

TEST REPORT



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1. Report No : DRTFCC2203-0079

2. Customer

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Address (IC) : 100 Crossways Park West Suite 105 Woodbury NY 11797 United States Of America
(Excluding The States Of Alaska)

3. Use of Report : FCC & IC Certification

4. Product Name / Model Name : Mobile Computer / XM75PW

FCC ID : UTWXM75PW

IC : 6914A-XM75PW

5. FCC Regulation(s): Part 15.247

IC Standard(s): RSS-247 Issue 2, RSS-Gen Issue 5

Test Method used: KDB558074 D01v05r02, ANSI C63.10-2013

6. Date of Test : 2021.12.07 ~ 2022.01.21, 2022.03.07 ~ 2022.03.10



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	Reviewed by
	Name : SeungMin Gil  (Signature)	Name : JaeJin Lee  (Signature)

2022 . 03 . 17 .

DT&C Co., Ltd.

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
DRTFCC2203-0079	Mar, 17. 2022	Initial issue	SeungMin Gil	JaeJin Lee

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1. General Information

1.1. Explanations for Reference Test Data

1.1.1. Introduction

This report includes the WLAN test data of FCC ID: UTWXM75P / IC: 6914A-XM75P with reference to KDB 484596 D01v01. The applicant takes full responsibility that the test data as reference section below represents compliance for FCC ID: UTWXM75PW / IC: 6914A-XM75PW.

Reference FCC ID / IC	Exhibit type	Separated FCC ID / IC
FCC ID: UTWXM75P / IC: 6914A-XM75P	Original Grant / New Single Certification	FCC ID: UTWXM75PW / IC: 6914A-XM75PW

1.1.2. Explain the Differences

FCC ID: UTWXM75PW / IC: 6914A-XM75PW is same the internal printed circuit board with FCC ID: UTWXM75P / IC: 6914A-XM75P. For FCC ID: UTWXM75PW / IC: 6914A-XM75PW, WWAN and NFC transmitters have been removed. (It does not changed the SW/HW component of WLAN.)

1.1.3. Spot Check Verification Data

Equipment Class (capability)	FCC Part/ RSS Std.	Mode	TX Freq. (MHz)	Test item	Detector Mode	Reference FCC ID: UTWXM75P / IC: 6914A-XM75P		Separated FCC ID: UTWXM75PW / IC: 6914A-XM75PW		Limit (dBuV/m)	Deviation (dB)
						Frequency (MHz)	Result (dBuV/m)	Frequency (MHz)	Result (dBuV/m)		
DTS (WLAN)	15.247 / RSS-247	802.11n (HT40)	2 422	Radiated Band edge	Average	2 389.90	51.99	2 389.78	51.63	54.00	-0.36
		802.11b	2 437	Radiated Spurious emission	Average	4 874.01	48.50	4 874.02	47.92	54.00	-0.58

Note1: The spot check were performed based on worst-case results reported in the original test report.

The spot check test results are within 3dB and two products shows a good correlation. It also complies with the FCC limit.

1.1.4. Reference Section

Reference FCC ID: UTWXM75P / IC: 6914A-XM75P

Equipment Class	FCC Part/ RSS Std.	Capability	Band(MHz)	Exhibit type	Report title	Reference Sections
DTS	15.247 / RSS-247	WLAN	2 412 ~ 2 462	Original Grant/ New Single Certification	DTS	All

1.2. Description of EUT

Equipment Class	Digital Transmission System (DTS)
Product Name	Mobile Computer
Model Name	XM75PW
Add Model Name	-
Firmware Version Identification Number	67.00xx
EUT Serial Number (Reference product) ^{Note1}	Conducted : 2114810121 Radiated : 2129310621
EUT Serial Number (Separated product) ^{Note2}	Radiated : 2204610446
Power Supply	DC 3.85 V
Modulation Technique	<ul style="list-style-type: none"> ▪ 802.11b: CCK, DSSS ▪ 802.11g/n: OFDM
Antenna Specification	Antenna Type: LDS Antenna Gain: 0.67 dBi (PK)

Note1: Reference FCC ID: UTWXM75P / IC: 6914A-XM75P

Note2: Separated FCC ID: UTWXM75PW / IC: 6914A-XM75PW

Band	Mode	Tx. frequency(MHz)	Max. conducted power(dBm)	Antenna gain (dBi)	Max. e.i.r.p (dBm)
2.4 GHz	802.11b	2 412 ~ 2 462	18.81	0.67	19.48
	802.11g	2 412 ~ 2 462	23.19	0.67	23.86
	802.11n (HT20)	2 412 ~ 2 462	22.65	0.67	23.32
	802.11n (HT40)	2 422 ~ 2 452	23.38	0.67	24.05
	802.11ac (VHT20)	2 412 ~ 2 462	22.72	0.67	23.39
	802.11ac (VHT40)	2 422 ~ 2 452	23.02	0.67	23.69

Note: e.i.r.p = $P_{\text{cond}} + G_{\text{EUT}}$

P_{cond} = measured power at feedpoint of the EUT antenna, in dBm (Peak Conducted Output Power)

G_{EUT} = gain of the EUT radiating element (antenna), in dBi

1.3. Declaration by the applicant / manufacturer

N/A

1.4. 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.dtnet.net	
Telephone	: + 82-31-321-2664
FAX	: + 82-31-321-1664

1.5. Testing Environment

Ambient Condition	
▪ Temperature	+20 °C ~ +25 °C
▪ Relative Humidity	+35 % ~ +46 %

1.6. 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)	4.9 dB (The confidence level is about 95 %, $k = 2$)
Radiated emission (1 GHz ~ 18 GHz)	5.0 dB (The confidence level is about 95 %, $k = 2$)
Radiated emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, $k = 2$)

1.7. Test Equipment List

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	21/06/24	22/06/24	MY50200867
Spectrum Analyzer	Agilent Technologies	N9020A	21/06/24	22/06/24	US47360812
DC Power Supply	Agilent Technologies	66332A	21/06/24	22/06/24	US37474125
Multimeter	FLUKE	17B+	21/12/16	22/12/16	36390701WS
Signal Generator	Rohde Schwarz	SMBV100A	21/12/16	22/12/16	255571
Signal Generator	ANRITSU	MG3695C	21/12/16	22/12/16	173501
Thermohygrometer	XIAOMI	MHO-C201	21/12/16	22/12/16	00089675
Thermohygrometer	BODYCOM	BJ5478	21/12/16	22/12/16	120612-2
Loop Antenna	ETS-Lindgren	6502	21/01/28	23/01/28	00226186
BILOG ANTENNA	Schwarzbeck	VULB 9160	21/12/16	22/12/16	3362
Horn Antenna	ETS-Lindgren	3117	21/12/16	22/12/16	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	21/06/24	22/06/24	155
PreAmplifier	Agilent Technologies	8449B	21/06/24	22/06/24	3008A02108
PreAmplifier	tsj	MLA-1840-J02-45	21/06/24	22/06/24	16966-10728
PreAmplifier	H.P	8447D	21/12/16	22/12/16	2944A07774
High-pass filter	Wainwright	WHKX12-935-1000-15000-40SS	21/06/24	22/06/24	7
High-pass filter	Wainwright	WHKX10-2838-3300-18000-60SS	21/06/24	22/06/24	2
High-pass filter	Wainwright	WHKX6-6320-8000-26500-40CC	21/06/24	22/06/24	2
Attenuator	Aeroflex/Weinschel	86-10-11	21/06/24	22/06/24	408
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A MA2490A	21/06/24	22/06/24	1306007 1249001
Power Meter & Wide Bandwidth Sensor	Agilent Technologies	N1911A N1921A	21/06/24	22/06/24	MY53360016 MY53360018
EMI Receiver	ROHDE&SCHWARZ	ESU	21/11/12	22/11/12	100469
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	21/08/23	22/08/23	101333
LISN	SCHWARZBECK	NSLK 8128 RC	21/10/22	22/10/22	8128 RC-387
HYGROMETER	TESTO	608-H1	22/01/14	23/01/14	34862883
Cable	Junkosha	MWX241	22/01/04	23/01/04	mmW-1
Cable	Junkosha	MWX241	22/01/04	23/01/04	mmW-4
Cable	HUBER+SUHNER	SUCOFLEX100	22/01/04	23/01/04	M-01
Cable	HUBER+SUHNER	SUCOFLEX100	22/01/04	23/01/04	M-02
Cable	JUNFLON	MWX241	22/01/04	23/01/04	M-03
Cable	JUNFLON	MWX221	22/01/04	23/01/04	M-04
Cable	JUNFLON	MWX221	22/01/04	23/01/04	M-05
Cable	DTNC	Cable	22/01/04	23/01/04	M-06
Cable	JUNFLON	J12J101757-00	22/01/04	23/01/04	M-07
Cable	HUBER+SUHNER	SUCOFLEX106	22/01/04	23/01/04	M-08
Cable	HUBER+SUHNER	SUCOFLEX106	22/01/04	23/01/04	M-09
Cable	DT&C	Cable	22/01/04	23/01/04	RFC-45
Cable	DT&C	Cable	22/01/04	23/01/04	RFC-69
Test Software	tsj	Radiated Emission Measurement	NA	NA	Version 2.00.0177
Test Software	tsj	Noise Terminal Measurement	NA	NA	Version 2.00.0170

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 KDB558074 D01v05r02 were used in measurement of the EUT.

The EUT was tested per the guidance of KDB558074 D01v05r02. 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 15.247 under the FCC Rules Part 15 Subpart C.

2.3. General Test Procedures

Conducted Emissions

The power-line conducted emission test procedure is not described on the KDB558074 D01v05r02.

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 KDB558074 D01v05r02. 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 section 12.1 of the KDB558074 D01v05r02.

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. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 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.

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	Data rate
802.11b	1 Mbps ~ 11 Mbps
802.11g	6 Mbps ~ 54 Mbps
802.11n(HT20)	MCS 0 ~ MCS 7
802.11n(HT40)	MCS 0 ~ MCS 7
802.11ac(VHT20)	MCS 0 ~ MCS 8
802.11ac(VHT40)	MCS 0 ~ MCS 9

Test Mode

Test mode	Worst case data rate	Tested Frequency (MHz)		
TM 1	802.11b 11 Mbps	2 412	2 437	2 462
TM 2	802.11g 54 Mbps	2 412	2 437	2 462
TM 3	802.11ac(VHT20) MCS 8	2 412	2 437	2 462
TM 4	802.11n(HT40) MCS 7	2 422	2 437	2 452

Note1: The worst case data rate was determined according to the power measurements.

Note2: The power measurement results for all modes and data rate were reported.

EUT Operation test setup

- Test Software: QRCT4.0.74.0

- Power setting: Refer to the table below.

Mode	Frequency (MHz)	Power Setting
802.11b	Data Rate(Mbps)	1 ~ 11
	2 412	15.5
	2 437	15.5
	2 462	15.5
802.11g	Data Rate(Mbps)	6 ~ 54
	2 412	14.0
	2 437	14.0
	2 462	14.0
802.11n (HT20)	Data Rate(MCS)	0 ~ 7
	2 412	13.5
	2 437	13.5
	2 462	13.5
802.11n (HT40)	Data Rate(MCS)	0 ~ 7
	2 422	12.0
	2 437	14.5
	2 452	14.5
802.11ac (VHT20)	Data Rate(MCS)	0 ~ 8
	2 412	13.5
	2 437	13.5
	2 462	13.5
802.11ac (VHT40)	Data Rate(MCS)	0 ~ 9
	2 422	12.0
	2 437	13.0
	2 452	13.0

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 attached on the device by means of unique coupling method. (Spring Tension).
Therefore this E.U.T complies with the requirement of Part 15.203**

4. Summary of Test Result

FCC part section(s)	RSS section(s)	Test Description	Limit	Test Condition	Status Note 1
15.247(a)	RSS-247[5.2]	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	RSS-247[5.4]	Maximum Peak Output Power	< 1 Watt (conducted), FCC & IC < 4 Watt (e.i.r.p), IC		C
15.247(d)	RSS-247[5.5]	Unwanted Emissions(Conducted)	20 dBc in any 100 kHz BW		C
15.247(e)	RSS-247[5.2]	Power Spectral Density	< 8 dBm / 3 kHz		C
-	RSS-Gen[6.7]	Occupied Bandwidth (99 %)	NA		C
15.247(d) 15.205 15.209	RSS-247[5.5] RSS-Gen[8.9] RSS-Gen[8.10]	Unwanted Emissions(Radiated)	Part 15.209 limits (Refer to section 5.5)	Radiated	C Note 3
15.207	RSS-Gen[8.8]	AC Power-Line Conducted Emissions	Part 15.207 limits (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 test item was performed in three orthogonal EUT positions and the worst case data was reported.					

5. Test Result

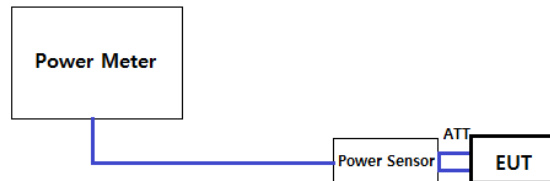
5.1. Maximum Peak Output Power

■ Test Requirements and limit, Part 15.247(b) & RSS-247 [5.4]

The maximum permissible conducted output power is 1 Watt.

The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e) of RSS-247.

5.1.1. Test Setup



5.1.2. Test Procedures

- KDB558074 D01v05r02 - Section 8.3.1.3
- ANSI C63.10-2013 – Section 11.9.1.3

RBW ≥ DTSPKPM1 Peak-reading power meter method

The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

- KDB558074 D01v05r02 - Section 8.3.2.3
- ANSI C63.10-2013 – Section 11.9.2.3

Method AVGPM-G

The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

5.1.3. Test Results

- Refer to the next page

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)							
			Data Rate (Mbps)							
			1	2	5.5	11	-	-	-	-
802.11b	2 412	PK	18.68	18.76	18.61	18.79	-	-	-	-
		AV	16.37	16.38	16.43	16.44	-	-	-	-
	2 437	PK	18.38	18.50	18.37	18.54	-	-	-	-
		AV	16.07	16.10	16.17	16.18	-	-	-	-
	2 462	PK	18.68	18.75	18.69	18.81	-	-	-	-
		AV	16.38	16.41	16.47	16.49	-	-	-	-

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)							
			Data Rate (Mbps)							
			6	9	12	18	24	36	48	54
802.11g	2 412	PK	18.96	19.01	19.03	20.85	20.98	22.43	22.71	22.85
		AV	14.31	14.37	14.33	15.03	14.88	14.63	14.79	14.76
	2 437	PK	18.86	18.77	18.94	20.73	20.86	22.29	22.39	22.61
		AV	14.41	14.28	14.19	15.02	14.96	14.70	14.72	14.80
	2 462	PK	18.90	18.98	19.05	21.04	21.15	22.45	22.71	23.19
		AV	14.40	14.47	14.52	15.24	15.11	14.78	14.88	14.91

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)							
			Data Rate (MCS)							
			0	1	2	3	4	5	6	7
802.11n (HT20)	2 412	PK	18.51	18.54	20.34	20.43	21.60	22.29	22.47	22.51
		AV	13.68	13.53	14.41	14.46	14.21	14.28	14.29	14.23
	2 437	PK	18.44	18.48	20.28	20.41	22.03	21.91	22.36	22.65
		AV	13.81	13.63	14.46	14.51	14.33	14.39	14.34	14.29
	2 462	PK	18.65	18.67	20.37	20.48	21.89	22.14	22.54	22.61
		AV	13.92	13.74	14.53	14.57	14.22	14.24	14.21	14.25

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)								
			Data Rate (MCS)								
			0	1	2	3	4	5	6	7	8
802.11ac (VHT20)	2 412	PK	18.70	18.73	20.71	20.82	22.14	22.31	22.47	22.51	22.67
		AV	13.84	13.78	14.57	14.61	14.36	14.40	14.43	14.37	14.44
	2 437	PK	18.58	18.61	20.60	20.87	21.89	22.36	22.63	22.71	22.72
		AV	13.92	13.78	14.76	14.77	14.43	14.62	14.61	14.68	14.65
	2 462	PK	18.69	18.78	20.56	20.65	22.31	22.40	22.61	22.69	22.70
		AV	13.85	13.93	14.59	14.71	14.46	14.49	14.62	14.49	14.54

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)							
			Data Rate (MCS)							
			0	1	2	3	4	5	6	7
802.11n (HT40)	2 422	PK	21.82	21.90	21.81	21.88	21.77	21.83	21.92	21.95
		AV	13.70	13.77	13.76	13.64	13.64	13.75	13.81	13.83
	2 437	PK	21.34	21.23	21.47	21.98	22.85	23.26	23.32	23.38
		AV	15.83	15.94	15.98	15.94	15.83	15.86	15.83	15.89
	2 452	PK	20.79	20.95	21.05	21.12	22.74	23.04	22.97	23.25
		AV	14.98	15.03	14.96	15.01	14.86	14.82	14.81	14.82

Mode	Freq. (MHz)	Det.	Maximum Peak Conducted Output Power (dBm)									
			Data Rate (MCS)									
			0	1	2	3	4	5	6	7	8	9
802.11ac (VHT40)	2 422	PK	21.62	21.60	21.53	21.52	21.55	21.52	21.57	21.64	21.66	21.71
		AV	13.54	13.52	13.53	13.55	13.57	13.59	13.58	13.60	13.66	13.69
	2 437	PK	20.41	20.47	21.11	20.81	22.56	22.61	22.46	22.52	22.87	23.02
		AV	14.46	14.36	14.41	14.34	14.40	14.39	14.41	14.43	14.48	14.49
	2 452	PK	19.73	19.77	20.41	20.06	21.98	22.17	22.08	21.89	22.48	22.87
		AV	13.36	13.46	13.47	13.34	13.29	13.35	13.36	13.31	13.43	13.37

5.2. 6 dB Bandwidth

■ Test Requirements and limit, Part 15.247(a) & RSS-247 [5.2]

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the EUT's antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

5.2.1. Test Setup

Refer to the APPENDIX I.

5.2.2. Test Procedures

- KDB558074 D01v05r02 - Section 8.2
- ANSI C63.10-2013 – Section 11.8.2

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = **Peak**.
4. Trace mode = **max hold**.
5. Sweep = **auto couple**.
6. Allow the trace to stabilize.
7. Option 1 - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

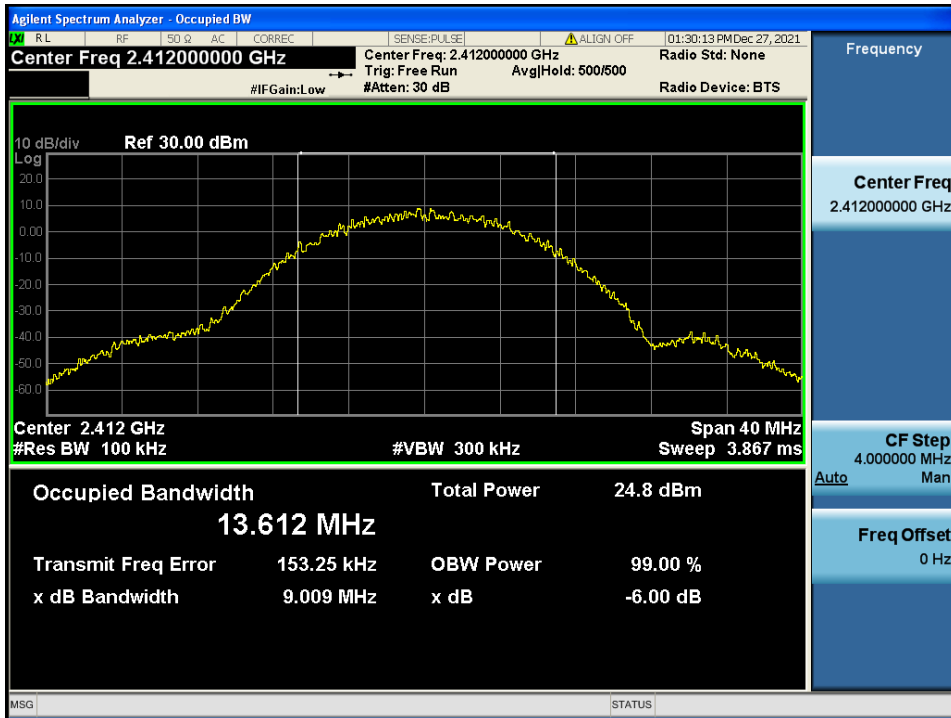
Option 2 - The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW $\geq 3 \times$ RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

5.2.3. Test Results

Test Mode	Frequency	Test Results (MHz)
TM 1	2 412	9.01
	2 437	9.02
	2 462	8.36
TM 2	2 412	16.51
	2 437	16.52
	2 462	16.52
TM 3	2 412	17.70
	2 437	17.74
	2 462	17.72
TM 4	2 422	36.44
	2 437	36.54
	2 452	36.42

