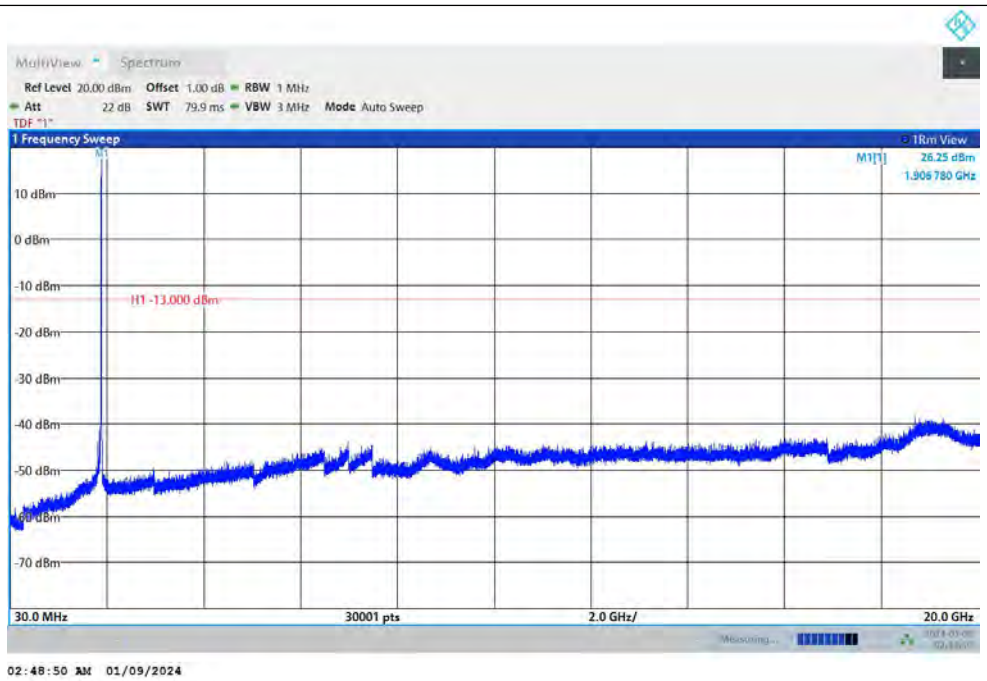
Band2-9262-30~1000MHz



Band2-9400-30~1000MHz



Band2-9538-30~1000MHz


MultiView
Spectrum
Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz
Att 22 dB SWT 79.9 ms VBW 3 MHz Mode Auto Sweep
TDF "1"
1 Frequency Sweep
1Rm View
M1
M1[1] 26.25 dBm
1.906 780 GHz
10 dBm
0 dBm
-10 dBm
H1 -13.000 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
30.0 MHz
30001 pts
2.0 GHz/
20.0 GHz
02:48:50 AM 01/09/2024

FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	VL	NT	2.6	0.001404	±2.5	PASS
Band2	9262	VN	NT	-8.71	-0.004702	±2.5	PASS
Band2	9262	VH	NT	-0.86	-0.000464	±2.5	PASS
Band2	9400	VL	NT	5.62	0.002989	±2.5	PASS
Band2	9400	VN	NT	-2.95	-0.001569	±2.5	PASS
Band2	9400	VH	NT	-8.39	-0.004463	±2.5	PASS
Band2	9538	VL	NT	-6.17	-0.003120	±2.5	PASS
Band2	9538	VN	NT	5.92	0.002994	±2.5	PASS
Band2	9538	VH	NT	9.16	0.004632	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band2	9262	NV	-30	-1.56	-0.000842	±2.5	PASS
Band2	9262	NV	-20	3.96	0.002138	±2.5	PASS
Band2	9262	NV	-10	9.15	0.004940	±2.5	PASS
Band2	9262	NV	0	7.04	0.003800	±2.5	PASS
Band2	9262	NV	10	-4.66	-0.002516	±2.5	PASS
Band2	9262	NV	20	-3.38	-0.001825	±2.5	PASS
Band2	9262	NV	30	1.86	0.001004	±2.5	PASS
Band2	9262	NV	40	8.5	0.004589	±2.5	PASS
Band2	9262	NV	50	7.88	0.004254	±2.5	PASS
Band2	9400	NV	-30	-9.09	-0.004835	±2.5	PASS
Band2	9400	NV	-20	4.71	0.002505	±2.5	PASS
Band2	9400	NV	-10	1.48	0.000787	±2.5	PASS
Band2	9400	NV	0	-0.35	-0.000186	±2.5	PASS
Band2	9400	NV	10	-9.07	-0.004824	±2.5	PASS
Band2	9400	NV	20	-6.97	-0.003707	±2.5	PASS
Band2	9400	NV	30	0.8	0.000426	±2.5	PASS
Band2	9400	NV	40	-7.4	-0.003936	±2.5	PASS
Band2	9400	NV	50	1.29	0.000686	±2.5	PASS
Band2	9538	NV	-30	-9.06	-0.004581	±2.5	PASS
Band2	9538	NV	-20	3.55	0.001795	±2.5	PASS
Band2	9538	NV	-10	-5.54	-0.002801	±2.5	PASS
Band2	9538	NV	0	-5.84	-0.002953	±2.5	PASS
Band2	9538	NV	10	-0.83	-0.000420	±2.5	PASS
Band2	9538	NV	20	1.86	0.000941	±2.5	PASS
Band2	9538	NV	30	7.69	0.003889	±2.5	PASS
Band2	9538	NV	40	0.82	0.000415	±2.5	PASS
Band2	9538	NV	50	-5.71	-0.002887	±2.5	PASS

LTE BAND2

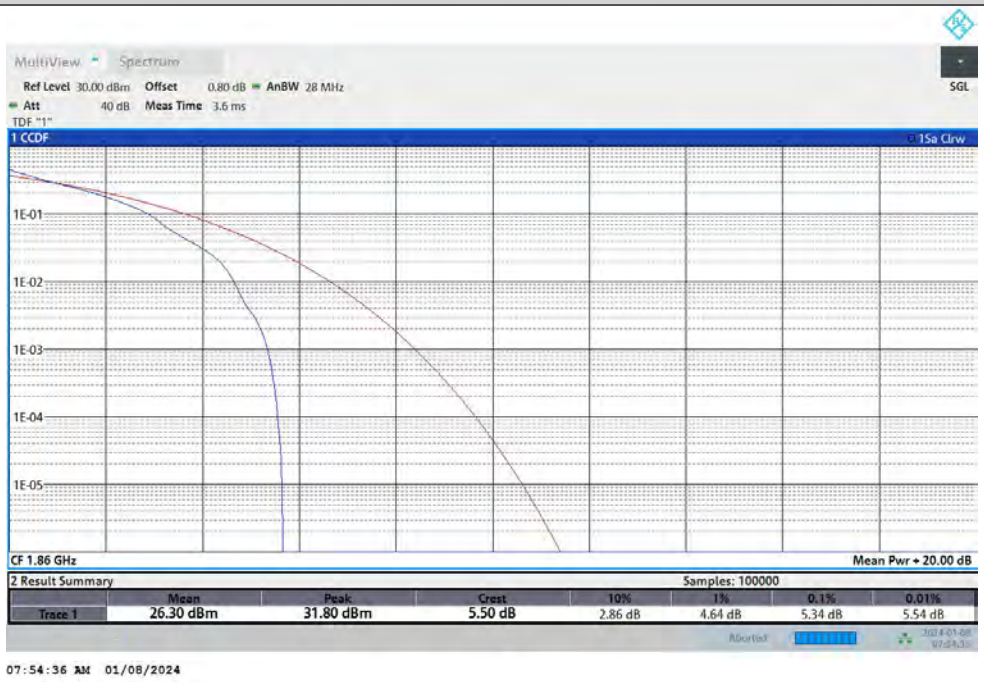
PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

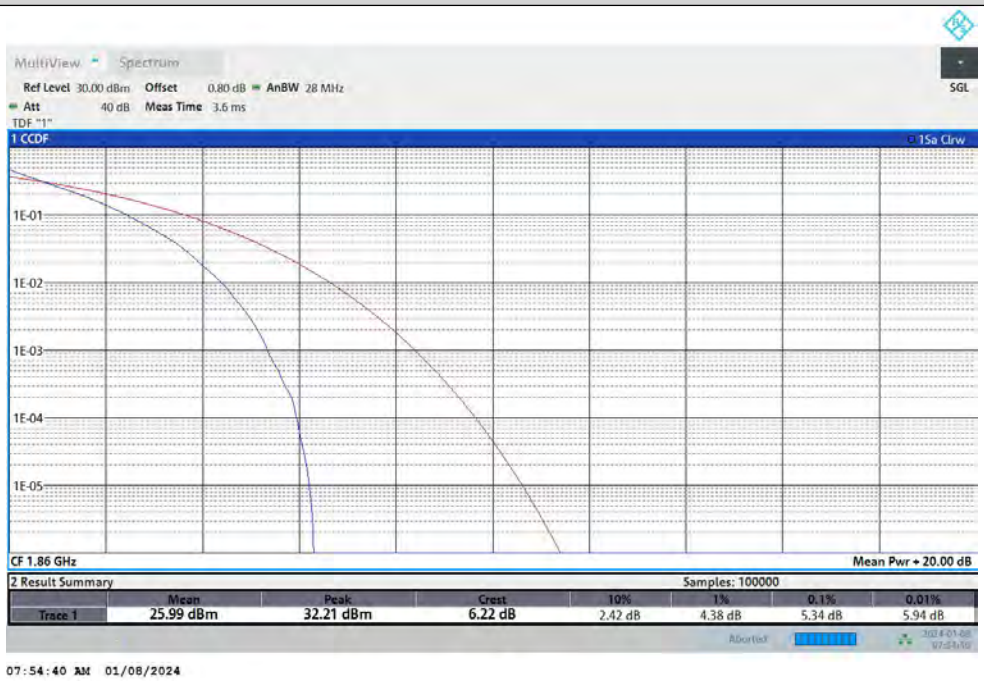
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band2	20MHz	QPSK	18700	1RB#0	5.34	13	PASS
Band2	20MHz	QPSK	18700	100RB#0	5.34	13	PASS
Band2	20MHz	QPSK	18900	1RB#0	4.80	13	PASS
Band2	20MHz	QPSK	18900	100RB#0	5.48	13	PASS
Band2	20MHz	QPSK	19100	1RB#0	5.60	13	PASS
Band2	20MHz	QPSK	19100	100RB#0	5.30	13	PASS
Band2	20MHz	16QAM	18700	1RB#0	5.74	13	PASS
Band2	20MHz	16QAM	18700	100RB#0	6.08	13	PASS
Band2	20MHz	16QAM	18900	1RB#0	5.70	13	PASS
Band2	20MHz	16QAM	18900	100RB#0	6.42	13	PASS
Band2	20MHz	16QAM	19100	1RB#0	6.80	13	PASS
Band2	20MHz	16QAM	19100	100RB#0	6.16	13	PASS
Band2	20MHz	64QAM	18700	1RB#0	6.42	13	PASS
Band2	20MHz	64QAM	18700	100RB#0	6.68	13	PASS
Band2	20MHz	64QAM	18900	1RB#0	6.20	13	PASS
Band2	20MHz	64QAM	18900	100RB#0	6.68	13	PASS
Band2	20MHz	64QAM	19100	1RB#0	6.62	13	PASS
Band2	20MHz	64QAM	19100	100RB#0	6.54	13	PASS

