RF TEST REPORT

Applicant	Hefei Kuxin Microelectronics Limited
FCC ID	2A9XO-ARLINK-P301-D
Product	ARLink-P301-D
Brand	Artosyn
Model	P301-D
Report No.	R2208A0730-R1V3
Issue Date	March 9, 2023

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2022)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying

Approved by: Xu Kai

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	February 10, 2023
Rev.1	Update FCC ID.	March 2, 2023
Rev.2	Update information.	March 7, 2023
Rev.3	Update information.	March 9, 2023
Note: This revised report (Report No.: R2208A0730-R1V3) supersedes and replaces the previously issued report (Report No.: R2208A0730-R1V2). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Maximum output power	15.247(b)(3)	PASS
2	99% Bandwidth and 6dB Bandwidth	15.247(a)(2) C63.10 6.7	PASS
3	Power spectral density	15.247(e)	PASS
4	Band Edge	15.247(d)	PASS
5	Spurious RF Conducted Emissions	15.247(d)	PASS
6	Unwanted Emissions	15.247(d),15.205,15.209	PASS
7	Conducted Emission	15.207	NA
Date of Testing: August 16, 2022 ~ November 28, 2022 Date of Sample Received: August 9, 2022			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
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Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Hefei Kuxin Microelectronics Limited
Applicant address	Building B2, Phase 3, Hefei Innovation Industrial Park, Hefei, China
Manufacturer	Shenzhen Edadoc Technology Co., Ltd.
Manufacturer address	Floor 3, building 3, No. 111, Zhiye Road, Pudong New Area, Shanghai

2.2. General information

EUT Description	
Model	P301-D
SN	BBAF00FF
Hardware Version	V1.3
Software Version	V1.0.1.5
Power Supply	Battery
Antenna Type	External Antenna
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)
Antenna Gain	4 dBi
Additional beamforming gain	NA
Operating Frequency Range(s)	5M: 2405 ~ 2465 MHz 10M: 2410 ~ 2465 MHz 20M: 2415 ~ 2460 MHz 40M: 2425 ~ 2450 MHz
Modulation Type	OFDM
Max. Output Power	26.50 dBm
EUT Accessory	
Other Accessories	Manufacturer: CIROCOMM TECHNOLOGY Model: /
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15C (2022) Radio Frequency Devices

ANSI C63.10-2013

Reference standard:

KDB 558074 D01 15.247 Meas Guidance v05r02

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the loop antenna is vertical, the others are vertical and horizontal. and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Test Mode	Data Rate
5M	MCS0
10M	MCS0
20M	MCS0
40M	MCS0

Wireless Technology and Frequency Range

Wireless Technology	Bandwidth	Frequency
Wi-Fi	2.4G Slot 5MHz	2405
		2440
		2465
	2.4G Slot 10MHz	2410
		2440
		2465
	2.4G Slot 20MHz	2415
		2420
		2440
		2455
		2460
	2.4G Slot 40MHz	2425
		2440
		2450
	2.4G BR 5MHz	2405
		2440
		2465
Does this device support TPC Function? ☐Yes ☒No		

5. Test Case Results

5.1. Maximum output power

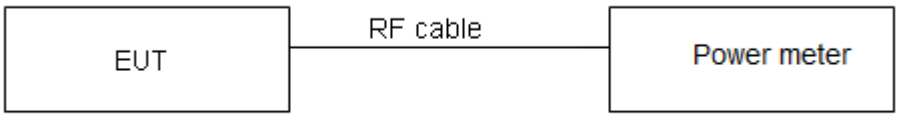
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to Power meter with a known loss. The EUT is max power transmission with proper modulation.

Test Setup



Limits

Rule Part 15.247 (b) (3) specifies that " For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz: 1 Watt."

Average Output Power	≤ 1W (30dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

Test Results

Test Mode	Carrier frequency (MHz)	Power Index
2.4G Slot 5MHz	2405	25
	2440	25
	2465	25
2.4G Slot 10MHz	2410	25
	2440	25
	2465	25
2.4G Slot 20MHz	2415	25
	2420	25
	2440	25
	2455	25
	2460	25
2.4G Slot 40MHz	2425	25
	2440	25
	2450	25
2.4G BR 5MHz	2405	25
	2440	25
	2465	25

Test Mode	Duty cycle	Duty cycle correction Factor(dB)
2.4G Slot 5MHz	0.93	0.30
2.4G Slot 10MHz	0.93	0.30
2.4G Slot 20MHz	0.93	0.30
2.4G Slot 40MHz	0.88	0.57
2.4G BR 5MHz	0.08	10.94
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.		

Test Mode	Carrier frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
2.4G Slot 5MHz	2405	25.14	25.45	30	PASS
	2440	25.10	25.40	30	PASS
	2465	23.56	23.86	30	PASS
2.4G Slot 10MHz	2410	25.39	25.69	30	PASS
	2440	25.23	25.53	30	PASS
	2465	23.21	23.51	30	PASS
2.4G Slot 20MHz	2415	25.68	25.99	30	PASS
	2420	25.92	26.22	30	PASS
	2440	25.28	25.59	30	PASS
	2455	25.27	25.58	30	PASS
	2460	24.92	25.23	30	PASS
2.4G Slot 40MHz	2425	25.23	25.80	30	PASS
	2440	24.84	25.41	30	PASS
	2450	24.69	25.26	30	PASS
2.4G BR 5MHz	2405	14.85	25.78	30	PASS
	2440	13.32	24.26	30	PASS
	2465	15.56	26.50	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

5.2. 99% Bandwidth and 6dB Bandwidth

Ambient condition

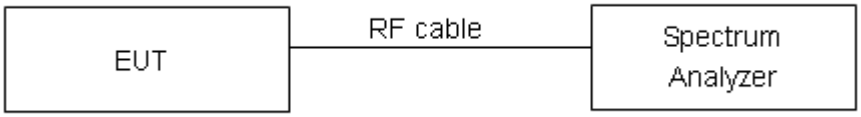
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.
Dector=Peak, Trace mode=max hold.

The EUT was connected to the spectrum analyzer through a known loss cable. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value.

Test Setup



Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

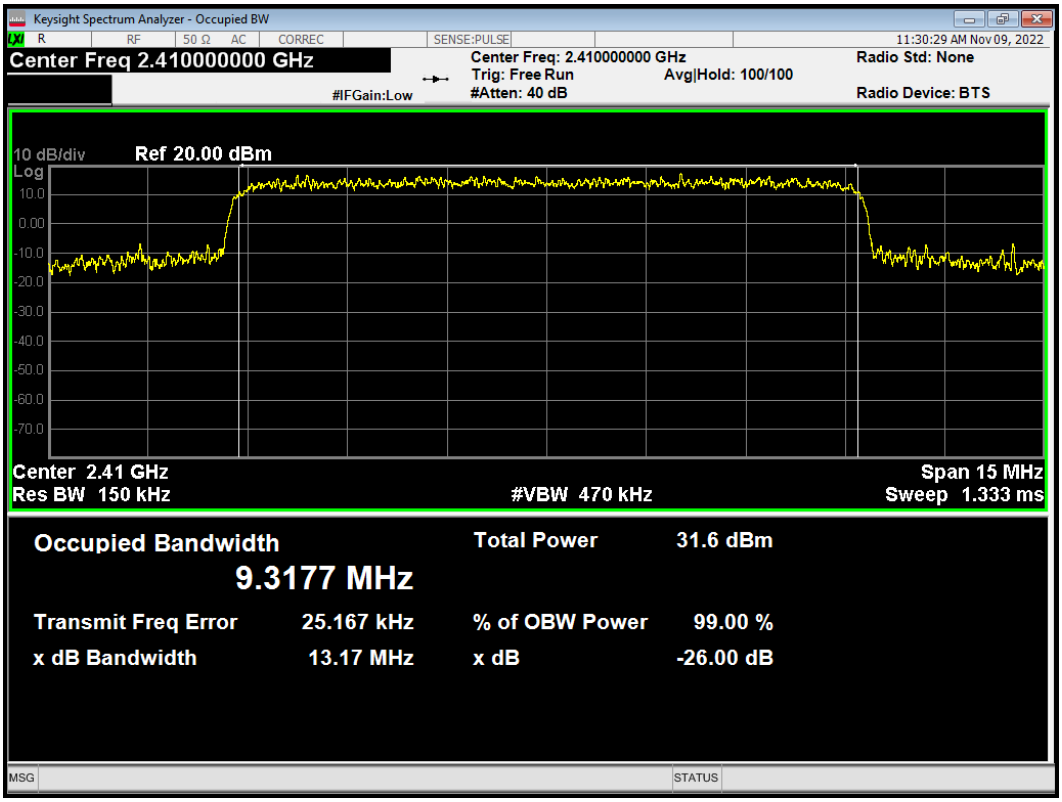
Test Results:

Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
2.4G Slot 5MHz	2405	4.68	4.46	500	PASS
	2440	4.66	4.63	500	PASS
	2465	4.63	4.56	500	PASS
2.4G Slot 10MHz	2410	9.32	9.24	500	PASS
	2440	9.32	9.24	500	PASS
	2465	9.19	8.66	500	PASS
2.4G Slot 20MHz	2415	18.54	18.51	500	PASS
	2420	18.47	18.34	500	PASS
	2440	18.55	18.11	500	PASS
	2455	18.50	18.39	500	PASS
	2460	18.27	17.76	500	PASS
2.4G Slot 40MHz	2425	36.54	35.15	500	PASS
	2440	36.63	36.03	500	PASS
	2450	36.35	35.43	500	PASS
2.4G BR 5MHz	2405	4.67	4.38	500	PASS
	2440	4.64	4.55	500	PASS
	2465	4.64	4.61	500	PASS

