

Product Name: Smart Phone	Report No: FCC022023-00288F5
Product Model: V20Pro	Security Classification: Open
Version: V1.0	Total Page: 67

TIRT Testing Report

Prepared By:	Checked By:	Approved By:	
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RF TEST REPORT

FCC ID: 2AX4YV20PRO

According to

47 CFR FCC Part 15, Subpart E

ANSI C63.4:2014, ANSI C63.10:2013

Equipment : Smart Phone
Model No. : V20Pro
Trademark : DOOGEE
Applicant : Shenzhen DOOGEE Hengtong Technology CO.,LTD
B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22,
Longhua New District, Shenzhen, China

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.
- Test date: 2023/02/01~2023/02/14

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen

Add: 101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street,
Pingshan District, Shenzhen, China

TEL: +86-0755-27087573

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History of this test report

Original Report Issue Date: 2023.02.17

- No additional attachment
- Additional attachments were issued following record

Attachment No.	Issue Date	Description

1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	Section 15.203 Section 7.1.4 RSS-Gen Issue 5	PASS
AC Power Line Conducted Emission	Section 15.207 Section 7.2.4 RSS-GEN(8.8), ANSI C63.10	PASS
Peak Transmit Power	Section 15.407(a), RSS-247 5.4(2)	PASS
Power Spectral Density	Section 15.407(a), RSS-247 5.2(2)	PASS
Undesirable Emission	Section 15.407(b), RSS-247 5.5	PASS
Radiated Emission	Section 15.407(b)&15.209 Section 5.5 RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10	PASS
Band Edge	15.205, RSS-247 Issue 2, ANSI C63.10	PASS
Frequency Stability	15.407(f), RSS-GEN(6.11)	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Frequency Stability: The manufacturer stated in the user's manual.
3. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

1.1 Measurement Uncertainty

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (9KHz~30MHz)	±2.56dB
Spurious emissions, radiated (30MHz~1GHz)	±4.6dB
Spurious emissions, radiated (Above 1GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7°C
Time	±1.25%

2 General Information

2.1 General Description of EUT

EUT Name	: Smart Phone
Model No.	: V20Pro
DIFF.	: N/A
Power supply	: DC 11V from adapter, DC 3.7V from battery
Radio Technology	: 5G WIFI
Operation Frequency	: 802.11a/n(HT20)/ac(HT20): 5180~5240MHz; 5745~5825MHz 802.11n(HT40)/ac(HT40): 5190~5230MHz; 5755~5795MHz 802.11ac(HT80): 5210MHz, 5775MHz
Channel separation	: 20MHz for 802.11a/ 802.11ac20/ 802.11n(HT20) 40MHz for 802.11ac40/ 802.11n(HT40) 80MHz for 802.11ac80
Modulation technology:	: IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	: Internal Antenna, max gain 1.0dBi Antenna information is provided by applicant.
Software version	: DOOGEE-V20Pro-EEA-Android12.0-20221209
Hardware version	: A201_01
Intend use environment	: Residential, commercial and light industrial environment

2.2 Test mode

Transmitting mode Keep the EUT in transmitting with modulation.
EUT was test with 99% duty cycle at its maximum power control level.

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 Test Facility

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Designation Number:	CN1309
Test Firm Registration Number:	825524
Telephone:	+86-0755-27087573

2.4 Description of Support Units

Accessories : /
Manufacturer : /
Model : /
Ratings : /

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.

2.7 Other Information Requested by the Customer

None.

3 Test Instruments list

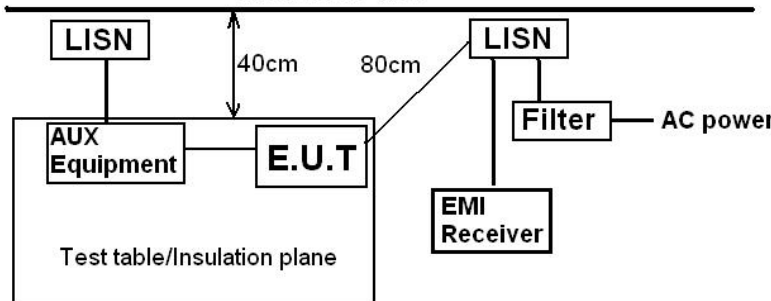
No.	Equipment	Manufacturer	Type No.	Serial No.	Cal. date (yyyy/mm/dd)	Cal. Due date (yyyy/mm/dd)
1	EMI Receiver	Rohde&Schwarz	ESCI	100718	2022/11/09	2023/11/10
2	AMN	Rohde&Schwarz	ENV216	100075	2022/11/09	2023/11/10
3	AMN	Schwarzbeck	NSLK8127	#829	2022/11/09	2023/11/10
4	ECSI RF IN RF Cable	Rohde&Schwarz	RP-X1	\	2022/11/17	2023/11/16
5	ECSI RF IN RF Cable	Rohde&Schwarz	Sapre sm	\	2022/11/09	2023/11/10
6	EMI Receiver	Rohde&Schwarz	ESR7	102013	2022/11/09	2023/11/10
7	Spectrum analyzer	Rohde&Schwarz	FSV30	103741	2022/11/09	2023/11/10
8	Spectrum analyzer	KEYSIGHT	N9010A	MY51440158	2022/11/09	2023/11/10
9	Integral Antenna	Schwarzbeck	VULB 9163	9163-868	2022/12/25	2023/12/24
10	Integral Antenna	Schwarzbeck	BBHA 9120D	BBHA 9120D 1201	2022/11/09	2023/11/10
11	Integral Antenna	Schwarzbeck	BBHA 9170	9170#685	2022/11/06	2023/11/10
12	Preamplifier	CD Systems Inc	PAP-03036- 30	85060000	2022/11/09	2023/11/10
13	Preamplifier	Schwarzbeck	BBV9721	9721-019	2022/11/09	2023/11/10
14	Preamplifier	emci	EMC012645 SE	980417	2022/11/09	2023/11/10
15	ECSI RF IN RF Cable	Rohde&Schwarz	AP-X1	\	2022/11/09	2023/11/10
16	Spectrum Analyzer	Agilent	N9010A	MY52221119	2022/11/09	2023/11/10
17	Power Collection Unit	Tonscend	JS0806-2	188060134	2022/09/12	2023/09/11
18	Tonscend Test System	Tonscend	2.6.77.0518	NA	NA	NA
19	Power Sensor	Agilent	U2021XA	MY55410011	2022/09/12	2023/09/11
20	Power Sensor	Agilent	U2021XA	MY55410012	2022/09/12	2023/09/11
21	Power Sensor	Agilent	U2021XA	MY55410018	2022/09/12	2023/09/11
22	Power Sensor	Agilent	U2021XA	MY55410019	2022/09/12	2023/09/11
23	Temp&Humidity Recorder	Anymetre	JR900	NA	2022/11/03	2023/11/02
24	Temp&Humidity Chamber	ETOMA	NTH1100- 30A	16080628	2022/09/01	2023/08/30

4 Test results and Measurement Data

4.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The antenna is internal antenna. The best case gain of the antenna is 1.0dBi for 5.15~5.25GHz, 5.725~5.85GHz	