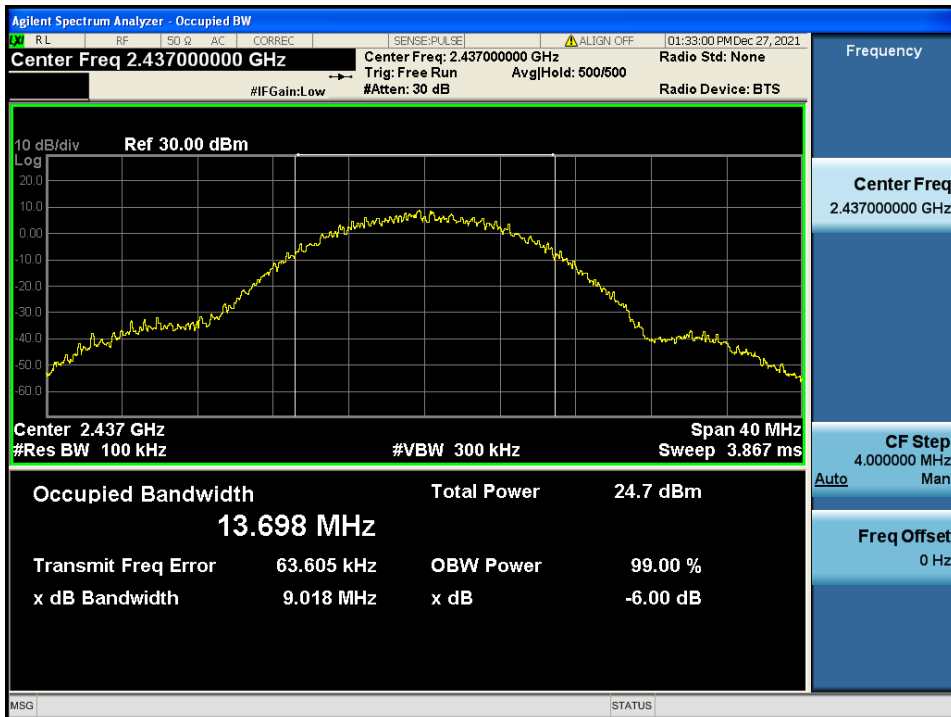
6 dB Bandwidth

TM 1 & 2412



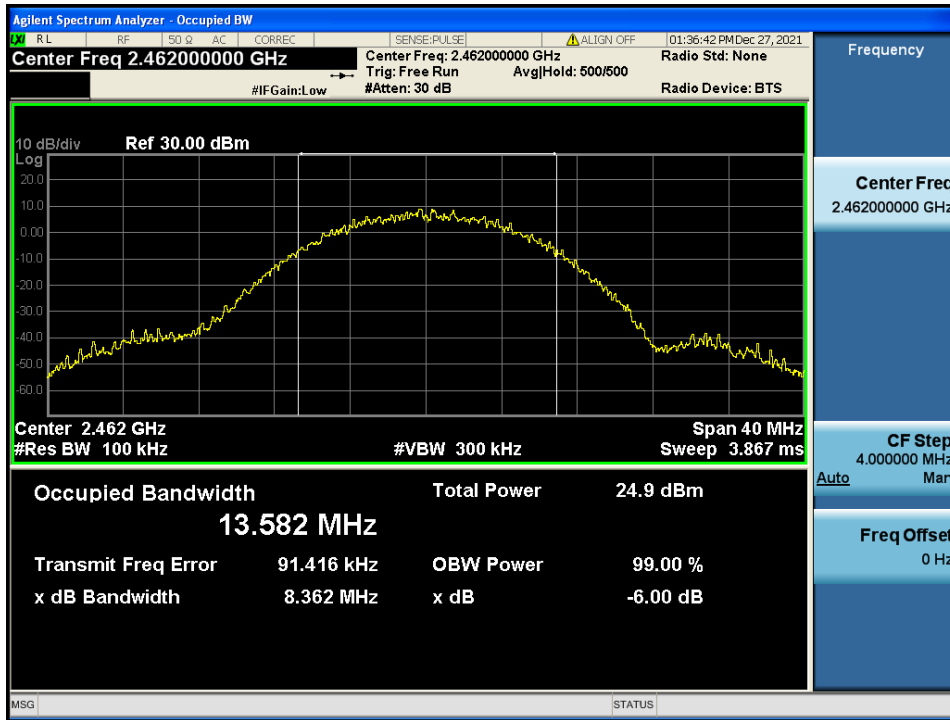
6 dB Bandwidth

TM 1 & 2437



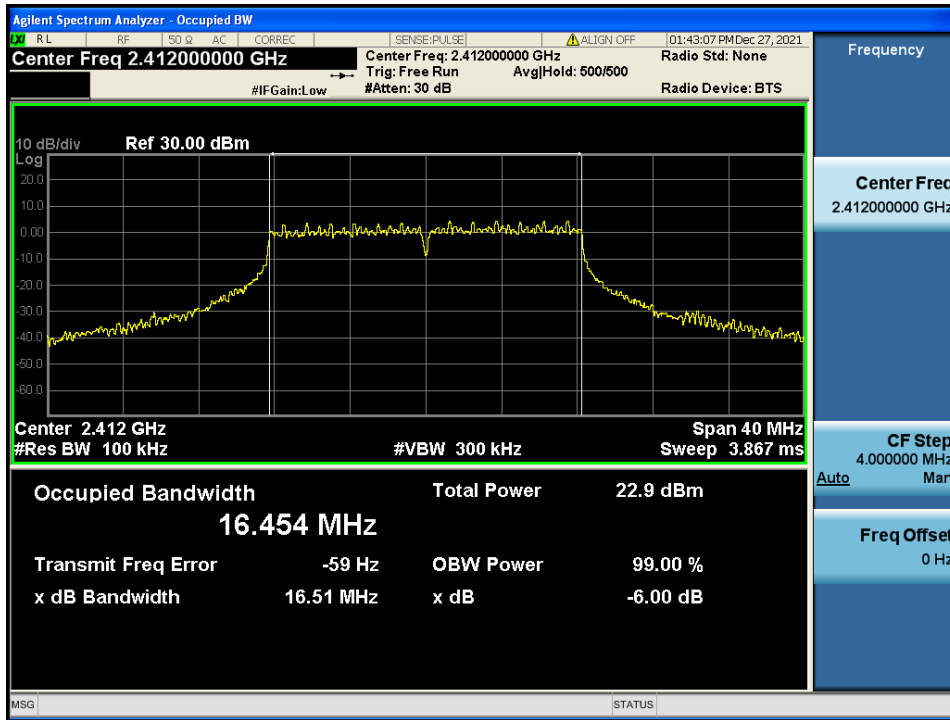
6 dB Bandwidth

TM 1 & 2.462



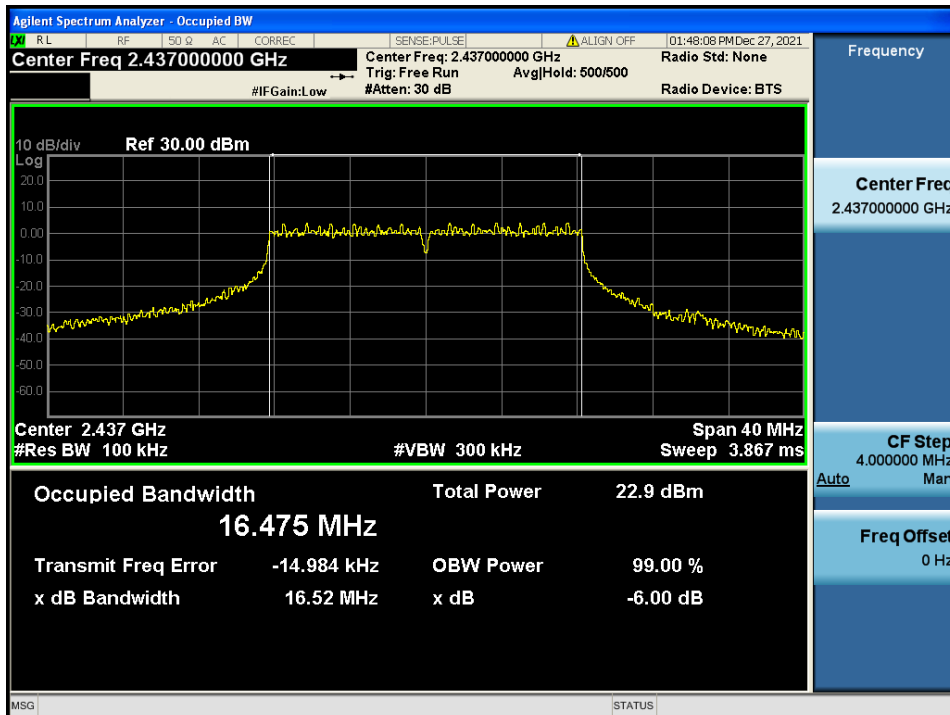
6 dB Bandwidth

TM 2 & 2412



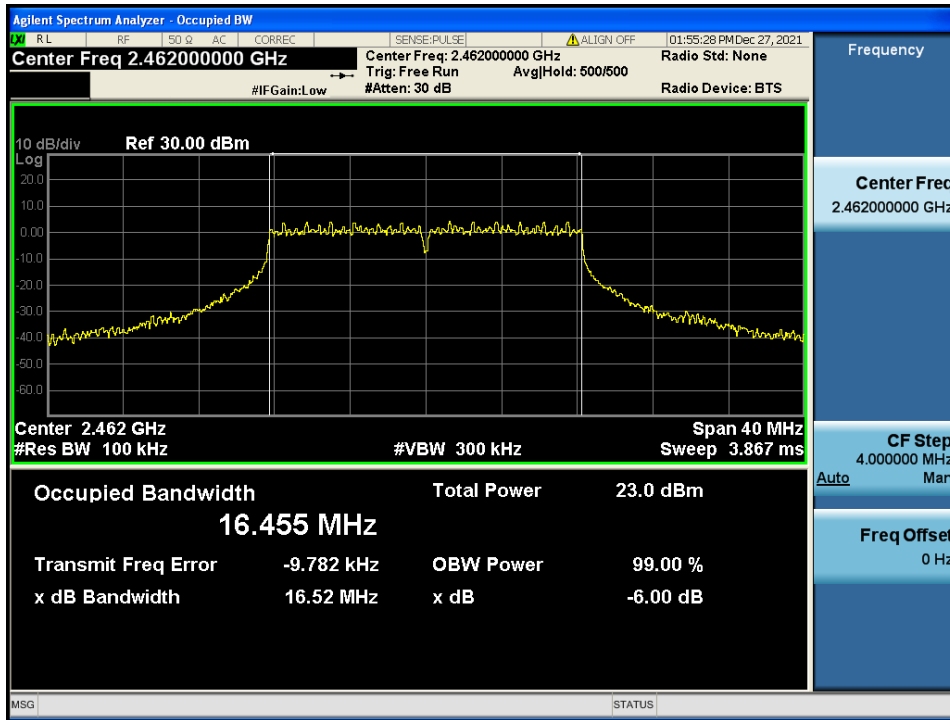
6 dB Bandwidth

TM 2 & 2437



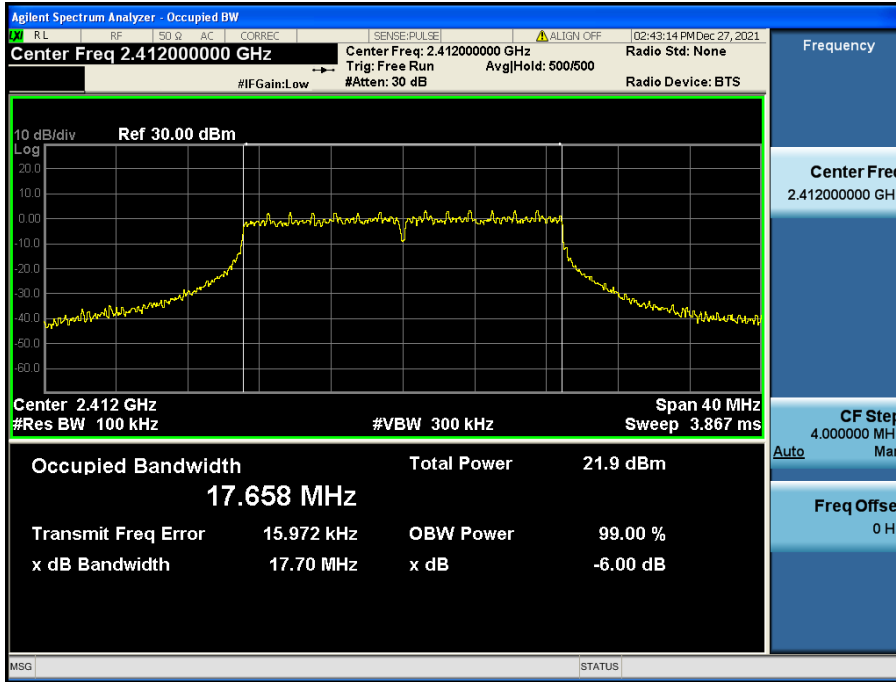
6 dB Bandwidth

TM 2 & 2 462



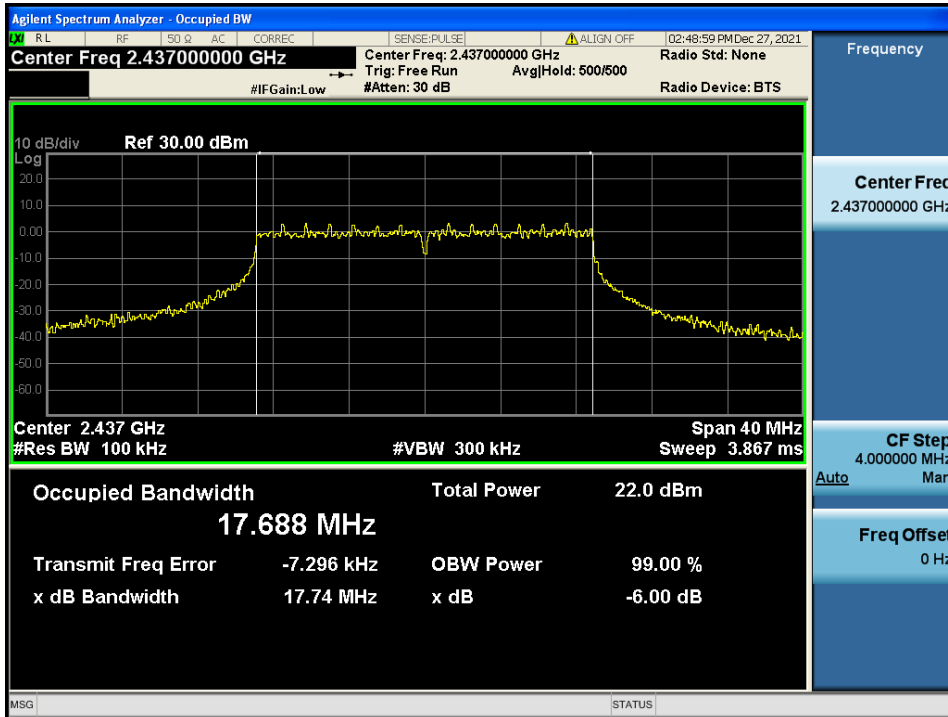
6 dB Bandwidth

TM 3 & 2 412



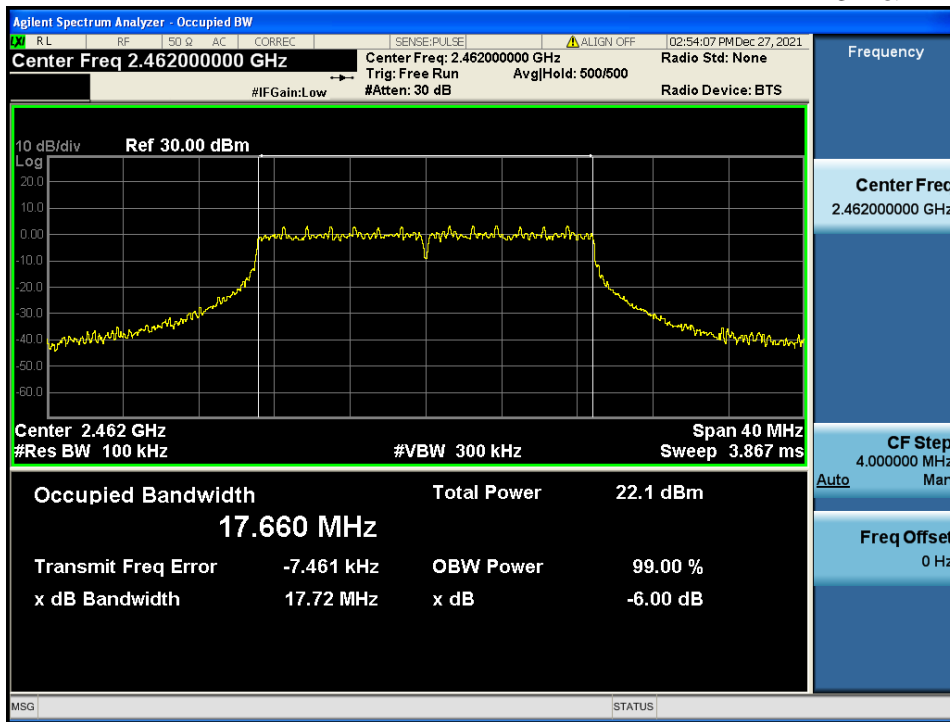
6 dB Bandwidth

TM 3 & 2 437



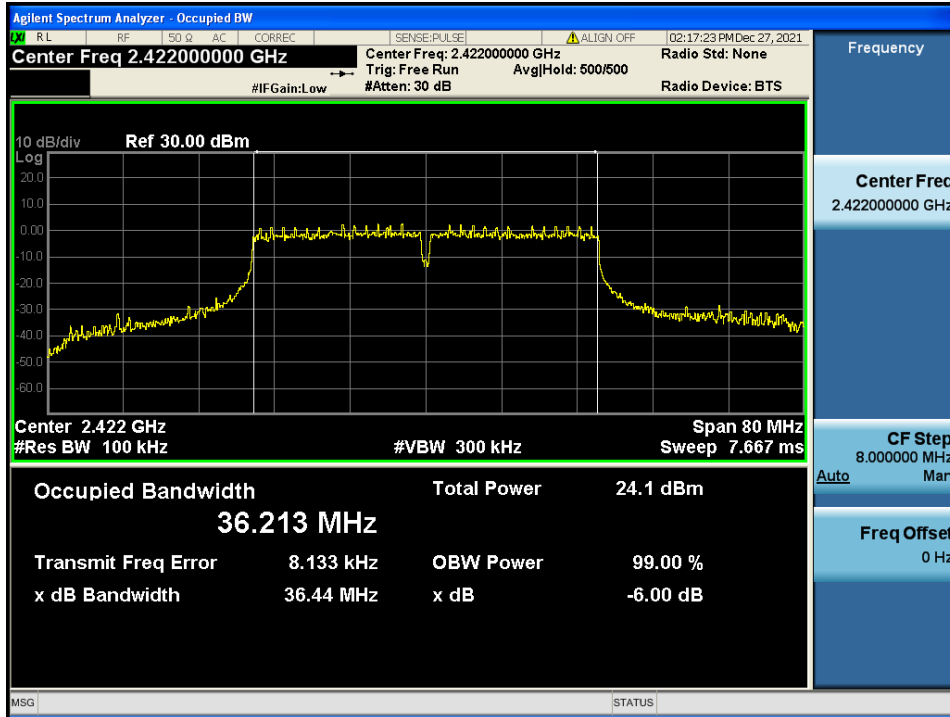
6 dB Bandwidth

TM 3 & 2 462



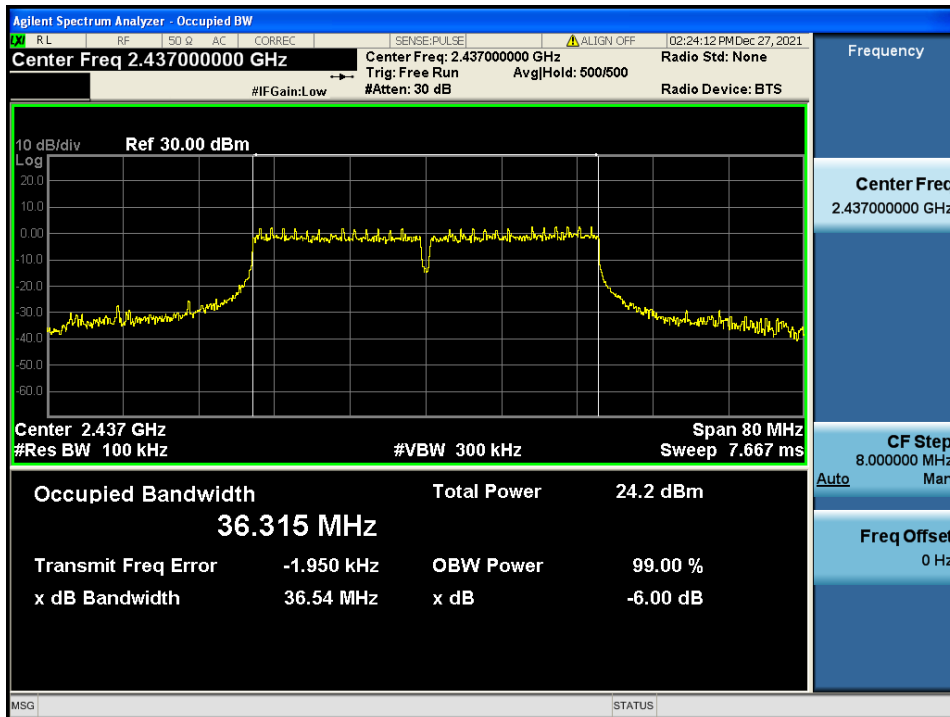
6 dB Bandwidth

TM 4 & 2 422



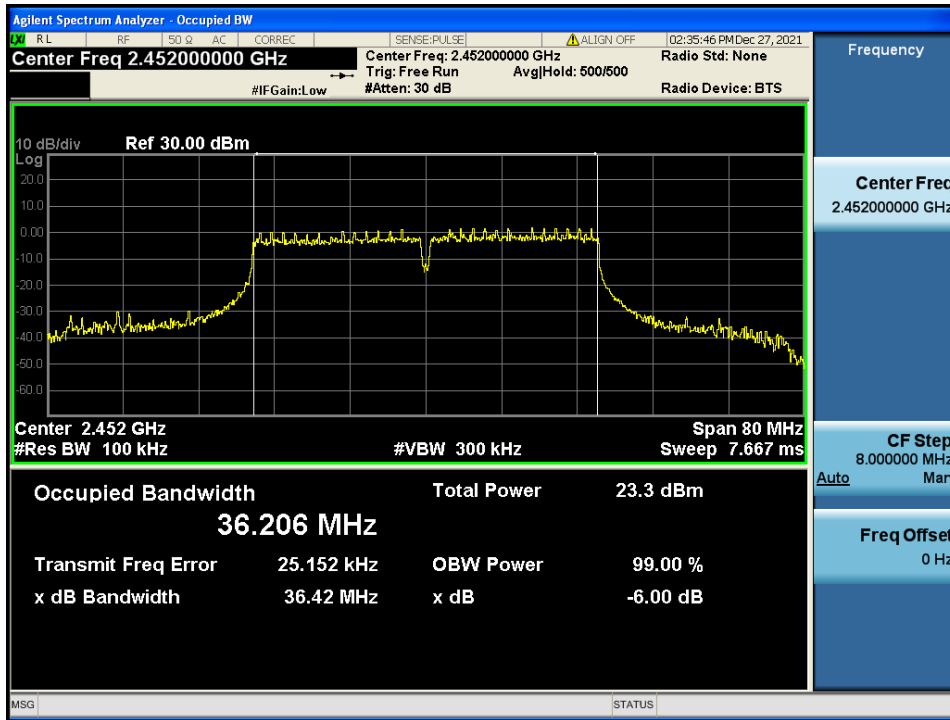
6 dB Bandwidth

TM 4 & 2 437



6 dB Bandwidth

TM 4 & 2.452



5.3. Power Spectral Density

■ Test requirements and limit, Part 15.247(e) & RSS-247 [5.2]

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.3.1. Test Setup

Refer to the APPENDIX I.

5.3.2. Test Procedures

- KDB558074 D01v05r02 - Section 8.4
- ANSI C63.10-2013 – Section 11.10.2

Method PKPSD (peak PSD)

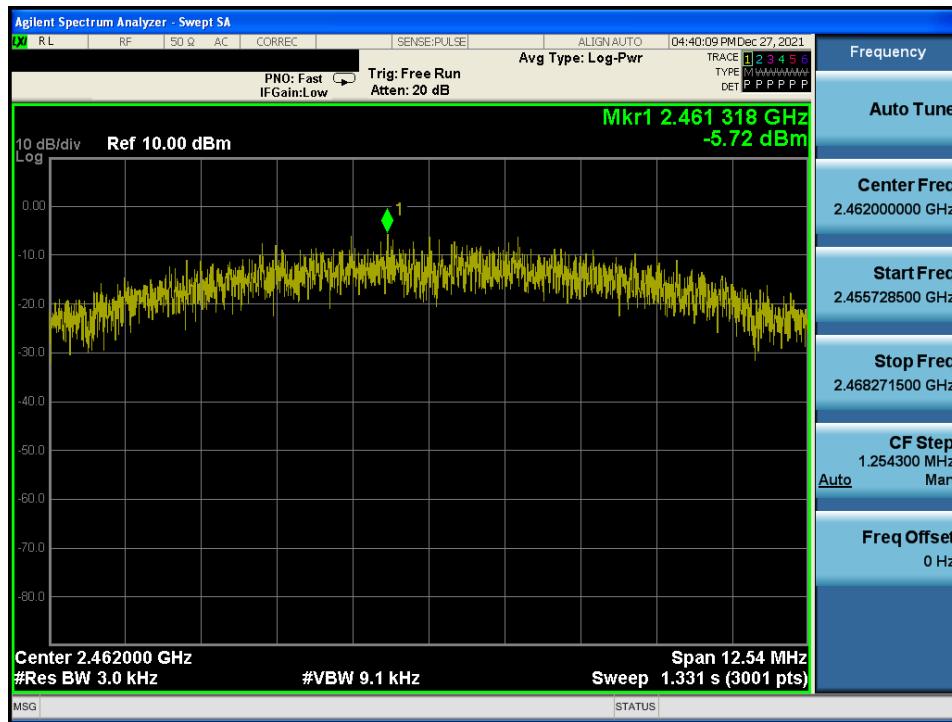
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to **1.5 times** the DTS bandwidth.
3. Set the RBW : **3 kHz ≤ RBW ≤ 100 kHz**.
4. Set the VBW ≥ **3 x RBW**.
5. Detector = **peak**.
6. Sweep time = **auto couple**.
7. Trace mode = **max hold**.
8. Allow trace to fully stabilize.
9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.3.3. Test Results

Test Mode	Frequency	RBW	PKPSD (dBm)	Limit (dBm / 3 kHz)
TM 1	2 412	3 kHz	-5.82	8.00
	2 437	3 kHz	-6.03	8.00
	2 462	3 kHz	-5.72	8.00
TM 2	2 412	3 kHz	-10.26	8.00
	2 437	3 kHz	-10.71	8.00
	2 462	3 kHz	-10.84	8.00
TM 3	2 412	3 kHz	-9.34	8.00
	2 437	3 kHz	-9.39	8.00
	2 462	3 kHz	-9.17	8.00
TM 4	2 422	3 kHz	-12.90	8.00
	2 437	3 kHz	-9.78	8.00
	2 452	3 kHz	-11.75	8.00