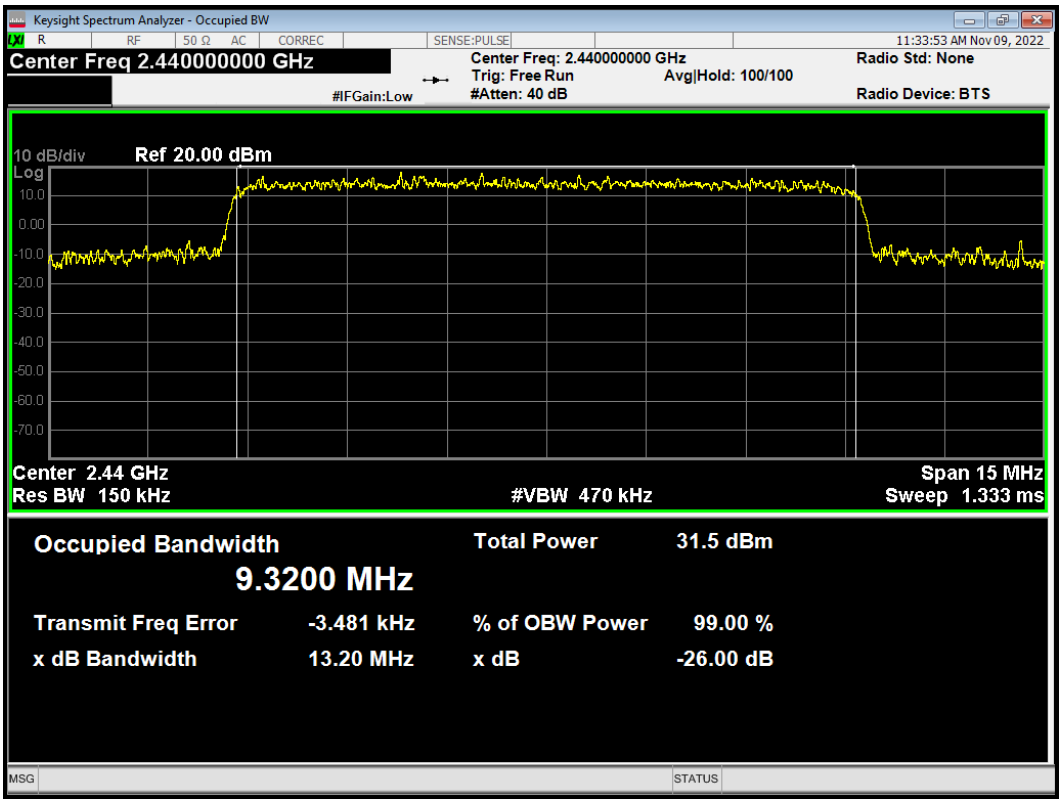
99%bandwidth

SLOT

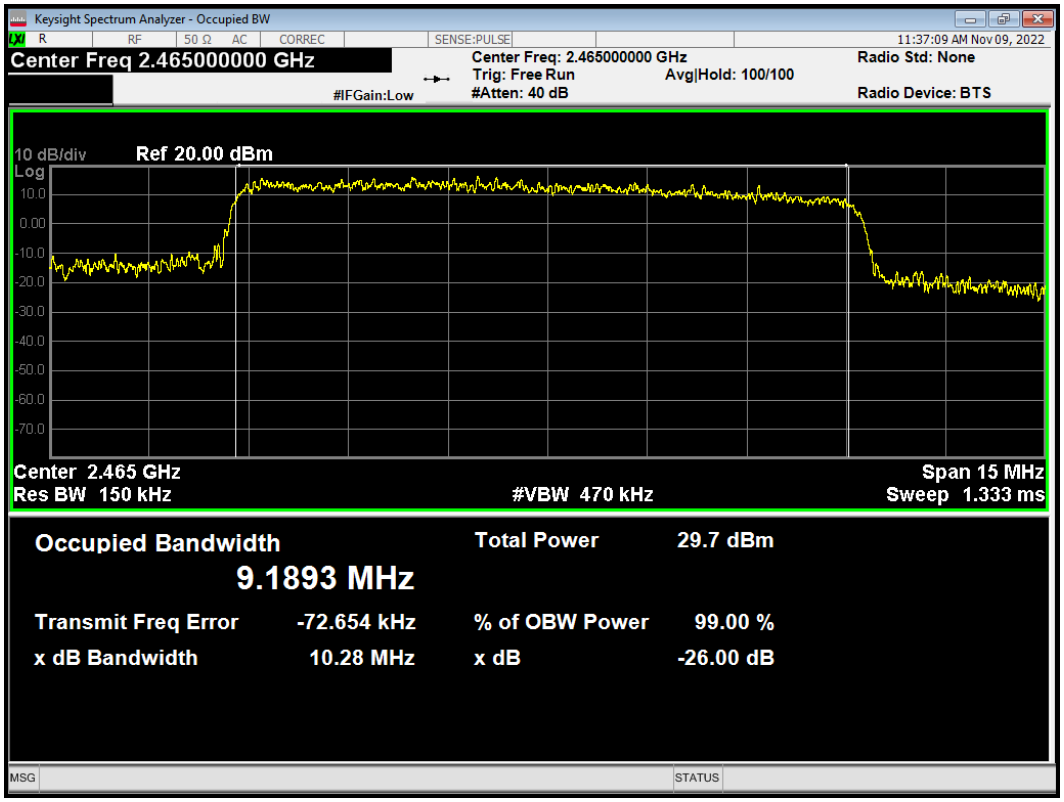
OBW slot 10M 2410MHz



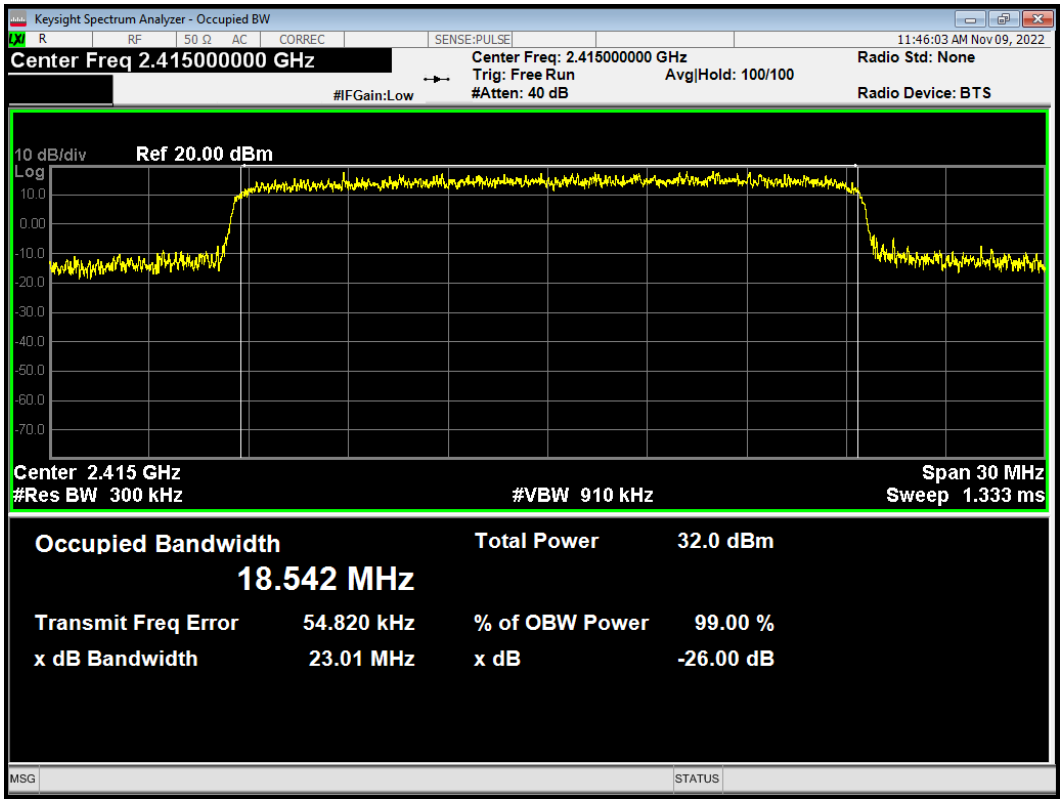
OBW slot 10M 2440MHz



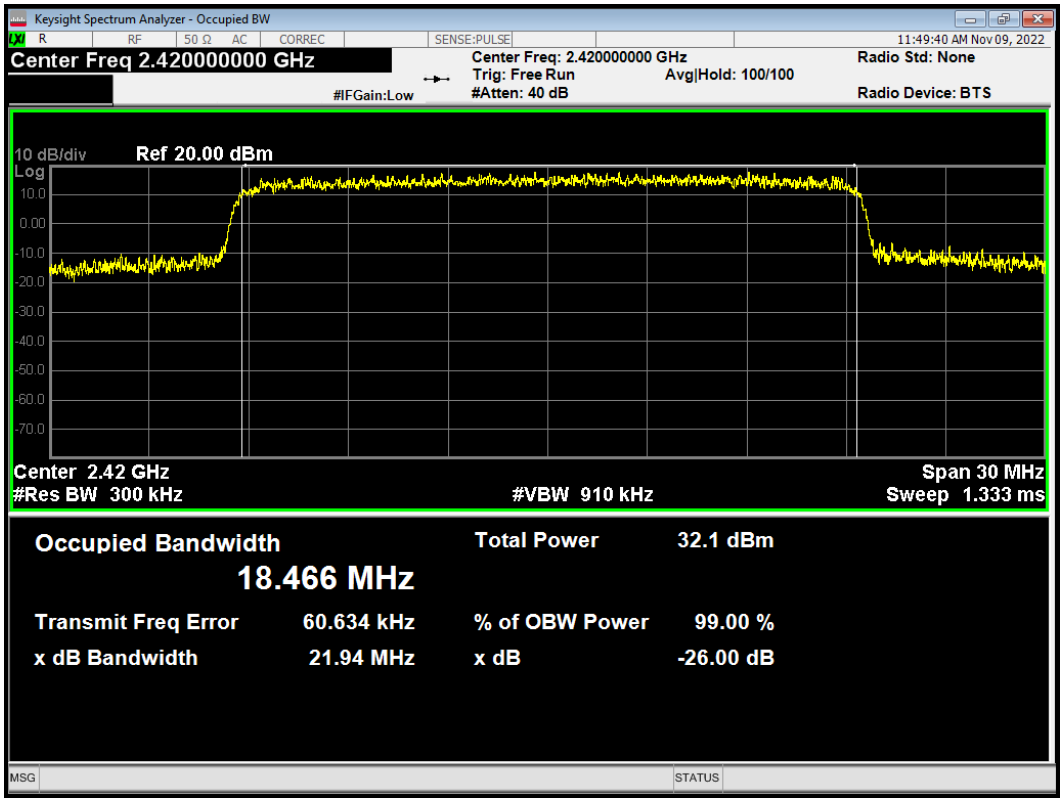
OBW slot 10M 2465MHz



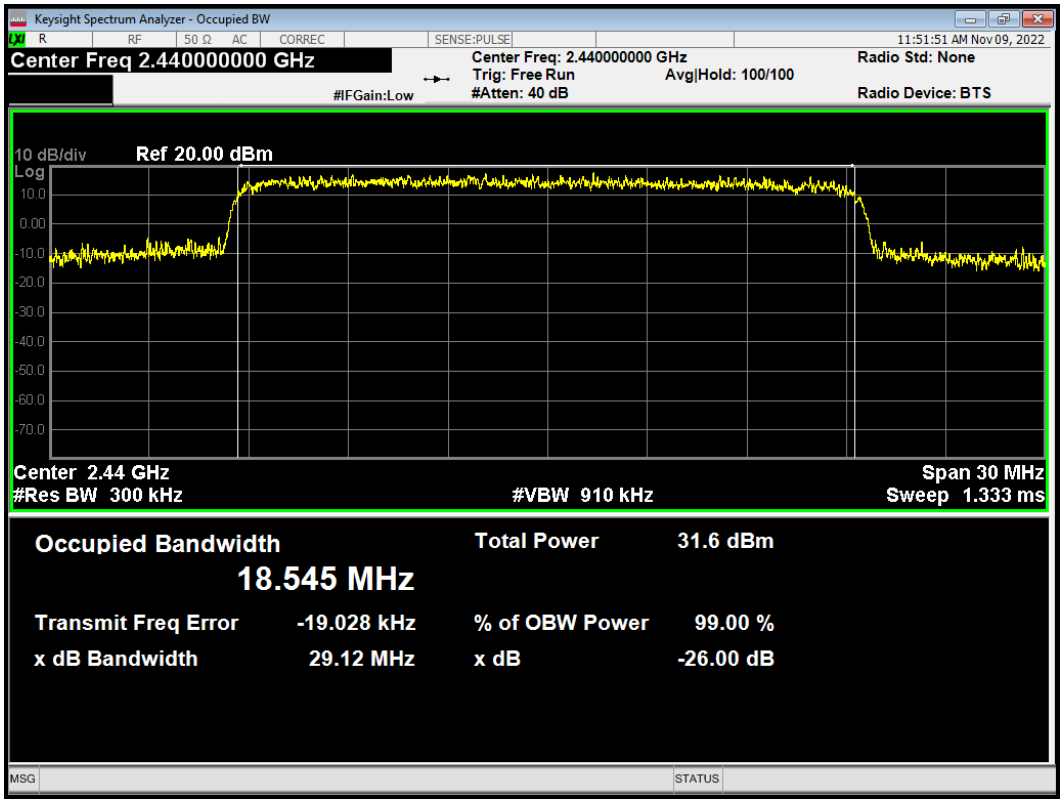
OBW slot 20M 2415MHz



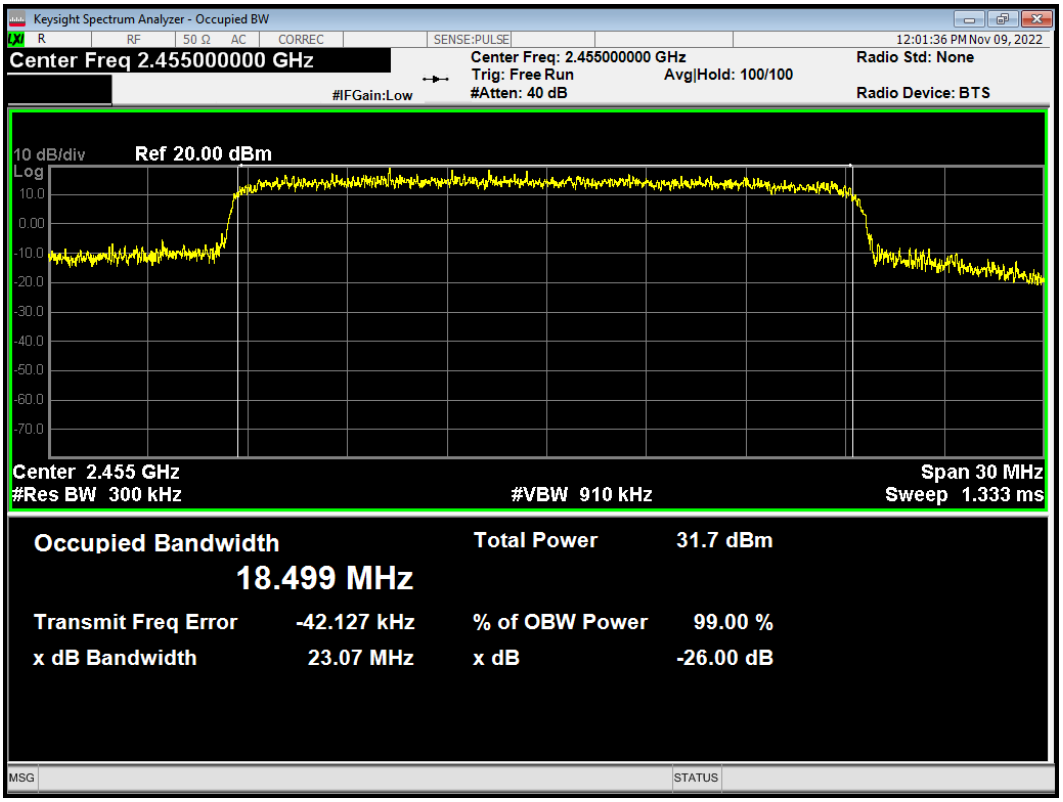
OBW slot 20M 2420MHz



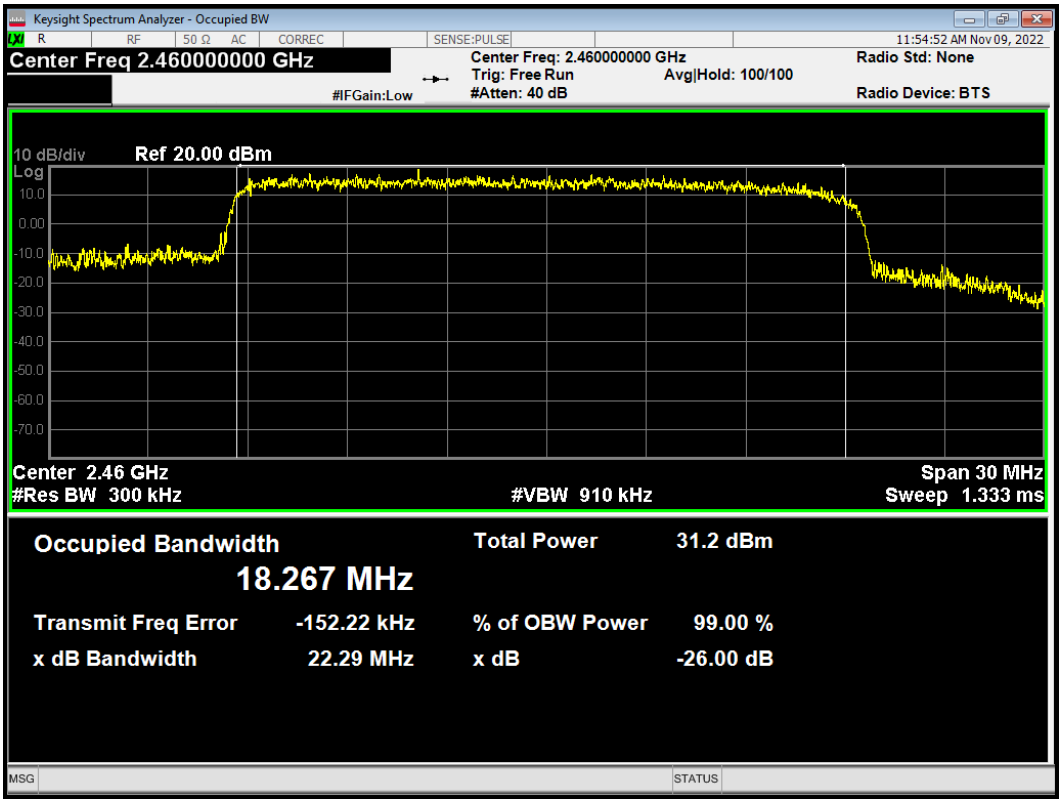
OBW slot 20M 2440MHz



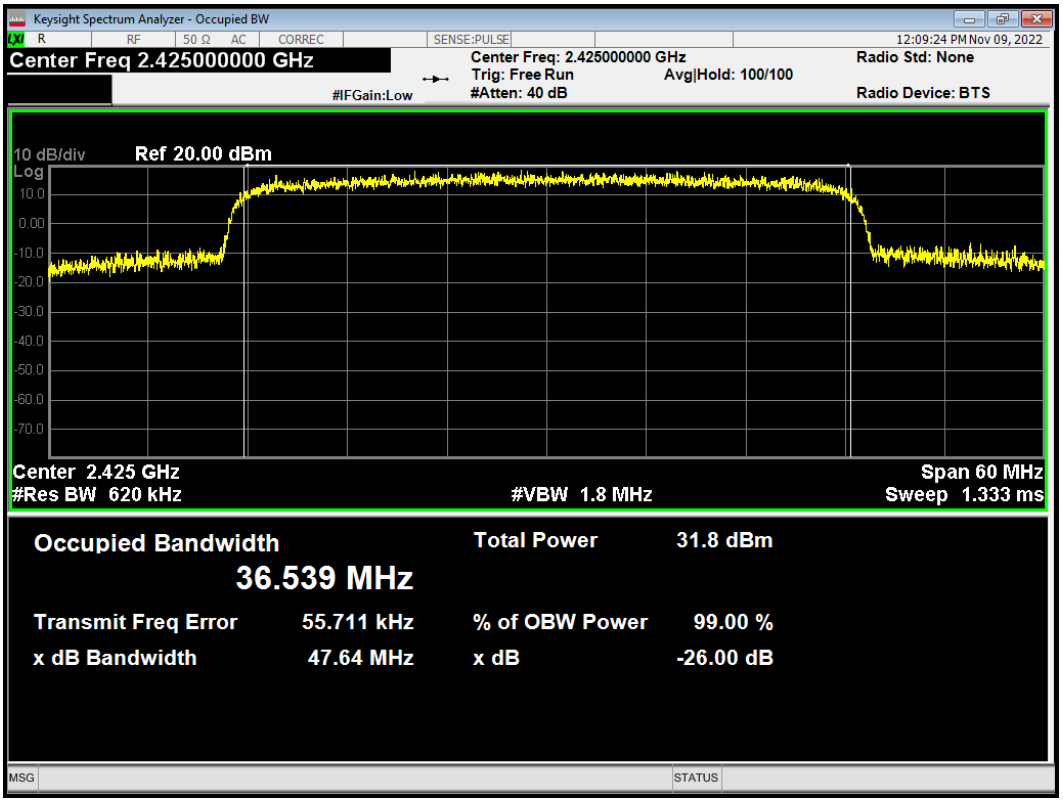
OBW slot 20M 2455MHz



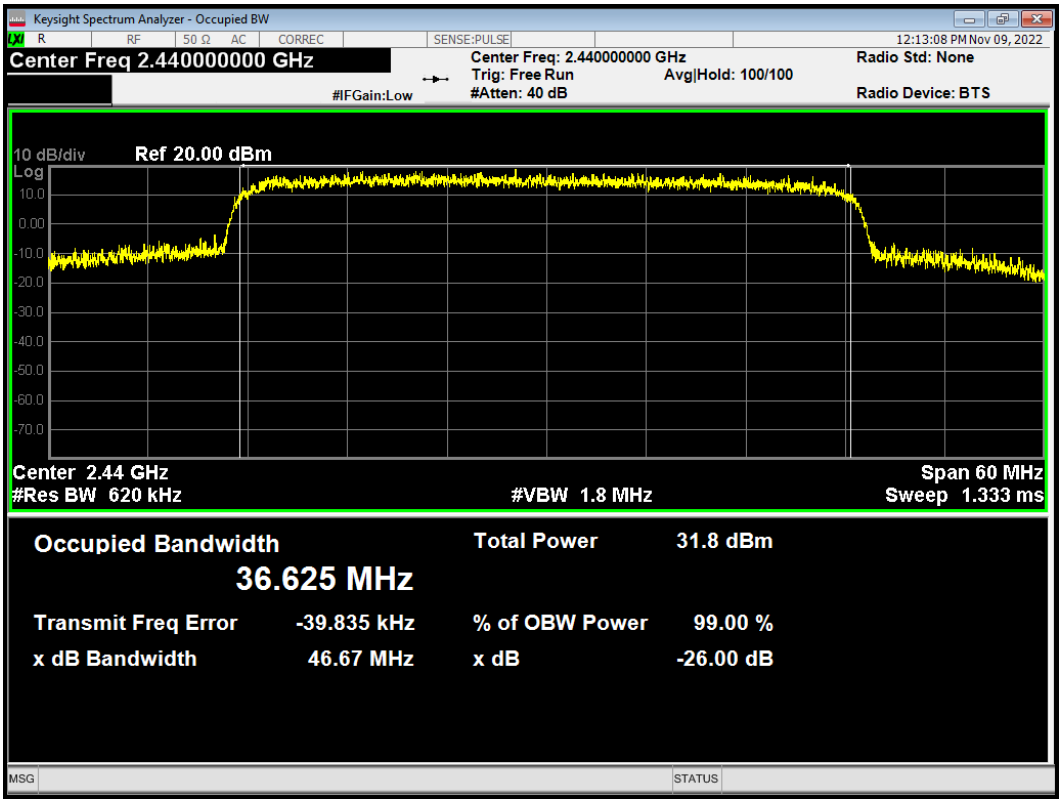