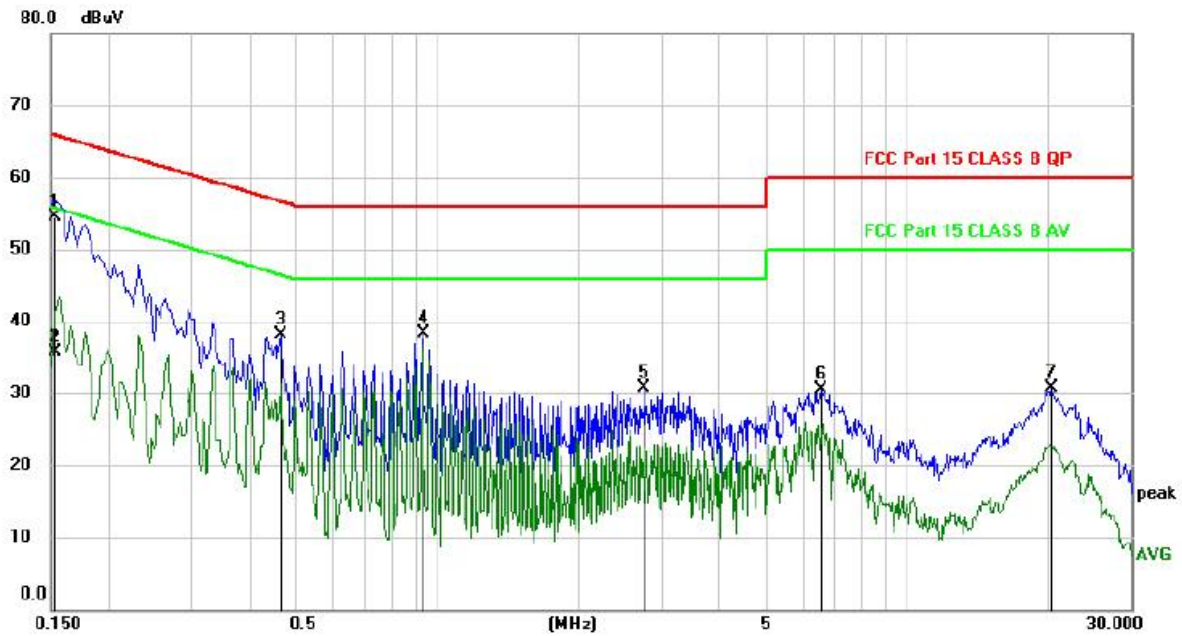
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.10:2013																
Test Frequency Range:	150KHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9KHz, VBW=30KHz																
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> * Decreases with the logarithm of the frequency.			Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
5-30	60	50															
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.																
Test setup:	Reference Plane  <i>Remark:</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m																
Test Instruments:	Refer to section 5.10 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

Measurement Data

An initial pre-scan was performed on the line and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Line:



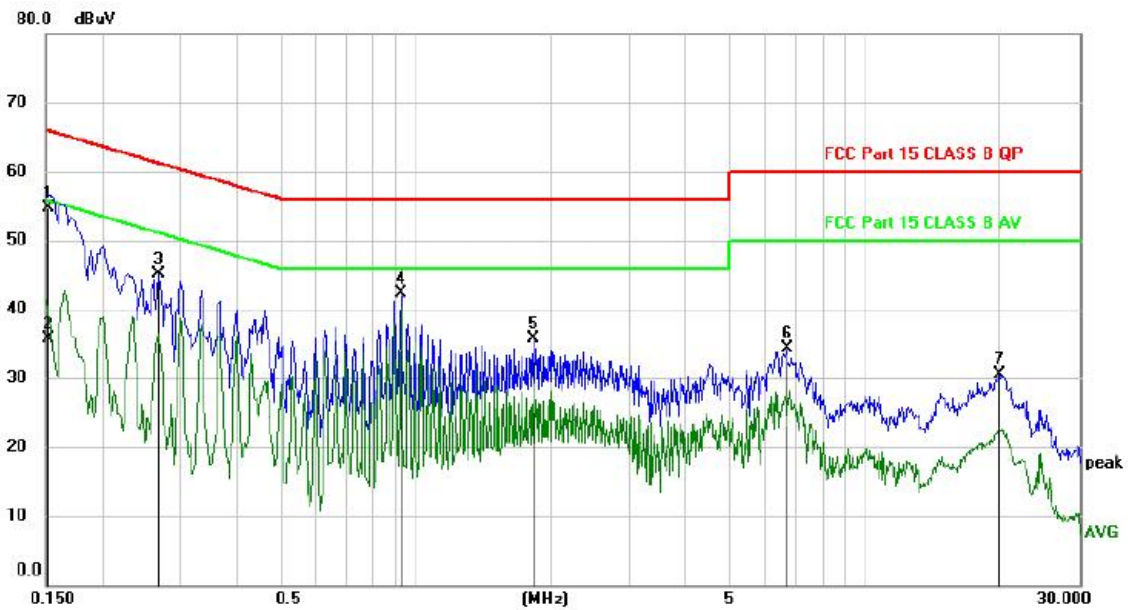
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1530	44.47	9.94	54.41	65.84	-11.43	QP	
2		0.1530	25.73	9.94	35.67	55.84	-20.17	AVG	
3		0.4620	28.14	9.95	38.09	56.66	-18.57	peak	
4		0.9300	28.45	9.95	38.40	56.00	-17.60	peak	
5		2.7540	20.84	9.93	30.77	56.00	-25.23	peak	
6		6.5670	20.44	10.10	30.54	60.00	-29.46	peak	
7		20.3730	20.25	10.47	30.72	60.00	-29.28	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Neutral:



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1516	44.78	9.94	54.72	65.91	-11.19	QP	
2		0.1516	25.73	9.94	35.67	55.91	-20.24	AVG	
3		0.2670	35.17	9.95	45.12	61.21	-16.09	peak	
4		0.9270	32.44	9.96	42.40	56.00	-13.60	peak	
5		1.8240	25.81	9.89	35.70	56.00	-20.30	peak	
6		6.6630	24.19	10.11	34.30	60.00	-25.70	peak	
7		19.8750	20.01	10.47	30.48	60.00	-29.52	peak	

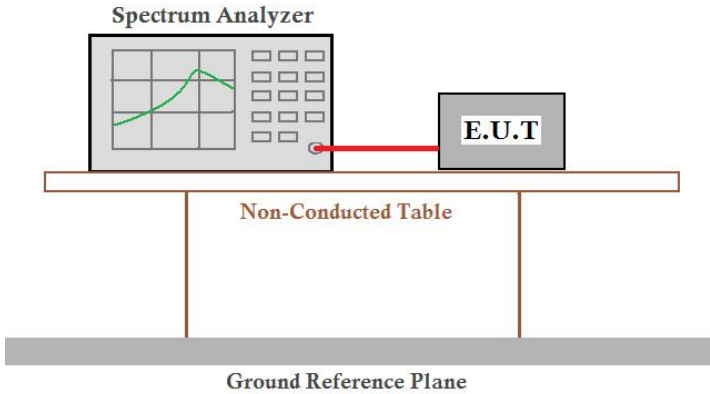
*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Note: All modes and channels have been tested and only the A 5180MHz mode with the worst data is listed.

4.3 Emission Bandwidth and 99% Occupied Bandwidth

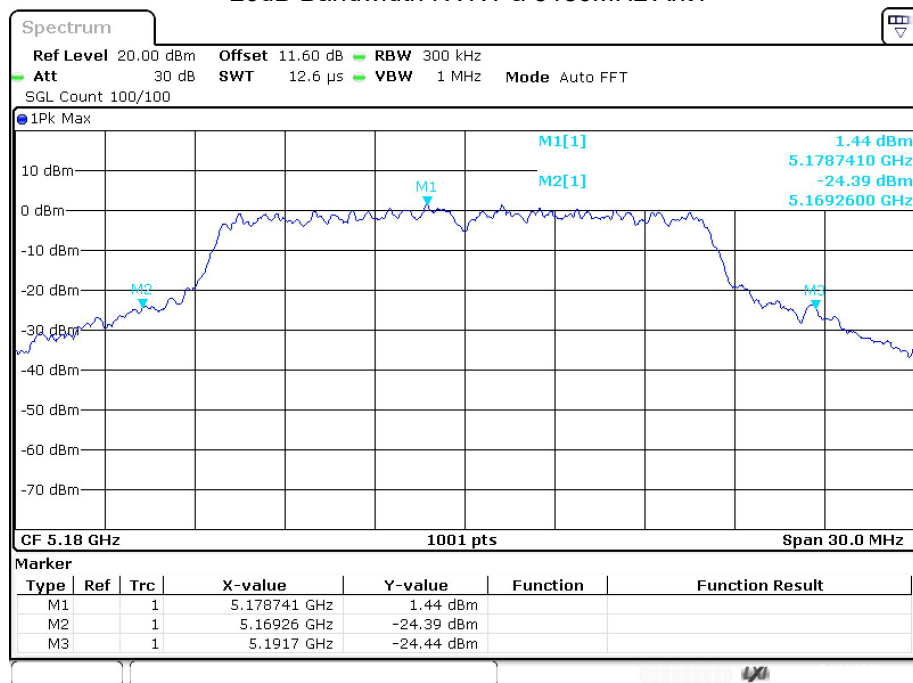
Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	N/A
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, showing a frequency spectrum on its screen, is connected to an Equipment Under Test (E.U.T.) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a Non-Conducted Table. This table is supported by two vertical legs. Below the table, a Ground Reference Plane is indicated by a horizontal line.
Test procedure:	According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data:

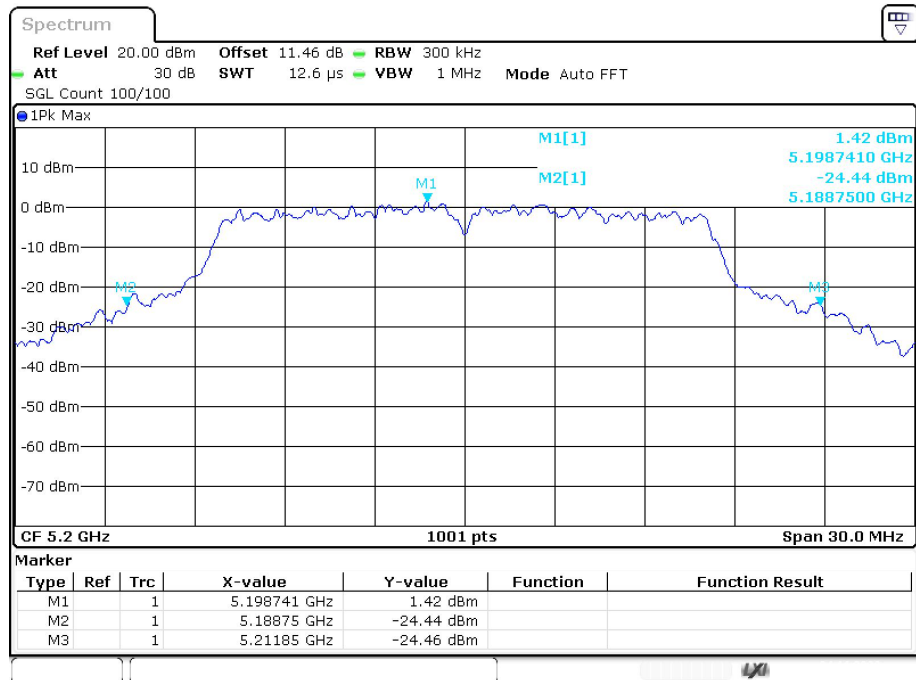
Band 1 (5150-5250 MHz): -26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	22.44	0.5	Pass
NVNT	a	5200	Ant1	23.10	0.5	Pass
NVNT	a	5240	Ant1	21.45	0.5	Pass
NVNT	ac20	5180	Ant1	22.14	0.5	Pass
NVNT	ac20	5200	Ant1	21.90	0.5	Pass
NVNT	ac20	5240	Ant1	21.66	0.5	Pass
NVNT	ac40	5190	Ant1	40.44	0.5	Pass
NVNT	ac40	5230	Ant1	40.56	0.5	Pass
NVNT	ac80	5210	Ant1	80.16	0.5	Pass
NVNT	n20	5180	Ant1	23.19	0.5	Pass
NVNT	n20	5200	Ant1	22.83	0.5	Pass
NVNT	n20	5240	Ant1	21.66	0.5	Pass
NVNT	n40	5190	Ant1	40.26	0.5	Pass
NVNT	n40	5230	Ant1	40.92	0.5	Pass