Test Graphs

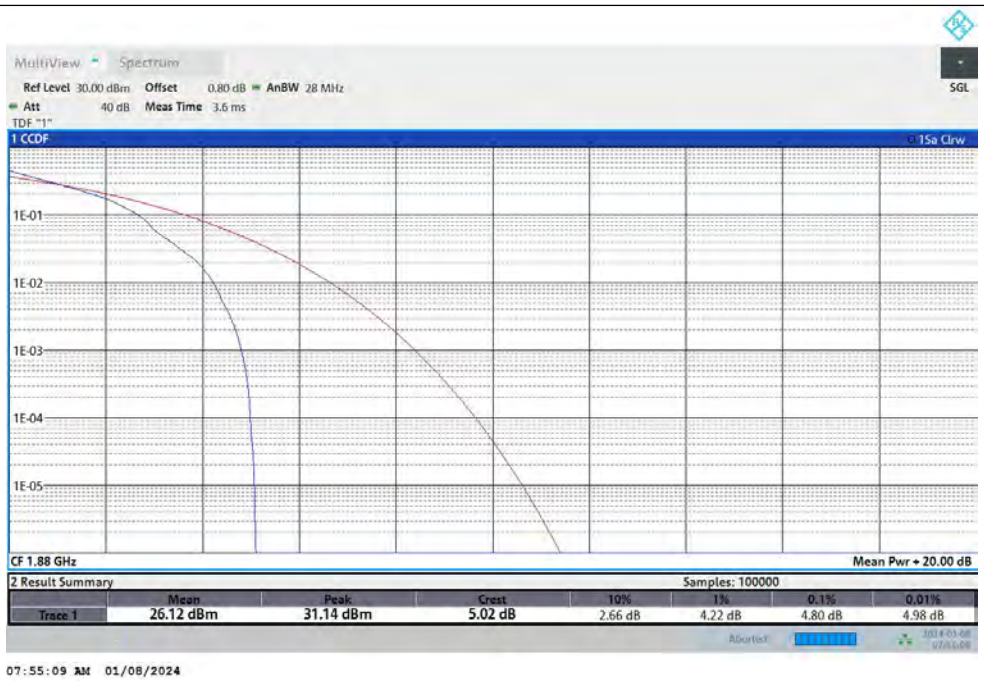
Band2-20MHz-QPSK-18700-1RB#0



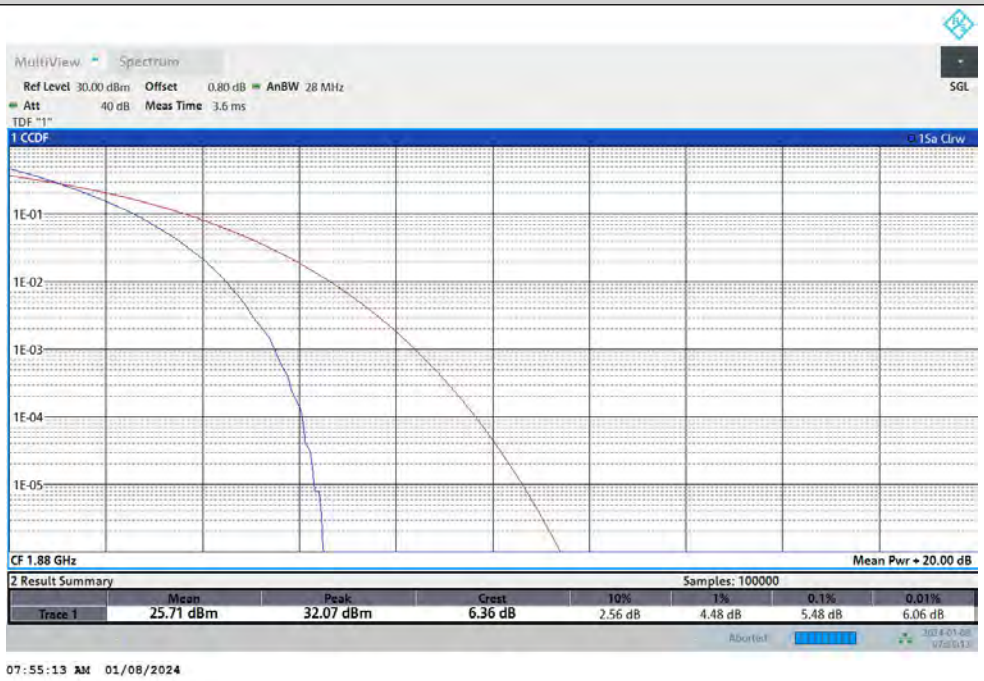
Band2-20MHz-QPSK-18700-100RB#0



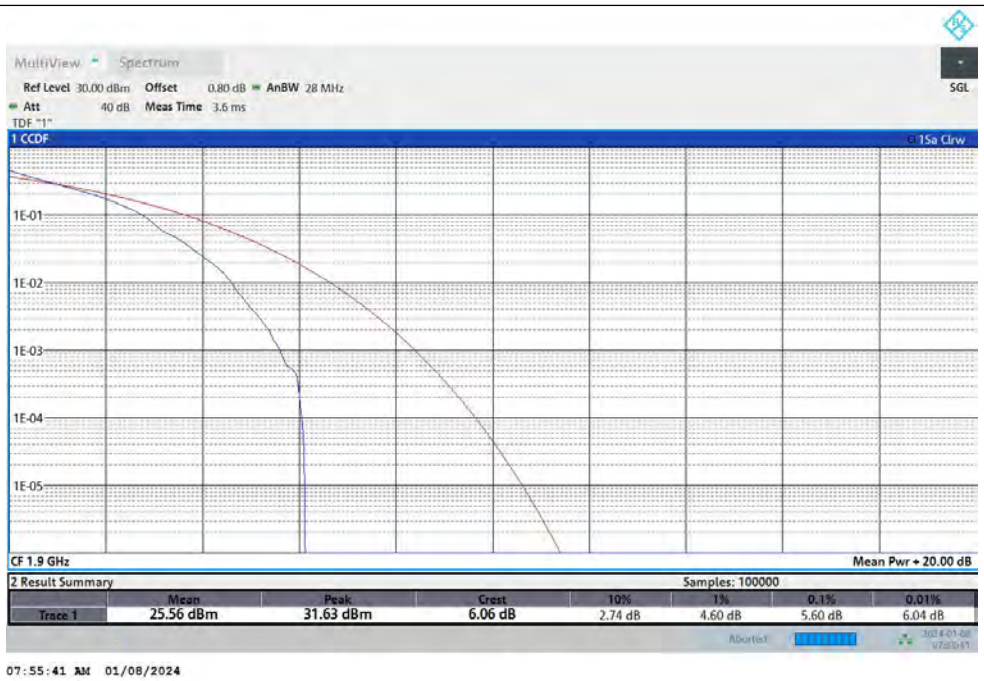
Band2-20MHz-QPSK-18900-1RB#0



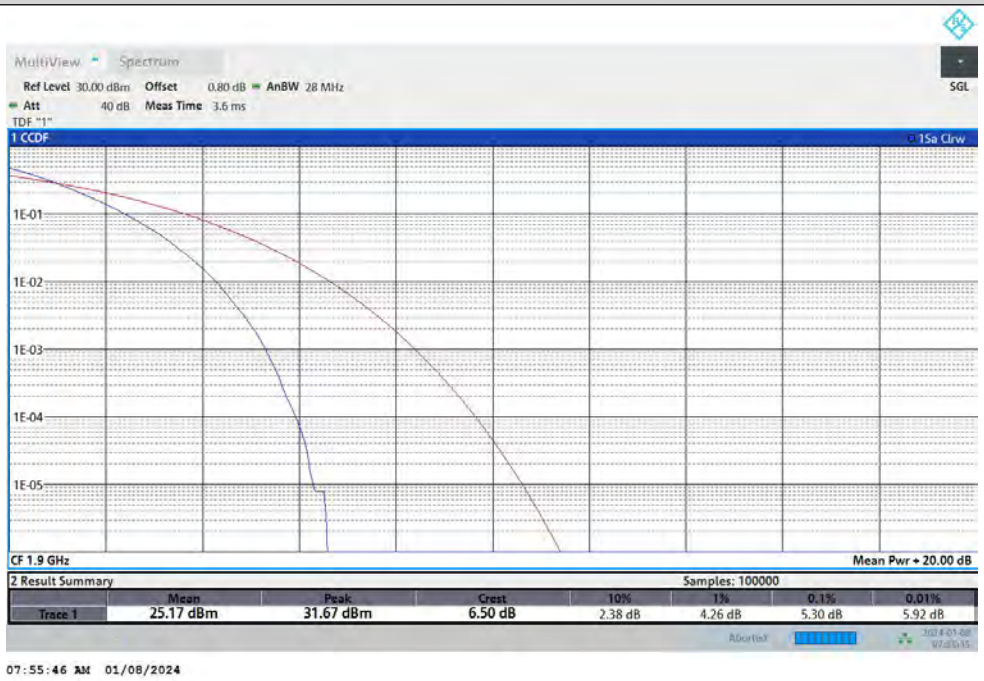
Band2-20MHz-QPSK-18900-100RB#0



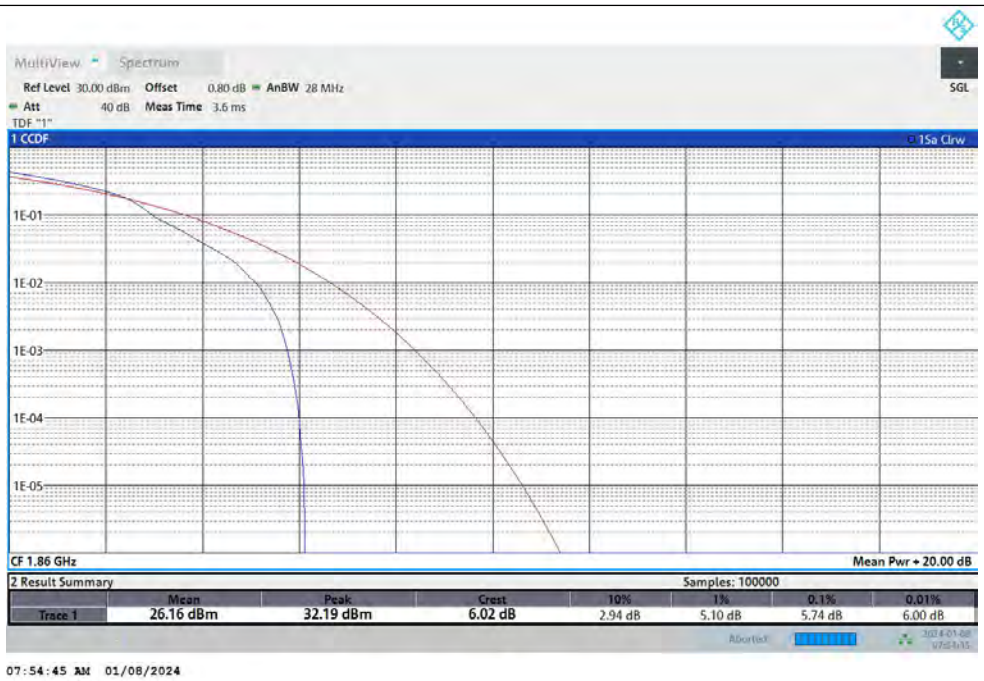
Band2-20MHz-QPSK-19100-1RB#0



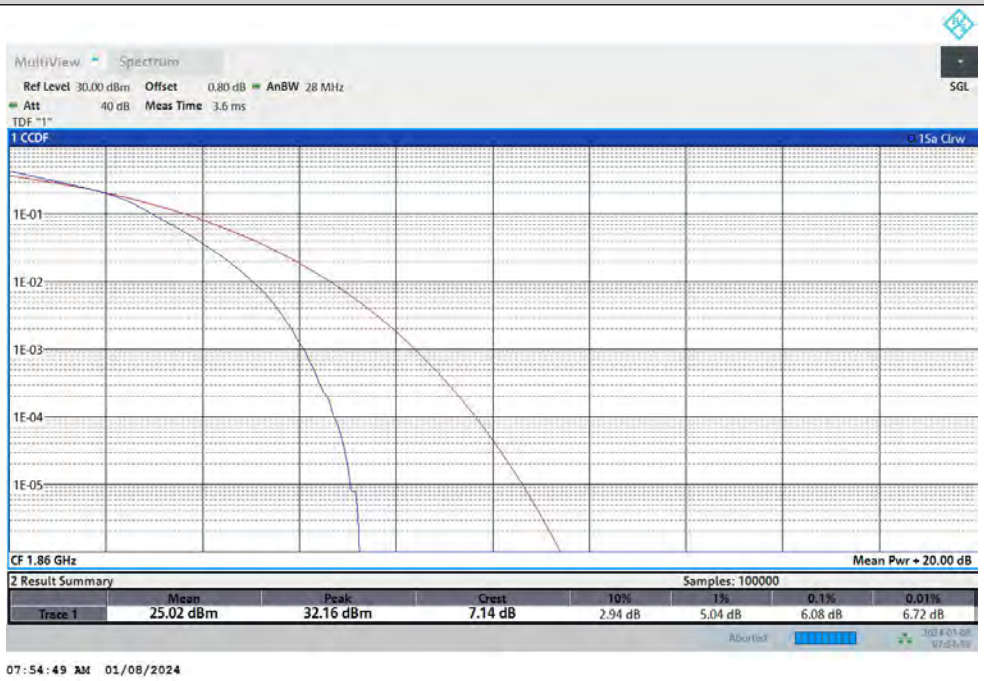
Band2-20MHz-QPSK-19100-100RB#0



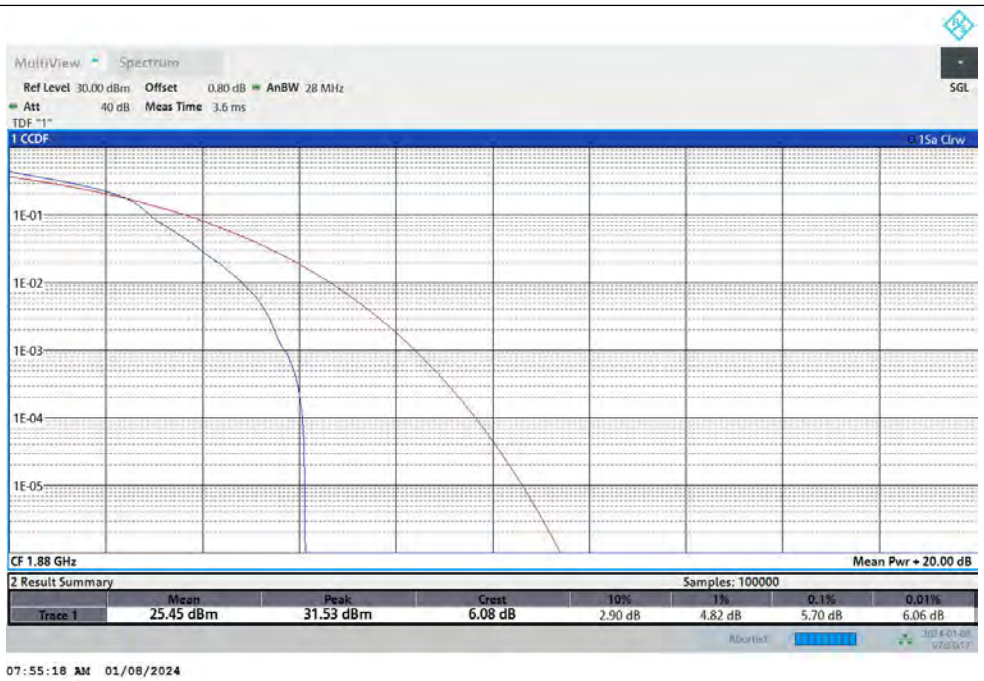
Band2-20MHz-16QAM-18700-1RB#0



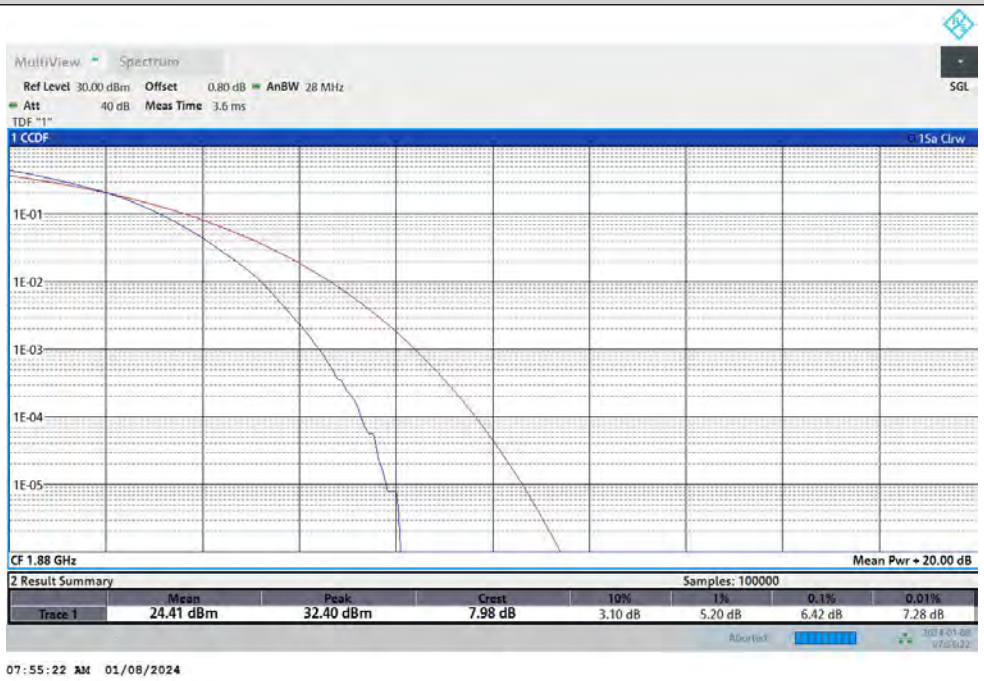
Band2-20MHz-16QAM-18700-100RB#0



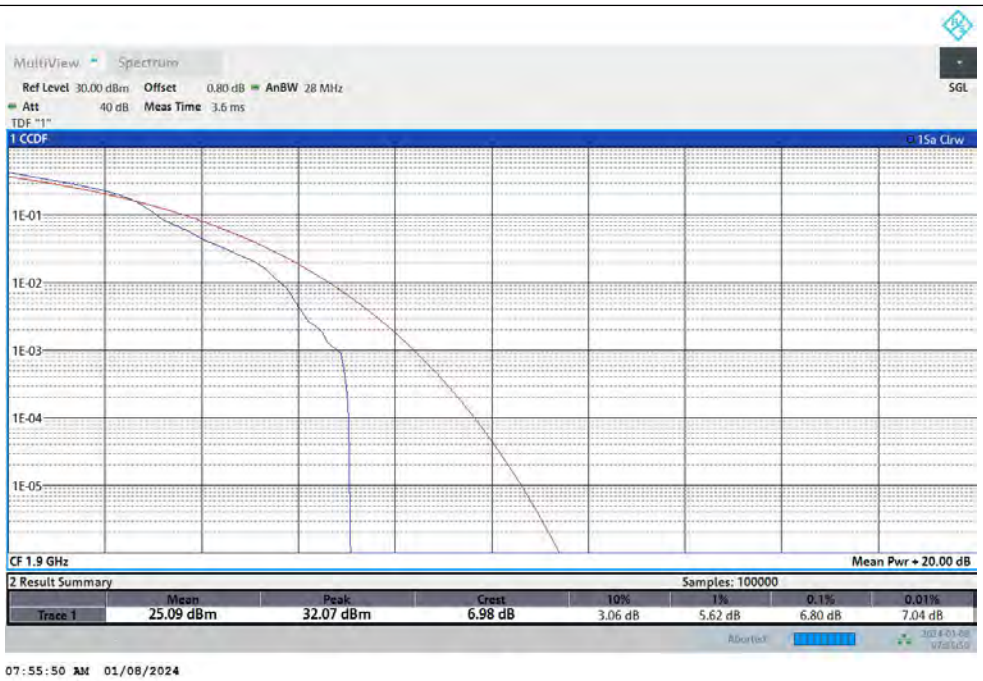
Band2-20MHz-16QAM-18900-1RB#0



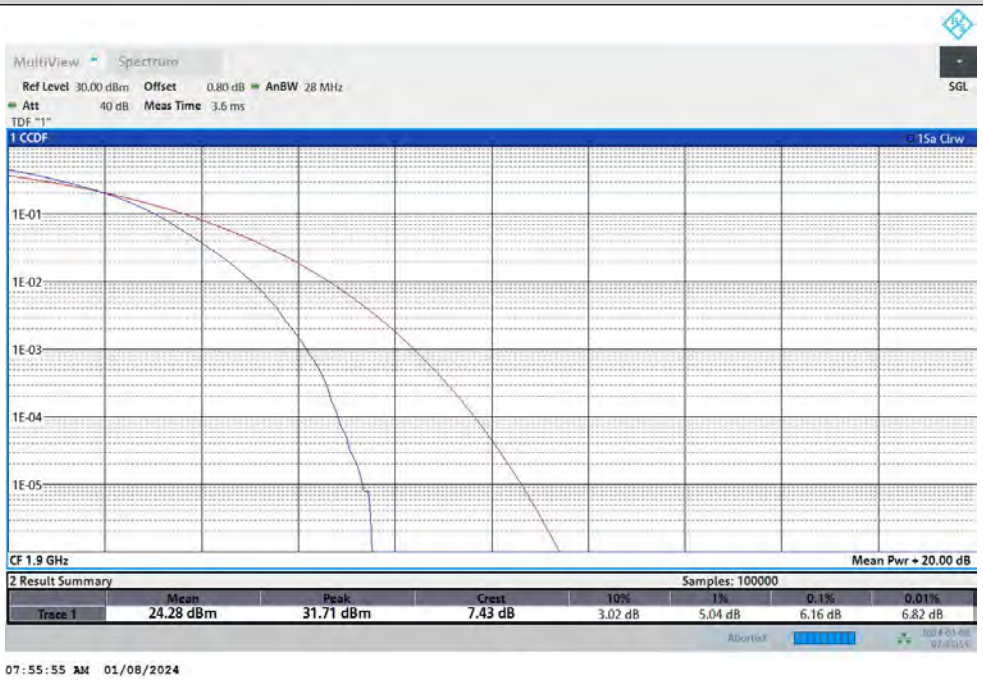
Band2-20MHz-16QAM-18900-100RB#0



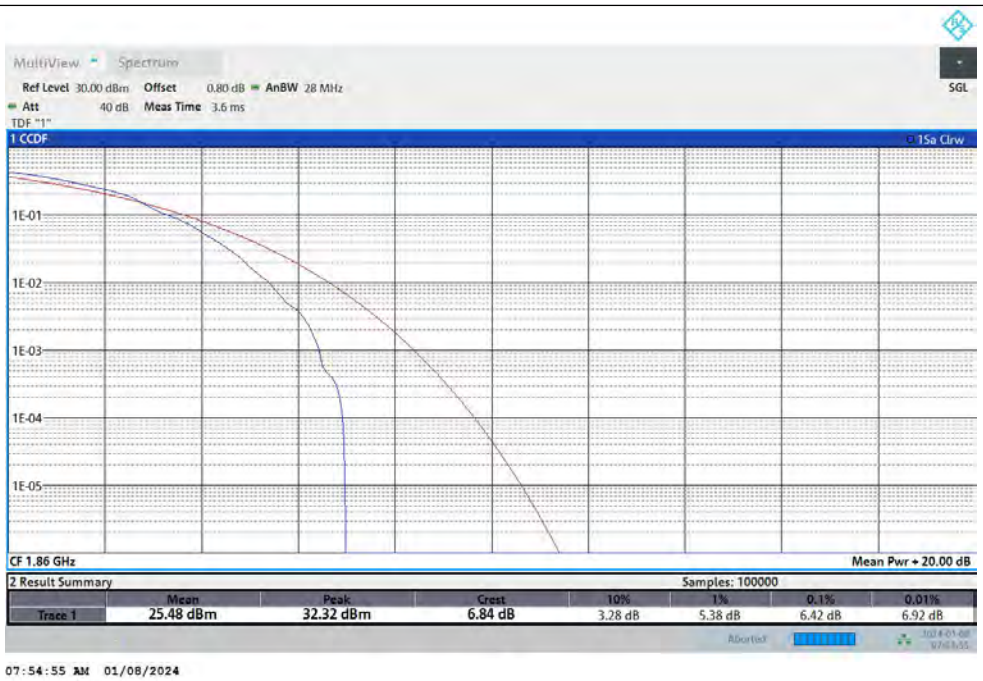
Band2-20MHz-16QAM-19100-1RB#0



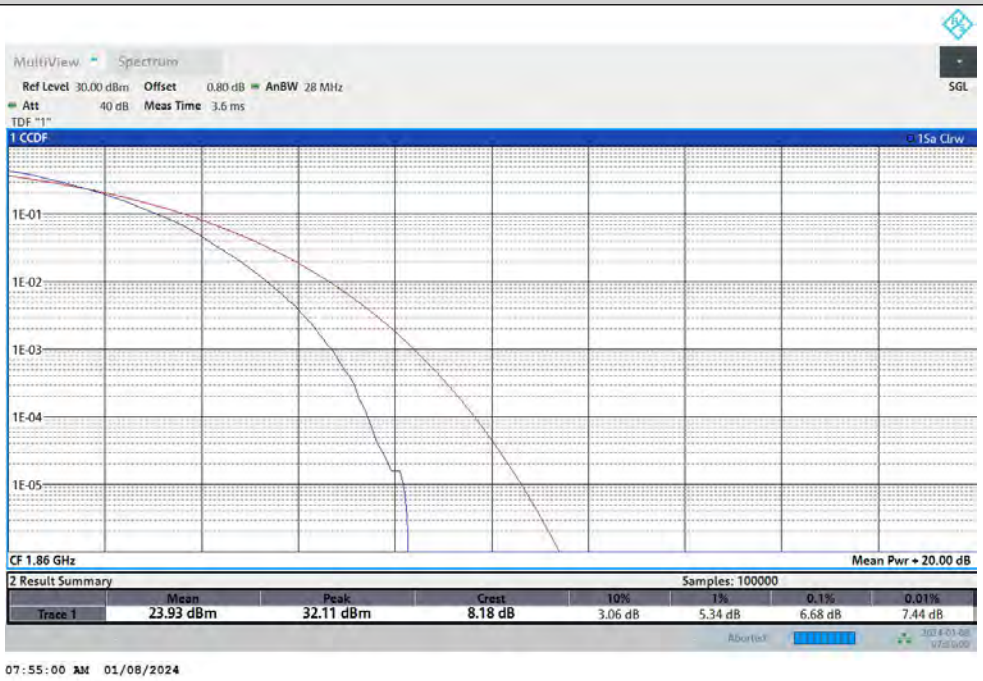
Band2-20MHz-16QAM-19100-100RB#0



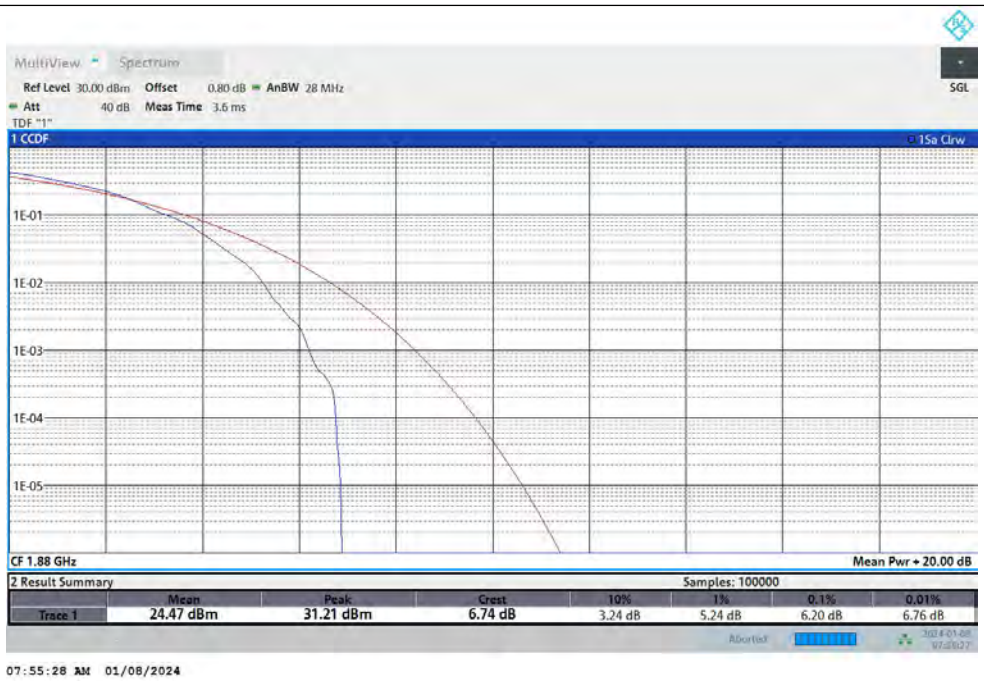
Band2-20MHz-64QAM-18700-1RB#0



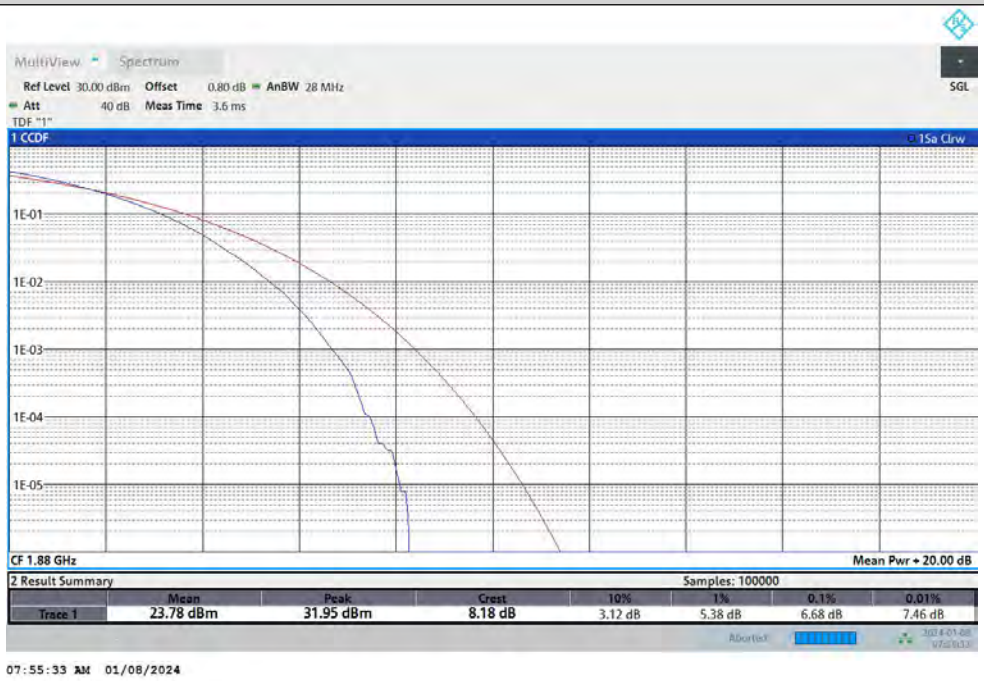
Band2-20MHz-64QAM-18700-100RB#0



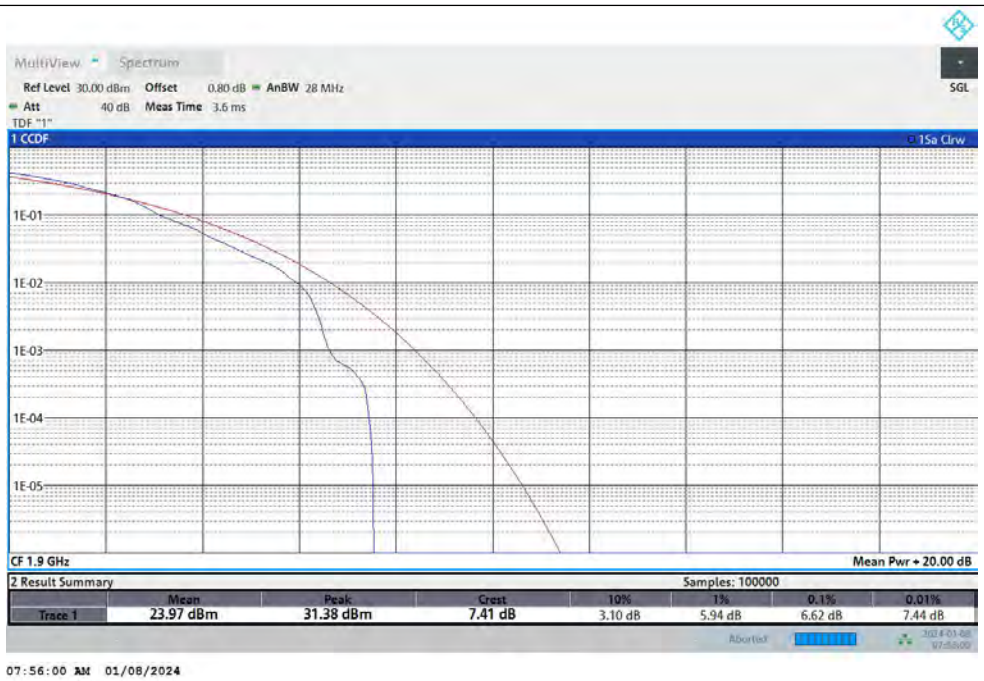
Band2-20MHz-64QAM-18900-1RB#0



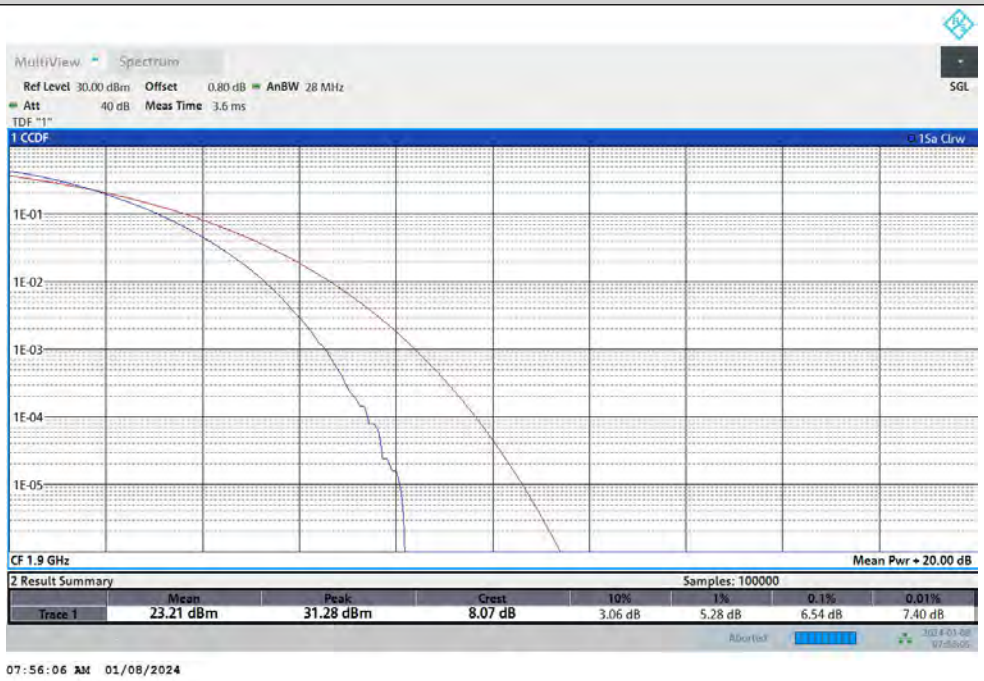
Band2-20MHz-64QAM-18900-100RB#0



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



Band2-20MHz-64QAM-19100-100RB#0



26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

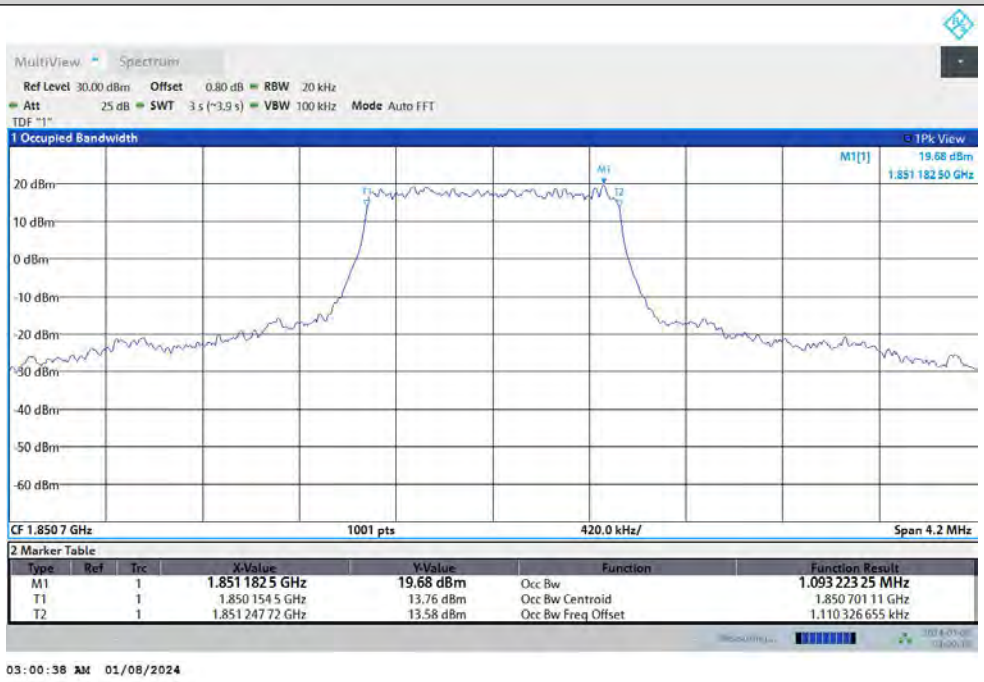
Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band2	1.4MHz	QPSK	18607	6RB#0	1.093	1.29	PASS
Band2	1.4MHz	QPSK	18900	6RB#0	1.084	1.26	PASS
Band2	1.4MHz	QPSK	19193	6RB#0	1.089	1.26	PASS
Band2	1.4MHz	16QAM	18607	6RB#0	1.088	1.29	PASS
Band2	1.4MHz	16QAM	18900	6RB#0	1.091	1.25	PASS
Band2	1.4MHz	16QAM	19193	6RB#0	1.086	1.27	PASS
Band2	3MHz	QPSK	18615	15RB#0	2.692	2.93	PASS
Band2	3MHz	QPSK	18900	15RB#0	2.693	2.94	PASS
Band2	3MHz	QPSK	19185	15RB#0	2.689	2.95	PASS
Band2	3MHz	16QAM	18615	15RB#0	2.685	2.95	PASS
Band2	3MHz	16QAM	18900	15RB#0	2.686	2.95	PASS
Band2	3MHz	16QAM	19185	15RB#0	2.685	2.95	PASS
Band2	5MHz	QPSK	18625	25RB#0	4.493	4.95	PASS
Band2	5MHz	QPSK	18900	25RB#0	4.484	4.88	PASS
Band2	5MHz	QPSK	19175	25RB#0	4.476	4.90	PASS
Band2	5MHz	16QAM	18625	25RB#0	4.478	4.87	PASS
Band2	5MHz	16QAM	18900	25RB#0	4.490	4.92	PASS
Band2	5MHz	16QAM	19175	25RB#0	4.488	4.93	PASS
Band2	10MHz	QPSK	18650	50RB#0	8.961	9.74	PASS
Band2	10MHz	QPSK	18900	50RB#0	8.944	9.68	PASS
Band2	10MHz	QPSK	19150	50RB#0	8.927	9.71	PASS
Band2	10MHz	16QAM	18650	50RB#0	8.947	9.62	PASS
Band2	10MHz	16QAM	18900	50RB#0	8.945	9.68	PASS
Band2	10MHz	16QAM	19150	50RB#0	8.940	9.68	PASS
Band2	15MHz	QPSK	18675	75RB#0	13.469	14.74	PASS
Band2	15MHz	QPSK	18900	75RB#0	13.408	14.52	PASS
Band2	15MHz	QPSK	19125	75RB#0	13.393	14.56	PASS
Band2	15MHz	16QAM	18675	75RB#0	13.441	14.61	PASS
Band2	15MHz	16QAM	18900	75RB#0	13.437	14.52	PASS
Band2	15MHz	16QAM	19125	75RB#0	13.407	14.48	PASS
Band2	20MHz	QPSK	18700	100RB#0	17.873	19.12	PASS
Band2	20MHz	QPSK	18900	100RB#0	17.868	19.12	PASS
Band2	20MHz	QPSK	19100	100RB#0	17.841	19.24	PASS
Band2	20MHz	16QAM	18700	100RB#0	17.913	19.24	PASS
Band2	20MHz	16QAM	18900	100RB#0	17.890	19.18	PASS
Band2	20MHz	16QAM	19100	100RB#0	17.827	19.12	PASS
Band2	1.4MHz	64QAM	18607	6RB#0	1.085	1.27	PASS
Band2	1.4MHz	64QAM	18900	6RB#0	1.084	1.30	PASS
Band2	1.4MHz	64QAM	19193	6RB#0	1.084	1.27	PASS
Band2	3MHz	64QAM	18615	15RB#0	2.688	2.93	PASS
Band2	3MHz	64QAM	18900	15RB#0	2.685	2.91	PASS

Band2	3MHz	64QAM	19185	15RB#0	2.690	2.94	PASS
Band2	5MHz	64QAM	18625	25RB#0	4.478	4.93	PASS
Band2	5MHz	64QAM	18900	25RB#0	4.485	4.93	PASS
Band2	5MHz	64QAM	19175	25RB#0	4.477	4.88	PASS
Band2	10MHz	64QAM	18650	50RB#0	8.946	9.65	PASS
Band2	10MHz	64QAM	18900	50RB#0	8.934	9.68	PASS
Band2	10MHz	64QAM	19150	50RB#0	8.935	9.71	PASS
Band2	15MHz	64QAM	18675	75RB#0	13.411	14.52	PASS
Band2	15MHz	64QAM	18900	75RB#0	13.449	14.56	PASS
Band2	15MHz	64QAM	19125	75RB#0	13.432	14.52	PASS
Band2	20MHz	64QAM	18700	100RB#0	17.872	19.18	PASS
Band2	20MHz	64QAM	18900	100RB#0	17.876	19.12	PASS
Band2	20MHz	64QAM	19100	100RB#0	17.826	19.06	PASS

