TEST REPORT

Dt&C Co., Ltd.
42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC2405-0053
2. Customer
   - Name : Sunny Wave Tech Co., Ltd.
   - Address (FCC) : 106-405-1, 50, UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan, Republic of Korea
     Address (IC) : 4F, Tefex Bldg, 7 Dongsan-ro, Seocho-gu Seoul 06781 Korea (Republic Of)
3. Use of Report : FCC & IC Certification
4. Product Name / Model Name : DOGSPLAY / DPT156G101BL
   FCC ID : 2BCMN-DPT156G101
   IC : 31319-DPT156G101
5. FCC Regulation(s): Part 15.407
   IC Standard(s): RSS-247 Issue 3, RSS-Gen Issue 5
   Test Method used: ANSI C63.10-2013, KDB789033 D02v02r01, KDB662911 D01v02r01
6. Date of Test : 2024.04.08 ~ 2024.04.30
7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing
8. Testing Environment : See appended test report
9. Test Result : Refer to the attached Test Result

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by Name : SeokHo Han (Signature)	Reviewed by Name : JaeJin Lee (Signature)

2024 . 05 . 28 .

Dt&C Co., Ltd.

This test report is a general report that does not use the KOLAS accreditation mark and is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2405-0053	May. 28, 2024	Initial issue	SeokHo Han	JaeJin Lee

CONTENTS

1. General Information

1.1. Description of EUT

Equipment Class	Unlicensed National Information Infrastructure TX(NII)
Product Name	DOGSPLAY
Model Name(s)	DPT156G101BL, DPT156G101BK
PMN(s)	DPT156G101BL, DPT156G101BK
Firmware Version Identification Number	202403291441_686e7a5e7c
EUT Serial Number	No Specified
Power Supply	DC 12 V
Modulation Technique	OFDM
Antenna Specification	Antenna Type: PCB Pattern Antenna Gain: Refer to the clause 3 in test report.

1.2. Declaration by the applicant / manufacturer

N/A

1.3. Testing Laboratory

Dt&C Co., Ltd.		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014. **- FCC & IC MRA Designation No. : KR0034** **- ISED#: 5740A**		
www.dtnc.net		
Telephone	:	+ 82-31-321-2664
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1.4. Testing Environment

Ambient Condition	
▪ Temperature	+21 ℃ ~ +24 ℃
▪ Relative Humidity	+41 % ~ +45 %

1.5. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C63.4-2014 and ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Antenna-port conducted emission	1.0 dB (The confidence level is about 95 %, k = 2)
AC power-line conducted emission	3.4 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz Below)	5.0 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz ~ 18 GHz)	4.8 dB (The confidence level is about 95 %, k = 2)
Radiated emission (18 GHz Above)	5.0 dB (The confidence level is about 95 %, k = 2)

1.6. Test Equipment List

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	23/12/15	24/12/15	MY48010133
Spectrum Analyzer	Agilent Technologies	N9020A	23/06/23	24/06/23	US47360812
Spectrum Analyzer	KEYSIGHT	N9030B	23/12/15	24/12/15	MY55480168
Receiver	Rohde Schwarz	ESCI3	23/06/23	24/06/23	100798
DC Power Supply	Agilent Technologies	66332A	23/06/23	24/06/23	US37474125
DC Power Supply	SM techno	SDP30-5D	23/06/23	24/06/23	305DMG288
Multimeter	FLUKE	17B+	23/12/15	24/12/15	36390701WS
Signal Generator	Rohde Schwarz	SMBV100A	23/12/15	24/12/15	255571
Signal Generator	ANRITSU	MG3695C	23/12/15	24/12/15	173501
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-1
Thermohygrometer	BODYCOM	BJ5478	23/12/15	24/12/15	120612-2
Loop Antenna	ETS-Lindgren	6502	23/11/09	24/11/09	00060496
Hybrid Antenna	Schwarzbeck	VULB 9160	23/12/15	24/12/15	3362
Horn Antenna	ETS-Lindgren	3117	23/06/23	24/06/23	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	23/06/23	24/06/23	155
PreAmplifier	Agilent Technologies	8449B	23/12/15	24/12/15	3008A02108
PreAmplifier	Tsj	MLA-1840-J02-45	23/06/23	24/06/23	16966-10728
PreAmplifier	H.P	8447D	23/12/15	24/12/15	2944A07774
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	23/12/15	24/12/15	7
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	23/12/15	24/12/15	2
High Pass Filter	Wainwright Instruments	WHKX6-6320-8000-26500-40CC	23/12/15	24/12/15	2
Attenuator	Aeroflex/Weinschel	86-10-11	23/06/23	24/06/23	408
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	23/12/15	24/12/15	1338004 1911481
EMI Test Receiver	ROHDE&SCHWARZ	ESCI7	24/01/29	25/01/29	100910
PULSE LIMITER	ROHDE&SCHWARZ	ESH3-Z2	23/08/21	24/08/21	101333
LISN	SCHWARZBECK	NSLK 8128 RC	23/10/26	24/10/26	8128 RC-387
Digital Thermo Hygrometer	CAS	TE-303N	24/02/07	25/02/07	220502531
Cable	Junkosha	MWX241	24/01/03	25/01/03	mmW-1
Cable	Junkosha	MWX241	24/01/03	25/01/03	mmW-4
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-01
Cable	HUBER+SUHNER	SUCOFLEX100	24/01/03	25/01/03	M-02
Cable	JUNFLON	MWX241/B	24/01/03	25/01/03	M-03
Cable	Junkosha	MWX221	24/01/03	25/01/03	M-04
Cable	Junkosha	MWX211	24/01/03	25/01/03	M-05
Cable	JUNFLON	J12J101757-00	24/01/03	25/01/03	M-07
Cable	HUBER+SUHNER	SUCOFLEX104	24/01/03	25/01/03	M-08
Cable	HUBER+SUHNER	SUCOFLEX106	24/01/03	25/01/03	M-09
Cable	Junkosha	MWX315	24/01/03	25/01/03	M-10
Cable	Dt&C	Cable	24/01/03	25/01/03	RFC-69
Cable	Radiall	TESTPRO3	24/01/03	25/01/03	RFC-70
Test Software (AC Line Conducted)	Tsj	EMI Measurement	NA	NA	Version 2.00.0190
Test Software (Radiated)	Tsj	EMI Measurement	NA	NA	Version 2.00.0185

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.
Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.

2. Test Methodology

The measurement procedures described in the ANSI C63.10-2013 and the guidance provided in KDB789033 D02v02r01 were used in measurement of the EUT.

The EUT was tested per the guidance of KDB789033 D02v02r01. And ANSI C63.10-2013 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the test mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

2.3. General Test Procedures

Conducted Emissions

The power-line conducted emission test procedure is not described on the KDB789033 D02v02r01.

So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10-2013.

The EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector.

Radiated Emissions

Basically the radiated tests were performed with KDB789033 D02v02r01. But some requirements and procedures like test site requirements, EUT setup and maximizing procedure were fulfilled with the requirements in Section 5 and 6 of the ANSI C63.10-2013 as stated on KDB789033 D02v02r01.

The EUT is placed on a non-conductive table, which is 0.8 m above ground plane. For emission measurements above 1 GHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 1 m or 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axis.

2.4. Instrument Calibration

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.5. Description of Test Modes

The EUT has been tested with the operating condition for maximizing the emission characteristics. A test program is used to control the EUT for staying in continuous transmitting.

Transmitting Configuration of EUT

Mode	SISO		MIMO (CDD)
	Ant 1	Ant 2	Ant 1 & 2
	Data rate		
802.11a	6~54Mbps	6~54Mbps	-
802.11n(HT20)	MCS 0 ~ 7	MCS 0 ~ 7	MCS 0 ~ 7
802.11ac(VHT20)	MCS 0 ~ 8(1SS)	MCS 0 ~ 8(1SS)	MCS 0 ~ 8(1SS)
802.11n(HT40)	MCS 0 ~ 7	MCS 0 ~ 7	MCS 0 ~ 7
802.11ac(VHT40)	MCS 0 ~ 9(1SS)	MCS 0 ~ 9(1SS)	MCS 0 ~ 9(1SS)
802.11ac(VHT80)	MCS 0 ~ 9(1SS)	MCS 0 ~ 9(1SS)	MCS 0 ~ 9(1SS)

CDD = Cycle Delay Diversity, SS = Spatial Streams

EUT Operation test setup

- Test Software: Tera Term 4.104.0.0
- Power setting: Refer to the table below.

Tested frequency and power setting

Band	Channel	Frequency (MHz)	802.11a
			Power Setting
U-NII 1	36	5 180	15
	40	5 200	15
	48	5 240	15
U-NII 2A	52	5 260	15
	60	5 280	15
	64	5 320	15
U-NII 2C	100	5 500	15
	116	5 580	15
	140	5 700	15
	144	5 720	15
U-NII 3	149	5 745	15
	157	5 785	15
	165	5 825	15

Band	Channel	Frequency (MHz)	802.11n(HT20), 802.11ac(VHT20)
			Power Setting
U-NII 1	36	5 180	11
	40	5 200	11
	48	5 240	10
U-NII 2A	52	5 260	14
	60	5 280	14
	64	5 320	14
U-NII 2C	100	5 500	13
	116	5 580	13
	140	5 700	12
	144	5 720	12
U-NII 3	149	5 745	14
	157	5 785	14
	165	5 825	14

Band	Channel	Frequency (MHz)	802.11n(HT40), 802.11ac(VHT40)
			Power Setting
U-NII 1	38	5 190	13
	46	5 230	13
U-NII 2A	54	5 270	13
	62	5 310	13
U-NII 2C	102	5 510	12
	110	5 550	12
	134	5 670	12
	142	5 710	12
U-NII 3	151	5 755	14
	159	5 795	14

Band	Channel	Frequency (MHz)	802.11ac(VHT80)
			Power Setting
U-NII 1	42	5 210	11
U-NII 2A	58	5 290	11
U-NII 2C	106	5 530	8
	138	5 690	8
U-NII 3	155	5 775	10

Tested Mode

Test Mode		ANT configuration	Worst data rate
TM 1	802.11a	Single transmitting	6Mbps
TM 2	802.11n(HT20)	CDD Multiple transmitting	MCS0
TM 3	802.11n(HT40)	CDD Multiple transmitting	MCS0
TM 4	802.11n(HT80)	CDD Multiple transmitting	MCS0

Note 1: The worst case data rate is determined as above test mode according to the power measurements.

3. Antenna Requirements

▣ **According to Part 15.203**

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section."

The antenna is permanently attached.(Refer to Internal Photo file.)
Therefore this E.U.T Complies with the requirement of §15.203

Directional antenna gain:

Bands	SISO		MIMO (CDD) Note 1.
	ANT 1 [dBi]	ANT 2 [dBi]	Directional Gain[dBi]
U-NII 1	2.88	2.84	**5.87**
U-NII 2A	3.01	3.07	**6.05**
U-NII 2C	3.01	3.07	**6.05**
U-NII 3	2.07	2.90	**5.50**

Note 1. Directional gain(correlated signal with unequal antenna gain and equal transmit power)
$10 \log [(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N^{ANT}]$ dBi

4. Summary of Test Result

FCC Part Section(s)	RSS Section(s)	Test Description	Limit	Test Condition	Status Note 1
15.407(a)	RSS-247[6.2]	Emission Bandwidth (26 dB Bandwidth)	N/A	Conducted	NT Note 3
15.407(e)	RSS-247[6.2]	Minimum Emission Bandwidth (6 dB Bandwidth)	> 500 kHz in 5 725 ~ 5 850 MHz		NT Note 3
15.407(a)	RSS-247[6.2]	Maximum Conducted Output Power	Part 15.407(a) (Refer to section 5.3)		NT Note 3
15.407(a)	RSS-247[6.2]	Peak Power Spectral Density	Part 15.407(a) (Refer to section 5.4)		NT Note 3
-	RSS-Gen[6.7]	Occupied Bandwidth (99 %)	N/A		NT Note 3
15.407(h)	RSS-247[6.3]	Dynamic Frequency Selection	Part 15.407(h) (Refer to the DFS test report)		NT Note 3
15.205 15.209 15.407(b)	RSS-Gen[8.9] RSS-Gen[8.10] RSS-247[6.2]	Unwanted Emissions	Part 15.209, 15.407(b) (Refer to section 5.5)	Radiated	C
15.207	RSS-Gen[8.8]	AC Conducted Emissions	Part 15.207 (Refer to section 5.6)	AC Line Conducted	C
15.203	-	Antenna Requirements	Part 15.203 (Refer to section 3)	-	C

Note 1: **C** = Comply **NC** = Not Comply **NT** = Not Tested **NA** = Not Applicable
Note 2: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS.
Note 3: This device uses the certified module. (FCC ID: 2AC23-DCT85)
Please refer to the module test for conducted signal test items.
The conducted output power was verified to be the same as module.

5. TEST RESULT

5.1 Unwanted Emissions

Test Requirements

- Part 15.407(b) & RSS-Gen[6.2]

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the **5.15 GHz - 5.25 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.

(2) For transmitters operating in the **5.25 GHz - 5.35 GHz band**: all emissions outside of the **5.15 GHz - 5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.

(3) For transmitters operating in the **5.47 GHz - 5.725 GHz band**: all emissions outside of the **5.47 GHz - 5.725 GHz band** shall not exceed an **EIRP of -27 dBm/MHz.**

(4) For transmitters operating in the **5.725 GHz - 5.85 GHz band**: (i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(5) Unwanted emissions **below 1 GHz** must comply with the general field strength limits set forth in **Section 15.209**.
Further, any U-NII devices using an **AC power line** are required to comply also with the conducted limits set forth in **Section 15.207**.

- Part 15.209 & RSS-247[8.9]: General requirements

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (μA/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	6.37/F (F in kHz)	300
0.490 – 1.705	24 000 / F (kHz)	63.7/F (F in kHz)	30
1.705 – 30.0	30	0.08	30

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	100	3
88 ~ 216	150 **	150	3
216 ~ 960	200 **	200	3
Above 960	500	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

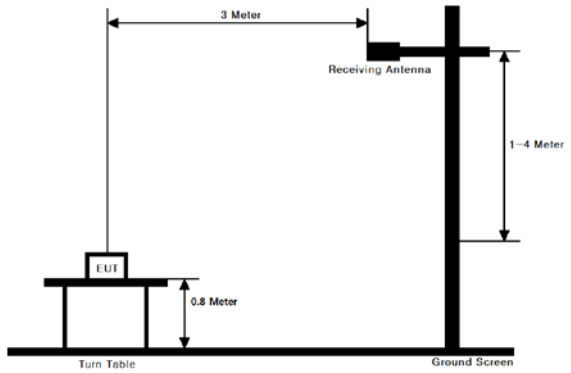
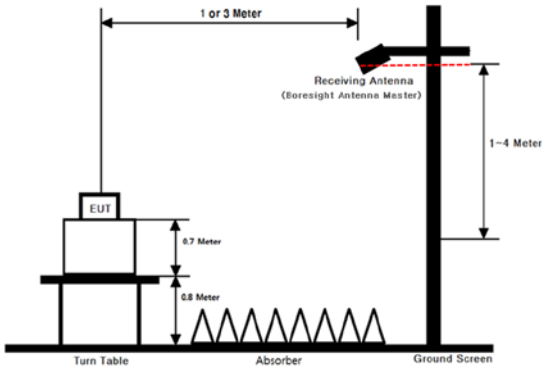
- Part 15.205(a): Restricted band of operation

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.414 25 ~ 8.414 75	108 ~ 121.94	1 300 ~ 1 427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1 435 ~ 1 626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.173 5 ~ 2.190 5	12.519 75 ~ 12.520 25	149.9 ~ 150.05	1 645.5 ~ 1 646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.576 75 ~ 12.577 25	156.524 75 ~ 156.525 25	1 660 ~ 1 710	8.025 ~ 8.5	22.01 ~ 23.12
4.177 25 ~ 4.177 75	13.36 ~ 13.41	156.7 ~ 156.9	1 718.8 ~ 1 722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.207 25 ~ 4.207 75	16.42 ~ 16.423	162.012 5 ~ 167.17	2 200 ~ 2 300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.694 75 ~ 16.695 25	167.72 ~ 173.2	2 310 ~ 2 390	10.6 ~ 12.7	36.43 ~ 36.5
6.267 75 ~ 6.268 25	16.804 25 ~ 16.804 75	240 ~ 285	2 483.5 ~ 2 500	13.25 ~ 13.4	Above 38.6
6.311 75 ~ 6.312 25	25.5 ~ 25.67	322 ~ 335.4	2 655 ~ 2 900		
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3 260 ~ 3 267		
8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3 332 ~ 3 339		
8.376 25 ~ 8.386 75	74.8 ~ 75.2	960 ~ 1 240	3 345.8 ~ 3 358		
			3 600 ~ 4 400		

- RSS-Gen[8.10]: Restricted frequency bands

MHz	MHz	MHz	MHz	MHz	GHz
0.090 ~ 0.110	8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3 345.8 ~ 3 358	9.0 ~ 9.2
0.495 ~ 0.505	8.376 25 ~ 8.386 75	74.8 ~ 75.2	960 ~ 1 427	3 500 ~ 4 400	9.3 ~ 9.5
2.173 5 ~ 2.190 5	8.414 25 ~ 8.414 75	108 ~ 138	1 435 ~ 1 626.5	4 500 ~ 5 150	10.6 ~ 12.7
3.020 ~ 3.026	12.29 ~ 12.293	149.9 ~ 150.05	1 645.5 ~ 1 646.5	5 350 ~ 5 460	13.25 ~ 13.4
4.125 ~ 4.128	12.519 75 ~ 12.520 25	156.524 75 ~	1 660 ~ 1 710	7 250 ~ 7 750	14.47 ~ 14.5
4.177 25 ~ 4.177 75	12.576 75 ~ 12.577 25	156.525 25	1 718.8 ~ 1 722.2	8 025 ~ 8 500	15.35 ~ 16.2
4.207 25 ~ 4.207 75	13.36 ~ 13.41	156.7 ~ 156.9	2 200 ~ 2 300		17.7 ~ 21.4
5.677 ~ 5.683	16.42 ~ 16.423	162.01 25 ~ 167.17	2 310 ~ 2 390		22.01 ~ 23.12
6.215 ~ 6.218	16.694 75 ~ 16.695 25	167.72 ~ 173.2	2 483.5 ~ 2 500		23.6 ~ 24.0
6.267 75 ~ 6.268 25	16.804 25 ~ 16.804 75	240 ~ 285	2 655 ~ 2 900		31.2 ~ 31.8
6.311 75 ~ 6.312 25	25.5 ~ 25.67	322 ~ 335.4	3 260 ~ 3 267		36.43 ~ 36.5
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3 332 ~ 3 339		Above 38.6

▣ Test Configuration

Below 1 GHz	Above 1 GHz
	

▣ Test Procedure

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m.
2. The turn table shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1 m or 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiated spurious emission measured using following Measurement Procedure **of KDB789033 D02v02r01**

► General Requirements for Unwanted Emissions Measurements

The following requirements apply to all unwanted emissions measurements, both in and outside of the restricted bands:

- EUT Duty Cycle

(1) The EUT shall be configured or modified to **transmit continuously** except as stated in (ii), below. The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (**to no lower than 98 percent**) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

(2) If **continuous transmission (or at least 98 percent duty cycle) cannot be achieved** due to hardware limitations of the EUT (e.g., overheating), the following additions to the measurement and reporting procedures are required:

- The EUT shall be configured to operate at the maximum achievable duty cycle.
- Measure the duty cycle, x, of the transmitter output signal.
- Adjustments to measurement procedures (e.g., increasing test time and number of traces averaged) shall be performed as described in the procedures below.
- The test report shall include the following additional information:
  - The reason for the duty cycle limitation.
  - The duty cycle achieved for testing and the associated transmit duration and interval between transmissions.
  - The sweep time and the amount of time used for trace stabilization during max-hold measurements for peak emission measurements.

(3) Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

► **Measurements below 1 000 MHz**

a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.

b) Compliance shall be demonstrated using **CISPR quasi-peak detection**; however, **peak detection** is permitted as an alternative to quasi-peak detection.

► **Measurements Above 1 000 MHz (Peak)**

a) Follow the requirements in section II.G.3, “General Requirements for Unwanted Emissions Measurements”.

b) Peak emission levels are measured by setting the analyzer as follows:

(i) **RBW = 1 MHz.**
(ii) **VBW ≥ 3 MHz.**
(iii) **Detector = Peak.**
(iv) Sweep time = Auto.
(v) Trace mode = Max hold.
(vi) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

► **Measurements Above 1000 MHz (Method AD)**

(i) **RBW = 1 MHz.**
(ii) **VBW ≥ 3 MHz.**
(iii) **Detector = RMS**, if span / (# of points in sweep) ≤ RBW / 2. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, the detector mode shall be set to peak.
(iv) Averaging type = power (i.e., RMS)
• As an alternative, the detector and averaging type may be set for linear voltage averaging. Some analyzers require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
(v) Sweep time = Auto.
(vi) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle. For example, with 50 percent duty cycle, at least 200 traces shall be averaged.
(vii) If tests are performed with the EUT transmitting at a duty cycle less than 98 percent, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
• **If power averaging (RMS) mode was used in step (iv) above, the correction factor is 10 log(1/x), where x is the duty cycle.** For example, if the transmit duty cycle was 50 percent, then 3 dB must be added to the measured emission levels.
• If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50 percent, then 6 dB must be added to the measured emission levels.
• If a specific emission is demonstrated to be continuous (100 percent duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

Duty Cycle Correction factor

Test Mode	Date rate	T_{on}(ms)	T_{on+off} (ms)	x = T_{on} / (T_{on+off})	DCCF = 10 log(1/x) (dB)
TM 1	6 Mbps	3.108	3.211	0.967 9	0.14
TM 2	MCS 0	4.768	4.869	0.979 3	0.09
TM 3	MCS 0	2.316	2.418	0.957 8	0.19
TM 4	MCS 0	1.096	1.198	0.914 9	0.39

Note1: Where, T = Transmission duration / x = Duty cycle
Note2: Please refer to the appendix II for duty cycle plots.