OBW slot 20M 2460MHz



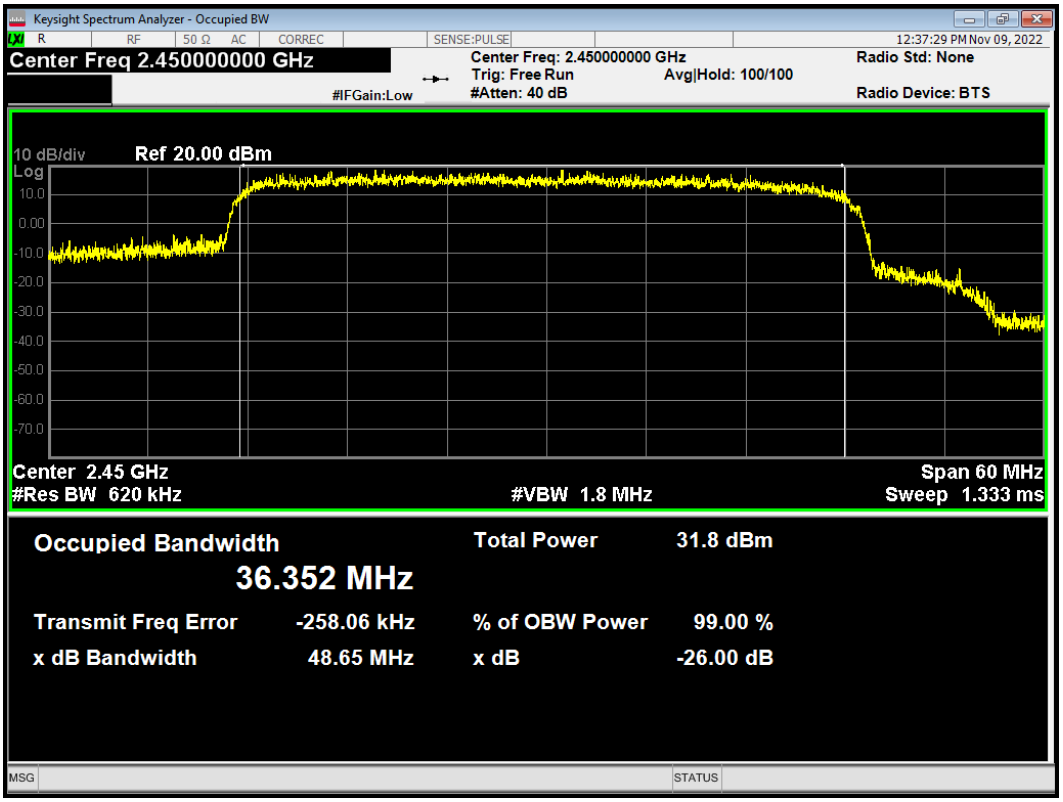
OBW slot 40M 2425MHz



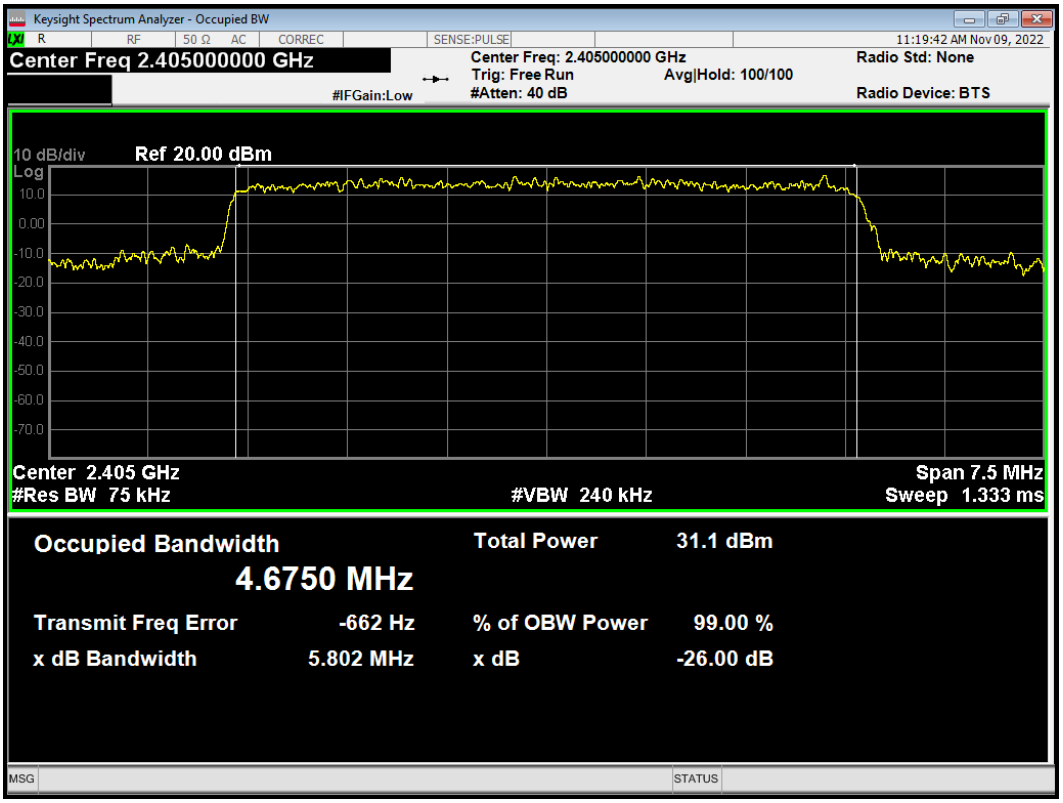
OBW slot 40M 2440MHz



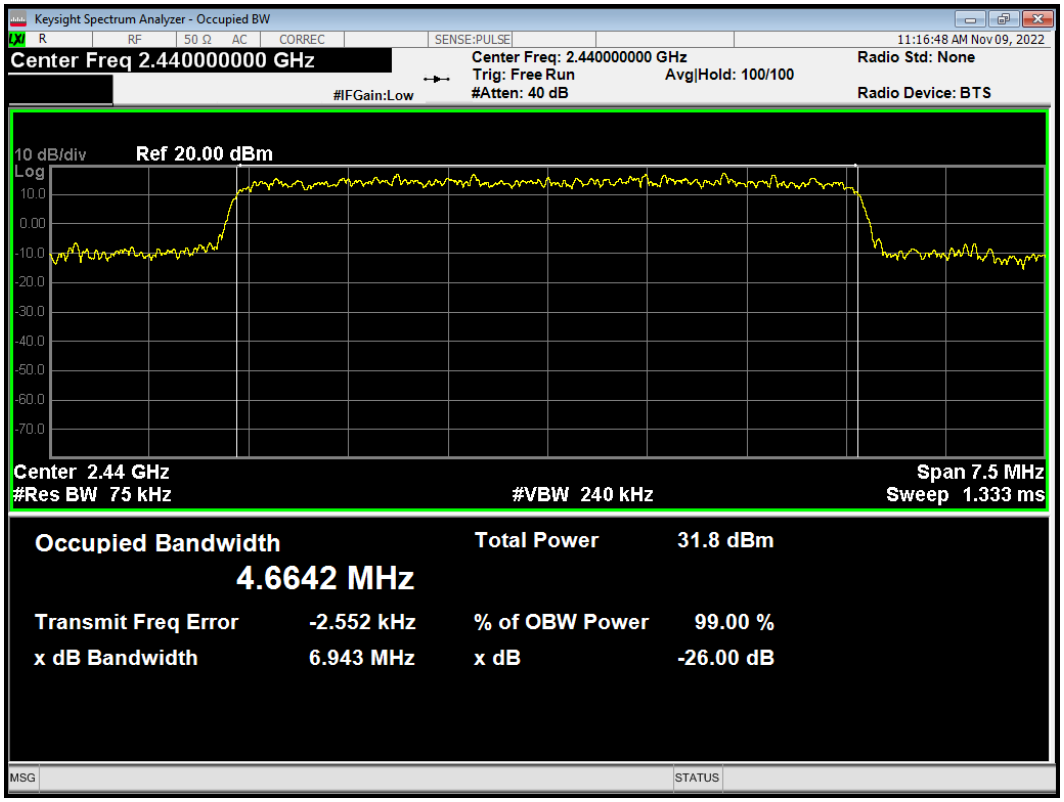
OBW slot 40M 2450MHz



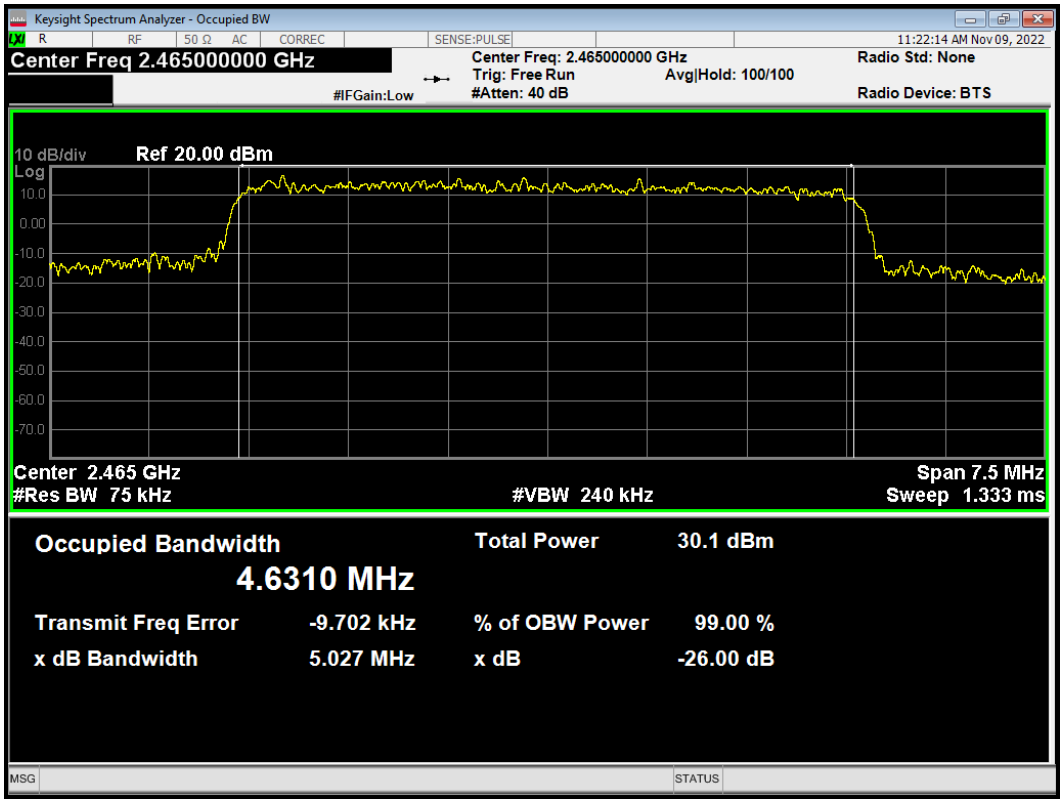
OBW slot 5M 2405MHz



OBW slot 5M 2440MHz

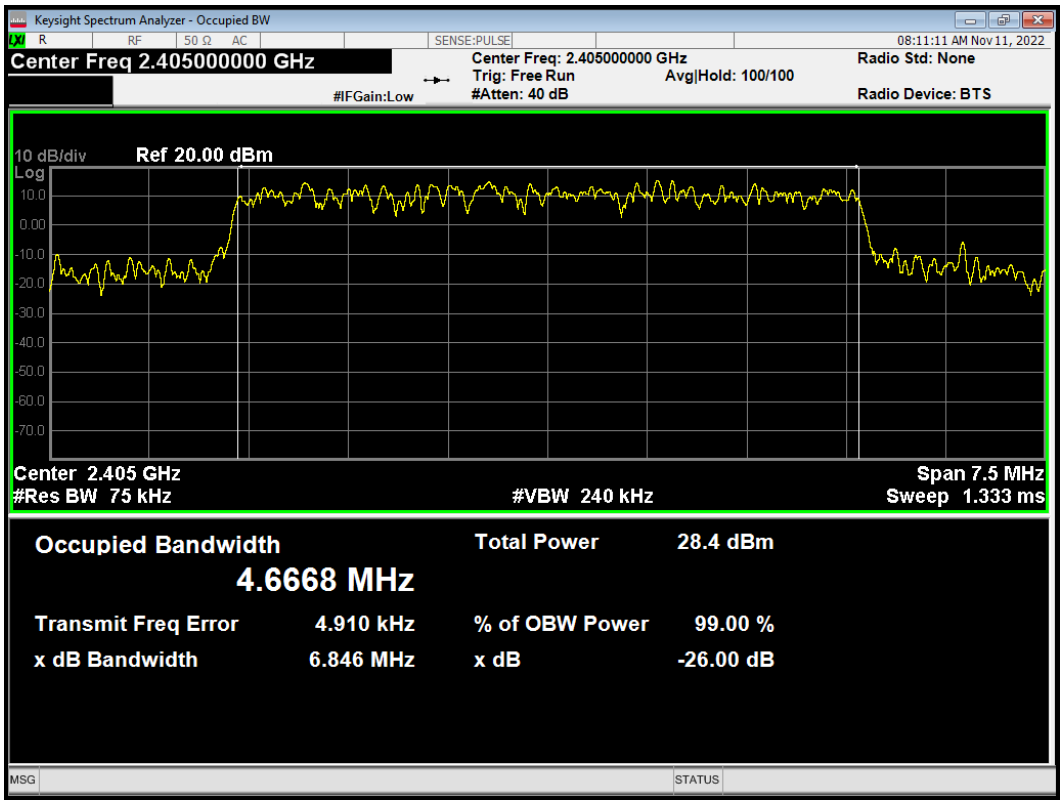


OBW slot 5M 2465MHz

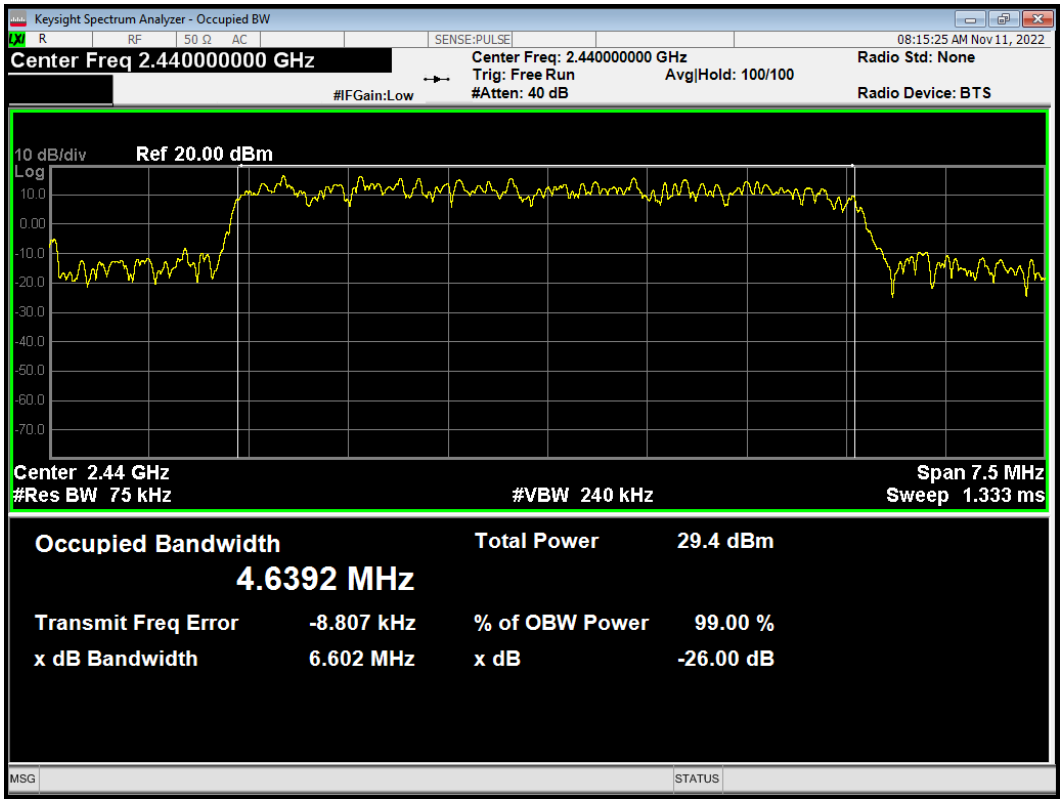


BR

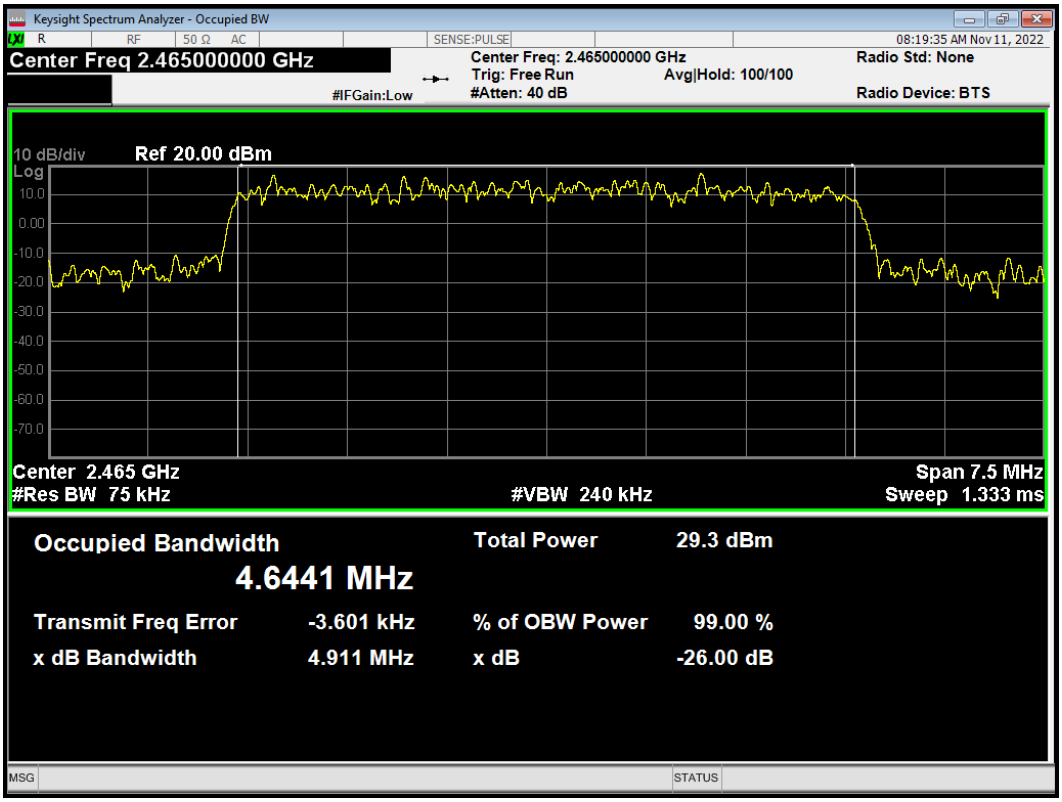
OBW BR 5M 2405MHz



OBW BR 5M 2440MHz



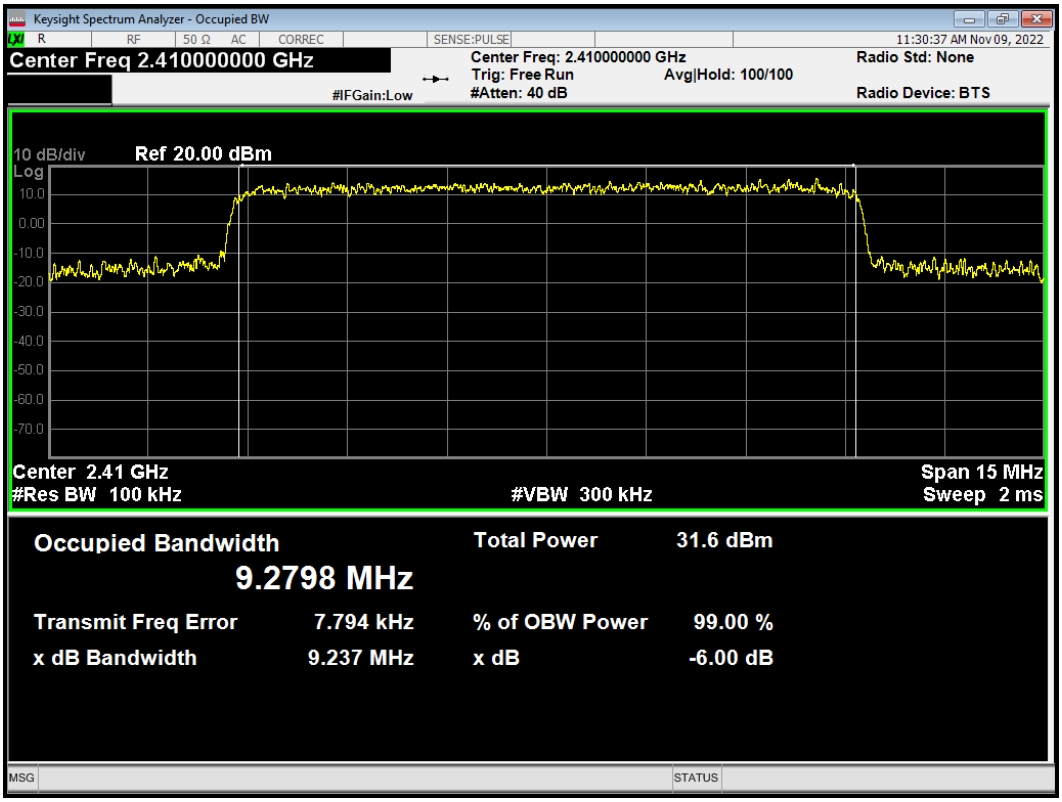