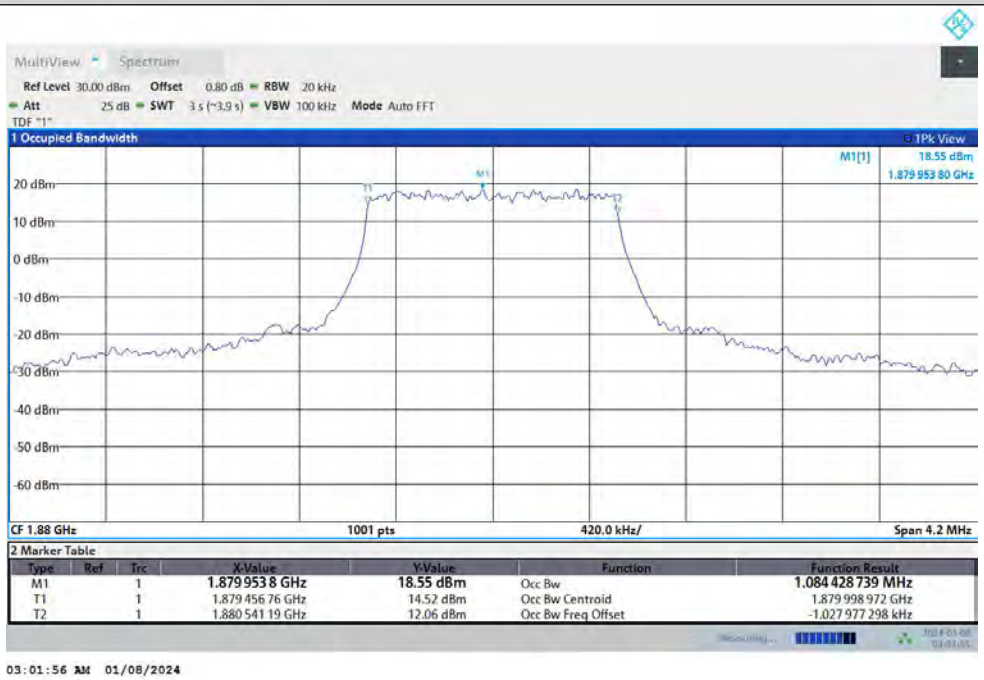
Test Graphs

Occupied Bandwidth

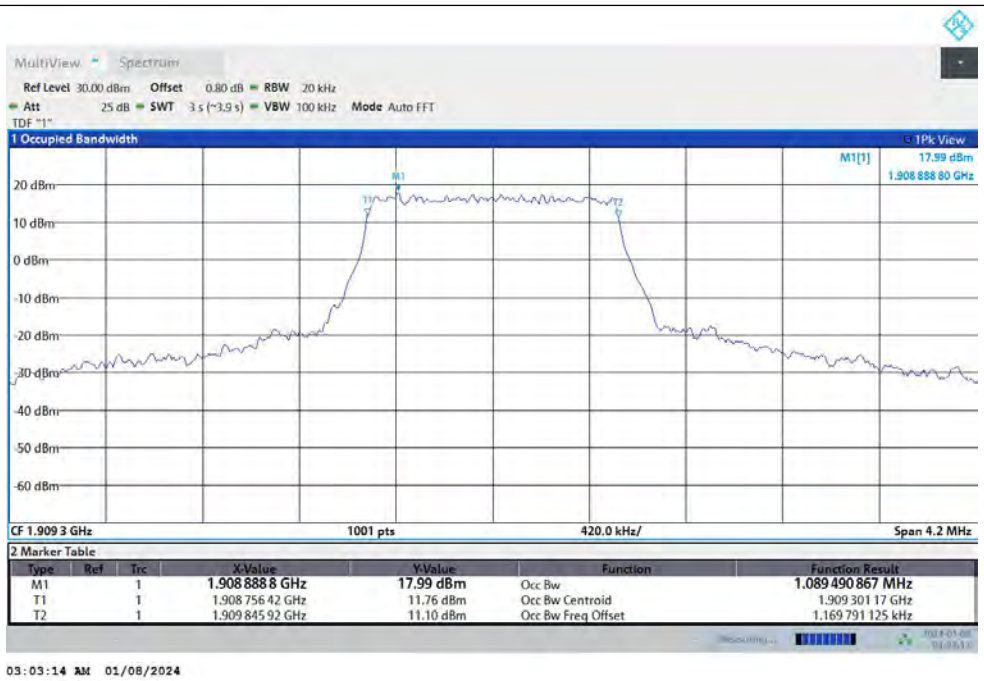
Band2-1.4MHz-QPSK-18607-6RB#0



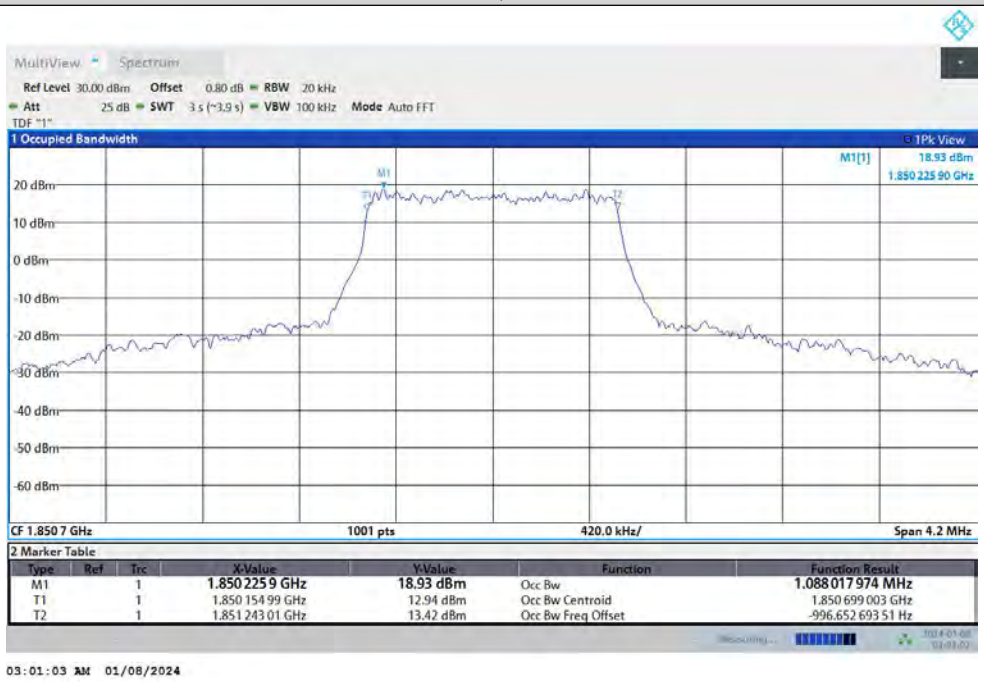
Band2-1.4MHz-QPSK-18900-6RB#0



Band2-1.4MHz-QPSK-19193-6RB#0



Band2-1.4MHz-16QAM-18607-6RB#0



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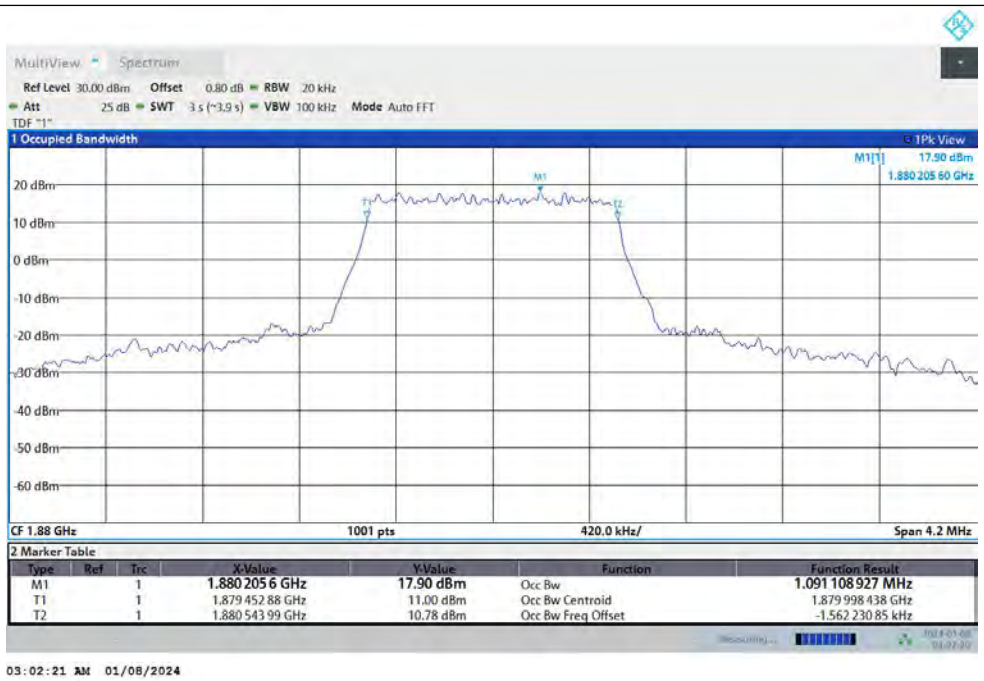

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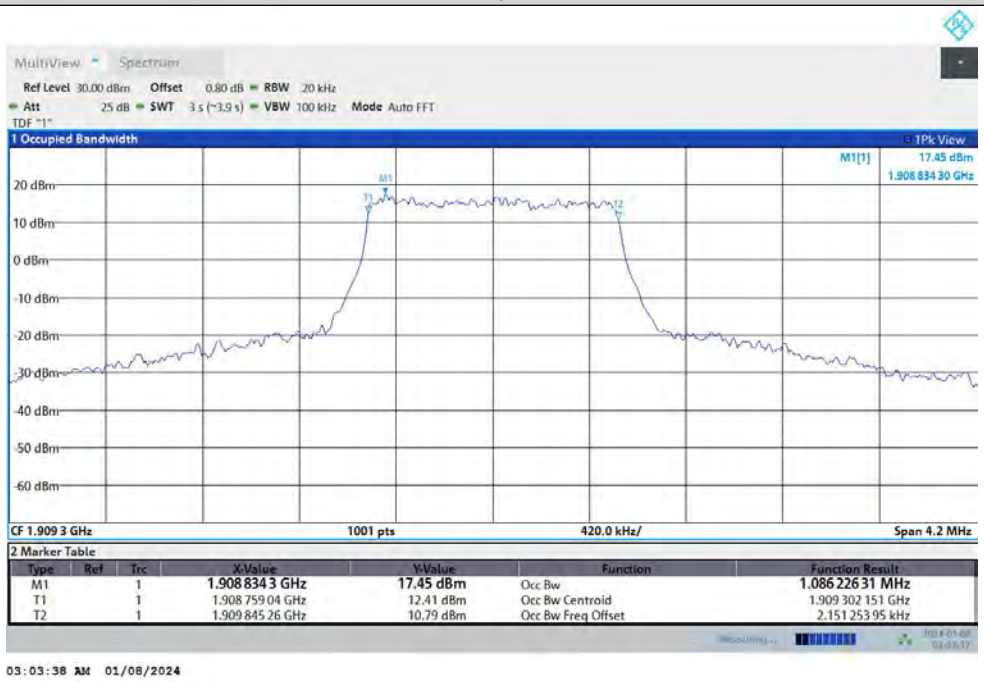

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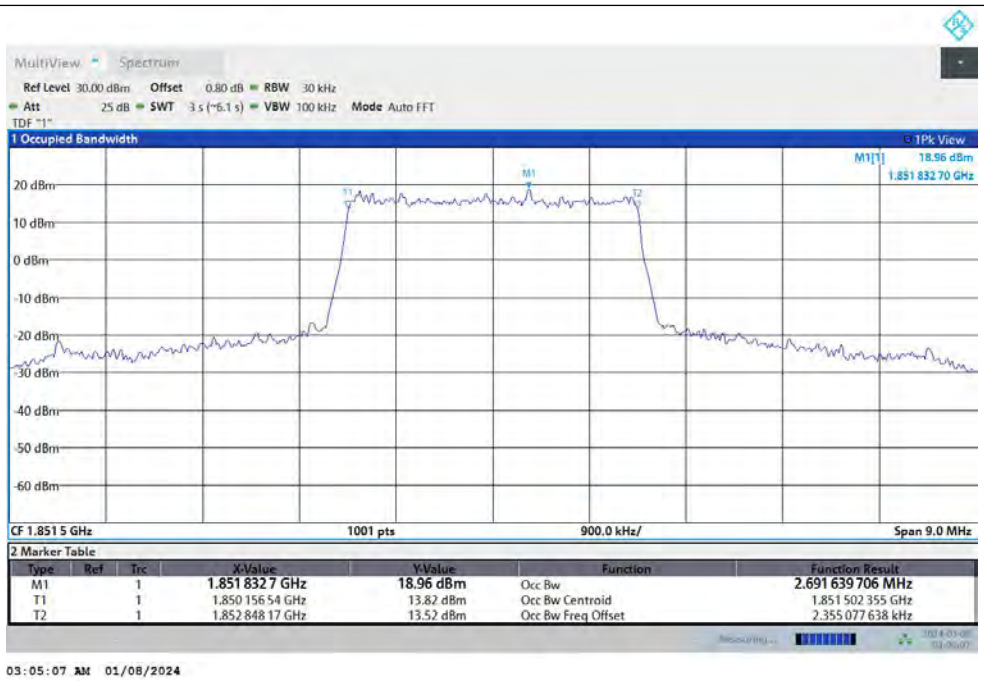
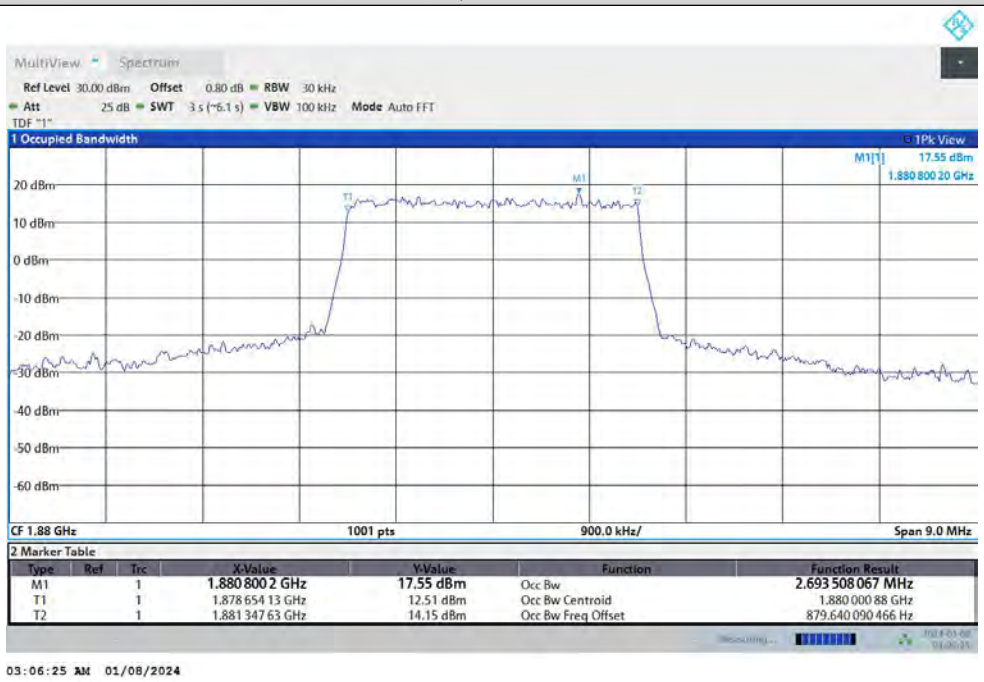
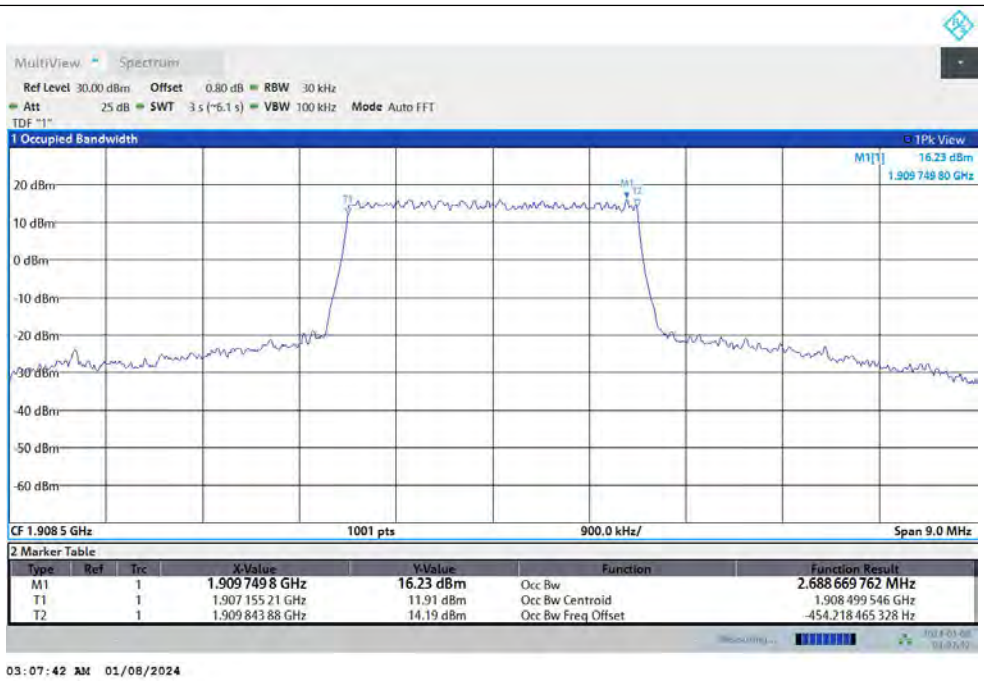


Band2-3MHz-QPSK-18900-15RB#0



Band2-3MHz-QPSK-19185-15RB#0



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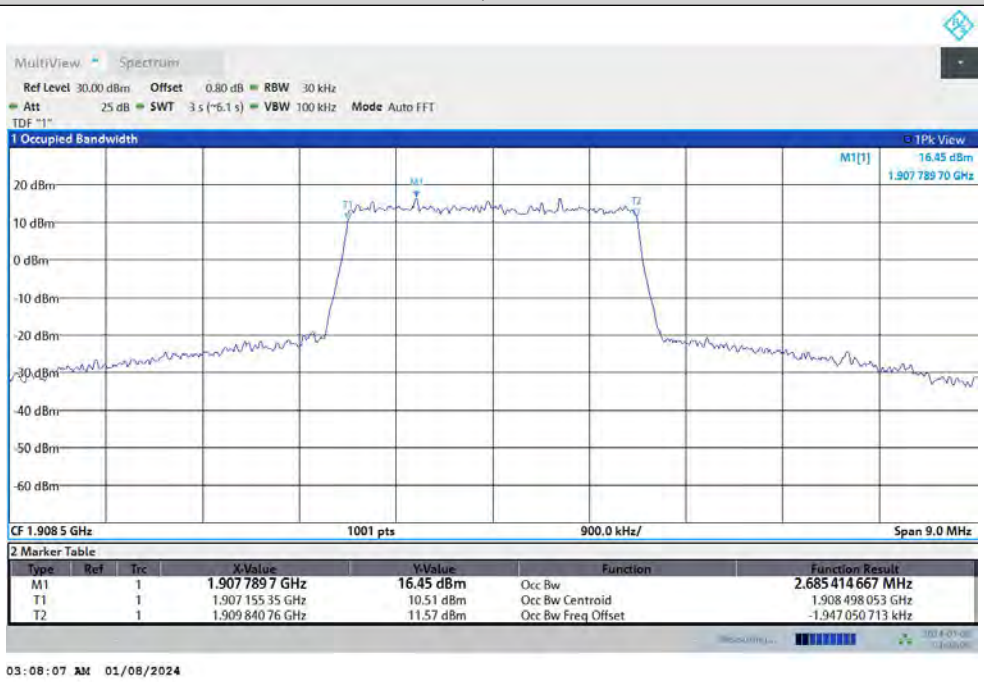
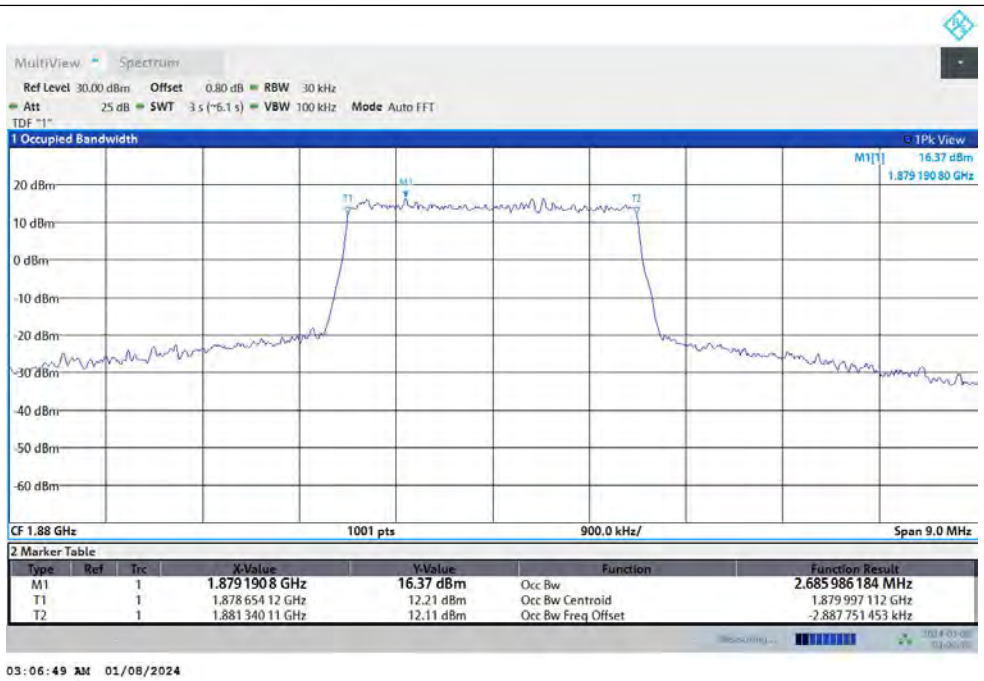
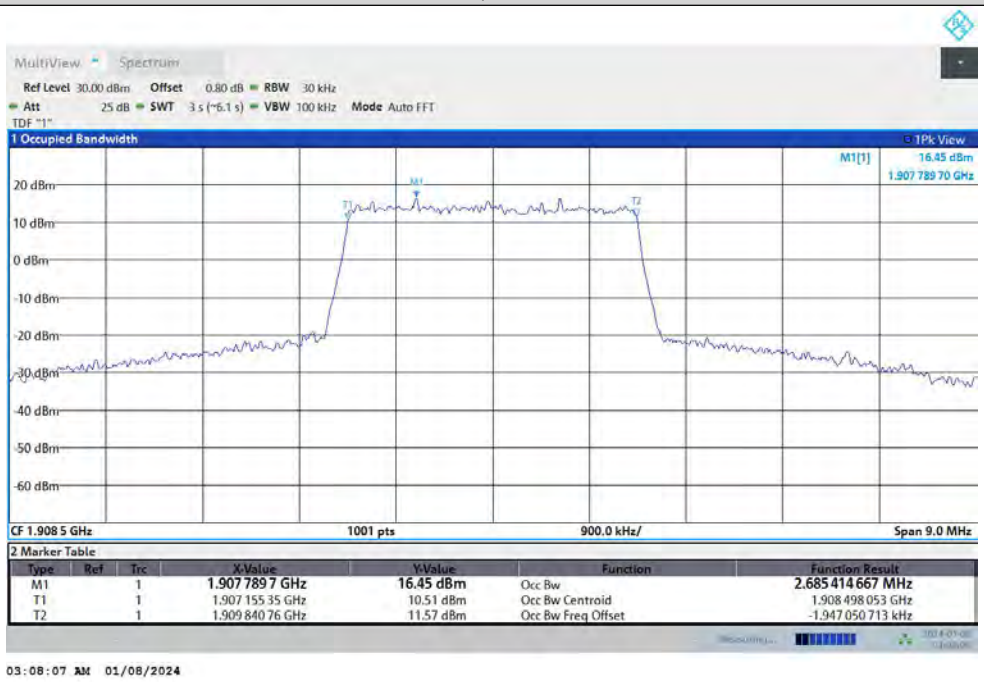


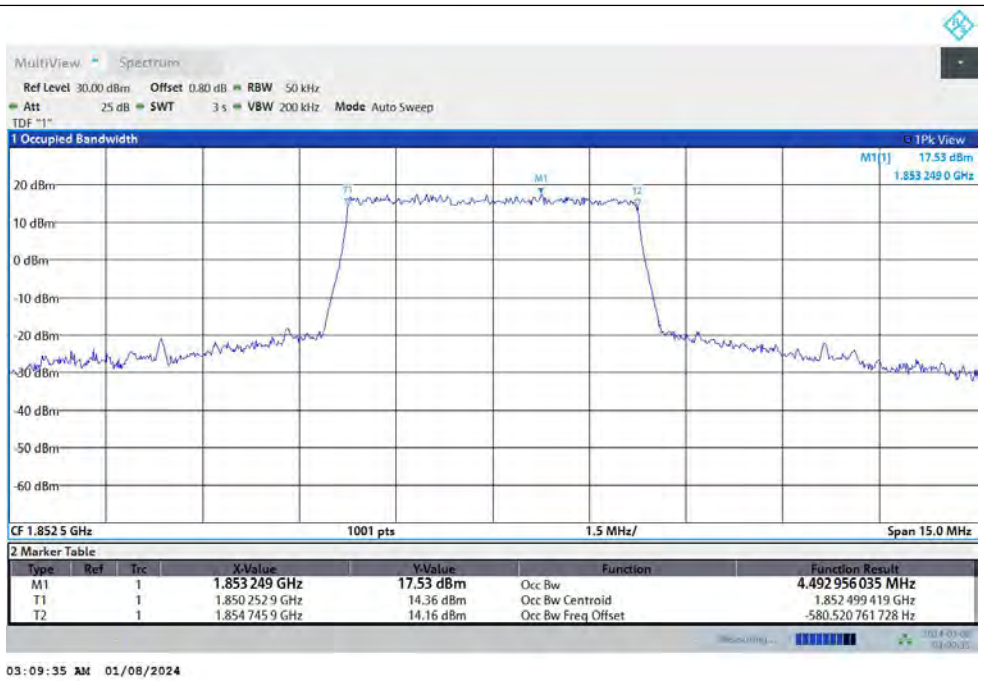
Band2-3MHz-16QAM-18900-15RB#0



Band2-3MHz-16QAM-19185-15RB#0



Band2-5MHz-QPSK-18625-25RB#0



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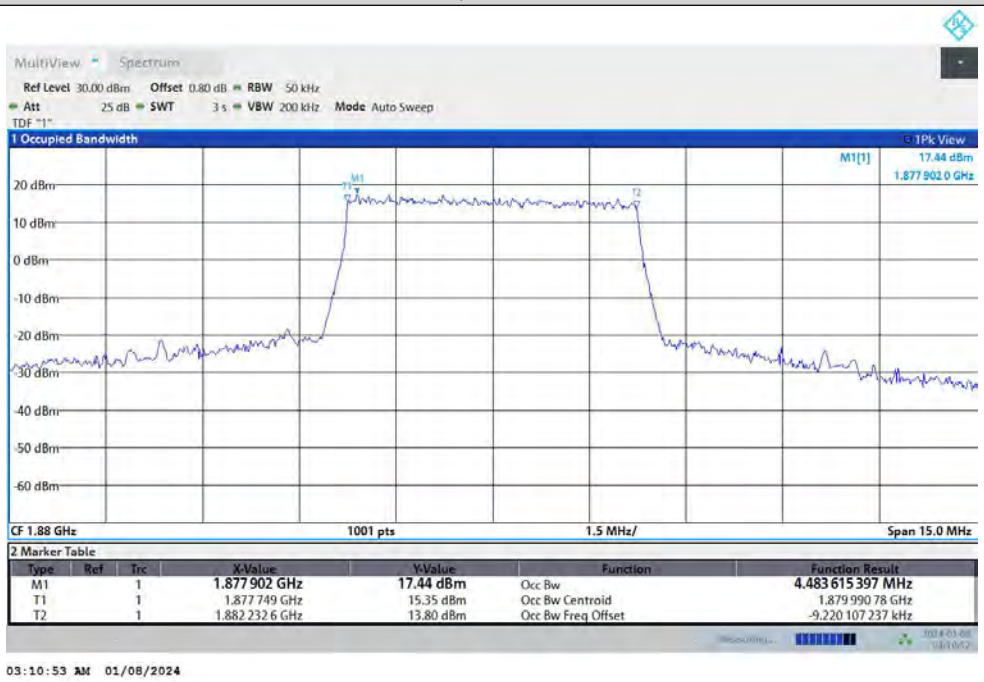