▣ Test Results

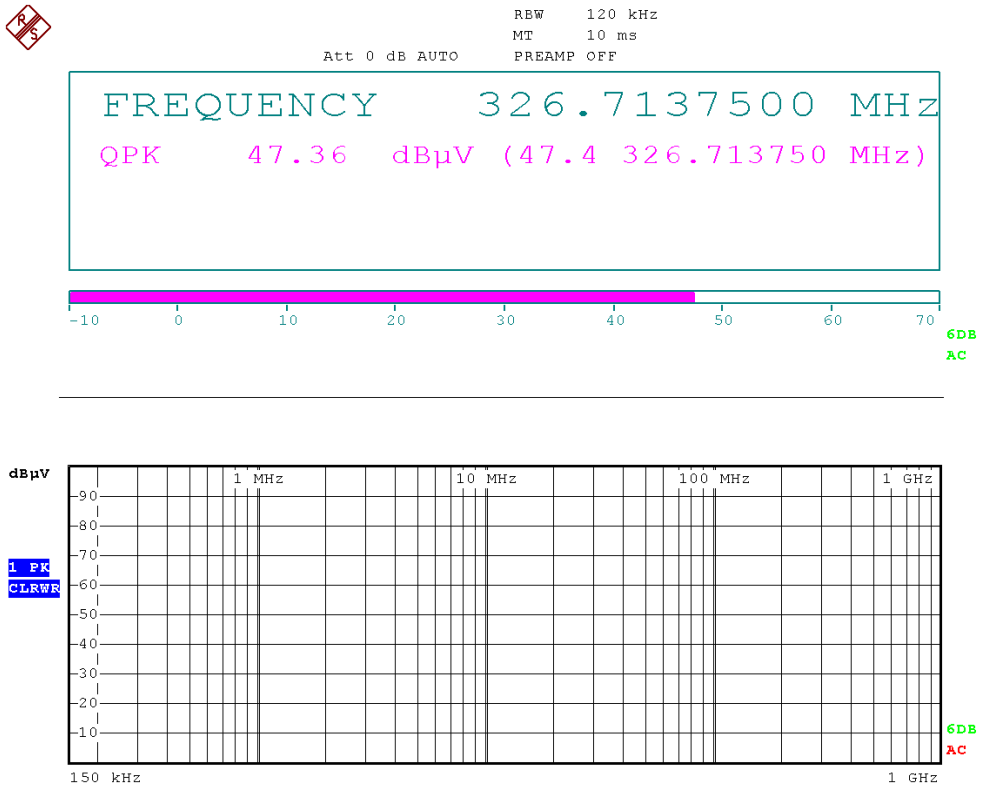
Test Notes

1. The radiated emissions below 1 GHz were investigated 9 kHz to 1 GHz and the worst case data was reported.
2. Information of Distance Correction Factor
For finding emissions, measurements may be performed at a distance closer than that specified in the regulations.
In this case, the distance factor is applied to the result.
- Calculation of distance correction factor
At frequencies below 30 MHz = 40 log(tested distance / specified distance)
At frequencies at or above 30 MHz = 20 log(tested distance / specified distance)
When distance factor is “N/A”, the measurements were performed at the specified distance and distance factor is not applied.
3. Sample Calculation.
Margin = Limit – Result / Result = Reading + TF+ DCCF + DCF / TF = AF + CL + HL + AL – AG
Where, TF = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, HL = High pass filter Loss, AL = Attenuator Loss, DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

Radiated Emissions data(9 kHz ~ 1 GHz) : TM 2

Tested Frequency (MHz)	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin(dB)
5 180	326.71	H	X	QPK	47.40	-4.16	N/A	N/A	43.24	46.02	2.78
	475.21	V	X	QPK	43.40	-0.91	N/A	N/A	42.49	46.02	3.53
	490.05	V	X	QPK	43.10	-0.71	N/A	N/A	42.39	46.02	3.63

TM 2 & U-NII & 5 180 & X axis & Hor Detector Mode : QPK



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▣ Test Results

Test Notes

1. The radiated emissions above 1GHz were investigated up to 40 GHz. And no other spurious and harmonic emissions were found below listed frequencies.
2. Information of Distance Correction Factor
   For finding emissions, measurements may be performed at a distance closer than that specified in the regulations.
   In this case, the distance factor is applied to the result.
   - Calculation of distance correction factor
   At frequencies below 30 MHz = 40 log(tested distance / specified distance)
   At frequencies at or above 30 MHz = 20 log(tested distance / specified distance)
   When distance factor is "N/A", the measurements were performed at the specified distance and distance factor is not applied.
3. Sample Calculation.
   Margin = Limit – Result / Result = Reading + TF+ DCCF + DCF / TF = AF + CL + HL + AL – AG
   Where, TF = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, HL = High pass filter Loss, AL = Attenuator Loss, DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
4. The limit is converted to field strength.
   E(dBuV/m) = EIRP(dBm) + 95.2 dB = -27 dBm + 95.2 = 68.2 dBuV/m

Unwanted Emissions data(1 GHz ~ 40 GHz) : *TM1 ANT1*

Band	Tested Frequency (MHz)	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 180	5 148.64	V	X	PK	48.07	8.63	N/A	N/A	56.70	74.00	17.30
		5 148.43	V	X	AV	34.40	8.63	0.14	N/A	43.17	54.00	10.83
		10 360.41	H	X	PK	44.14	15.71	N/A	N/A	59.85	68.20	8.35
		15 540.16	H	X	PK	53.38	11.47	N/A	N/A	64.85	74.00	9.15
		15 540.53	H	X	AV	42.00	11.47	0.14	N/A	53.61	54.00	0.39
	5 200	10 400.93	H	X	PK	42.80	15.75	N/A	N/A	58.55	68.20	9.65
		15 599.79	H	X	PK	51.55	11.53	N/A	N/A	63.08	74.00	10.92
		15 599.67	H	X	AV	41.43	11.53	0.14	N/A	53.10	54.00	0.90
	5 240	10 480.40	H	X	PK	42.44	15.90	N/A	N/A	58.34	68.20	9.86
		15 722.67	H	X	PK	51.95	11.70	N/A	N/A	63.65	74.00	10.35
		15 721.77	H	X	AV	41.45	11.69	0.14	N/A	53.28	54.00	0.72
U-NII 2A	5 260	10 520.71	H	X	PK	42.51	16.01	N/A	N/A	58.52	68.20	9.68
		15 775.81	H	X	PK	51.30	11.76	N/A	N/A	63.06	74.00	10.94
		15 776.87	H	X	AV	41.33	11.76	0.14	N/A	53.23	54.00	0.77
	5 280	10 560.37	H	X	PK	42.77	16.10	N/A	N/A	58.87	68.20	9.33
		15 841.30	H	X	PK	51.27	11.94	N/A	N/A	63.21	74.00	10.79
		15 840.01	H	X	AV	40.95	11.93	0.14	N/A	53.02	54.00	0.98
	5 320	5 351.74	V	X	PK	49.06	8.70	N/A	N/A	57.76	74.00	16.24
		5 351.78	V	X	AV	33.16	8.70	0.14	N/A	42.00	54.00	12.00
		10 639.09	H	X	PK	42.10	16.37	N/A	N/A	58.47	74.00	15.53
		10 639.47	H	X	AV	31.45	16.37	0.14	N/A	47.96	54.00	6.04
		15 961.12	H	X	PK	51.42	12.09	N/A	N/A	63.51	74.00	10.49
		15 961.19	H	X	AV	40.83	12.09	0.14	N/A	53.06	54.00	0.94

Unwanted Emissions data(1 GHz ~ 40 GHz) : *TM1 ANT2*

Band	Tested Frequency (MHz)	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	5 500	5 458.14	V	X	PK	42.79	9.03	N/A	N/A	51.82	74.00	22.18
		5 469.55	V	X	PK	46.30	9.05	N/A	N/A	55.35	68.20	12.85
		5 458.55	V	X	AV	31.85	9.03	0.14	N/A	41.02	54.00	12.98
		10 999.51	H	X	PK	39.80	17.44	N/A	N/A	57.24	74.00	16.76
		10 998.84	H	X	AV	28.80	17.44	0.14	N/A	46.38	54.00	7.62
		16 500.87	H	X	PK	47.77	12.34	N/A	N/A	60.11	68.20	8.09
	5 580	11 161.19	H	X	PK	40.85	17.59	N/A	N/A	58.44	74.00	15.56
		11 161.03	H	X	AV	29.48	17.59	0.14	N/A	47.21	54.00	6.79
		16 739.40	H	X	PK	48.05	12.91	N/A	N/A	60.96	68.20	7.24
	5 700	5 725.57	V	X	PK	56.07	9.37	N/A	N/A	65.44	68.20	2.76
	5 720	11 440.02	H	X	PK	39.09	17.94	N/A	N/A	57.03	74.00	16.97
		11 440.63	H	X	AV	28.80	17.94	0.14	N/A	46.88	54.00	7.12
		17 160.30	H	X	PK	45.86	13.35	N/A	N/A	59.21	68.20	8.99
U-NII 3	5 745	5 638.85	V	X	PK	42.07	9.26	N/A	N/A	51.33	68.20	16.87
		5 685.85	V	X	PK	42.11	9.31	N/A	N/A	51.42	94.73	43.31
		11 490.82	H	X	PK	39.94	17.98	N/A	N/A	57.92	74.00	16.08
		11 490.43	H	X	AV	28.55	17.98	0.14	N/A	46.67	54.00	7.33
		17 235.75	H	X	PK	46.82	13.27	N/A	N/A	60.09	68.20	8.11
	5 785	11 569.80	H	X	PK	38.93	18.08	N/A	N/A	57.01	74.00	16.99
		11 569.65	H	X	AV	28.54	18.08	0.14	N/A	46.76	54.00	7.24
		17 355.93	H	X	PK	47.10	13.35	N/A	N/A	60.45	68.20	7.75
	5 825	5 856.41	V	X	PK	53.19	9.53	N/A	N/A	62.72	110.40	47.68
		5 938.82	V	X	PK	42.40	9.66	N/A	N/A	52.06	68.20	16.14
		11 649.18	H	X	PK	39.42	18.07	N/A	N/A	57.49	74.00	16.51
		11 649.44	H	X	AV	28.96	18.07	0.14	N/A	47.17	54.00	6.83
		17 474.78	H	X	PK	46.67	13.34	N/A	N/A	60.01	68.20	8.19

Unwanted Emissions data(1 GHz ~ 40 GHz) : *TM2*

Band	Tested Frequency (MHz)	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 180	5 149.83	V	X	PK	45.65	8.63	N/A	N/A	54.28	74.00	19.72
		5 149.97	V	X	AV	34.23	8.63	0.09	N/A	42.95	54.00	11.05
		10 359.97	H	X	PK	38.68	15.71	N/A	N/A	54.39	68.20	13.81
		15 540.16	H	X	PK	52.03	11.47	N/A	N/A	63.50	74.00	10.50
		15 540.08	H	X	AV	40.29	11.47	0.09	N/A	51.85	54.00	2.15
	5 200	10 400.29	H	X	PK	39.75	15.75	N/A	N/A	55.50	68.20	12.70
		15 600.77	H	X	PK	51.36	11.53	N/A	N/A	62.89	74.00	11.11
		15 600.66	H	X	AV	40.40	11.53	0.09	N/A	52.02	54.00	1.98
	5 240	10 478.93	H	X	PK	39.94	15.90	N/A	N/A	55.84	68.20	12.36
		15 720.13	H	X	PK	50.63	11.69	N/A	N/A	62.32	74.00	11.68
		15 721.27	H	X	AV	40.18	11.69	0.09	N/A	51.96	54.00	2.04
U-NII 2A	5 260	10 519.17	H	X	PK	40.09	16.01	N/A	N/A	56.10	68.20	12.10
		15 780.71	H	X	PK	49.97	11.77	N/A	N/A	61.74	74.00	12.26
		15 780.65	H	X	AV	40.10	11.77	0.09	N/A	51.96	54.00	2.04
	5 280	10 560.51	H	X	PK	40.19	16.10	N/A	N/A	56.29	68.20	11.91
		15 840.72	H	X	PK	50.70	11.93	N/A	N/A	62.63	74.00	11.37
		15 840.77	H	X	AV	39.96	11.93	0.09	N/A	51.98	54.00	2.02
	5 320	5 352.86	V	X	PK	48.35	8.70	N/A	N/A	57.05	74.00	16.95
		5 353.19	V	X	AV	32.70	8.70	0.09	N/A	41.49	54.00	12.51
		10 640.43	H	X	PK	39.66	16.37	N/A	N/A	56.03	74.00	17.97
		10 640.07	H	X	AV	29.52	16.37	0.09	N/A	45.98	54.00	8.02
		15 960.92	H	X	PK	51.47	12.09	N/A	N/A	63.56	74.00	10.44
		15 960.34	H	X	AV	40.10	12.09	0.09	N/A	52.28	54.00	1.72
U-NII 2C	5 500	5 457.92	V	X	PK	43.32	9.03	N/A	N/A	52.35	74.00	21.65
		5 463.77	V	X	PK	44.79	9.04	N/A	N/A	53.83	68.20	14.37
		5 458.31	V	X	AV	32.00	9.03	0.09	N/A	41.12	54.00	12.88
		10 998.79	H	X	PK	39.70	17.44	N/A	N/A	57.14	74.00	16.86
		10 999.47	H	X	AV	28.89	17.44	0.09	N/A	46.42	54.00	7.58
		16 502.30	H	X	PK	48.76	12.35	N/A	N/A	61.11	68.20	7.09
	5 580	11 159.01	H	X	PK	39.69	17.58	N/A	N/A	57.27	74.00	16.73
		11 158.98	H	X	AV	29.85	17.58	0.09	N/A	47.52	54.00	6.48
		16 741.76	H	X	PK	52.36	12.92	N/A	N/A	65.28	68.20	2.92
	5 700	5 730.43	V	X	PK	50.78	9.38	N/A	N/A	60.16	68.20	8.04
	5 720	11 440.25	H	X	PK	39.24	17.94	N/A	N/A	57.18	74.00	16.82
		11 440.55	H	X	AV	28.88	17.94	0.09	N/A	46.91	54.00	7.09
		17 163.50	H	X	PK	51.24	13.34	N/A	N/A	64.58	68.20	3.62
U-NII 3	5 745	5 646.78	V	X	PK	41.90	9.27	N/A	N/A	51.17	68.20	17.03
		5 695.90	V	X	PK	45.97	9.32	N/A	N/A	55.29	102.17	46.88
		11 490.27	H	X	PK	38.85	17.98	N/A	N/A	56.83	74.00	17.17
		11 490.55	H	X	AV	28.72	17.98	0.09	N/A	46.79	54.00	7.21
		17 237.99	H	X	PK	50.90	13.27	N/A	N/A	64.17	68.20	4.03
	5 785	11 569.49	H	X	PK	38.94	18.08	N/A	N/A	57.02	74.00	16.98
		11 569.72	H	X	AV	28.60	18.08	0.09	N/A	46.77	54.00	7.23
		17 350.81	H	X	PK	51.87	13.35	N/A	N/A	65.22	68.20	2.98
	5 825	5 890.78	V	X	PK	42.89	9.54	N/A	N/A	52.43	93.53	41.10
		5 938.17	V	X	PK	42.32	9.65	N/A	N/A	51.97	68.20	16.23
		11 649.47	H	X	PK	39.49	18.07	N/A	N/A	57.56	74.00	16.44
		11 649.19	H	X	AV	29.10	18.07	0.09	N/A	47.26	54.00	6.74
		17 482.93	H	X	PK	51.19	13.87	N/A	N/A	65.06	68.20	3.14

Unwanted Emissions data(1 GHz ~ 40 GHz) : *TM3*

Band	Tested Frequency (MHz)	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 190	5 145.91	V	X	PK	49.47	8.62	N/A	N/A	58.09	74.00	15.91
		5 146.21	V	X	AV	37.98	8.62	0.19	N/A	46.79	54.00	7.21
		10 379.59	H	X	PK	39.42	15.73	N/A	N/A	55.15	68.20	13.05
		15 569.72	H	X	PK	47.63	11.49	N/A	N/A	59.12	74.00	14.88
		15 569.22	H	X	AV	37.44	11.49	0.19	N/A	49.12	54.00	4.88
	5 230	10 459.16	H	X	PK	39.63	15.84	N/A	N/A	55.47	68.20	12.73
		15 690.54	H	X	PK	47.65	11.65	N/A	N/A	59.30	74.00	14.70
		15 690.51	H	X	AV	37.16	11.65	0.19	N/A	49.00	54.00	5.00
U-NII 2A	5 270	10 539.95	H	X	PK	40.15	16.05	N/A	N/A	56.20	68.20	12.00
		15 808.84	H	X	PK	47.11	11.83	N/A	N/A	58.94	74.00	15.06
		15 809.75	H	X	AV	37.27	11.83	0.19	N/A	49.29	54.00	4.71
	5 310	5 350.43	V	X	PK	49.89	8.70	N/A	N/A	58.59	74.00	15.41
		5 350.85	V	X	AV	35.98	8.70	0.19	N/A	44.87	54.00	9.13
		10 620.30	H	X	PK	40.49	16.28	N/A	N/A	56.77	74.00	17.23
		10 620.01	H	X	AV	29.89	16.28	0.19	N/A	46.36	54.00	7.64
		15 932.10	H	X	PK	47.94	12.04	N/A	N/A	59.98	74.00	14.02
		15 931.22	H	X	AV	37.41	12.03	0.19	N/A	49.63	54.00	4.37
U-NII 2C	5 510	5 458.18	V	X	PK	44.77	9.03	N/A	N/A	53.80	74.00	20.20
		5 469.36	V	X	PK	47.14	9.05	N/A	N/A	56.19	68.20	12.01
		5 457.61	V	X	AV	33.41	9.03	0.19	N/A	42.63	54.00	11.37
		11 021.45	H	X	PK	39.55	17.49	N/A	N/A	57.04	74.00	16.96
		11 021.04	H	X	AV	28.81	17.49	0.19	N/A	46.49	54.00	7.51
		16 529.97	H	X	PK	46.98	12.47	N/A	N/A	59.45	68.20	8.75
	5 550	11 100.03	H	X	PK	39.82	17.57	N/A	N/A	57.39	74.00	16.61
		11 100.46	H	X	AV	29.35	17.57	0.19	N/A	47.11	54.00	6.89
		16 649.58	H	X	PK	48.09	12.78	N/A	N/A	60.87	68.20	7.33
	5 670	5 729.53	V	X	PK	48.73	9.38	N/A	N/A	58.11	68.20	10.09
	5 710	11 420.44	H	X	PK	39.44	17.90	N/A	N/A	57.34	74.00	16.66
		11 421.12	H	X	AV	29.11	17.90	0.19	N/A	47.20	54.00	6.80
		17 129.20	H	X	PK	45.76	13.38	N/A	N/A	59.14	68.20	9.06
U-NII 3	5 755	5 649.30	V	X	PK	41.97	9.27	N/A	N/A	51.24	68.20	16.96
		5 719.60	V	X	PK	51.52	9.36	N/A	N/A	60.88	110.69	49.81
		11 511.34	H	X	PK	39.09	18.00	N/A	N/A	57.09	74.00	16.91
		11 510.83	H	X	AV	28.95	18.00	0.19	N/A	47.14	54.00	6.86
		17 265.27	H	X	PK	47.28	13.29	N/A	N/A	60.57	68.20	7.63
	5 795	5 892.36	V	X	PK	42.72	9.54	N/A	N/A	52.26	92.35	40.09
		5 928.52	V	X	PK	42.58	9.63	N/A	N/A	52.21	68.20	15.99
		11 589.36	H	X	PK	40.81	18.08	N/A	N/A	58.89	74.00	15.11
		11 589.43	H	X	AV	28.83	18.08	0.19	N/A	47.10	54.00	6.90
		17 386.21	H	X	PK	46.45	13.35	N/A	N/A	59.80	68.20	8.40

Unwanted Emissions data(1 GHz ~ 40 GHz) : *TM4*

Band	Tested Frequency (MHz)	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	TF (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	5 210	5 146.53	V	X	PK	41.43	8.62	N/A	N/A	50.05	74.00	23.95
		5 146.67	V	X	AV	31.48	8.62	0.39	N/A	40.49	54.00	13.51
		10 420.89	H	X	PK	39.89	15.78	N/A	N/A	55.67	68.20	12.53
		15 630.82	H	X	PK	47.63	11.57	N/A	N/A	59.20	74.00	14.80
		15 630.43	H	X	AV	36.95	11.57	0.39	N/A	48.91	54.00	5.09
U-NII 2A	5 290	5 351.90	V	X	PK	41.79	8.70	N/A	N/A	50.49	74.00	23.51
		5 351.06	V	X	AV	31.32	8.70	0.39	N/A	40.41	54.00	13.59
		10 579.18	H	X	PK	40.35	16.15	N/A	N/A	56.50	68.20	11.70
		15 871.52	H	X	PK	47.92	11.95	N/A	N/A	59.87	74.00	14.13
		15 871.25	H	X	AV	37.53	11.95	0.39	N/A	49.87	54.00	4.13
U-NII 2C	5 530	5 458.06	V	X	PK	41.40	9.03	N/A	N/A	50.43	74.00	23.57
		5 460.96	V	X	PK	42.49	9.03	N/A	N/A	51.52	68.20	16.68
		5 458.24	V	X	AV	31.76	9.03	0.39	N/A	41.18	54.00	12.82
		11 059.22	H	X	PK	39.49	17.56	N/A	N/A	57.05	74.00	16.95
		11 059.68	H	X	AV	29.04	17.56	0.39	N/A	46.99	54.00	7.01
		16 589.71	H	X	PK	47.43	12.65	N/A	N/A	60.08	68.20	8.12
	5 690	11 379.69	H	X	PK	39.48	17.85	N/A	N/A	57.33	74.00	16.67
		11 379.28	H	X	AV	29.03	17.85	0.39	N/A	47.27	54.00	6.73
		17 070.07	H	X	PK	47.19	13.38	N/A	N/A	60.57	68.20	7.63
U-NII 3	5 775	5 644.45	V	X	PK	40.87	9.26	N/A	N/A	50.13	68.20	18.07
		5 682.45	V	X	PK	41.20	9.30	N/A	N/A	50.50	92.21	41.71
		5 889.96	V	X	PK	42.44	9.54	N/A	N/A	51.98	94.13	42.15
		5 929.16	V	X	PK	42.21	9.63	N/A	N/A	51.84	68.20	16.36
		11 551.69	H	X	PK	40.35	18.08	N/A	N/A	58.43	74.00	15.57
		11 551.11	H	X	AV	28.94	18.08	0.39	N/A	47.41	54.00	6.59
		17 325.35	H	X	PK	46.87	13.36	N/A	N/A	60.23	68.20	7.97

5.2 AC Power-Line Conducted Emissions

▣ Test Requirements, §15.207 & RSS-Gen[8.8]

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5.0	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

▣ Test Configuration

See test photographs for the actual connections between EUT and support equipment.

▣ Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10-2013.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

▣ Test Results: Comply

Refer to the next page. The worst case data was reported.