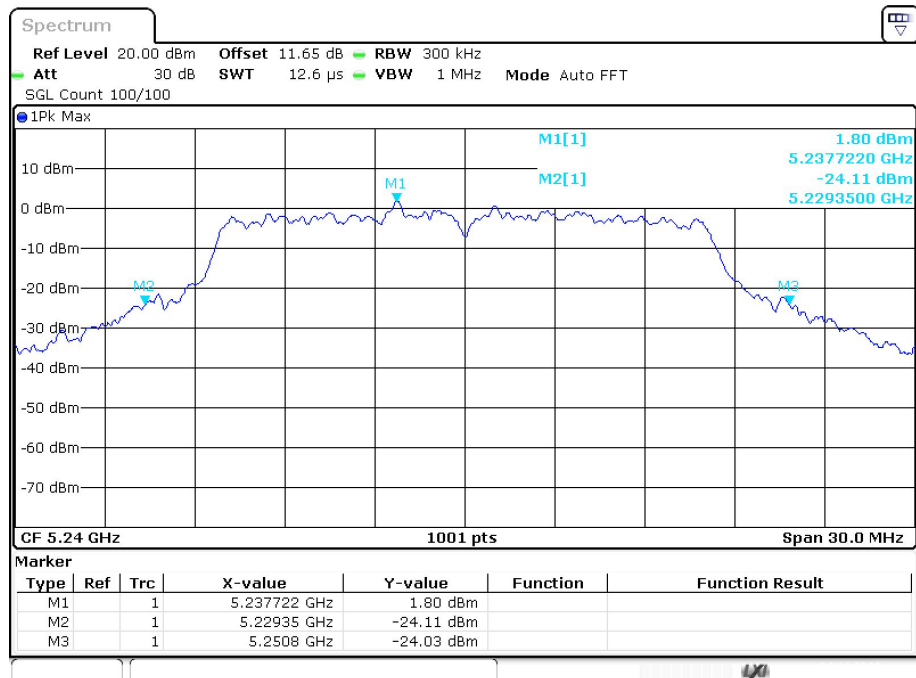
-26dB Bandwidth NVNT a 5180MHz Ant1



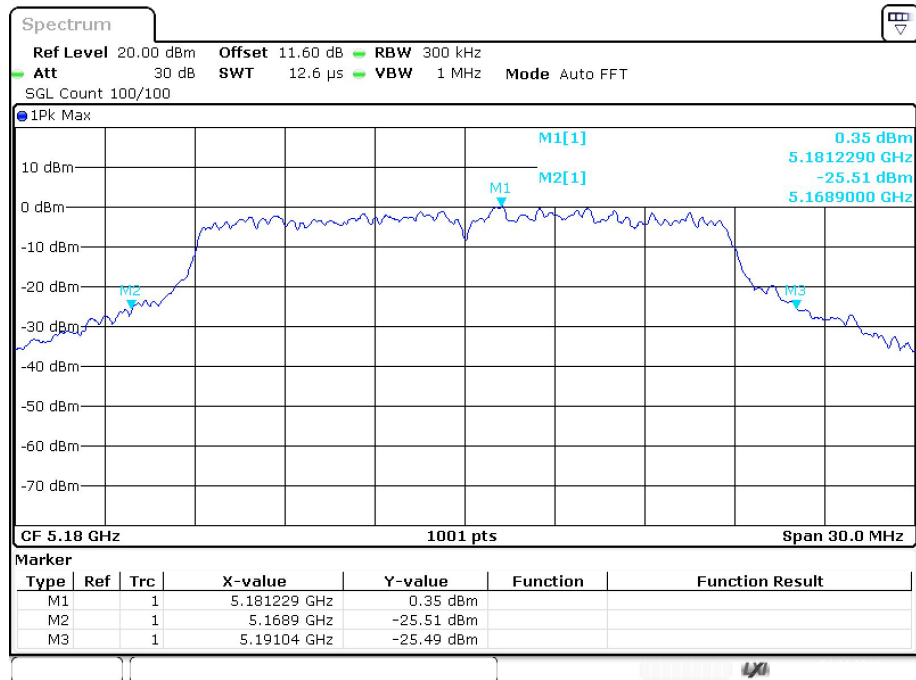
-26dB Bandwidth NVNT a 5200MHz Ant1



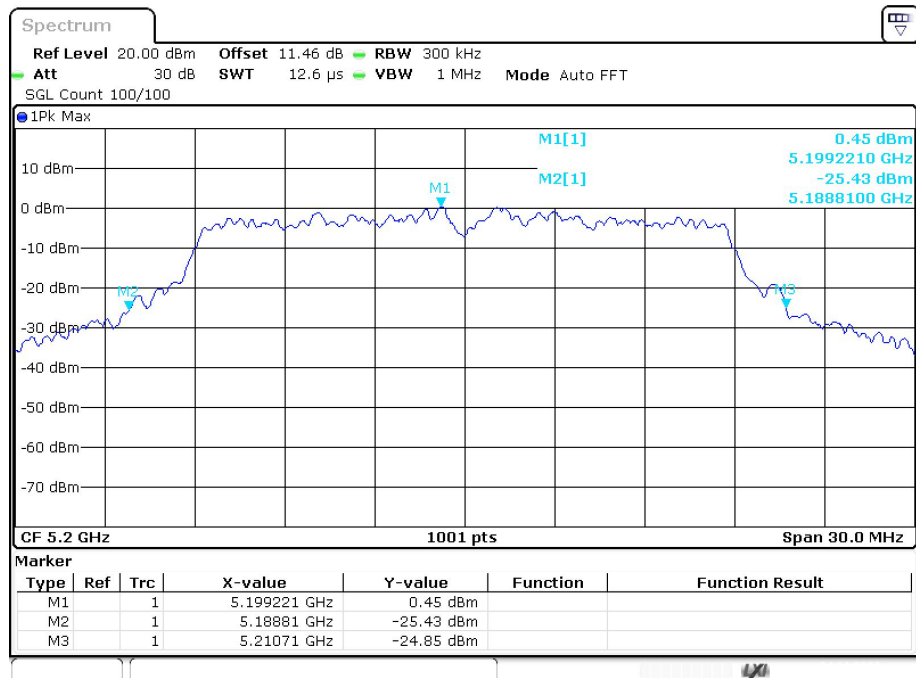
-26dB Bandwidth NVNT a 5240MHz Ant1



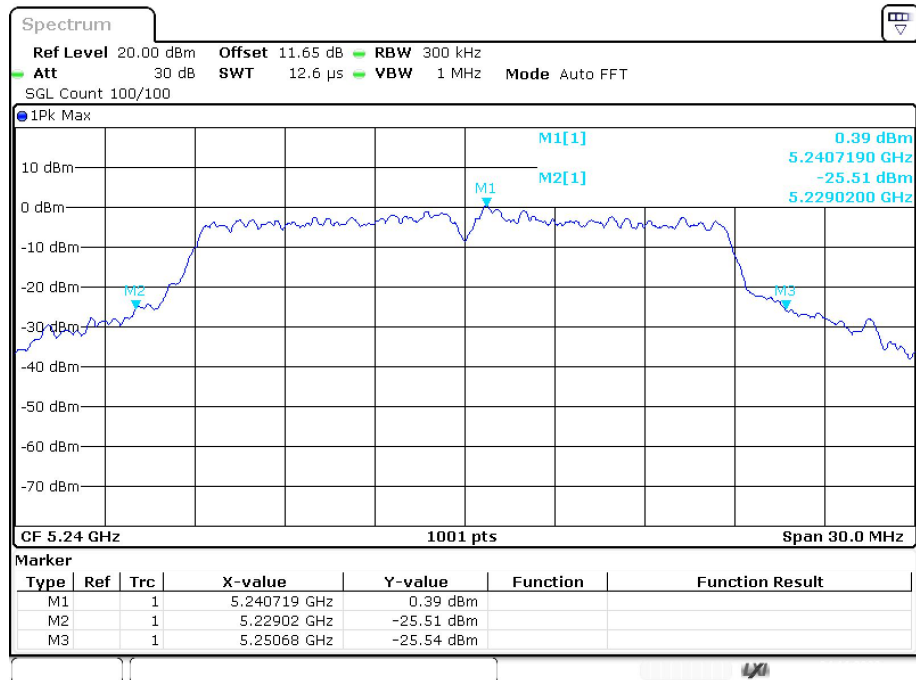
-26dB Bandwidth NVNT ac20 5180MHz Ant1



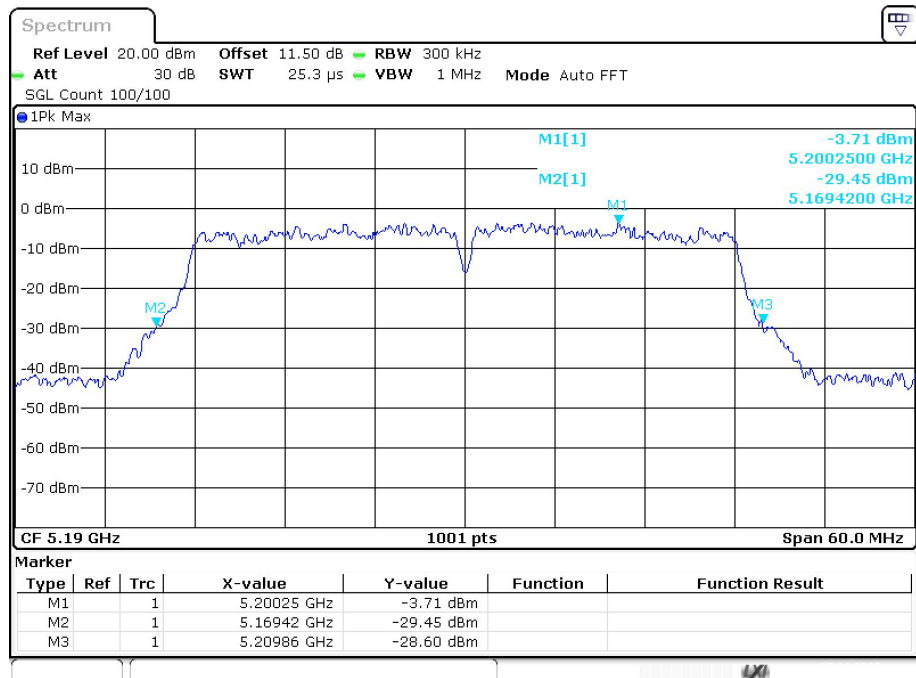
-26dB Bandwidth NVNT ac20 5200MHz Ant1



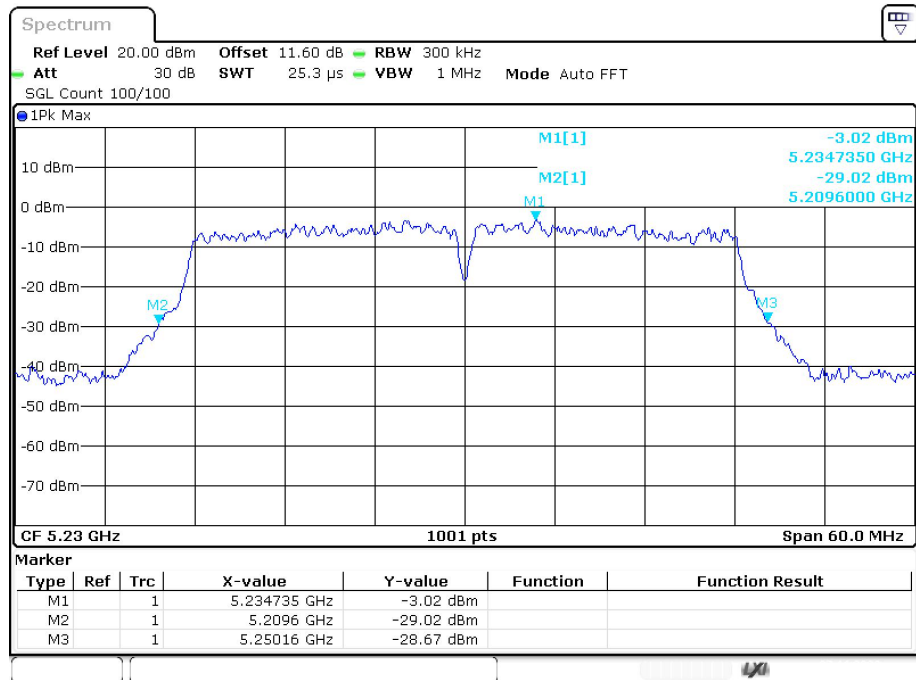
-26dB Bandwidth NVNT ac20 5240MHz Ant1



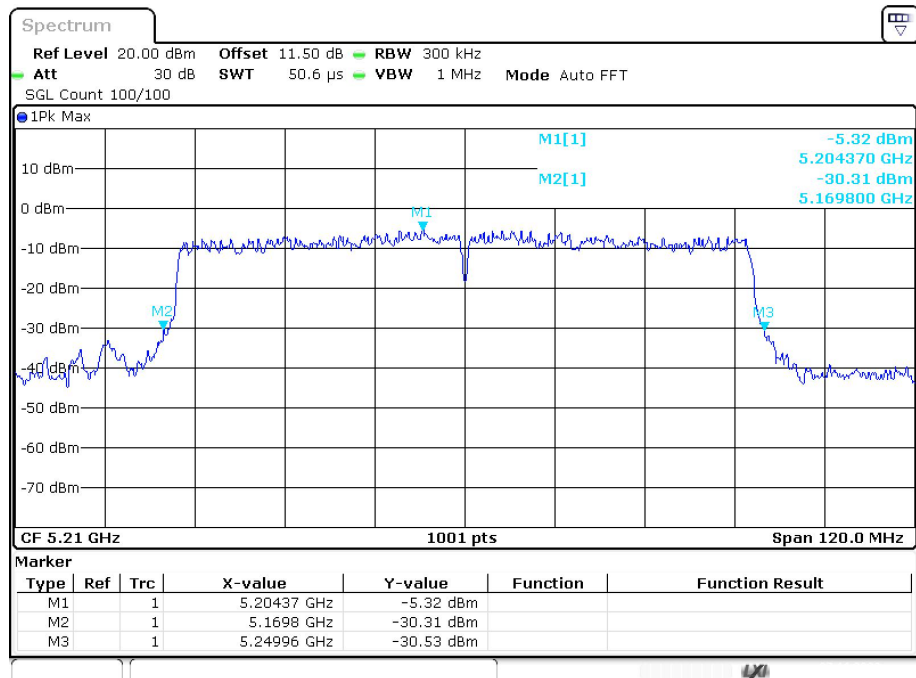