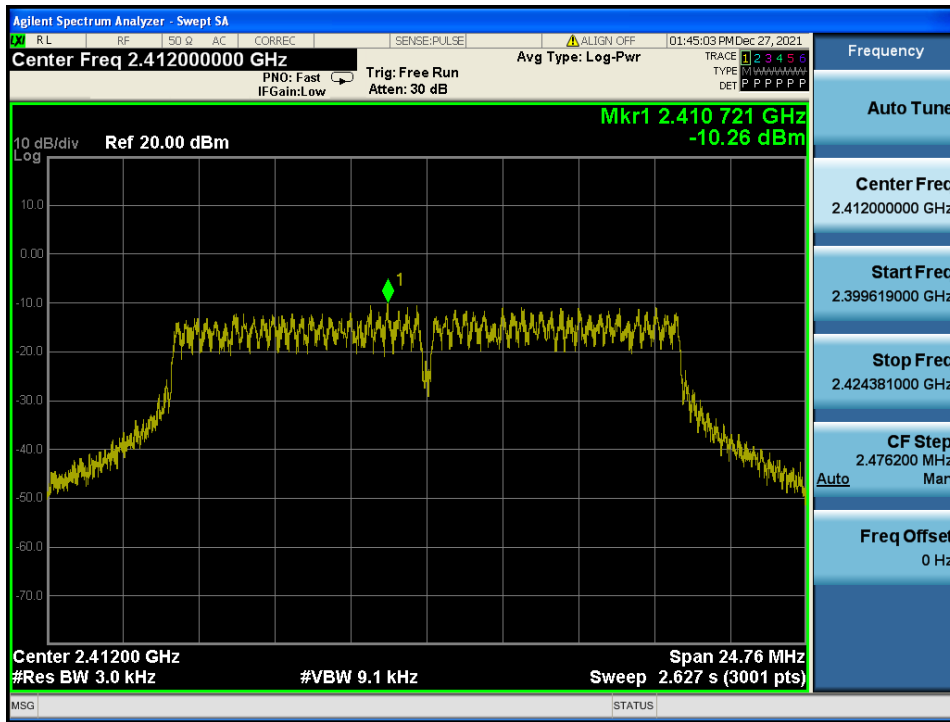
Power Spectral Density

TM 1 & 2 462



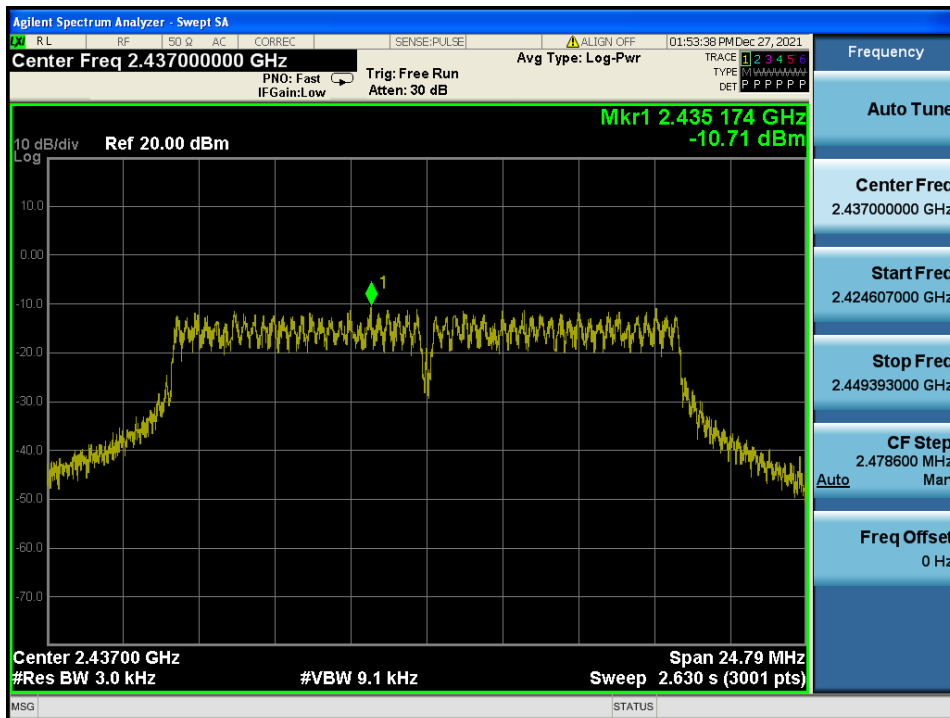
Power Spectral Density

TM 2 & 2 412



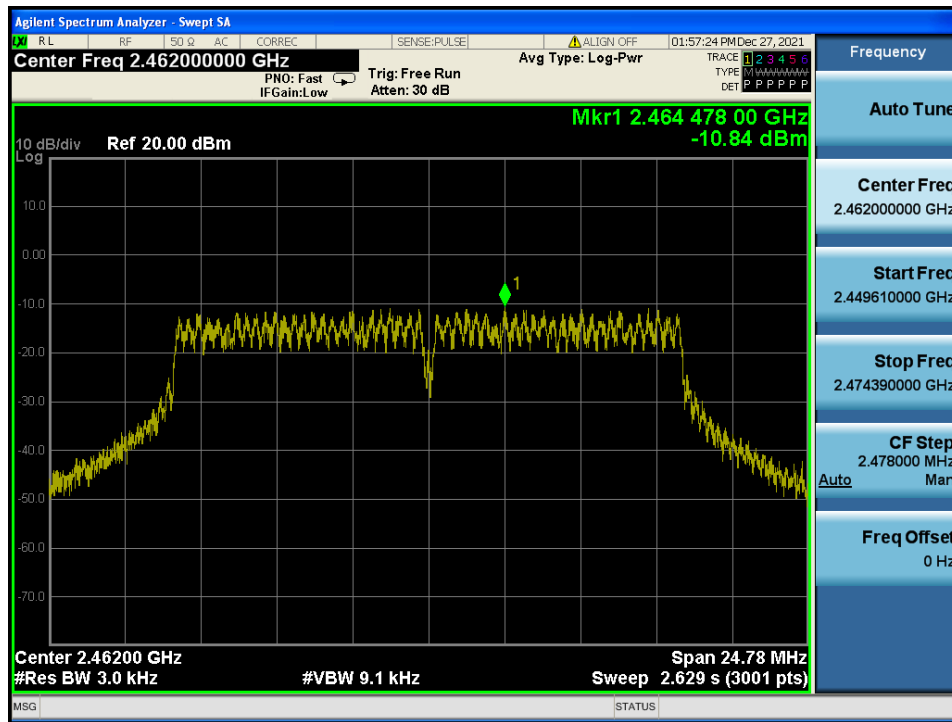
Power Spectral Density

TM 2 & 2 437



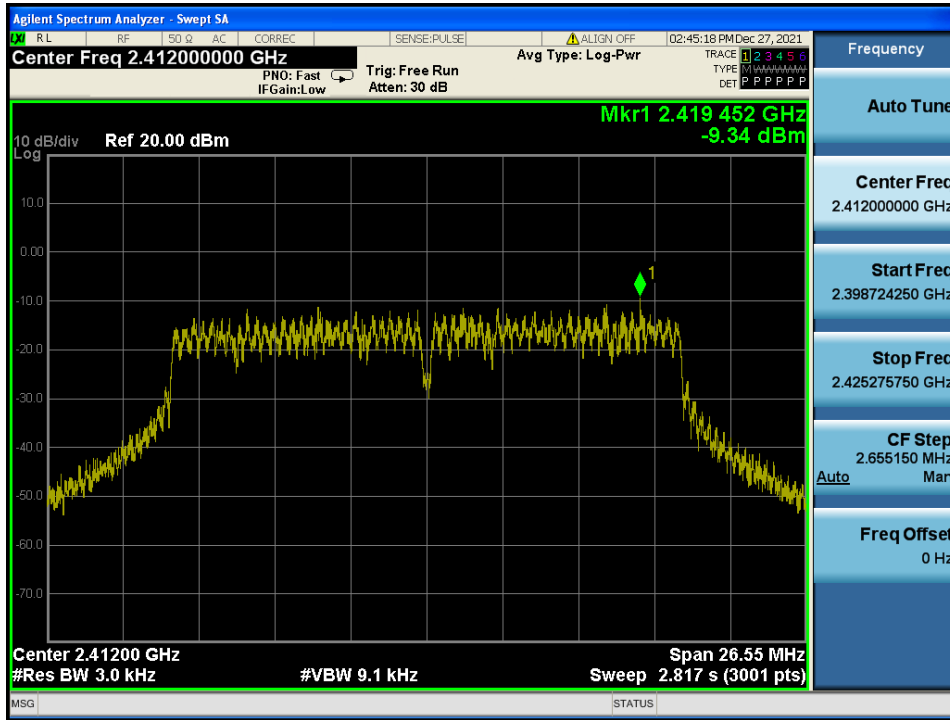
Power Spectral Density

TM 2 & 2 462



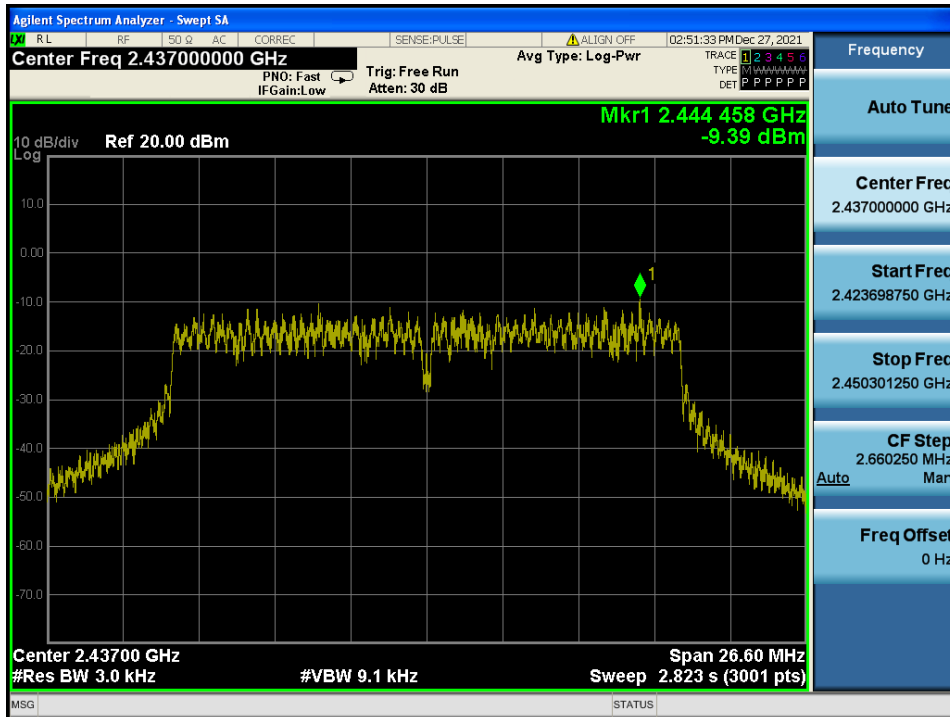
Power Spectral Density

TM 3 & 2 412



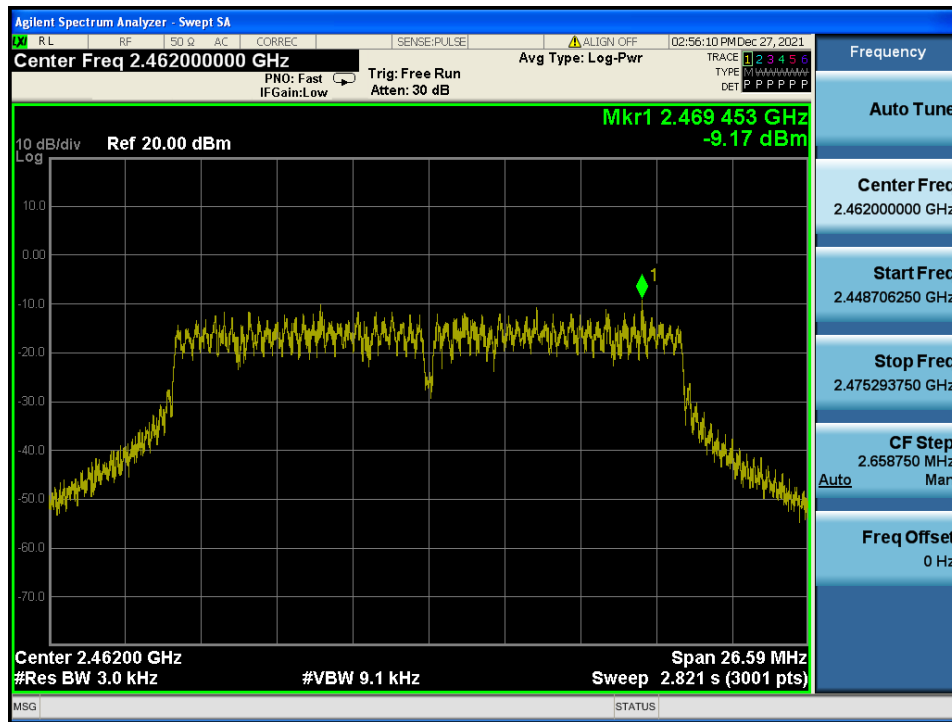
Power Spectral Density

TM 3 & 2 437



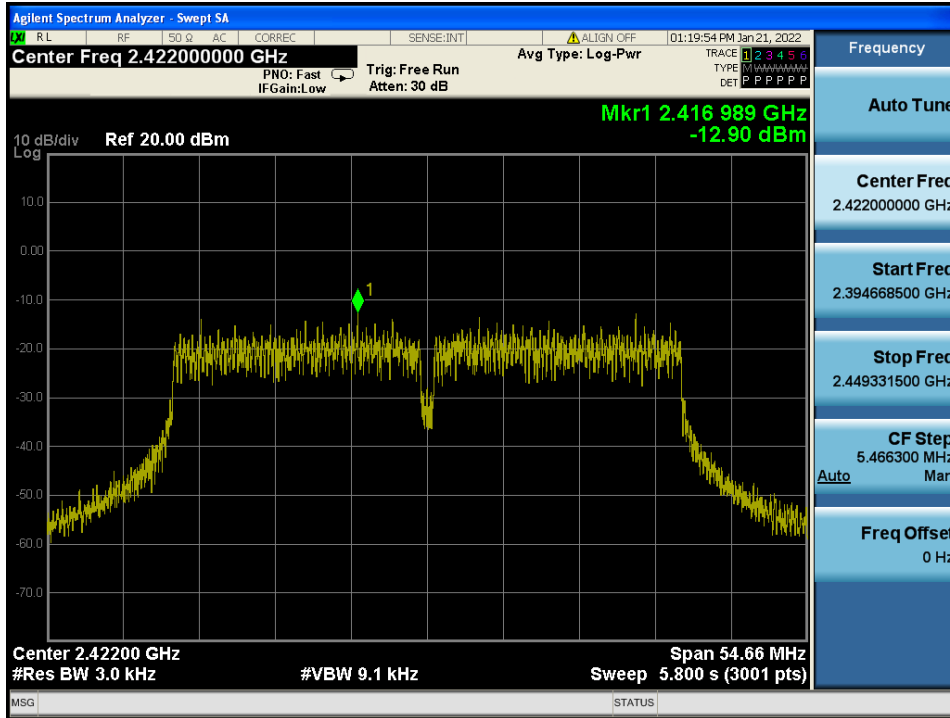
Power Spectral Density

TM 3 & 2 462



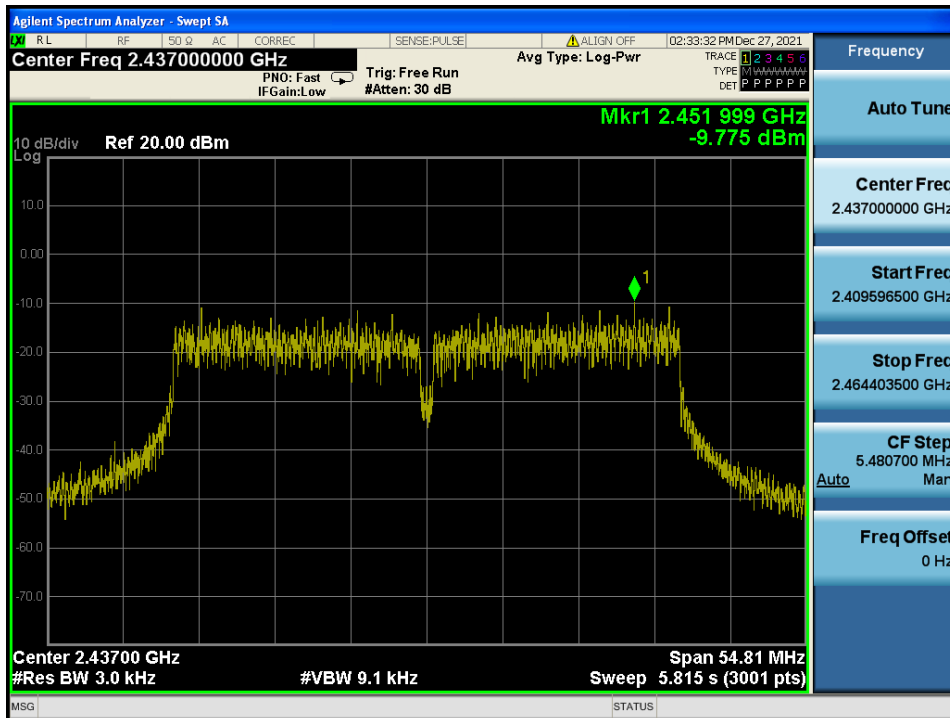
Power Spectral Density

TM 4 & 2 422



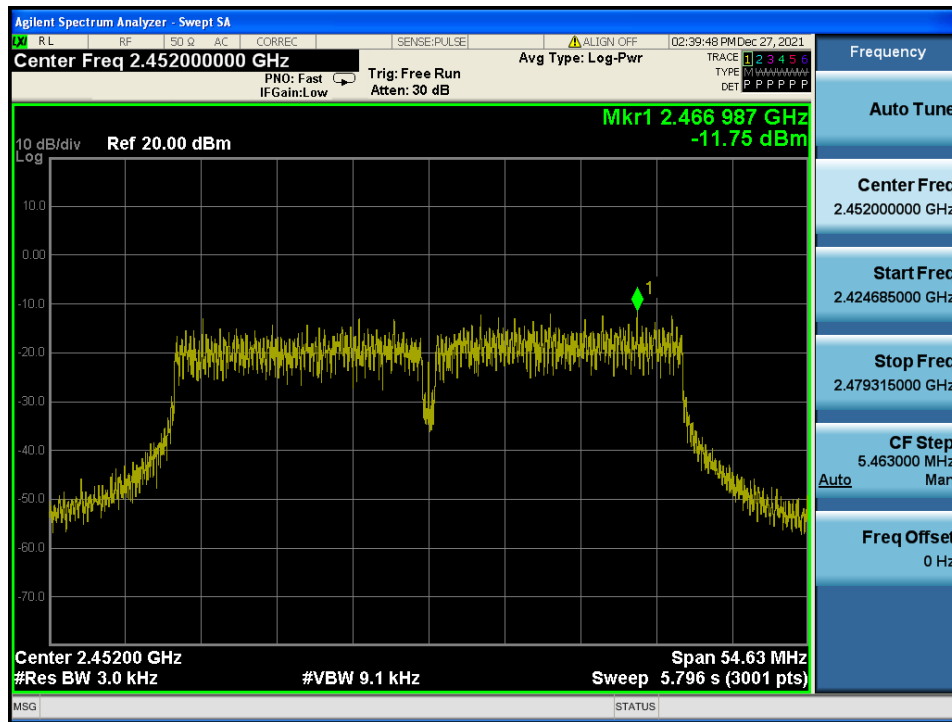
Power Spectral Density

TM 4 & 2 437



Power Spectral Density

TM 4 & 2 452



5.4. Unwanted Emissions (Conducted)

■ Test requirements and limit, Part 15.247(d) & RSS-247 [5.5]

In any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions :

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured inband average PSD level.

In either case, attenuation to levels below the general emission limits specified in §15.209(a) is not required.

5.4.1. Test Setup

Refer to the APPENDIX I including path loss

5.4.2. Test Procedures

- KDB558074 D01v05r02 - Section 8.5
- ANSI C63.10-2013 – Section 11.11

Reference level measurement

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to ≥ 1.5 times the DTS bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW $\geq 3 \times$ RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum PSD level
LIMIT LINE = 20 dB below of the reference level.

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 100 kHz.(Actual 1 MHz , See below note)
3. Set the VBW $\geq 3 \times$ RBW.(Actual 3 MHz, See below note)
4. Detector = peak.
5. Ensure that the number of measurement points \geq span / RBW
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use the peak marker function to determine the maximum amplitude level.

Note: The unwanted emission(conducted) was tested with below settings.

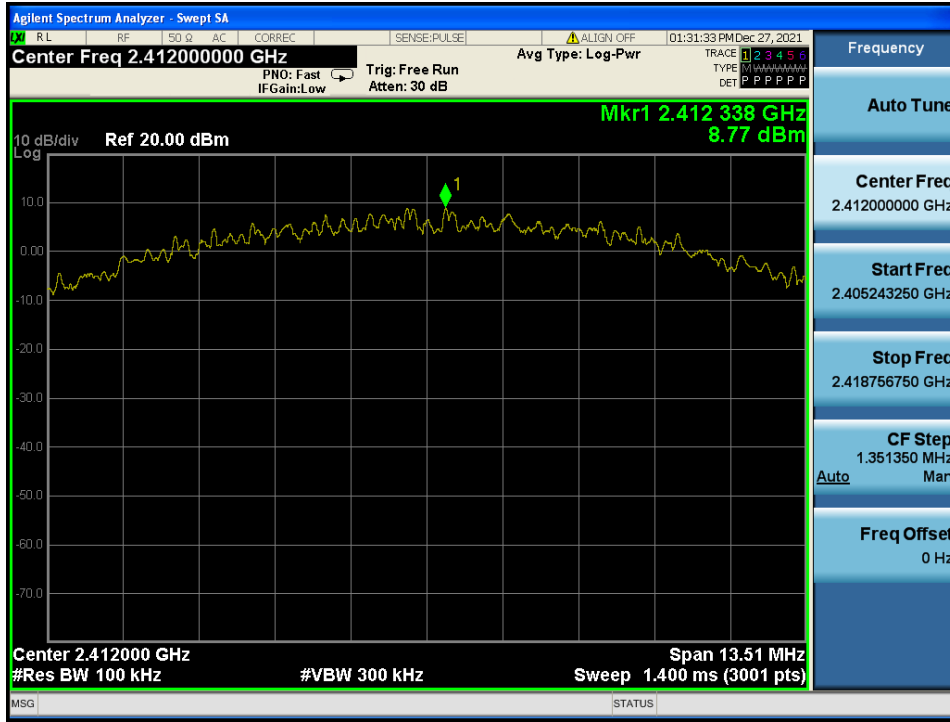
Frequency range	RBW	VBW	Detector	Trace	Sweep Point
9 kHz ~ 30 MHz	100 kHz	300 kHz	Peak	Max Hold	40 001
30 MHz ~ 10 GHz	1 MHz	3 MHz			
10 GHz ~ 25 GHz	1 MHz	3 MHz			

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2 001 to get accurate emission level within 100 kHz BW.

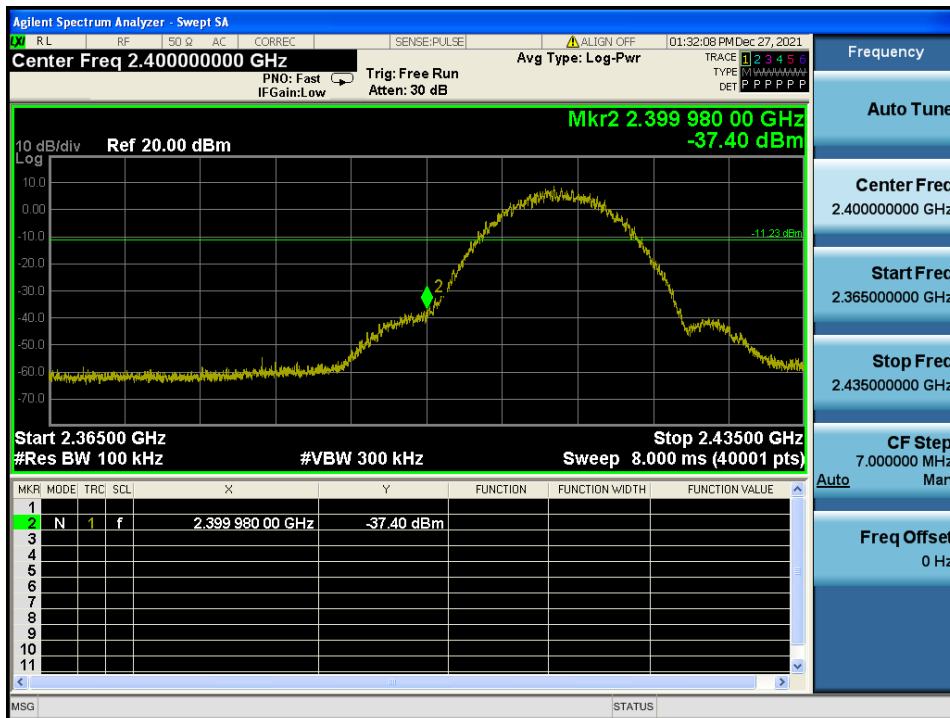
5.4.3. Test Results

TM 1 & 2 412

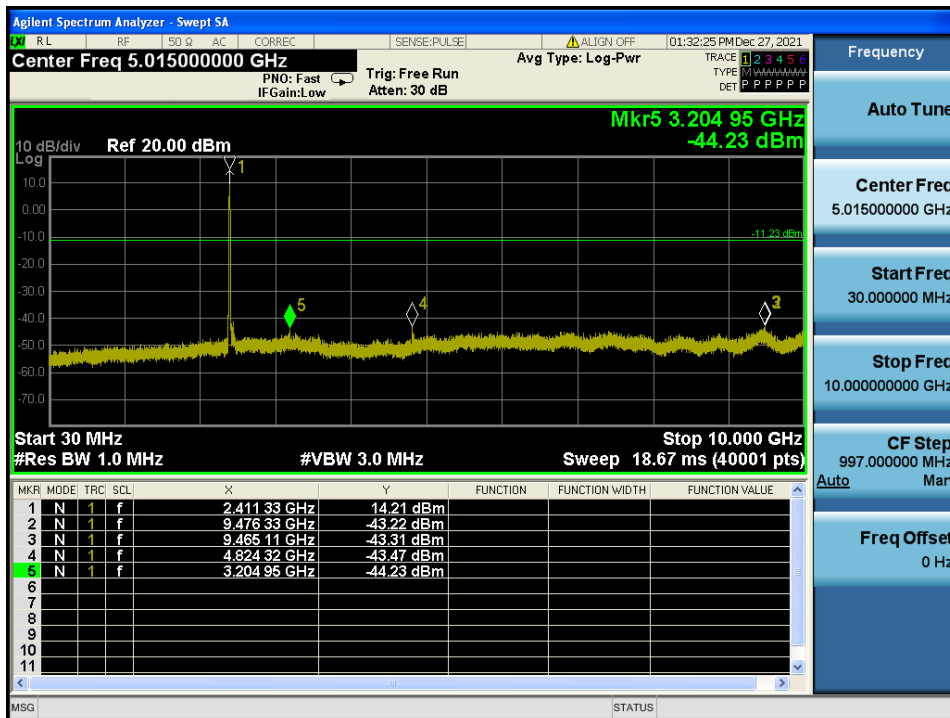
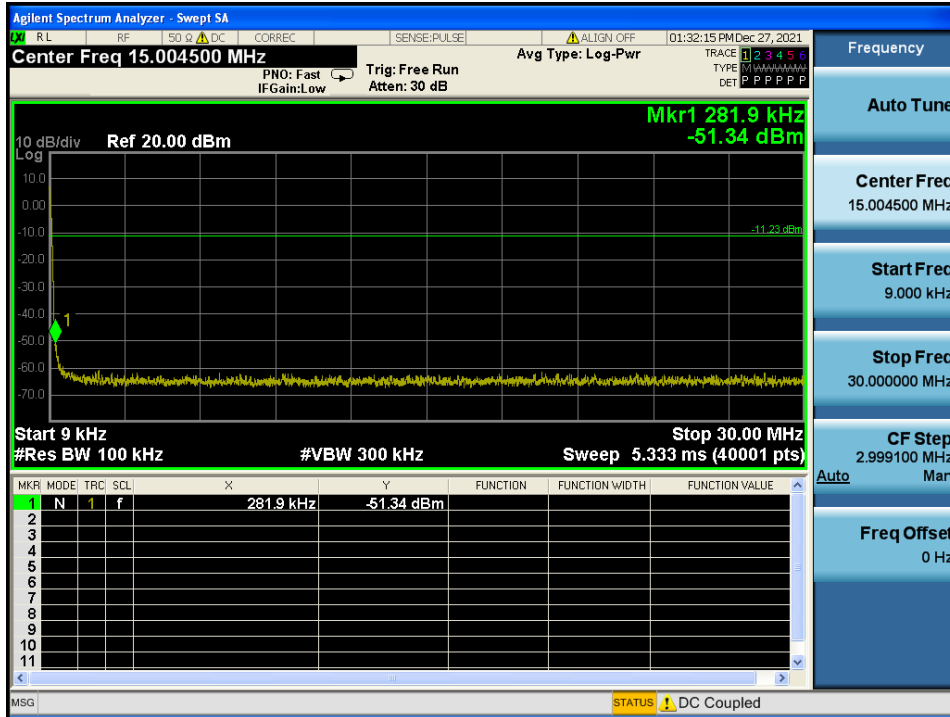
Reference



