



EPINTEKTEK Suzhou Ltd.

FCC RF Test Report

APPLICANT : Shanghai PANCHIP Microelectronics Co., Ltd
EQUIPMENT : RF Module
BRAND NAME : NA
MODEL NAME : PAN3028,PAN3031
STANDARD : 47 CFR Part 15C

Applicant : Shanghai PANCHIP Microelectronics Co., Ltd
Address : Add:3-F, Bldg D, No.666 summer, Shanghai Zhangjiang
Hi-Tech Park Road

Date of Receipt : May. 18, 2022
Test Date : May. 18, 2022 to Jun. 8, 2022
Issued Date : Jun. 8, 2022
Report No. : MEE2022041207-620E
Report Version : V1.0

Tested by : Adonis.Li

Reviewed by : Heaven Yang

Performed Location : EPINTEK Suzhou Ltd., Suzhou Industrial Park Branch
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The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced or partially used without the written approval of Suzhou EPINTEK Electrical Testing Technology Co., Ltd.

1. General Information

1.1. EUT Description

Product Name	RF Module
Model No.	PAN3028,PAN3031
EUT Voltage	DC 3.3V
Test Voltage	DC 3.3V
Chirp	
Frequency Range	902 ~ 928 MHz
TX Frequency Range	902.5~927.5MHz
Channel Number	NA
Type of Modulation	Chirp

1.2. Antenna List

Antenna manufacturer	胶棒天线	
Model No.	NA	
Brand Name	NA	
Antenna Delivery	1*TX+1*RX	
Antenna technology	SISO	
Antenna Type	External	Dipole
Antenna Gain #1	0dBi	

Note: Antenna gain is maximum average gain, the data is provided by customer. EPINTEK is not responsible for the authenticity of this data.

1.3. Test Channel

Band width	Center Frequency
500KHz	902.5 MHz
	927.5MHz

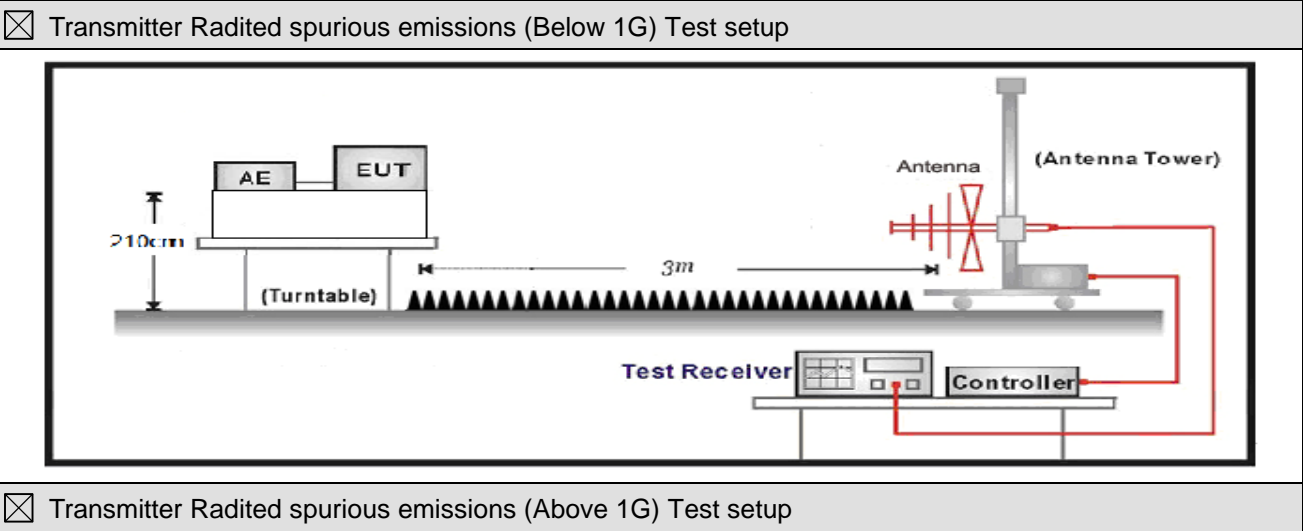
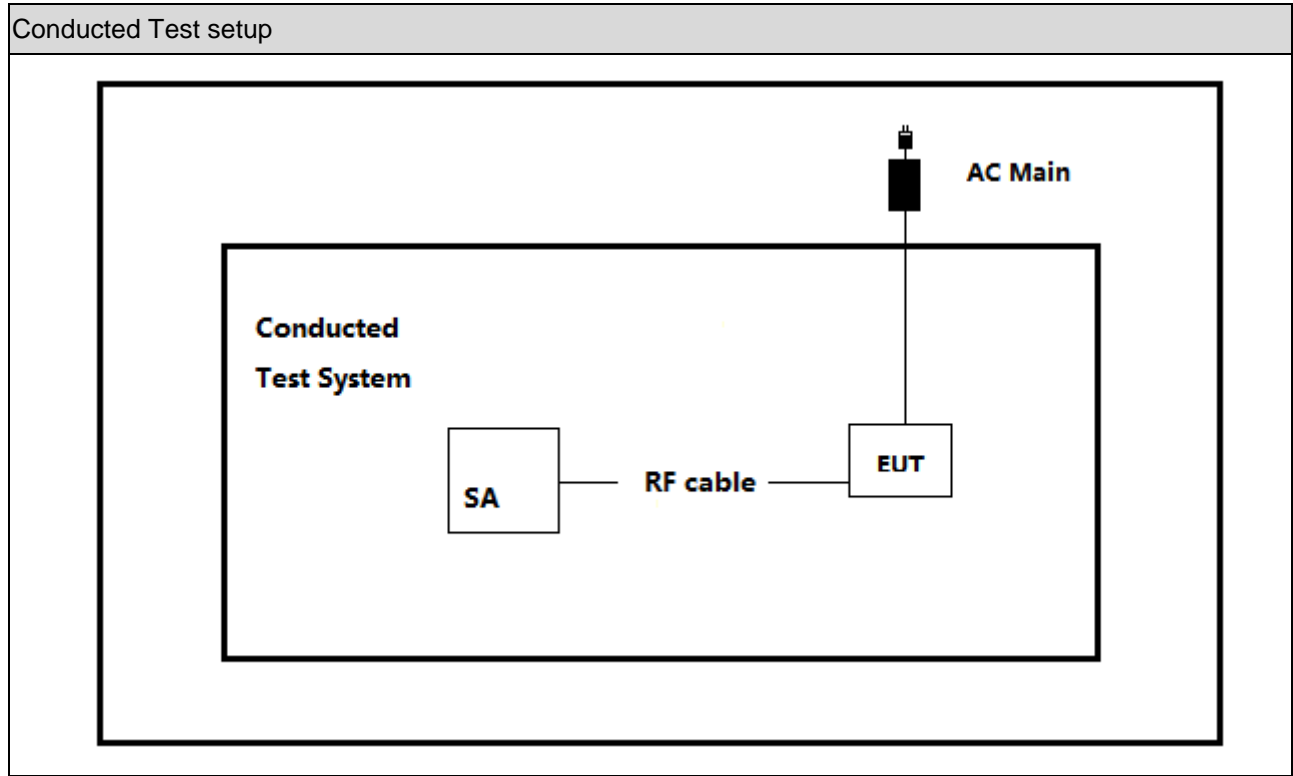
1.4. The test modes of the EUT can support:

Test Mode	Band width	Ant 1
Chirp	500KHz	√

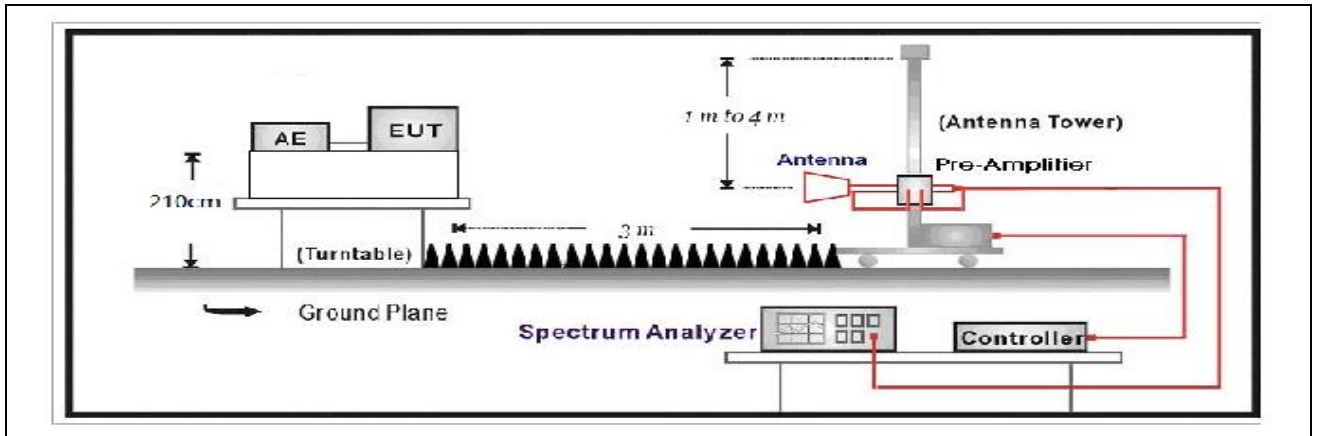
1.5. EUT Operational Condition

EUT Voltage	3.3V
Test Voltage	3.3V
Extreme Temperature	T _{nom} (25°C)

1.6. Configuration of Tested System



☒ Transmitter Radited spurious emissions (Above 1G) Test setup



1.7. Test Equipment

RF Test system				
Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
MXA Signal Analyzer	Agilent	N9020A	MY51110329	2021.09.29
EMI receiver	R&S	ESR3	102489	2022-12-24
Bilog Antenna	SCHWARZBECK	VULB 9168	01099	2023.03.13
Horn Antenna	Schwarzbeck	BBHA9120D	01938	2021.09.22
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.				