AC Power-Line Conducted Emissions (Graph)

Test Mode: U-NII 1 & TM 2 & 5 180 MHz

Results of Conducted Emission

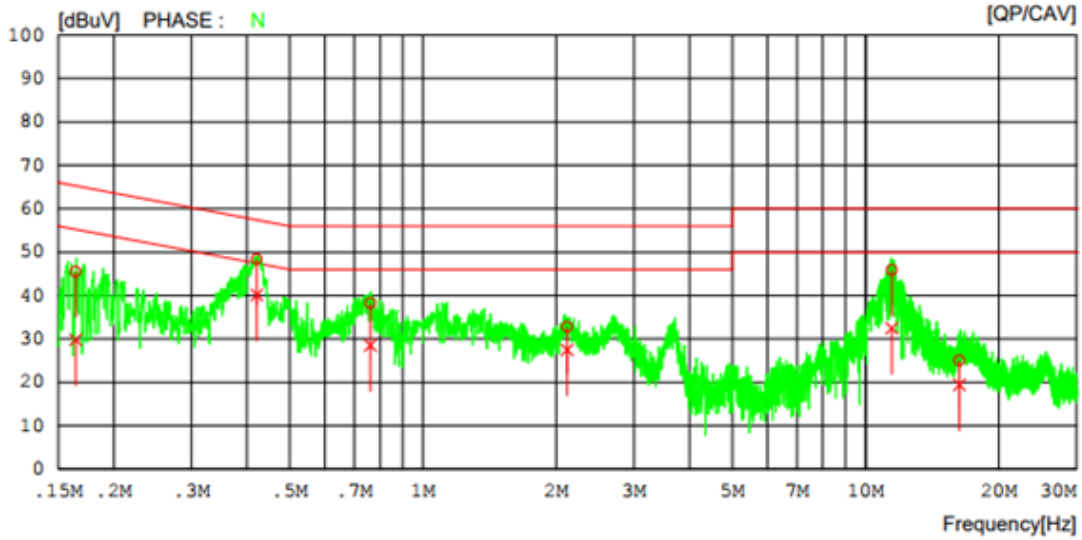
Date 2024-04-12

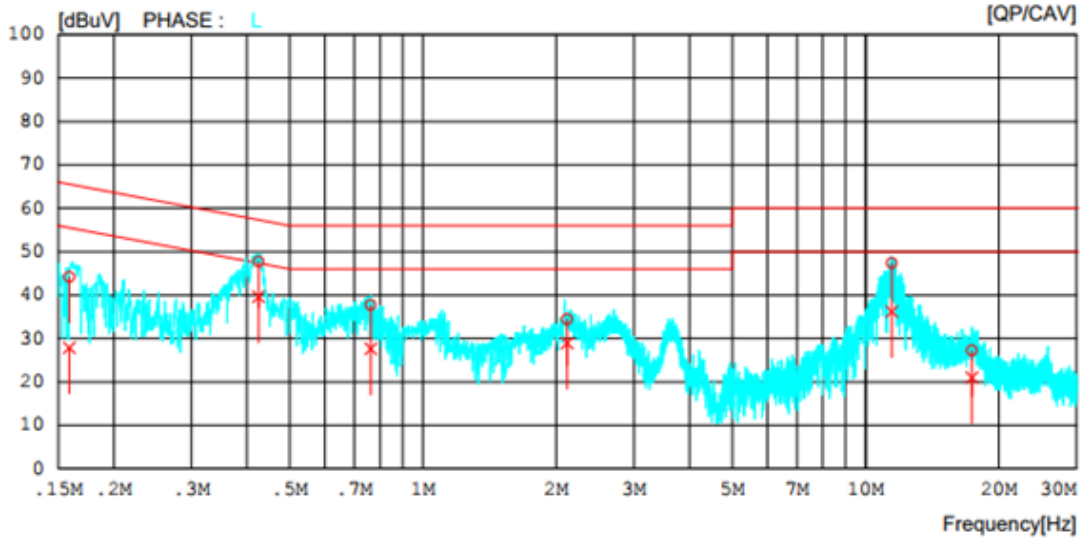
Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.1G_n20_5180

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21





AC Power-Line Conducted Emissions (Data List)

Test Mode: U-NII 1 & TM 2 & 5 180 MHz

Results of Conducted Emission

Date 2024-04-12

Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.1G_n20_5180

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ	READING		C.FACTOR	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.16412	35.52	19.81	9.99	45.51	29.80	65.25	55.25	19.74	25.45	N
2	0.42131	38.41	30.09	10.00	48.41	40.09	57.42	47.42	9.01	7.33	N
3	0.76061	28.23	18.49	10.01	38.24	28.50	56.00	46.00	17.76	17.50	N
4	2.11600	22.72	17.39	10.06	32.78	27.45	56.00	46.00	23.22	18.55	N
5	11.45820	35.44	22.03	10.42	45.86	32.45	60.00	50.00	14.14	17.55	N
6	16.28900	14.46	8.88	10.54	25.00	19.42	60.00	50.00	35.00	30.58	N
7	0.15885	34.20	17.86	9.99	44.19	27.85	65.52	55.52	21.33	27.67	L
8	0.42503	37.69	29.62	10.00	47.69	39.62	57.35	47.35	9.66	7.73	L
9	0.76187	27.62	17.50	10.11	37.73	27.61	56.00	46.00	18.27	18.39	L
10	2.11720	24.26	18.79	10.16	34.42	28.95	56.00	46.00	21.58	17.05	L
11	11.46400	36.88	25.68	10.52	47.40	36.20	60.00	50.00	12.60	13.80	L
12	17.38120	16.65	10.41	10.58	27.23	20.99	60.00	50.00	32.77	29.01	L

AC Power-Line Conducted Emissions (Graph)

Test Mode: U-NII 2A & TM 2 & 5 260 MHz

Results of Conducted Emission

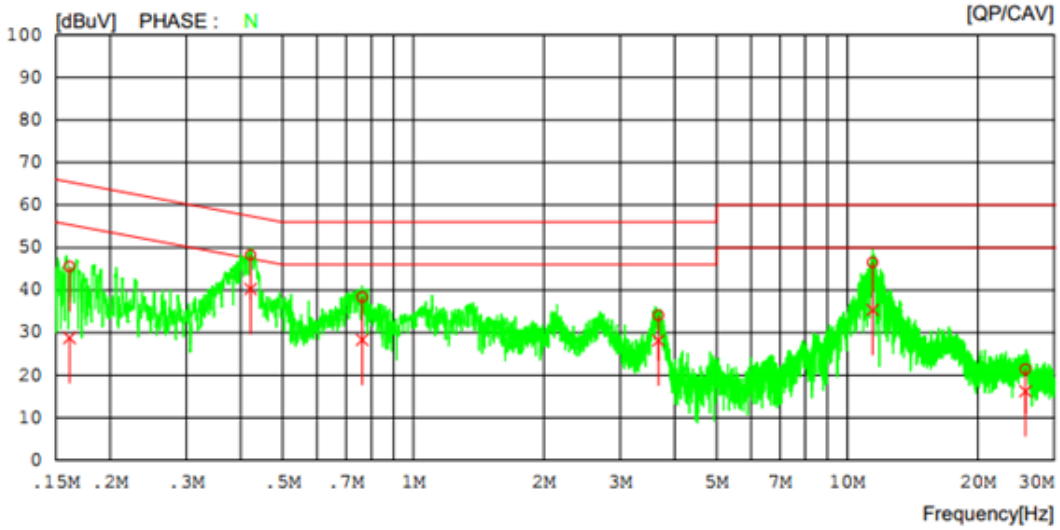
Date 2024-04-12

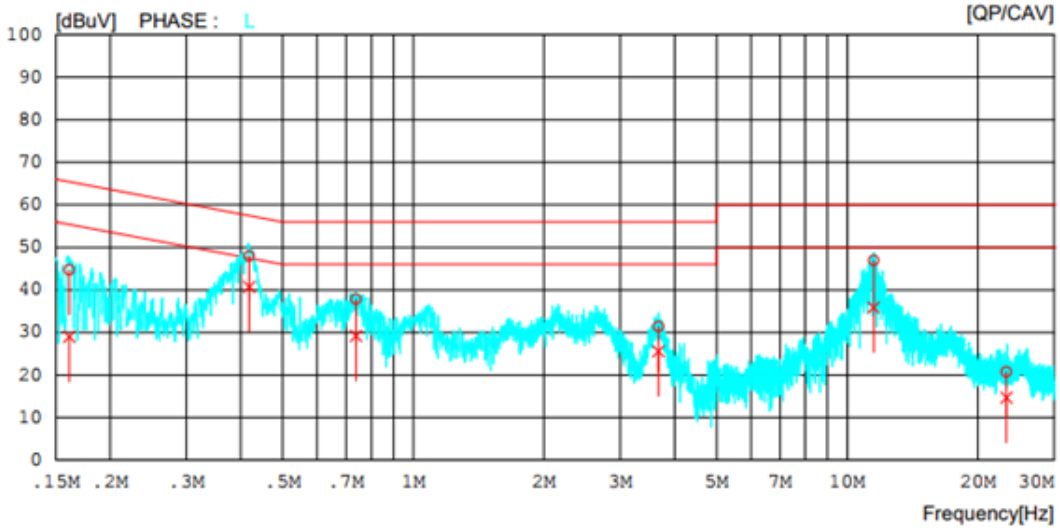
Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.3G_n20_5260

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_LT_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21





AC Power-Line Conducted Emissions (Data List)

Test Mode: U-NII 2A & TM 2 & 5 260 MHz

Results of Conducted Emission

Date 2024-04-12

Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.3G_n20_5260

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ	READING		C.FACTOR	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.16138	35.58	18.74	9.99	45.57	28.73	65.39	55.39	19.82	26.66	N
2	0.42189	38.25	30.22	10.00	48.25	40.22	57.41	47.41	9.16	7.19	N
3	0.76230	28.33	18.29	10.01	38.34	28.30	56.00	46.00	17.66	17.70	N
4	3.67200	23.93	18.07	10.09	34.02	28.16	56.00	46.00	21.98	17.84	N
5	11.44580	36.08	24.91	10.42	46.50	35.33	60.00	50.00	13.50	14.67	N
6	25.75460	10.85	5.62	10.59	21.44	16.21	60.00	50.00	38.56	33.79	N
7	0.16117	34.73	19.00	9.99	44.72	28.99	65.40	55.40	20.68	26.41	L
8	0.41857	37.97	30.72	10.00	47.97	40.72	57.48	47.48	9.51	6.76	L
9	0.73845	27.74	19.11	10.11	37.85	29.22	56.00	46.00	18.15	16.78	L
10	3.67400	21.23	15.39	10.19	31.42	25.58	56.00	46.00	24.58	20.42	L
11	11.50260	36.39	25.34	10.52	46.91	35.86	60.00	50.00	13.09	14.14	L
12	23.27540	10.08	4.06	10.62	20.70	14.68	60.00	50.00	39.30	35.32	L

AC Power-Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & TM 2 & 5 500 MHz

Results of Conducted Emission

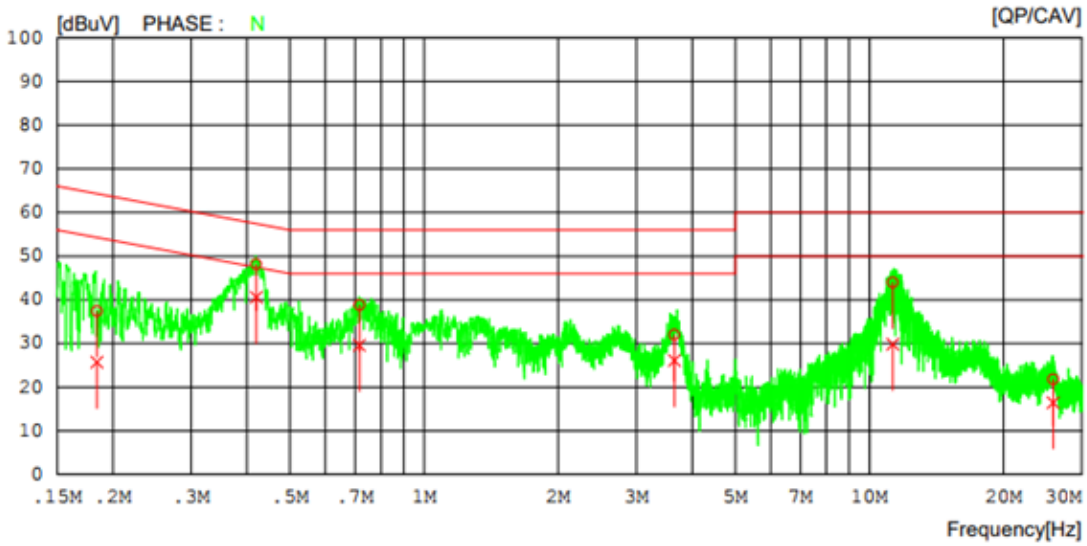
Date 2024-04-12

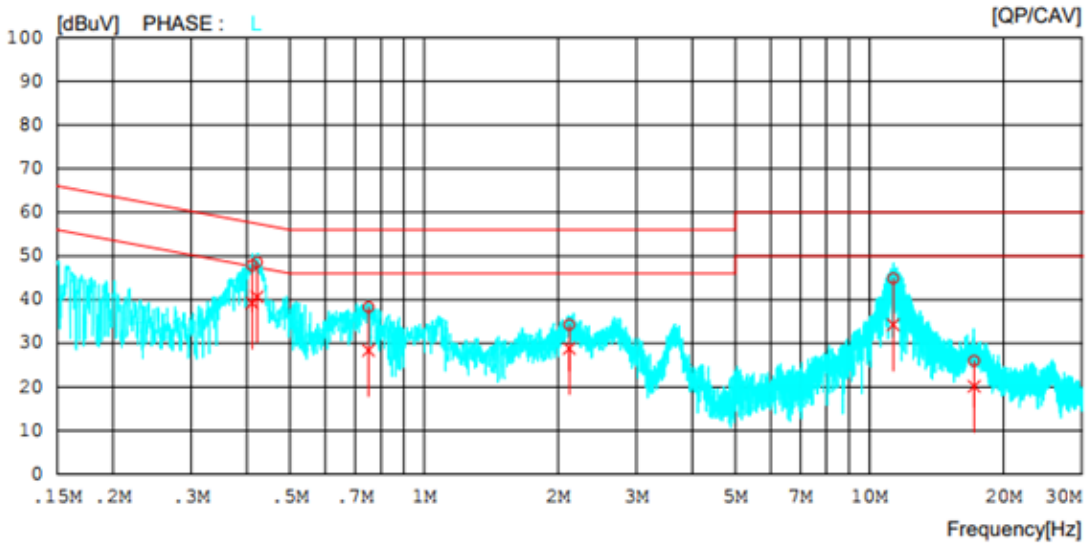
Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.5G_n20_5500

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21





AC Power-Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & TM 2 & 5 500 MHz

Results of Conducted Emission

Date 2024-04-12

Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.5G_n20_5500

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.18422	27.42	15.72	9.99	37.41	25.71	64.29	54.29	26.88	28.58	N
2	0.41986	38.13	30.56	10.00	48.13	40.56	57.45	47.45	9.32	6.89	N
3	0.71580	28.75	19.55	10.01	38.76	29.56	56.00	46.00	17.24	16.44	N
4	3.64840	21.90	15.98	10.09	31.99	26.07	56.00	46.00	24.01	19.93	N
5	11.28520	33.58	19.41	10.41	43.99	29.82	60.00	50.00	16.01	20.18	N
6	25.86760	11.19	5.84	10.60	21.79	16.44	60.00	50.00	38.21	33.56	N
7	0.41111	37.84	29.22	10.00	47.84	39.22	57.63	47.63	9.79	8.41	L
8	0.42153	38.60	30.66	10.00	48.60	40.66	57.42	47.42	8.82	6.76	L
9	0.75021	28.17	18.29	10.11	38.28	28.40	56.00	46.00	17.72	17.60	L
10	2.11880	24.08	18.67	10.16	34.24	28.83	56.00	46.00	21.76	17.17	L
11	11.30780	34.37	23.71	10.51	44.88	34.22	60.00	50.00	15.12	15.78	L
12	17.20120	15.37	9.53	10.59	25.96	20.12	60.00	50.00	34.04	29.88	L

AC Power-Line Conducted Emissions (Graph)

Test Mode: U-NII 3 & TM 2 & 5 745 MHz

Results of Conducted Emission

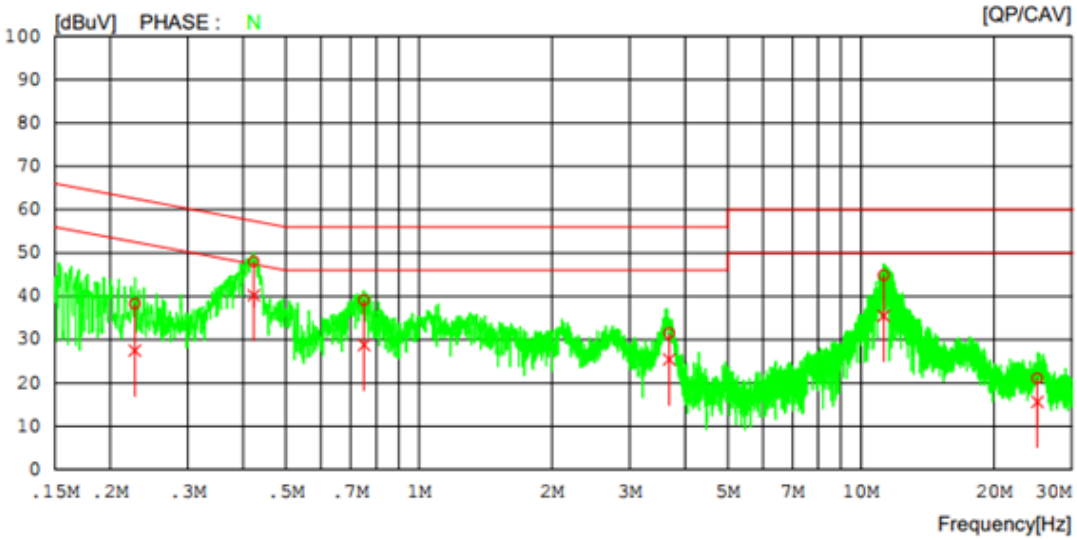
Date 2024-04-12

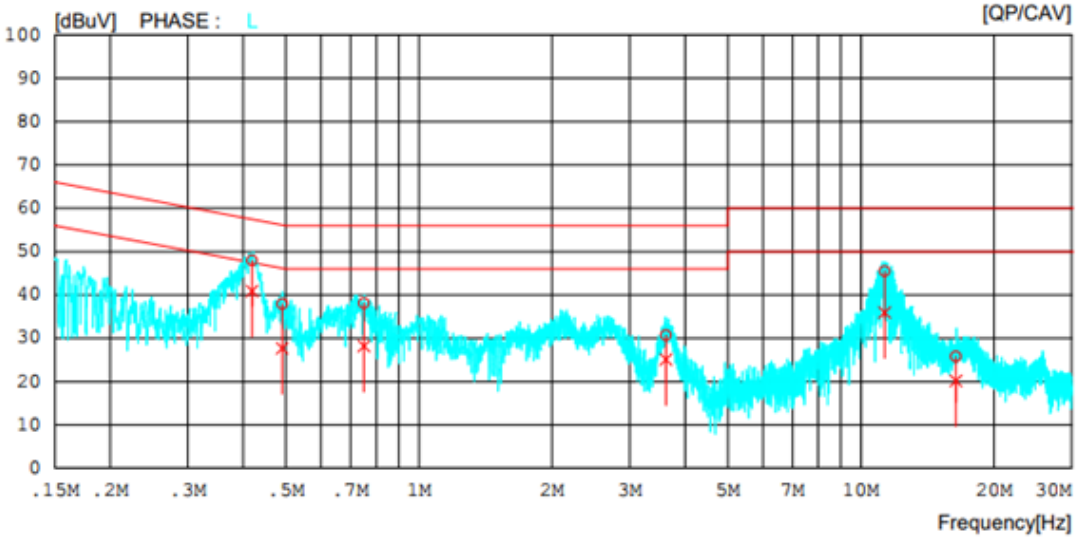
Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.7G_n20_5745

LIMIT : FCC P15.207 AV
FCC P15.207 QP

Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21





AC Power-Line Conducted Emissions (Data List)

Test Mode: U-NII 3 & TM 2 & 5 745 MHz

Results of Conducted Emission

Date 2024-04-12

Order No.
Model Name DPT156G101BL
Temp/Humi/Atm 21 ℃ / 45%
Test Condition 150 kHz - 30 MHz

Memo WLAN 5.7G_n20_5745

LIMIT : FCC P15.207 AV
FCC P15.207 QP

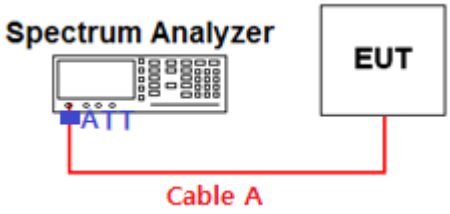
Lisn Factor
1. NSLK 8128 RC-387_N_23.10.26
2. NSLK 8128 RC-387_L1_23.10.26
Cable Loss
1. C1_LISN TO RECIVER_2023-12-11
Pulse Lmitter
1. PULSE LIMITER_ESH3-Z2_101333_2023.08.21

NO	FREQ	READING		C.FACTOR	RESULT		LIMIT		MARGIN		PHASE
		QP	CAV		QP	CAV	QP	CAV	QP	CAV	
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.22753	28.32	17.45	9.99	38.31	27.44	62.54	52.54	24.23	25.10	N
2	0.42293	38.03	30.22	10.00	48.03	40.22	57.39	47.39	9.36	7.17	N
3	0.75105	29.11	18.75	10.01	39.12	28.76	56.00	46.00	16.88	17.24	N
4	3.68400	21.39	15.30	10.09	31.48	25.39	56.00	46.00	24.52	20.61	N
5	11.26080	34.45	25.06	10.41	44.86	35.47	60.00	50.00	15.14	14.53	N
6	25.08240	10.46	5.04	10.59	21.05	15.63	60.00	50.00	38.95	34.37	N
7	0.41902	37.94	30.86	10.00	47.94	40.86	57.47	47.47	9.53	6.61	L
8	0.49041	27.91	17.68	10.00	37.91	27.68	56.16	46.16	18.25	18.48	L
9	0.75055	28.03	18.08	10.11	38.14	28.19	56.00	46.00	17.86	17.81	L
10	3.62080	20.51	14.92	10.19	30.70	25.11	56.00	46.00	25.30	20.89	L
11	11.31300	34.99	25.40	10.51	45.50	35.91	60.00	50.00	14.50	14.09	L
12	16.40060	15.15	9.58	10.61	25.76	20.19	60.00	50.00	34.24	29.81	L

APPENDIX I

Conducted Test set up Diagram

▪ Conducted Measurement



APPENDIX II

Duty Cycle Information

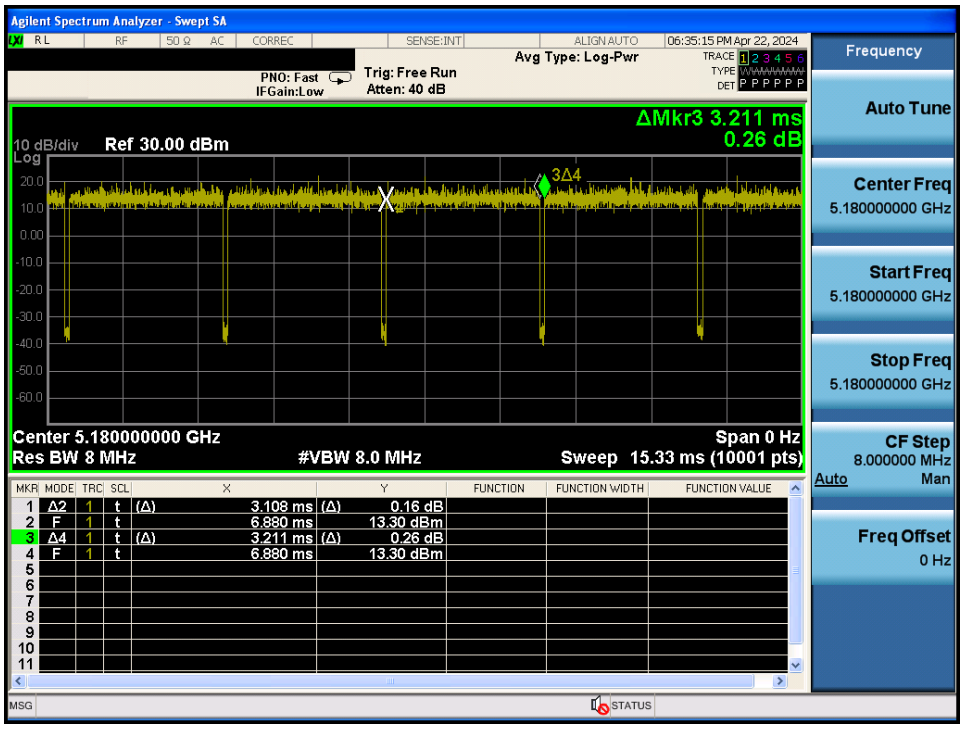
▣ Test Procedure

Duty Cycle [X = On Time / (On + Off time)] is measured using Measurement Procedure **of KDB789033 D02v02r01**

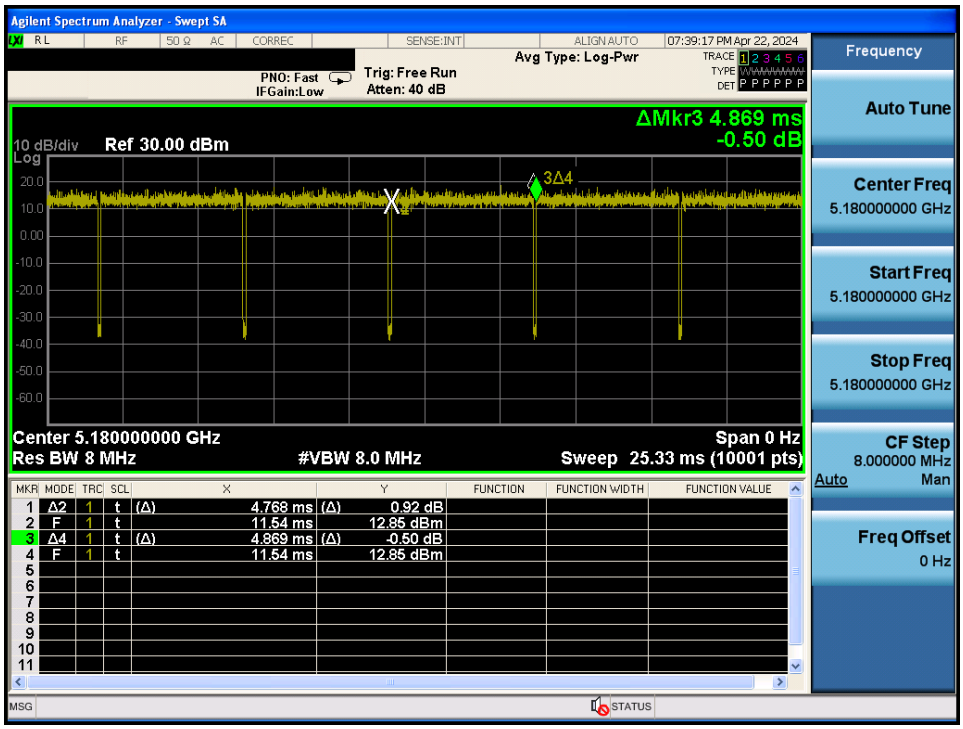
1. Set the center frequency of the spectrum analyzer to the center frequency of the transmission.
2. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW ≥ RBW. Set detector = peak.
4. Note : The zero-span measurement method shall not be used unless both **RBW and VBW are > 50 / *T***, where *T* is defined in section II.B.1.a), and **the number of sweep points across duration *T* exceeds 100**. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