-26dB Bandwidth NVNT ac40 5190MHz Ant1



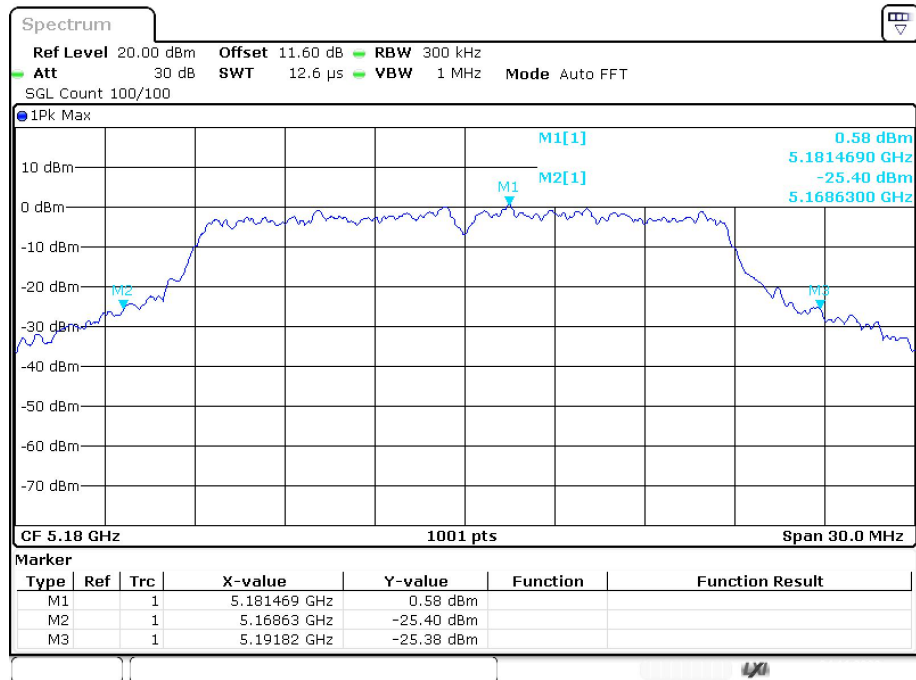
-26dB Bandwidth NVNT ac40 5230MHz Ant1



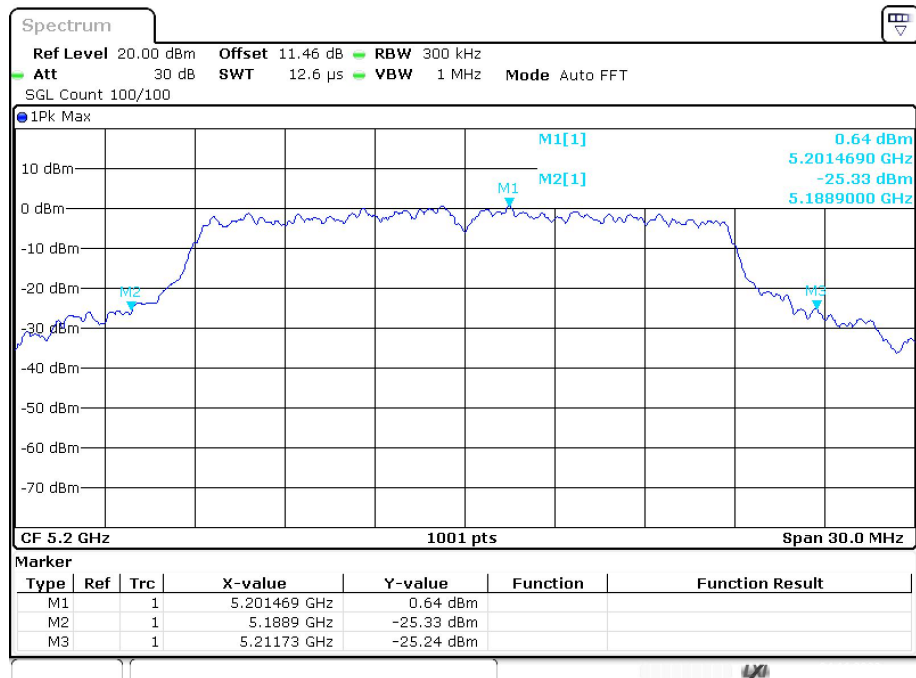
-26dB Bandwidth NVNT ac80 5210MHz Ant1



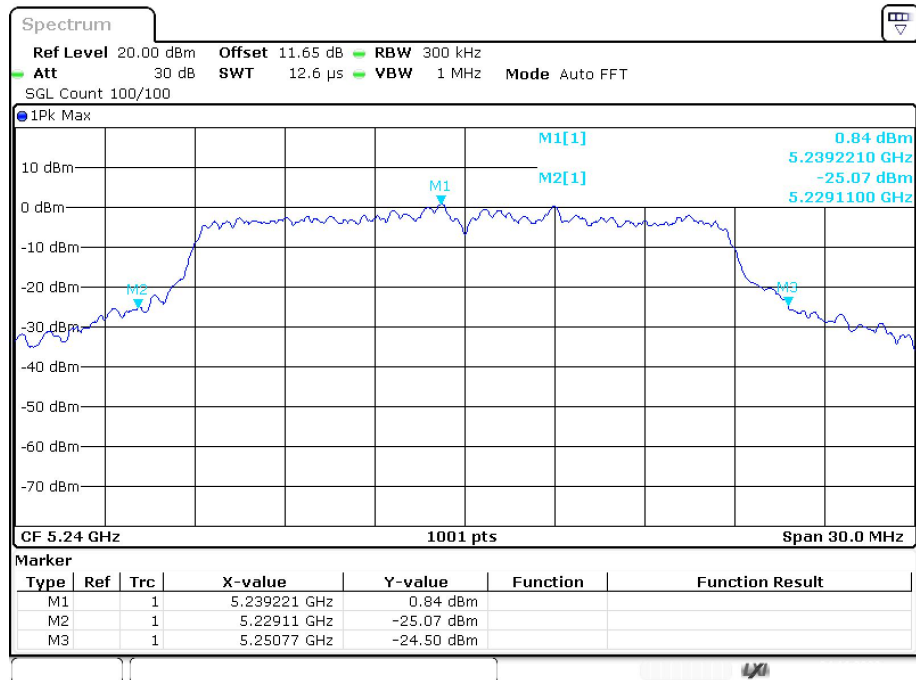
-26dB Bandwidth NVNT n20 5180MHz Ant1



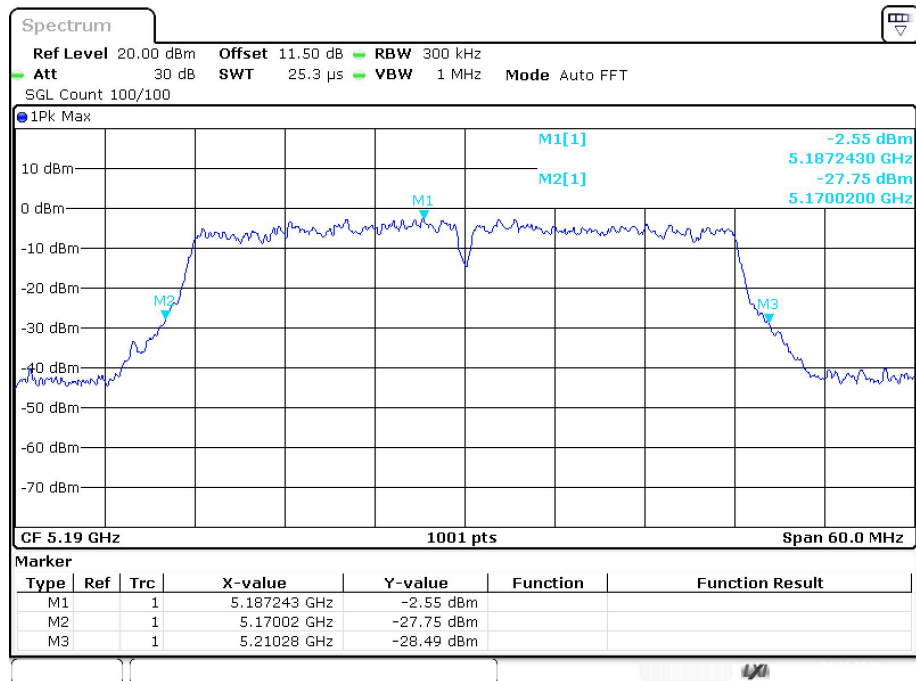
-26dB Bandwidth NVNT n20 5200MHz Ant1



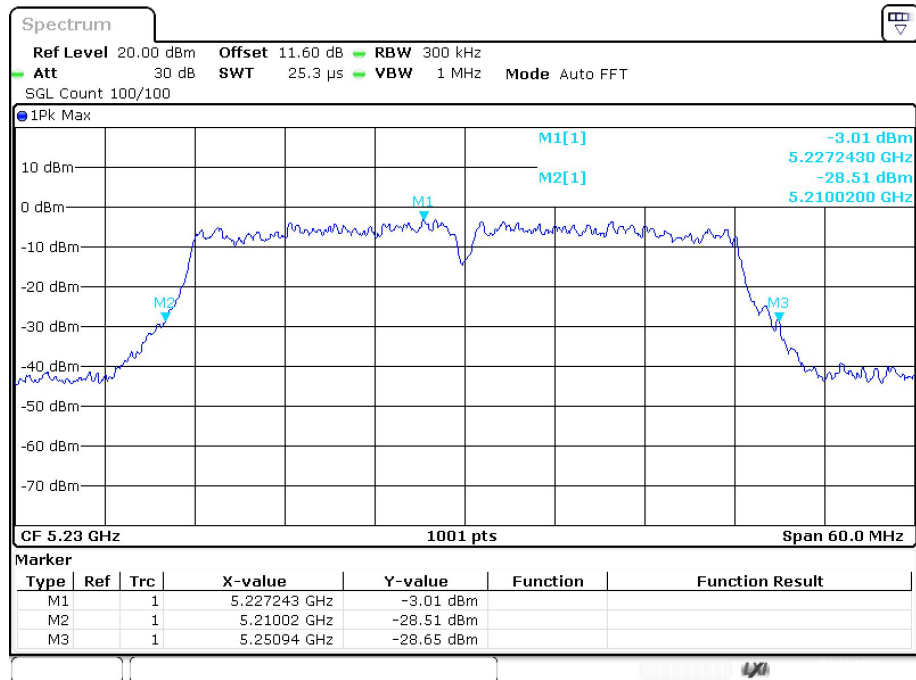
-26dB Bandwidth NVNT n20 5240MHz Ant1



-26dB Bandwidth NVNT n40 5190MHz Ant1