1.8. The Applicability of test items

Performed Test Item	Test Procedure	Result	Note
RF Output Power	15.247(b)(1)Output power	Pass	
Power Density	15.247(d) Power Density	Pass	
Frequency Band Edge	15.247(c)Frequency Band Edge	Pass	
Conducted Spurious Emission	15.207 Conducted Emission	Pass	
Radited spurious emissions	15.209 Radiated Emission 15.205 restricted Band of operation	Pass	
6dB Bandwidth	15.247(a)(2) 6dB Bandwidth	Pass	

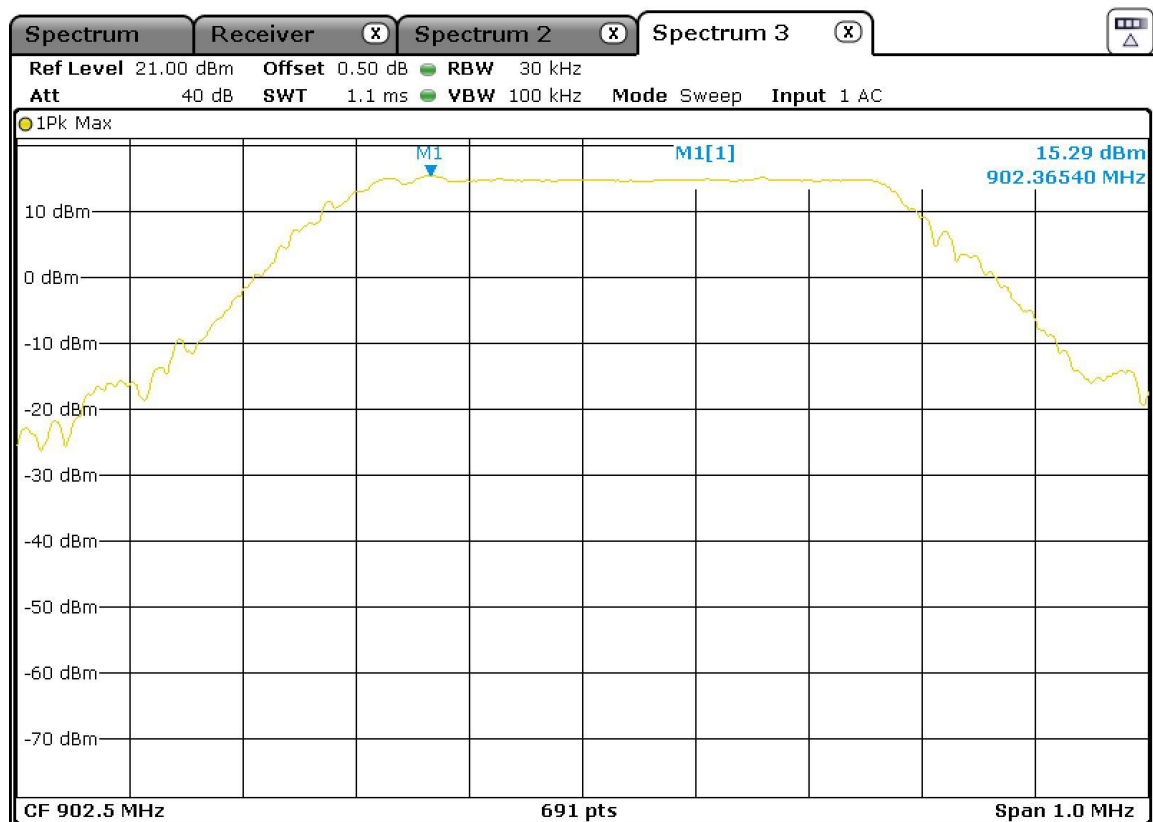
2. Test Result

2.1. RF Output Power

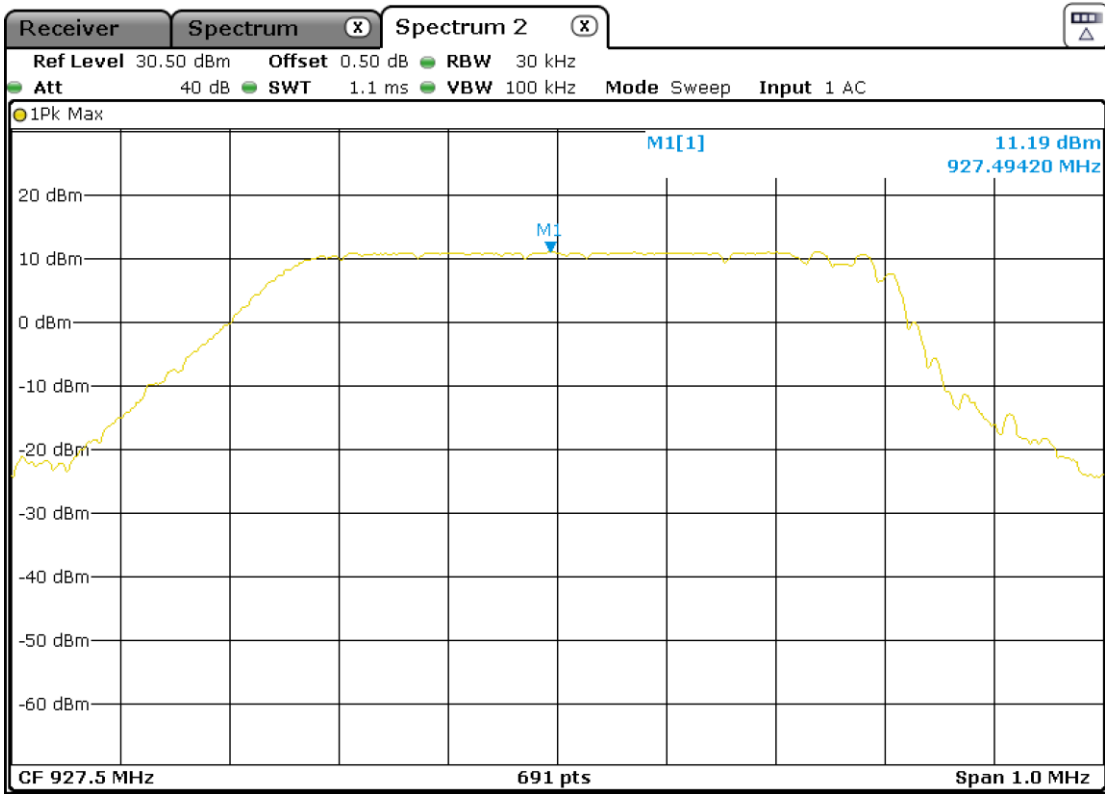
Test Item	:	RF Output Power
Test Mode	:	Chirp 500KHz
Ant Gain		0dBi

Test Conditions	Frequency (MHz)	Measured Power (dBm)	Limit (dBm EIRP,ant gain ≤6dBi)	Result
Tnom (25°C)	902.5MHz	15.29	30	Pass
	927.5MHz	11.19	30	Pass