   T : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
   (***T* = On time** of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

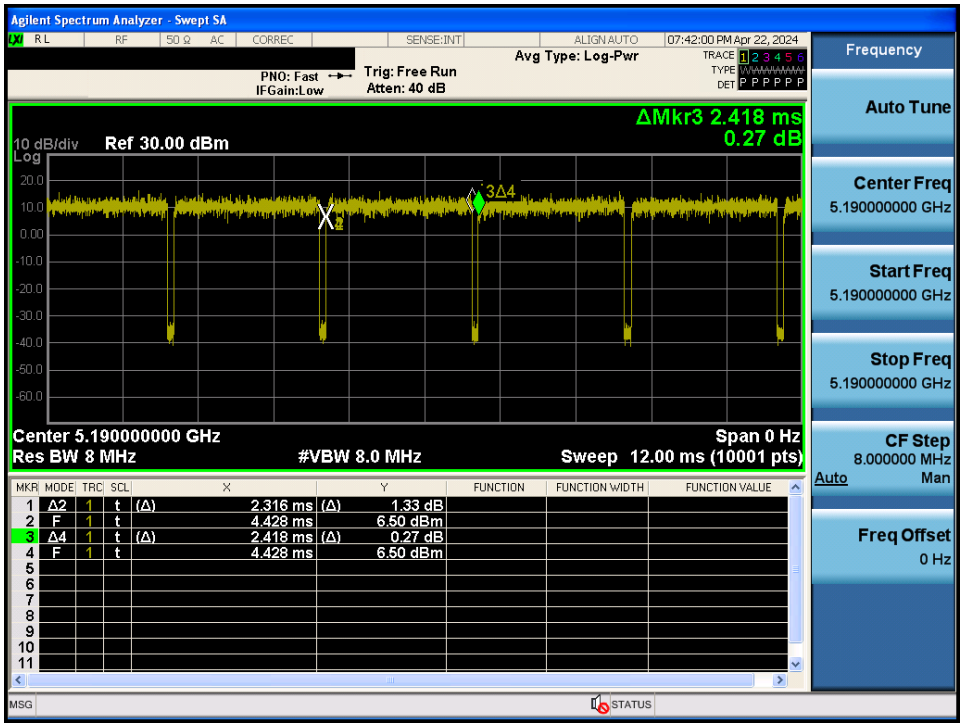
Duty Cycle Test Mode: TM1 & Ch.36



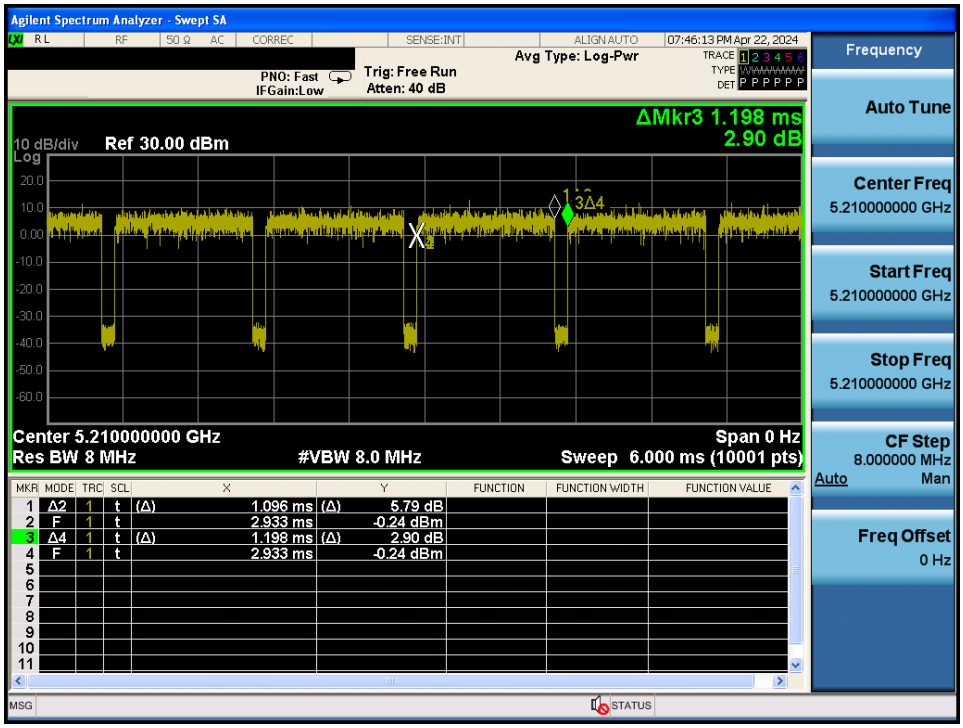
Duty Cycle Test Mode: TM 2 & Ch.36



Duty Cycle Test Mode: TM 3 & Ch.38



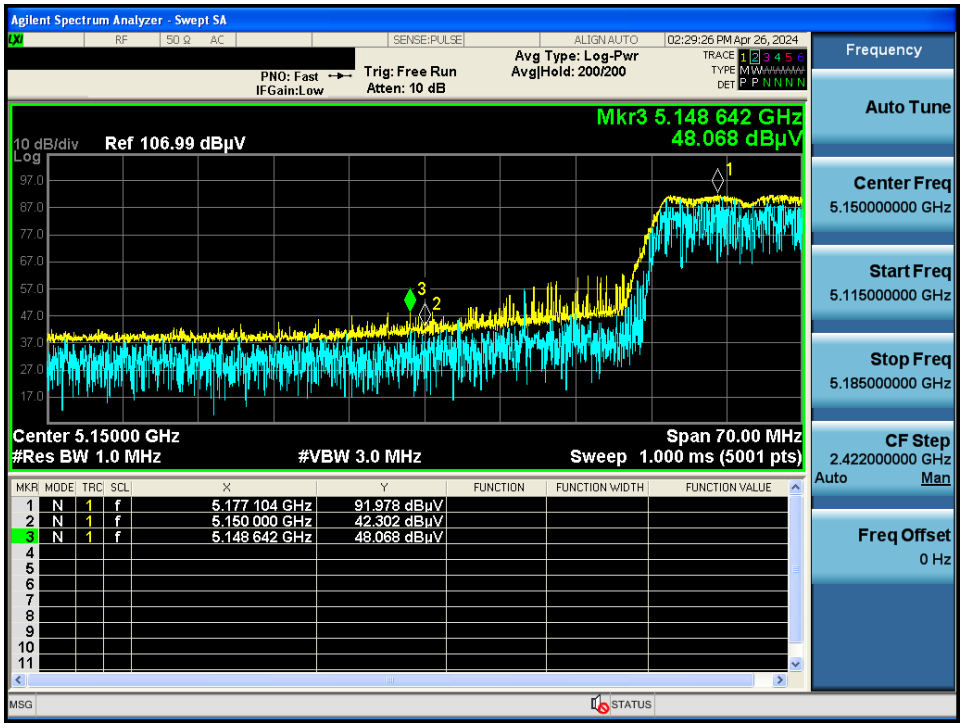
Duty Cycle Test Mode: TM 4 & Ch.42



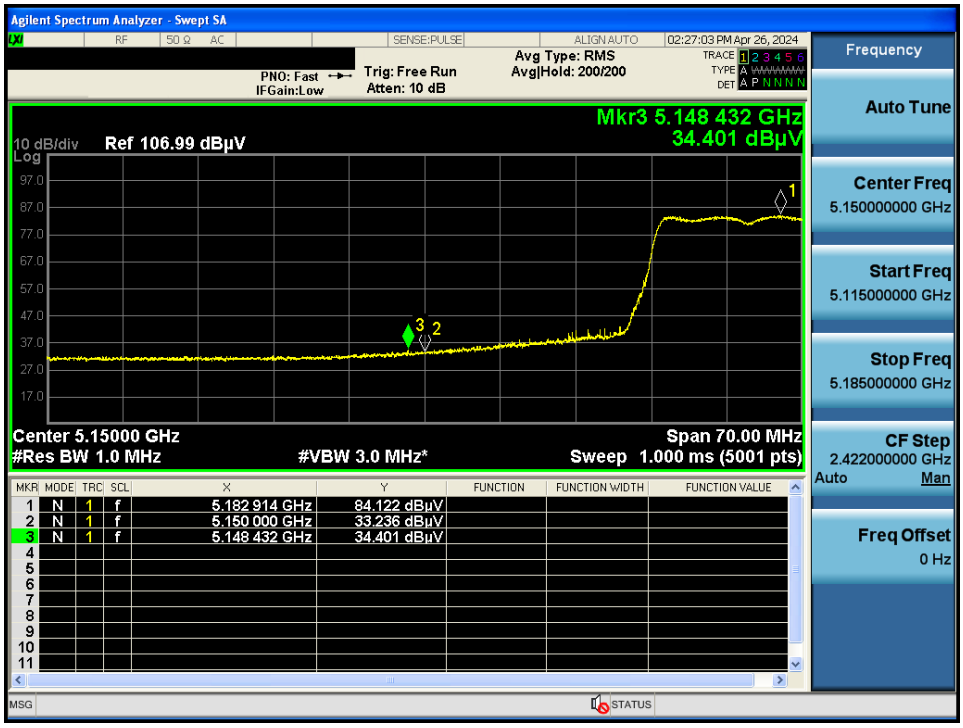
APPENDIX III

Unwanted Emissions (Radiated) Test Plot:

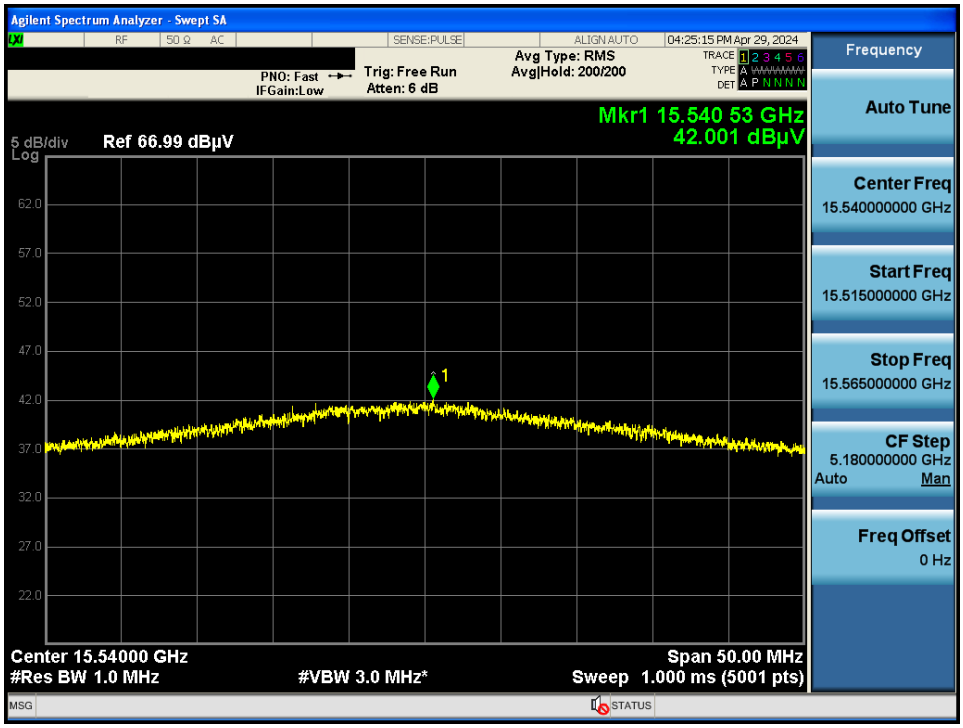
TM 1 & U-NII 1 & Ant1 & 5 180 & X axis & Ver **Detector Mode : PK**



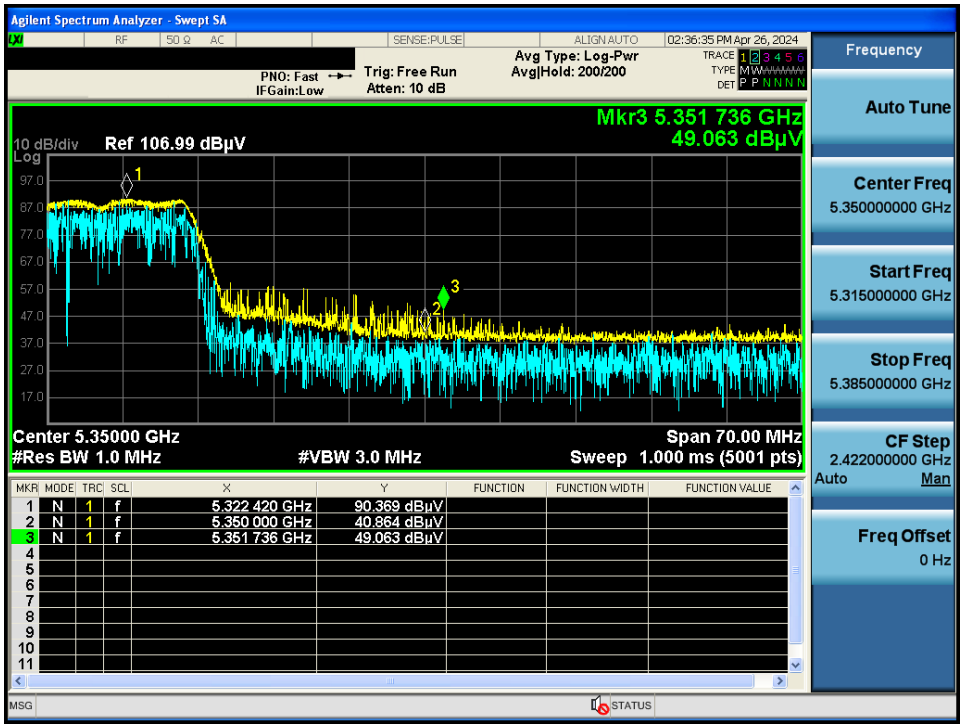
TM 1 & U-NII 1 & Ant1 & 5 180 & X axis & Ver **Detector Mode : AV**



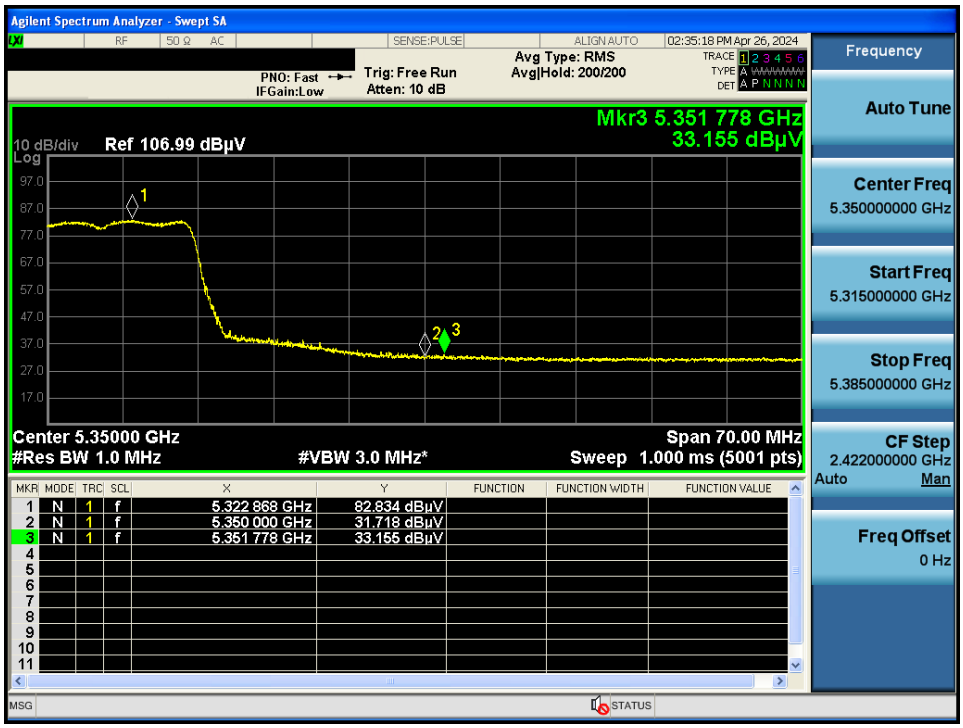
TM 1 & U-NII 1 & Ant1 & 5 180 & X axis & Hor **Detector Mode : AV**



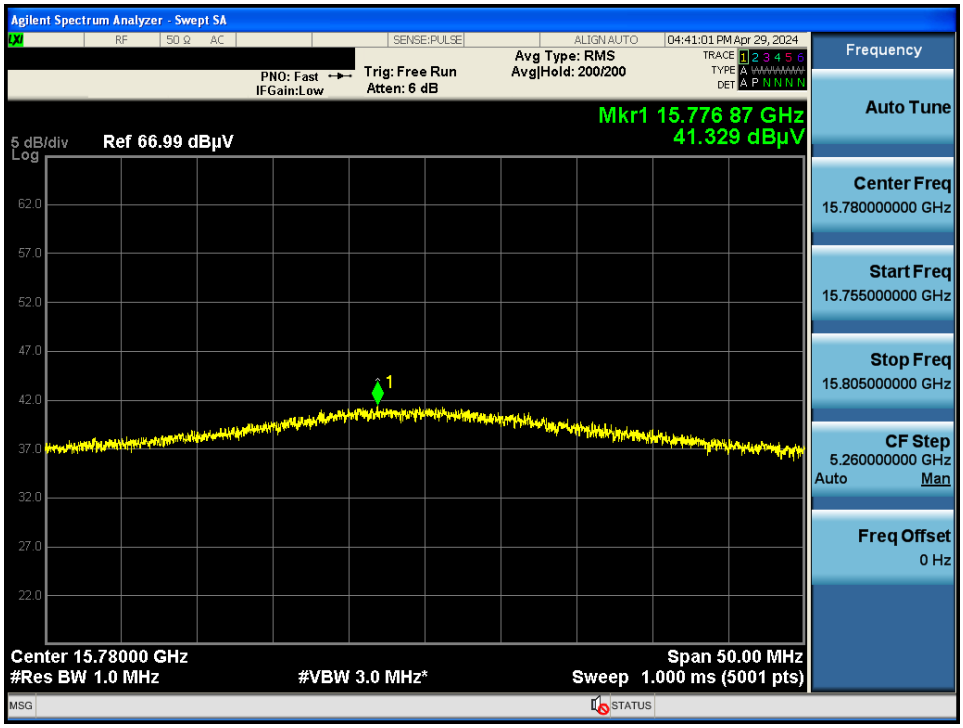
TM 1 & U-NII 2A & Ant1 & 5 320 & X axis & Ver **Detector Mode : PK**



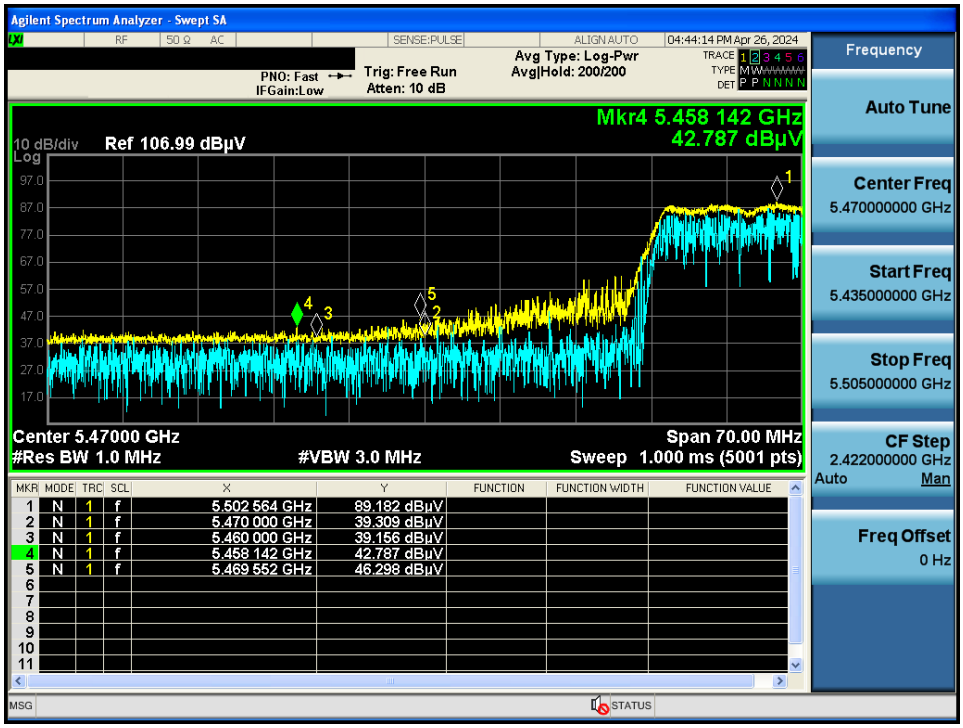
TM 1 & U-NII 2A & Ant1 & 5 320 & X axis & Ver **Detector Mode : AV**



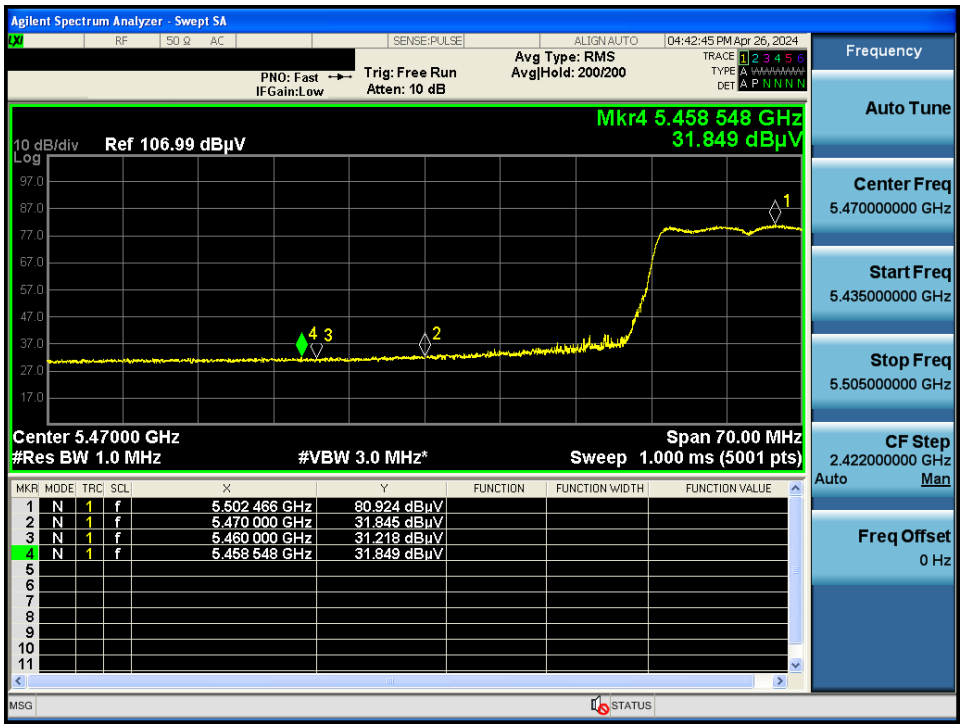
TM 1 & U-NII 2A & Ant1 & 5 260 & X axis & Hor Detector Mode : AV