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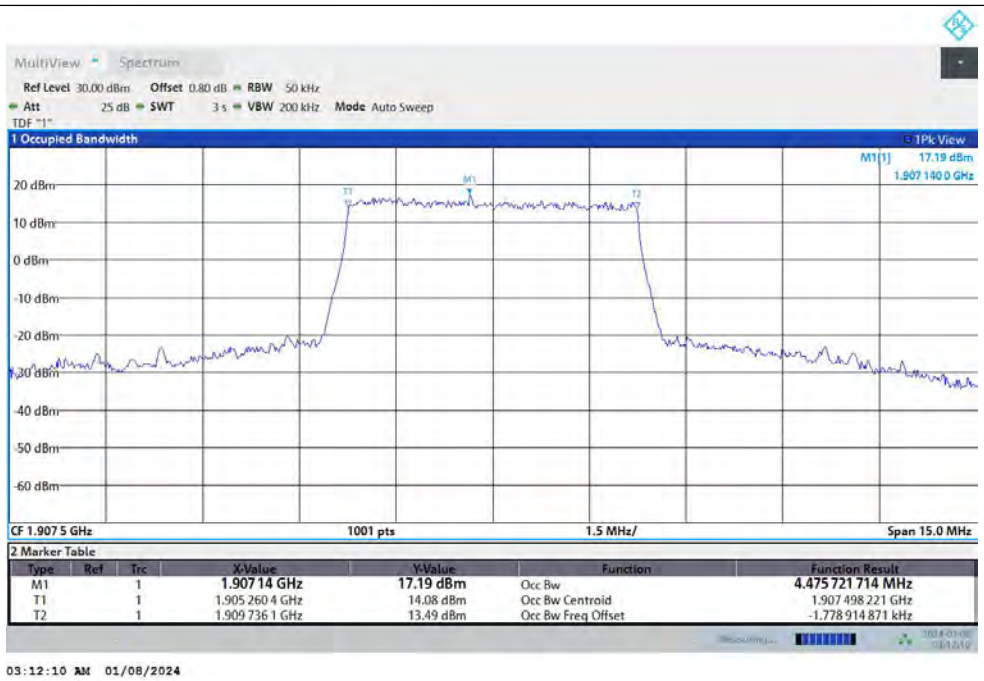

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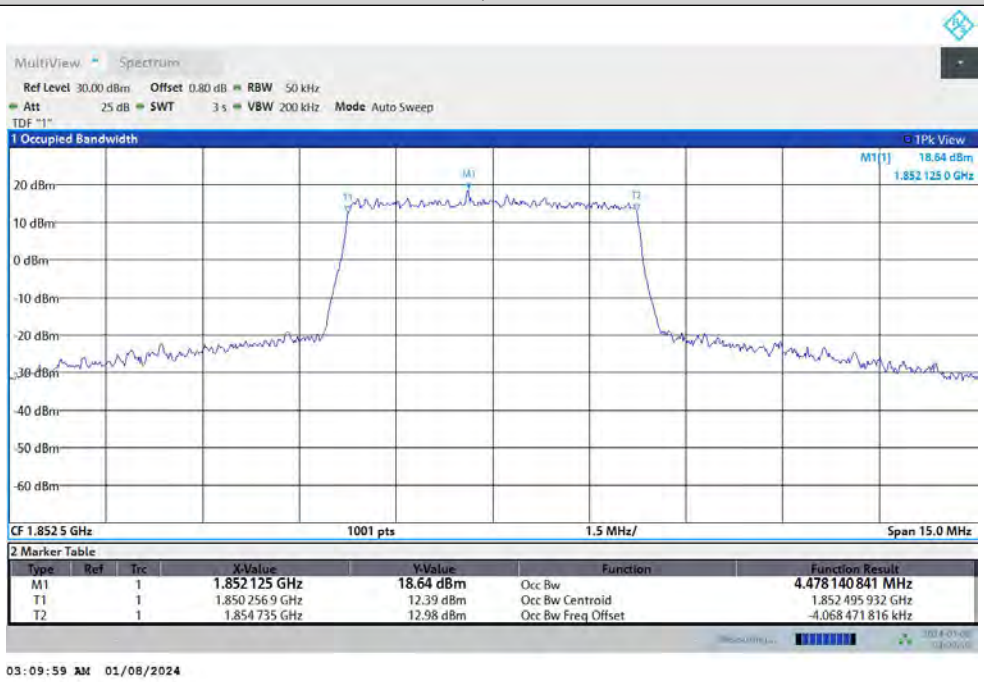

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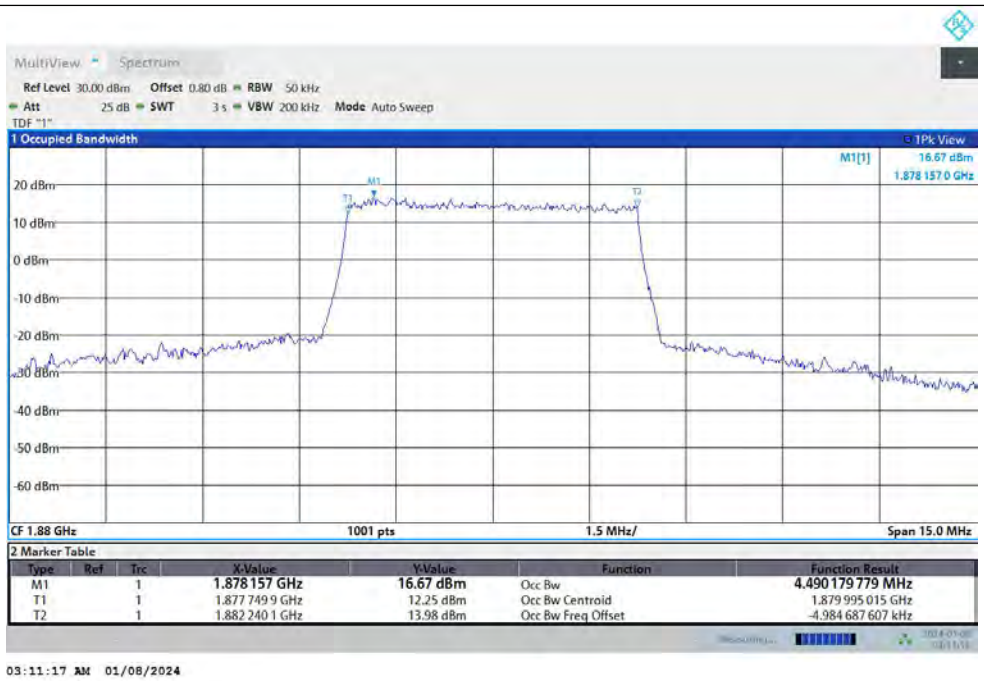

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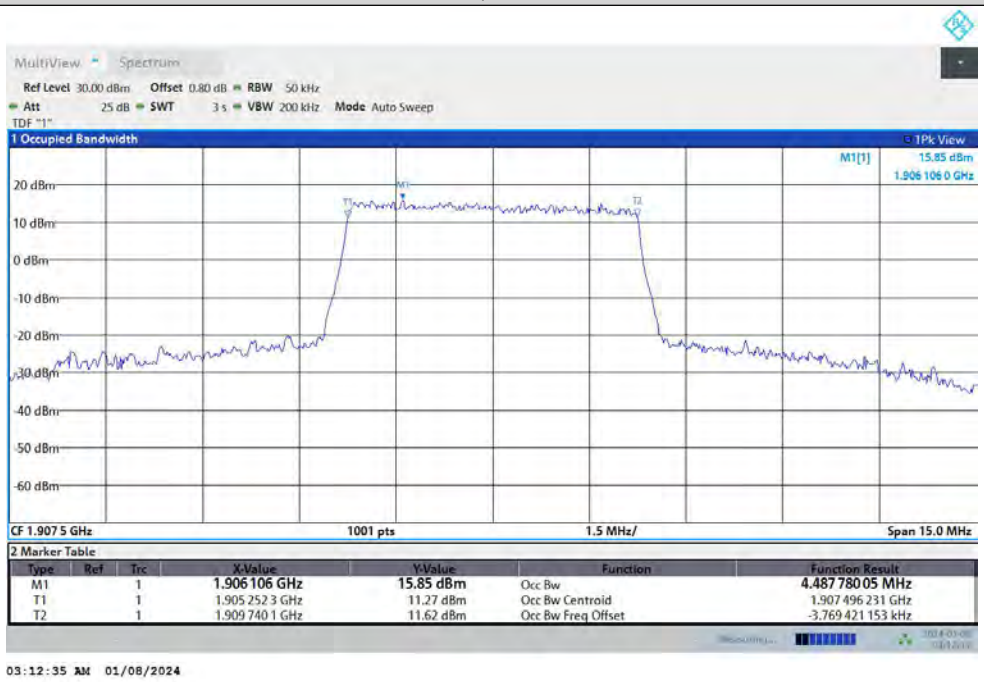
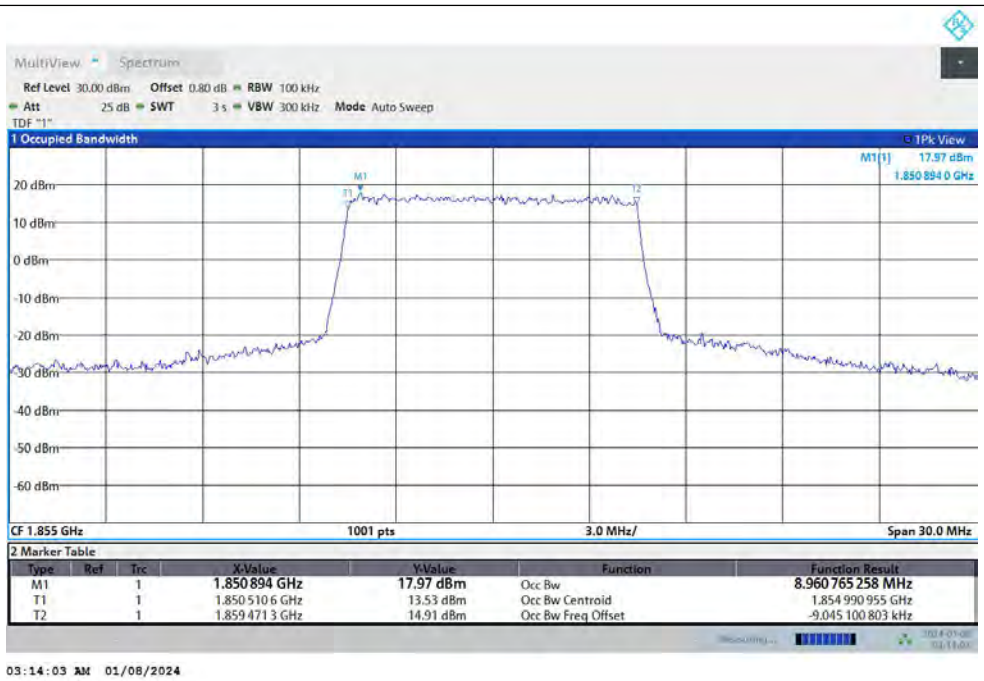


Band2-10MHz-QPSK-18650-50RB#0



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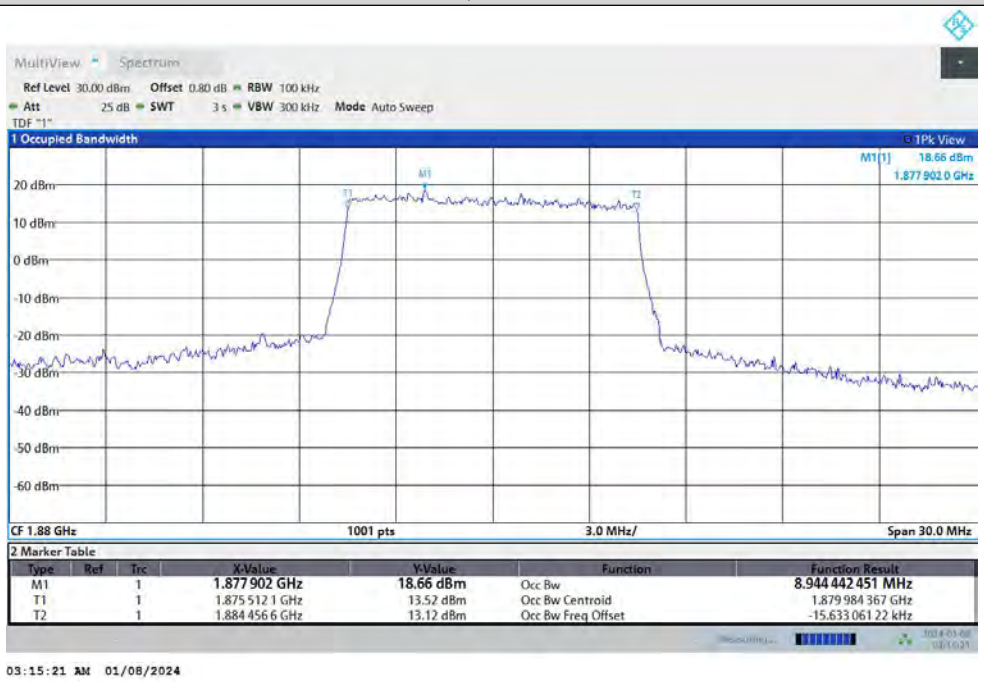

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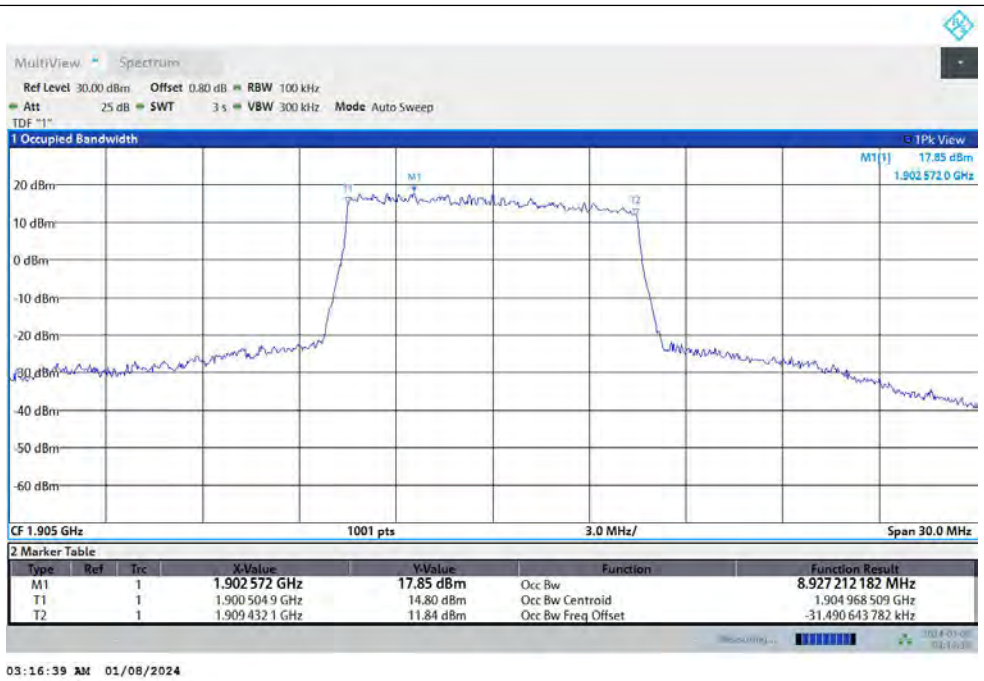
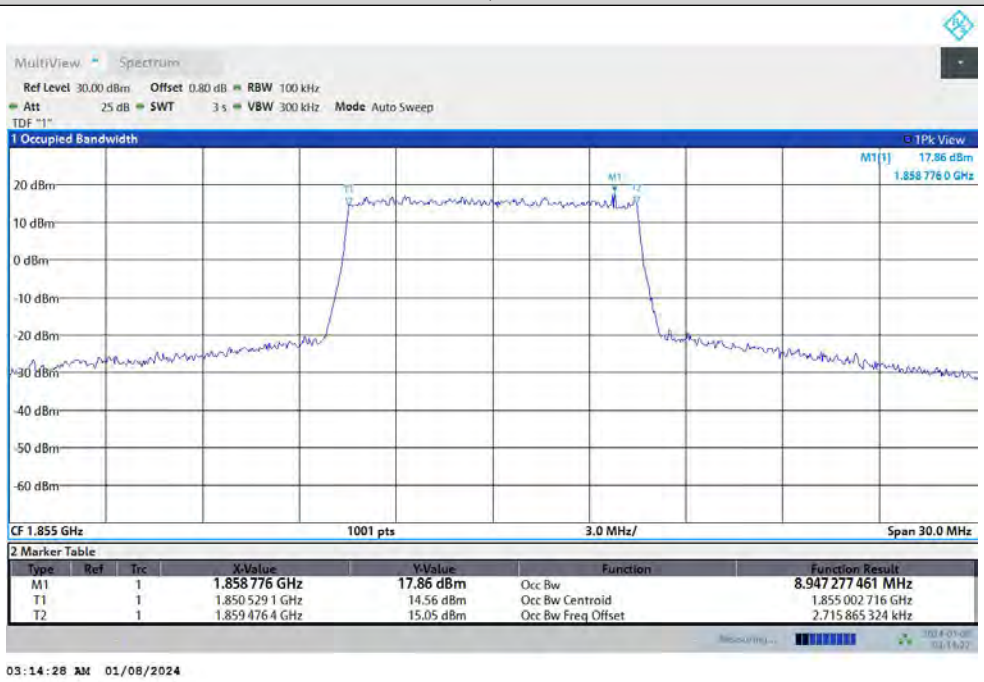


Band2-10MHz-16QAM-18650-50RB#0



Band2-10MHz-16QAM-18900-50RB#0

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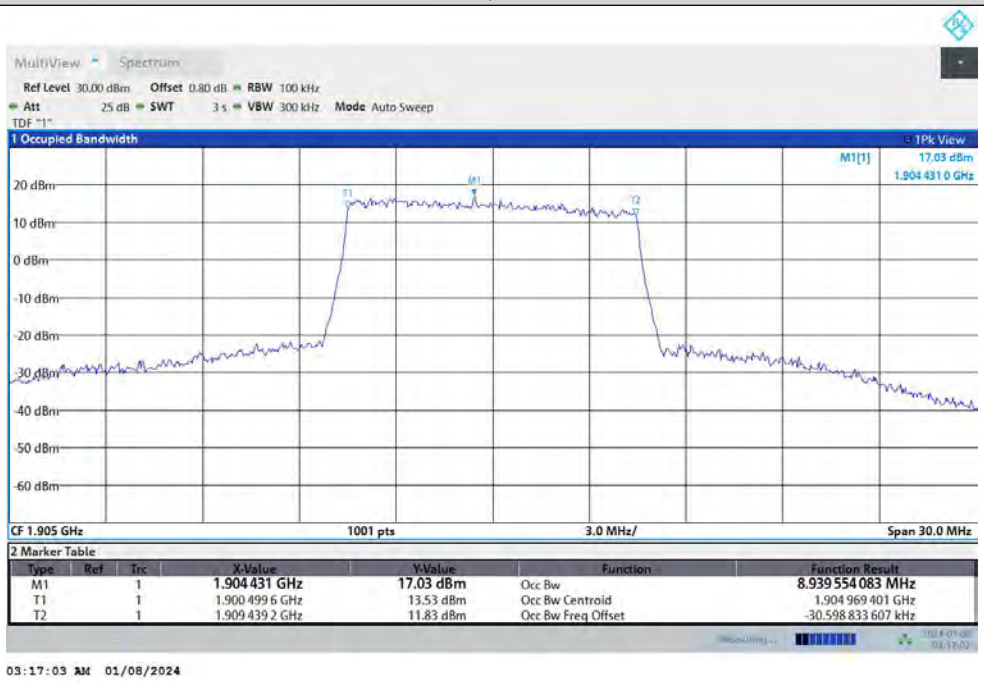
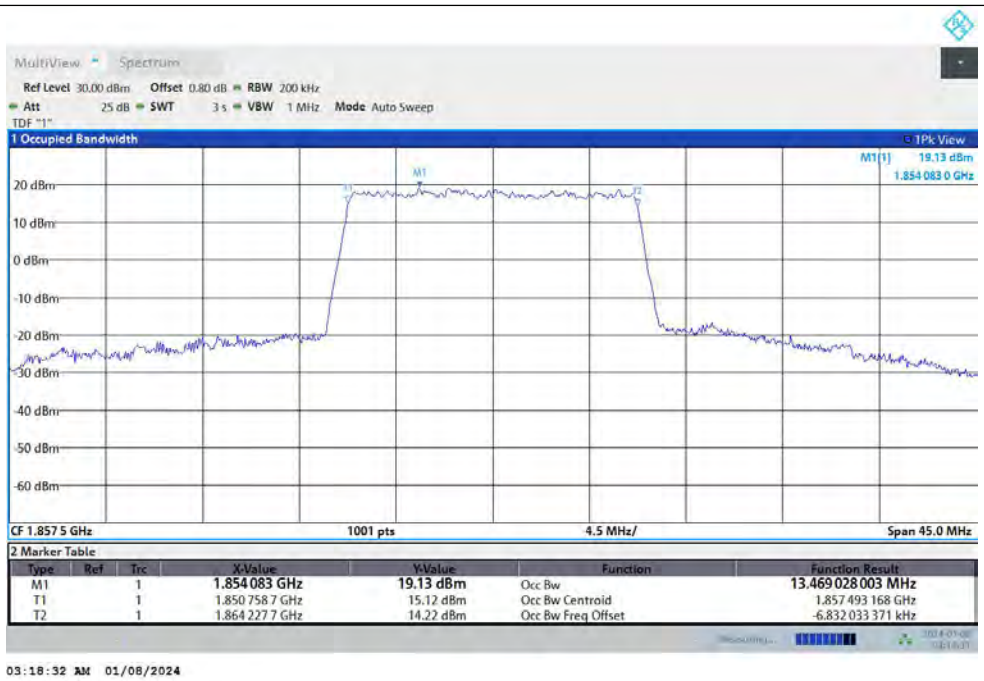
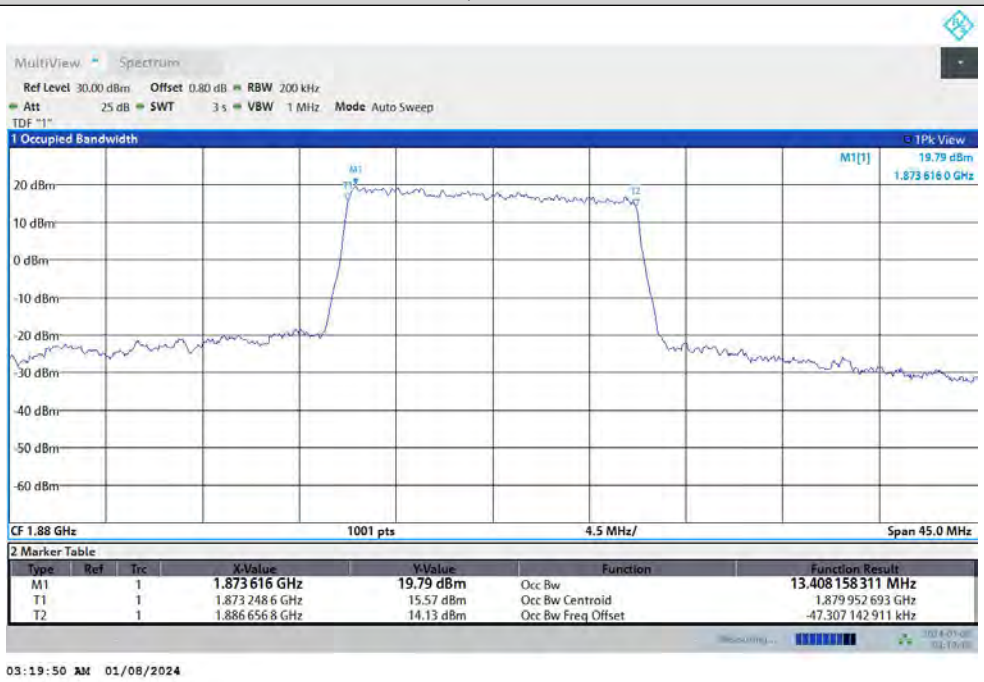