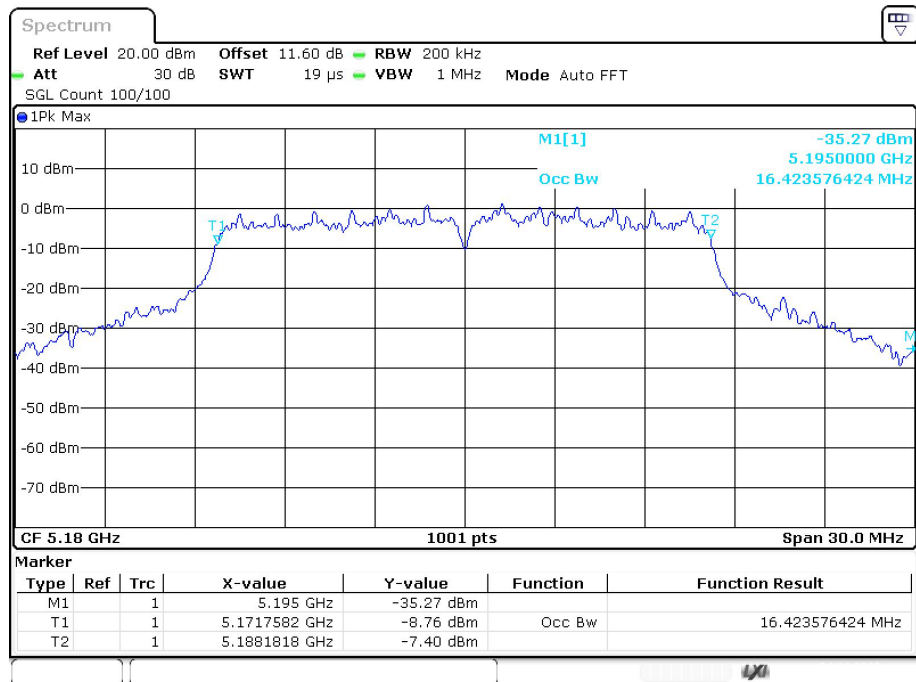
-26dB Bandwidth NVNT n40 5230MHz Ant1



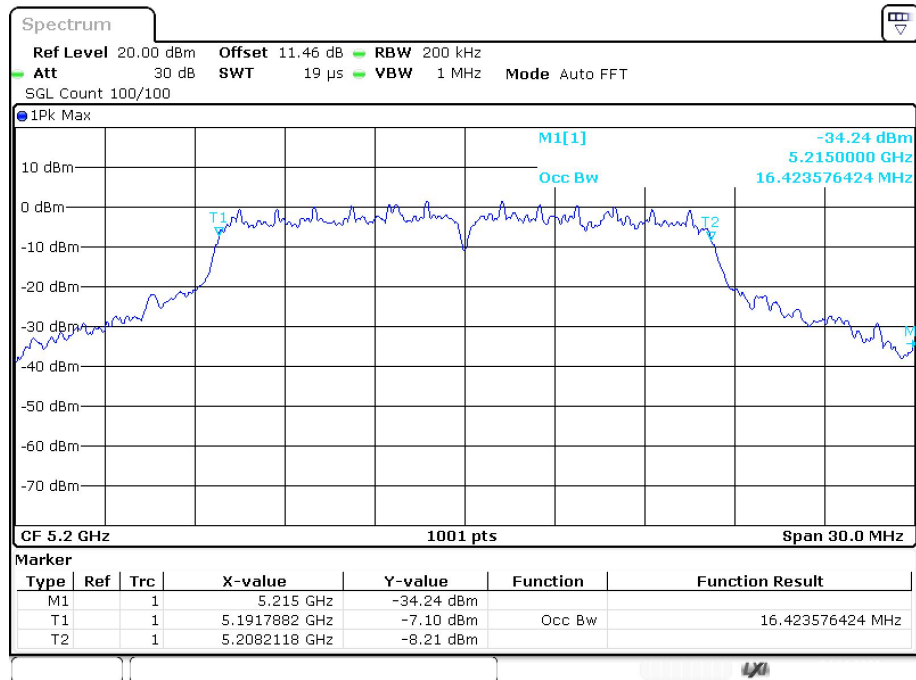
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.424
NVNT	a	5200	Ant1	16.424
NVNT	a	5240	Ant1	16.513
NVNT	ac20	5180	Ant1	17.802
NVNT	ac20	5200	Ant1	17.712
NVNT	ac20	5240	Ant1	17.742
NVNT	ac40	5190	Ant1	36.204
NVNT	ac40	5230	Ant1	36.144
NVNT	ac80	5210	Ant1	75.524
NVNT	n20	5180	Ant1	17.652
NVNT	n20	5200	Ant1	17.772
NVNT	n20	5240	Ant1	17.772
NVNT	n40	5190	Ant1	36.084
NVNT	n40	5230	Ant1	36.324