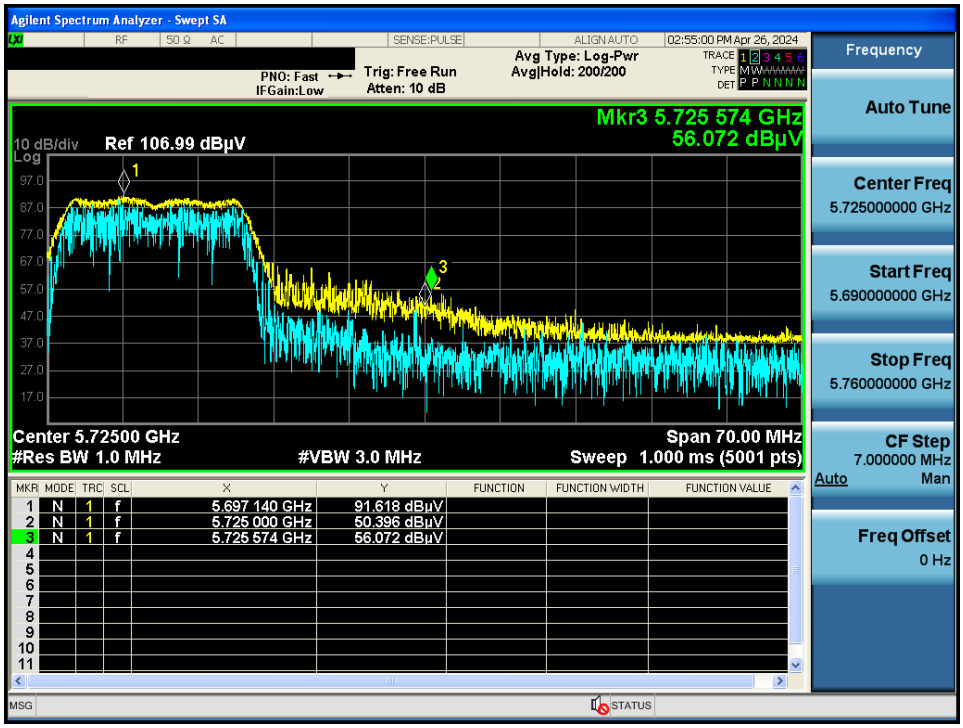
TM 1 & U-NII 2C & Ant2 & 5 500 & X axis & Ver **Detector Mode : PK**



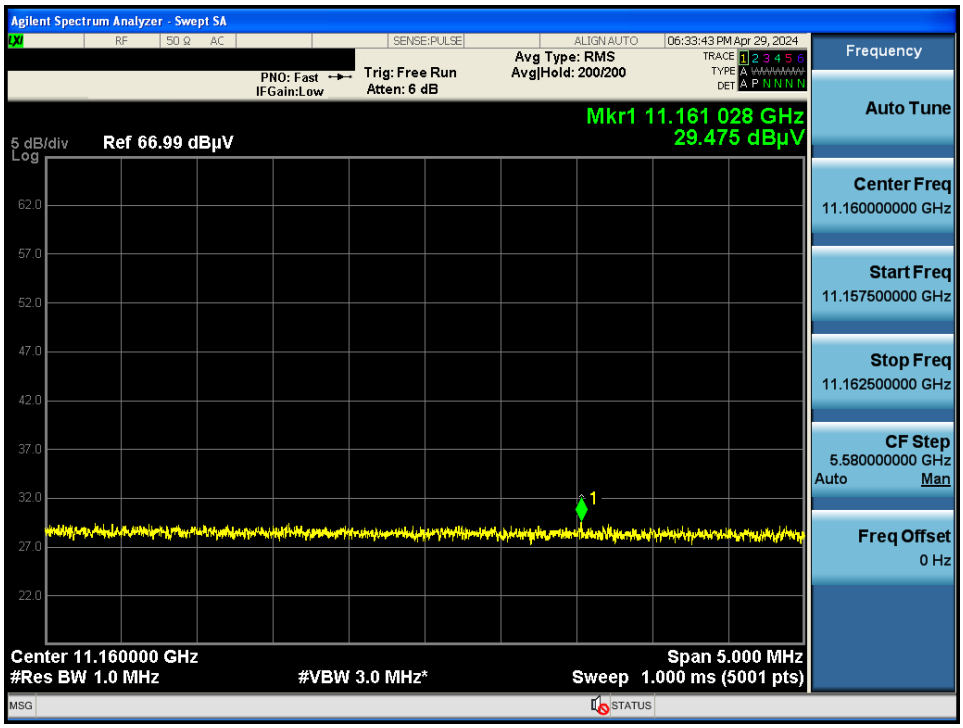
TM 1 & U-NII 2C & Ant2 & 5 500 & X axis & Ver **Detector Mode : AV**



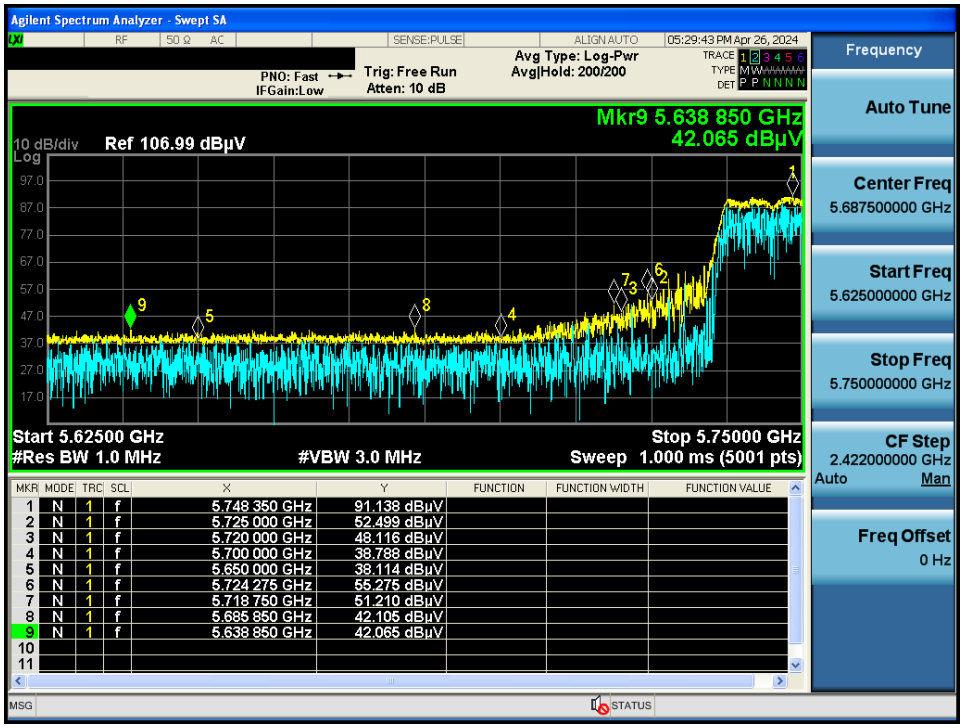
TM 1 & U-NII 2C & Ant2 & 5 700 & X axis & Ver **Detector Mode : PK**



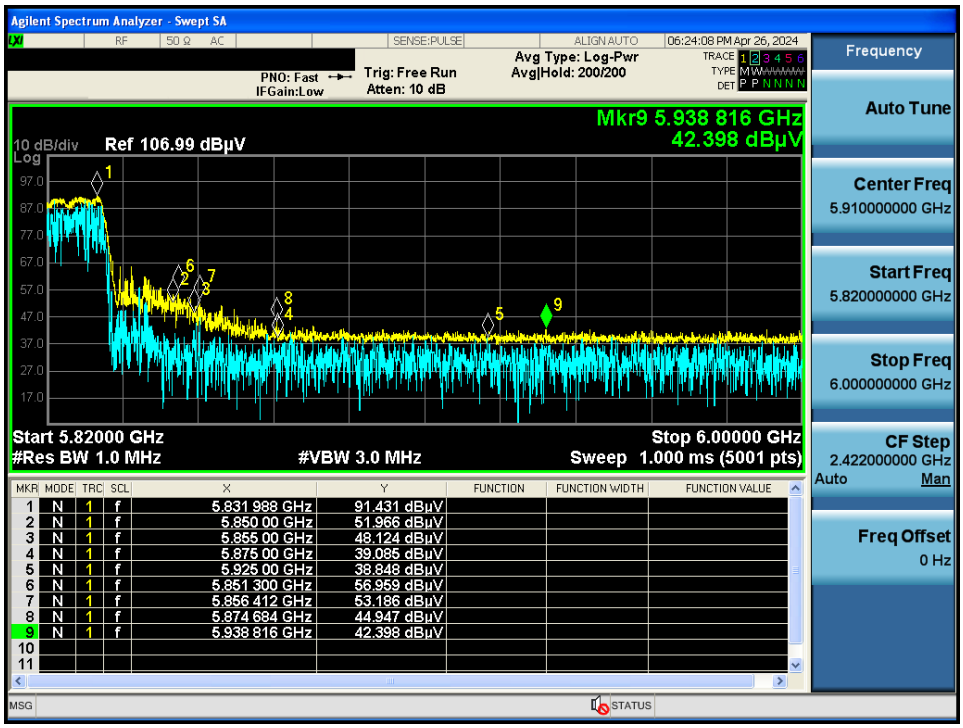
TM 1 & U-NII 2C & Ant2 & 5 580 & X axis & Hor **Detector Mode : AV**



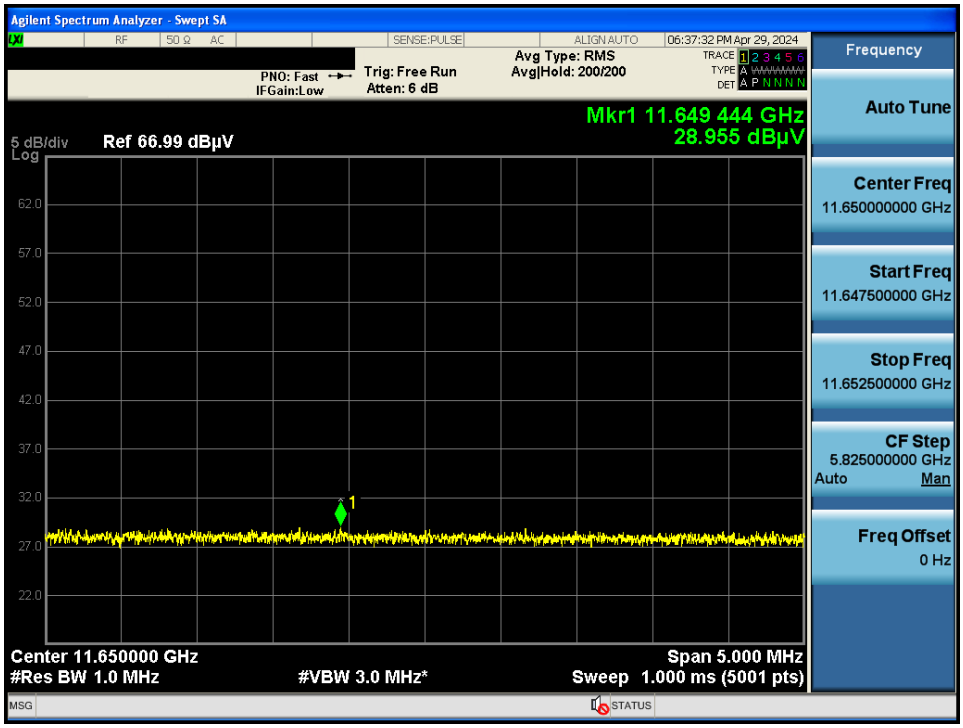
TM 1 & U-NII 3 & Ant2 & 5 745 & X axis & Ver **Detector Mode : PK**



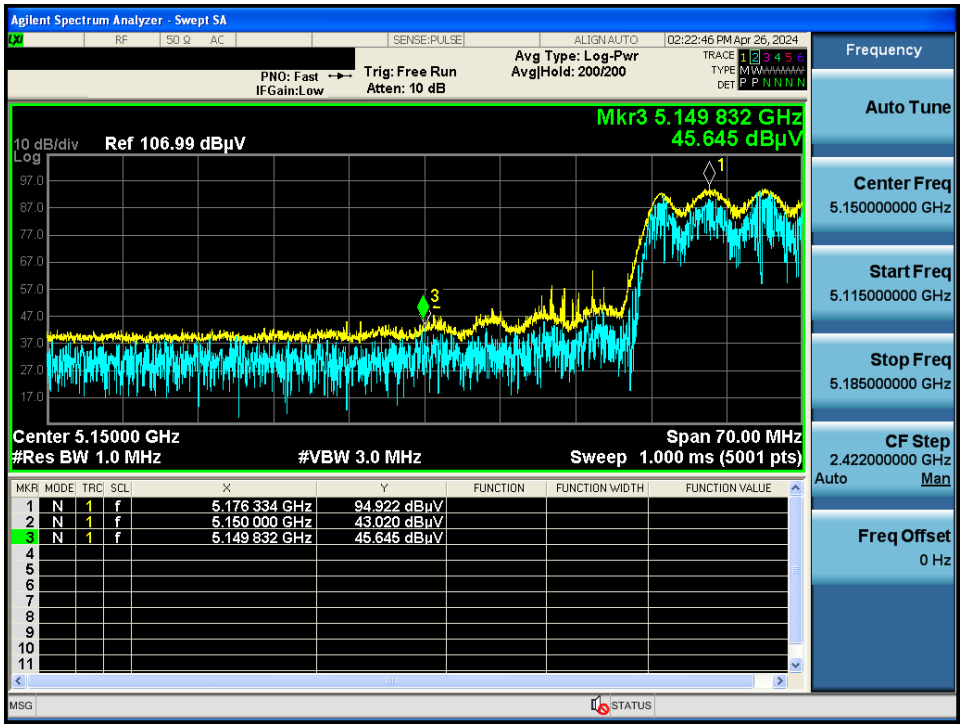
TM 1 & U-NII 3 & Ant2 & 5 825 & X axis & Ver **Detector Mode : PK**



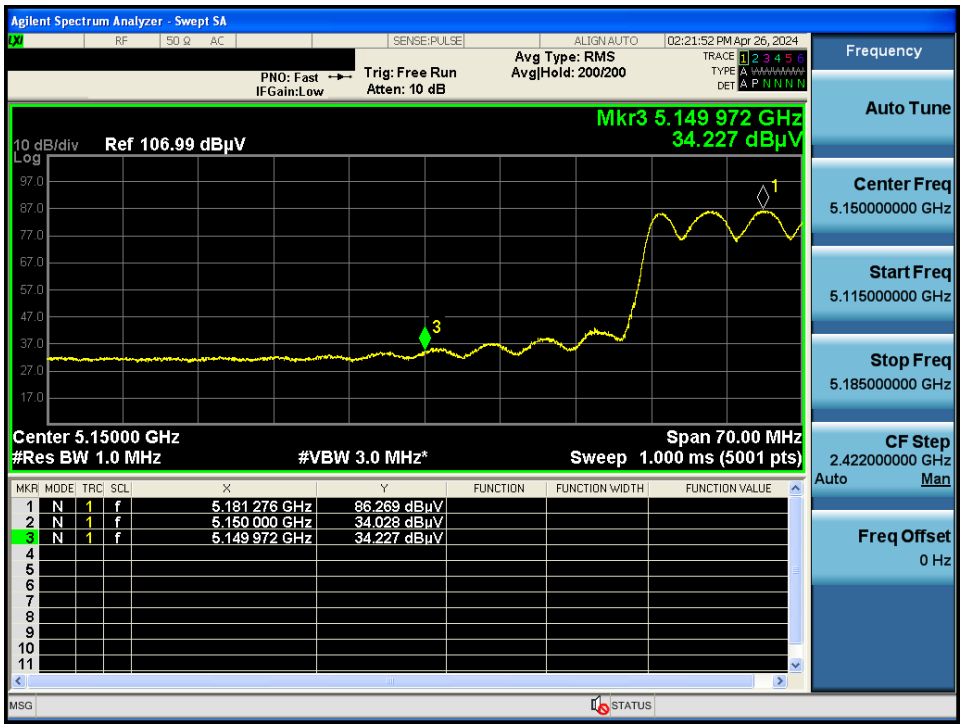
TM 1 & U-NII 3 & Ant2 & 5 825 & X axis & Hor **Detector Mode : AV**



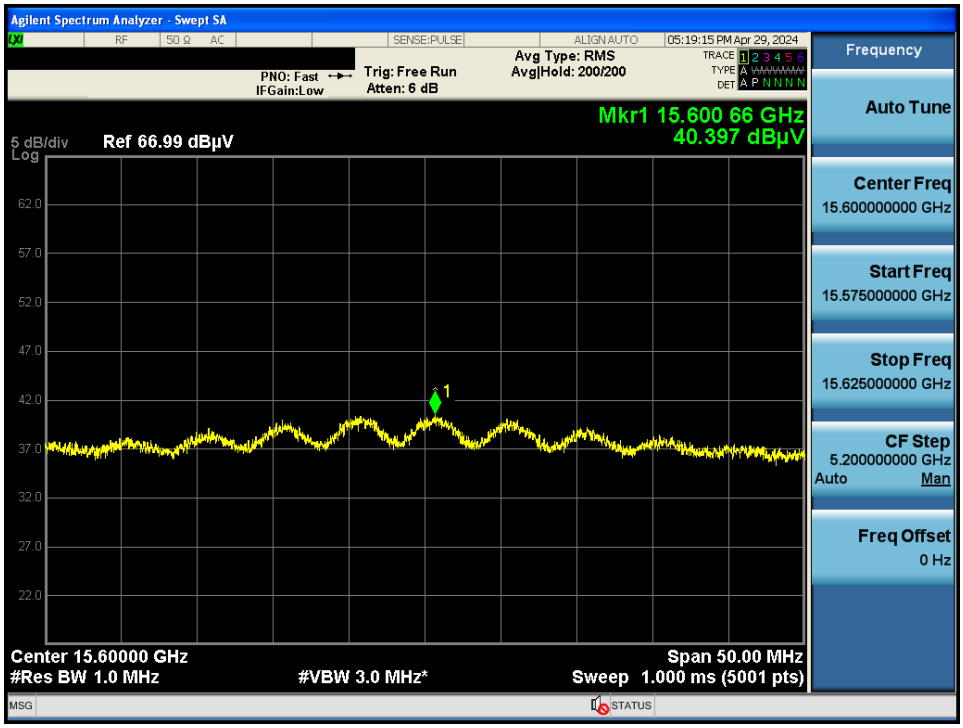
TM 2 & U-NII 1 & 5 180 & X axis & Ver **Detector Mode : PK**



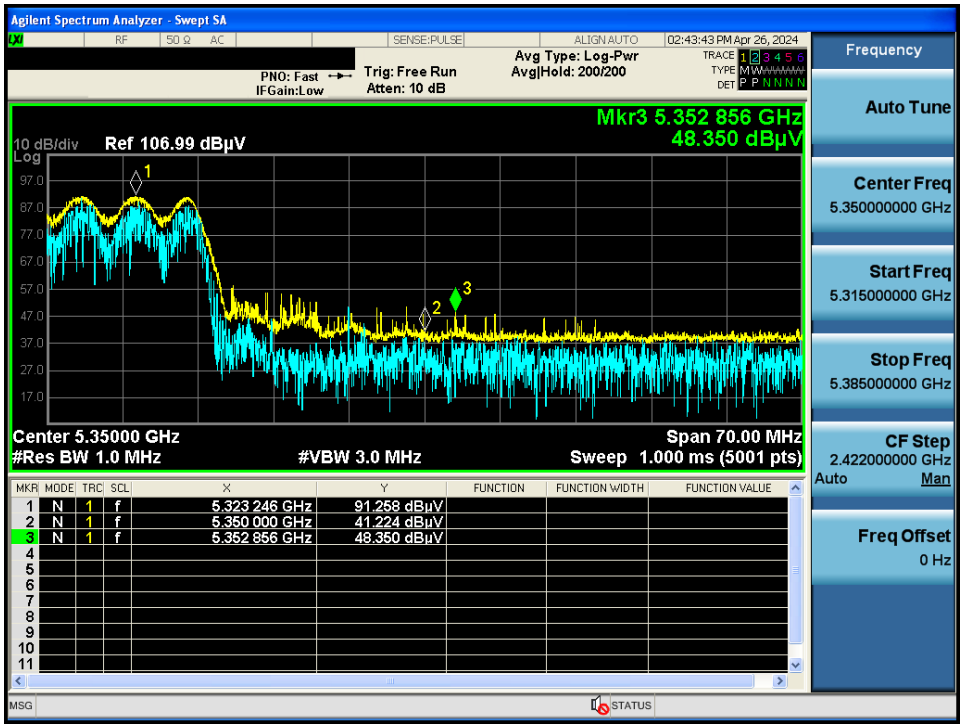
TM 2 & U-NII 1 & 5 180 & X axis & Ver **Detector Mode : AV**



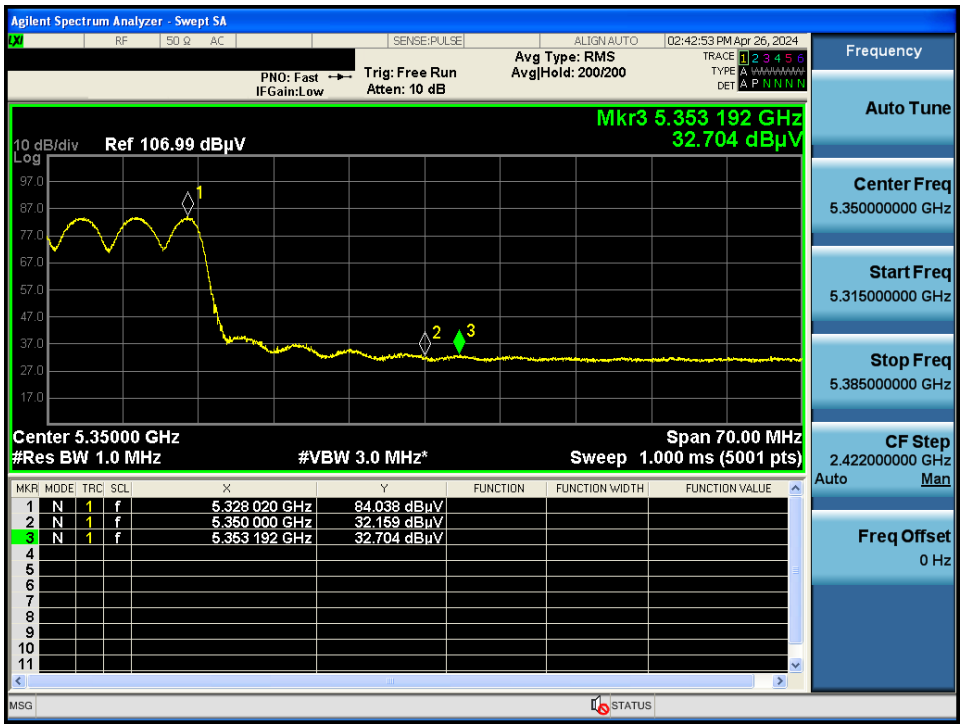
TM 2 & U-NII 1 & 5 200 & X axis & Hor **Detector Mode : AV**



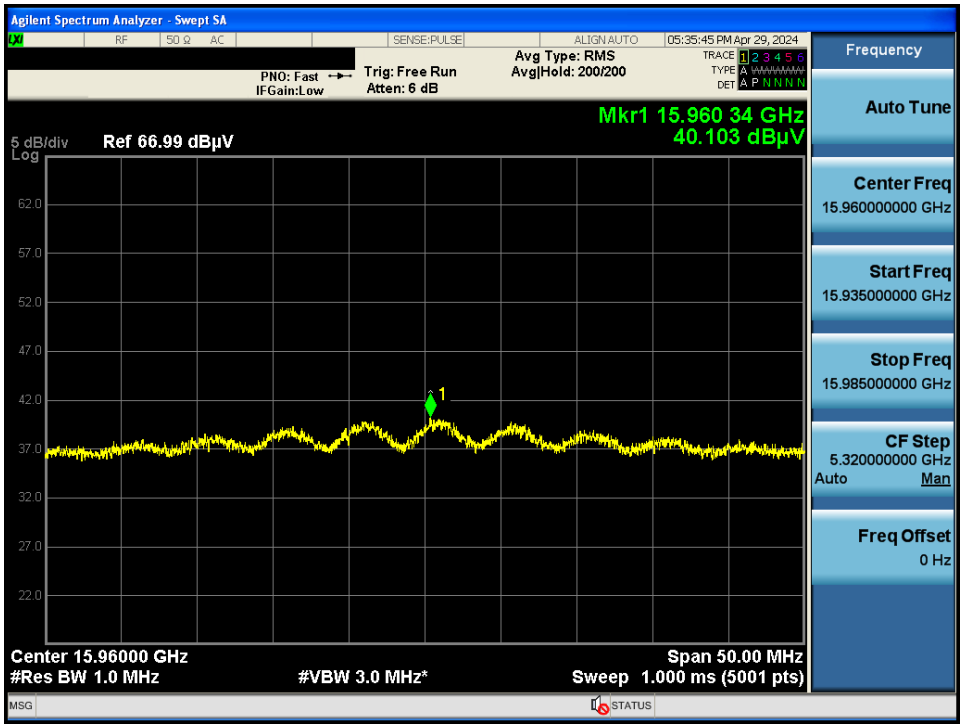
TM 2 & U-NII 2A & 5 320 & X axis & Ver **Detector Mode : PK**