Band2-15MHz-QPSK-18675-75RB#0

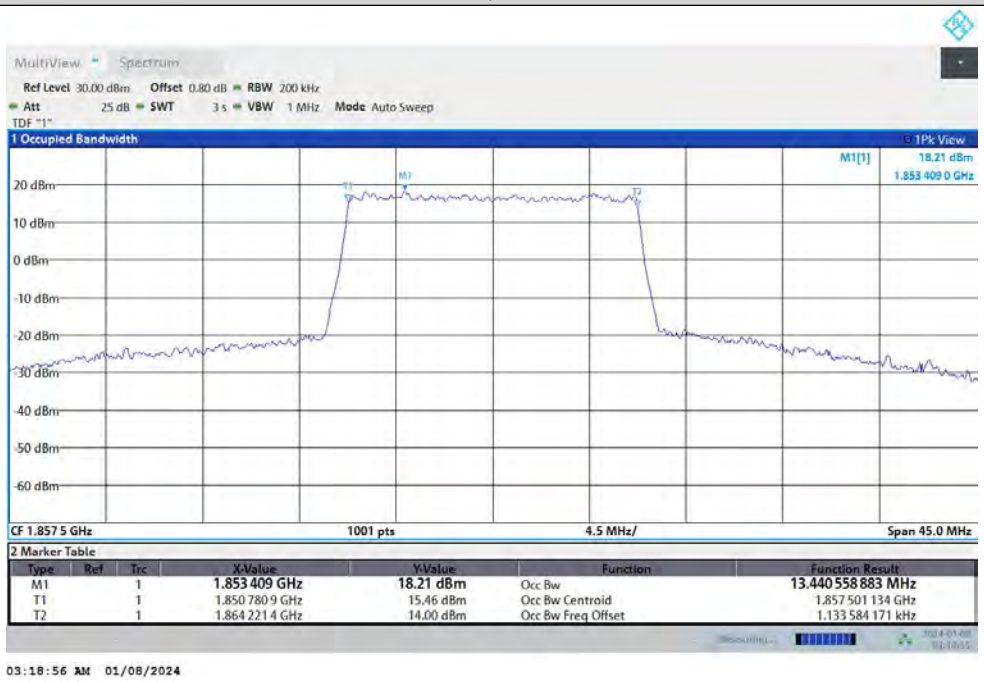


Band2-15MHz-QPSK-18900-75RB#0



Band2-15MHz-QPSK-19125-75RB#0

Band2-15MHz-16QAM-18675-75RB#0



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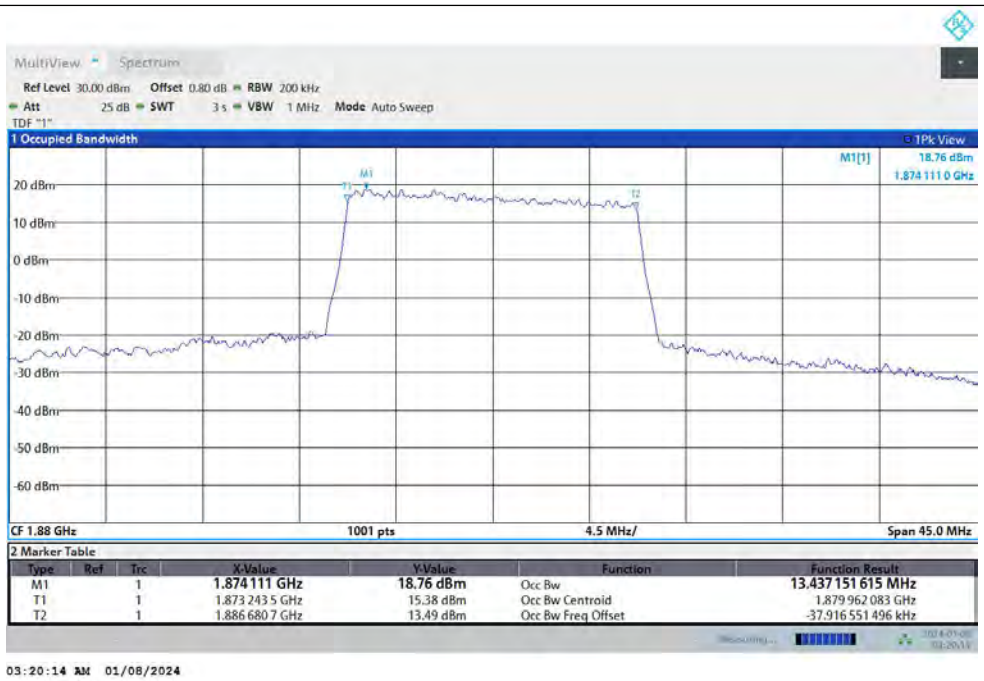
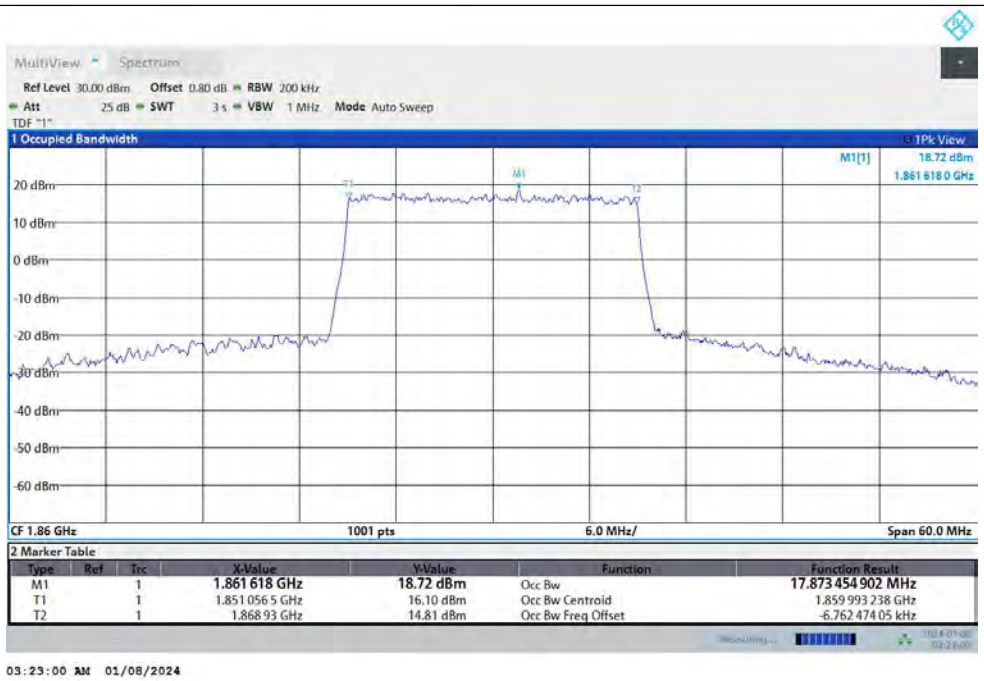


Band2-15MHz-16QAM-19125-75RB#0

Band2-20MHz-QPSK-18700-100RB#0



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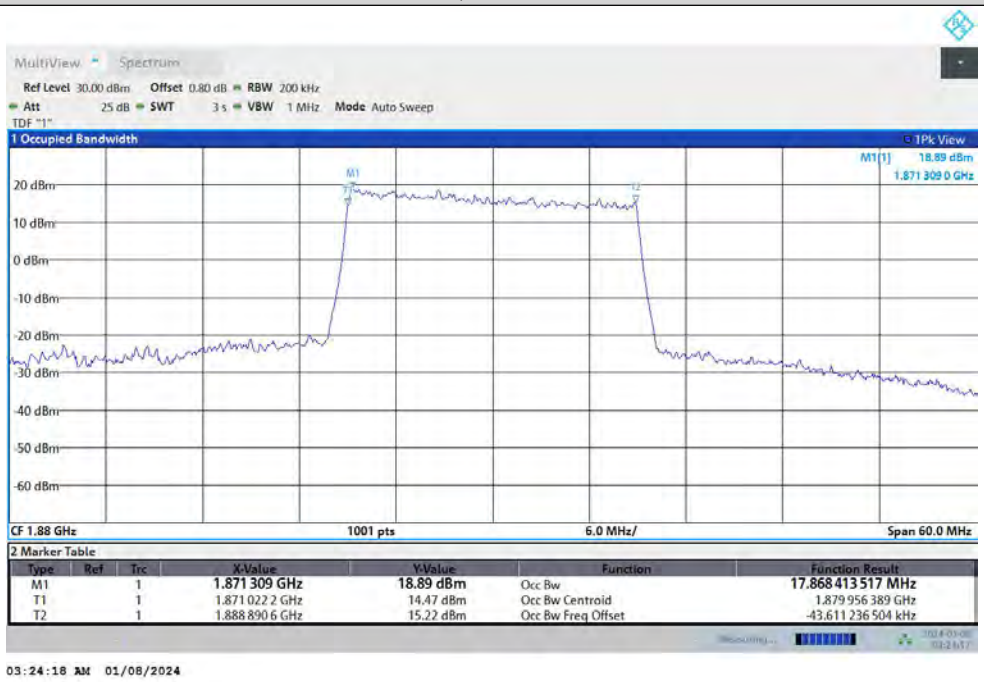

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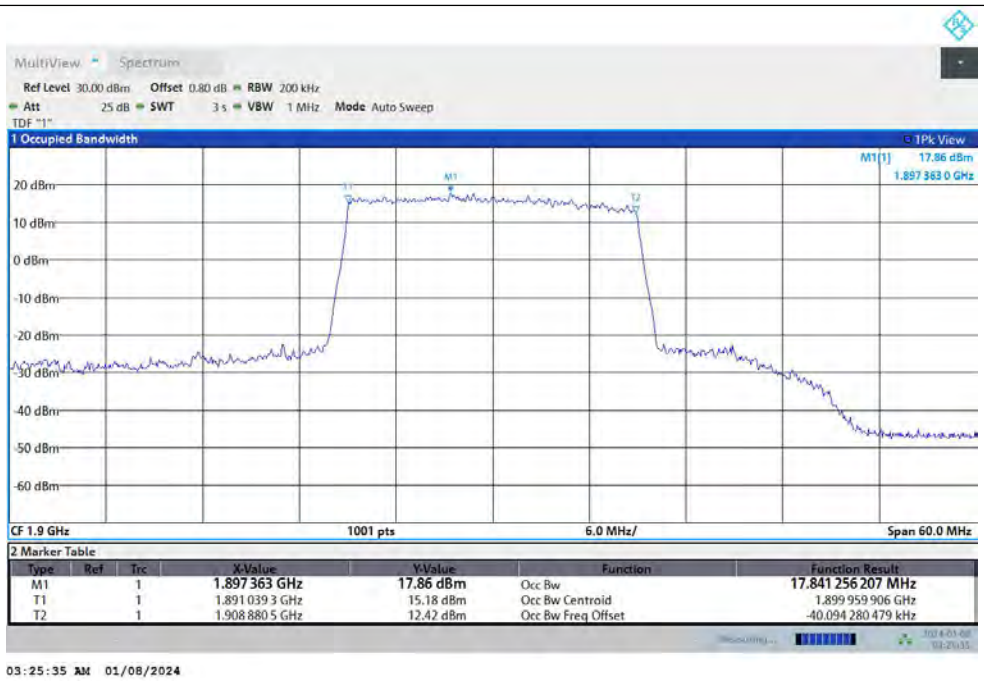

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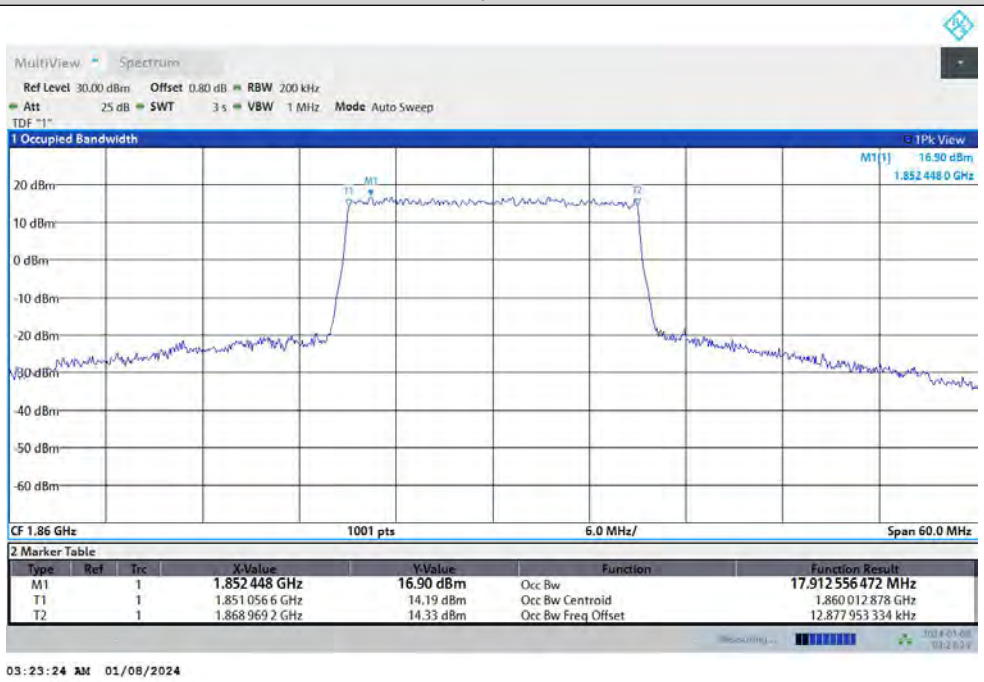

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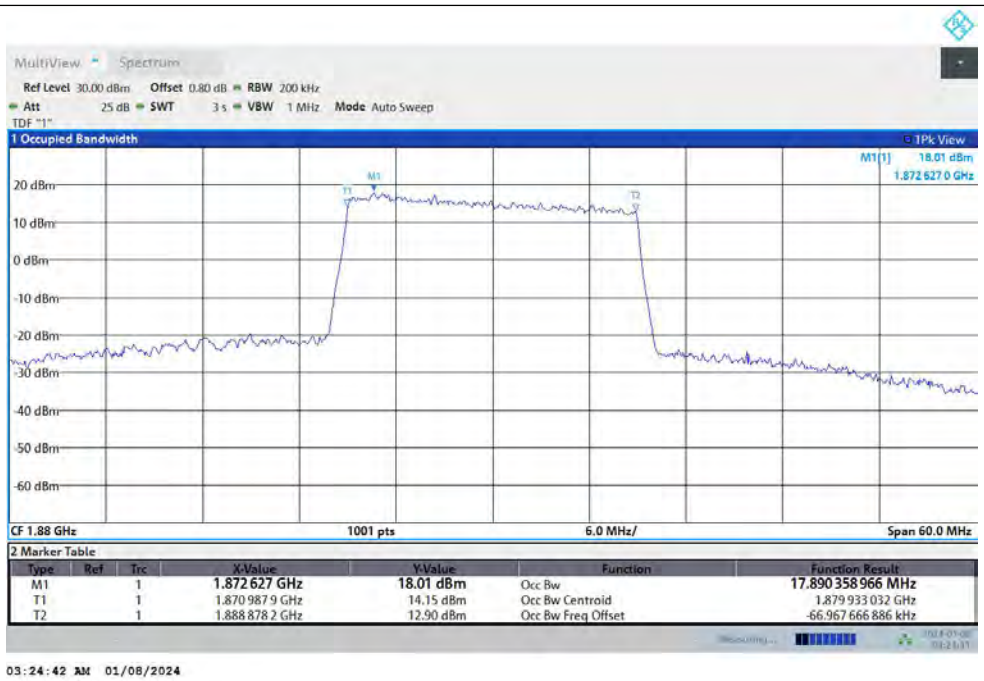
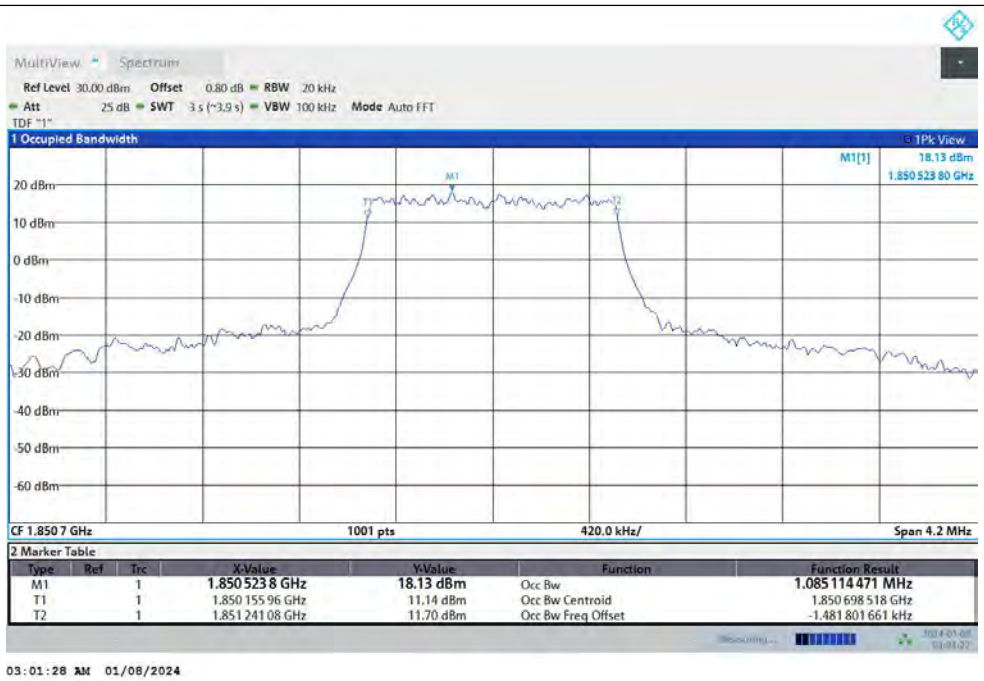


Band2-20MHz-16QAM-19100-100RB#0

Band2-1.4MHz-64QAM-18607-6RB#0



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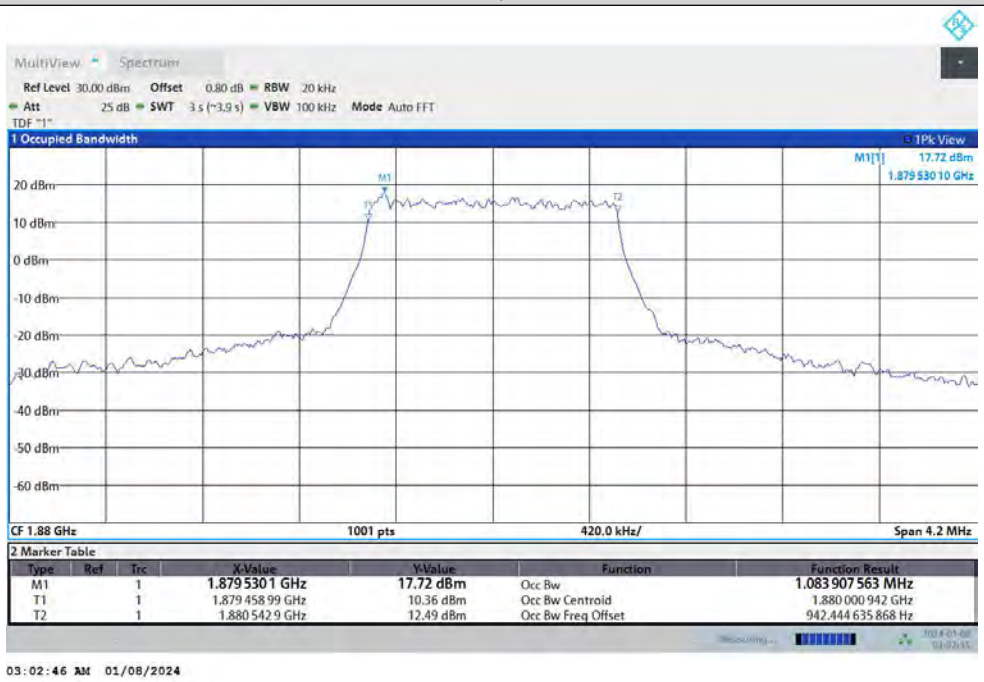
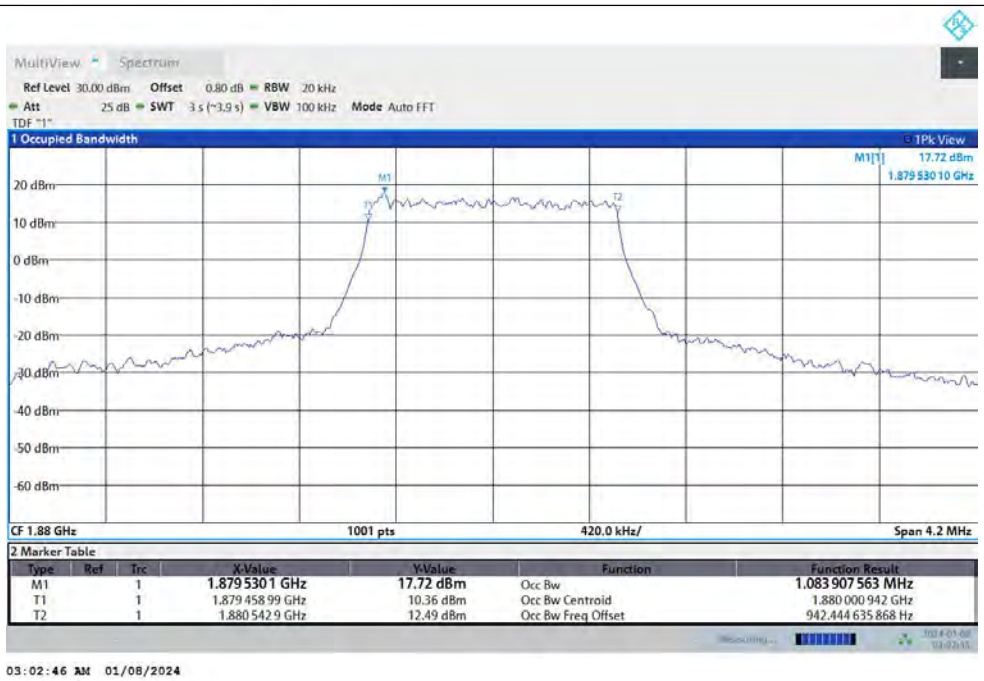
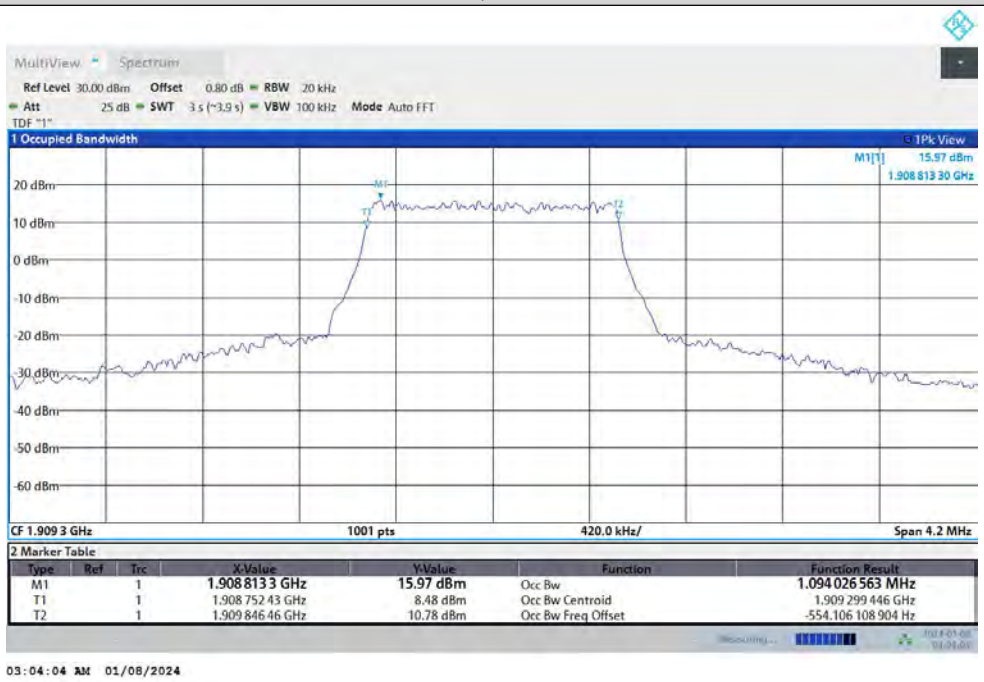


Band2-1.4MHz-64QAM-19193-6RB#0



Band2-3MHz-64QAM-18615-15RB#0



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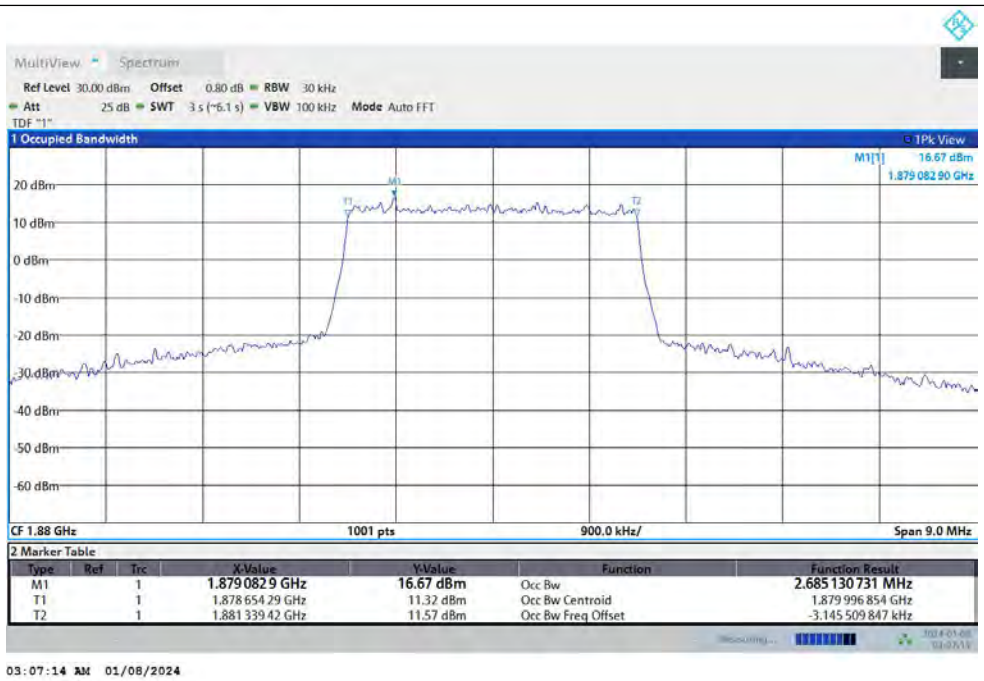

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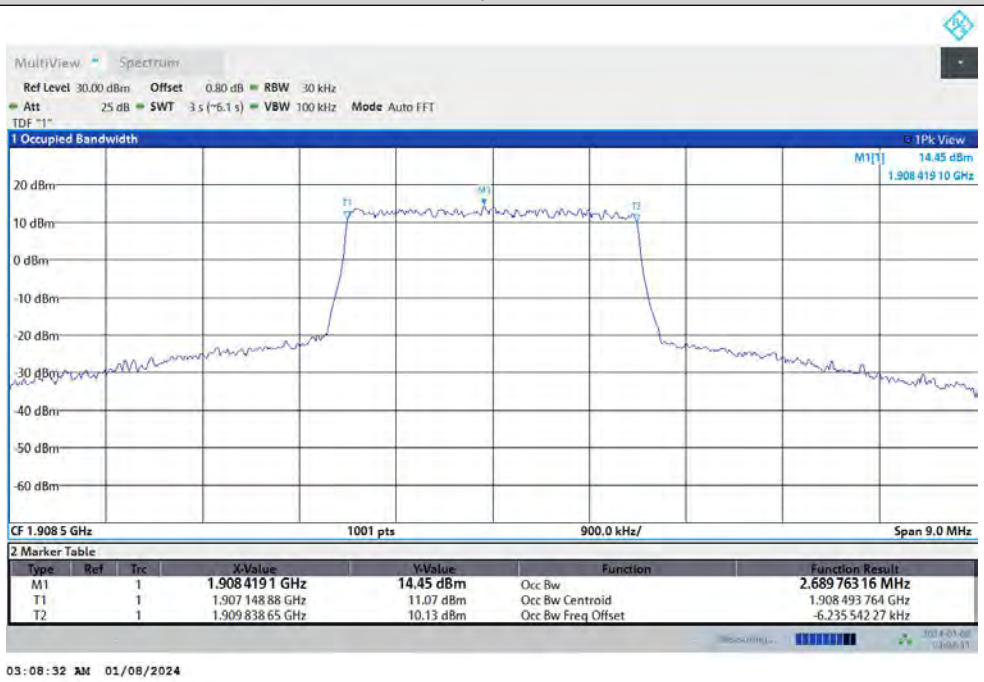
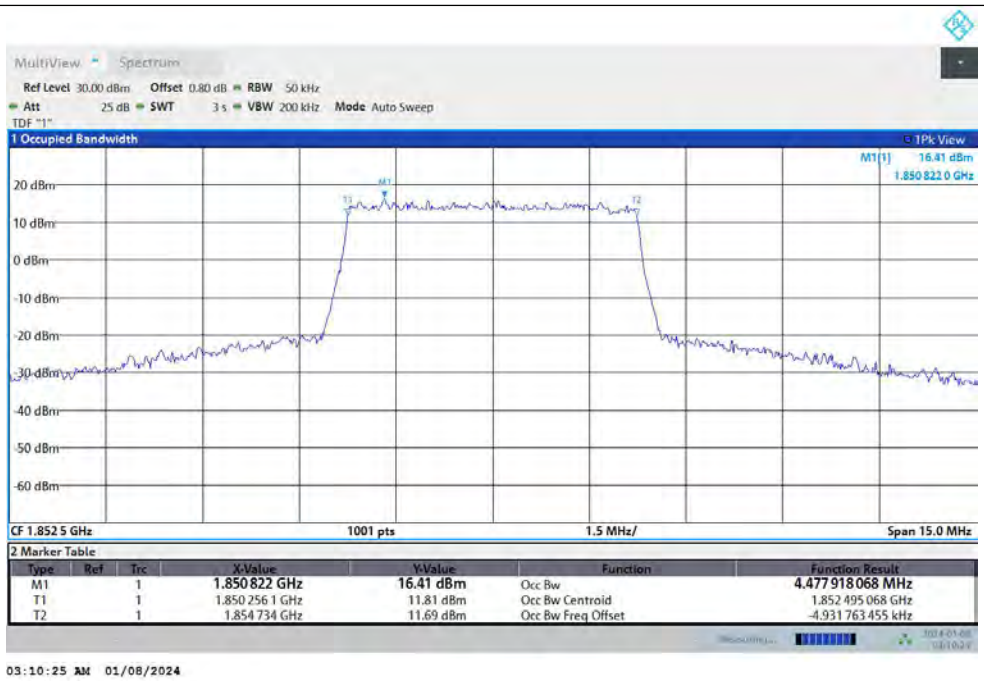