OBW BR 5M 2465MHz



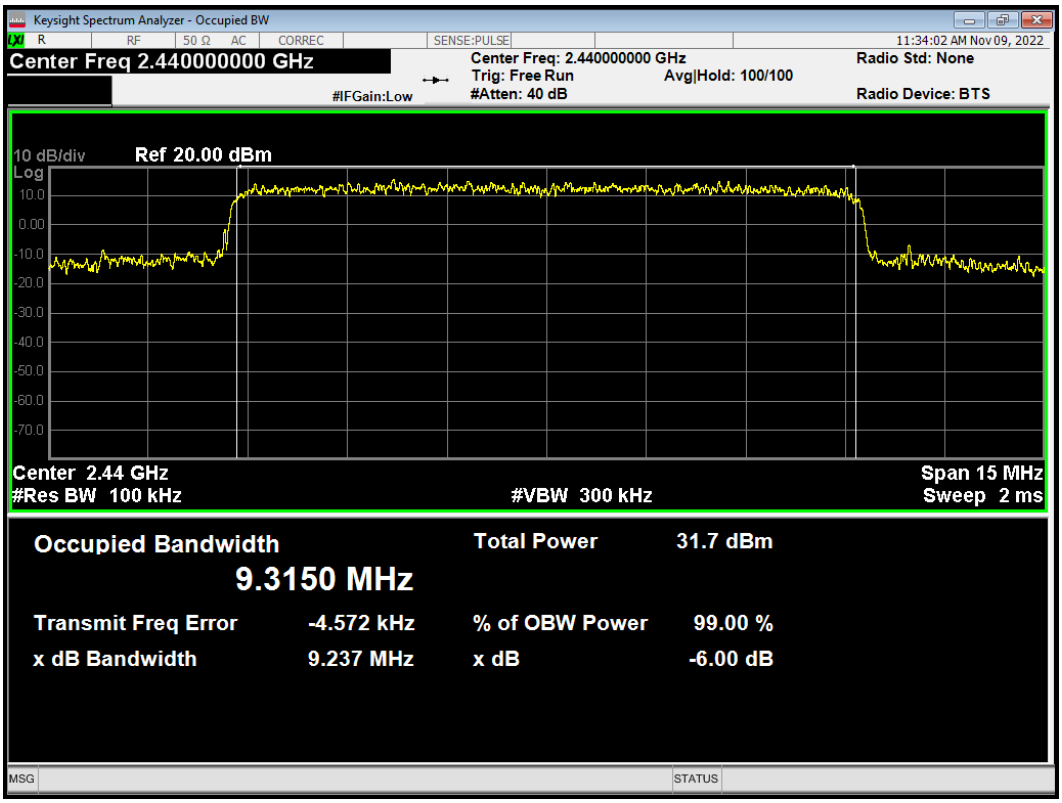
6 dB bandwidth

SLOT

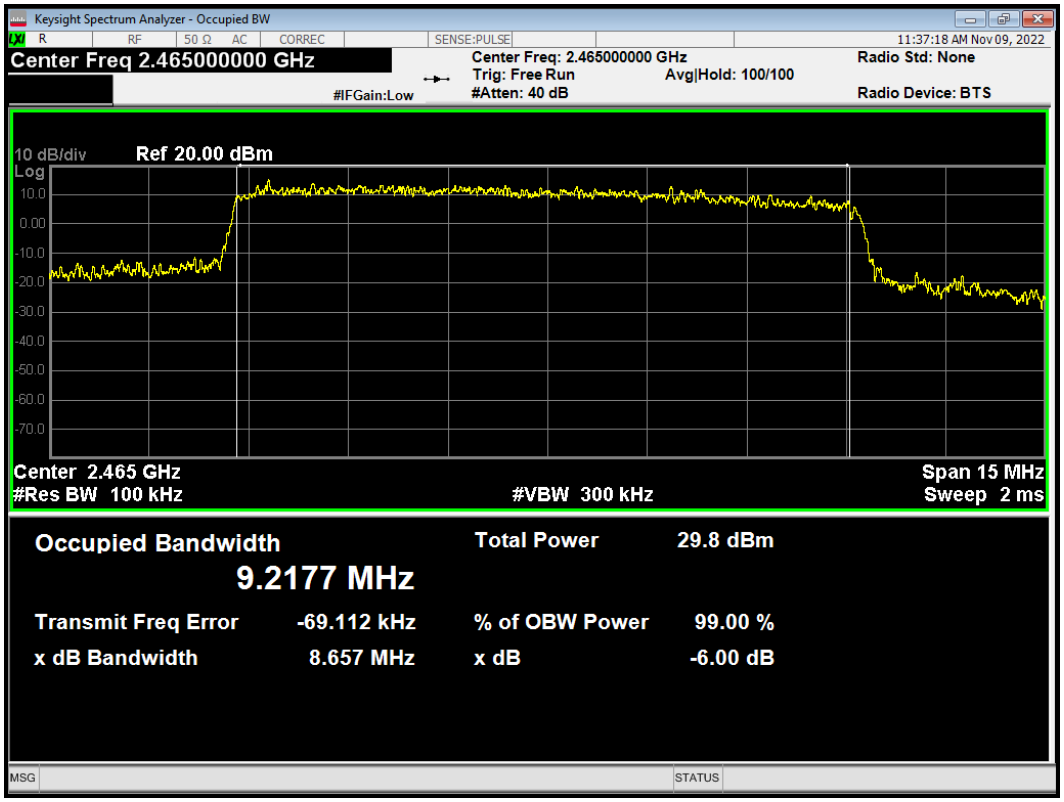
-6dB Bandwidth slot 10M 2410MHz



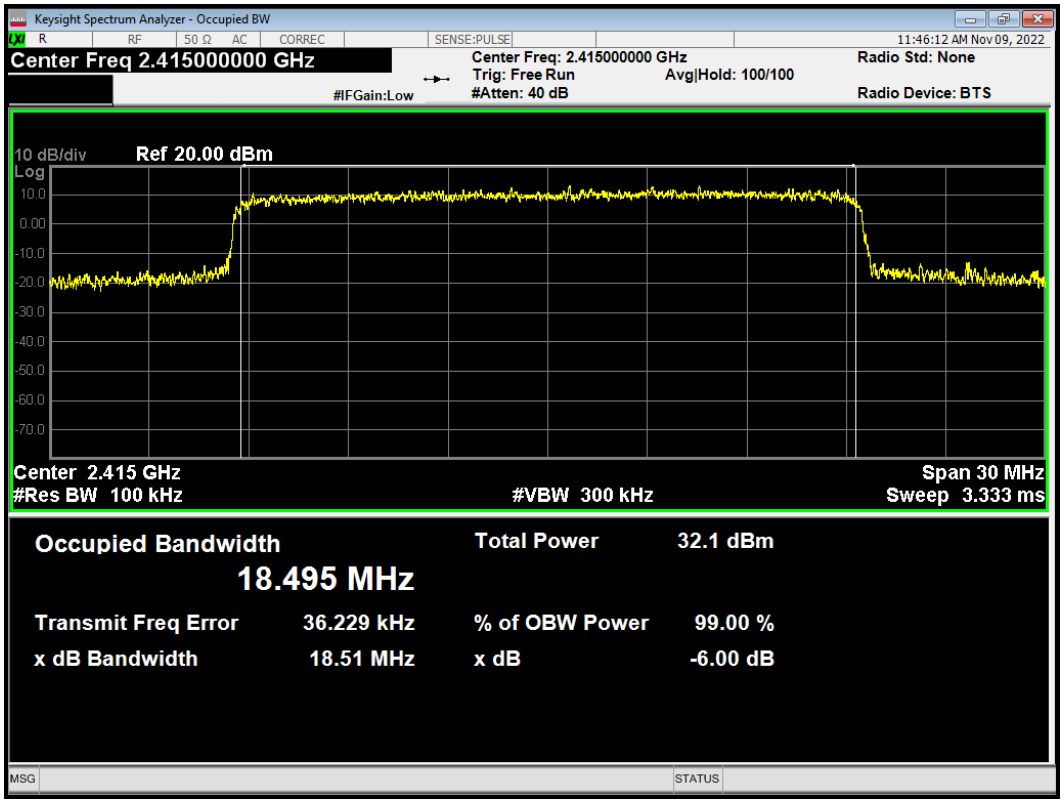
-6dB Bandwidth slot 10M 2440MHz



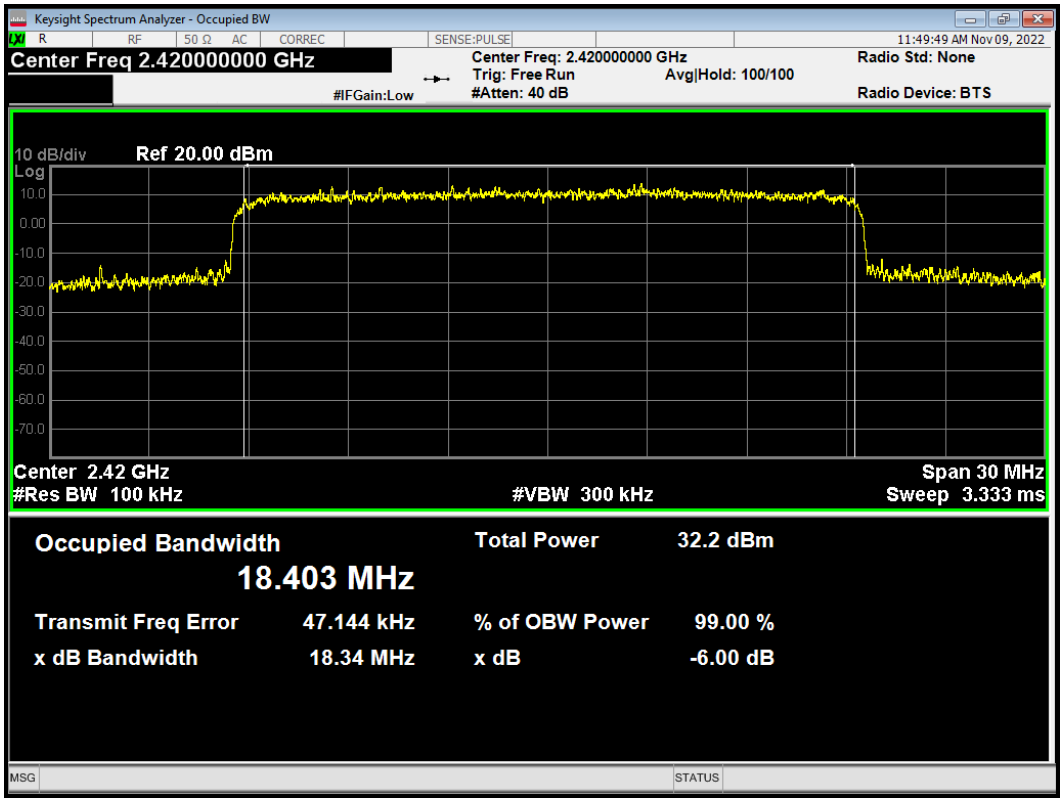
-6dB Bandwidth slot 10M 2465MHz



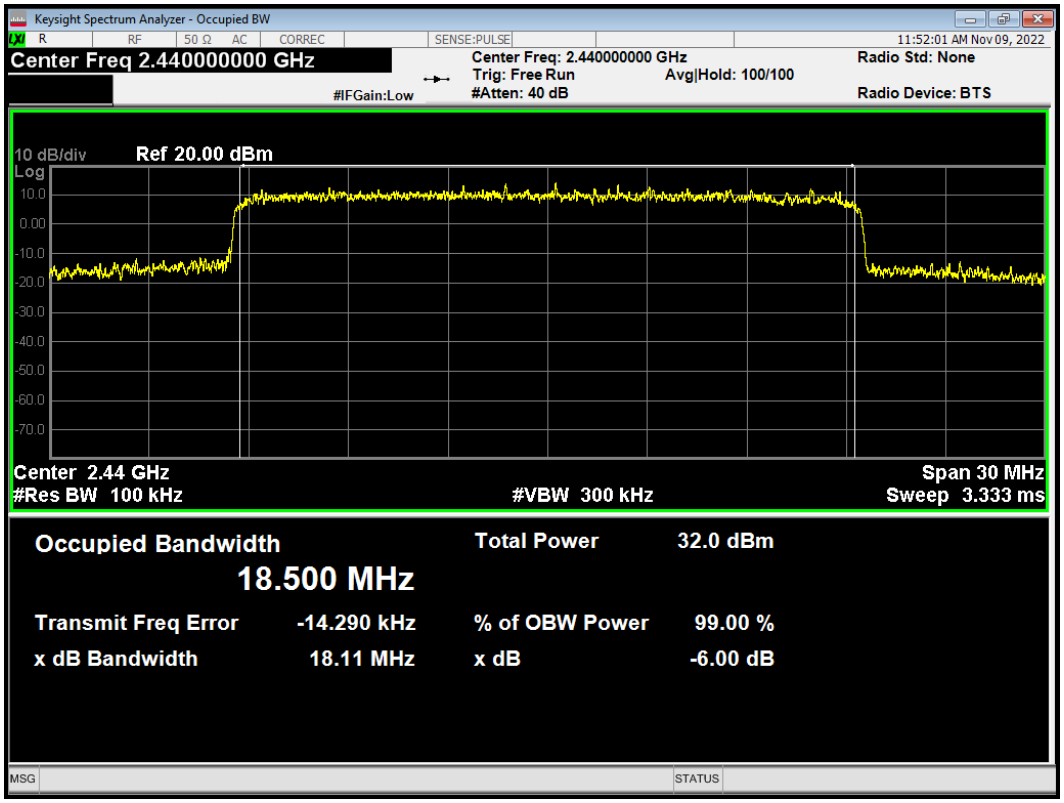
-6dB Bandwidth slot 20M 2415MHz



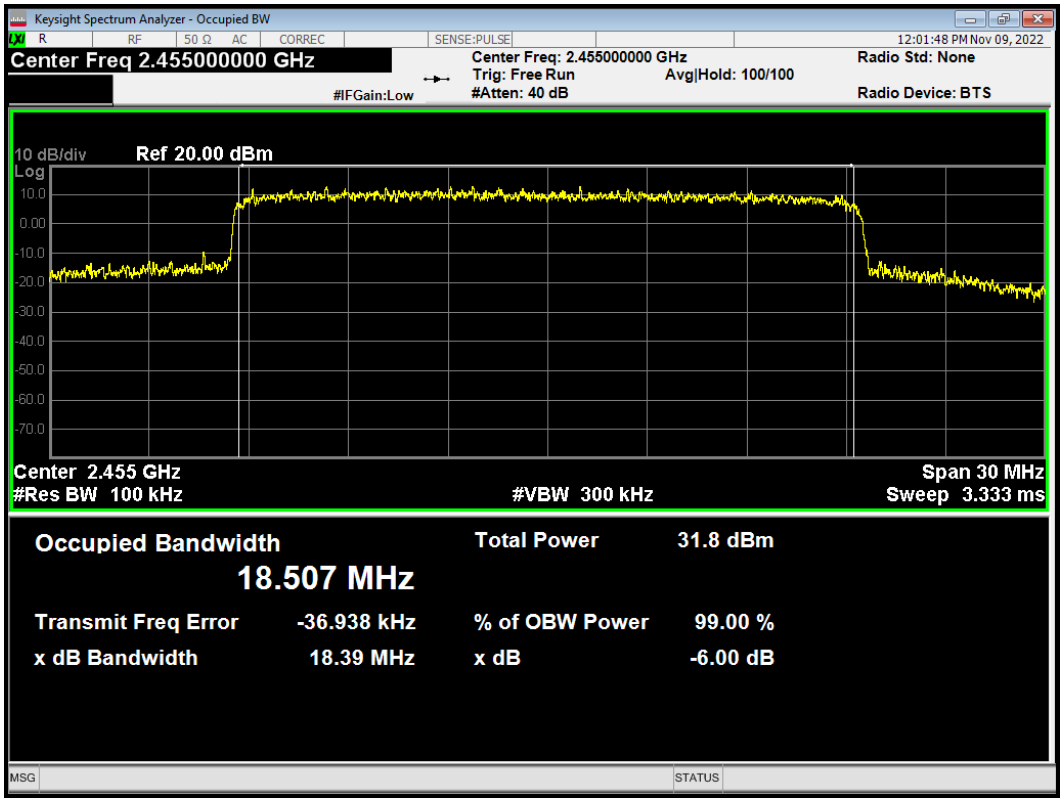
-6dB Bandwidth slot 20M 2420MHz



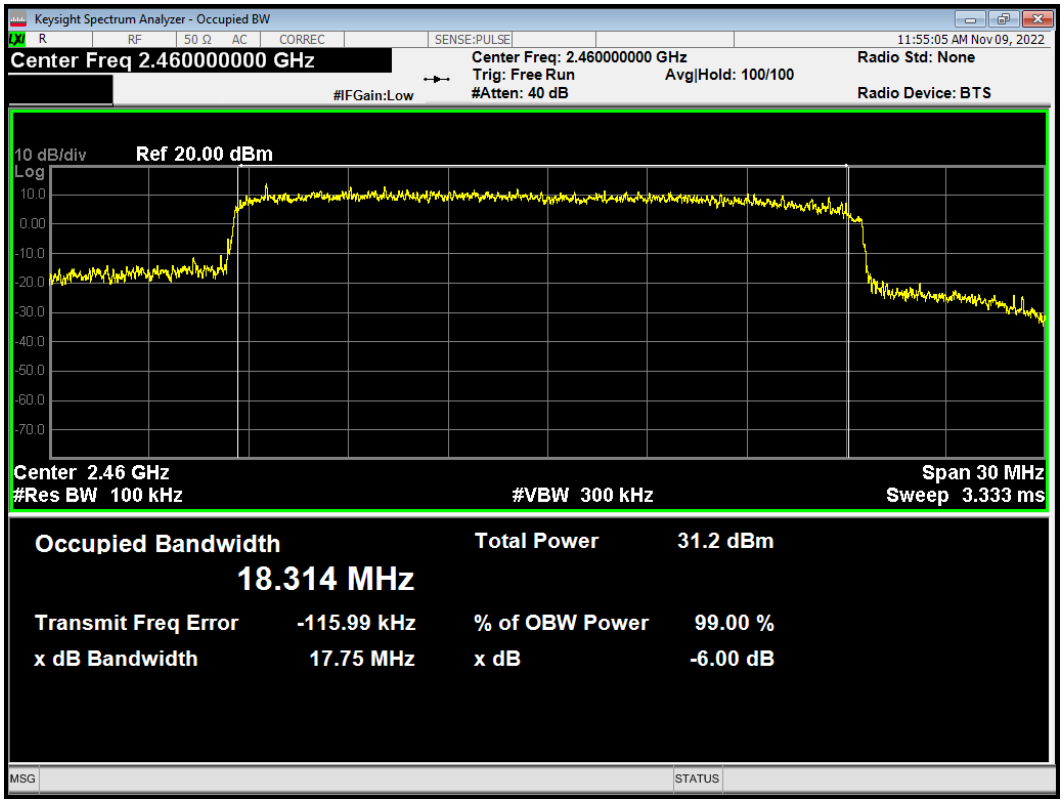
-6dB Bandwidth slot 20M 2440MHz