902.5MHz



927.5MHz

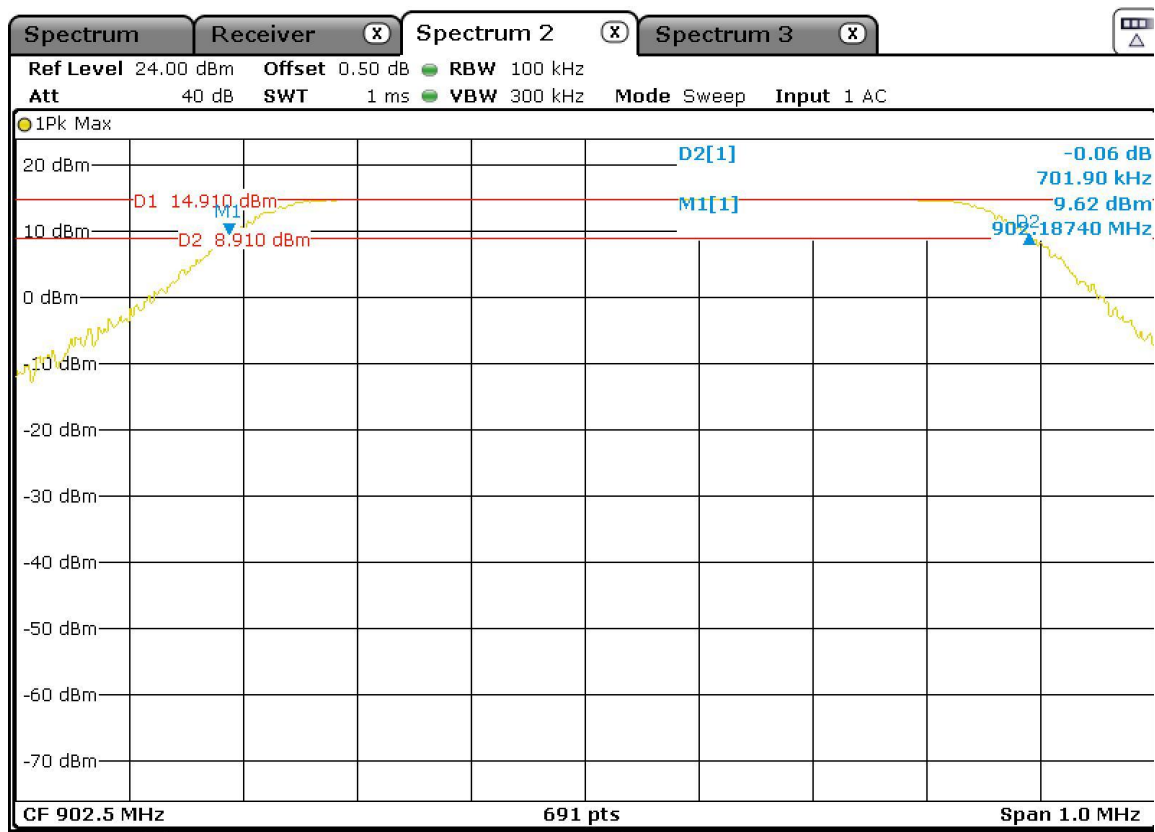


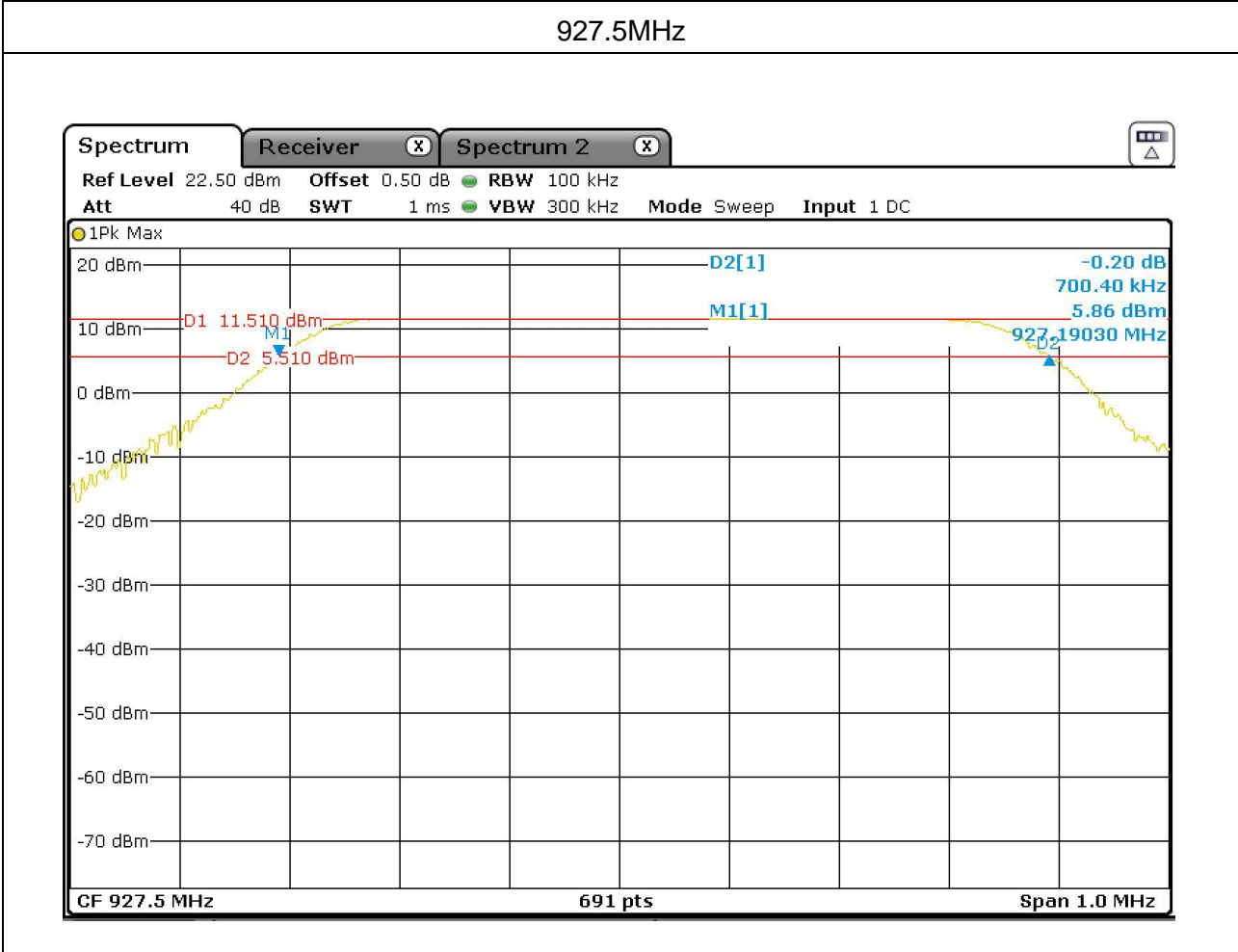
2.2. 6dB Bandwidth

Test Item	:	6dB Bandwidth
Test Mode	:	Chirp 500KHz
Ant Gain	:	0dBi

Test Conditions	Frequency (MHz)	Measured Band width (KHz)	Limit	Result
Tnom (25°C)	902.5MHz	701.9	$\geq 500\text{KHz}$	Pass
	927.5MHz	700.4	$\geq 500\text{KHz}$	Pass