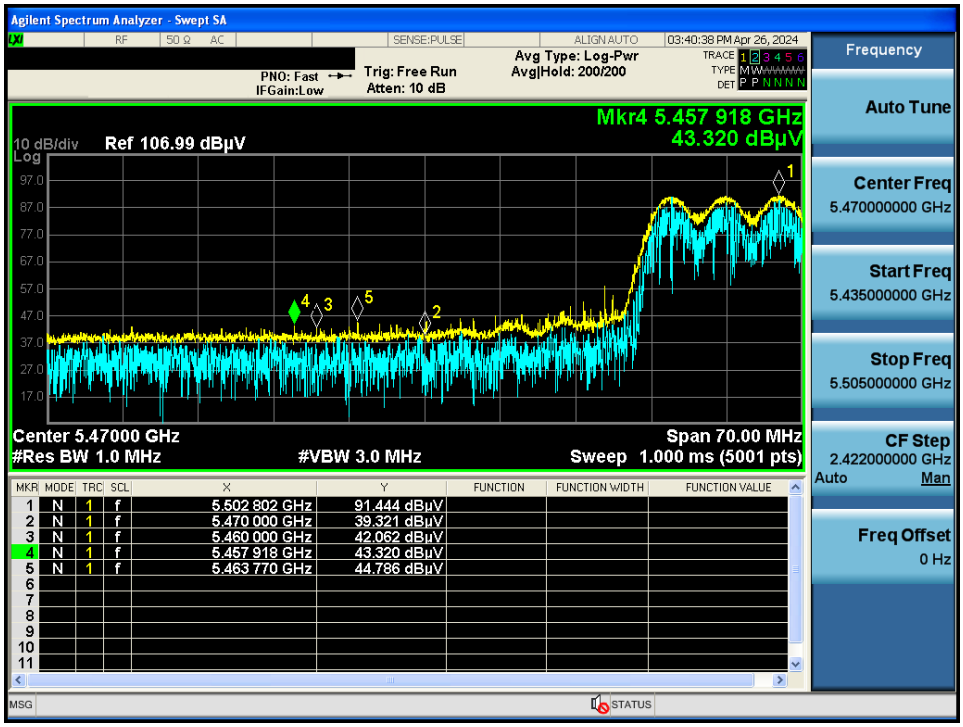
TM 2 & U-NII 2A & 5 320 & X axis & Ver **Detector Mode : AV**



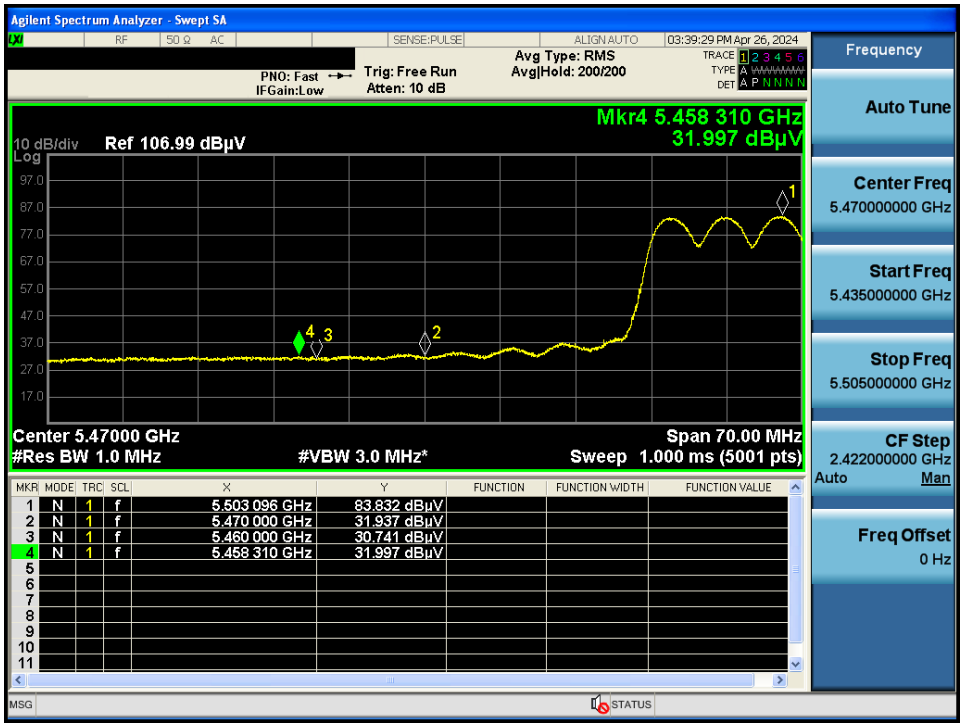
TM 2 & U-NII 2A & 5 320 & X axis & Hor **Detector Mode : AV**



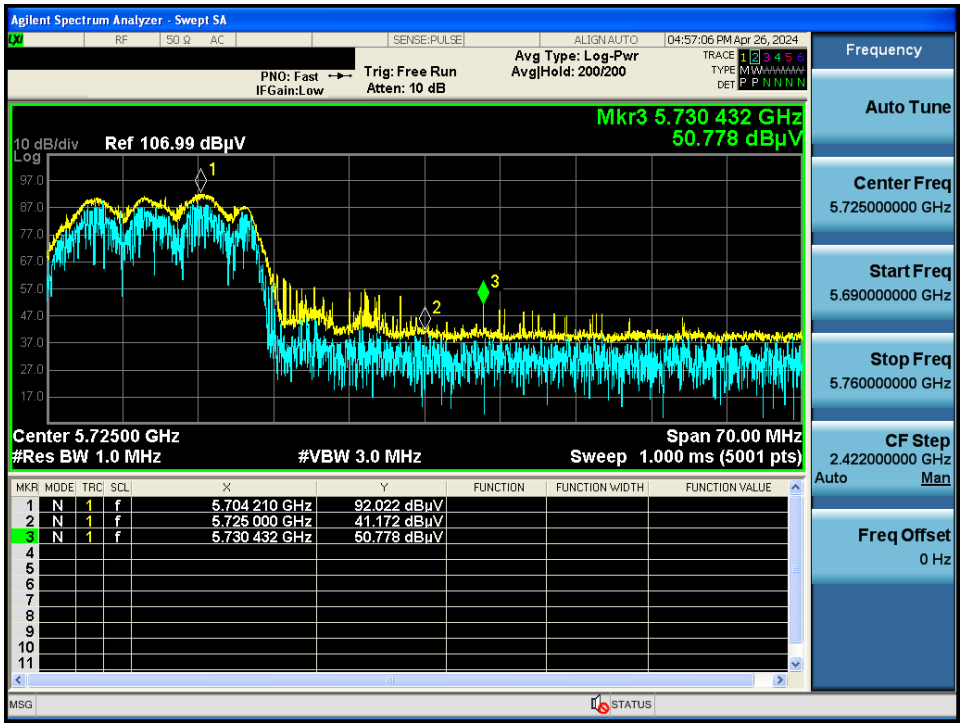
TM 2 & U-NII 2C & 5 500 & X axis & Ver **Detector Mode : PK**



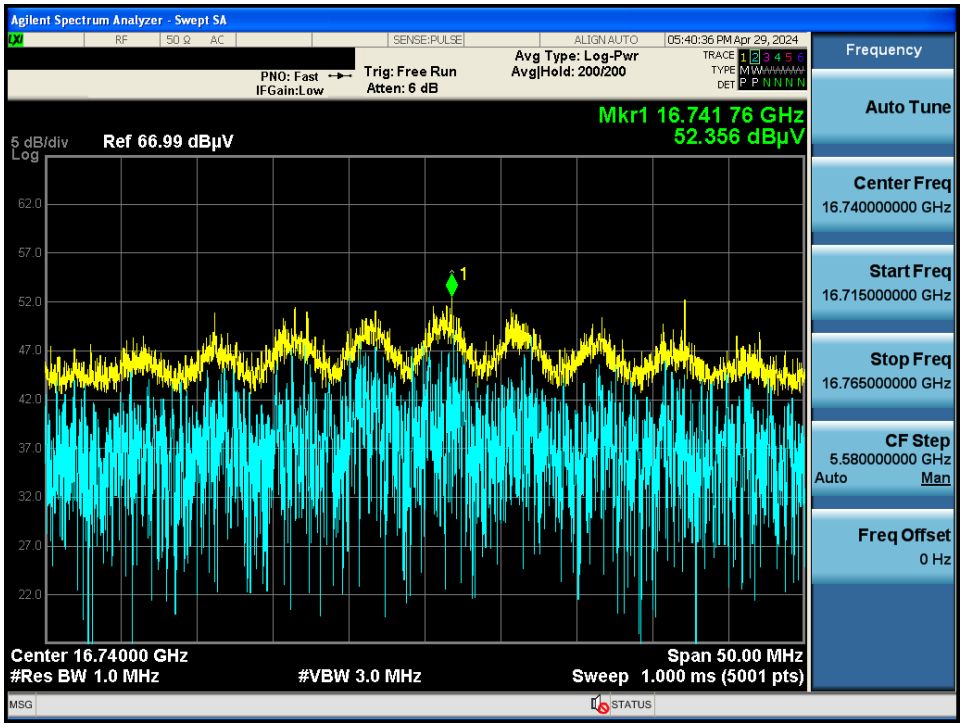
TM 2 & U-NII 2C & 5 500 & X axis & Ver **Detector Mode : AV**



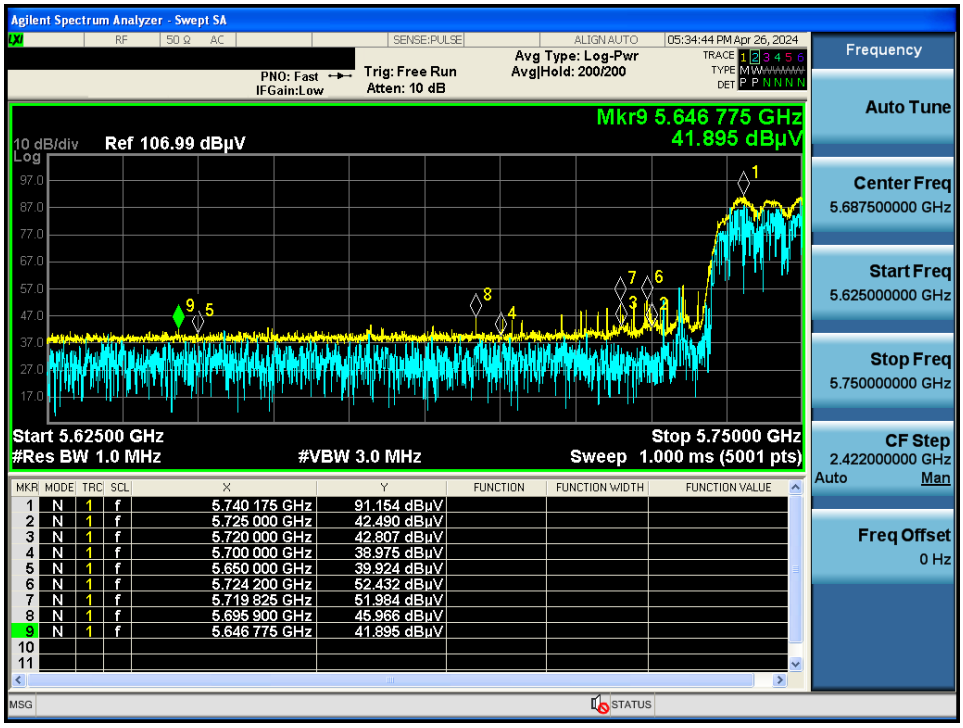
TM 2 & U-NII 2C & 5 700 & X axis & Ver **Detector Mode : PK**



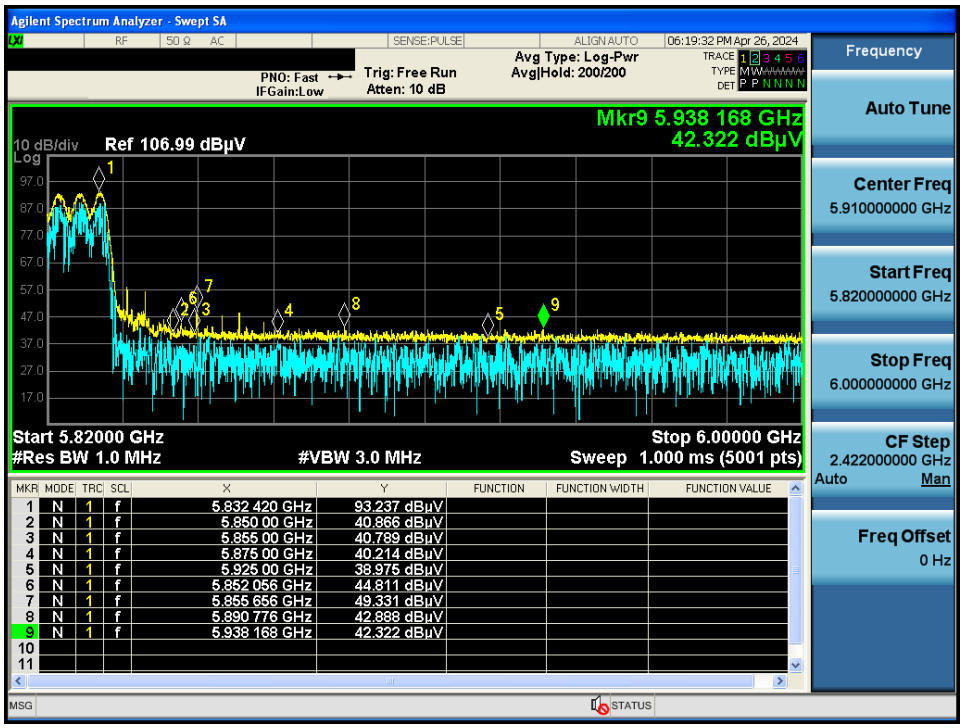
TM 2 & U-NII 2C & 5 580 & X axis & Hor **Detector Mode : PK**



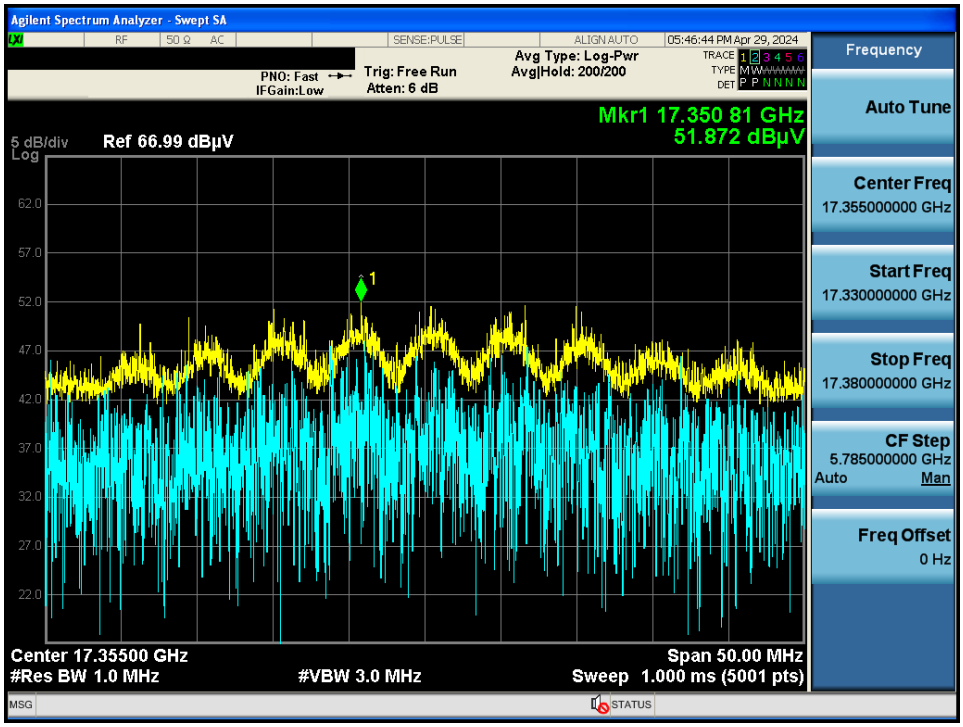
TM 2 & U-NII 3 & 5 745 & X axis & Ver **Detector Mode : PK**



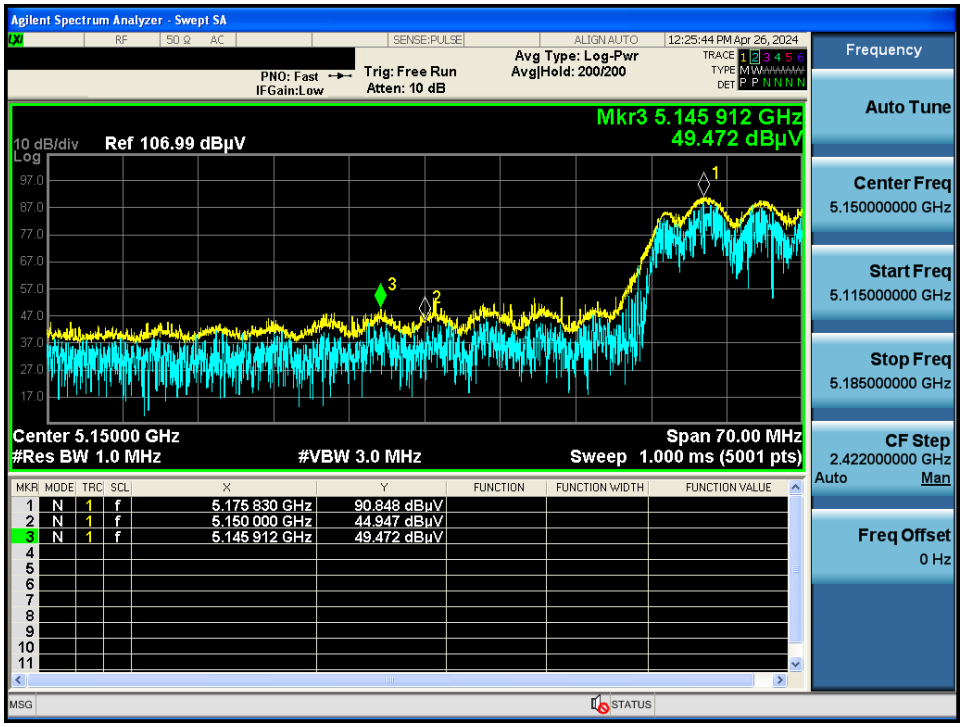
TM 2 & U-NII 3 & 5 825 & X axis & Ver **Detector Mode : PK**



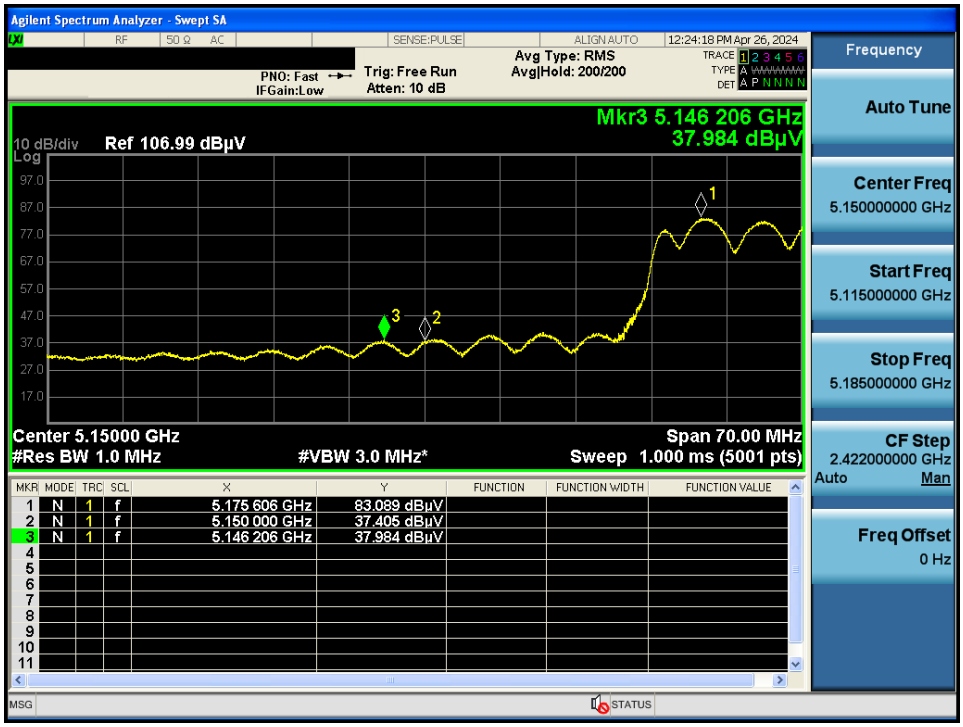
TM 2 & U-NII 3 & 5 785 & X axis & Hor **Detector Mode : PK**



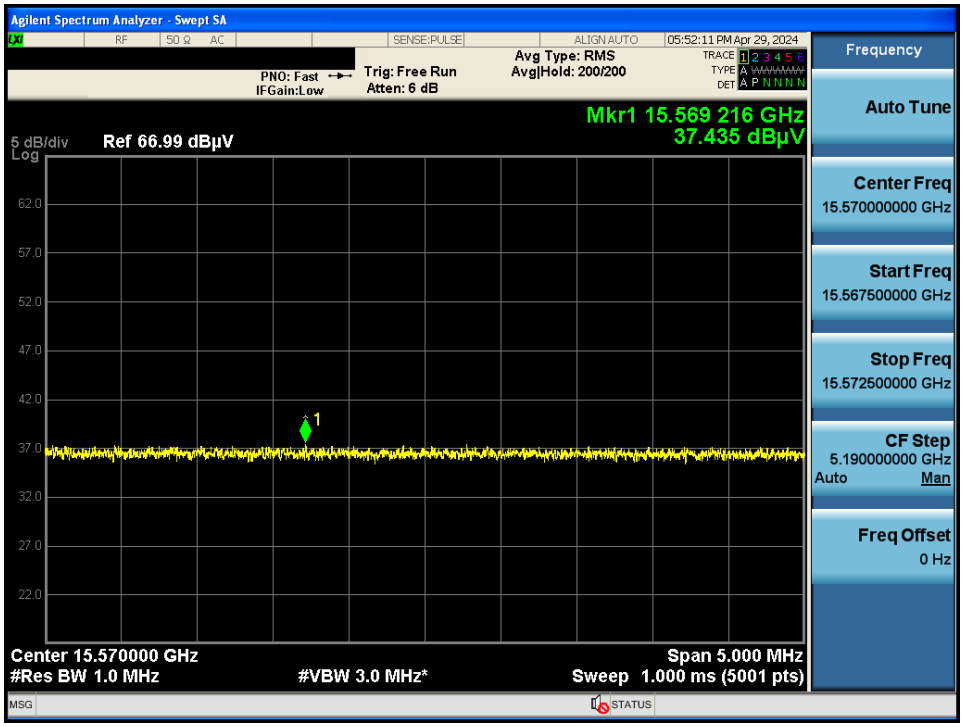
TM 3 & U-NII 1 & 5 190 & X axis & Ver **Detector Mode : PK**