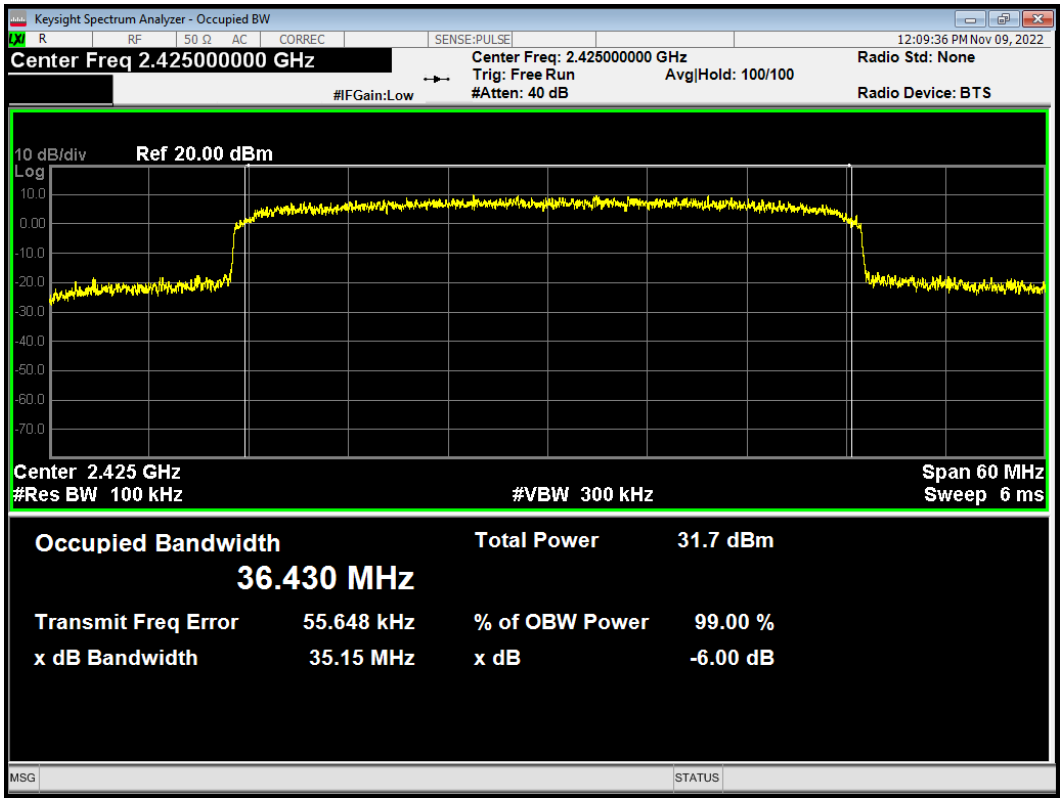
-6dB Bandwidth slot 20M 2455MHz



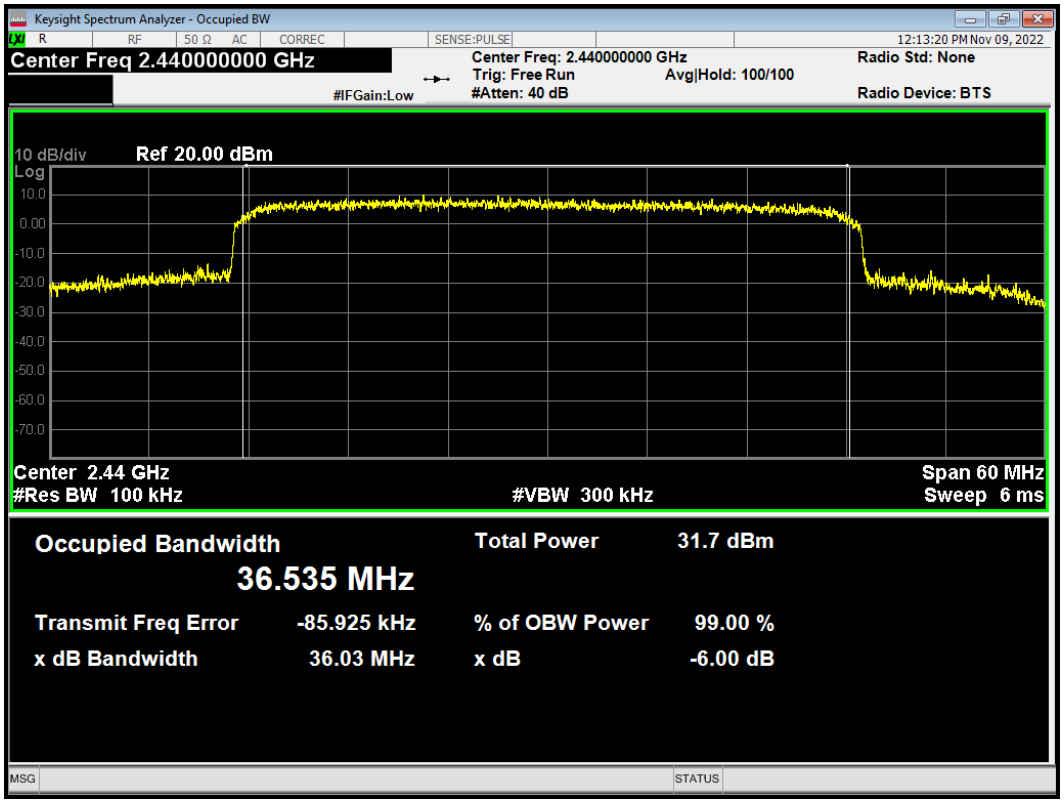
-6dB Bandwidth slot 20M 2460MHz



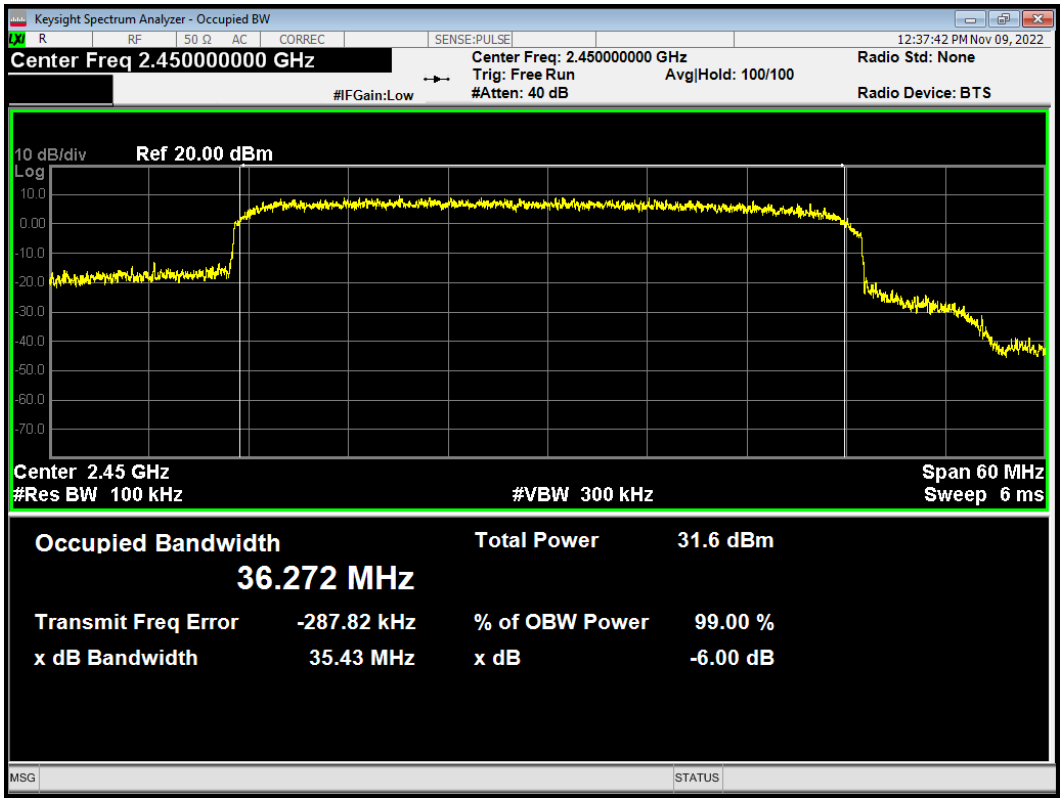
-6dB Bandwidth slot 40M 2425MHz



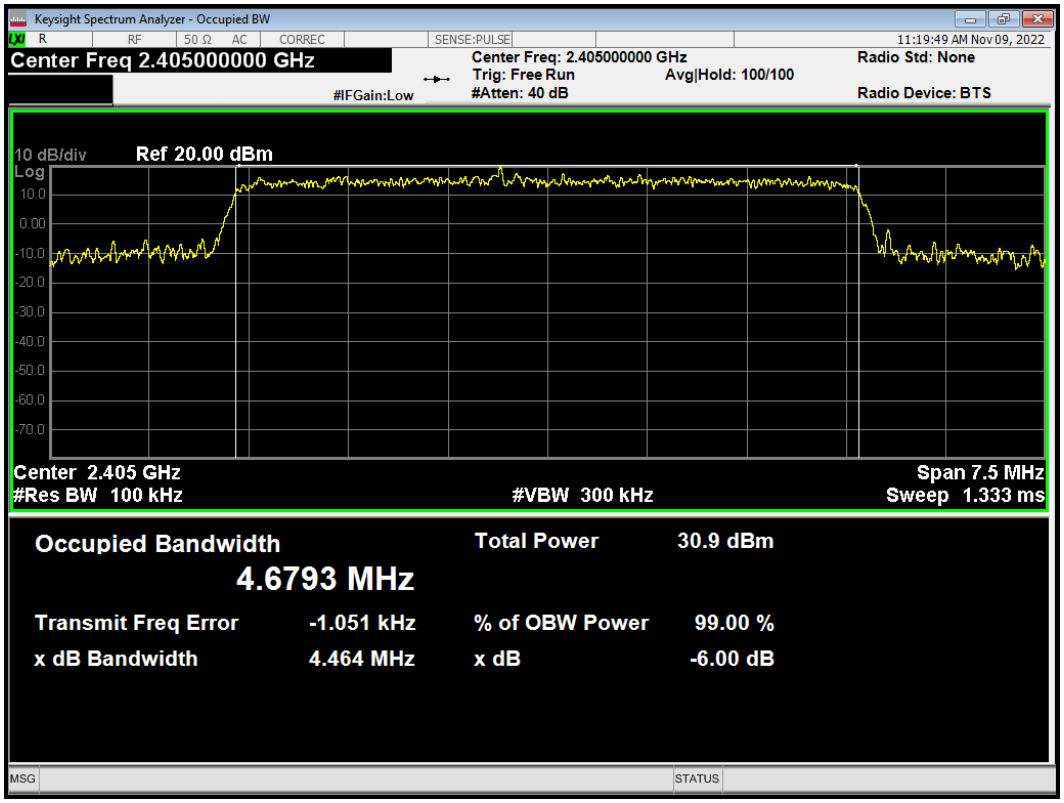
-6dB Bandwidth slot 40M 2440MHz



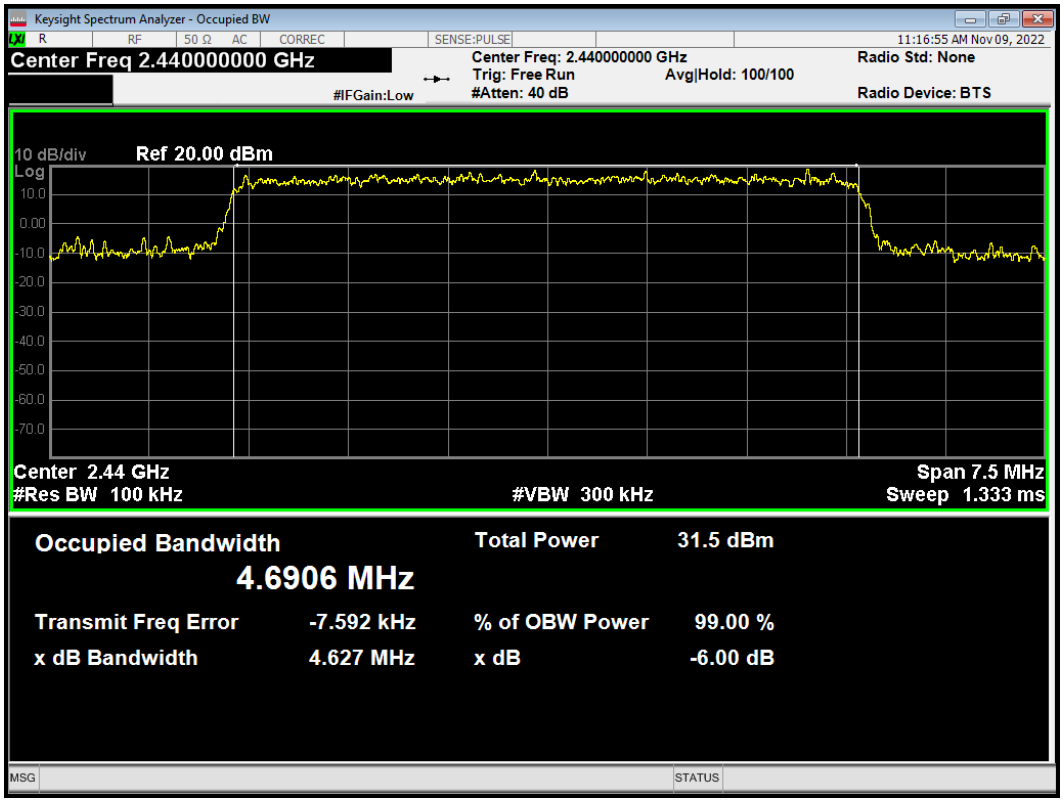
-6dB Bandwidth slot 40M 2450MHz



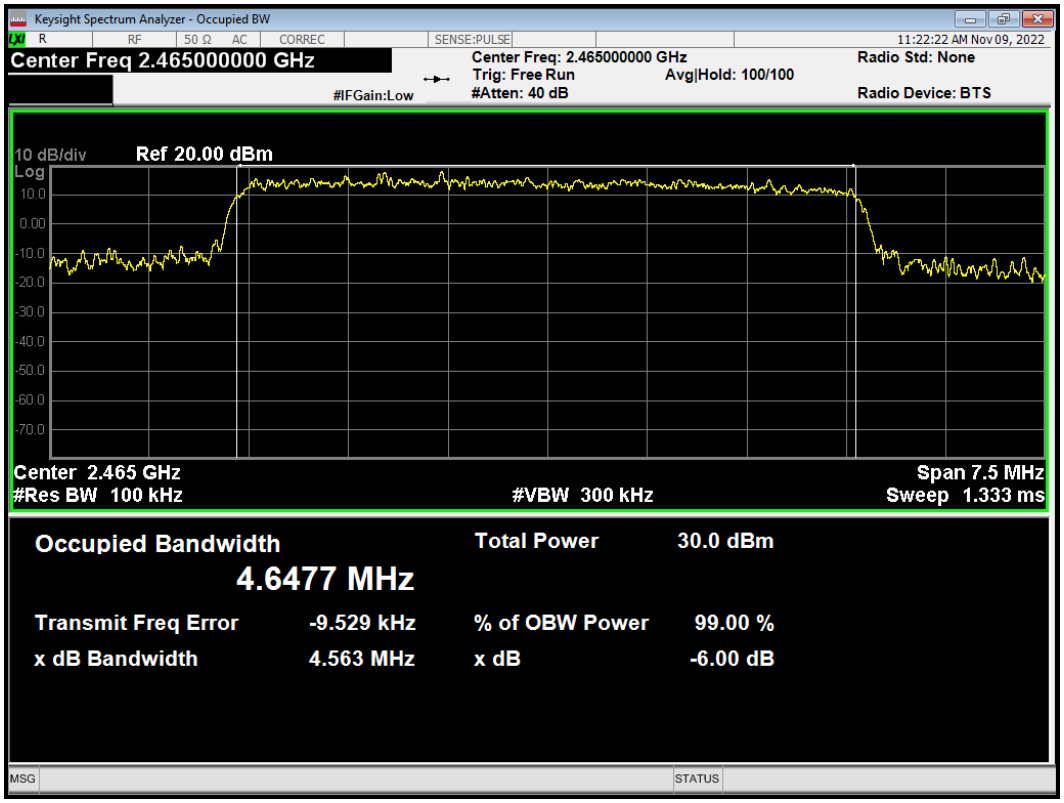
-6dB Bandwidth slot 5M 2405MHz



-6dB Bandwidth slot 5M 2440MHz

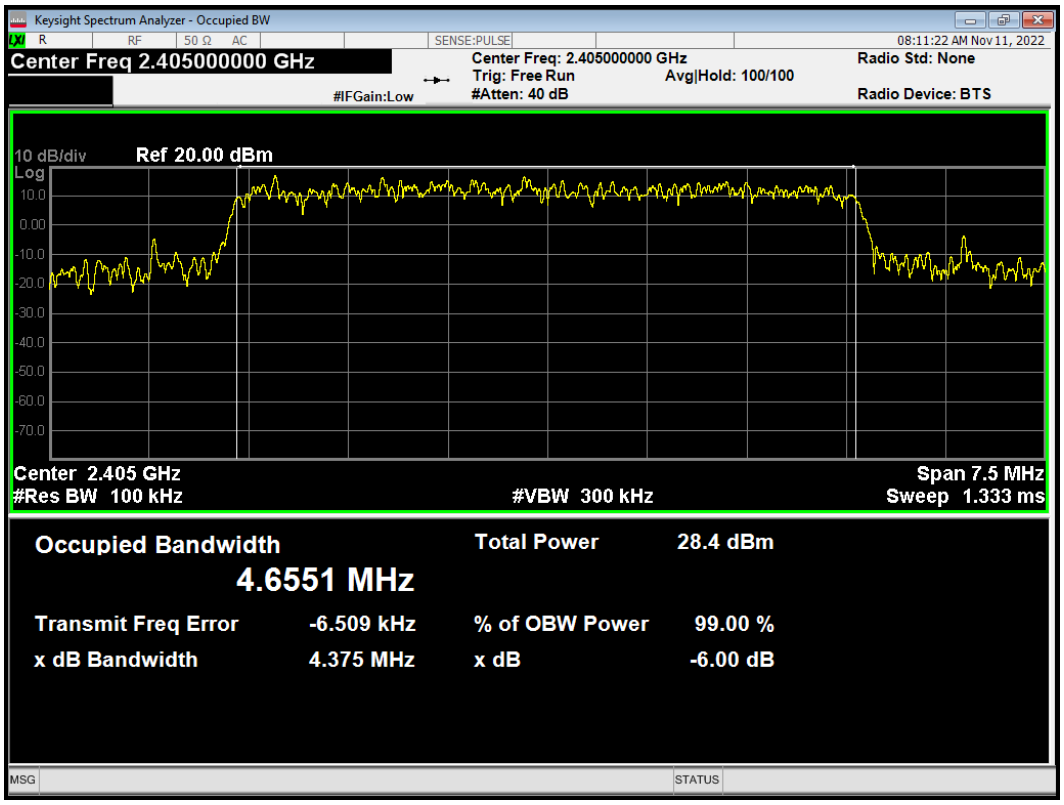


-6dB Bandwidth slot 5M 2465MHz