Band2-5MHz-64QAM-18625-25RB#0



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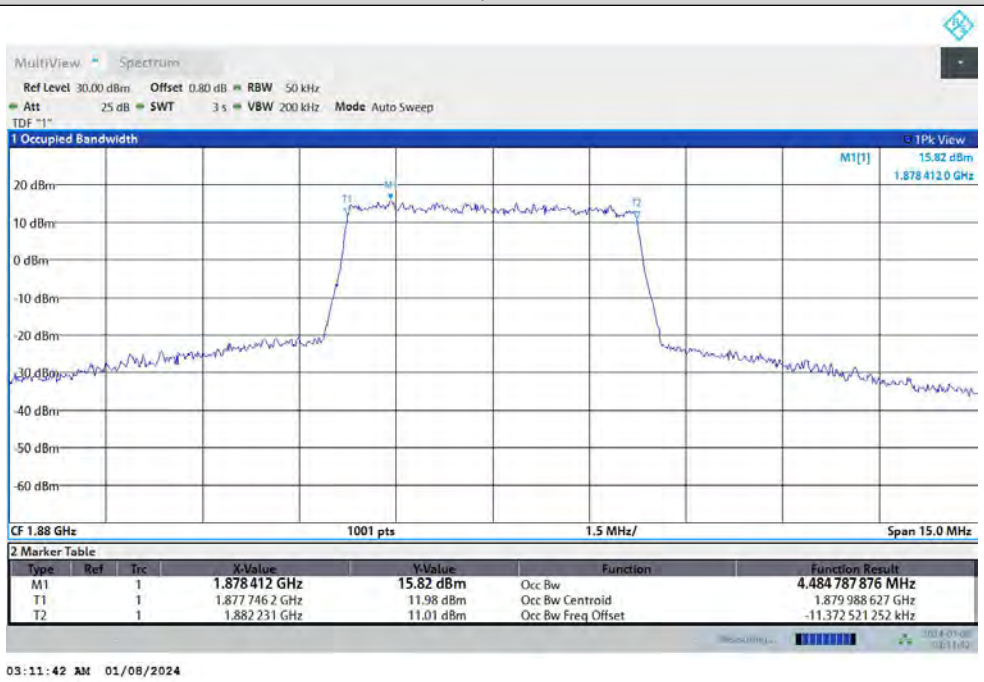
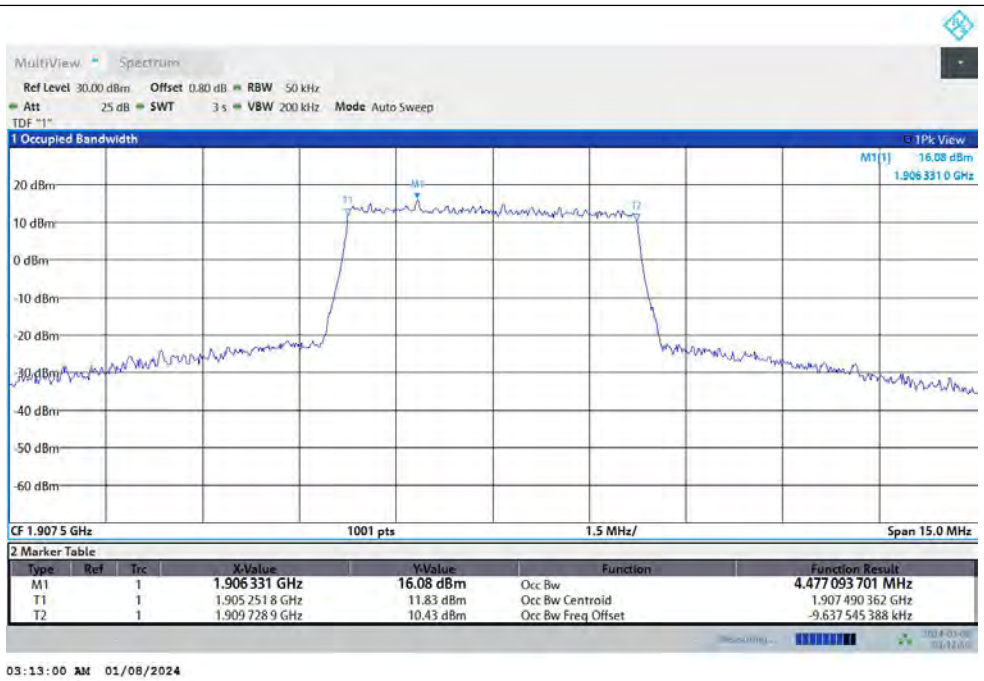
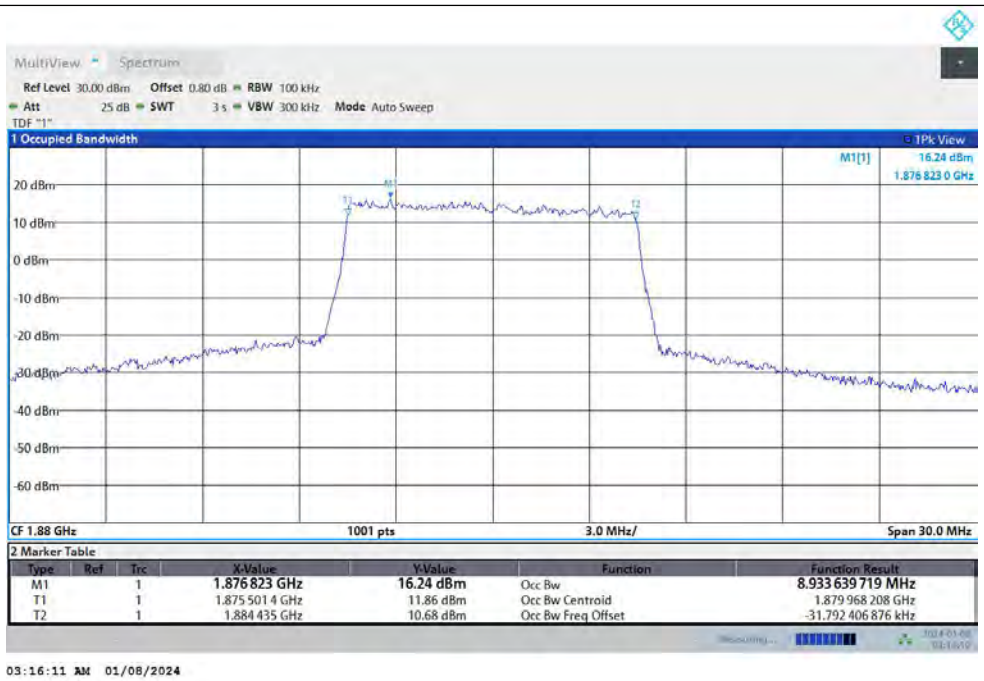