902.5MHz



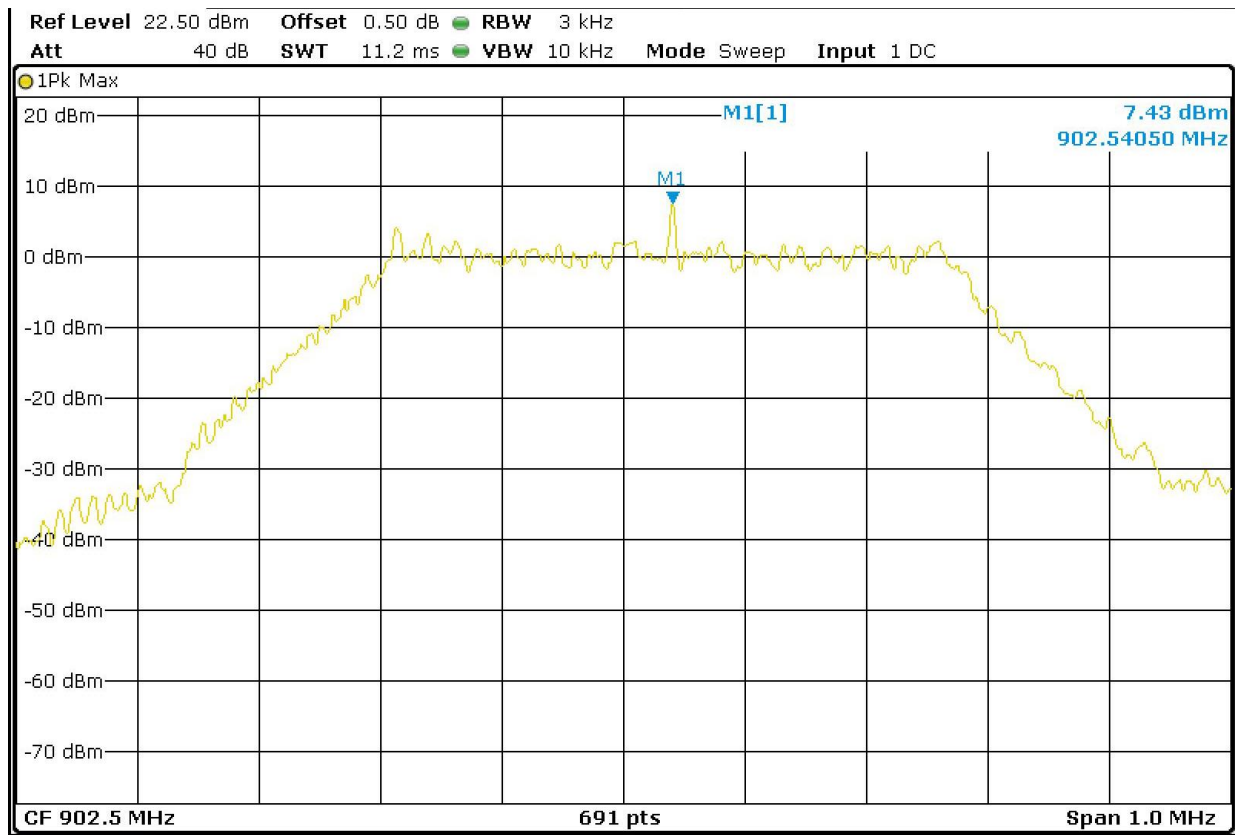


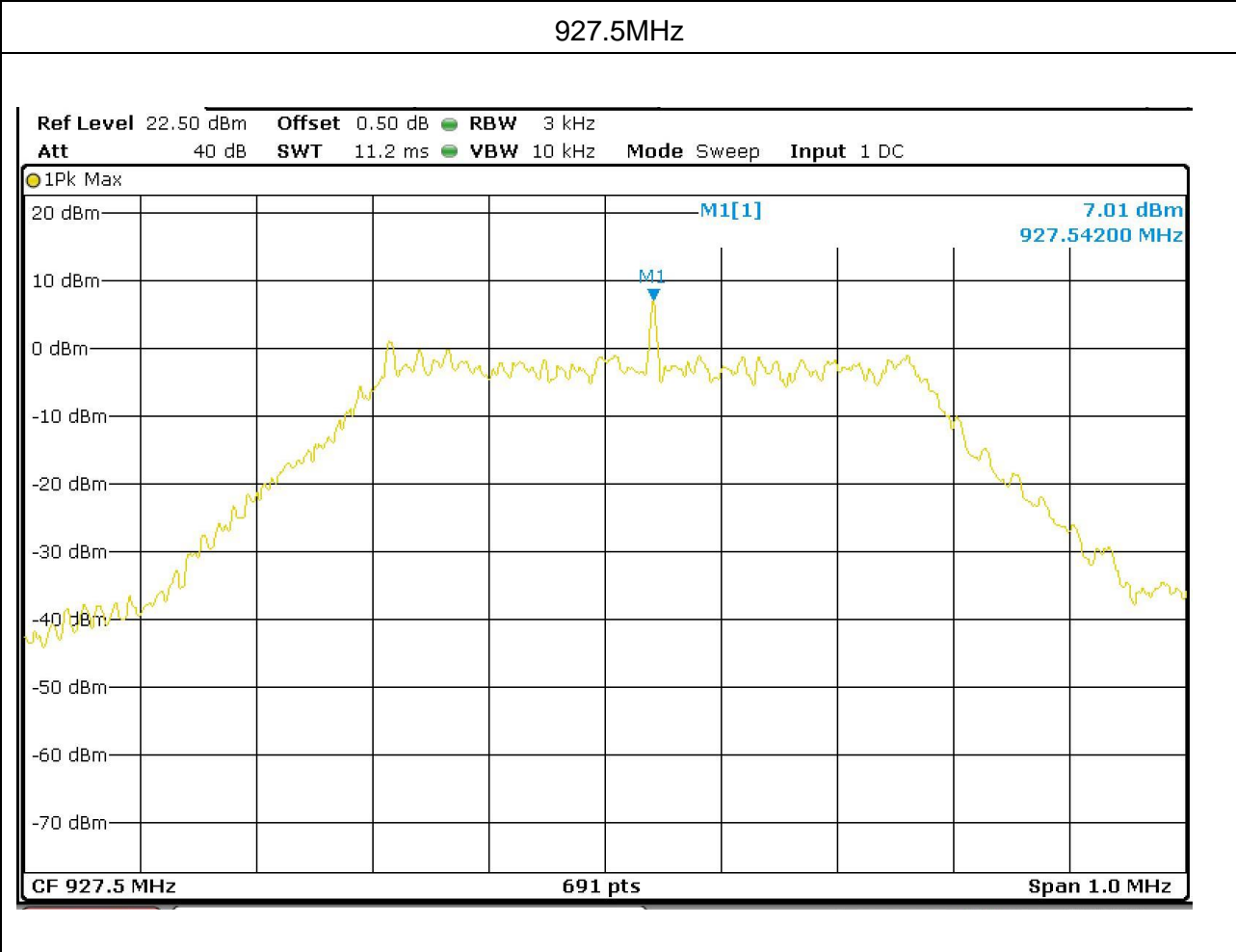
2.3. Power Density

Test Item	:	Power Density
Test Mode	:	Chirp 500KHz
Ant Gain		0dBi

Test Conditions	Frequency (MHz)	Measured Power (dBm)	Limit	Result
Tnom (25°C)	902.5MHz	7.43	8dBm	Pass
	927.5MHz	7.01	8dBm	Pass

902.5MHz



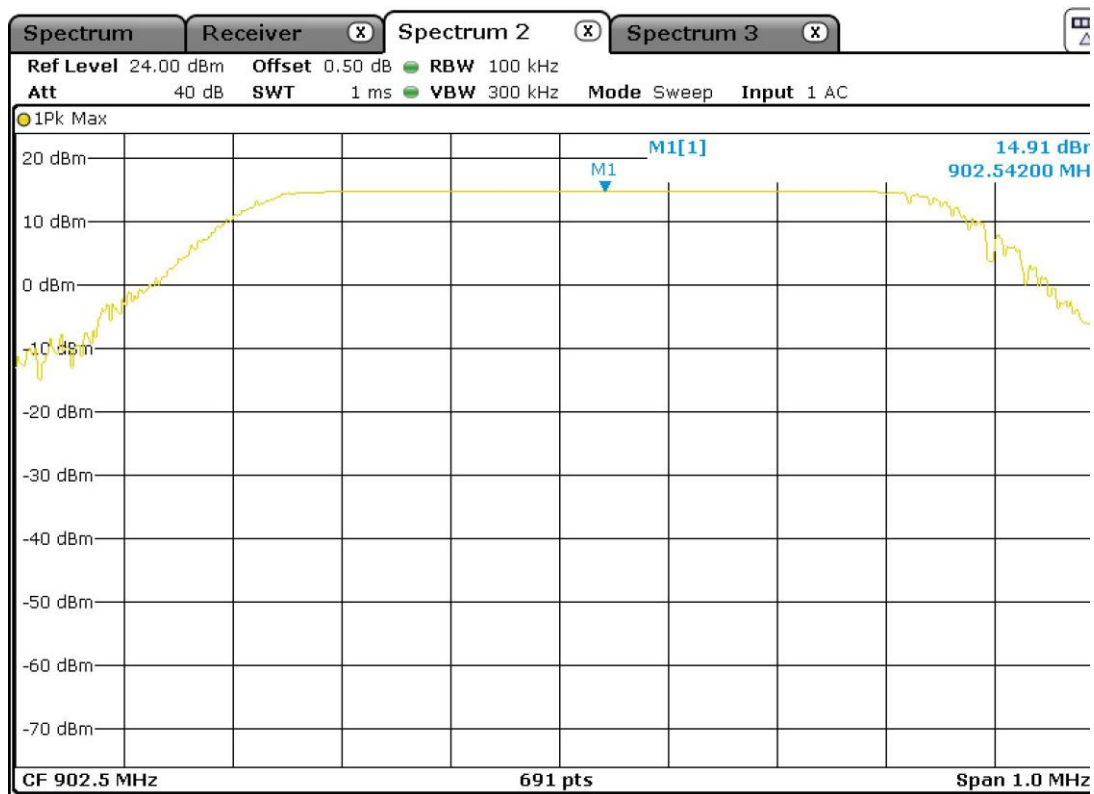


2.4. Power Density For 100K

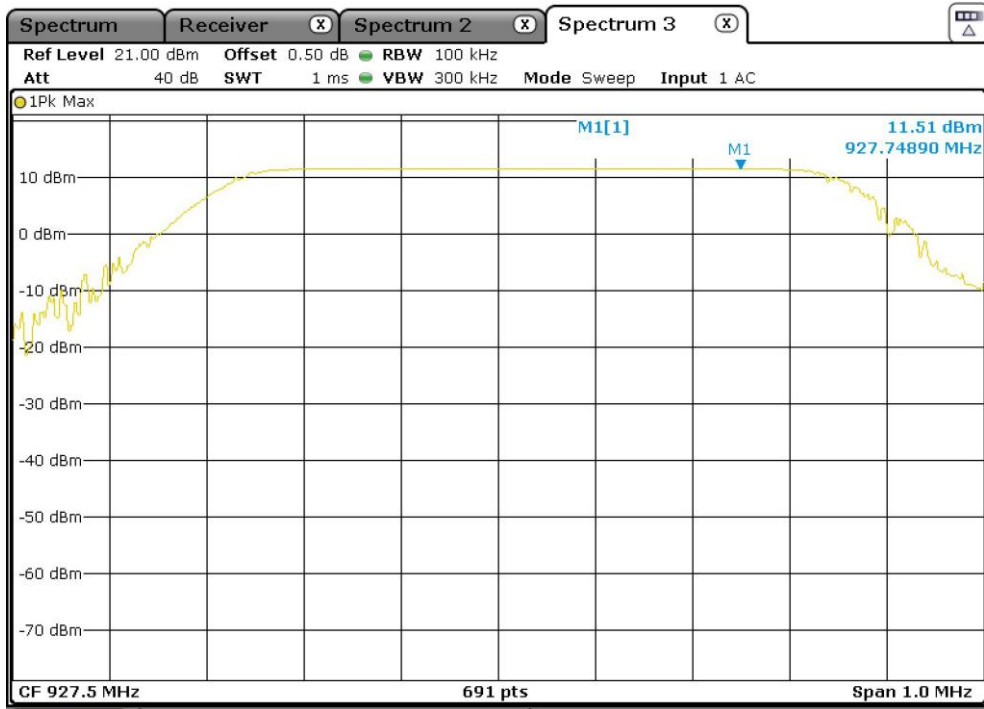
Test Item		Power Density For 100K
Test Mode		Chirp 500KHz
Ant Gain		0dBi

Test Conditions	Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Result
Tnom (25°C)	902.5MHz	N/A	14.91	N/A
	927.5MHz	N/A	11.51	N/A