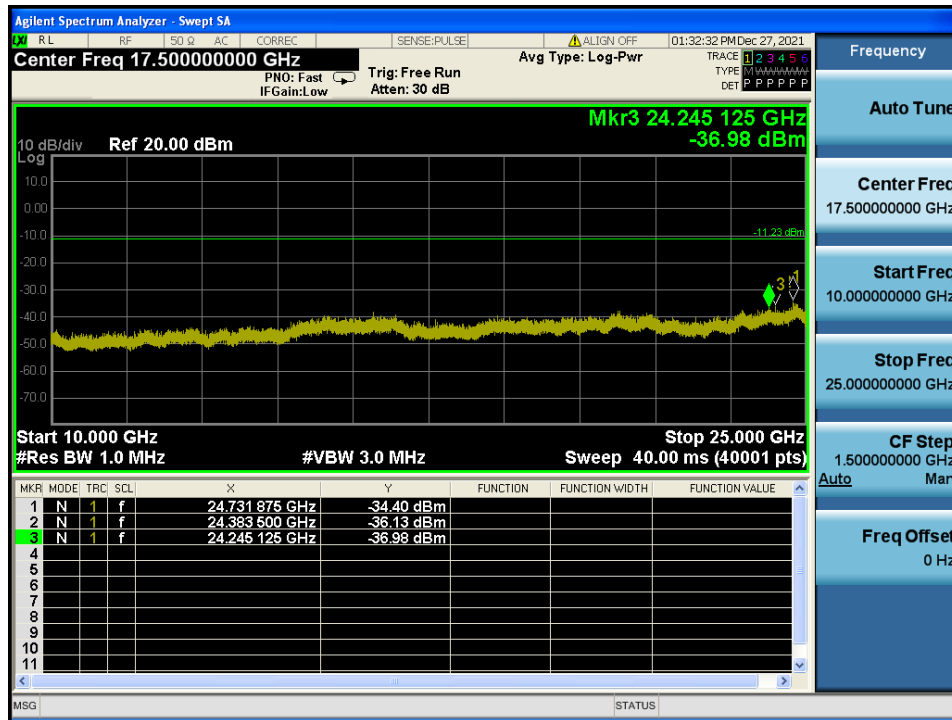
Low Band-edge



Conducted Spurious Emissions

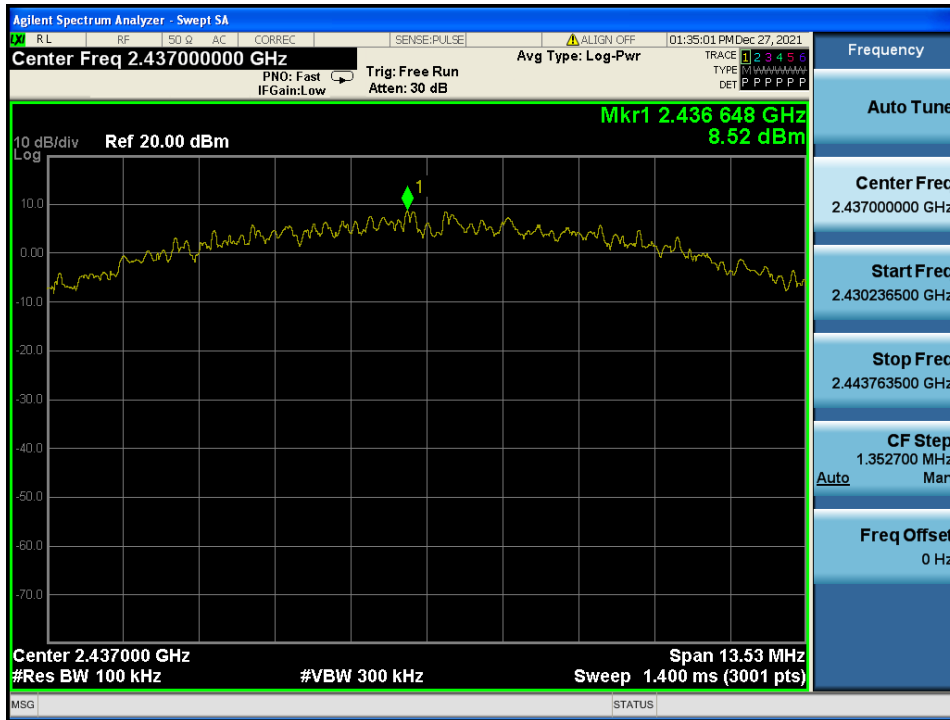


Conducted Spurious Emissions

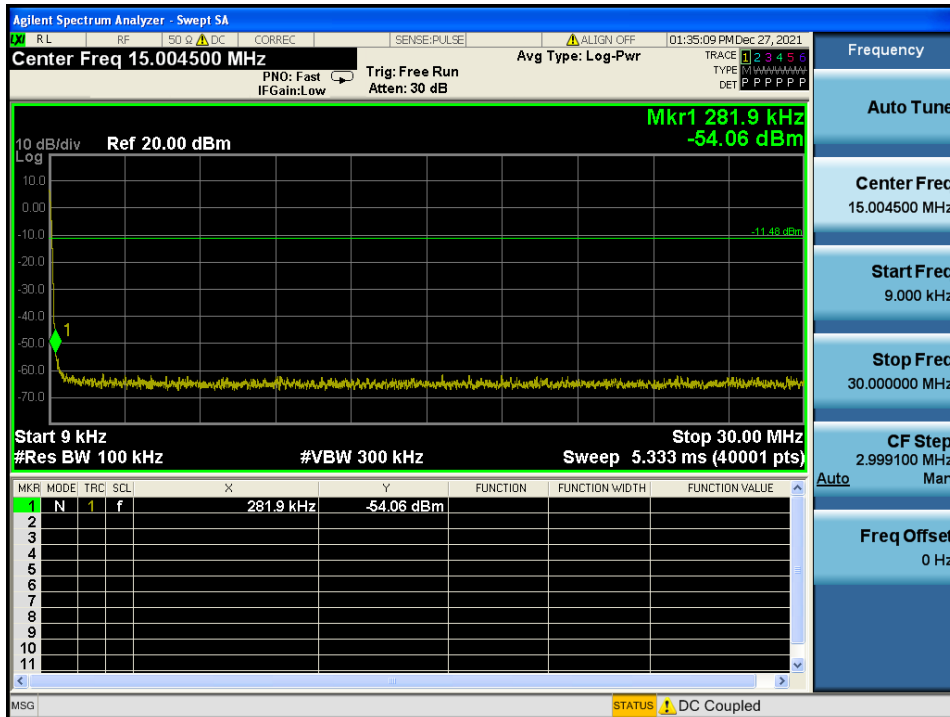


TM 1 & 2 437

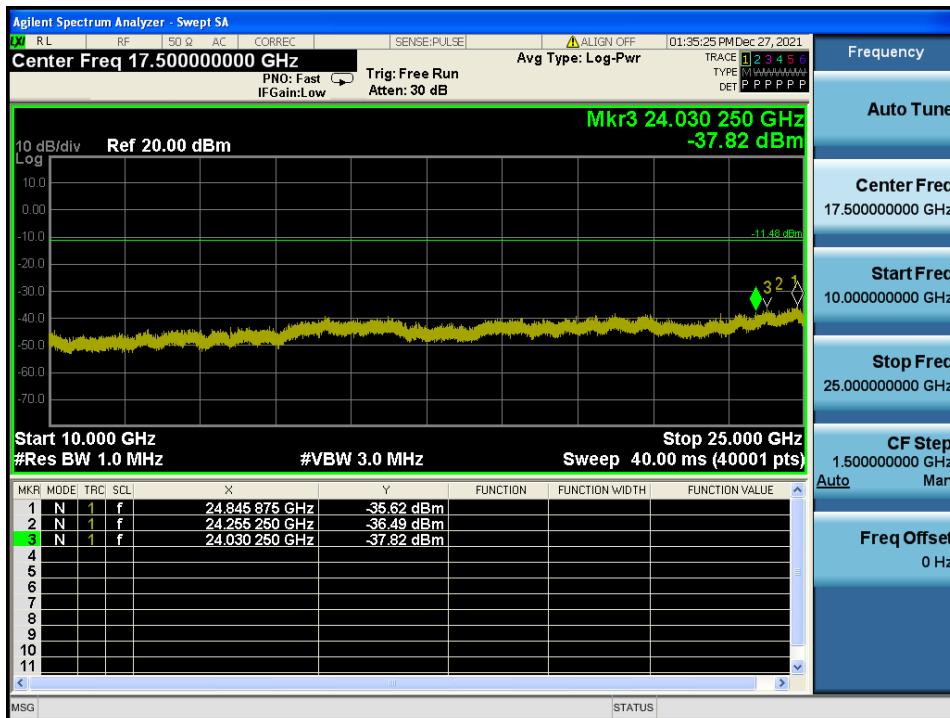
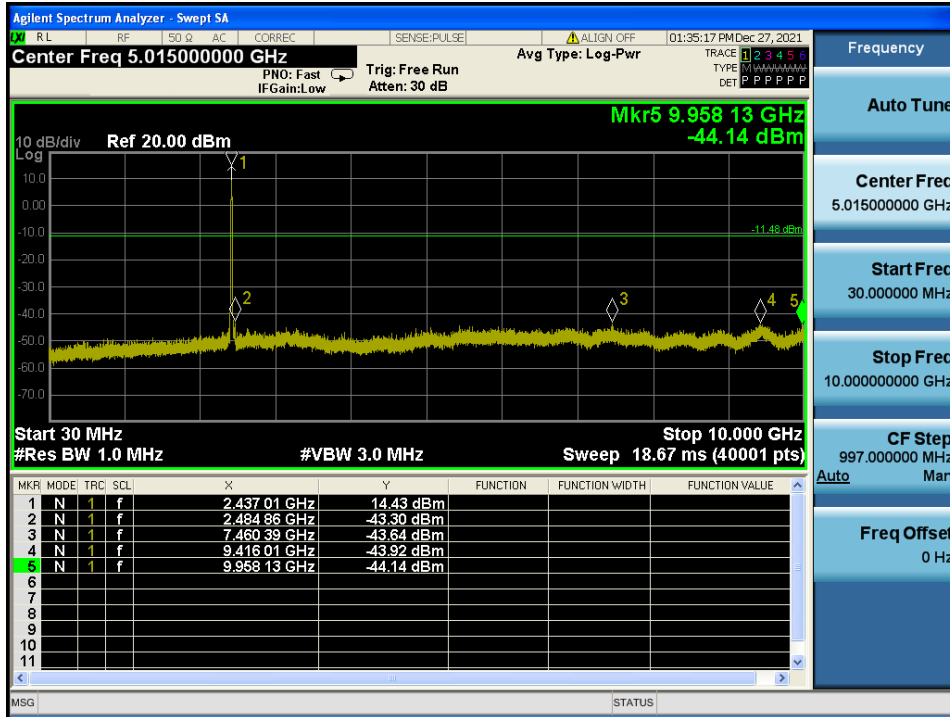
Reference



Conducted Spurious Emissions

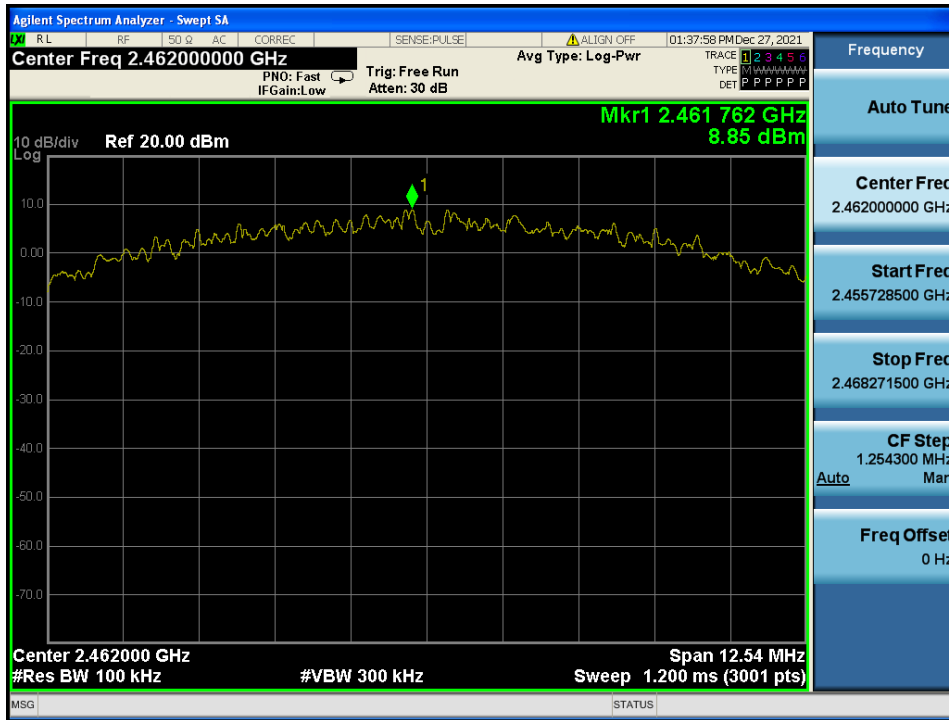


Conducted Spurious Emissions

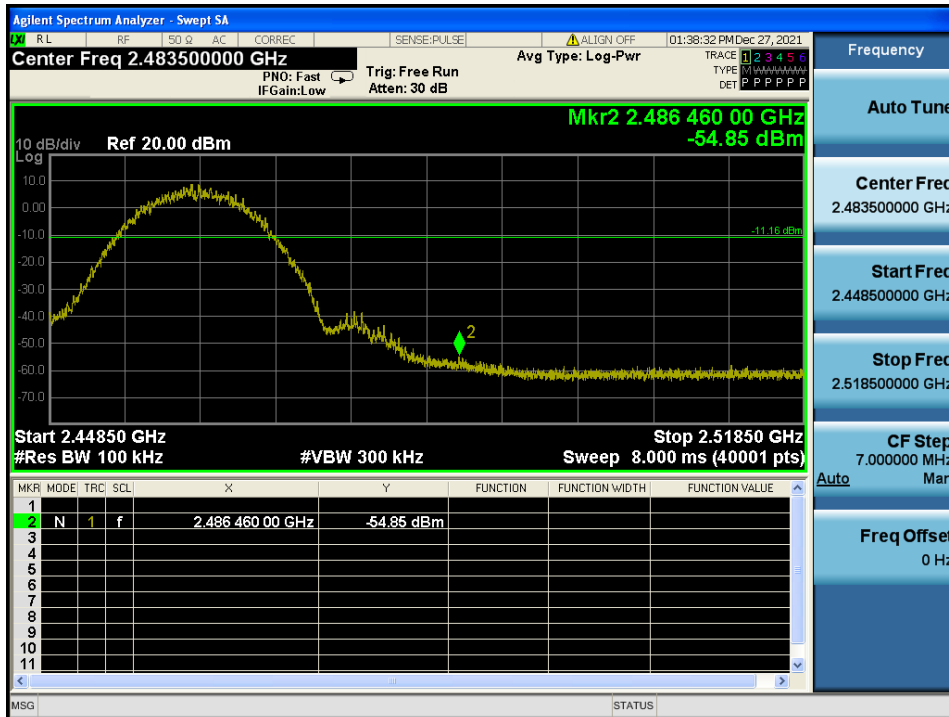


TM 1 & 2 462

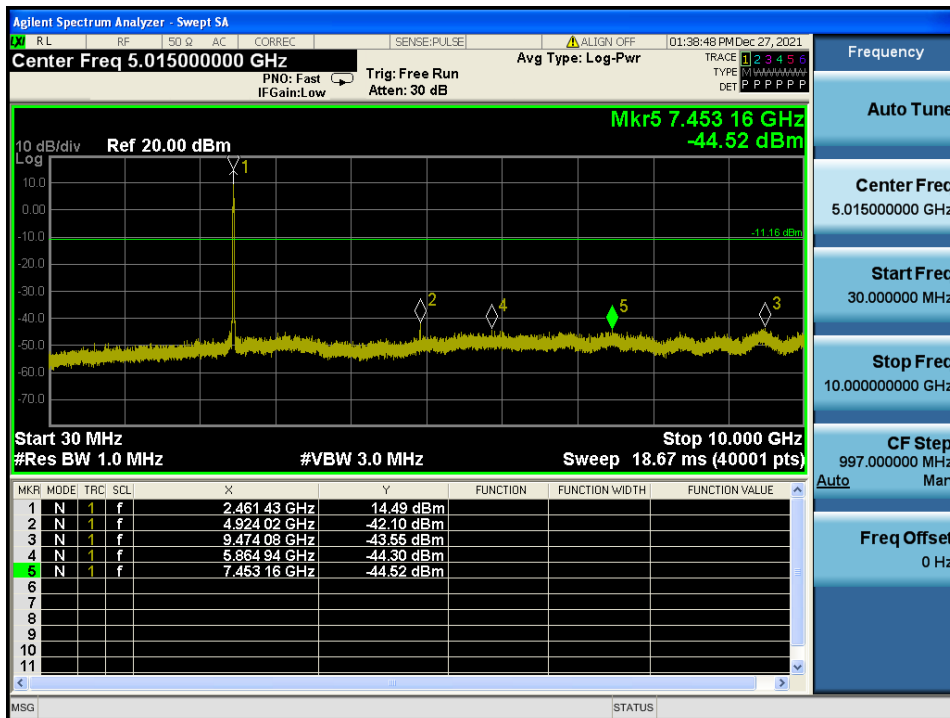
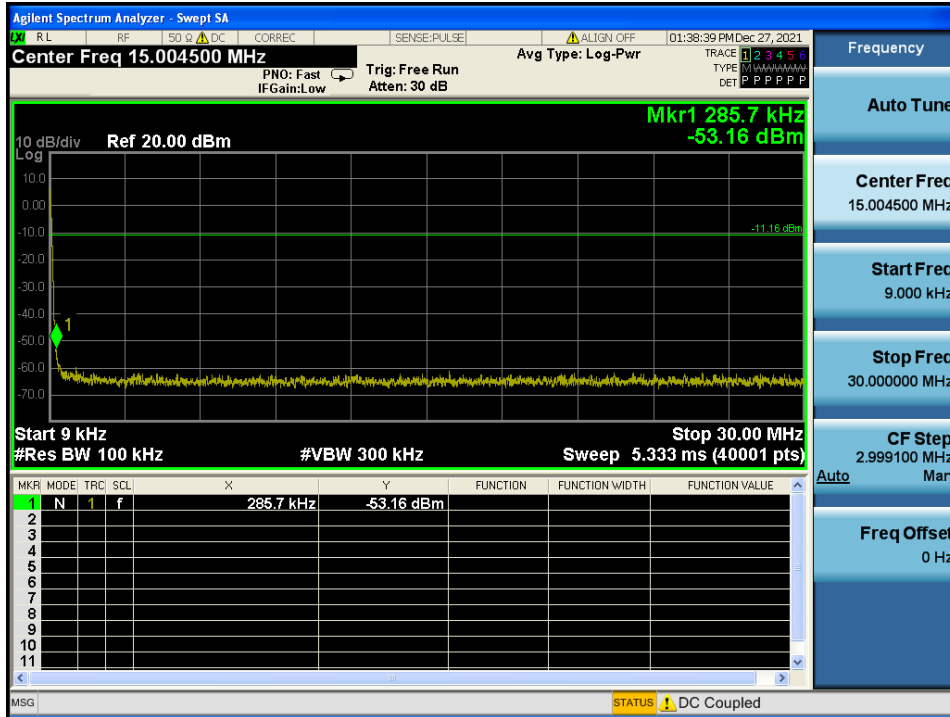
Reference