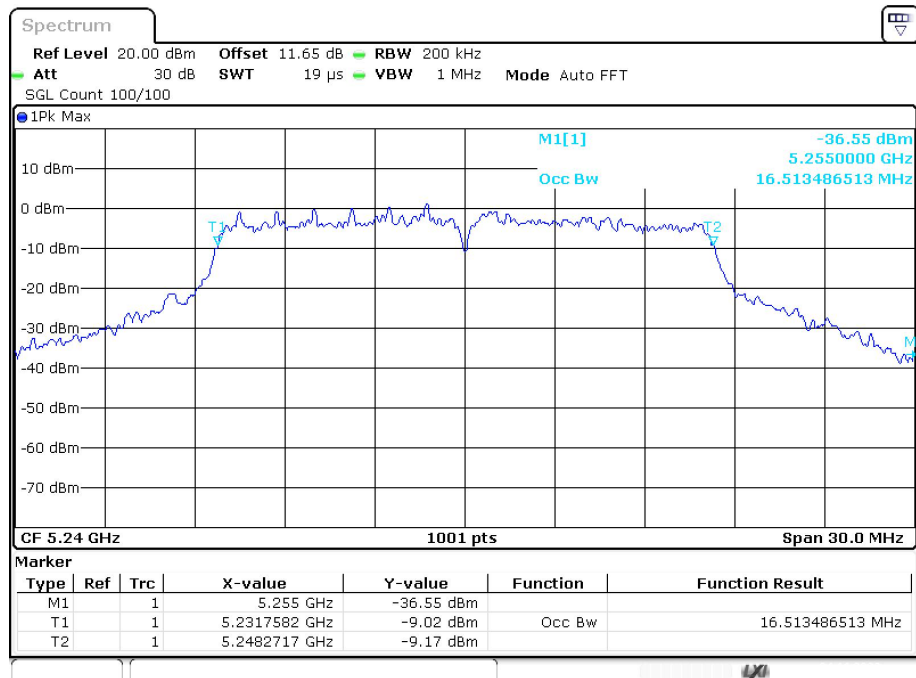
OBW NVNT a 5180MHz Ant1



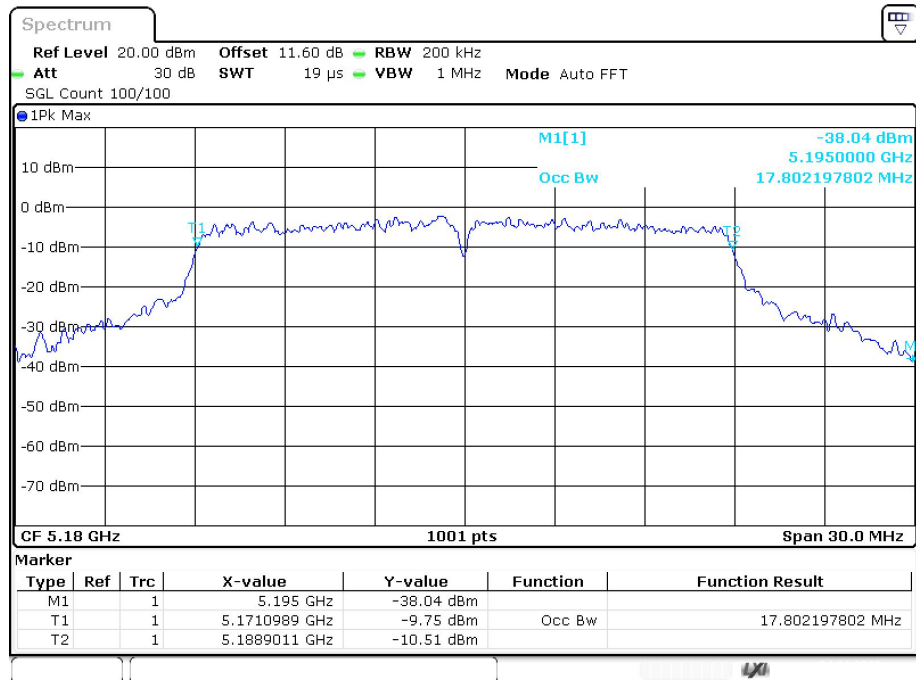
OBW NVNT a 5200MHz Ant1



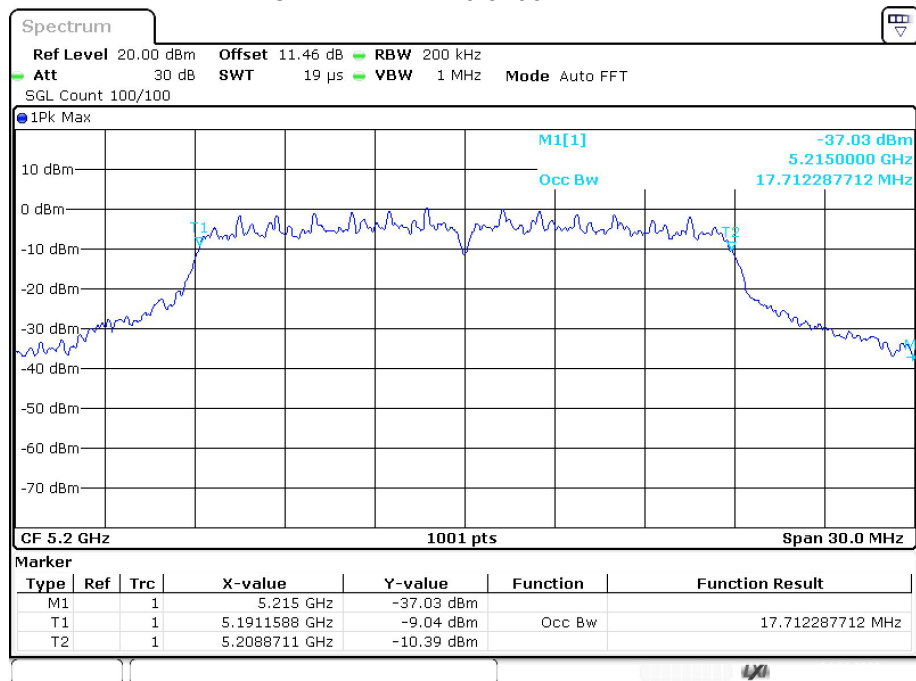
OBW NVNT a 5240MHz Ant1



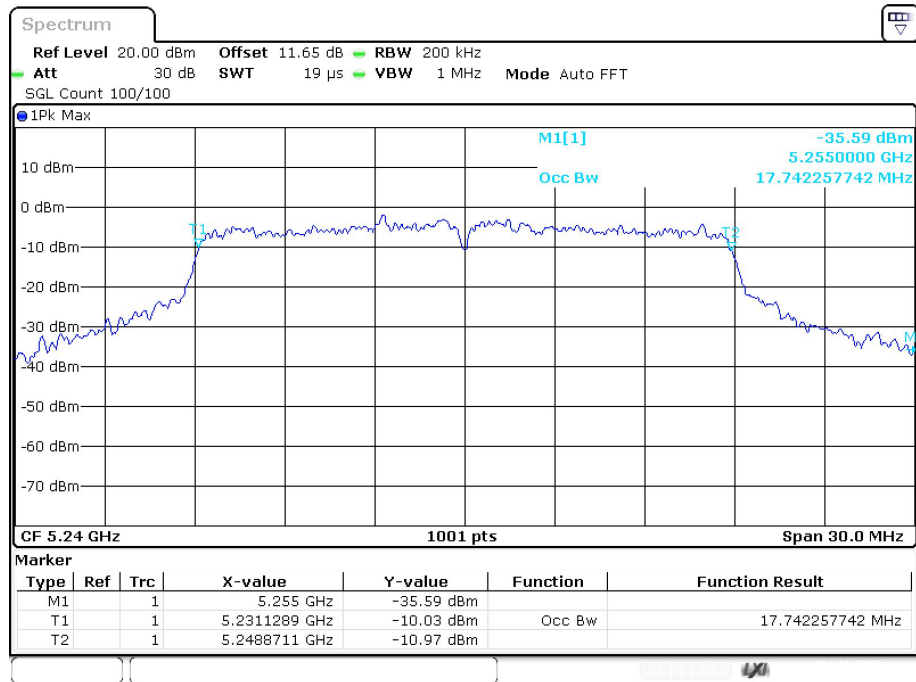
OBW NVNT ac20 5180MHz Ant1



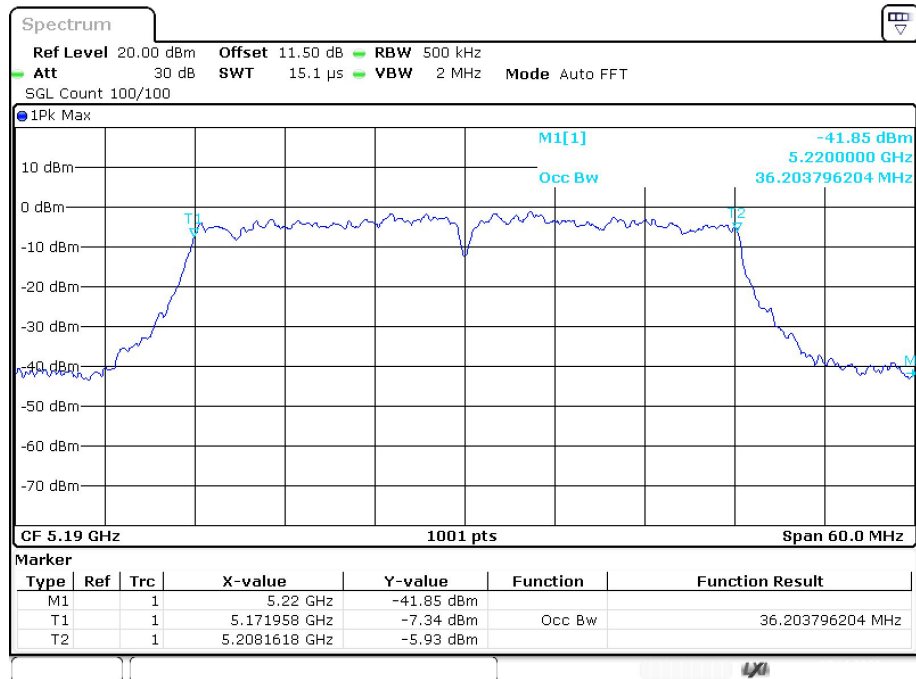