902.5MHz



927.5MHz

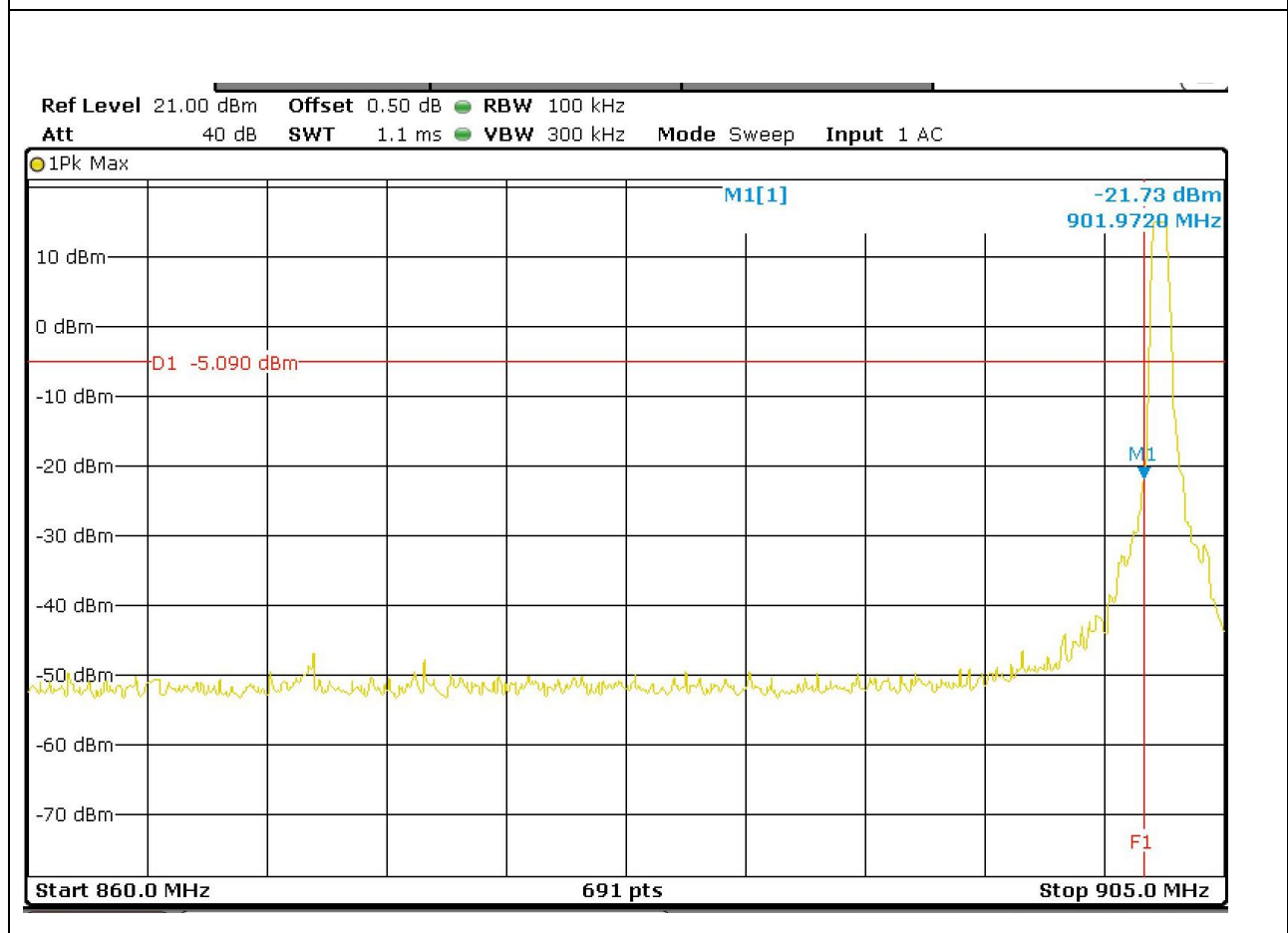


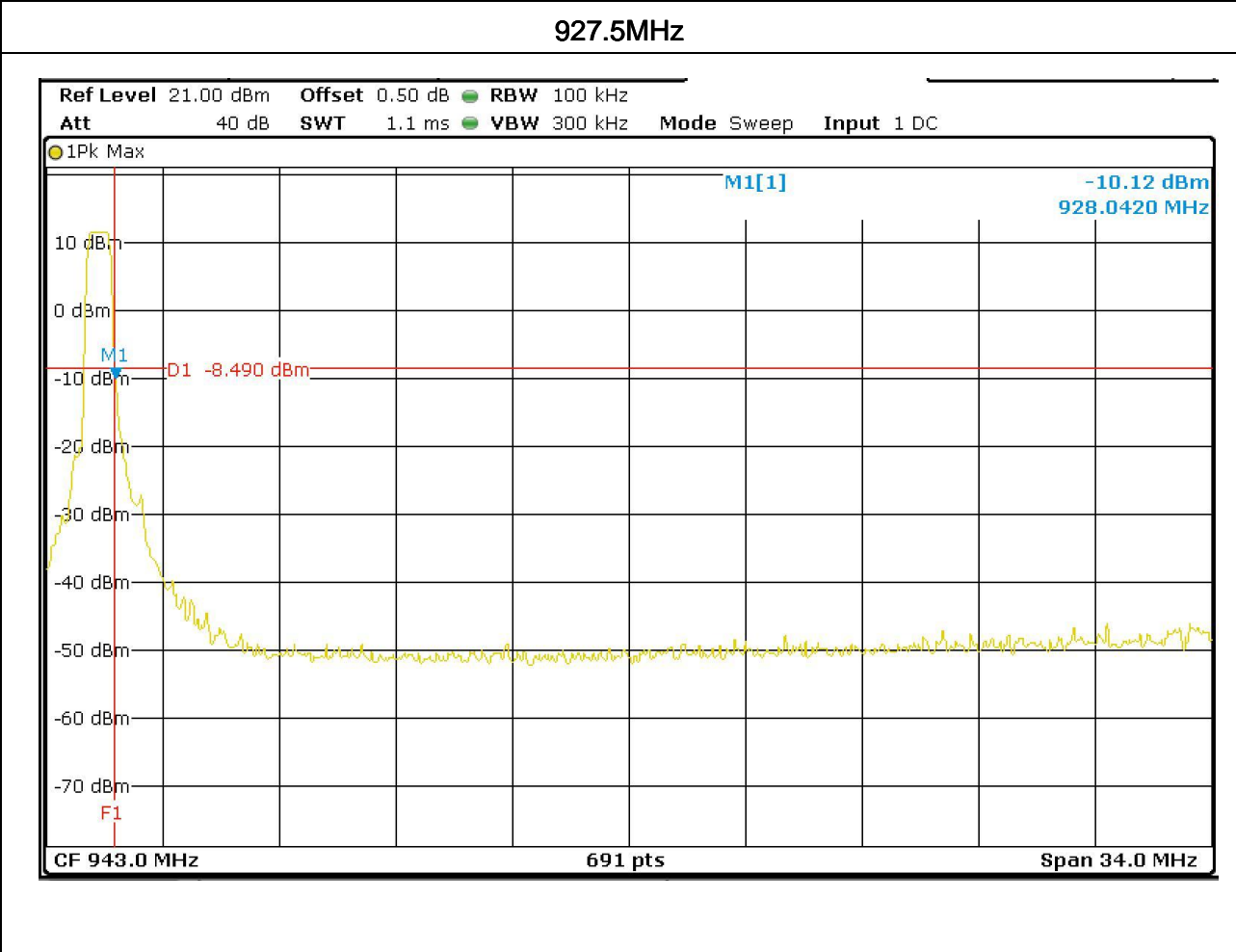
2.5. Frequency Band Edge

Test Item	:	Frequency Band Edge
Test Mode	:	Chirp 500KHz
Ant Gain	:	0dBi

Test Conditions	Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Result
Tnom (25°C)	902.5MHz	-21.73	-5.09	Pass
	927.5MHz	-10.12	-8.49	Pass