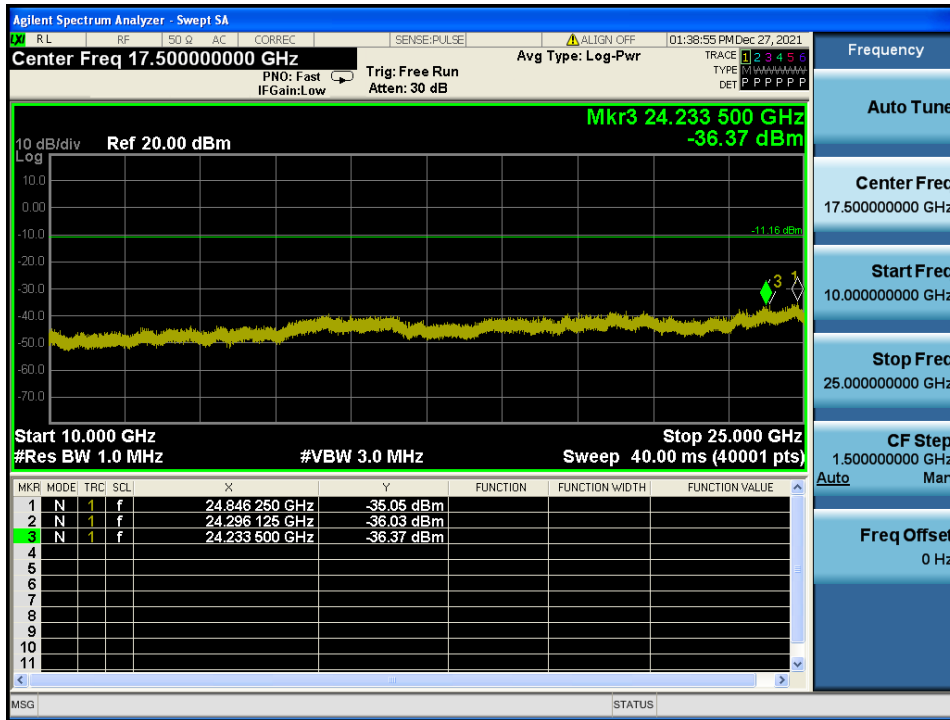
High Band-edge



Conducted Spurious Emissions

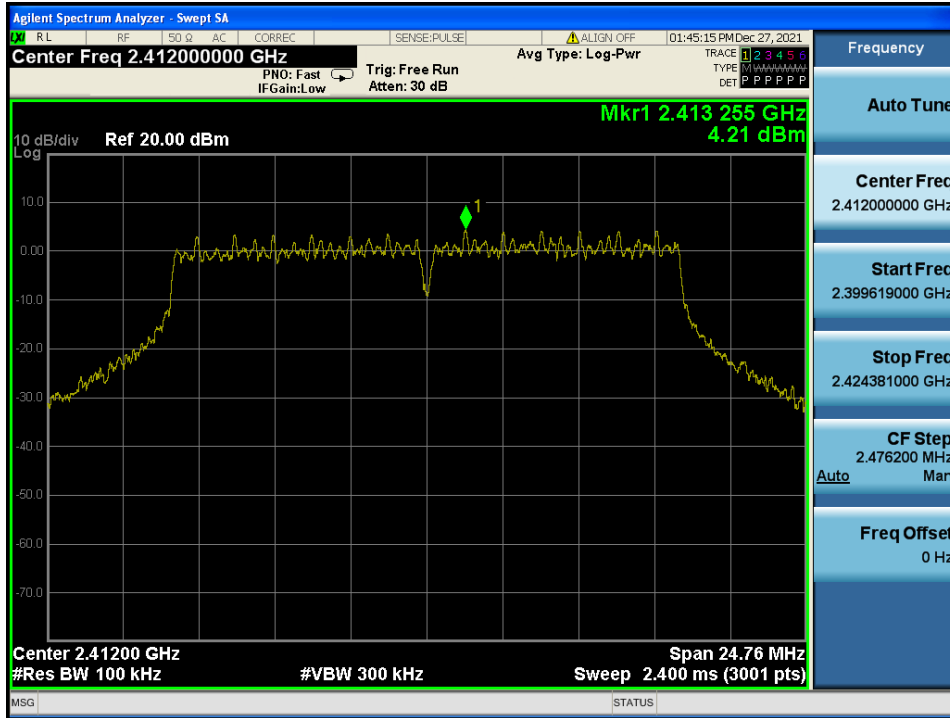


Conducted Spurious Emissions

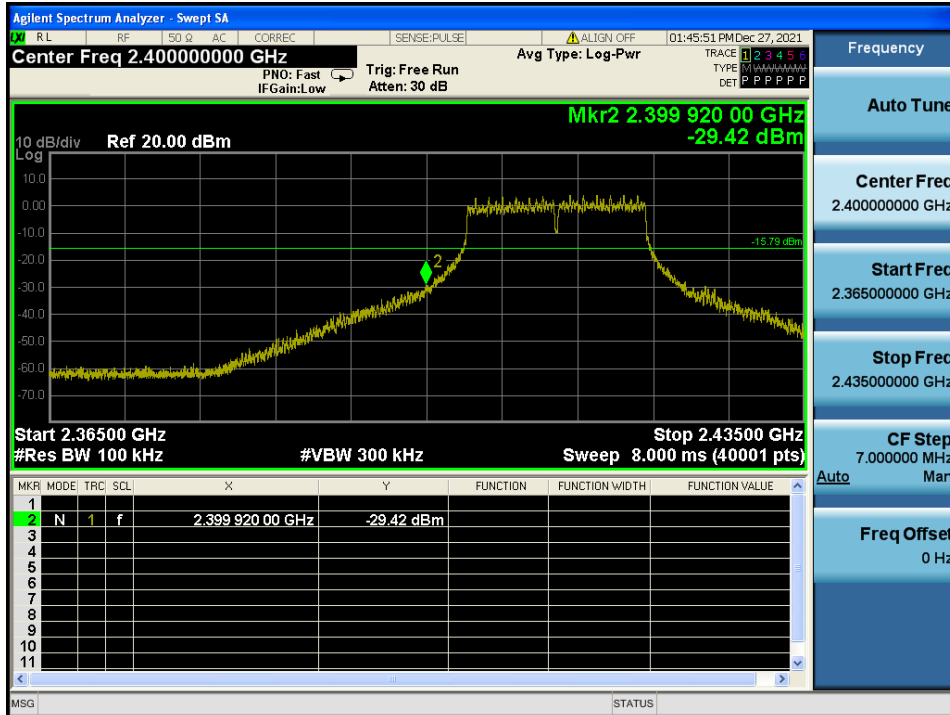


TM 2 & 2 412

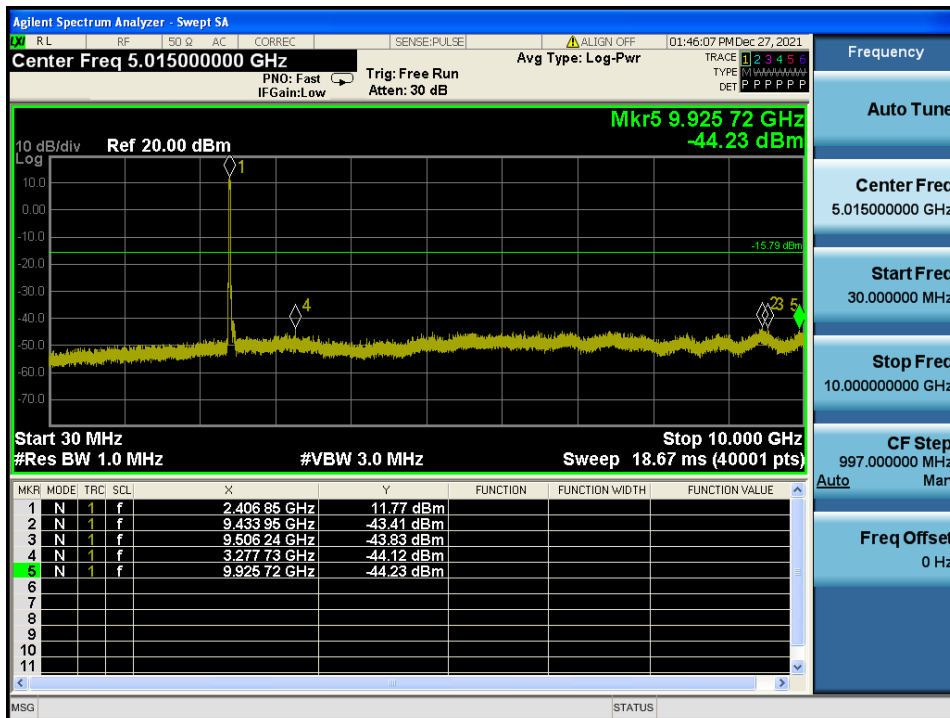
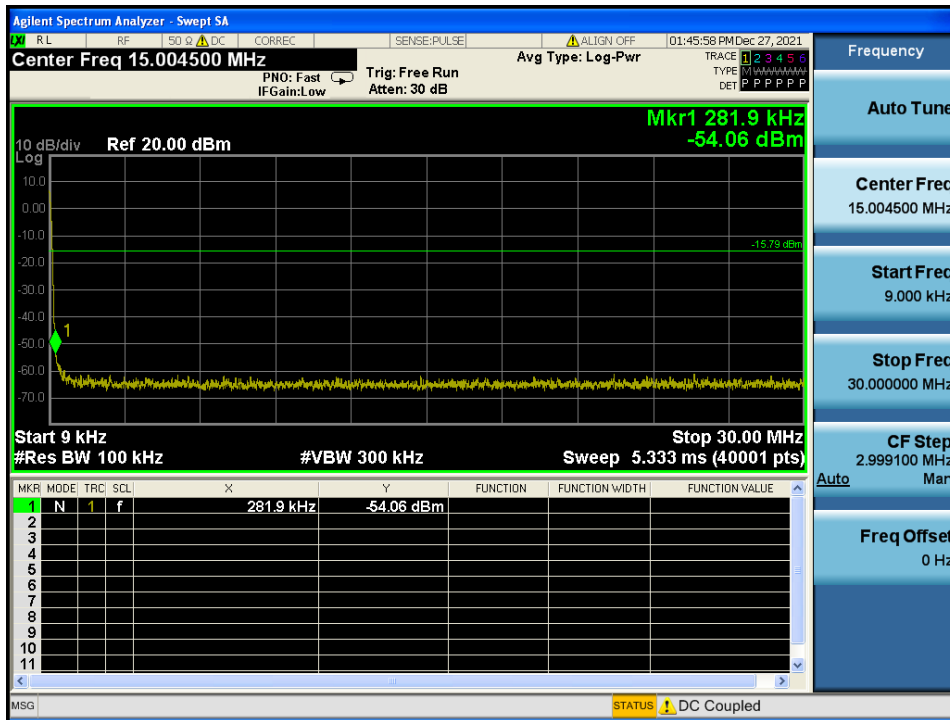
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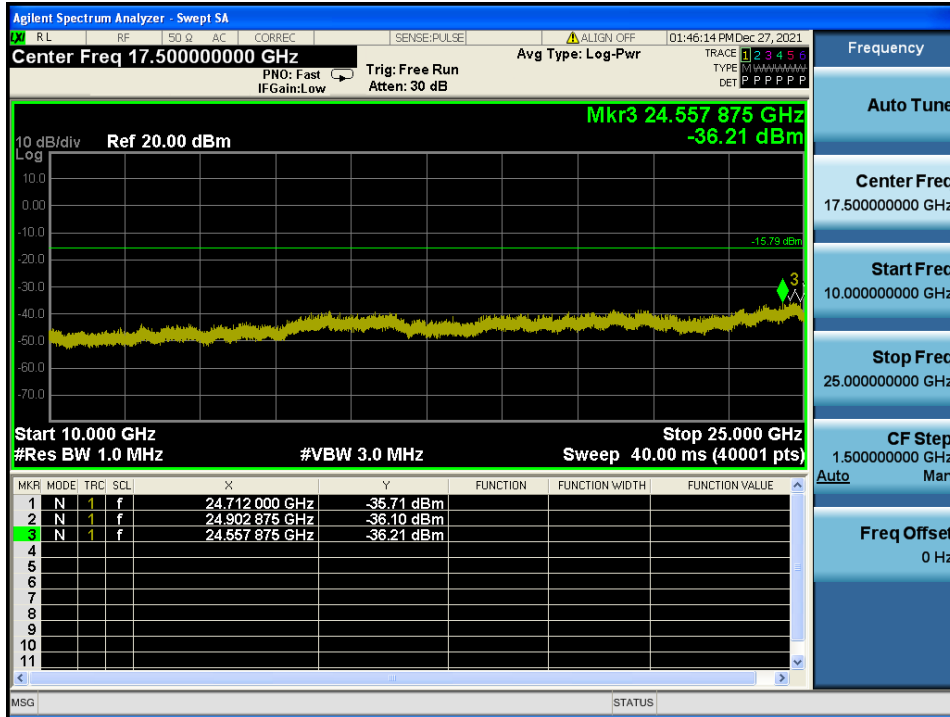
Low Band-edge



Conducted Spurious Emissions

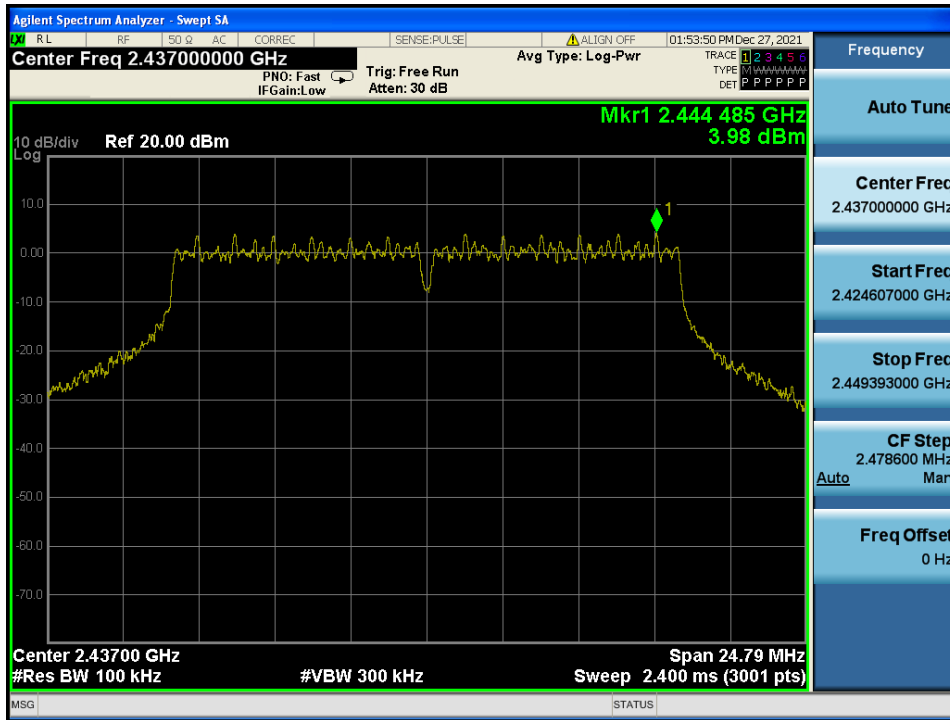


Conducted Spurious Emissions

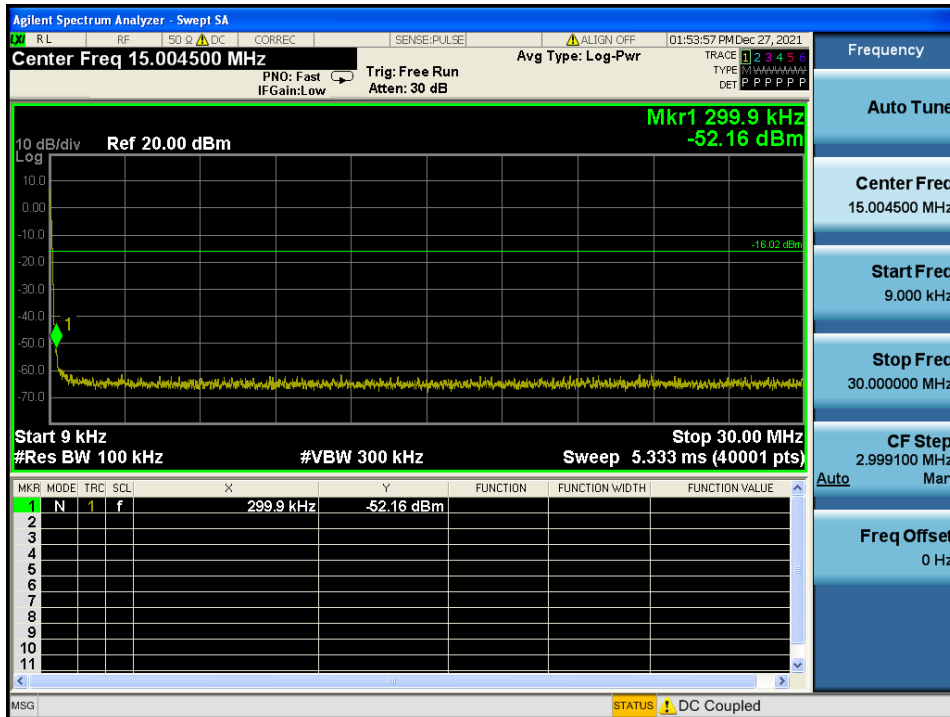


TM 2 & 2 437

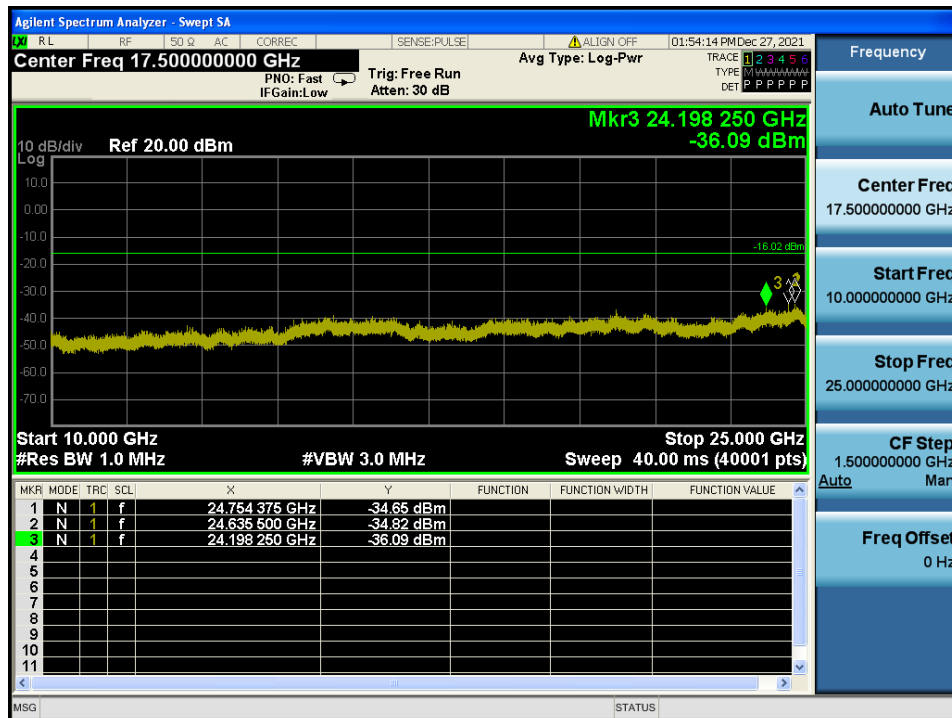
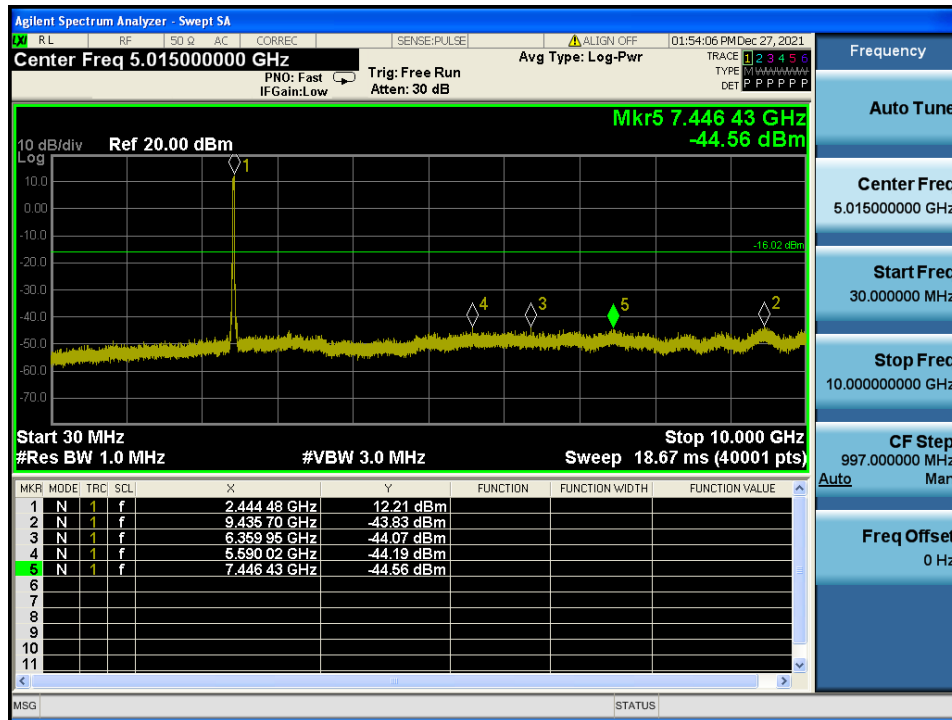
Reference



Conducted Spurious Emissions

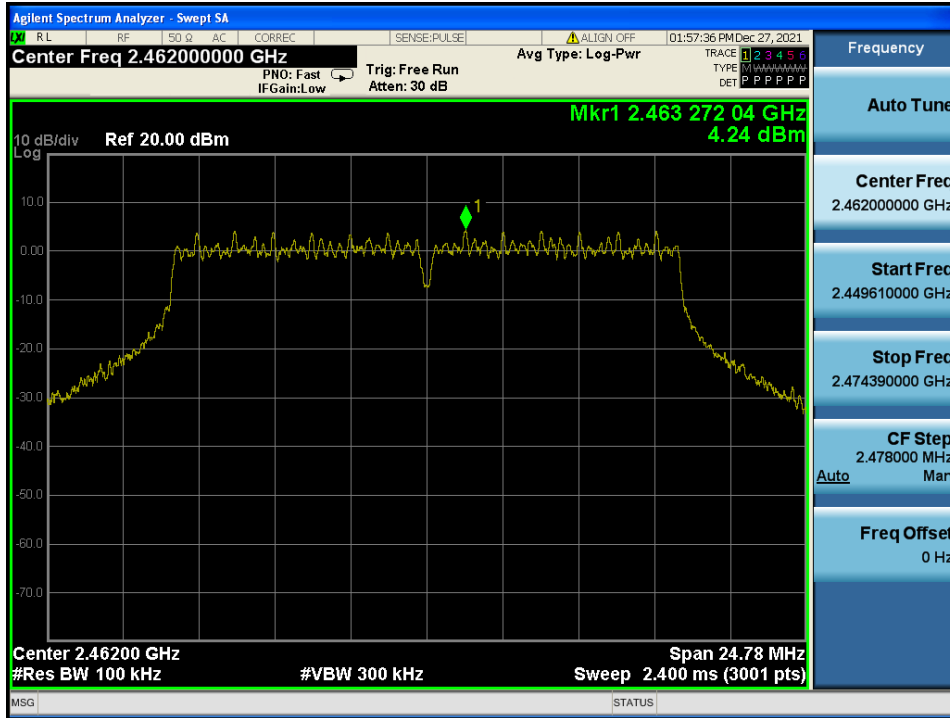


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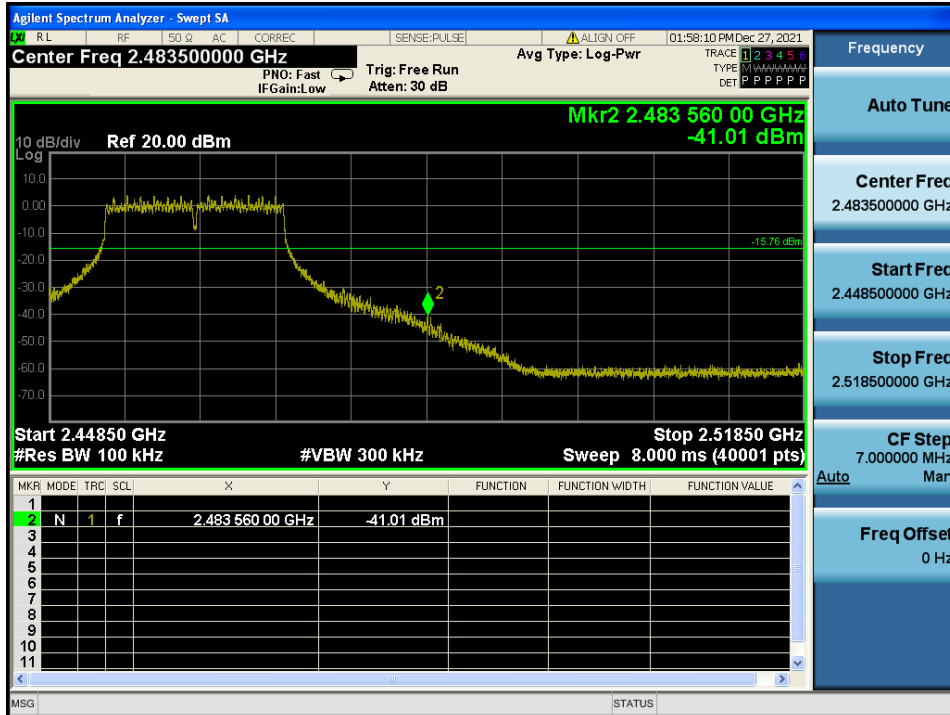


TM 2 & 2 462

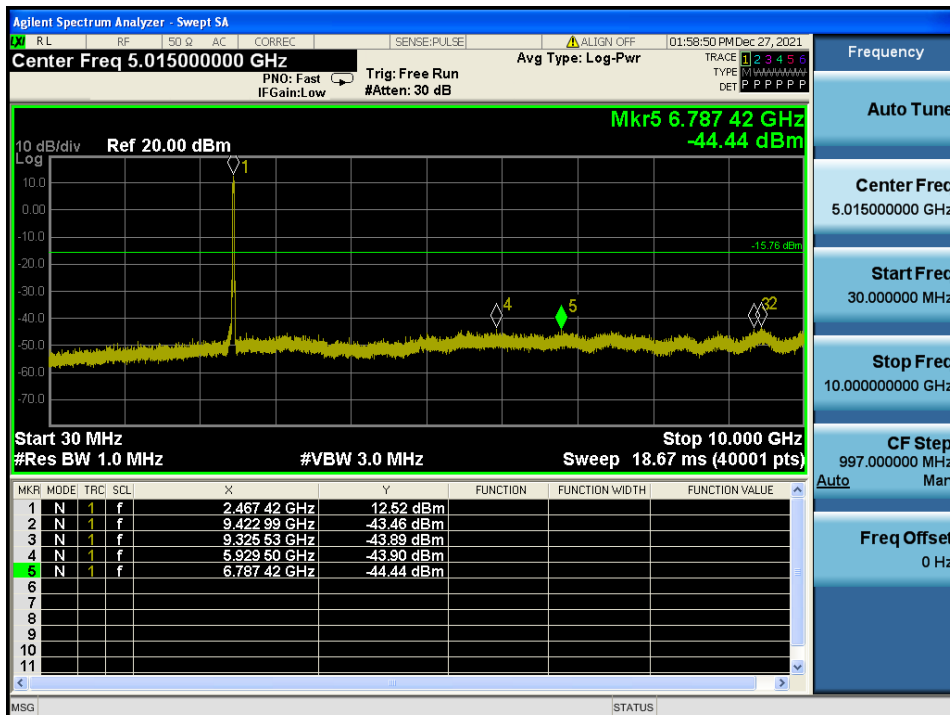
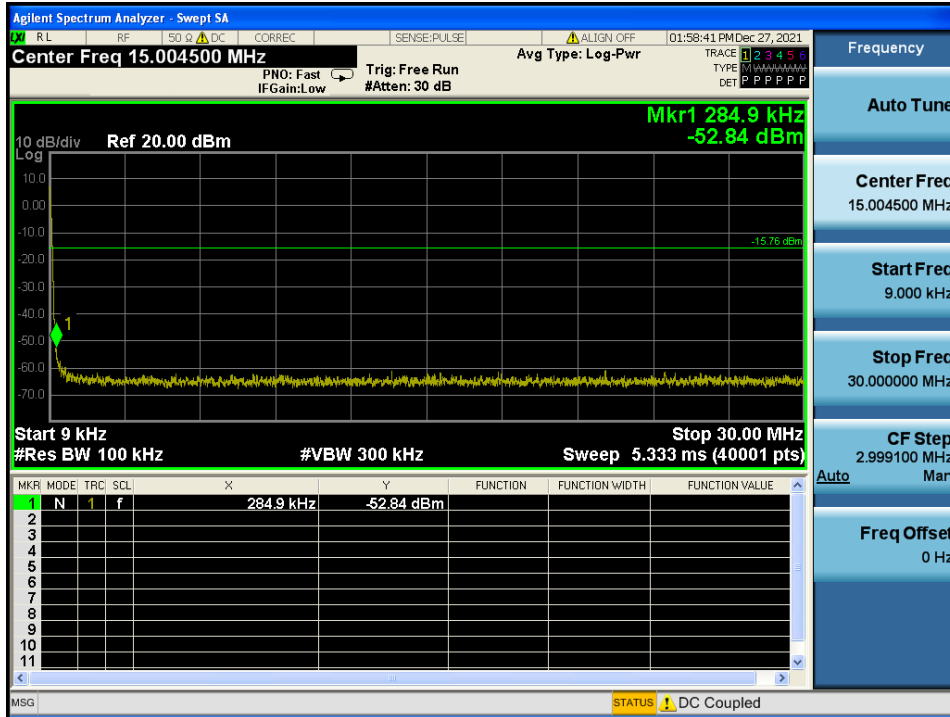
Reference