OBW NVNT ac20 5200MHz Ant1



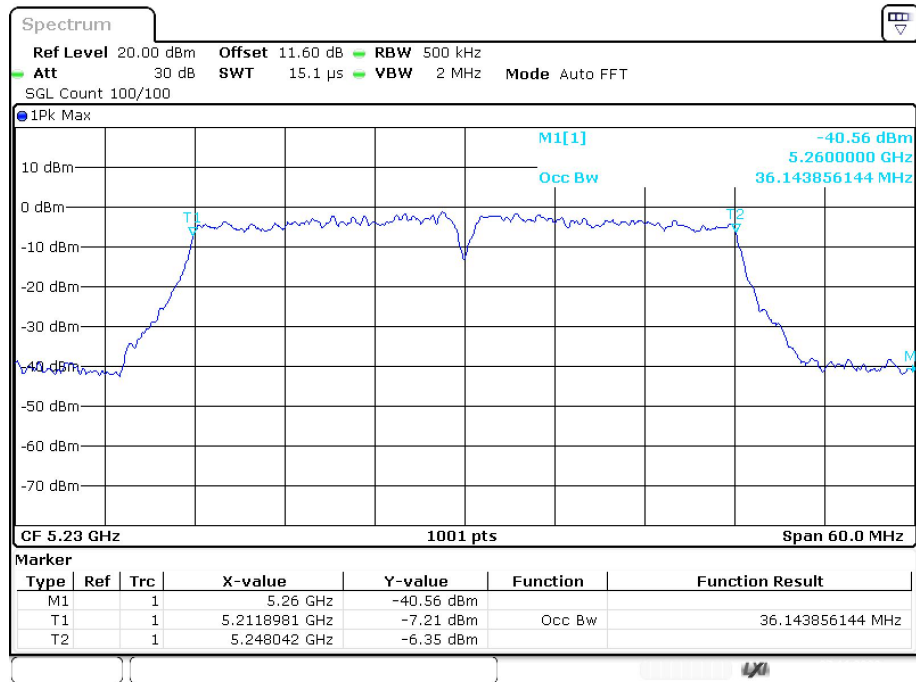
OBW NVNT ac20 5240MHz Ant1



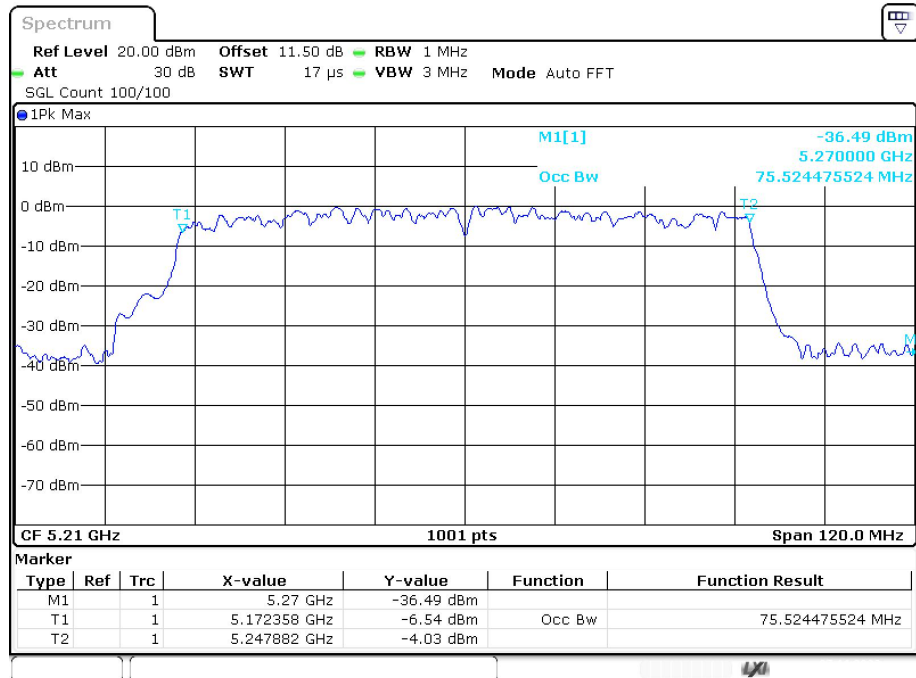
OBW NVNT ac40 5190MHz Ant1



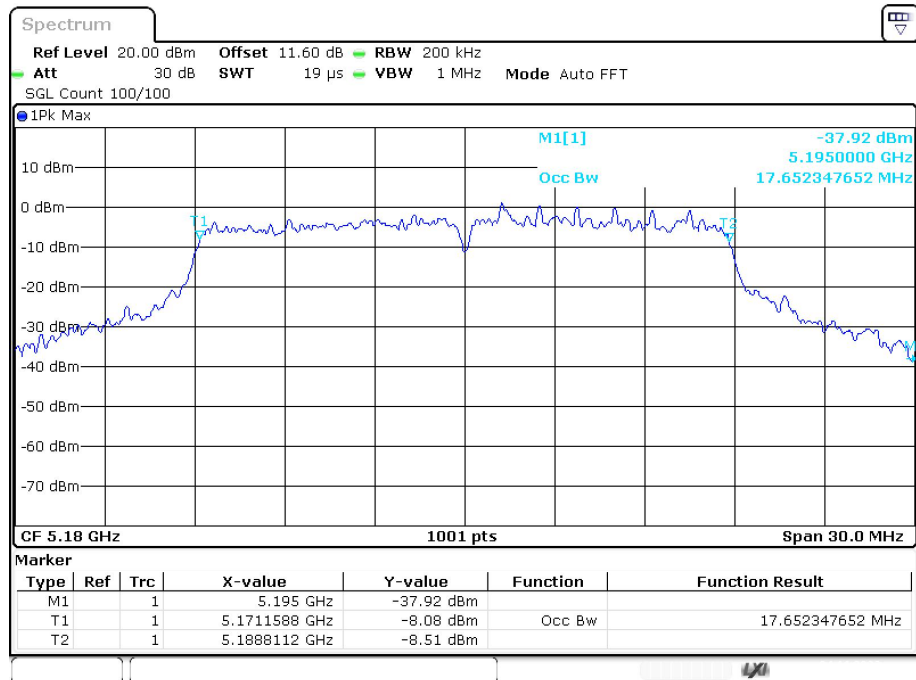
OBW NVNT ac40 5230MHz Ant1



OBW NVNT ac80 5210MHz Ant1



OBW NVNT n20 5180MHz Ant1



OBW NVNT n20 5200MHz Ant1