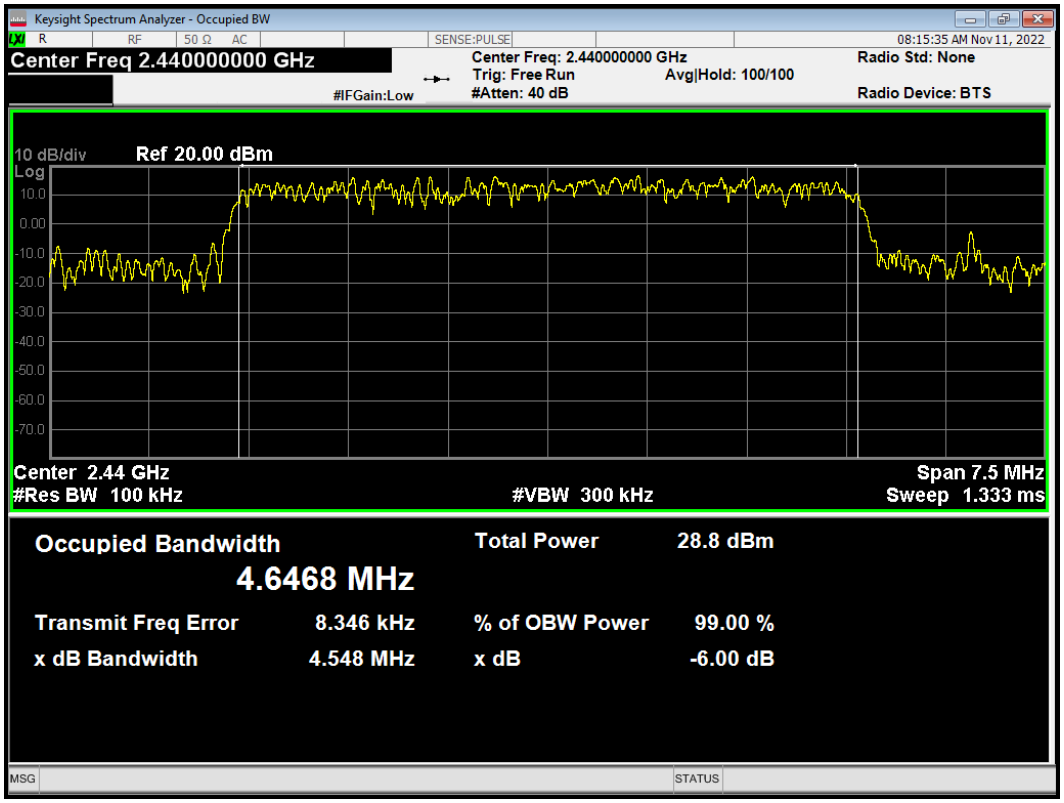


BR

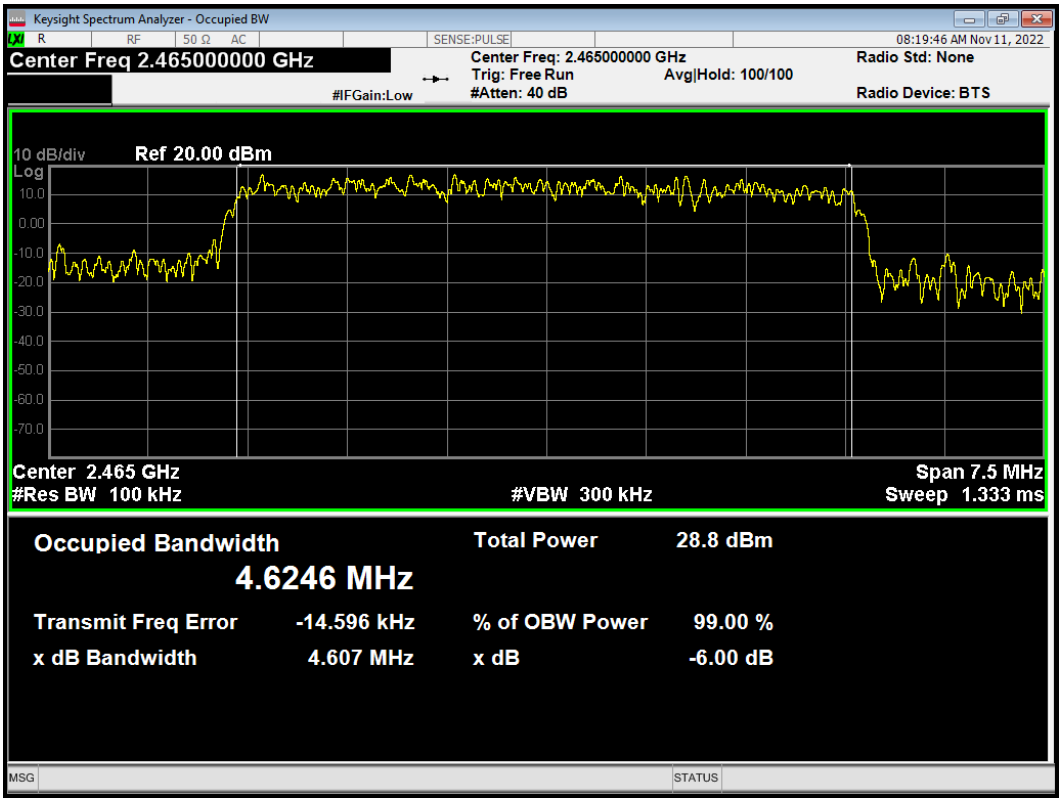
-6dB Bandwidth BR 5M 2405MHz



-6dB Bandwidth BR 5M 2440MHz



-6dB Bandwidth BR 5M 2465MHz



5.3. Band Edge

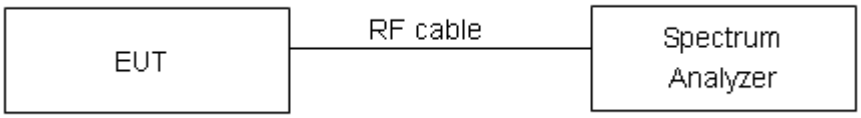
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “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 this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.”

Measurement Uncertainty

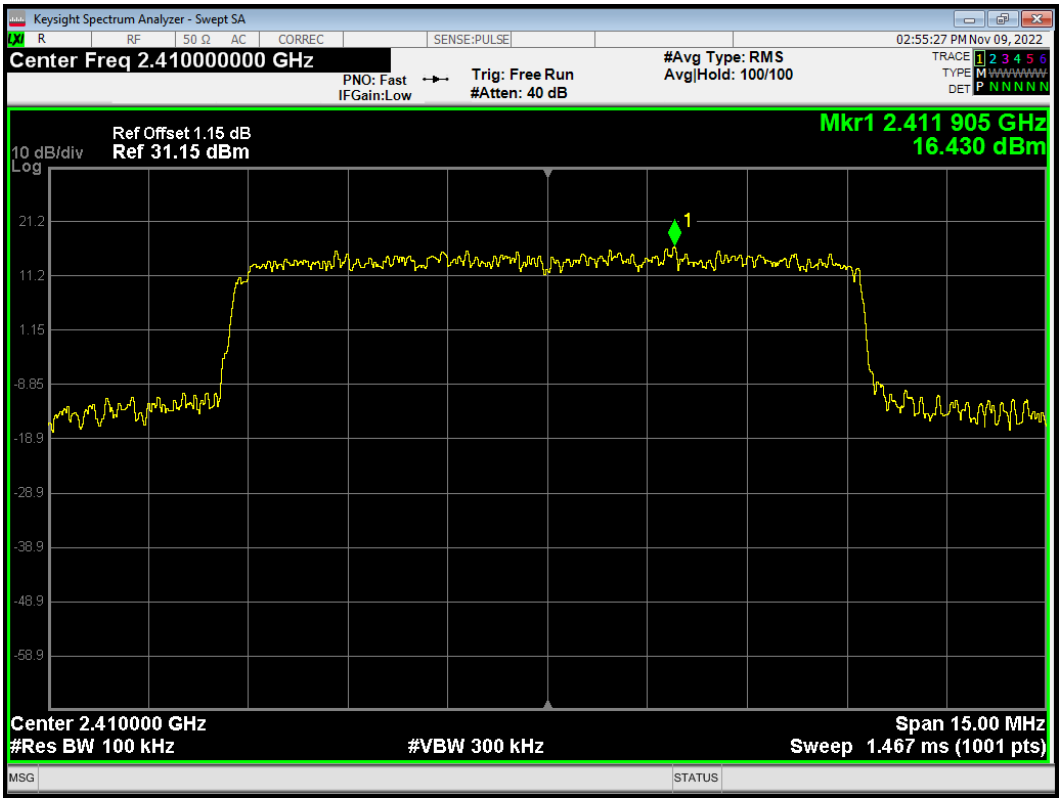
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
2GHz-3GHz	1.407 dB