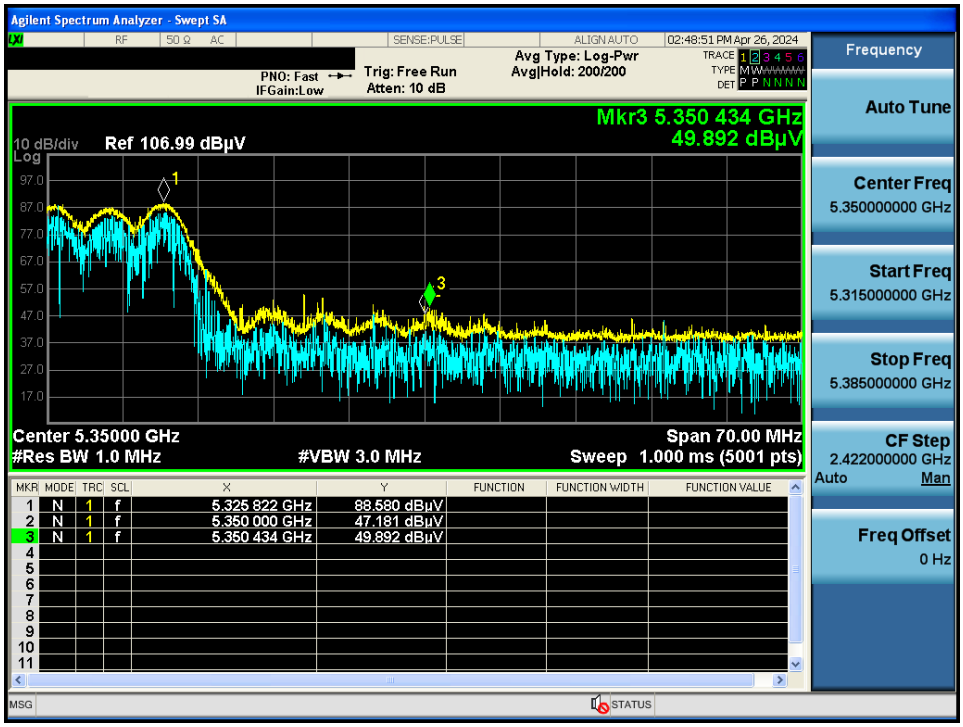
TM 3 & U-NII 1 & 5 190 & X axis & Ver **Detector Mode : AV**



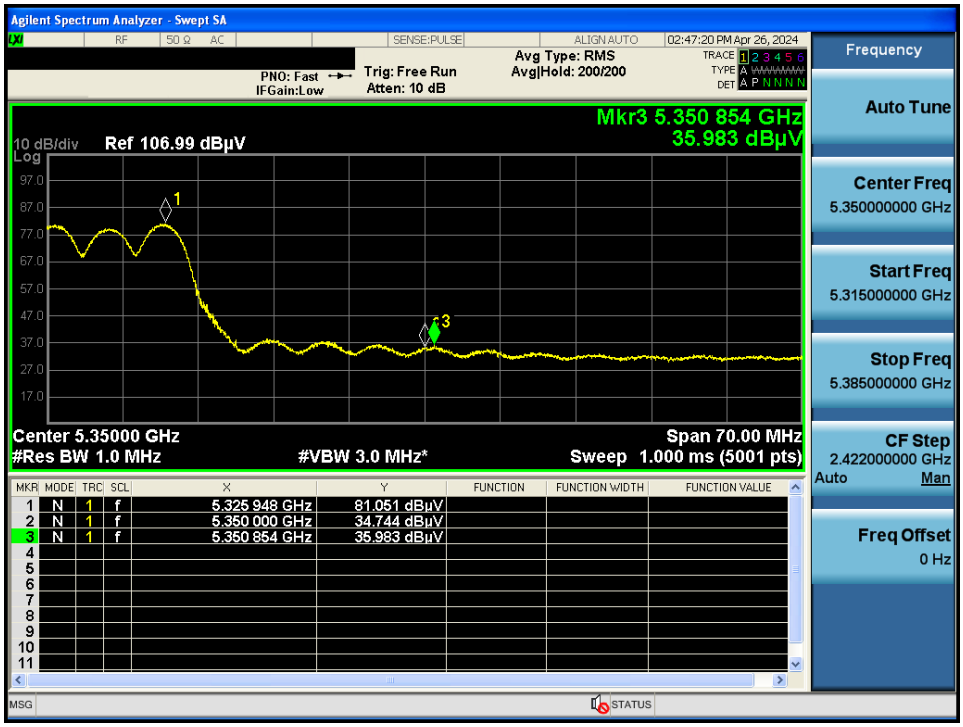
TM 3 & U-NII 1 & 5 190 & X axis & Hor **Detector Mode : AV**



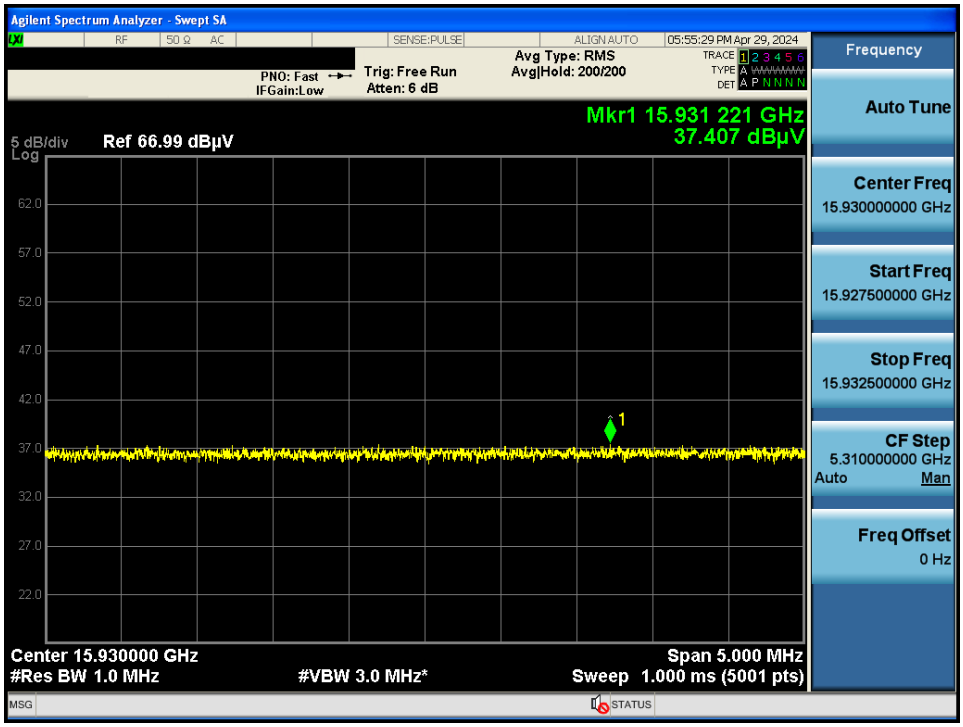
TM 3 & U-NII 2A & 5 310 & X axis & Ver **Detector Mode : PK**



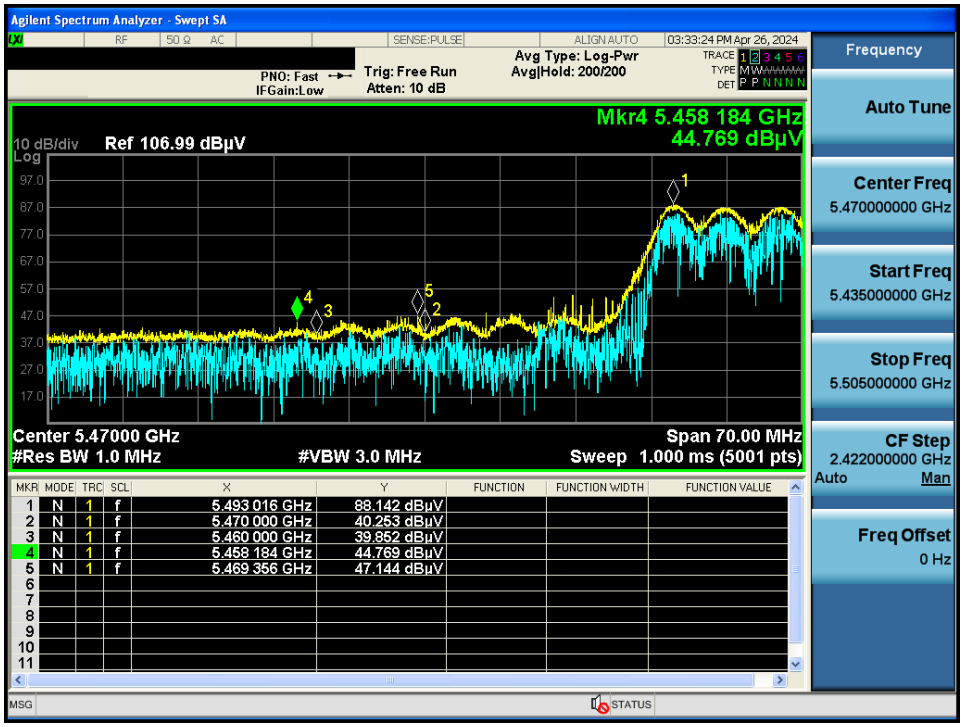
TM 3 & U-NII 2A & 5 310 & X axis & Ver **Detector Mode : AV**



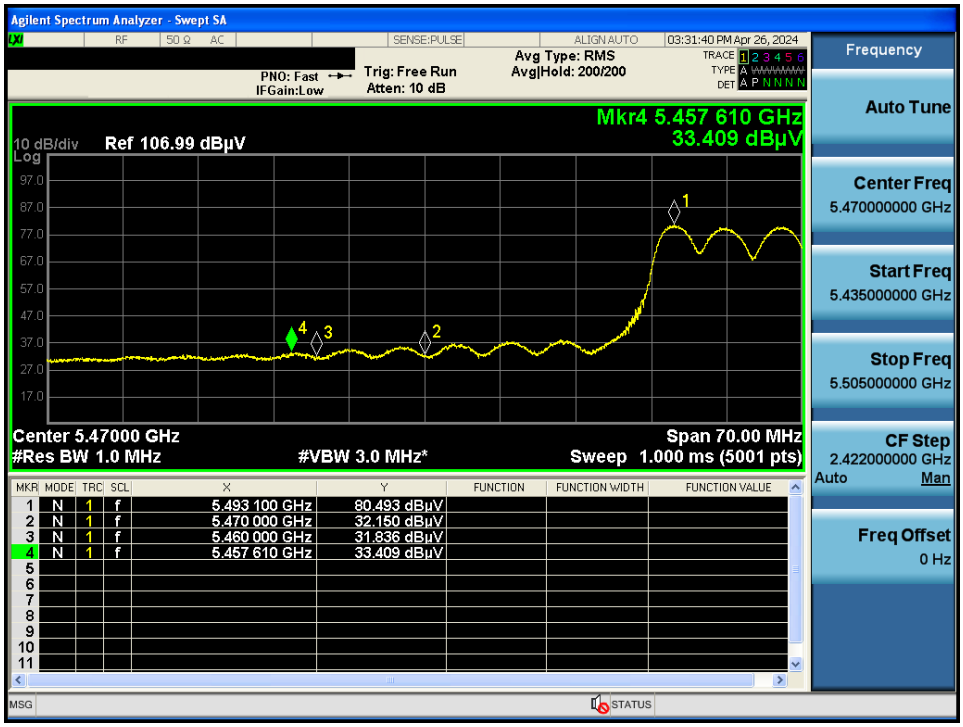
TM 3 & U-NII 2A & 5 310 & X axis & Hor **Detector Mode : AV**



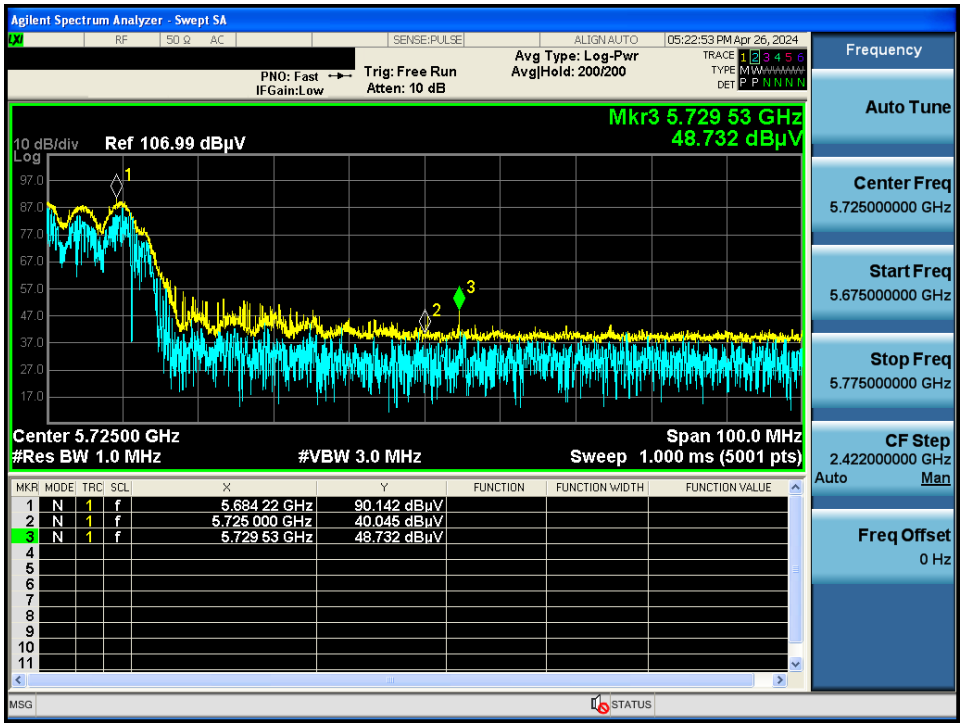
TM 3 & U-NII 2C & 5 510 & X axis & Ver **Detector Mode : PK**



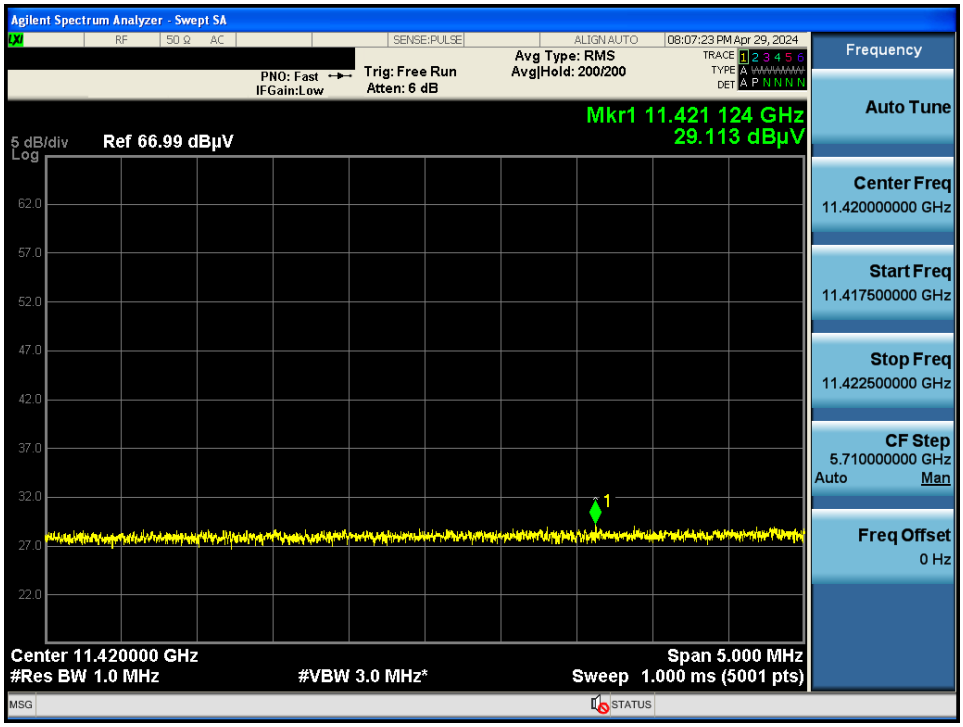
TM 3 & U-NII 2C & 5 510 & X axis & Ver **Detector Mode : AV**



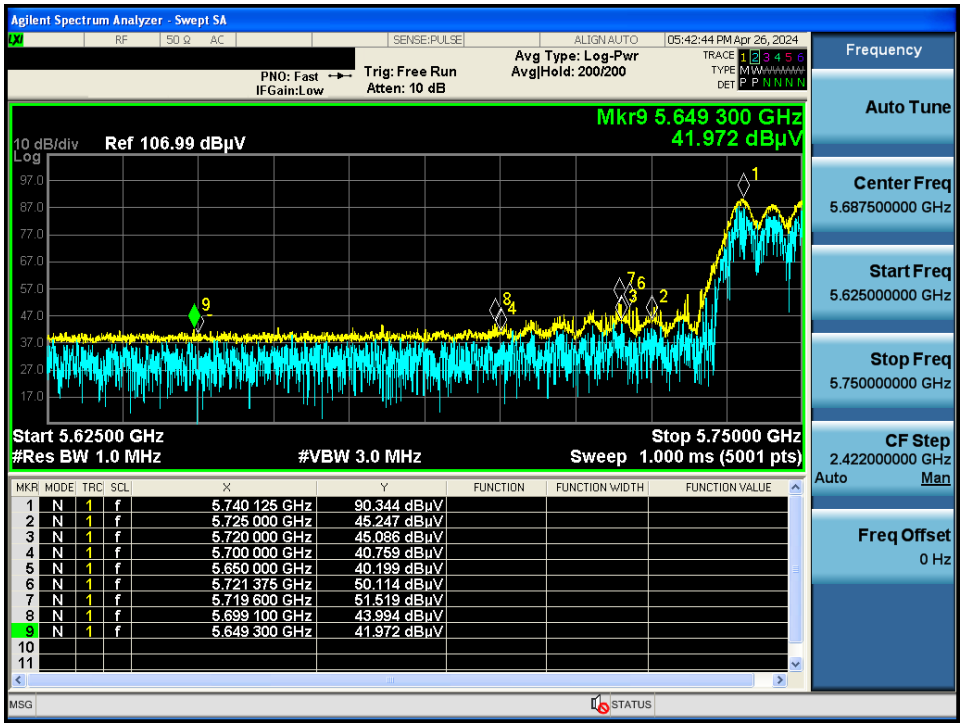
TM 3 & U-NII 2C & 5 670 & X axis & Ver **Detector Mode : PK**



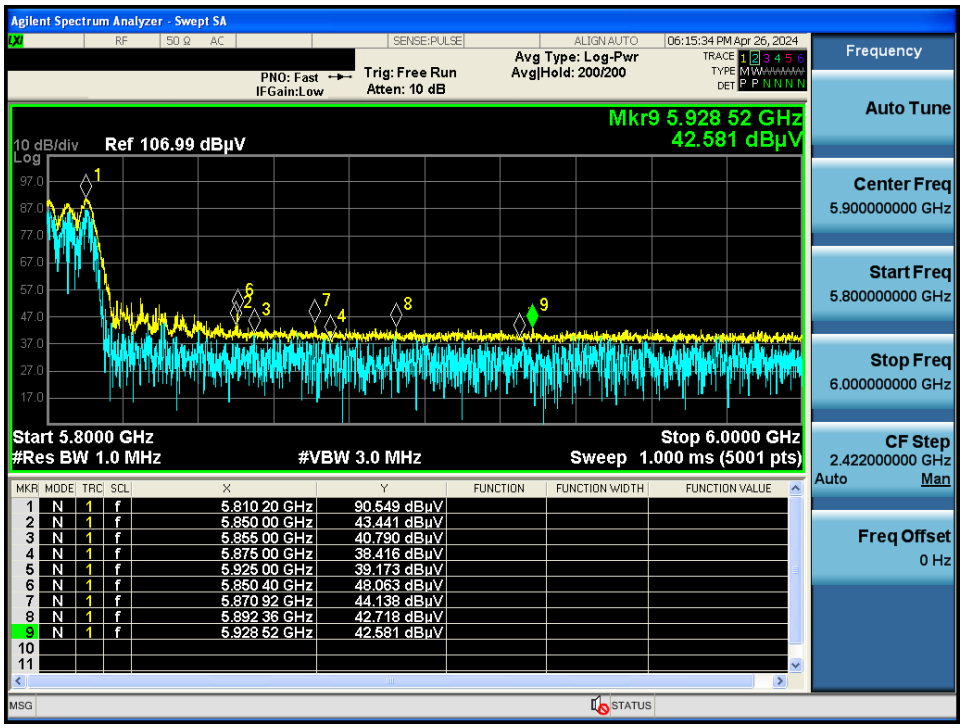
TM 3 & U-NII 2C & 5 710 & X axis & Hor **Detector Mode : AV**



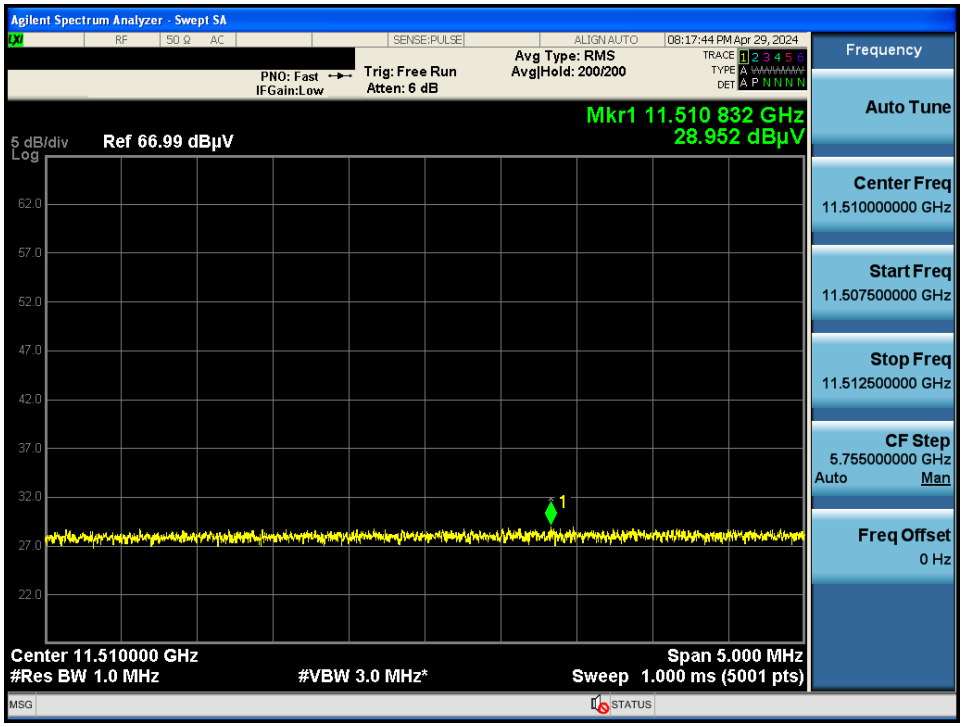
TM 3 & U-NII 3 & 5 755 & X axis & Ver **Detector Mode : PK**



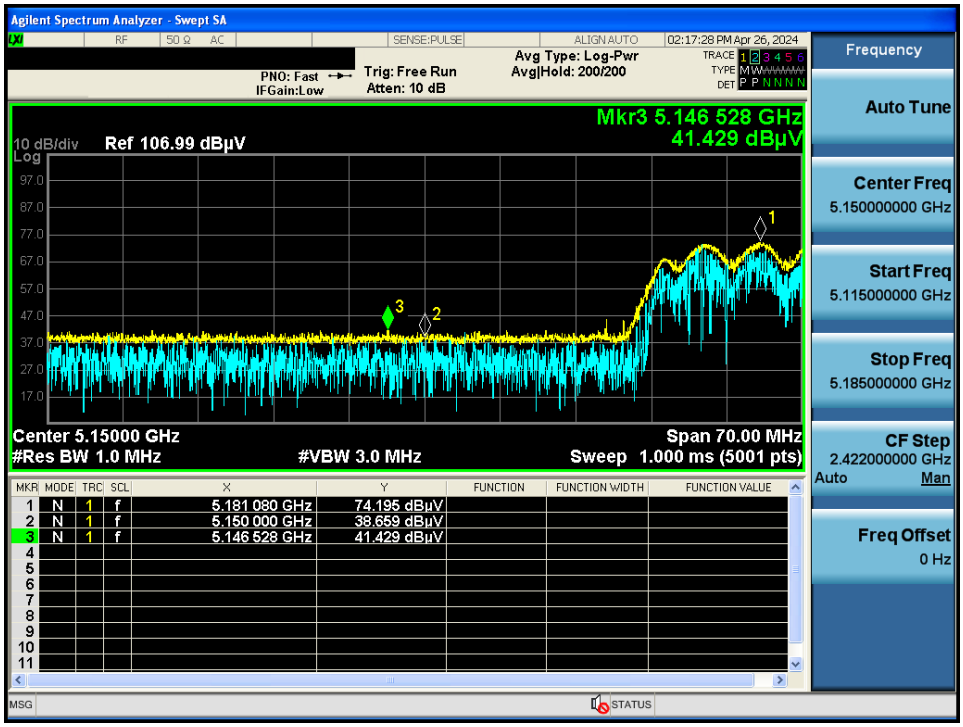
TM 3 & U-NII 3 & 5 795 & X axis & Ver **Detector Mode : PK**