Band2-5MHz-64QAM-19175-25RB#0



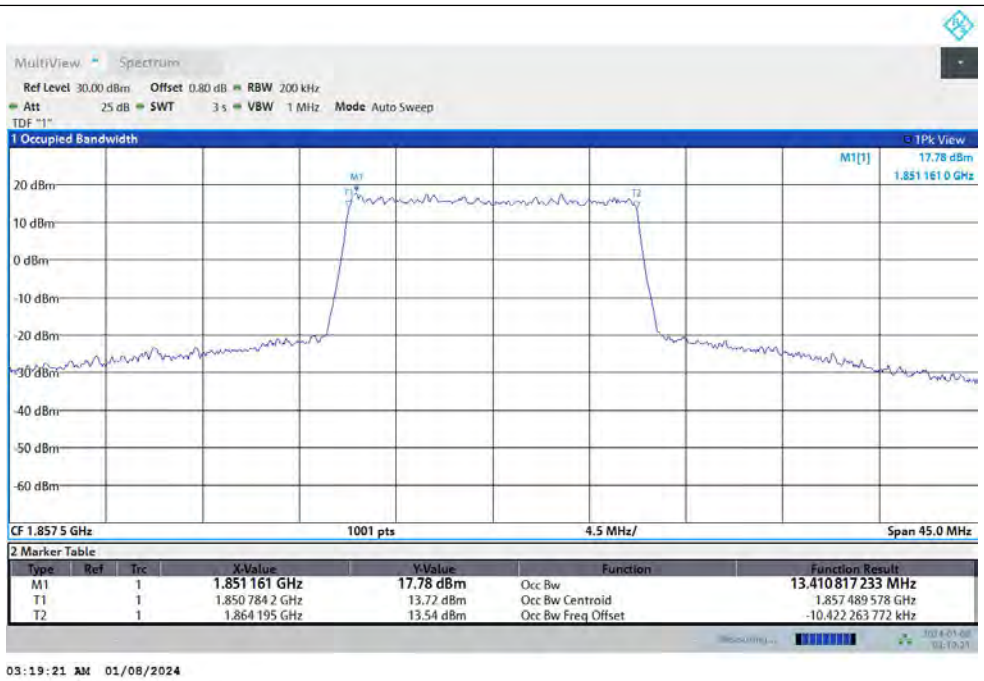
Band2-10MHz-64QAM-18650-50RB#0

Band2-10MHz-64QAM-18900-50RB#0



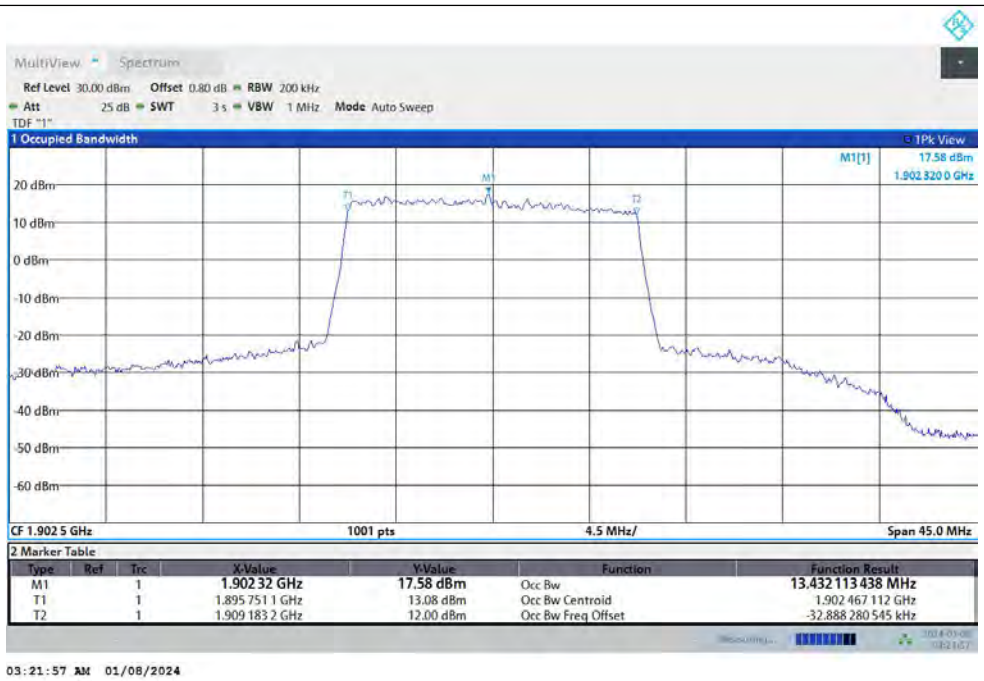
Band2-10MHz-64QAM-19150-50RB#0

Band2-15MHz-64QAM-18675-75RB#0

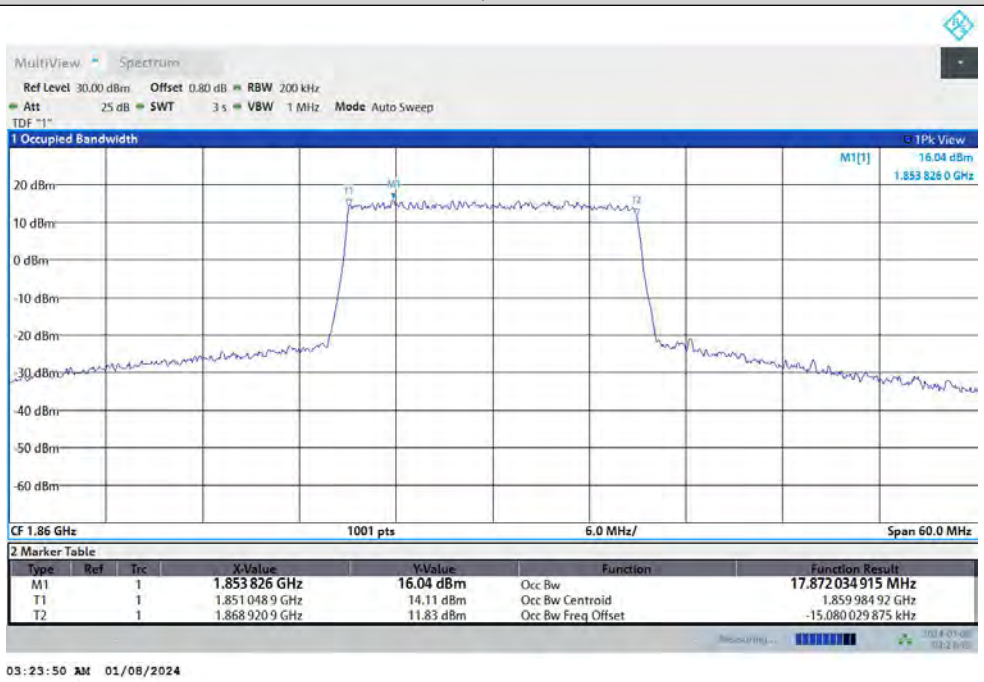


Band2-15MHz-64QAM-18900-75RB#0

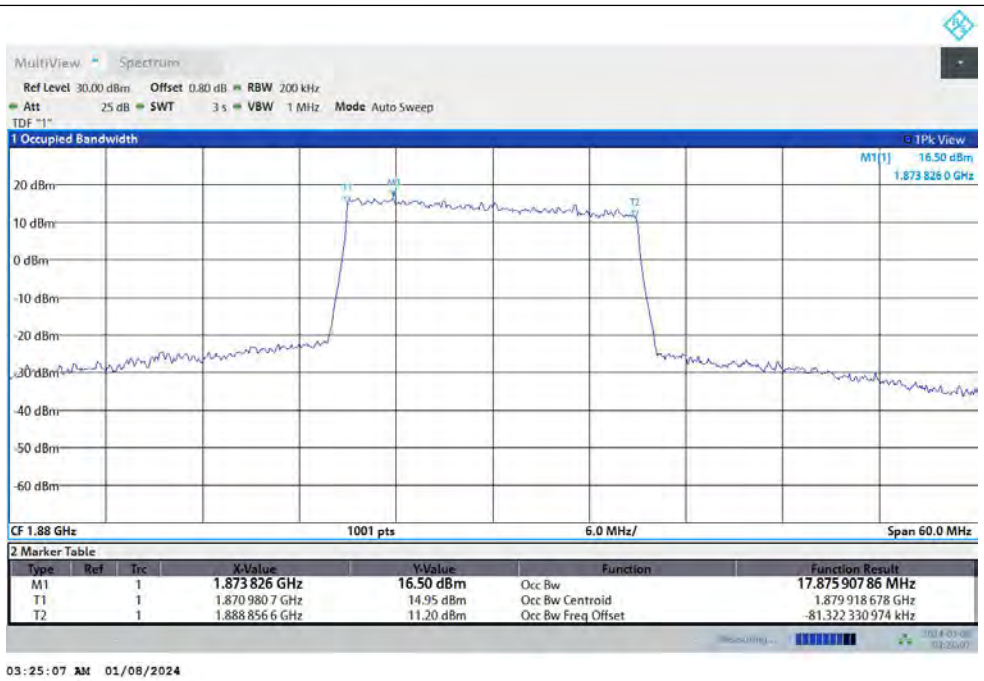
Band2-15MHz-64QAM-19125-75RB#0



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



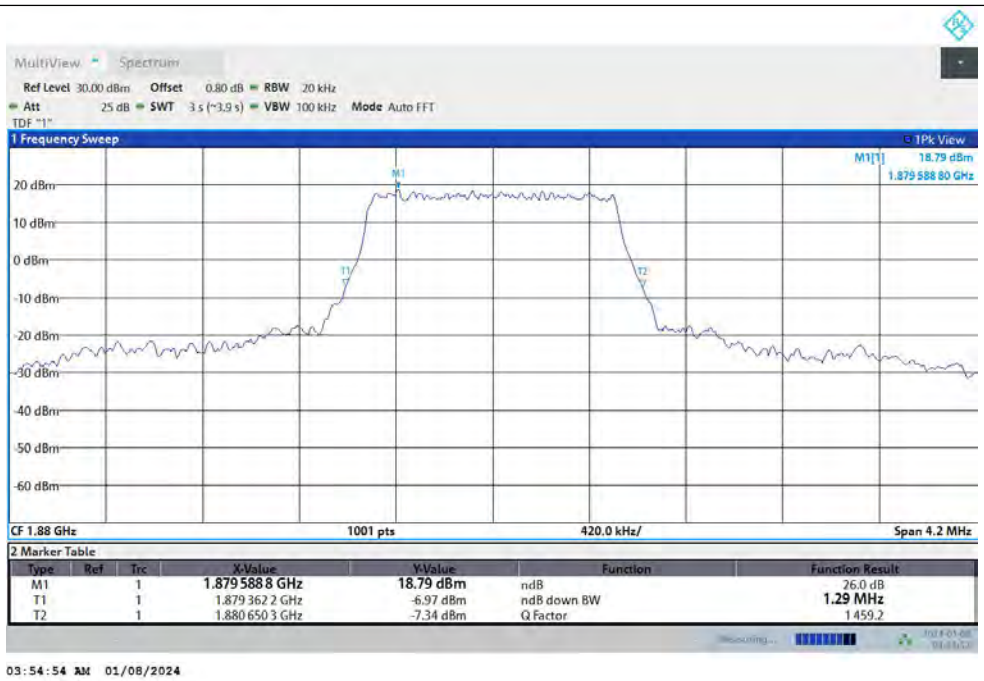
Band2-20MHz-64QAM-18900-100RB#0



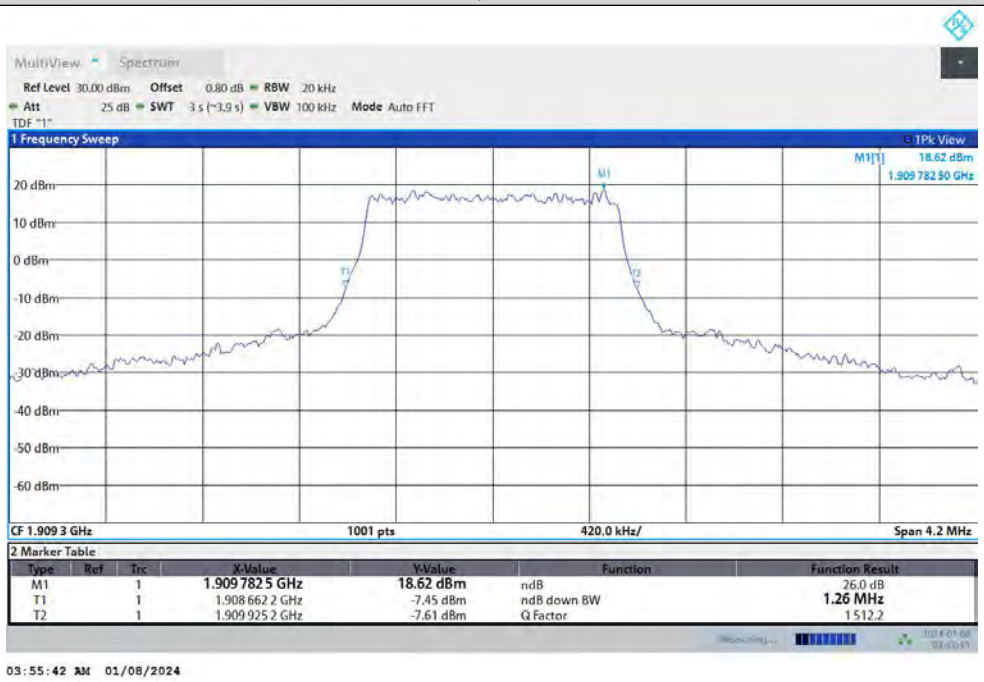
Band2-20MHz-64QAM-19100-100RB#0

26dB Bandwidth

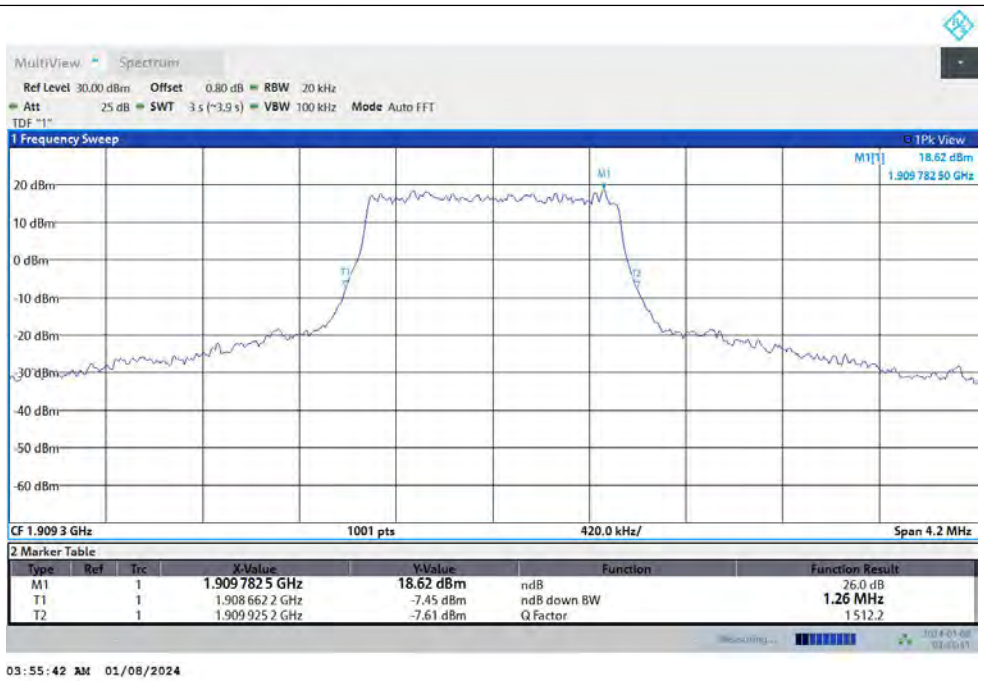
Band2-1.4MHz-QPSK-18607-6RB#0



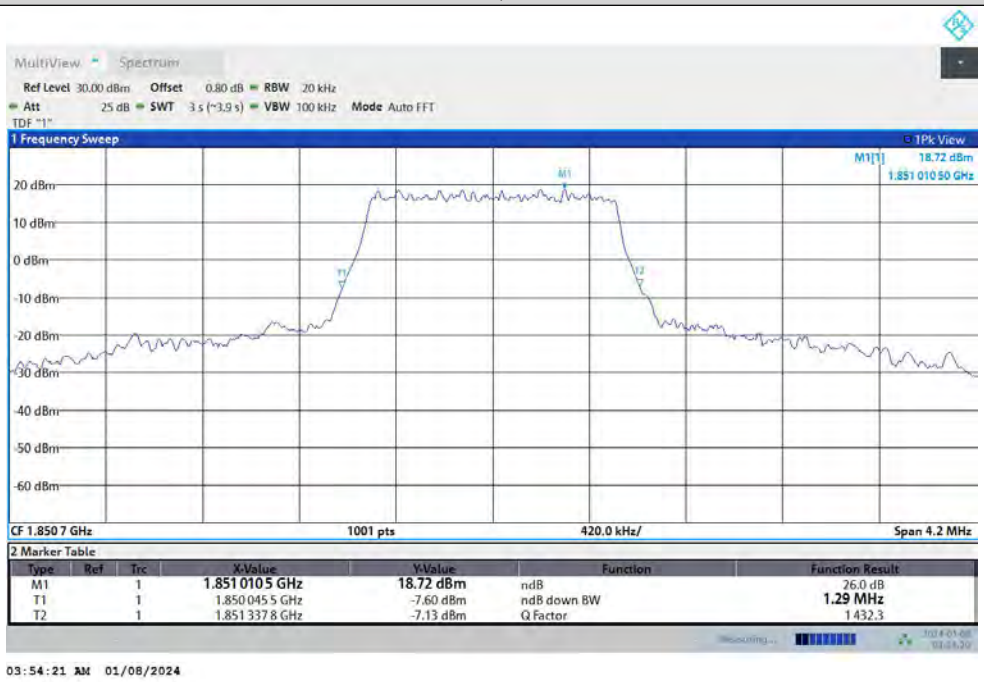
Band2-1.4MHz-QPSK-18900-6RB#0



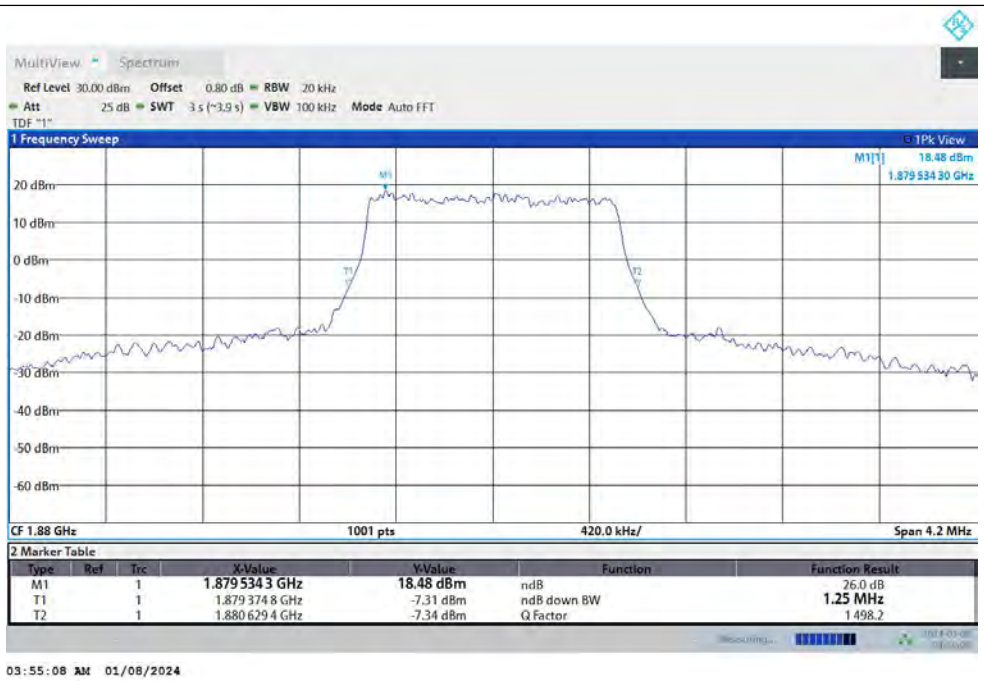
Band2-1.4MHz-QPSK-19193-6RB#0



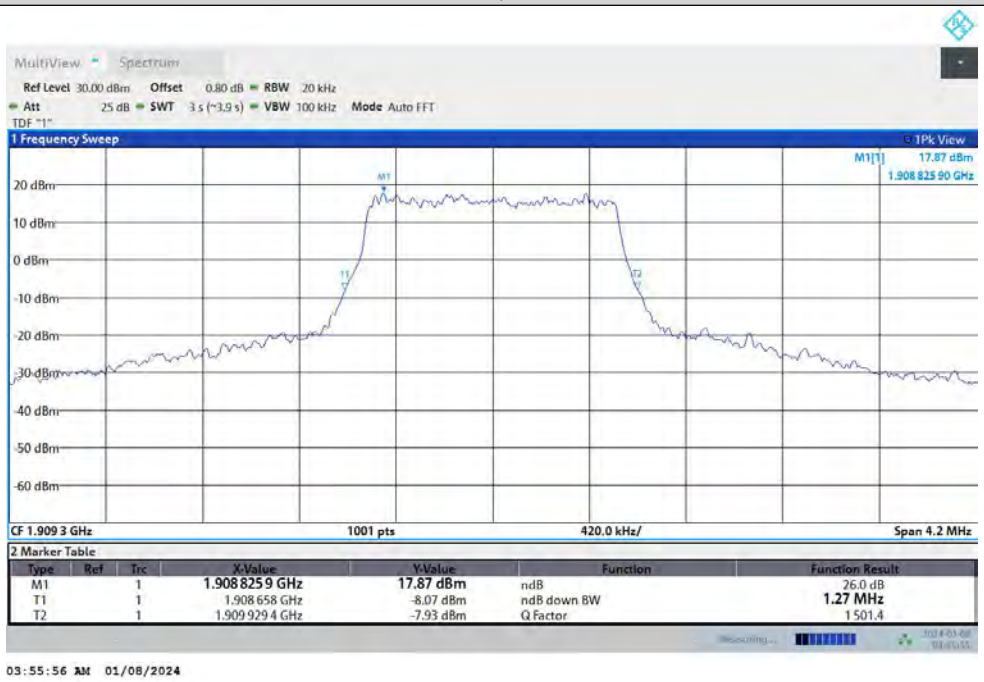
Band2-1.4MHz-16QAM-18607-6RB#0



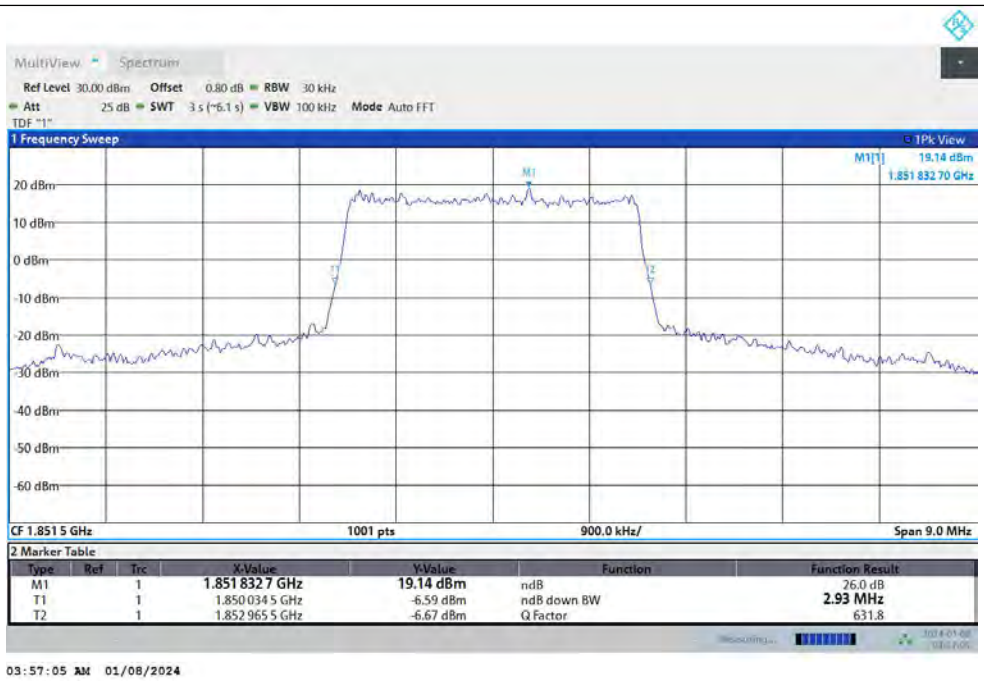
Band2-1.4MHz-16QAM-18900-6RB#0



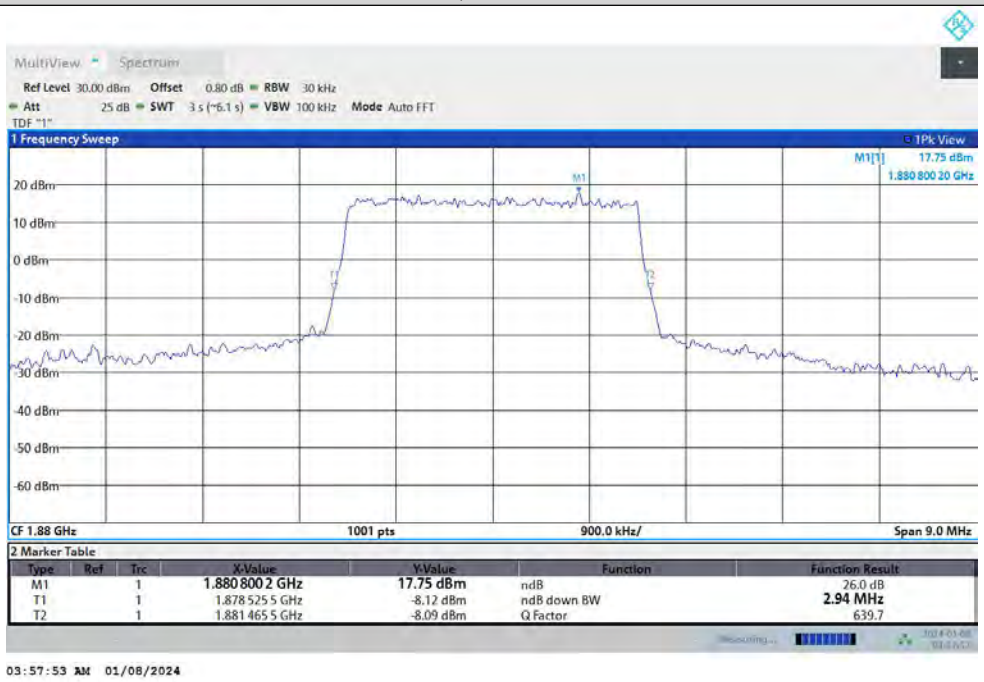
Band2-1.4MHz-16QAM-19193-6RB#0



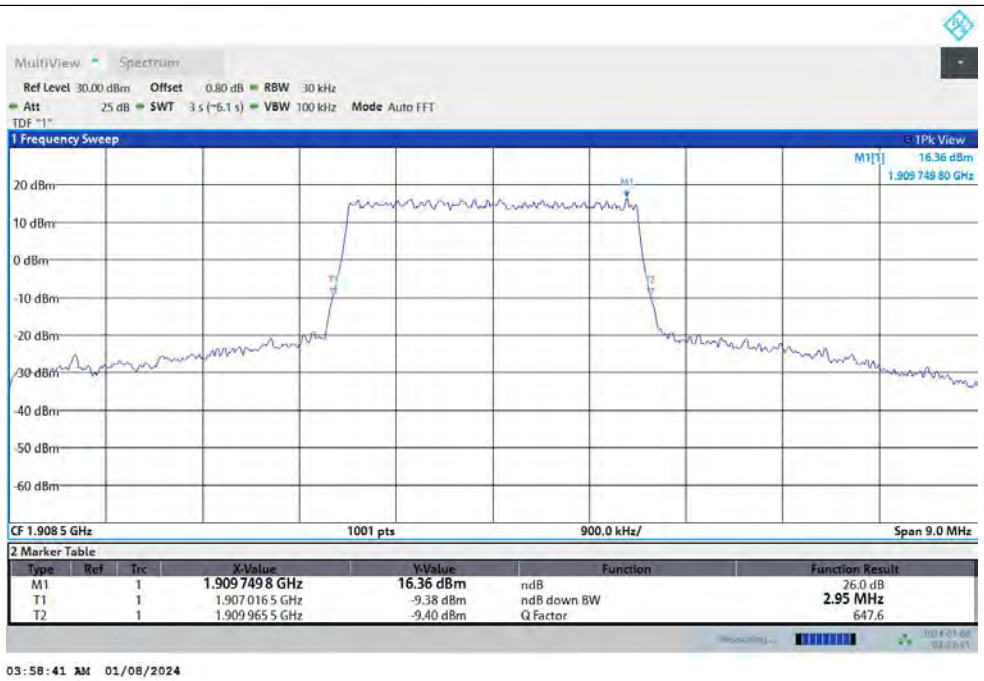
Band2-3MHz-QPSK-18615-15RB#0



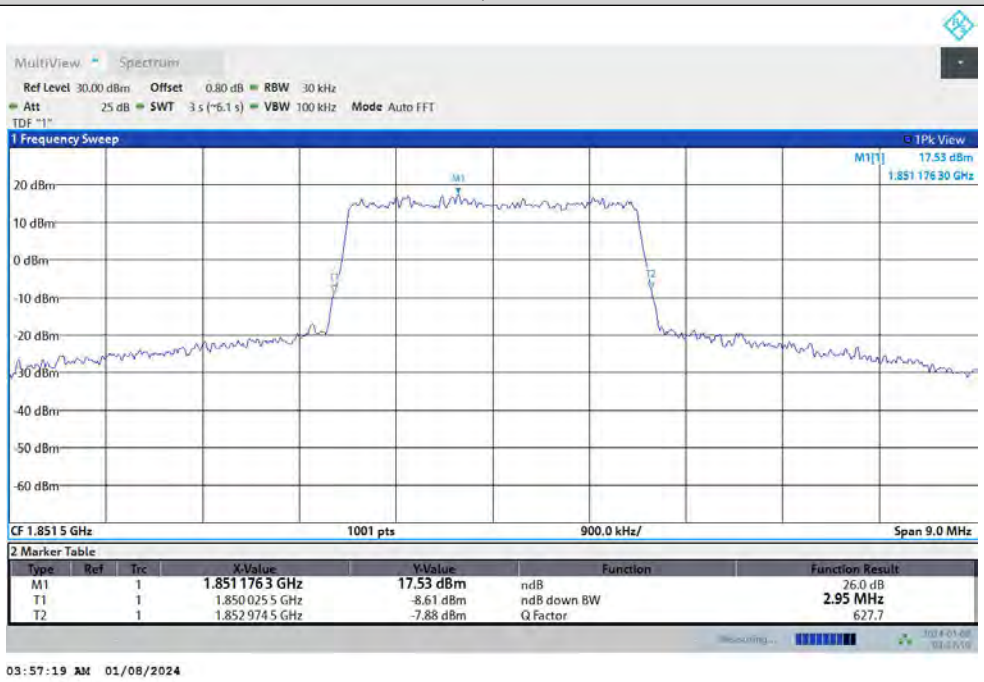
Band2-3MHz-QPSK-18900-15RB#0



Band2-3MHz-QPSK-19185-15RB#0



Band2-3MHz-16QAM-18615-15RB#0



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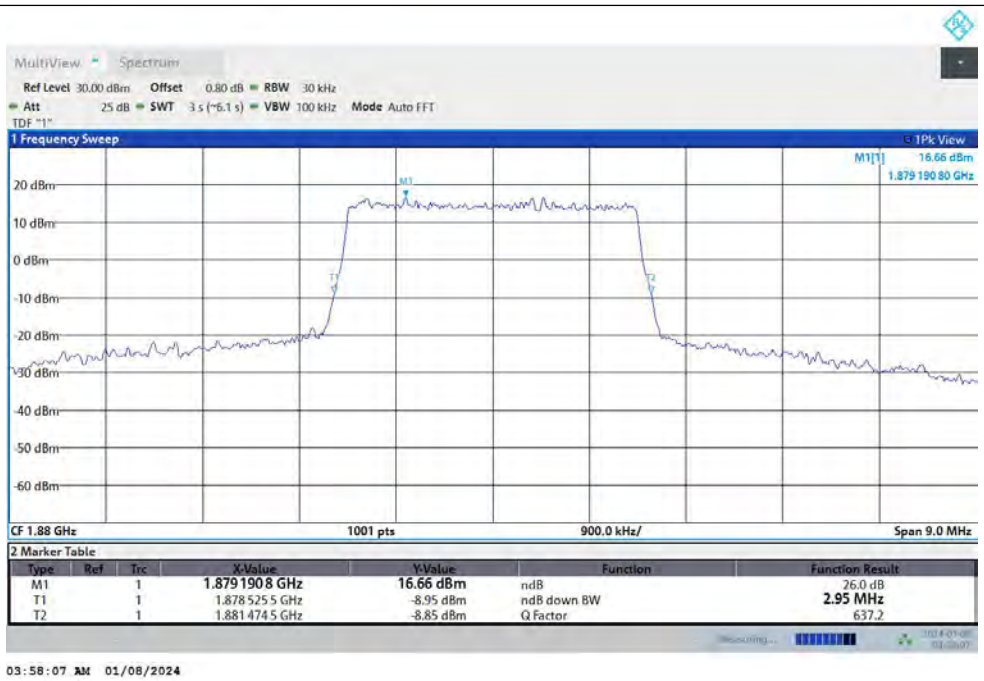
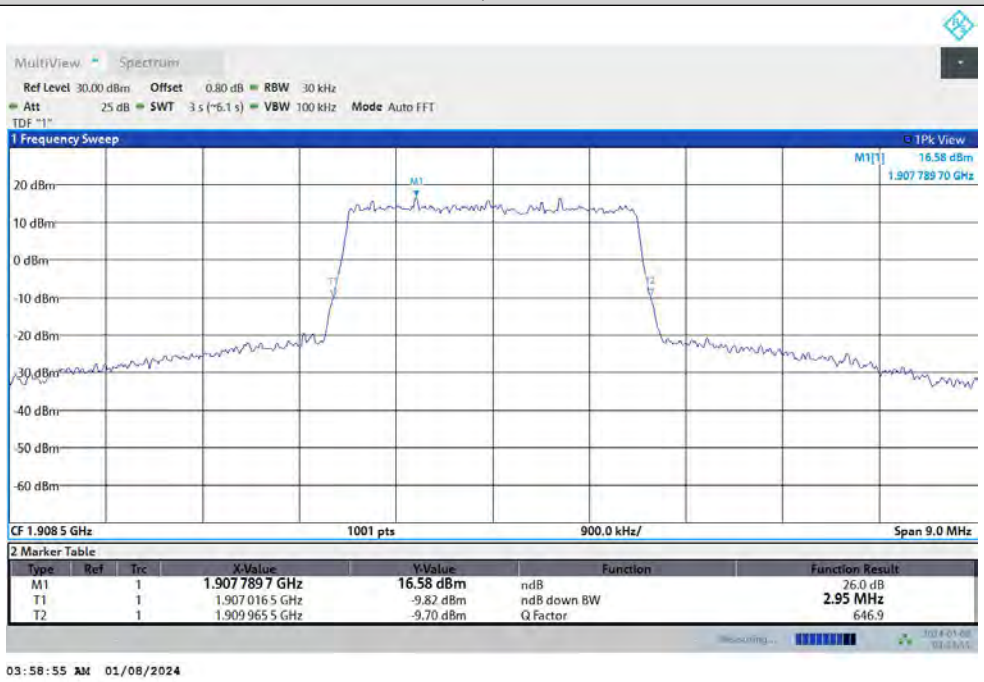
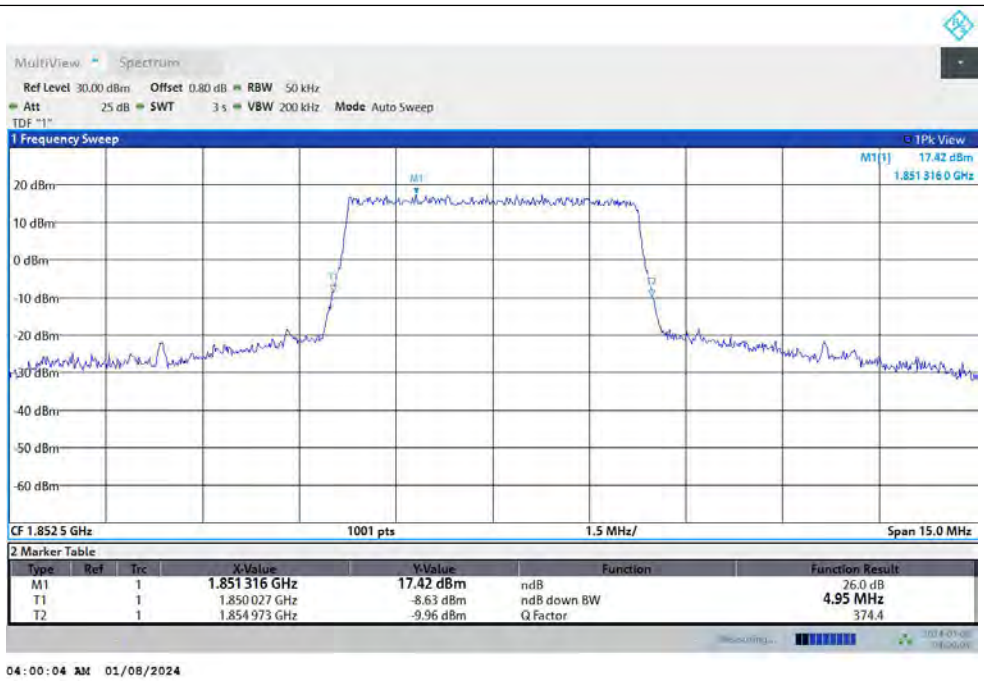


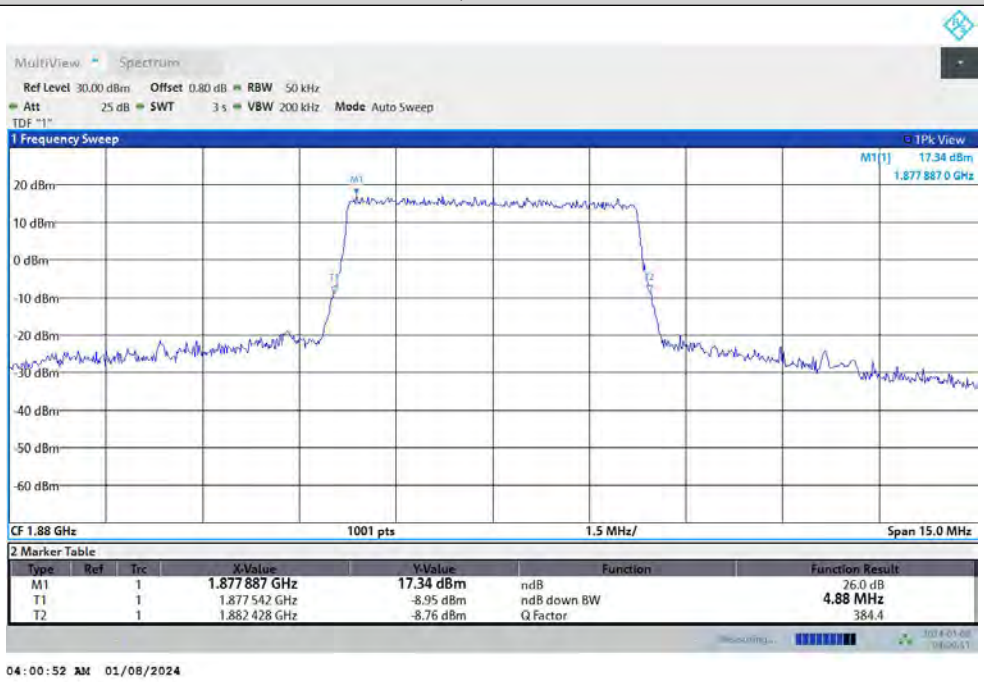
Band2-3MHz-16QAM-19185-15RB#0



Band2-5MHz-QPSK-18625-25RB#0



Band2-5MHz-QPSK-18900-25RB#0



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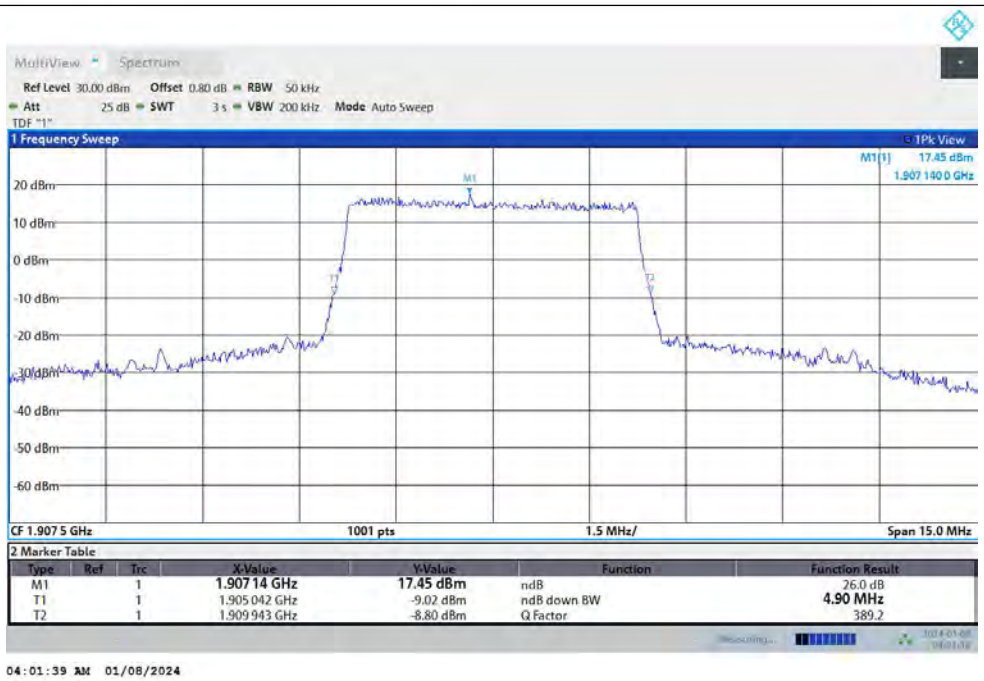
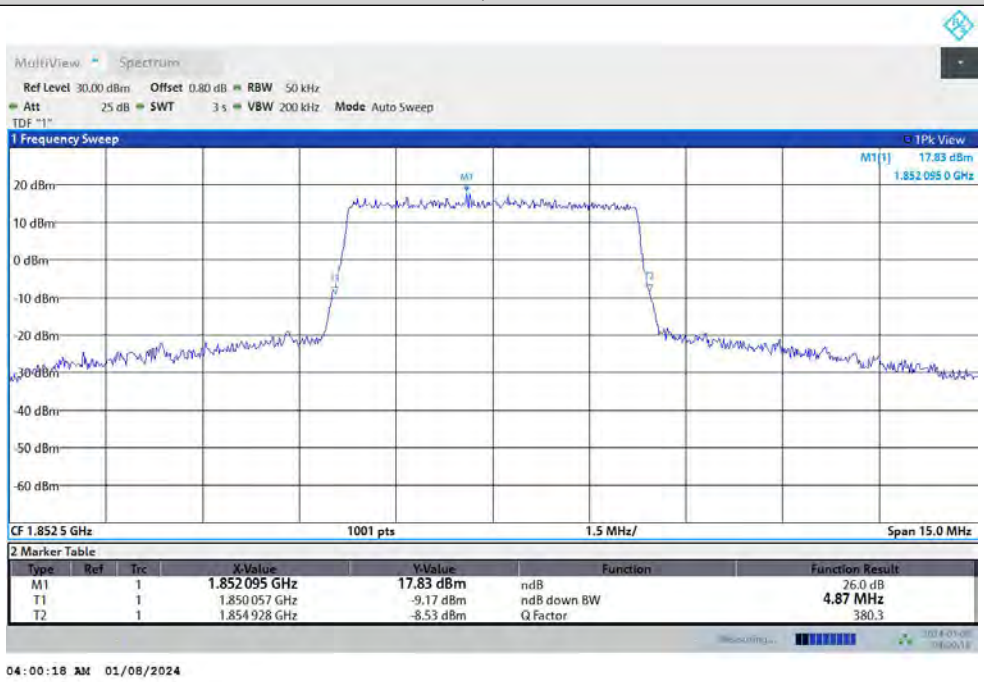
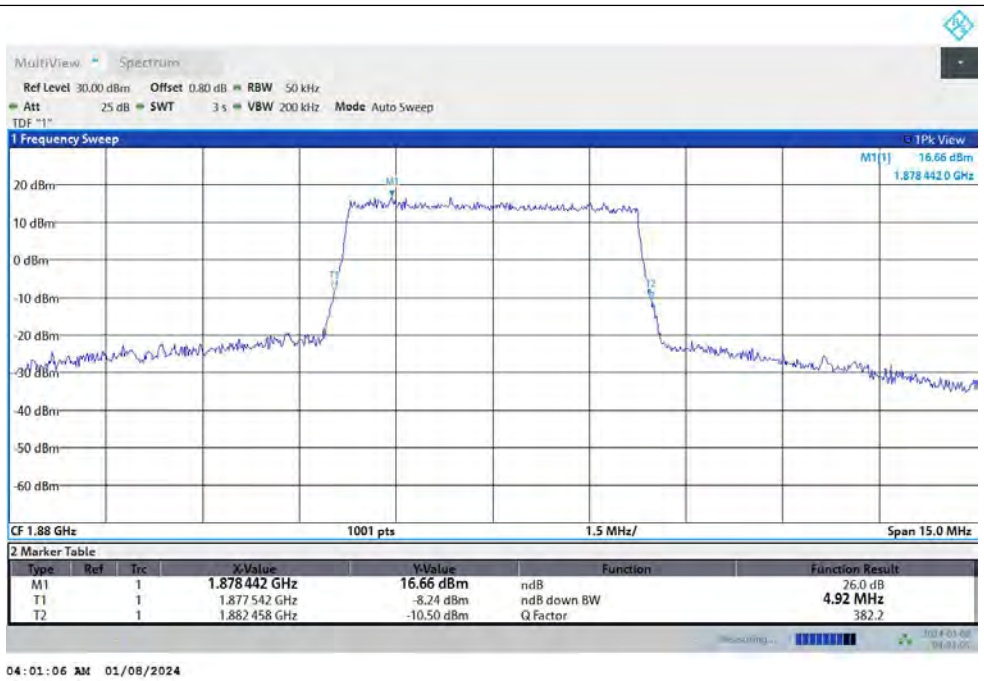