902.5MHz





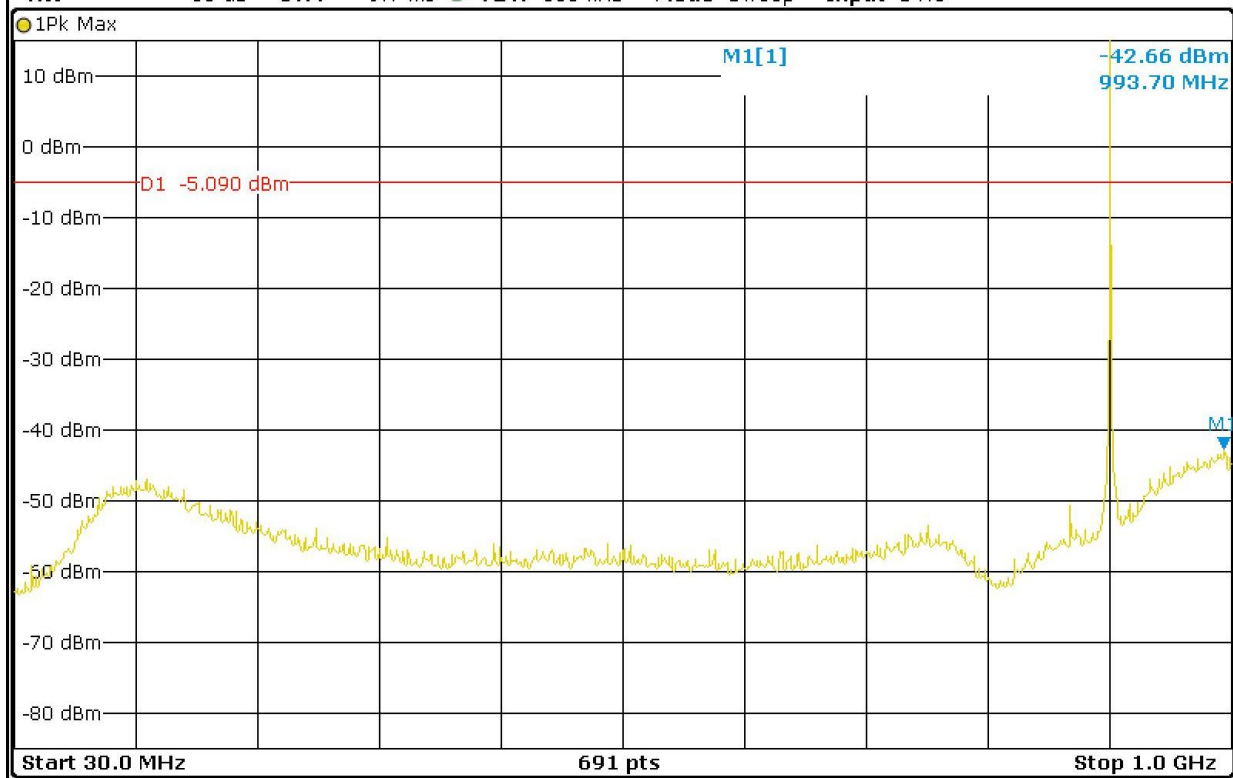
2.6. Conducted Spurious Emission

Test Item	:	Conducted Spurious Emission
Test Mode	:	Chirp 500KHz
Ant Gain	:	0dBi

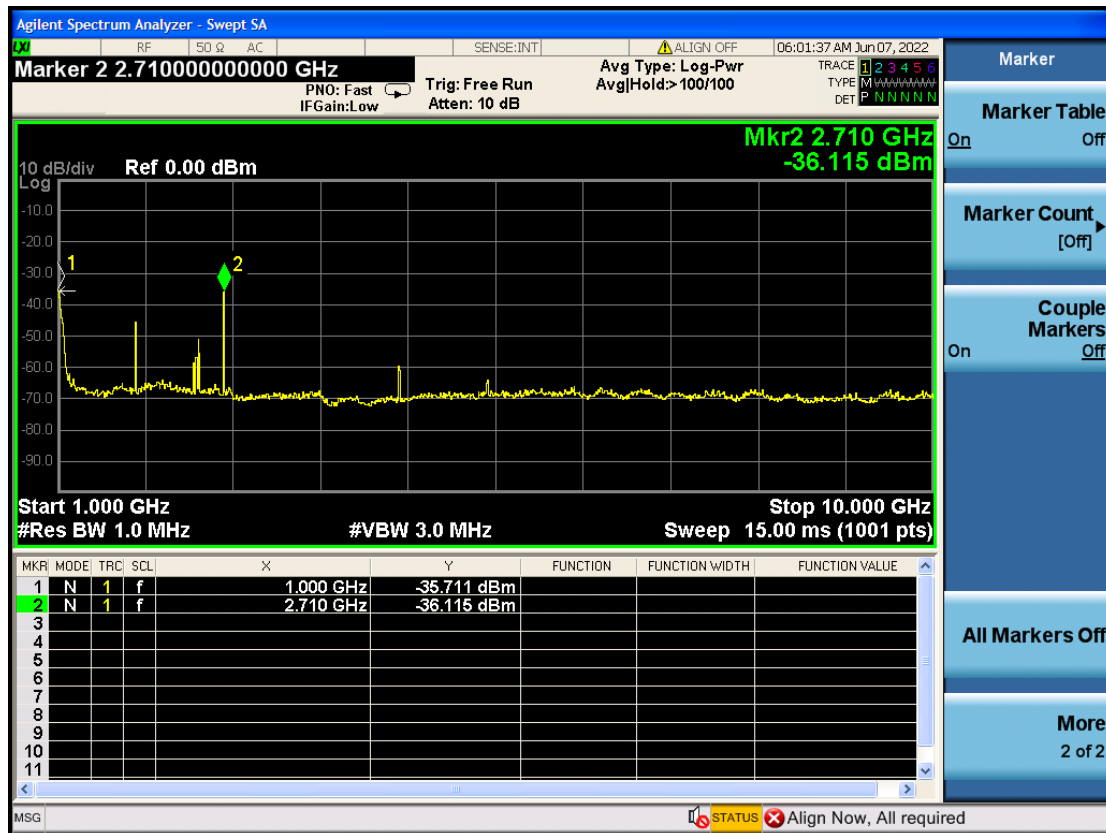
Test Conditions	Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Result
Tnom (25°C)	902.5MHz	-35.71	-5.09	Pass
	927.5MHz	-39.35	-8.49	Pass

902.5MHz 30MHz~1GHz

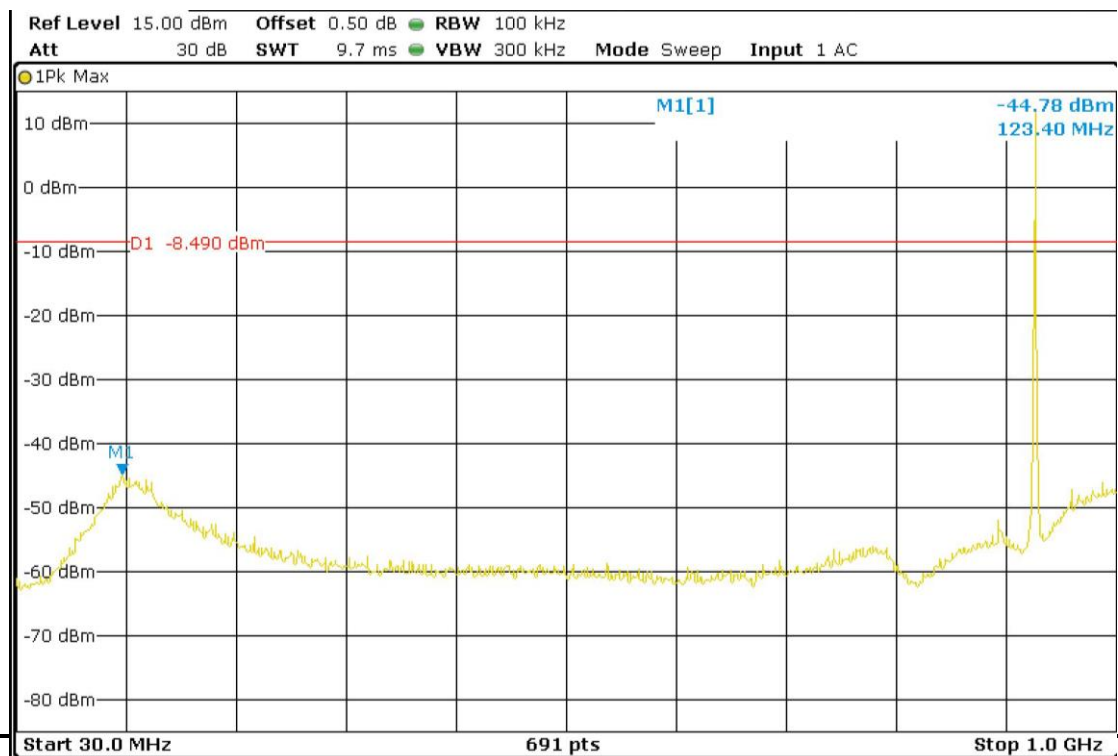
Ref Level 15.00 dBm Offset 0.50 dB RBW 100 kHz
Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Sweep Input 1 AC