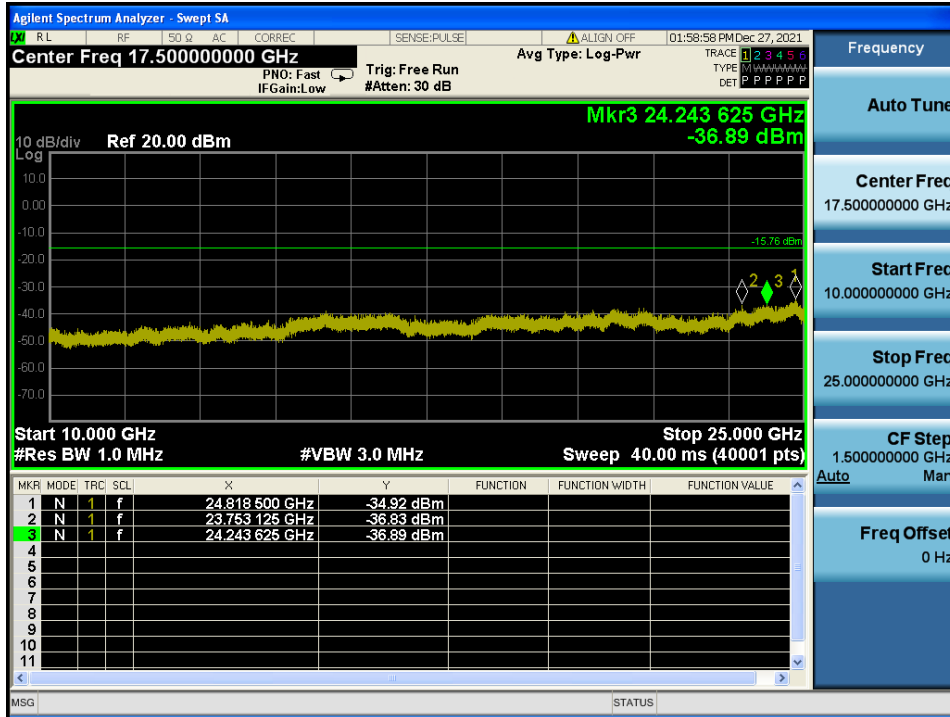
High Band-edge



Conducted Spurious Emissions

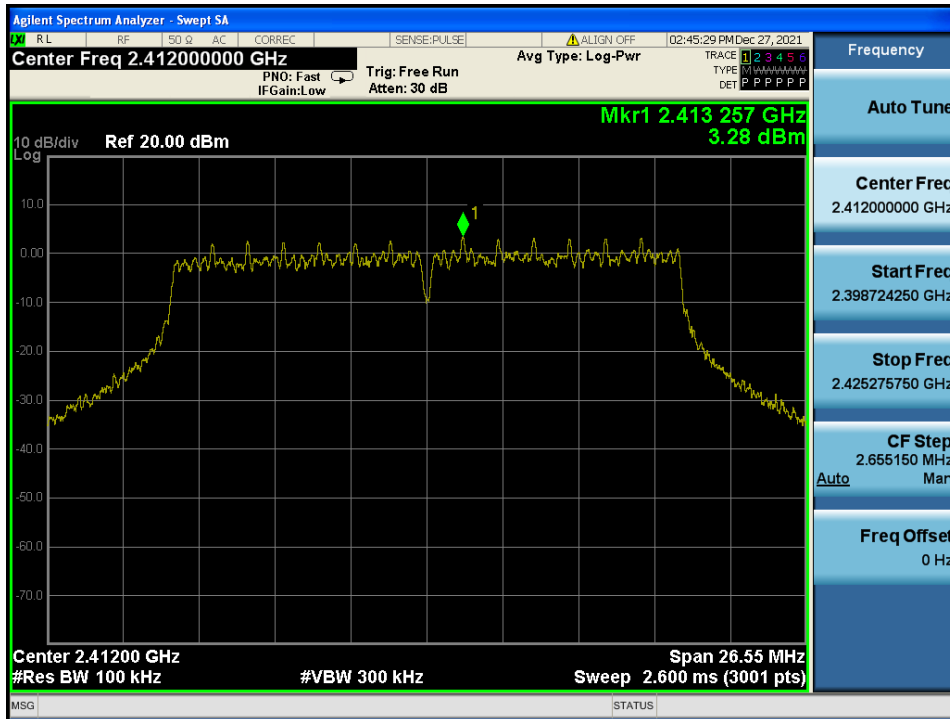


Conducted Spurious Emissions

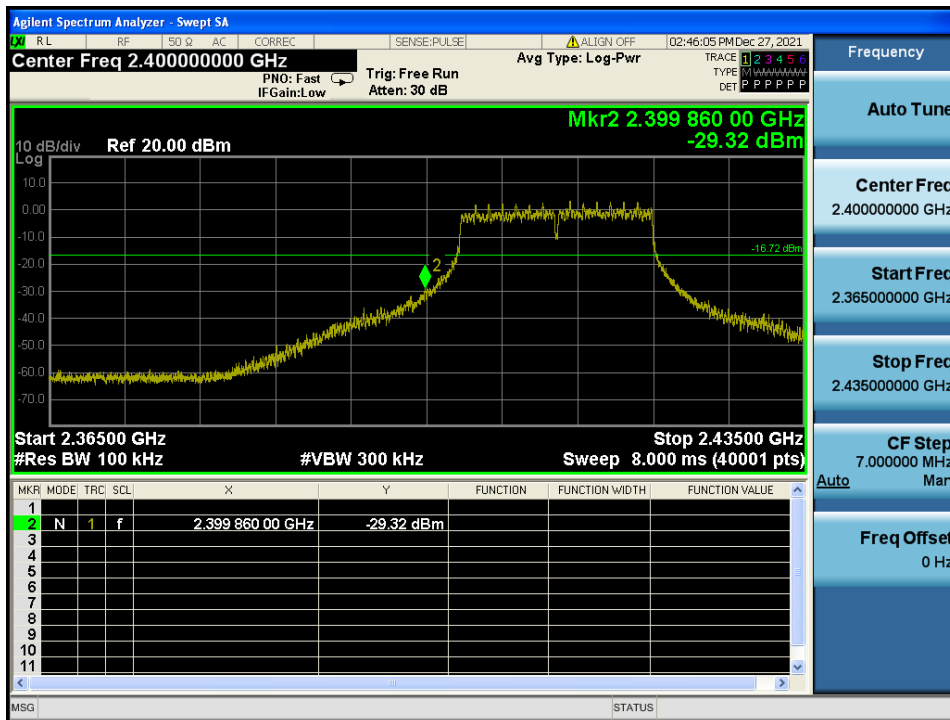


TM 3 & 2 412

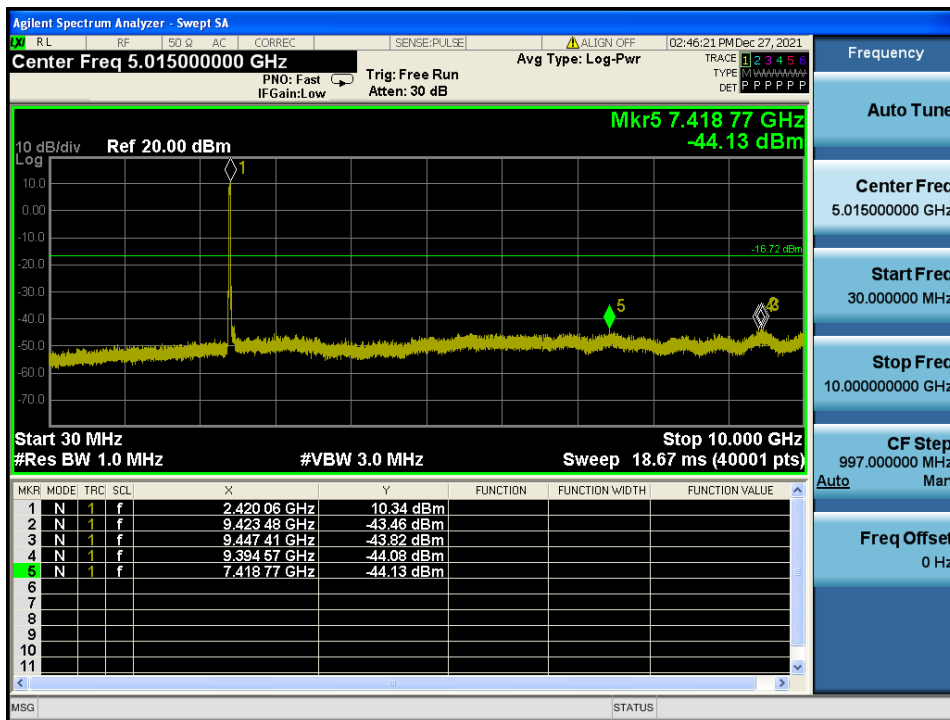
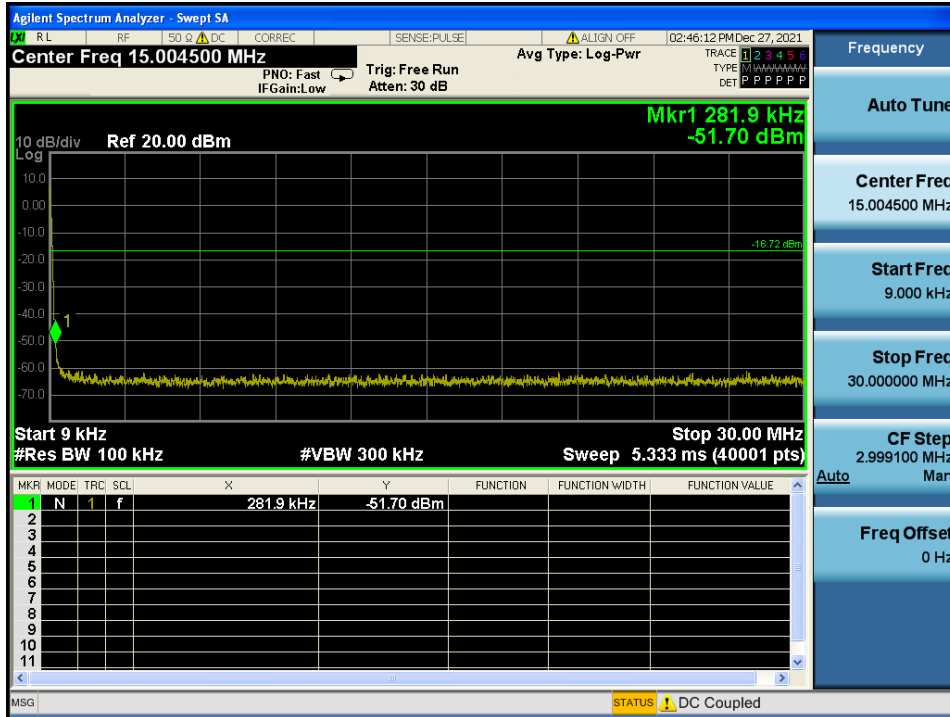
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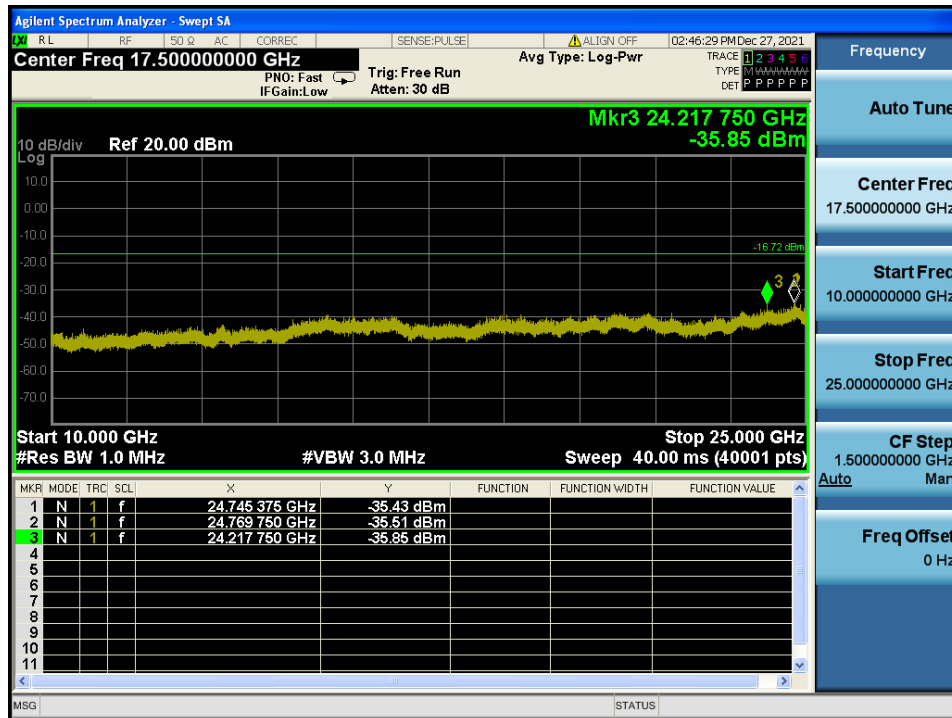
Low Band-edge



Conducted Spurious Emissions

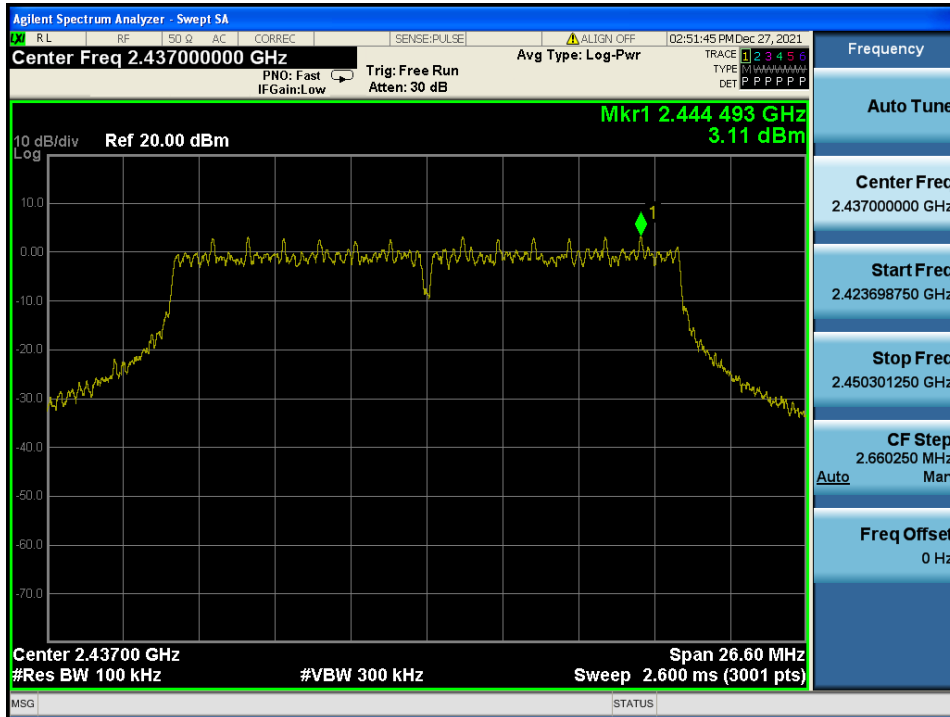


Conducted Spurious Emissions

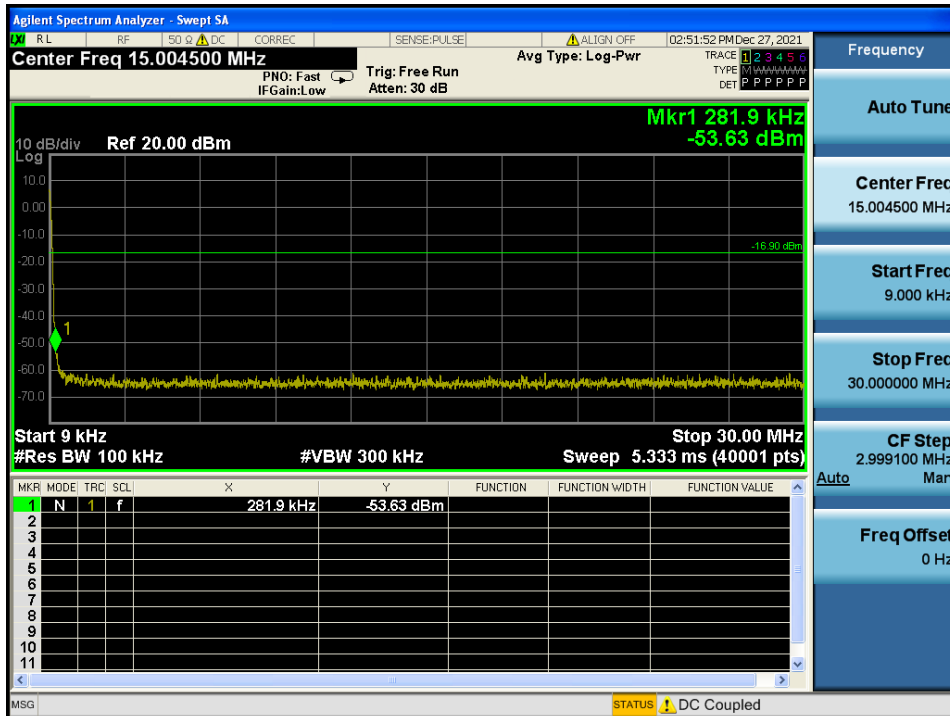


TM 3 & 2 437

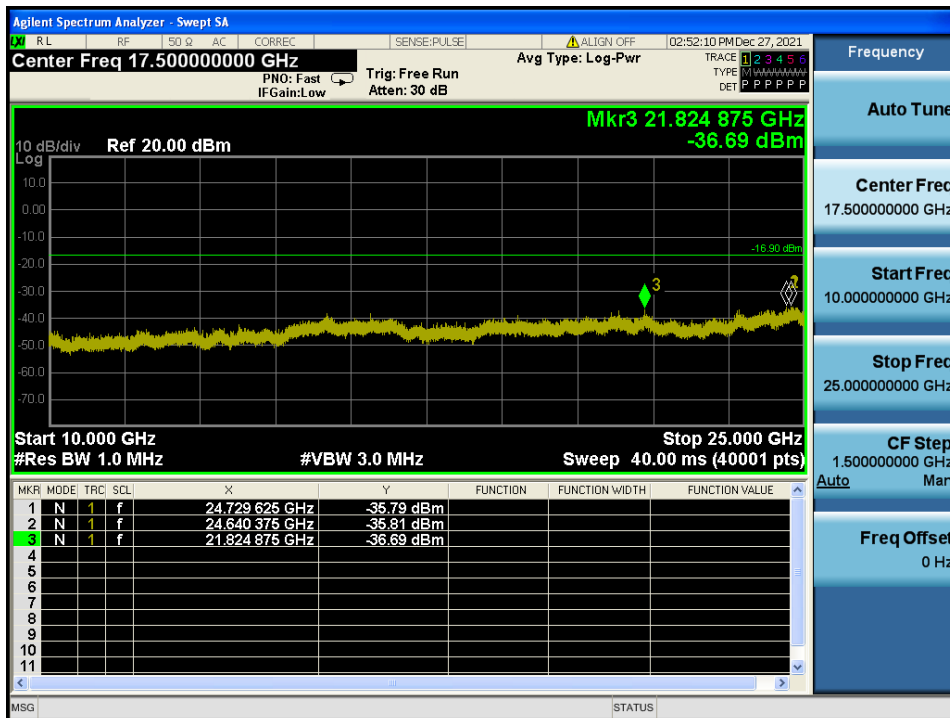
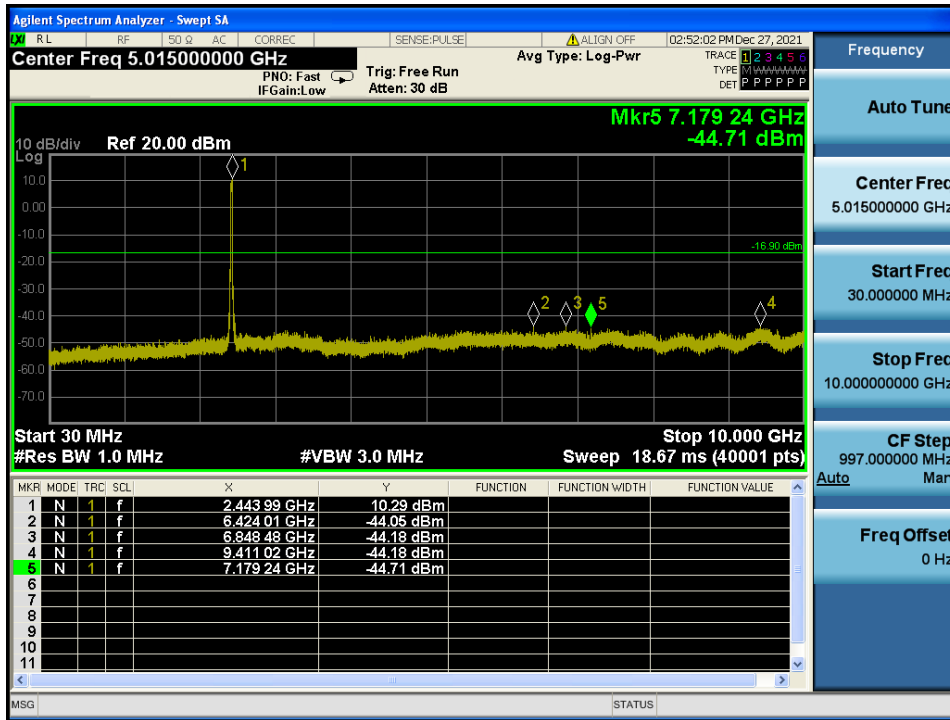
Reference