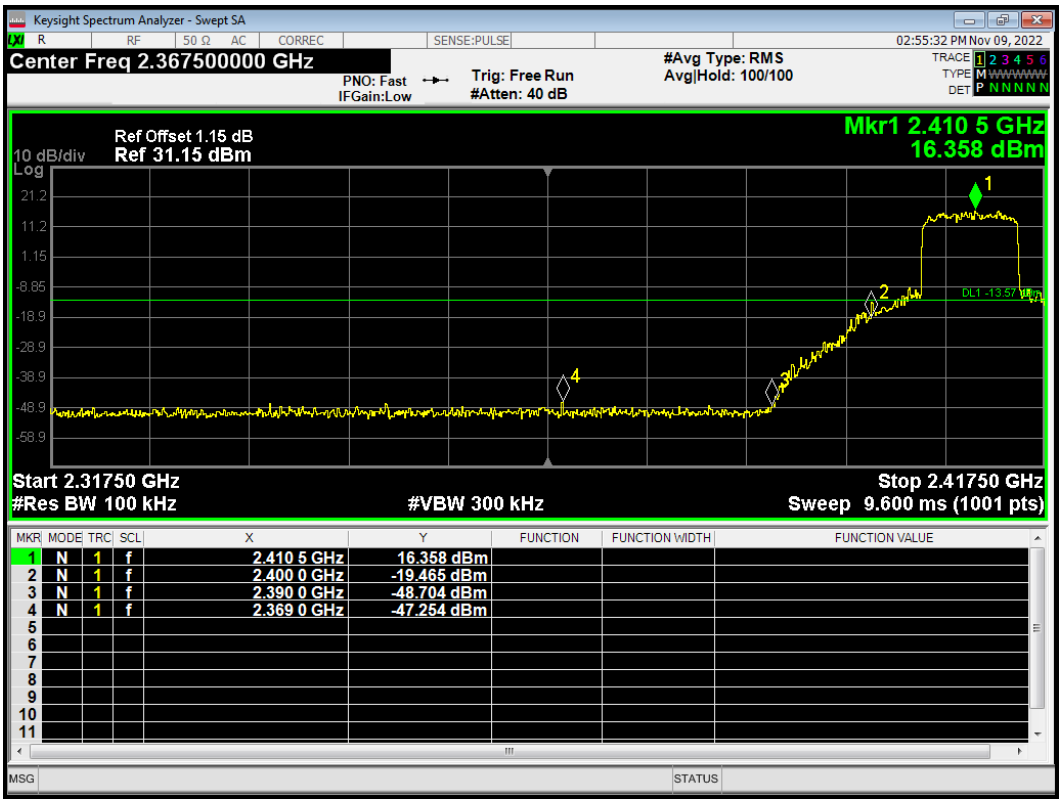
Test Results: PASS

SLOT

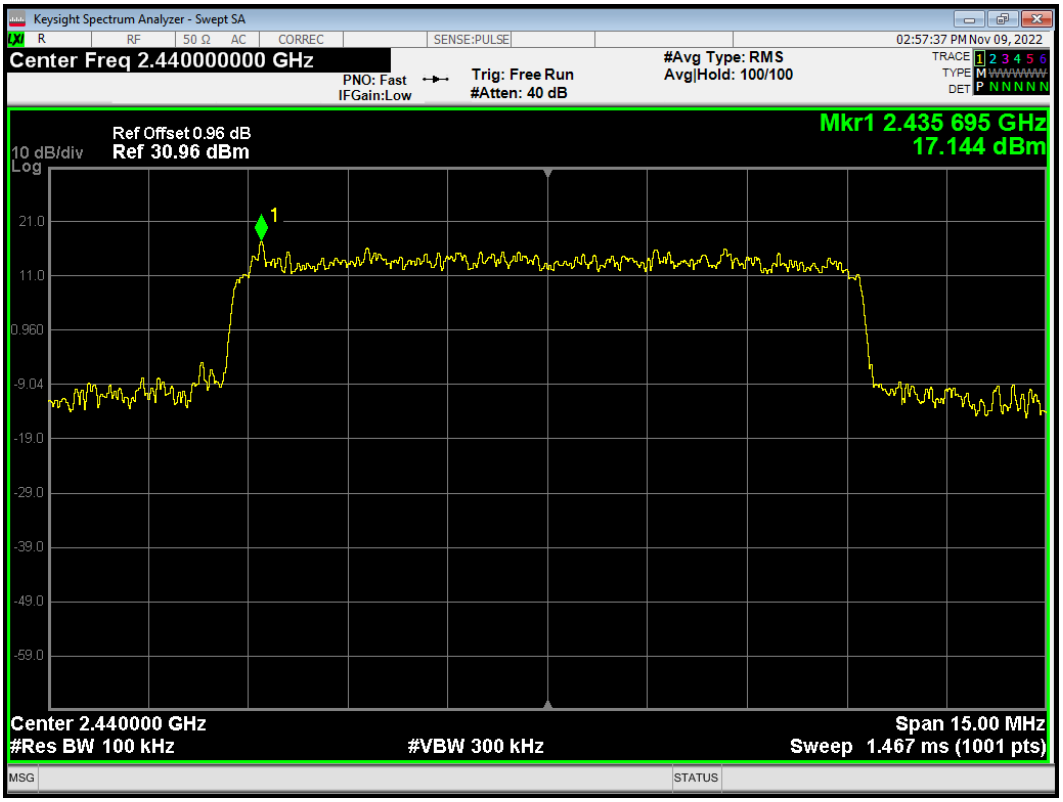
Band Edge slot 10M 2410MHz Ref



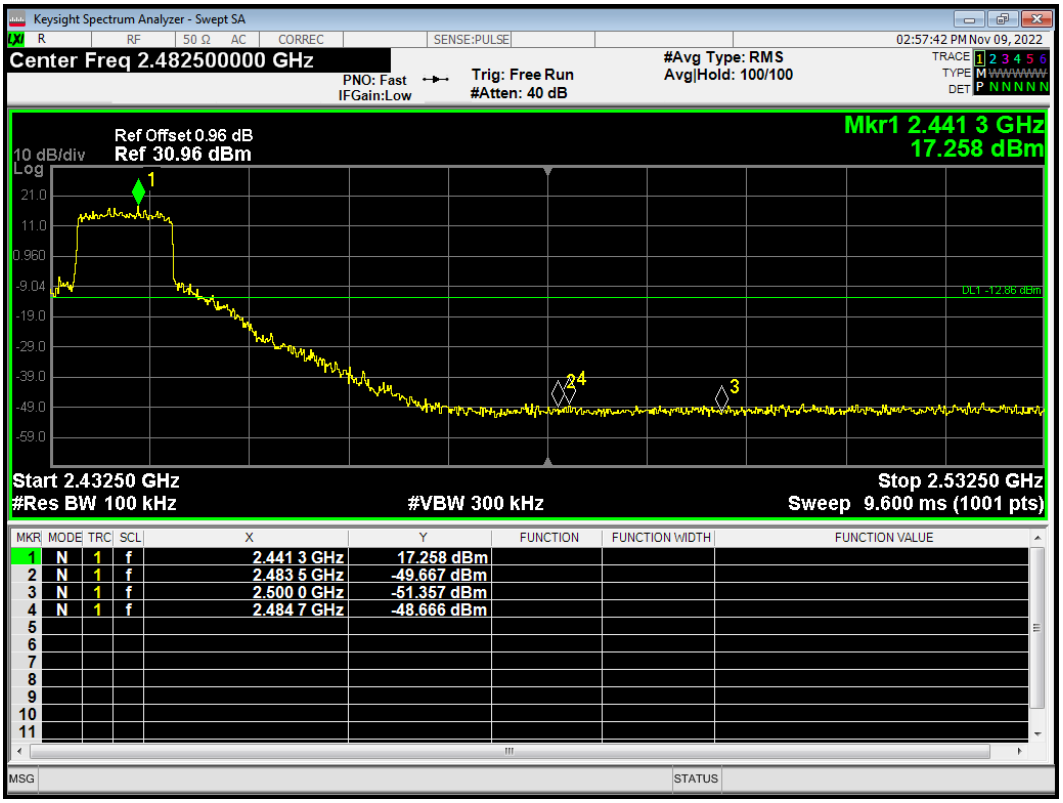
Band Edge slot 10M 2410MHz Emission



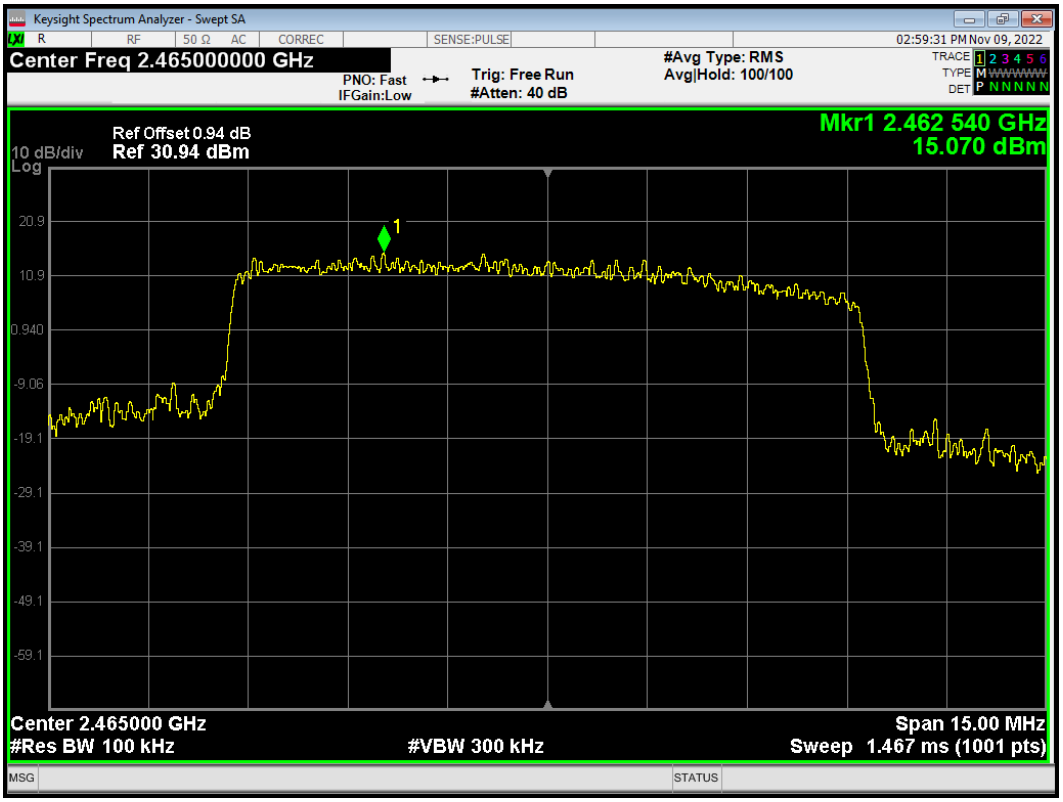
Band Edge slot 10M 2440MHz Ref



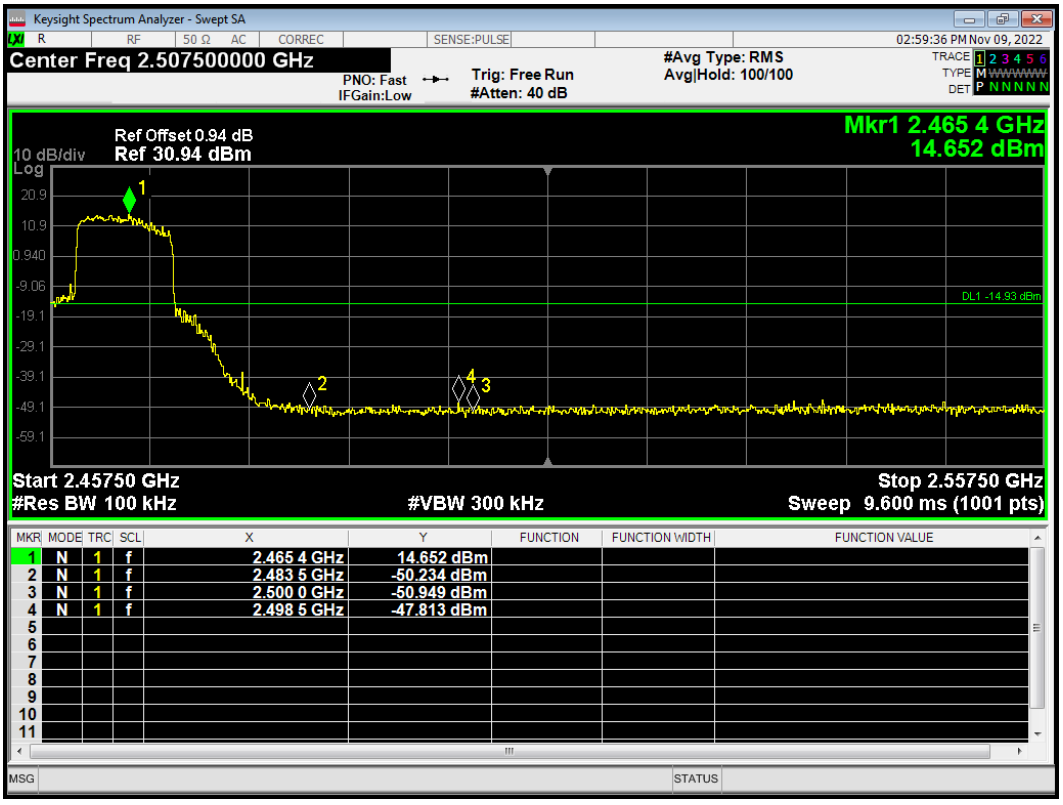
Band Edge slot 10M 2440MHz Emission



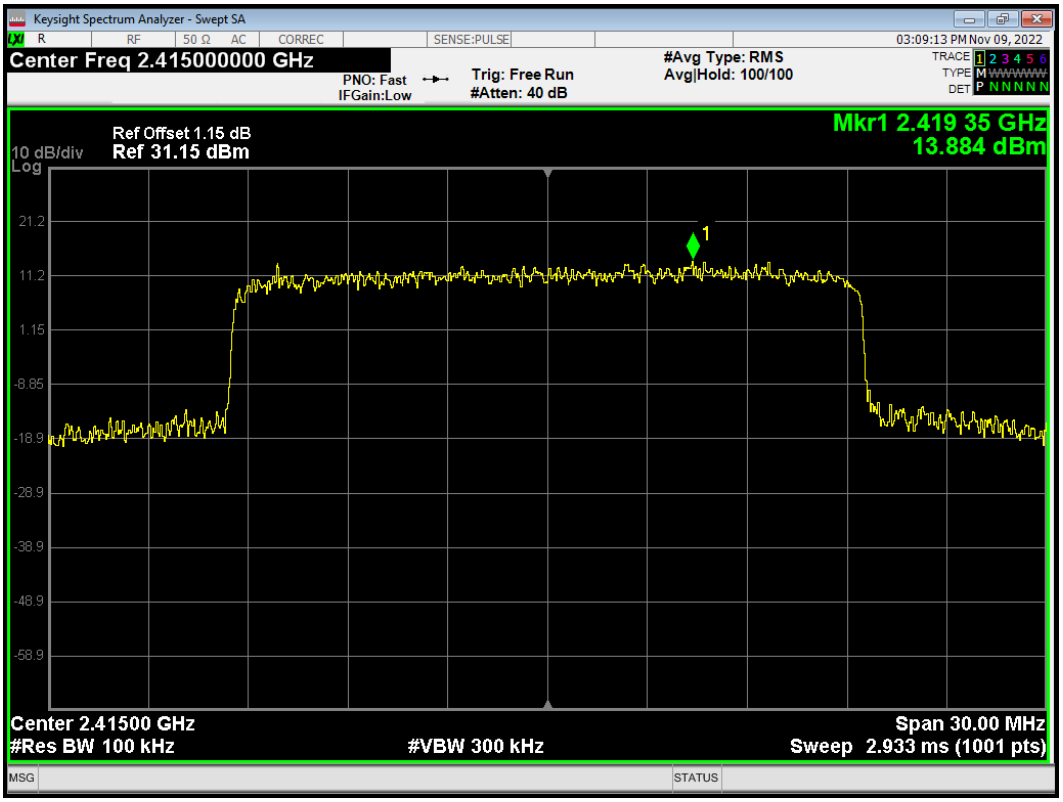
Band Edge slot 10M 2465MHz Ref



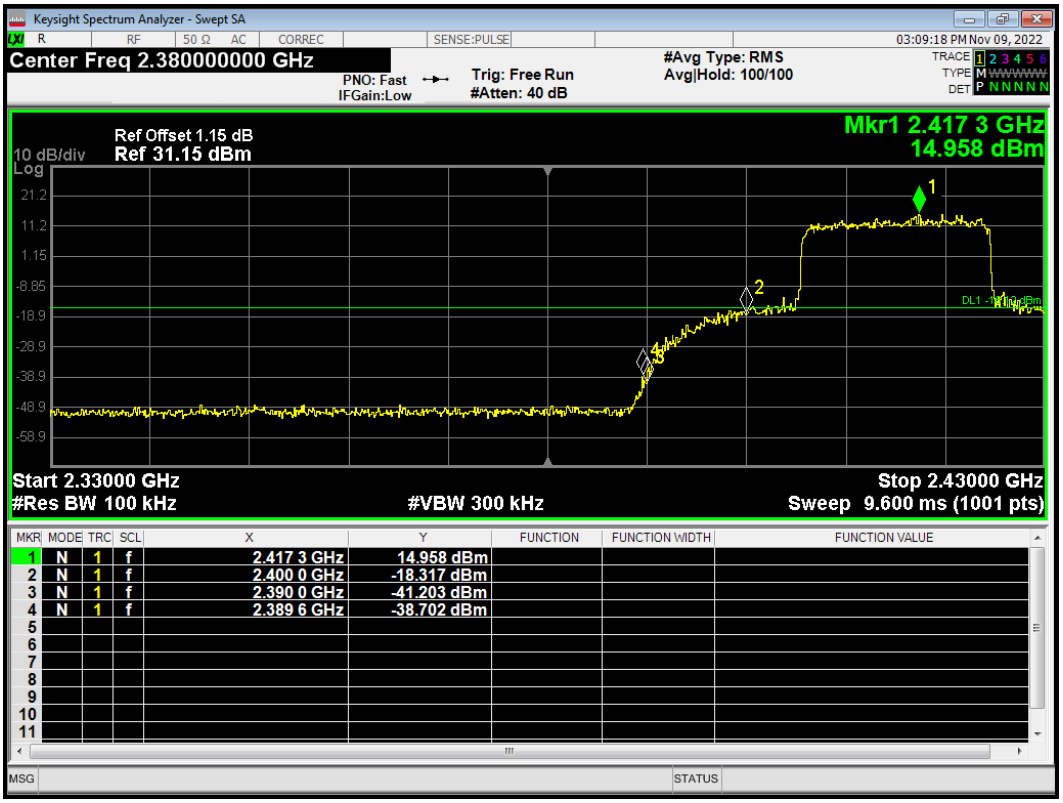
Band Edge slot 10M 2465MHz Emission



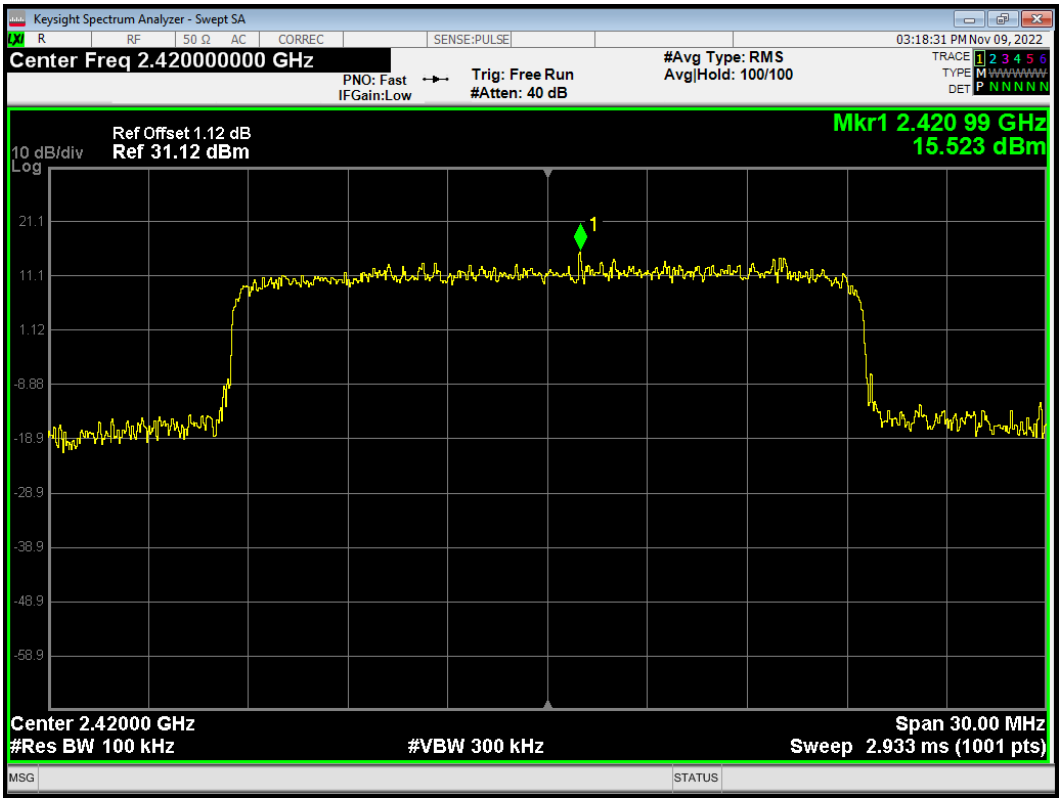
Band Edge slot 20M 2415MHz Ref



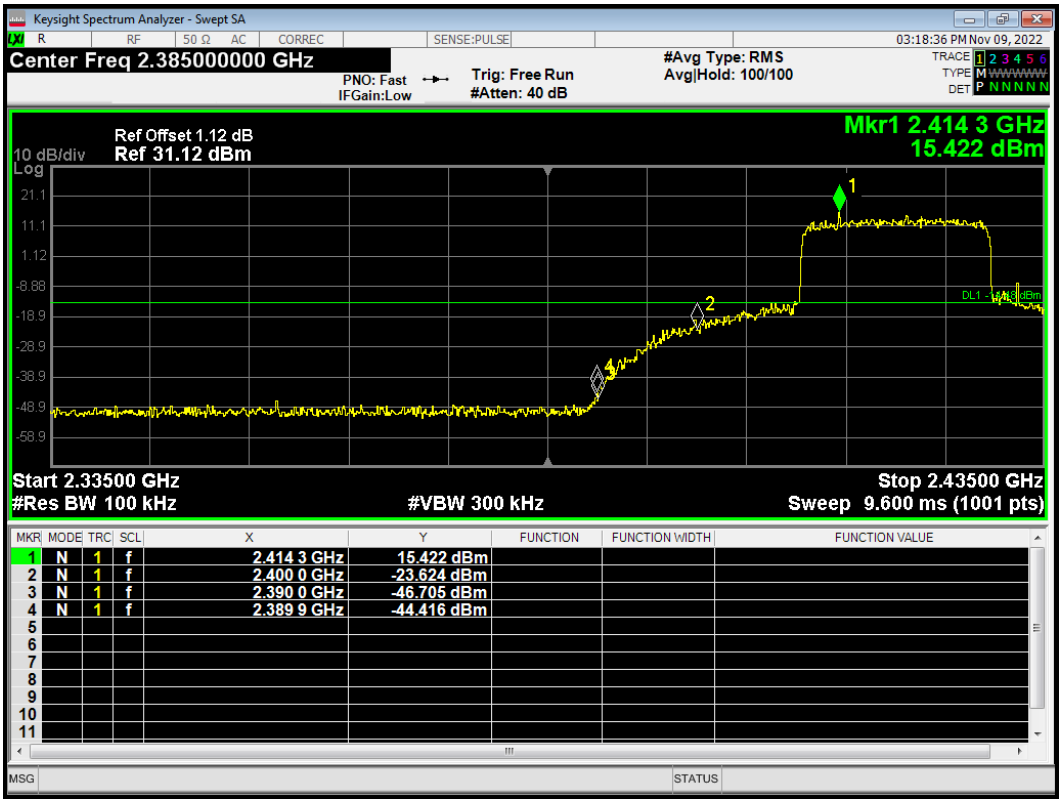