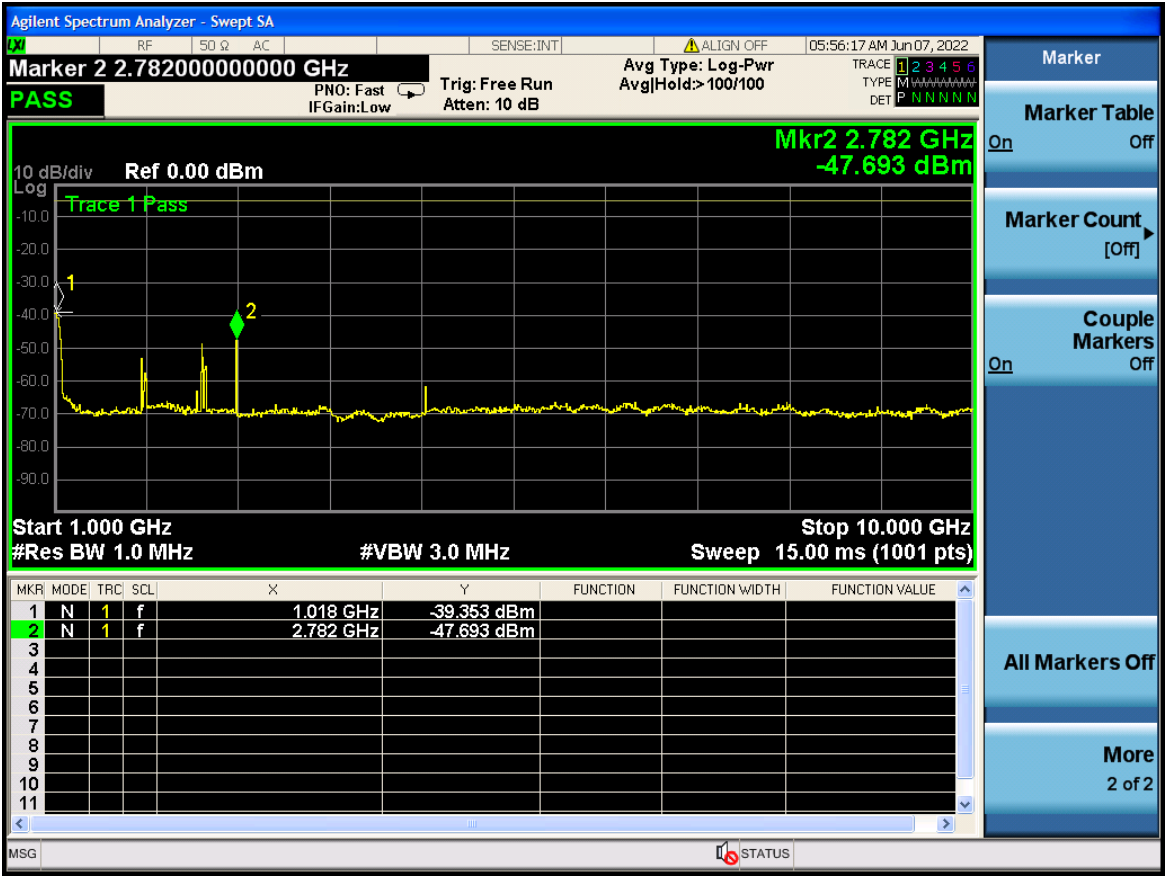
902.5MHz 1GHz~10GHz



927.5MHz 30MHz~1GHz



927.5MHz 1GHz~10GHz

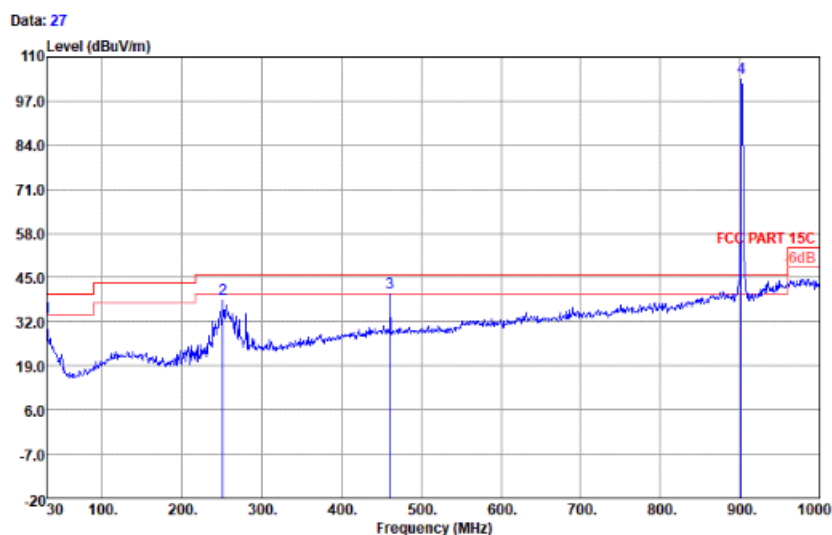


2.7. Radiated Spurious Emission

Test Item	:	Radiated Spurious Emission
Test Mode	:	Chirp 500KHz
Ant Gain	:	0dBi

Test Conditions	Frequency (MHz)	Result
Tnom (25°C)	902.5MHz	Pass
	927.5MHz	Pass

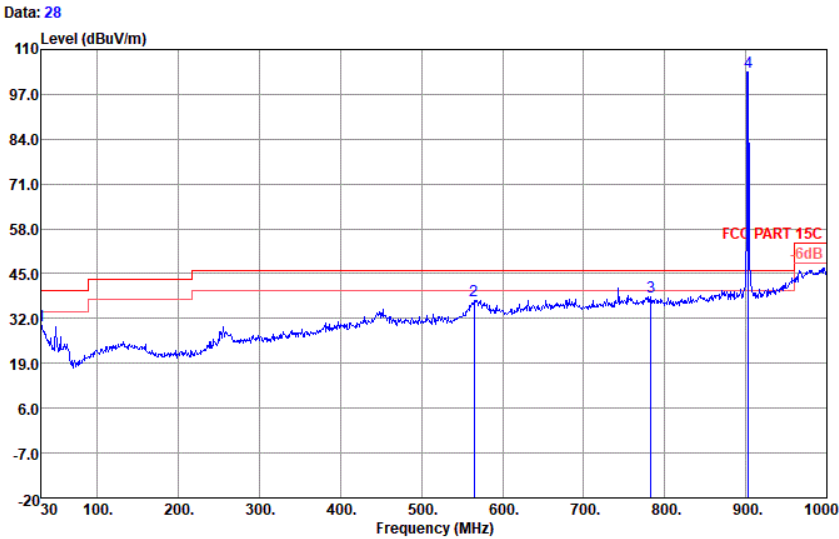
902.5MHz 30MHz~1GHz H



Site :
Condition : FCC PART 15C 3m CBL 6111D 59913 HORIZONTAL
Project : 902.5
Mode : 1
Plan :
IMEI :

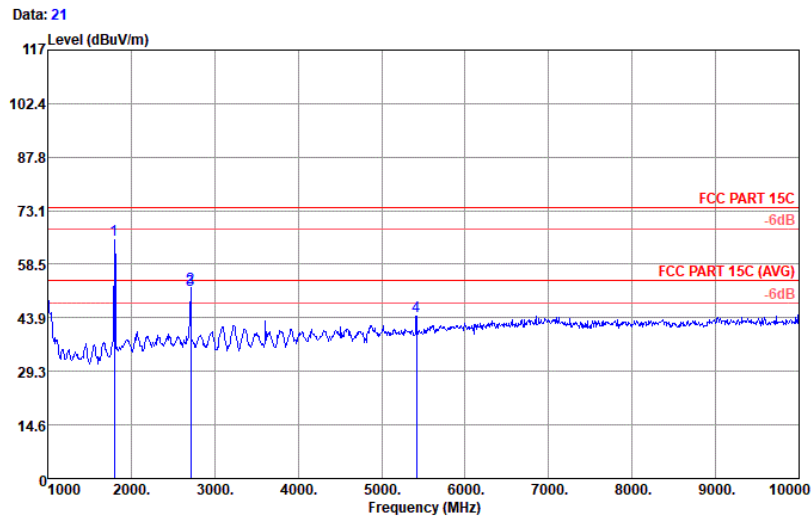
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	33.10	-6.90	40.00	39.94	24.80	0.76	32.40	---	---
2	251.16	38.73	-7.27	46.00	50.46	18.56	2.11	32.40	---	---
3	460.68	40.46	-5.54	46.00	46.68	23.04	3.14	32.40	---	---
4	902.03	103.87	57.87	46.00	101.92	28.94	4.49	31.48	---	---

902.5MHz 30MHZ~1GHz V



Site :
Condition : FCC PART 15C 3m CBL 6111D 59913 VERTICAL
Project : 902.5
Mode : 1
Plan :
IMEI :

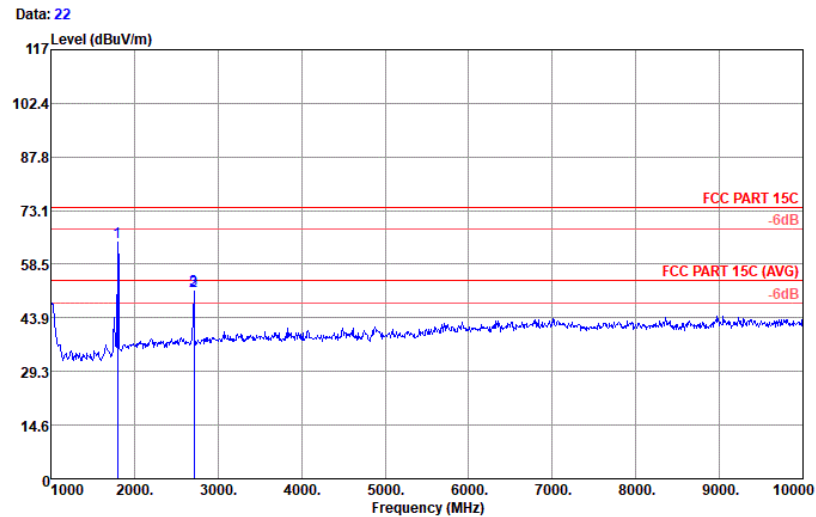
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	cm	deg	
1	30.00	30.10	-9.90	40.00	36.94	24.80	0.76	32.40	---	Peak
2	564.47	37.32	-8.68	46.00	40.32	26.08	3.32	32.40	---	Peak
3	782.72	38.38	-7.62	46.00	38.28	28.10	4.17	32.17	---	Peak
4	903.00	103.59	57.59	46.00	101.62	28.96	4.49	31.48	---	Peak