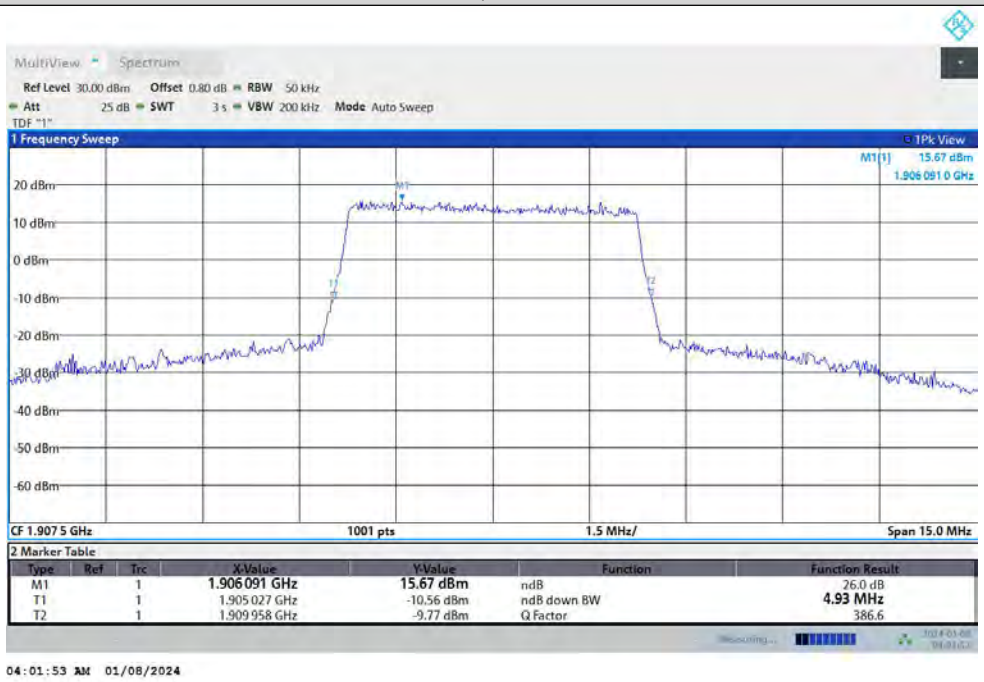
Band2-5MHz-16QAM-18625-25RB#0



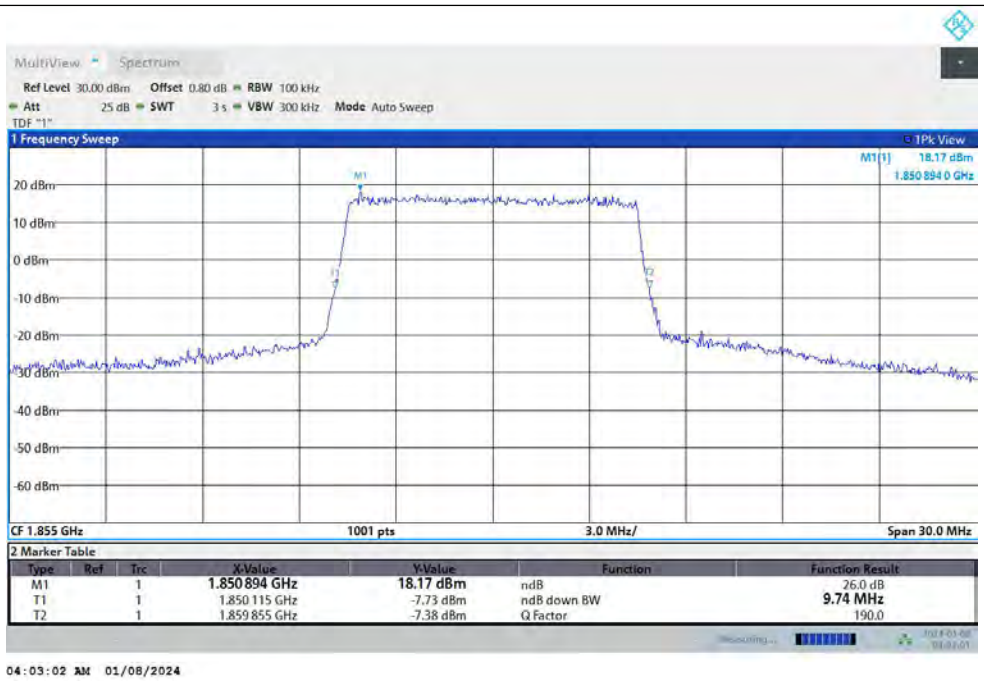
Band2-5MHz-16QAM-18900-25RB#0



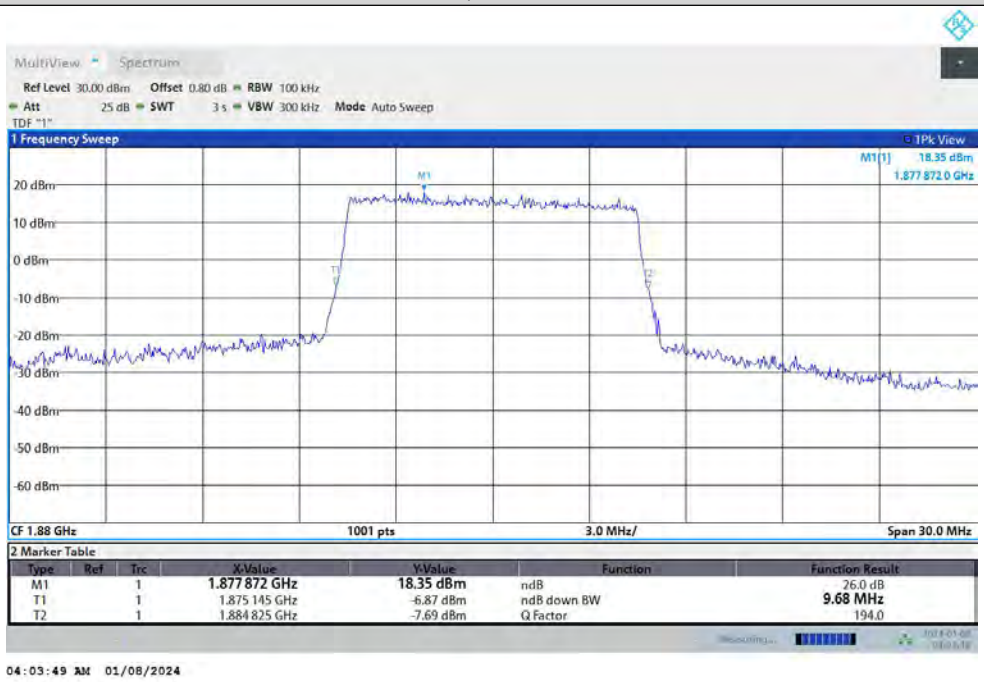
Band2-5MHz-16QAM-19175-25RB#0



Band2-10MHz-QPSK-18650-50RB#0



Band2-10MHz-QPSK-18900-50RB#0



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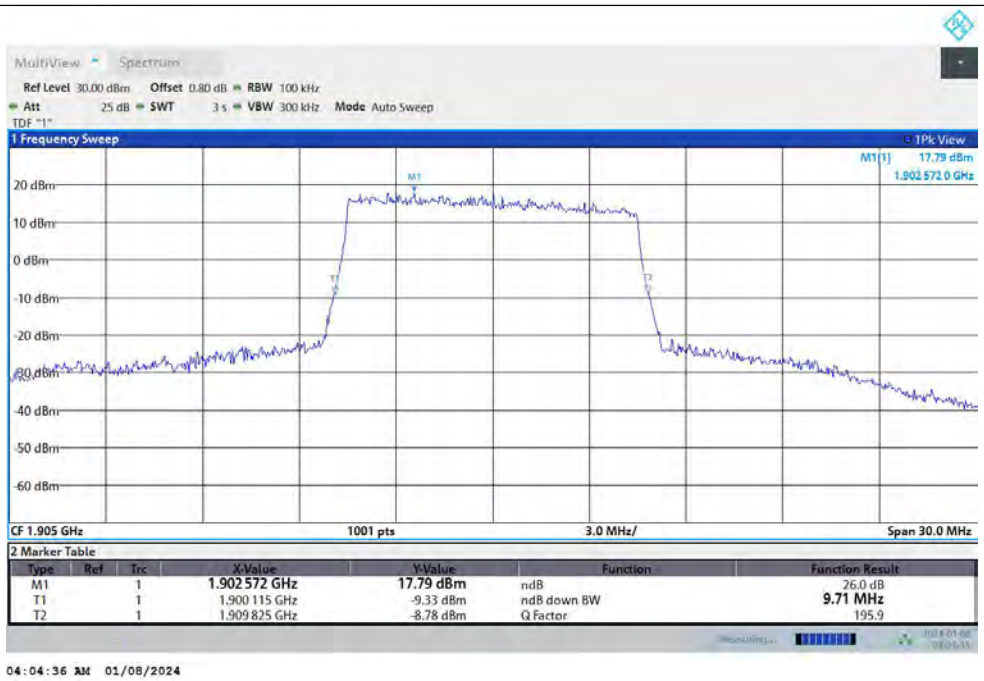
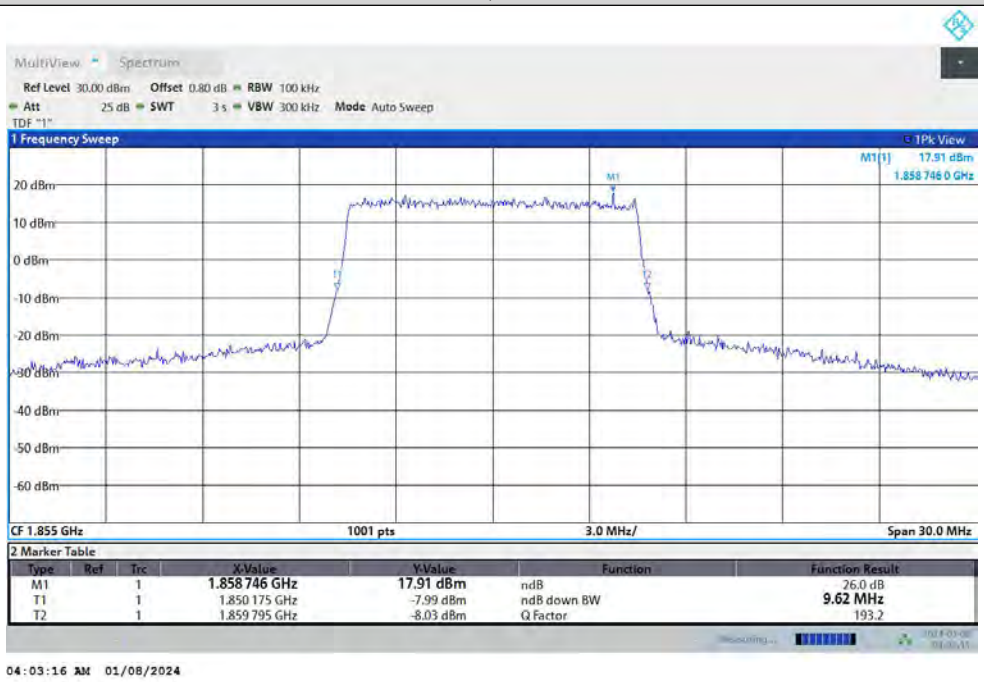
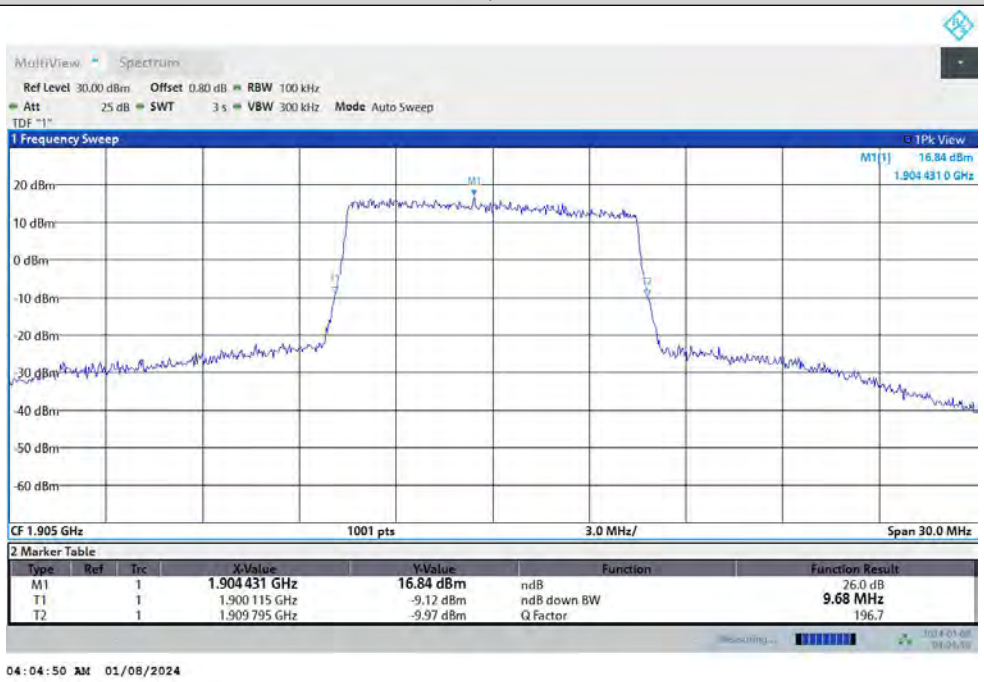


Band2-10MHz-16QAM-18650-50RB#0

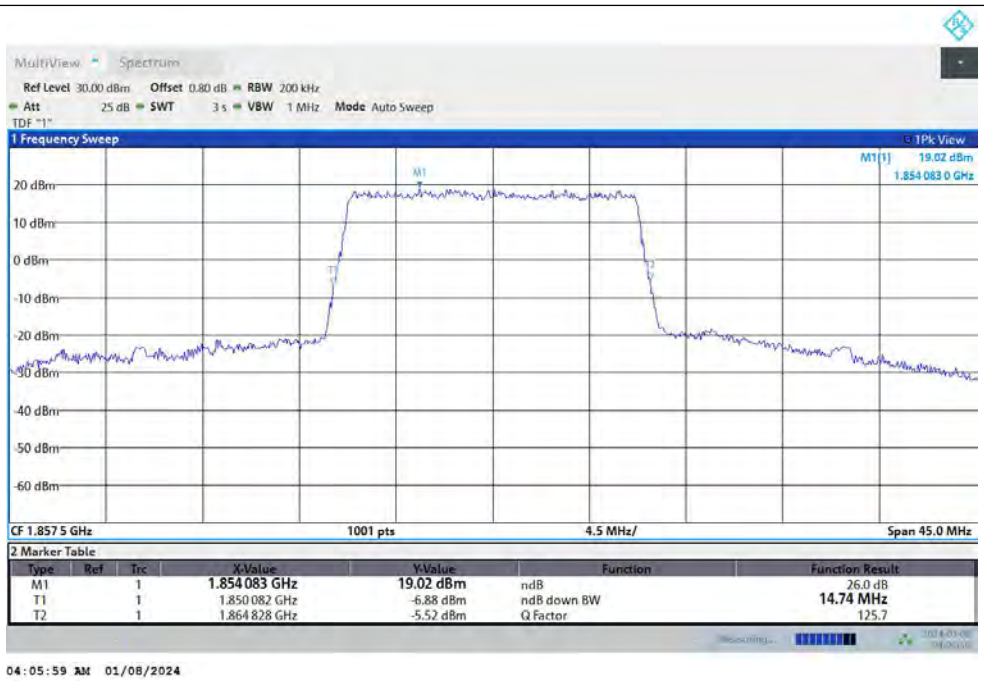


Band2-10MHz-16QAM-18900-50RB#0

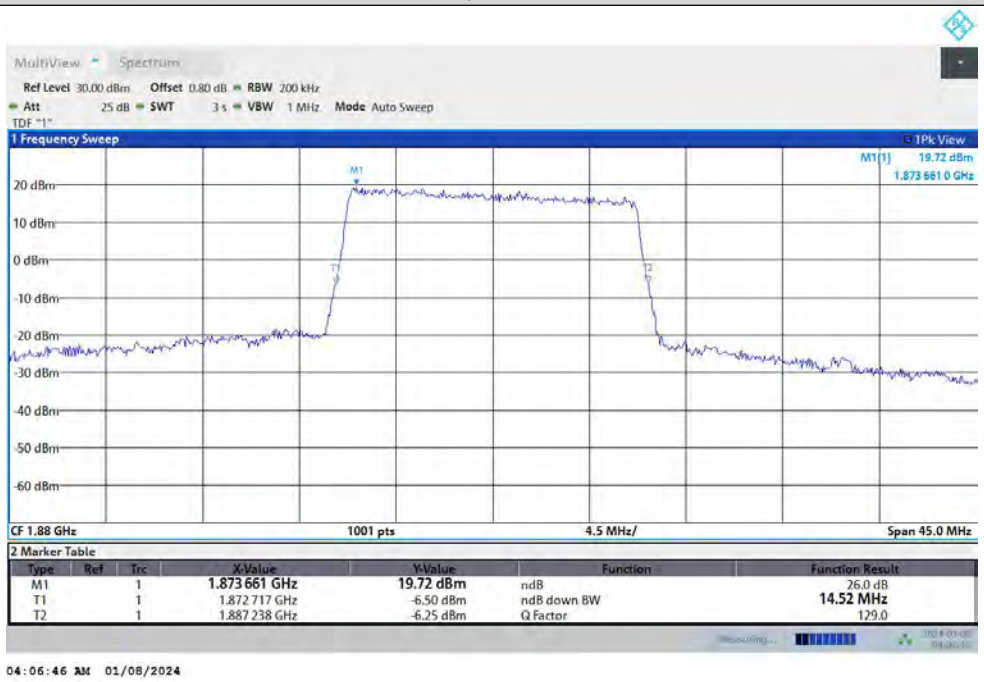
Band2-10MHz-16QAM-19150-50RB#0



Band2-15MHz-QPSK-18675-75RB#0

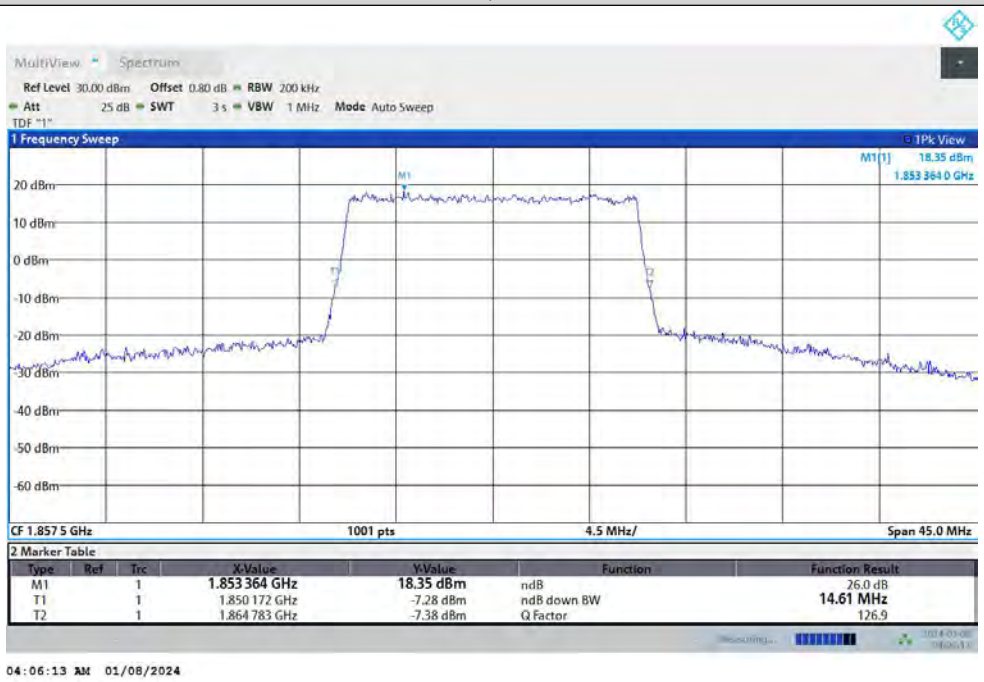


Band2-15MHz-QPSK-18900-75RB#0

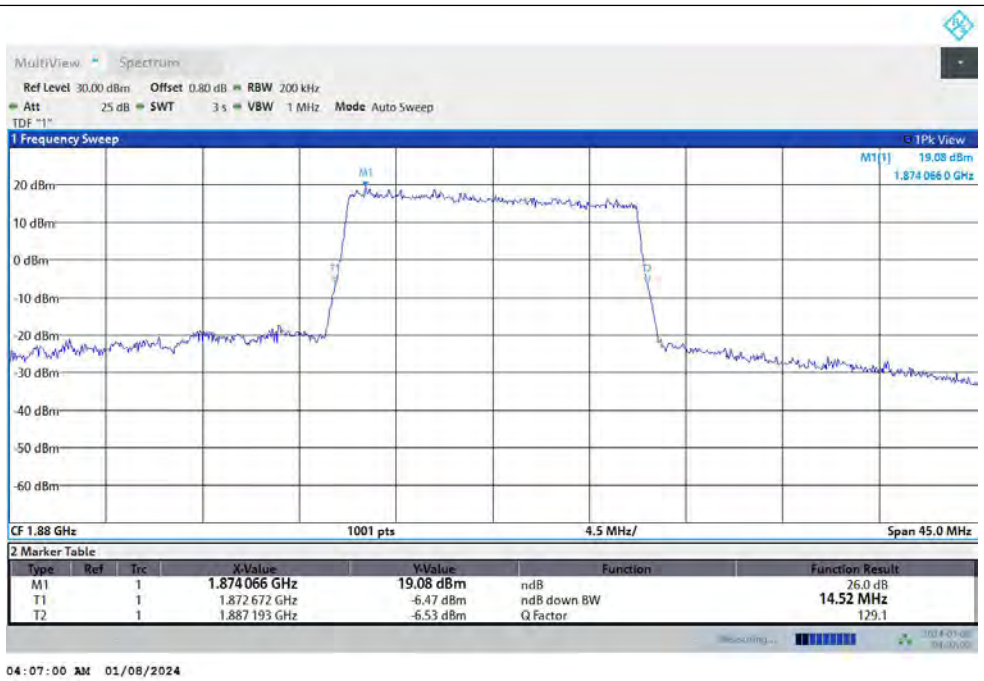


Band2-15MHz-QPSK-19125-75RB#0

Band2-15MHz-16QAM-18675-75RB#0

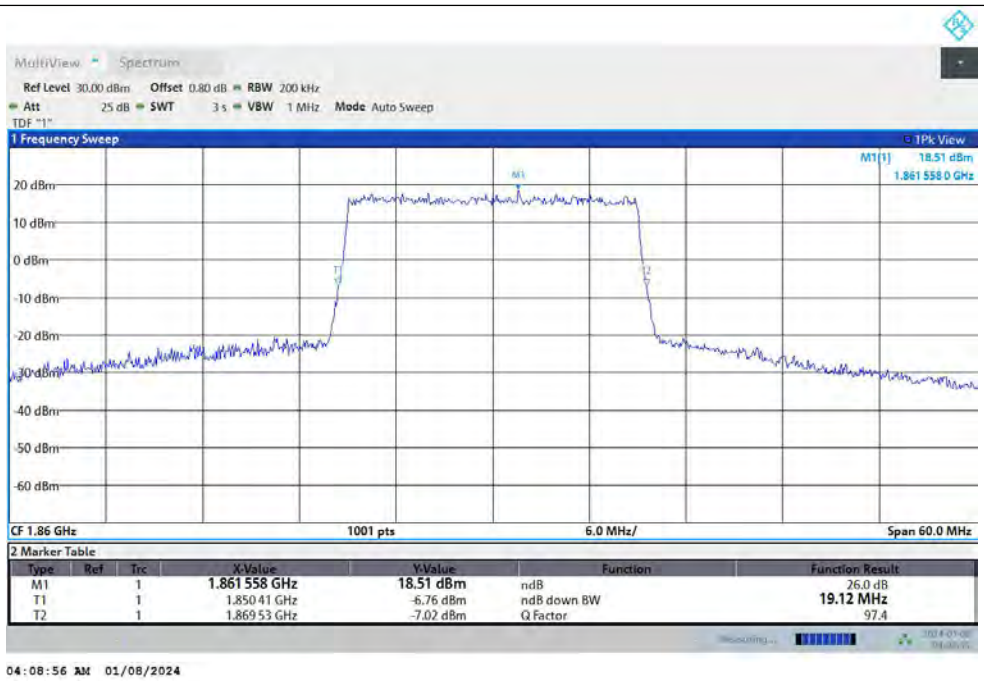


Band2-15MHz-16QAM-18900-75RB#0

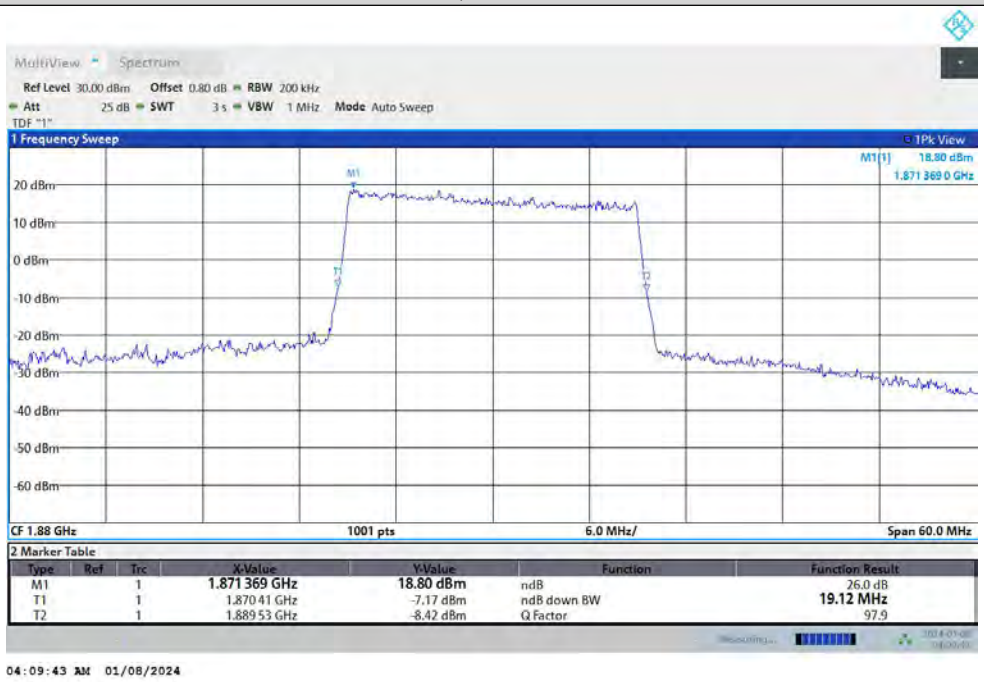


Band2-15MHz-16QAM-19125-75RB#0

Band2-20MHz-QPSK-18700-100RB#0



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



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