Conducted Spurious Emissions

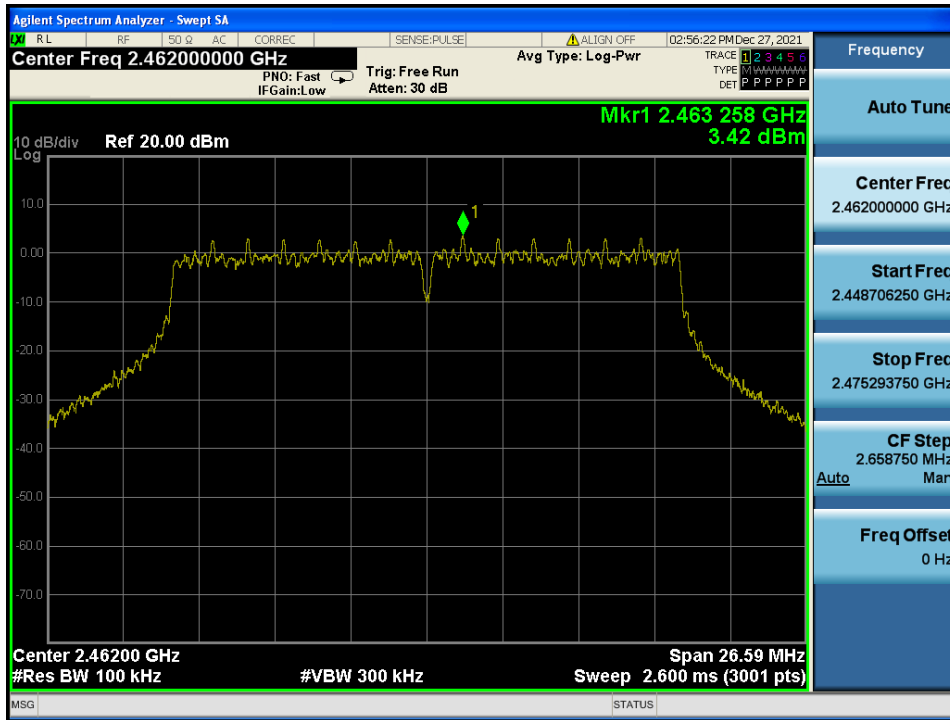


Conducted Spurious Emissions

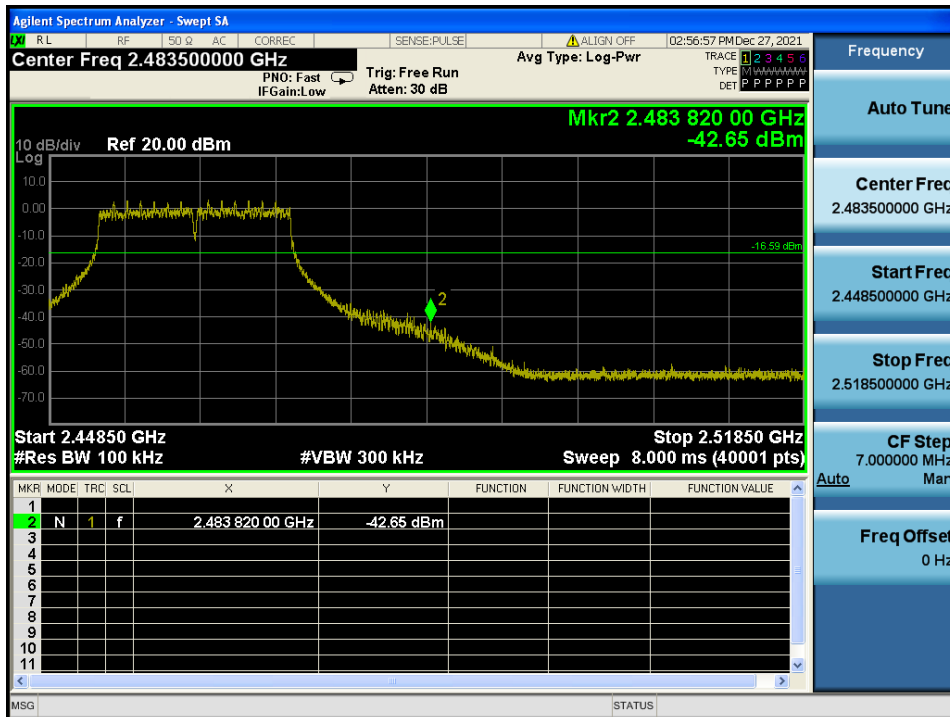


TM 3 & 2 462

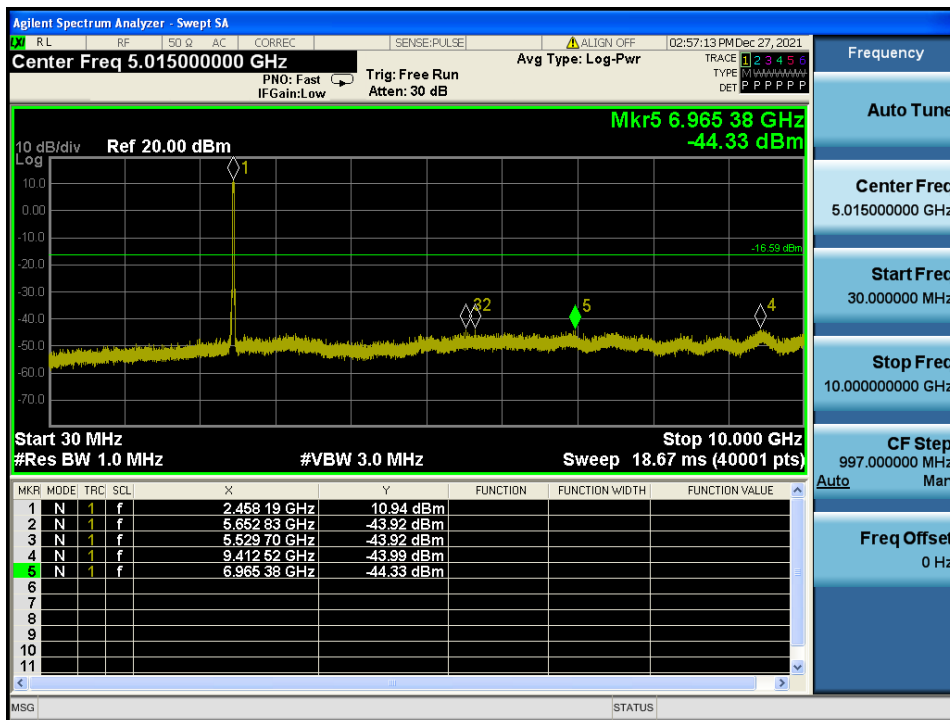
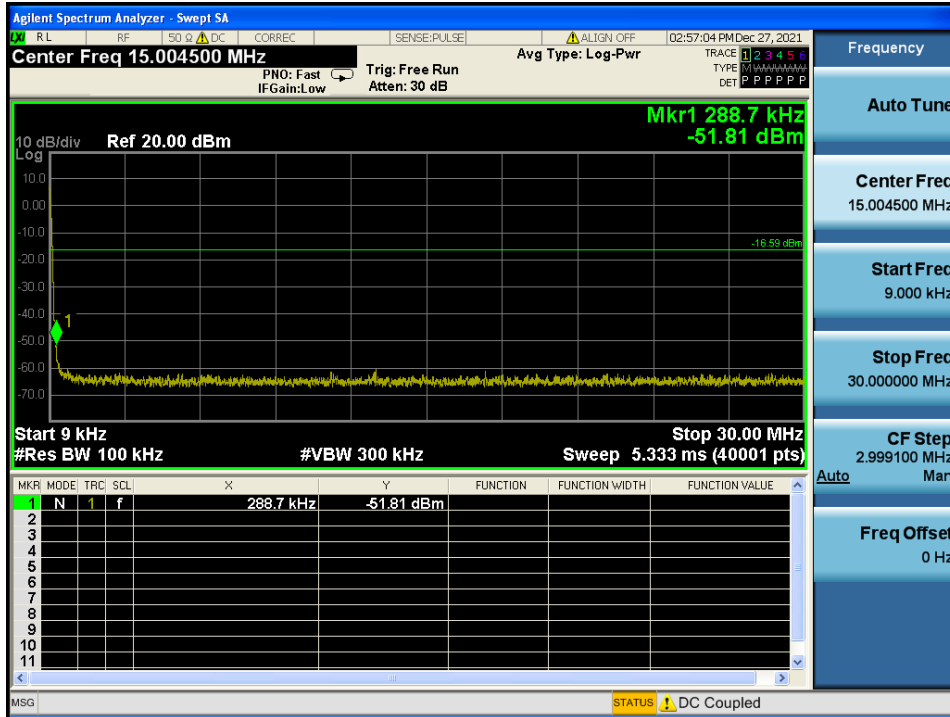
Reference



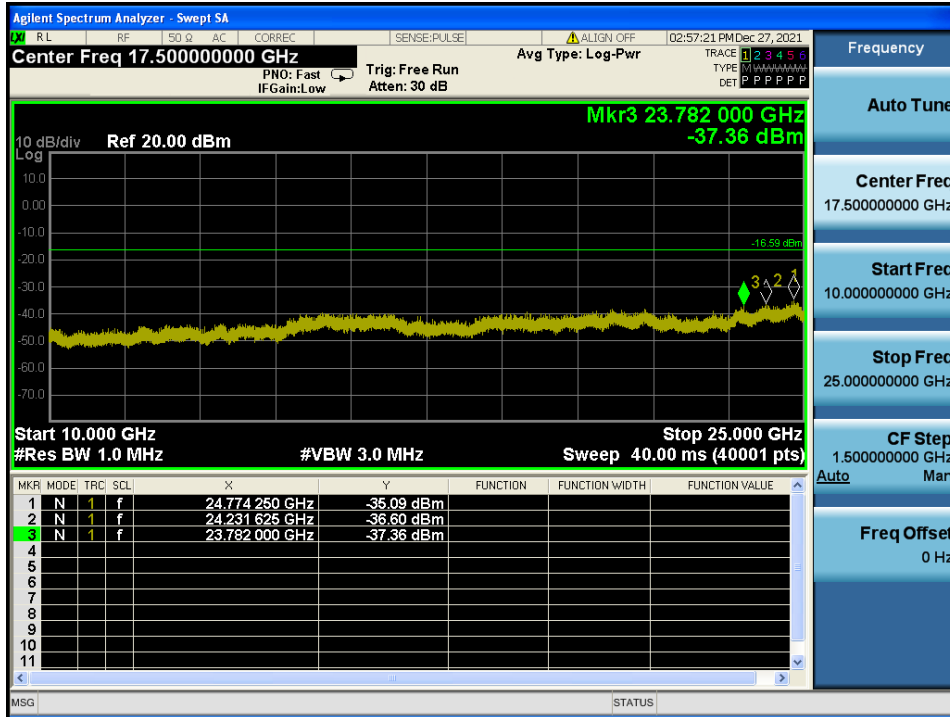
High Band-edge



Conducted Spurious Emissions

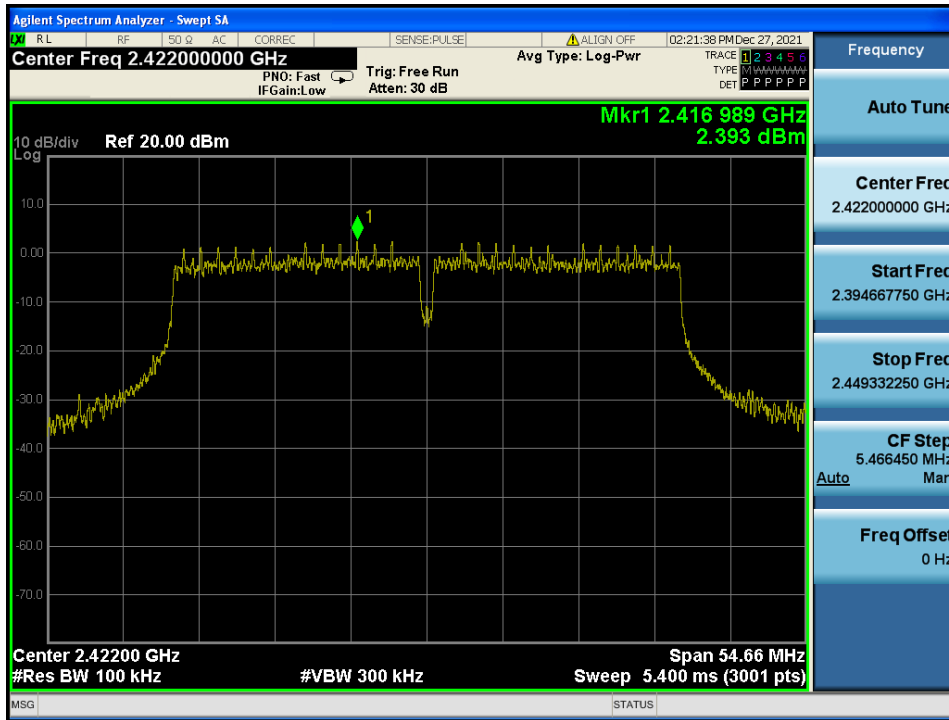


Conducted Spurious Emissions

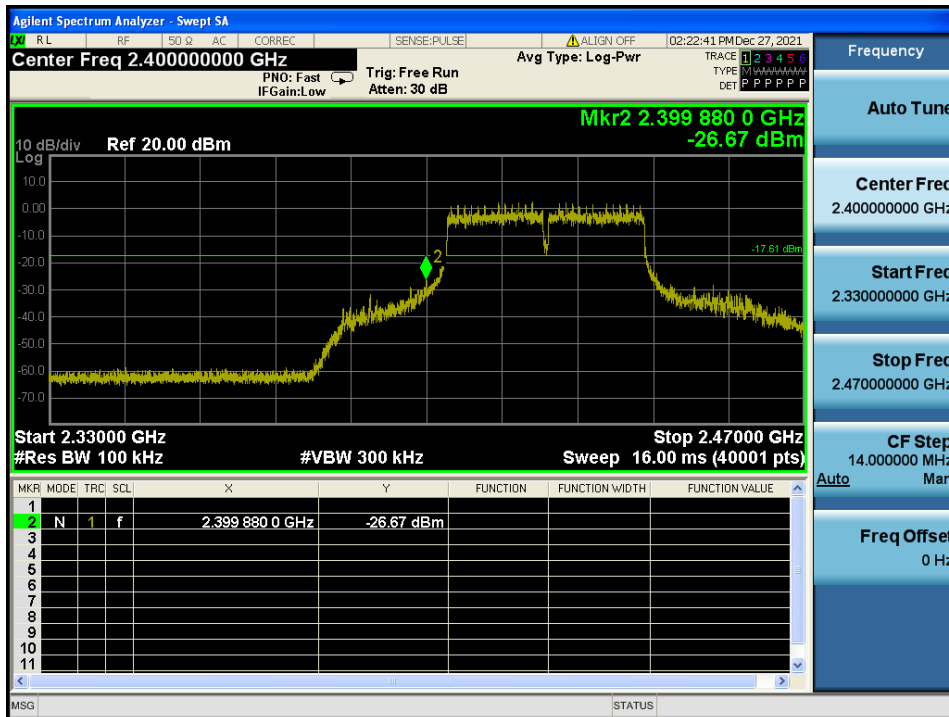


TM 4 & 2 422

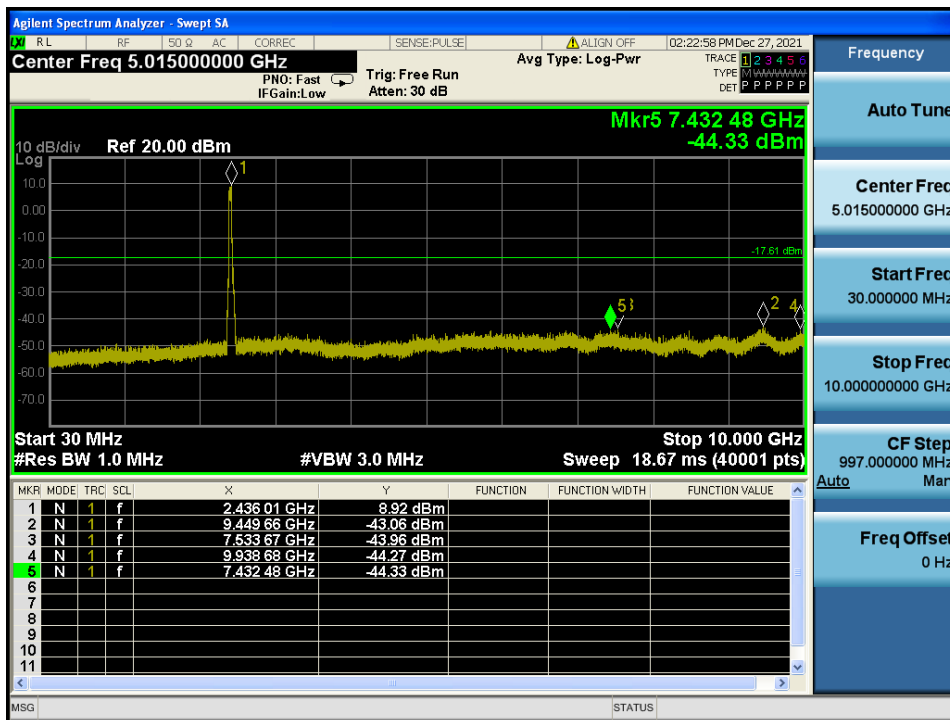
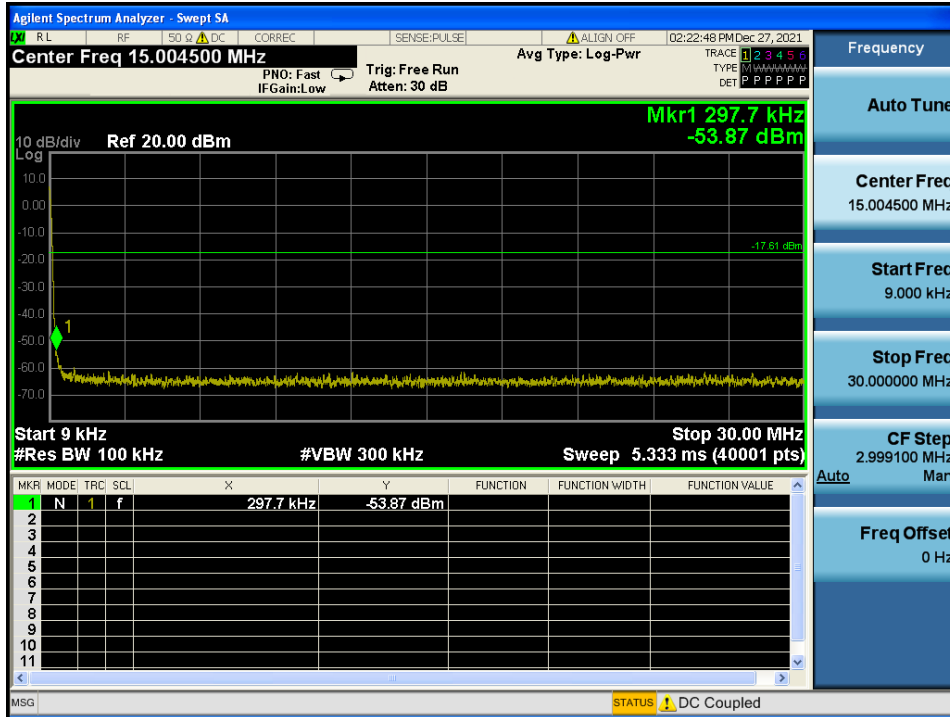
Reference



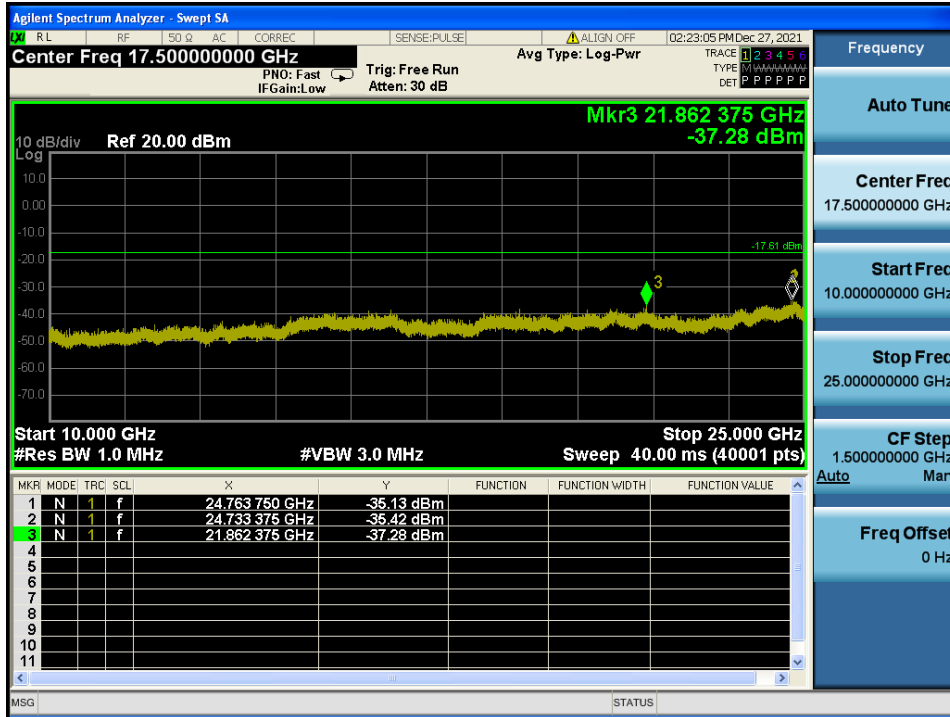
Low Band-edge



Conducted Spurious Emissions

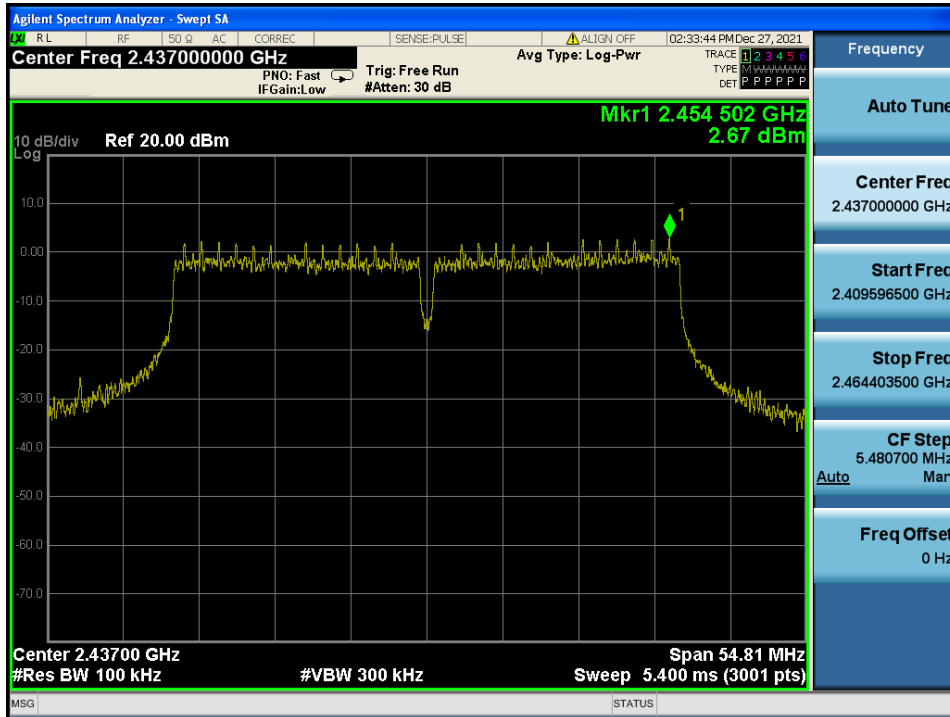


Conducted Spurious Emissions

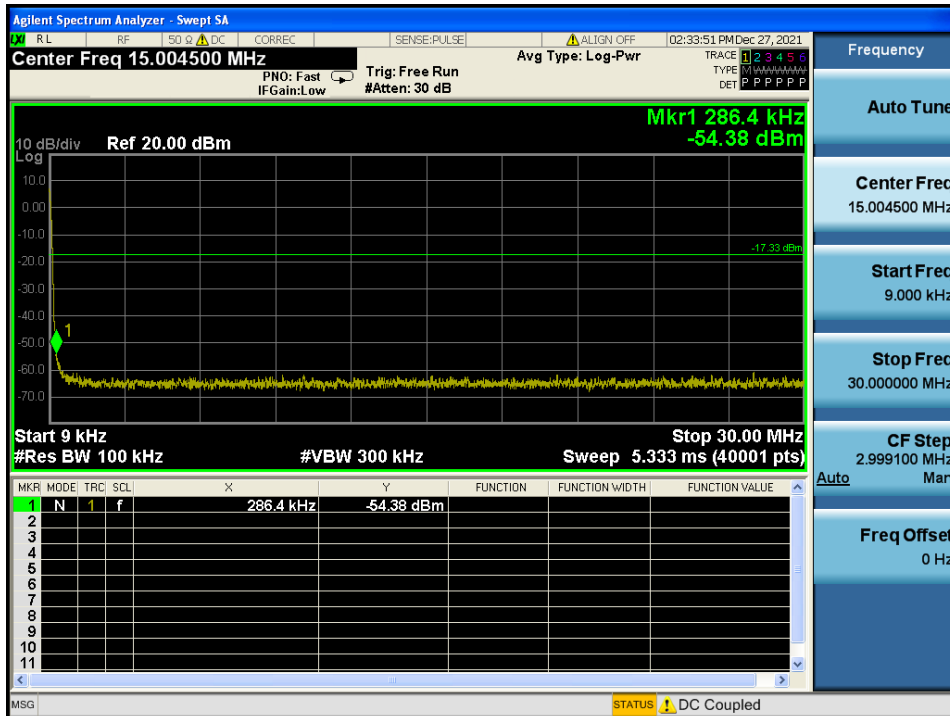


TM 4 & 2 437

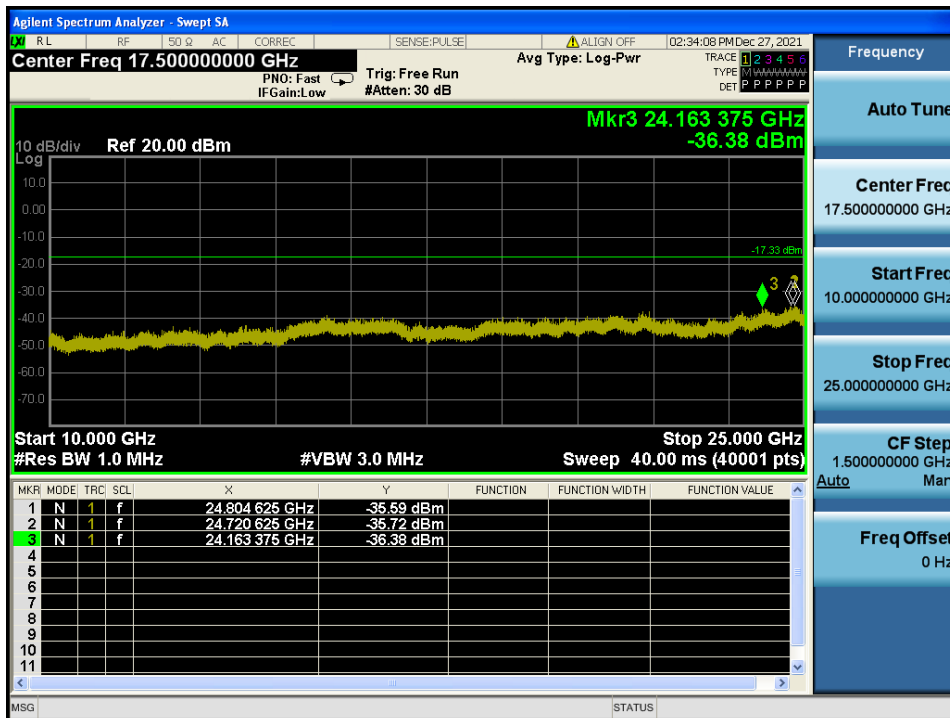
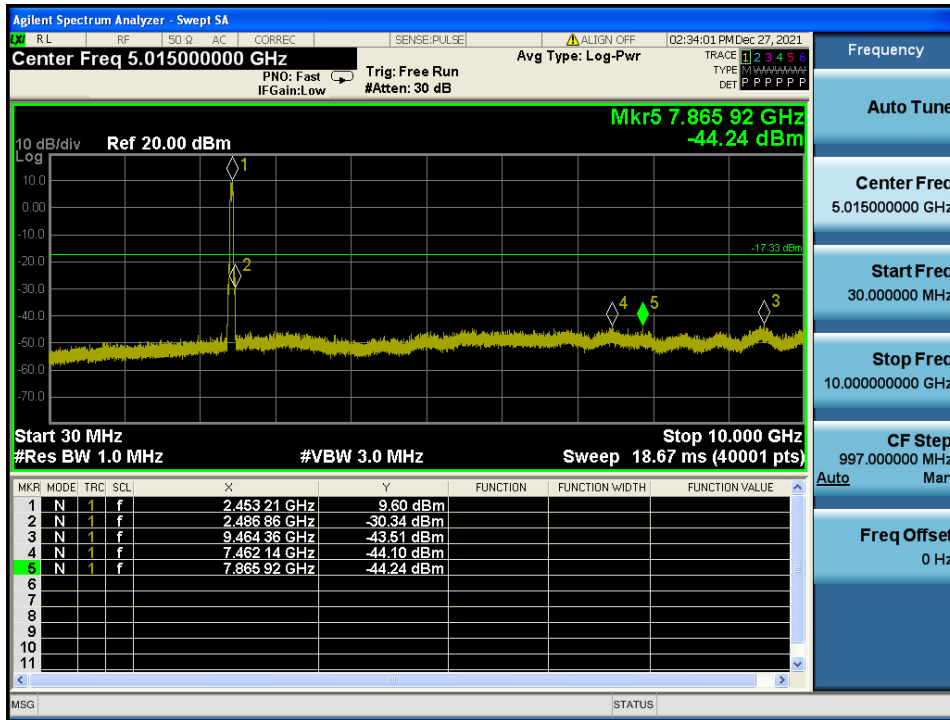
Reference