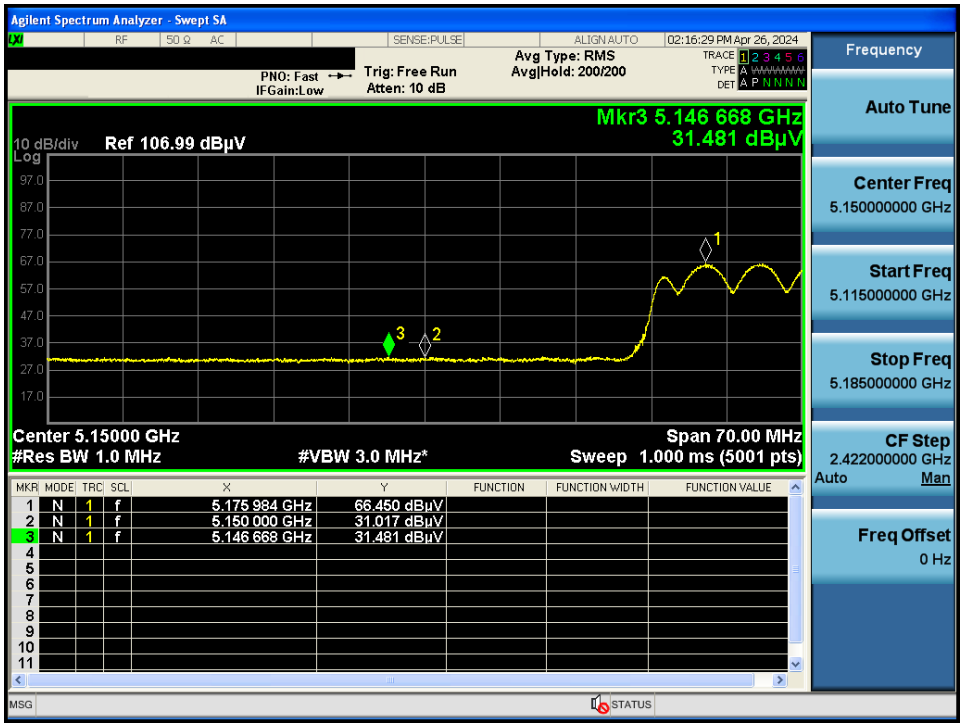
TM 3 & U-NII 3 & 5 755 & X axis & Hor **Detector Mode : AV**



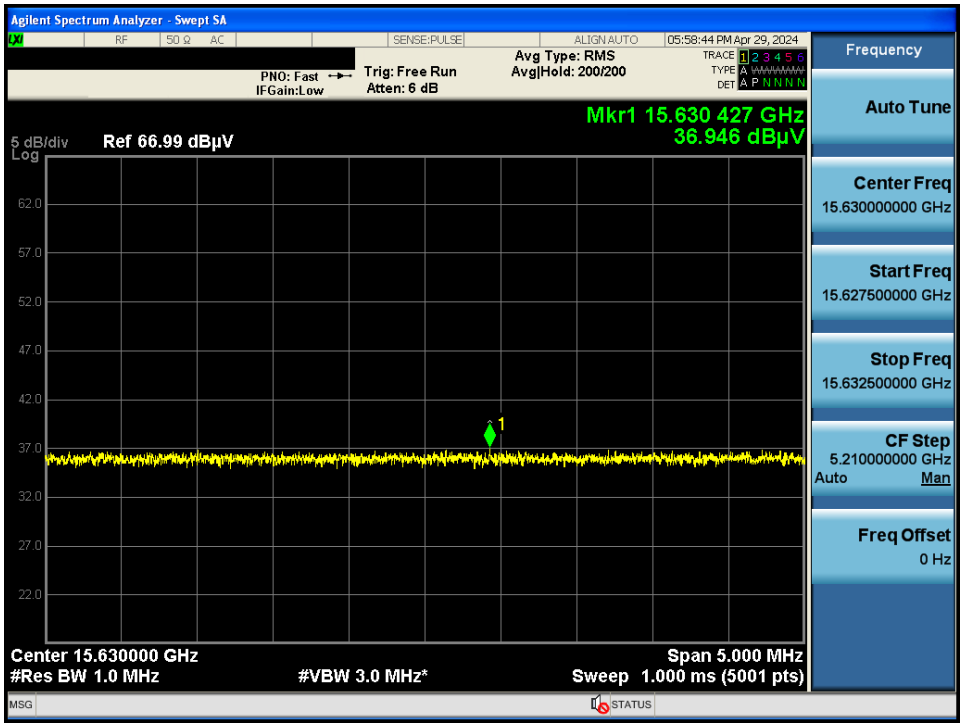
TM 4 & U-NII 1 & 5 210 & X axis & Ver **Detector Mode : PK**



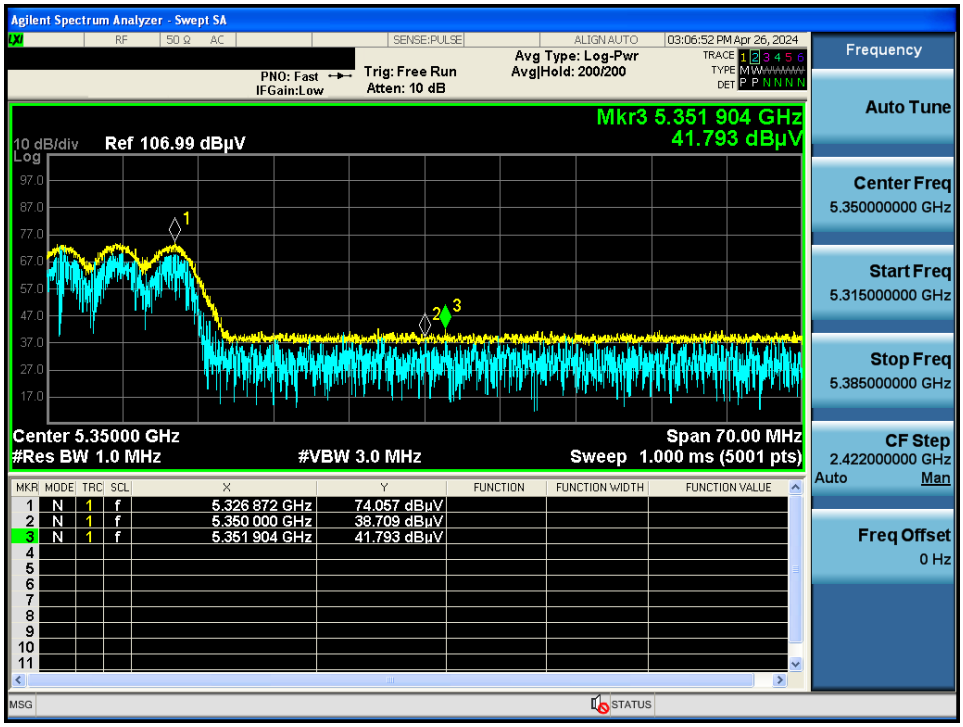
TM 4 & U-NII 1 & 5 210 & X axis & Ver **Detector Mode : AV**



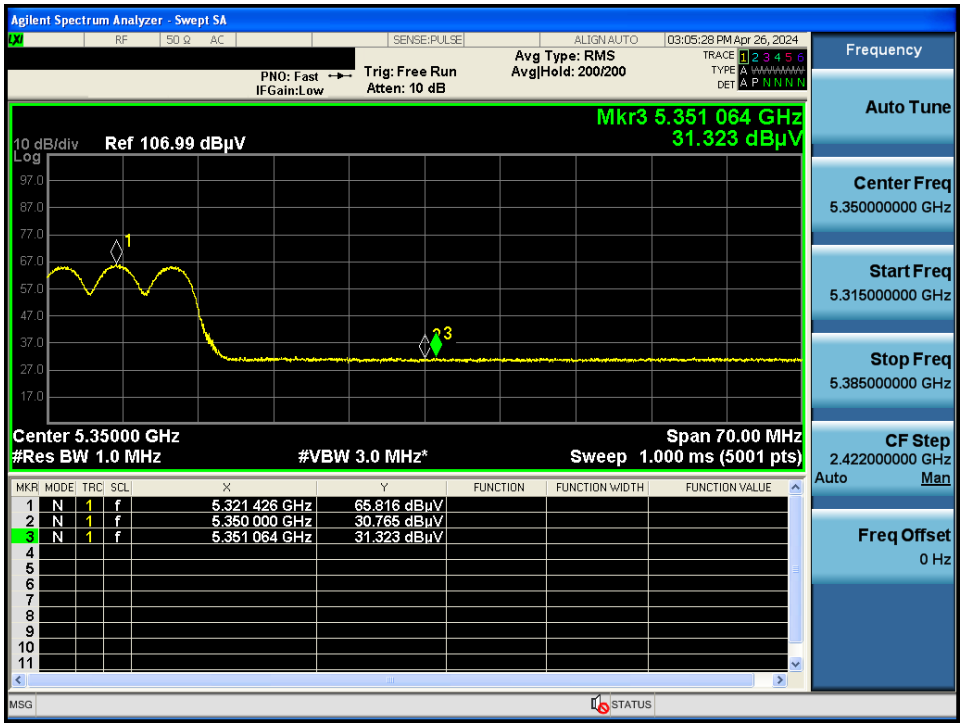
TM 4 & U-NII 1 & 5 210 & X axis & Hor **Detector Mode : AV**



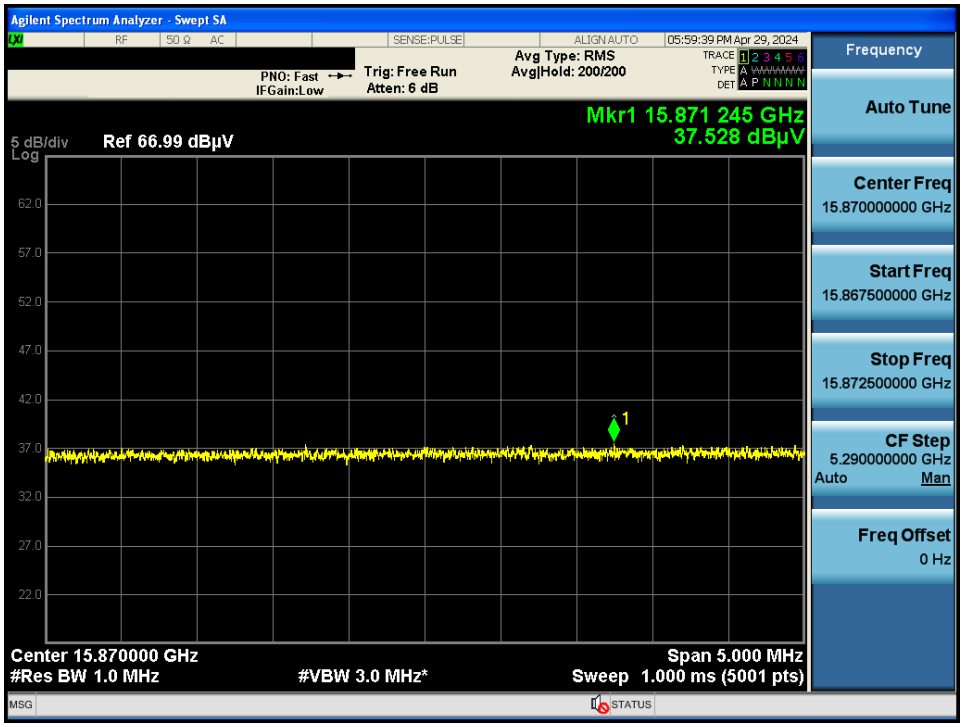
TM 4 & U-NII 2A & 5 290 & X axis & Ver **Detector Mode : PK**



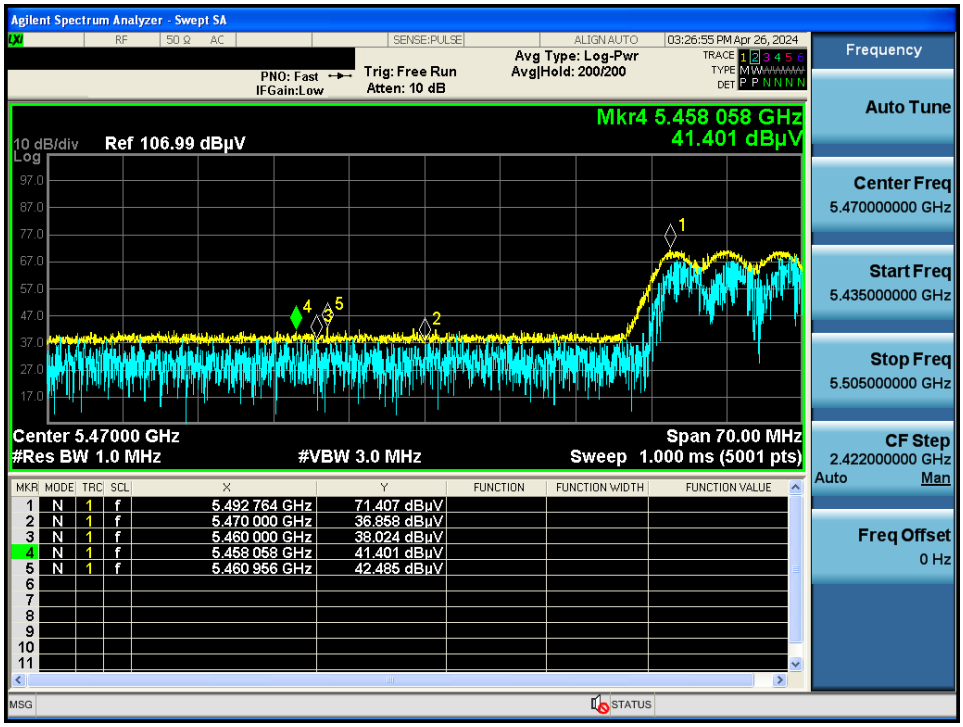
TM 4 & U-NII 2A & 5 290 & X axis & Ver **Detector Mode : AV**



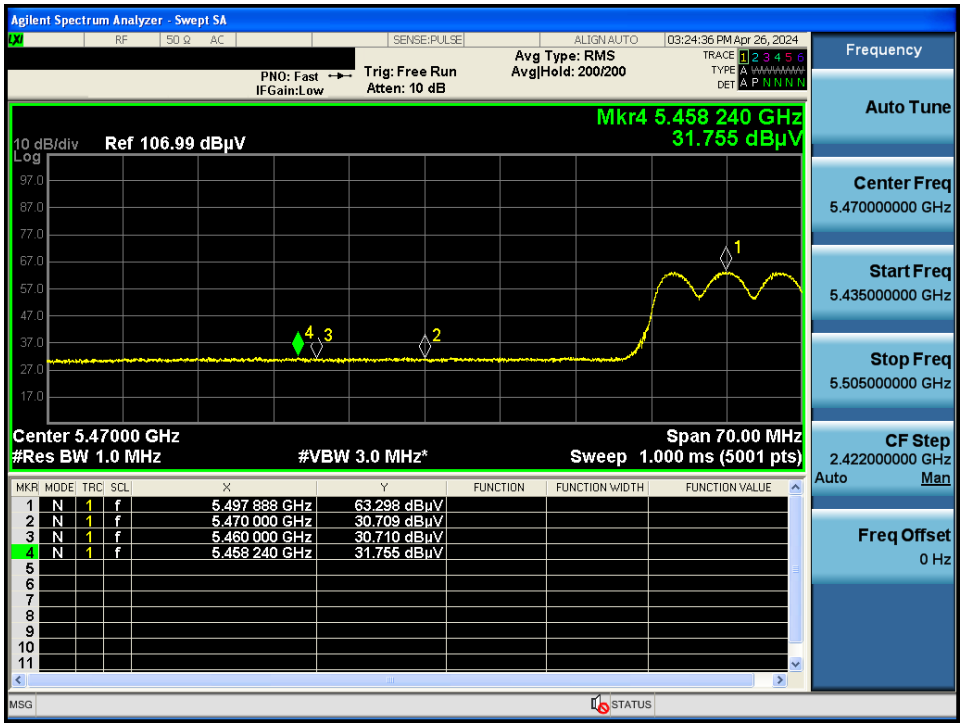
TM 4 & U-NII 2A & 5 290 & X axis & Hor **Detector Mode : AV**



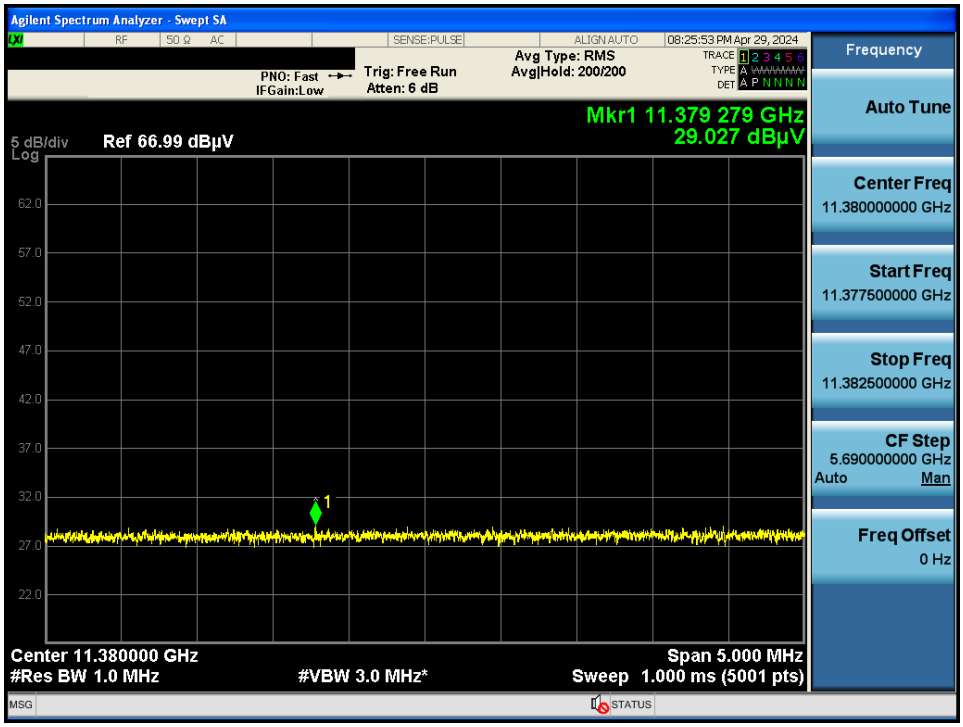
TM 4 & U-NII 2C & 5 530 & X axis & Ver **Detector Mode : PK**



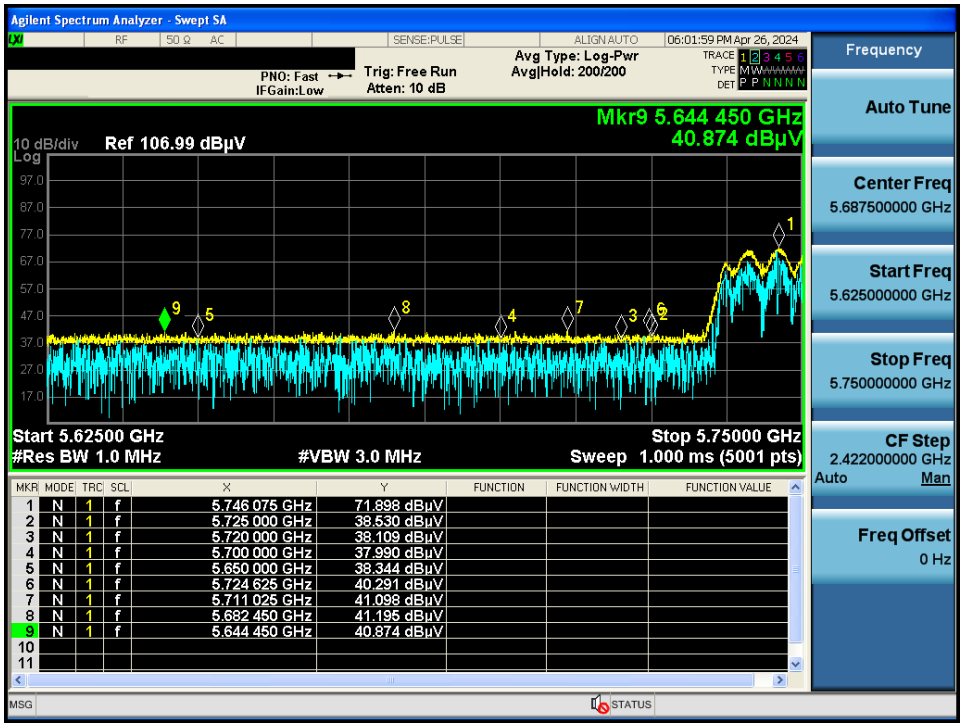
TM 4 & U-NII 2C & 5 530 & X axis & Ver **Detector Mode : AV**



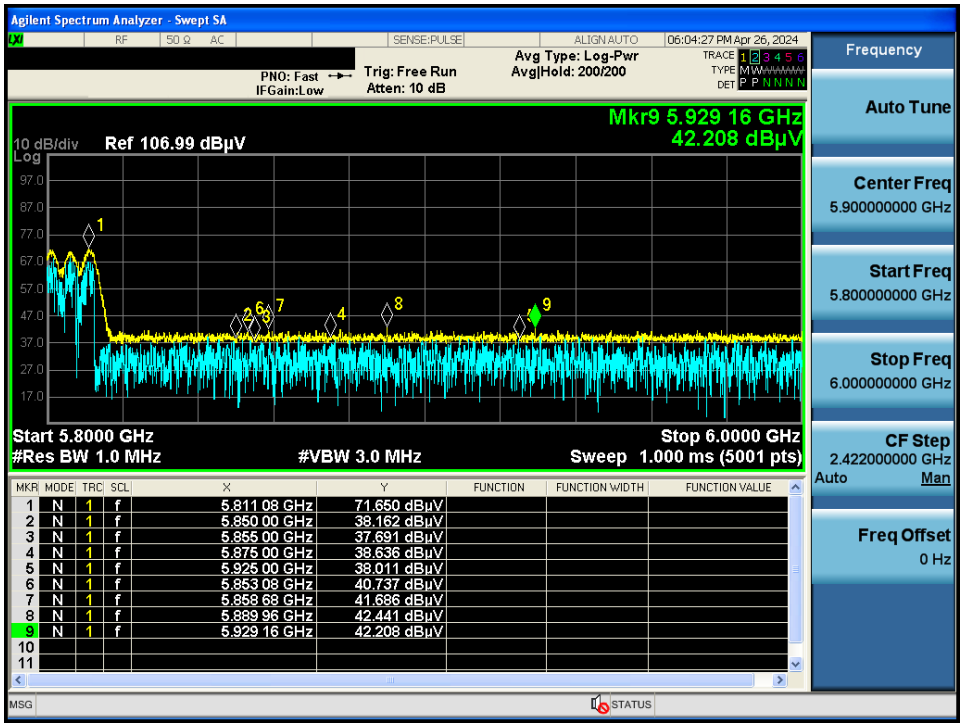
TM 4 & U-NII 2C & 5 690 & X axis & Hor **Detector Mode : AV**



TM 4 & U-NII 3 & 5 775 & X axis & Ver **Detector Mode : PK**



TM 4 & U-NII 3 & 5 775 & X axis & Ver **Detector Mode : PK**



TM 4 & U-NII 3 & 5 775 & X axis & Hor **Detector Mode : AV**