Site :
Condition : FCC PART 15C 3m 3117 00240132 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project :
Mode : 902.5
Plane :
IMEI :
PowerSetting : 23

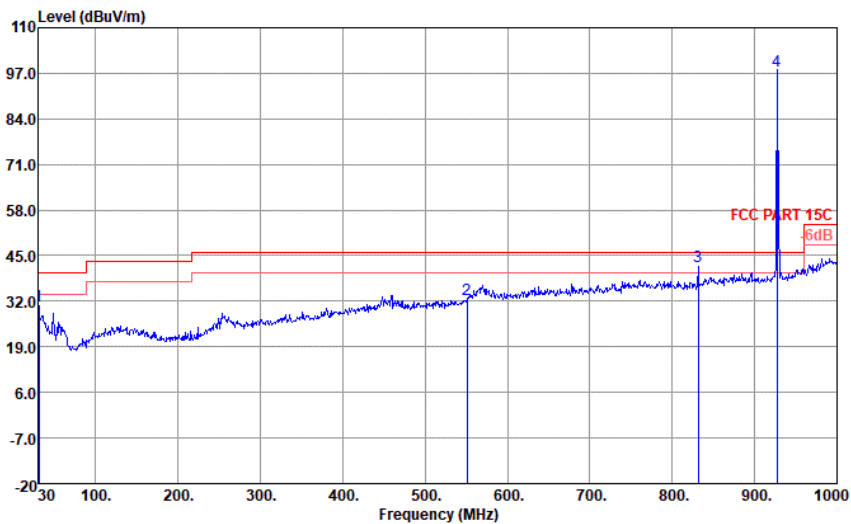
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	cm	deg
			dB	dBuV/m	dBuV	dB/m	dB	dB		
1	1801.00	65.28	-8.72	74.00	93.24	30.60	6.16	64.72	100	0 Peak
2	2710.00	52.18	-21.82	74.00	77.33	32.30	7.65	65.10	100	0 Peak
3 !	2710.00	51.50	-2.50	54.00	76.65	32.30	7.65	65.10	100	244 Average
4	5419.00	44.43	-29.57	74.00	64.69	34.51	10.91	65.68	100	0 Peak

902.5MHz 1GHz~10GHz M



Site :
Condition : FCC PART 15C 3m 3117 00240132 HORIZONTAL
Project :
Mode : 902.5
Plane :
IMEI :
Powersetting : 23

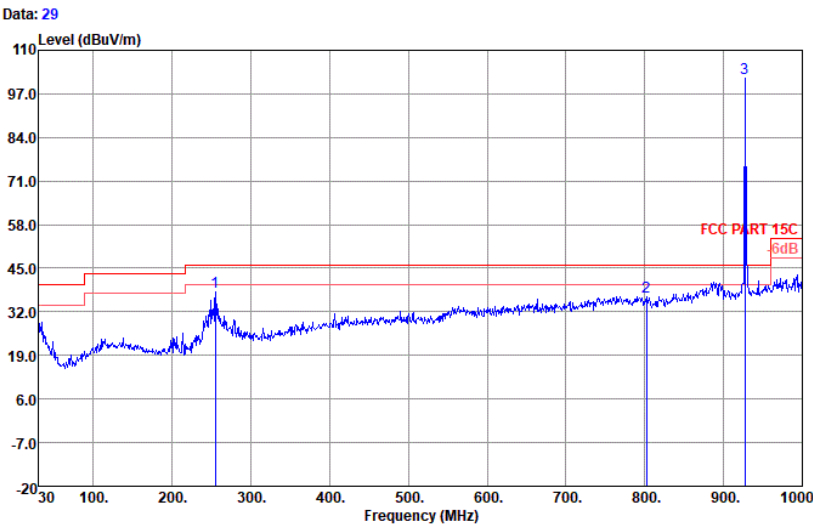
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	1801.00	64.40	-9.60	74.00	92.36	30.60	6.16	64.72	100	0 Peak
2	2710.00	51.14	-22.86	74.00	76.29	32.30	7.65	65.10	100	0 Peak
3 !	2710.00	51.40	-2.60	54.00	76.55	32.30	7.65	65.10	100	54 Average



Site :
Condition : FCC PART 15C 3m CBL 6111D 59913 VERTICAL
Project : 927.5
Mode : 1
Plan :
IMEI :

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.97	30.73	-9.27	40.00	37.67	24.70	0.76	32.40	---	---	Peak
2	550.89	32.59	-13.41	46.00	36.57	25.22	3.20	32.40	---	---	Peak
3	831.22	42.09	-3.91	46.00	41.63	28.18	4.25	31.97	---	---	Peak
4	927.25	97.71	51.71	46.00	95.01	29.44	4.54	31.28	---	---	Peak

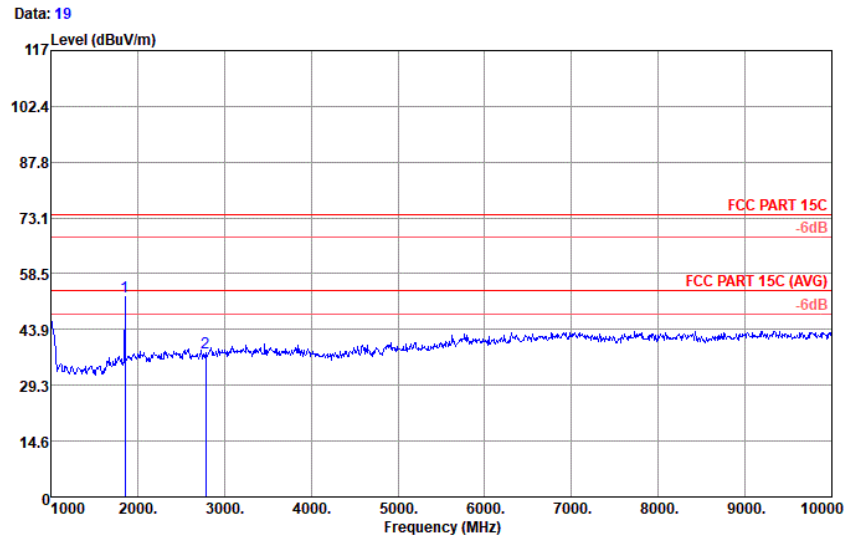
927.5MHz 30MHz~1GHz M



Site :
Condition : FCC PART 15C 3m CBL 6111D 59913 HORIZONTAL
Project : 927.5
Mode : 1
Plan :
IMEI :

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	255.04	37.83	-8.17	46.00	48.89	19.20	2.14	32.40	---	---	Peak
2	802.12	36.60	-9.40	46.00	36.51	27.96	4.22	32.09	---	---	Peak
3	927.25	101.84	55.84	46.00	99.14	29.44	4.54	31.28	---	---	Peak

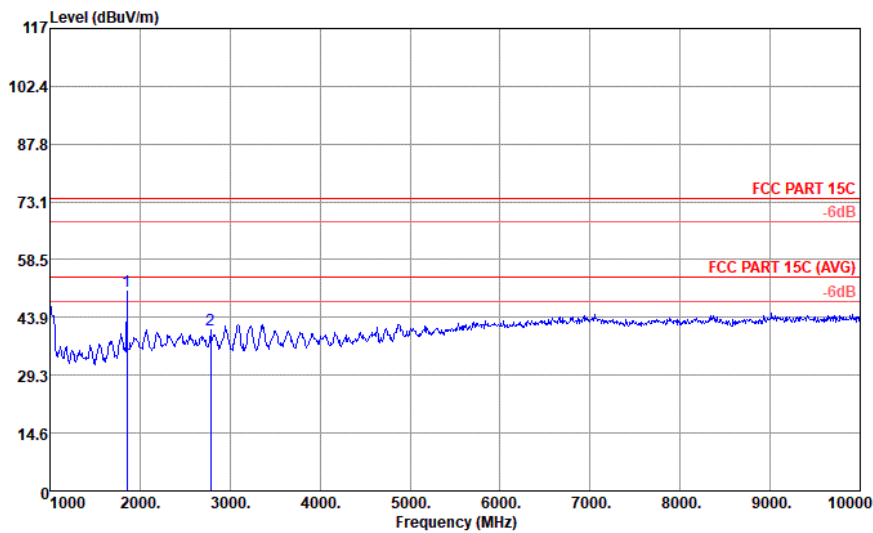
927.5MHz 1GHz~10GHz H



Site :
Condition : FCC PART 15C 3m 3117 00240132 HORIZONTAL
Project :
Mode : 927.5
Plane :
IMEI :
Powersetting : 19

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	1855.00	52.44	-21.56	74.00	80.03	30.88	6.25	64.72	100	0 Peak
2	2782.00	37.67	-36.33	74.00	62.75	32.30	7.74	65.12	100	0 Peak

927.5MHz 1GHz~10GHz V



Site :
Condition : FCC PART 15C 3m 3117 00240132 VERTICAL
: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Project :
Mode : 927.5
Plane :
IMEI :
Powersetting : 19

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor			
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	1855.00	50.46	-23.54	74.00	78.05	30.88	6.25	64.72	100	360 Peak
2	2782.00	40.75	-33.25	74.00	65.83	32.30	7.74	65.12	100	360 Peak

3. Attachment

EUT Photograph

(1) EUT Photo



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