Conducted Spurious Emissions

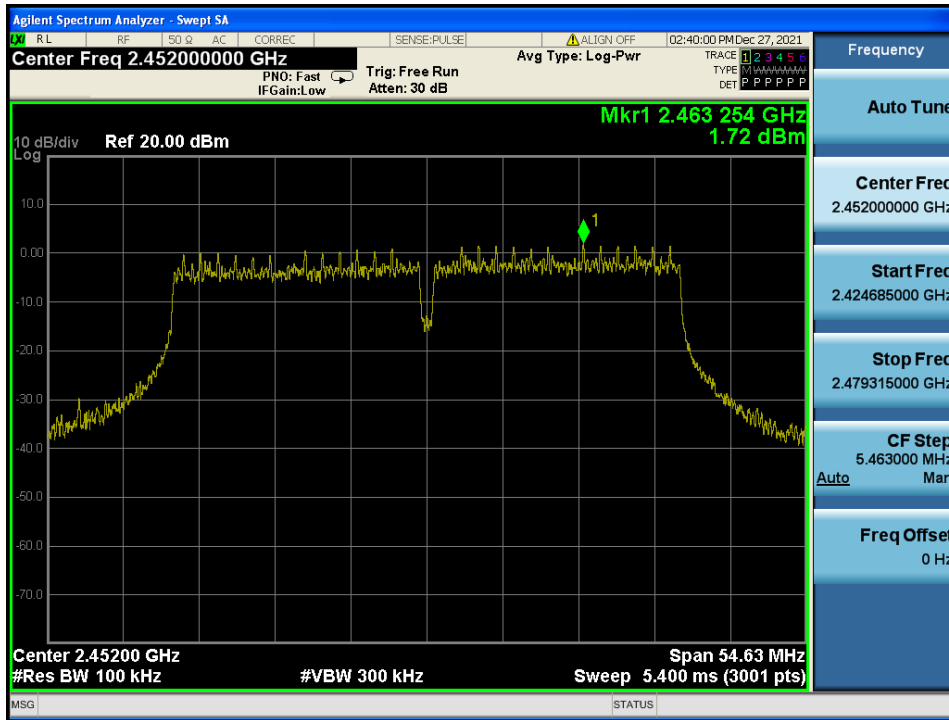


Conducted Spurious Emissions

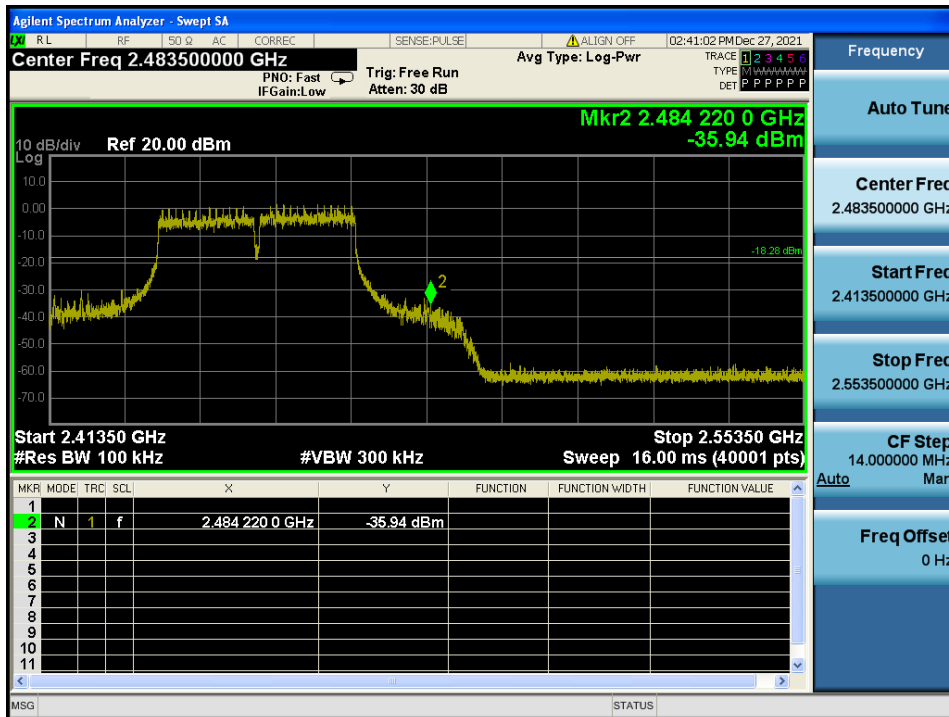


TM 4 & 2 452

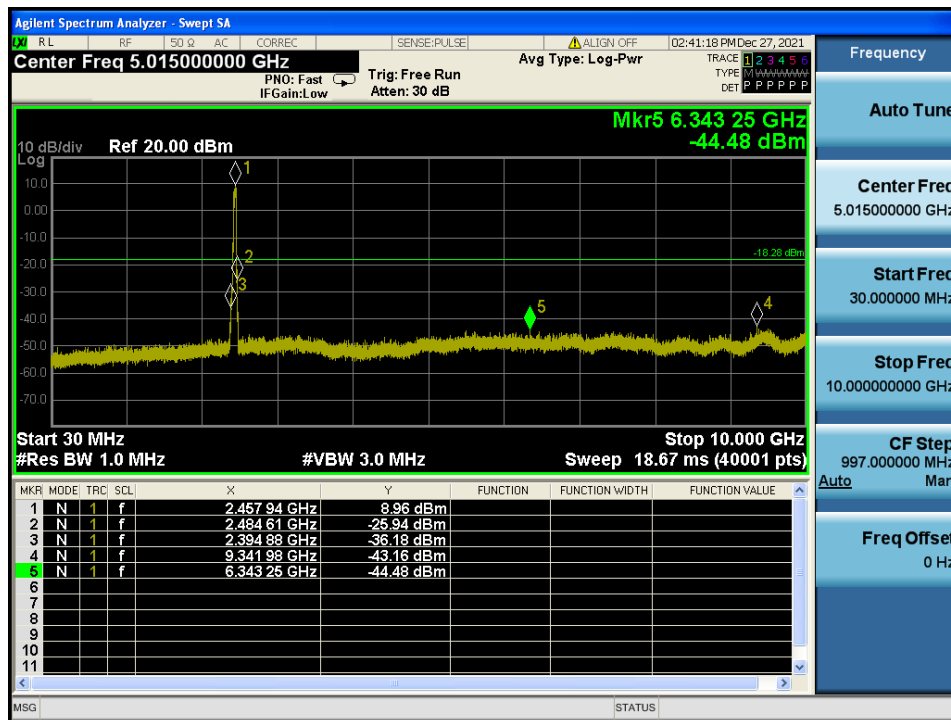
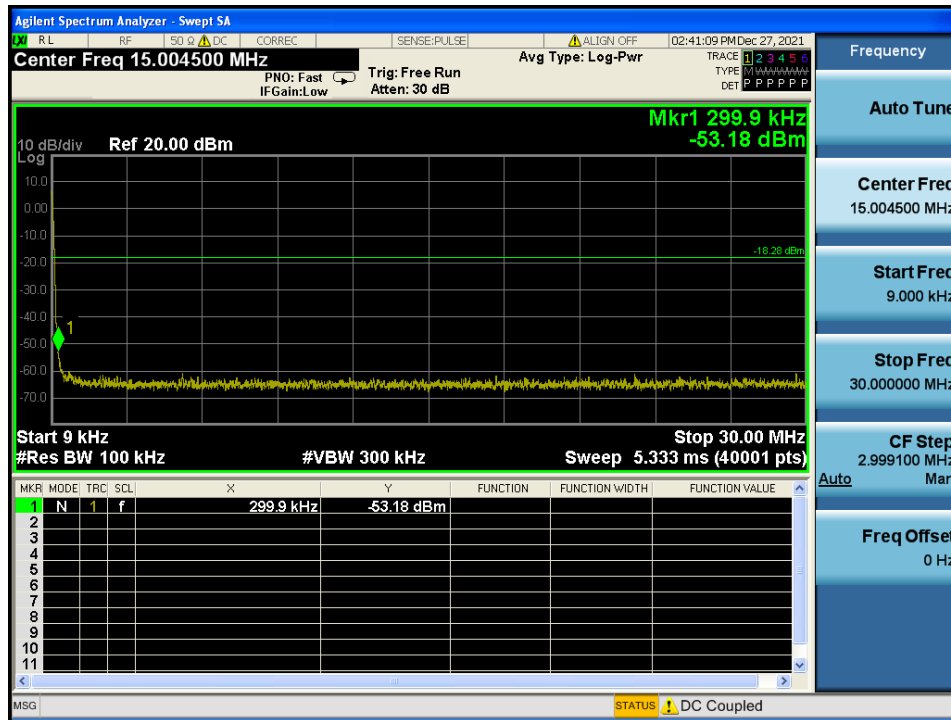
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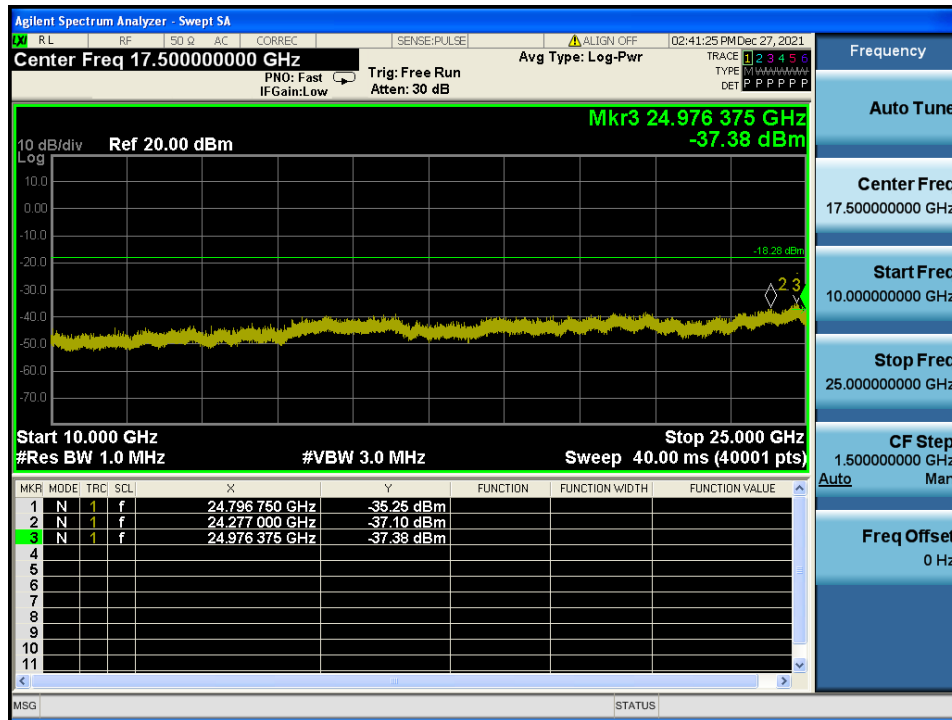
High Band-edge



Conducted Spurious Emissions



Conducted Spurious Emissions



5.5. Unwanted Emissions (Radiated)

▣ Test Requirements and limit,

Part 15.247(d), Part 15.205, Part 15.209 & RSS-247 [5.5], RSS-Gen [8.9], RSS-Gen [8.10]

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of Part 15.247 the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

- Part 15.209 & RSS-Gen[8.9]: General requirement

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uA/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	6.37/F (F in kHz)	300
0.490 – 1.705	2 4000 / 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

5.5.1. Test Setup

Refer to the APPENDIX I.

5.5.2. Test Procedures

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 turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 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.

Note: Measurement Instrument Setting for Radiated Emission Measurements.

- KDB558074 D01v05r02 - Section 8.6
- ANSI C63.10-2013 – Section 11.12

1. Frequency Range Below 1 GHz

RBW = 100 or 120 kHz, VBW = 3 x RBW, Detector = Peak or Quasi Peak

2. Frequency Range > 1 GHz

Peak Measurement > 1 GHz

RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Sweep time = Auto, Trace mode = Max Hold until the trace stabilizes

Average Measurement > 1 GHz

1. RBW = 1 MHz (unless otherwise specified).
2. VBW ≥ 3 x RBW.
3. Detector = RMS (Number of points ≥ 2 x Span / RBW)
4. Averaging type = power (i.e., RMS).
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. 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:
 - 1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is $10 \log(1 / D)$, where D is the duty cycle.
 - 2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is $20 \log(1 / D)$, where D is the duty cycle.
 - 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Duty Cycle Correction factor

Test Mode	Date rate	T _{on} (ms)	T _{on+off} (ms)	D = T _{on} / (T _{on+off})	DCCF = 10 log(1/D) (dB)
TM 1	11 Mbps	1.304	1.444	0.903 0	0.44
TM 2	54 Mbps	0.248	0.284	0.872 8	0.59
TM 3	MCS 8	0.200	0.236	0.8469	0.72
TM 4	MCS 7	0.128	0.179	0.7124	1.47

Note1: Where, T= Transmission duration / D= Duty cycle

Note2: Please refer to the appendix II for duty cycle plots.

5.5.3. Test Results

- Test Notes

1. The radiated emissions were investigated 9 kHz to 25 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 = $40 \log(\text{tested distance} / \text{specified distance})$
 At frequencies at or above 30 MHz = $20 \log(\text{tested distance} / \text{specified distance})$
 When distance factor is "N/A", the measurements were performed at the specified distance and distance factor is not applied.
3. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{TF} + \text{DCCF} + \text{DCF}$ / $\text{TF} = \text{AF} + \text{CL} + \text{HL} + \text{AL} - \text{AG}$
 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 ~ 25 GHz) : TM 1

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)
2 412	2 386.88	H	X	PK	49.75	4.35	N/A	N/A	54.10	74.00	19.90
	2 386.43	H	X	AV	38.32	4.35	0.44	N/A	43.11	54.00	10.89
	4 824.05	H	Y	PK	47.22	8.80	N/A	N/A	56.02	74.00	17.98
	4 824.15	H	Y	AV	37.80	8.80	0.44	N/A	47.04	54.00	6.96
2 437	4 874.21	H	Y	PK	48.17	8.82	N/A	N/A	56.99	74.00	17.01
	4 874.01	H	Y	AV	39.24	8.82	0.44	N/A	48.50	54.00	5.50
2 462	2 485.13	H	X	PK	49.32	4.75	N/A	N/A	54.07	74.00	19.93
	2 485.03	H	X	AV	39.10	4.75	0.44	N/A	44.29	54.00	9.71
	4 924.00	H	Y	PK	46.16	8.74	N/A	N/A	54.90	74.00	19.10
	4 924.03	H	Y	AV	36.58	8.74	0.44	N/A	45.76	54.00	8.24

Radiated Emissions data(9 kHz ~ 25 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)
2 412	2 389.92	V	X	PK	58.09	4.36	N/A	N/A	62.45	74.00	11.55
	2 389.67	V	X	AV	42.32	4.36	0.59	N/A	47.27	54.00	6.73
	4 824.38	V	Z	PK	44.60	8.80	N/A	N/A	53.40	74.00	20.60
	4 824.26	V	Z	AV	33.20	8.80	0.59	N/A	42.59	54.00	11.41
2 437	4 874.53	V	Z	PK	44.04	8.82	N/A	N/A	52.86	74.00	21.14
	4 875.01	V	Z	AV	33.68	8.82	0.59	N/A	43.09	54.00	10.91
2 462	2 483.60	V	X	PK	60.91	4.74	N/A	N/A	65.65	74.00	8.35
	2 483.72	V	X	AV	46.53	4.74	0.59	N/A	51.86	54.00	2.14
	4 925.12	V	Z	PK	43.31	8.74	N/A	N/A	52.05	74.00	21.95
	4 925.45	V	Z	AV	32.26	8.74	0.59	N/A	41.59	54.00	12.41

Radiated Emissions data(9 kHz ~ 25 GHz) : TM 3

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)
2 412	2 388.78	V	X	PK	56.48	4.36	N/A	N/A	60.84	74.00	13.16
	2 389.35	V	X	AV	42.23	4.36	0.72	N/A	47.31	54.00	6.69
	4 824.12	H	Y	PK	43.70	8.80	N/A	N/A	52.50	74.00	21.50
	4 824.15	H	Y	AV	33.19	8.80	0.72	N/A	42.71	54.00	11.29
2 437	4 874.59	H	Y	PK	44.62	8.82	N/A	N/A	53.44	74.00	20.56
	4 874.98	H	Y	AV	34.06	8.82	0.72	N/A	43.60	54.00	10.40
2 462	2 483.64	V	X	PK	62.67	4.74	N/A	N/A	67.41	74.00	6.59
	2 483.76	V	X	AV	45.18	4.74	0.72	N/A	50.64	54.00	3.36
	4 924.40	H	Y	PK	43.50	8.74	N/A	N/A	52.24	74.00	21.76
	4 924.79	H	Y	AV	32.49	8.74	0.72	N/A	41.95	54.00	12.05

Radiated Emissions data(9 kHz ~ 25 GHz) : TM 4

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)
2 422	2 389.08	V	X	PK	57.86	4.36	N/A	N/A	62.22	74.00	11.78
	2 389.90	V	X	AV	46.16	4.36	1.47	N/A	51.99	54.00	2.01
	4 844.05	V	X	PK	41.77	8.81	N/A	N/A	50.58	74.00	23.42
	4 844.81	V	X	AV	31.15	8.81	1.47	N/A	41.43	54.00	12.57
2 437	4 874.79	V	X	PK	41.56	8.82	N/A	N/A	50.38	74.00	23.62
	4 874.83	V	X	AV	30.85	8.82	1.47	N/A	41.14	54.00	12.86
2 452	2 484.64	V	X	PK	52.27	4.74	N/A	N/A	57.01	74.00	16.99
	2 484.48	V	X	AV	41.59	4.74	1.47	N/A	47.80	54.00	6.20
	4 904.45	V	X	PK	41.28	8.73	N/A	N/A	50.01	74.00	23.99
	4 904.06	V	X	AV	30.95	8.73	1.47	N/A	41.15	54.00	12.85

5.6. AC Power-Line Conducted Emissions

■ Test Requirements and limit, Part 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

5.6.1. Test Setup

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

5.6.2. Test Procedures

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.

5.6.3. Test Results

Refer to the next page. (The worst case data was reported. The worst data is TM 4 & Middle)

AC Power-Line Conducted Emissions (Graph)

Results of Conducted Emission

DTNC

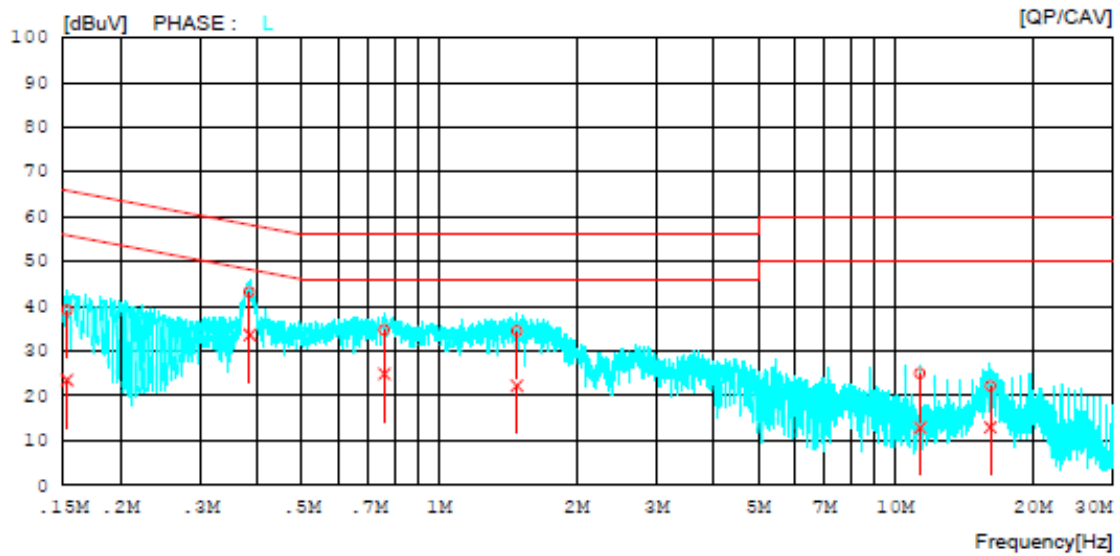
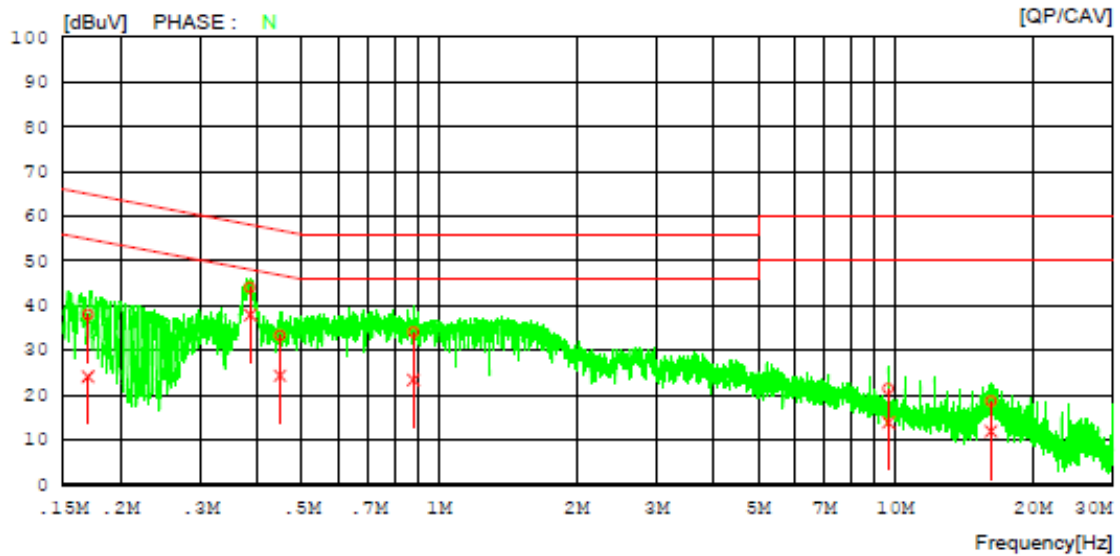
Date 2022-01-07

Order No.
Model No. XM75P
Serial No.
Test Condition 2.4G

Reference No.
Power Supply
Temp/Humi. 23 °C / 46 %
Operator J.H.Bang

Memo

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



AC Power-Line Conducted Emissions (List)

Results of Conducted Emission

DTNC

Date 2022-01-07

Order No.		Reference No.	
Model No.	XM75P	Power Supply	
Serial No.		Temp/Humi.	23 'C / 46 %
Test Condition	2.4G	Operator	J,H,Bang

Memo

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

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.16995	28.10	14.27	9.90	38.00	24.17	64.96	54.96	26.96	30.79	N
2	0.38540	34.19	28.00	9.91	44.10	37.91	58.16	48.16	14.06	10.25	N
3	0.44767	23.50	14.45	9.91	33.41	24.36	56.92	46.92	23.51	22.56	N
4	0.87761	24.14	13.48	9.93	34.07	23.41	56.00	46.00	21.93	22.59	N
5	9.65647	11.18	3.63	10.35	21.53	13.98	60.00	50.00	38.47	36.02	N
6	16.22179	8.24	1.51	10.38	18.62	11.89	60.00	50.00	41.38	38.11	N
7	0.15292	29.15	13.56	9.90	39.05	23.46	65.84	55.84	26.79	32.38	L
8	0.38396	33.25	23.71	9.91	43.16	33.62	58.19	48.19	15.03	14.57	L
9	0.75778	24.83	14.98	9.92	34.75	24.90	56.00	46.00	21.25	21.10	L
10	1.48196	24.43	12.16	10.05	34.48	22.21	56.00	46.00	21.52	23.79	L
11	11.32986	14.59	2.55	10.31	24.90	12.86	60.00	50.00	35.10	37.14	L
12	16.16776	11.79	2.58	10.38	22.17	12.96	60.00	50.00	37.83	37.04	L