Band Edge slot 20M 2415MHz Emission



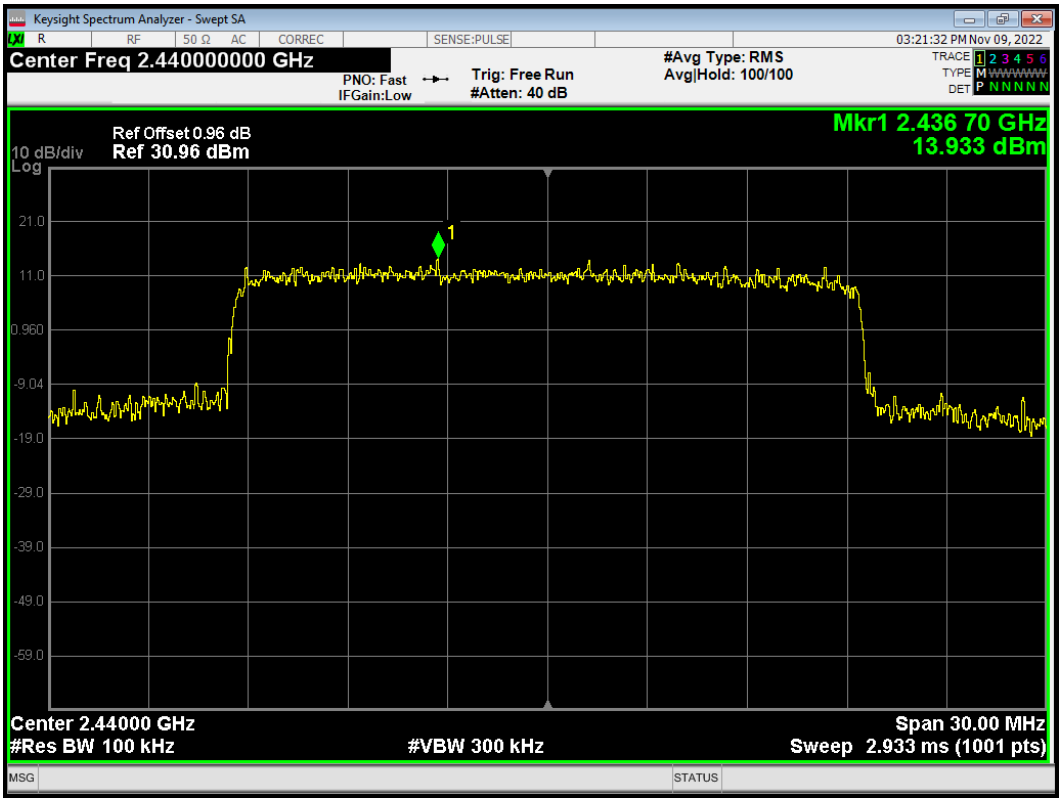
Band Edge slot 20M 2420MHz Ref



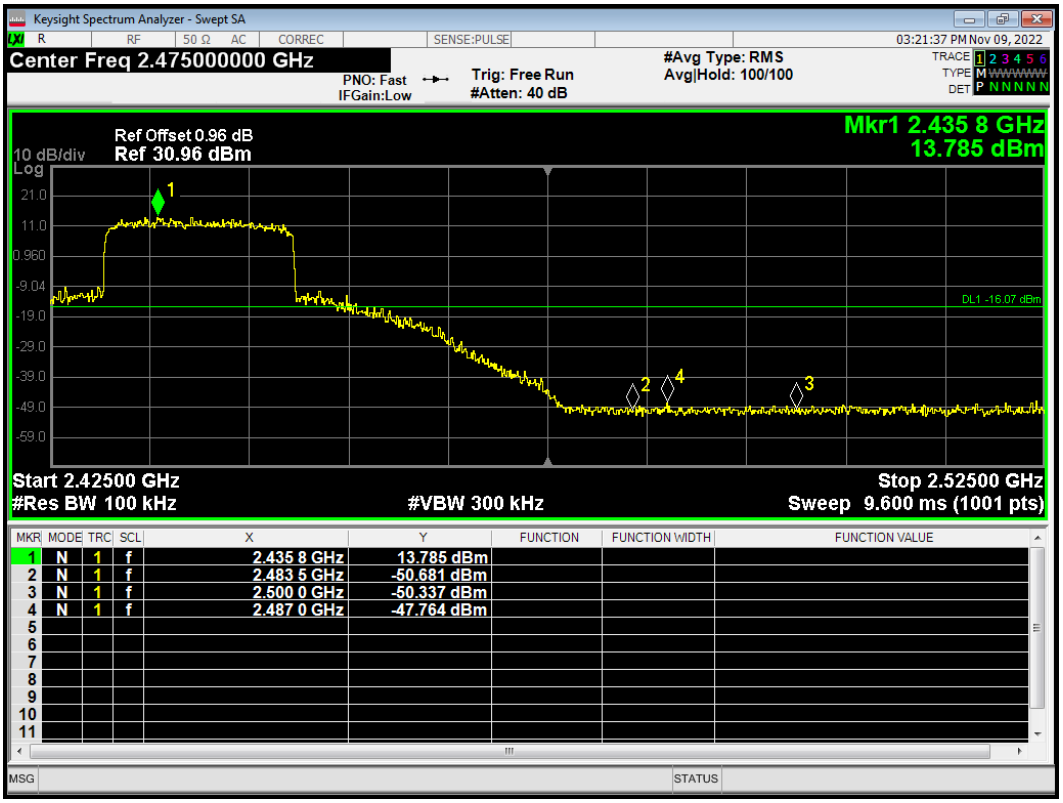
Band Edge slot 20M 2420MHz Emission



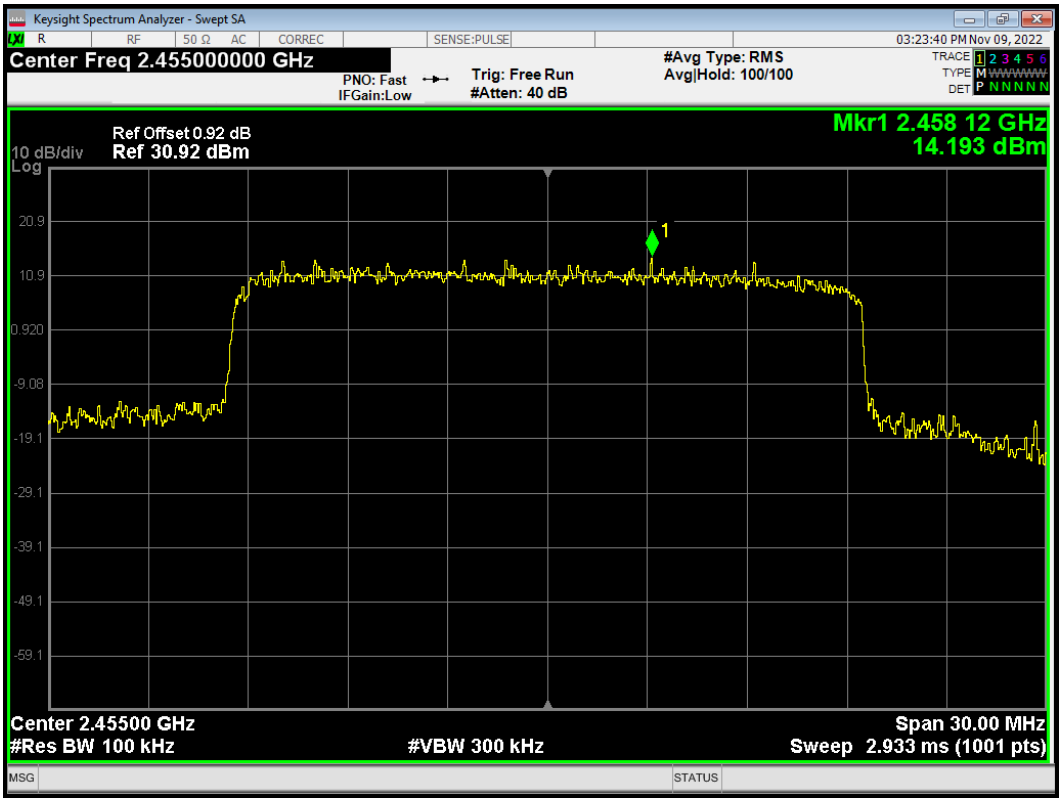
Band Edge slot 20M 2440MHz Ref



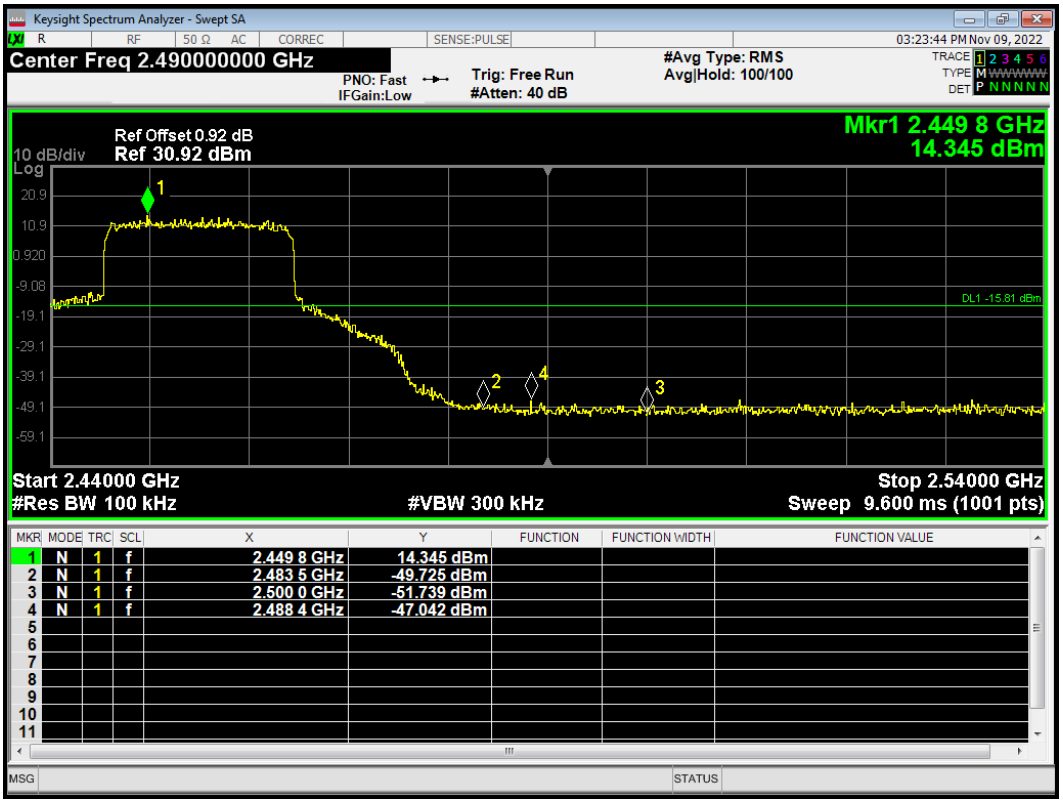
Band Edge slot 20M 2440MHz Emission



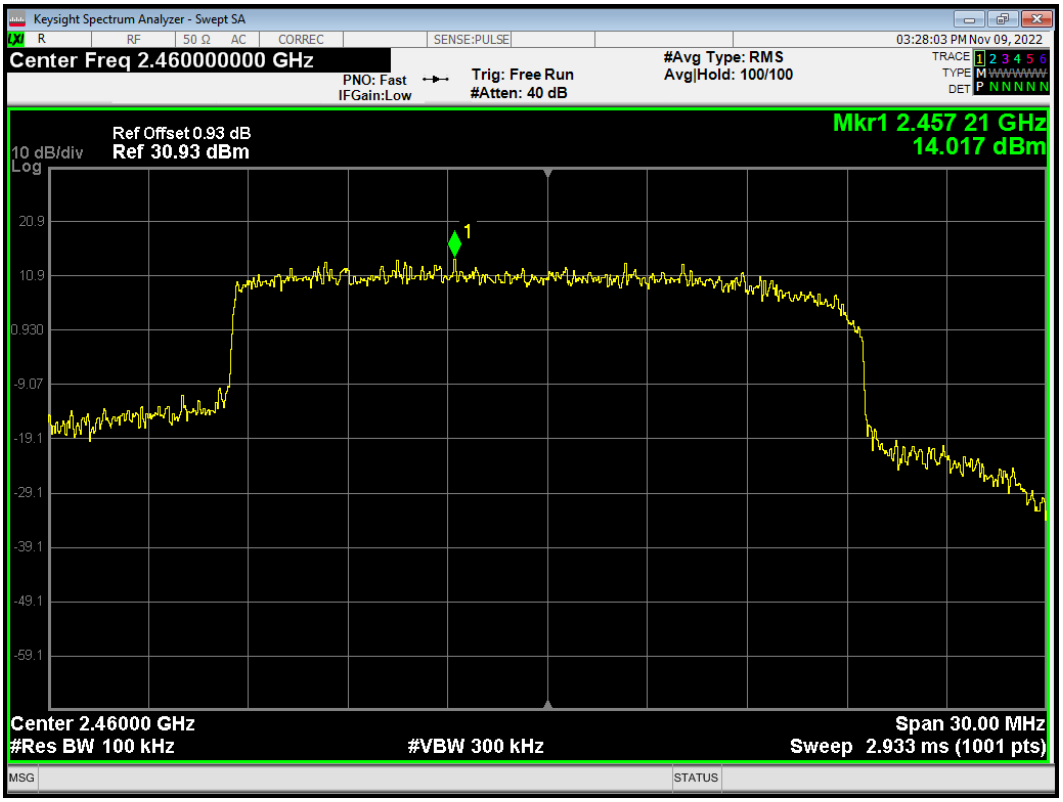
Band Edge slot 20M 2455MHz Ref



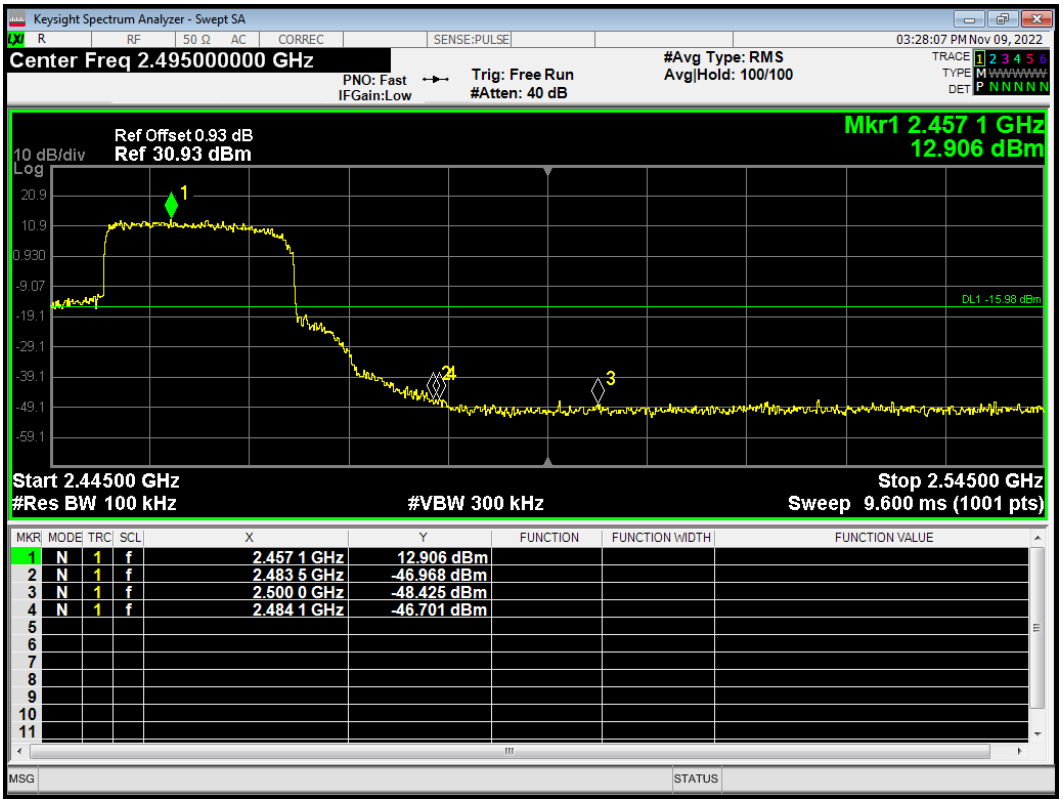
Band Edge slot 20M 2455MHz Emission



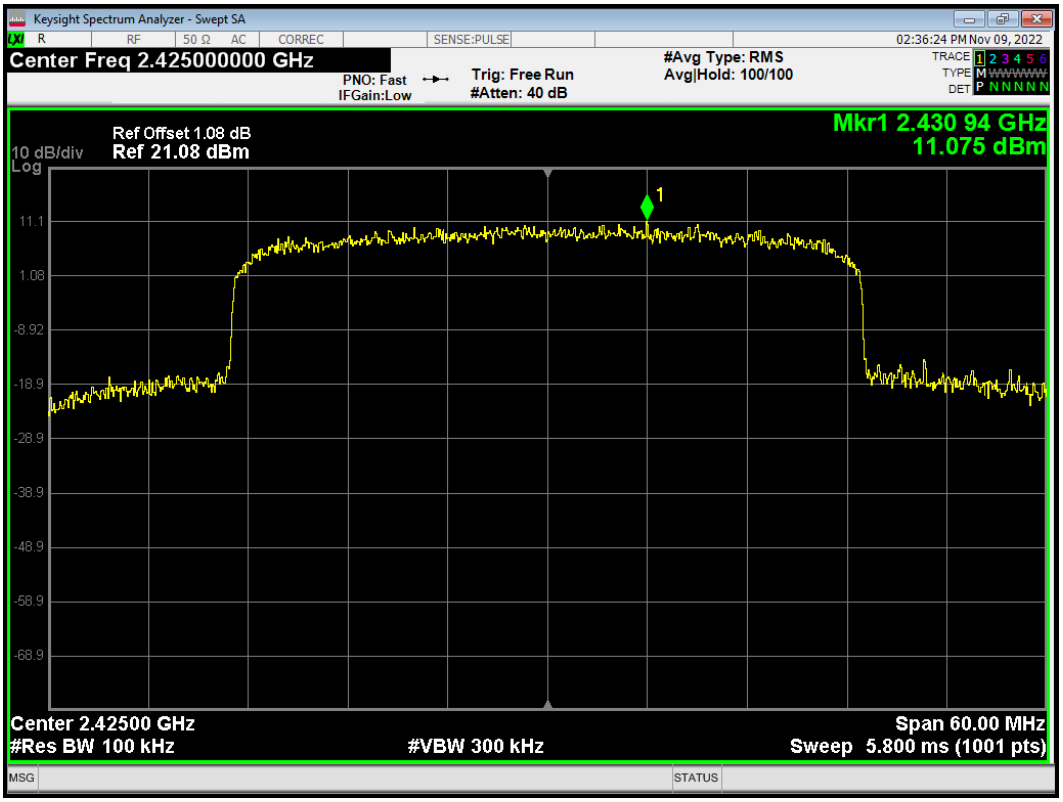
Band Edge slot 20M 2460MHz Ref



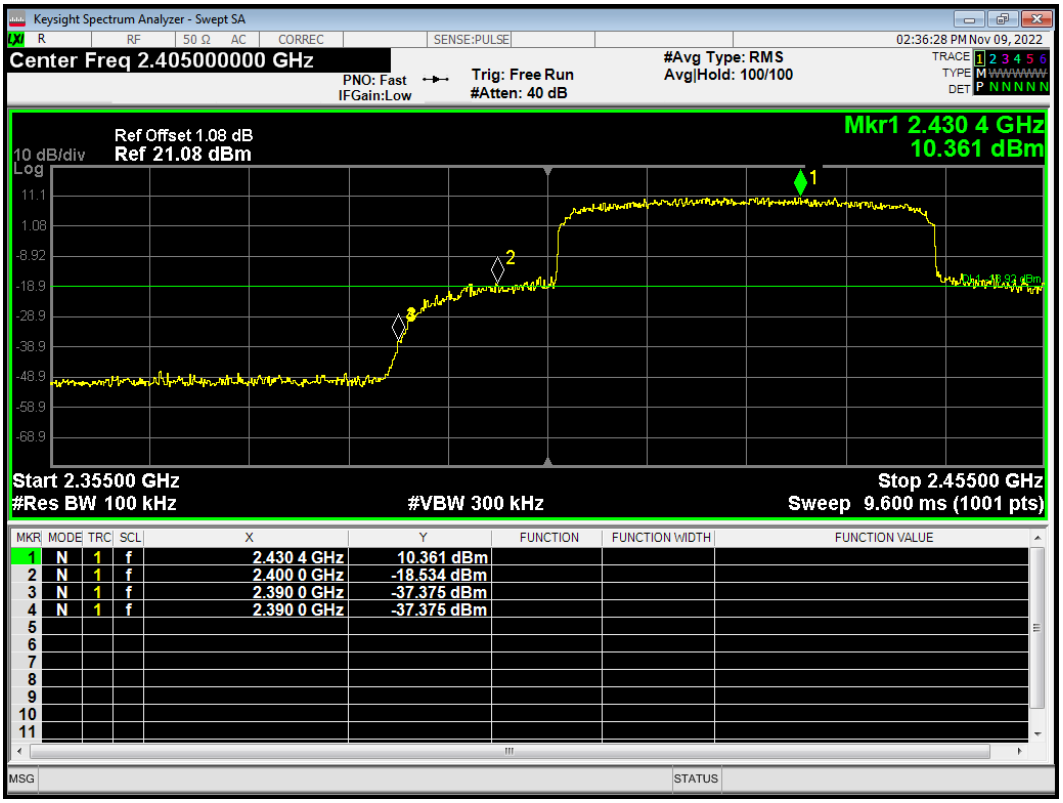
Band Edge slot 20M 2460MHz Emission



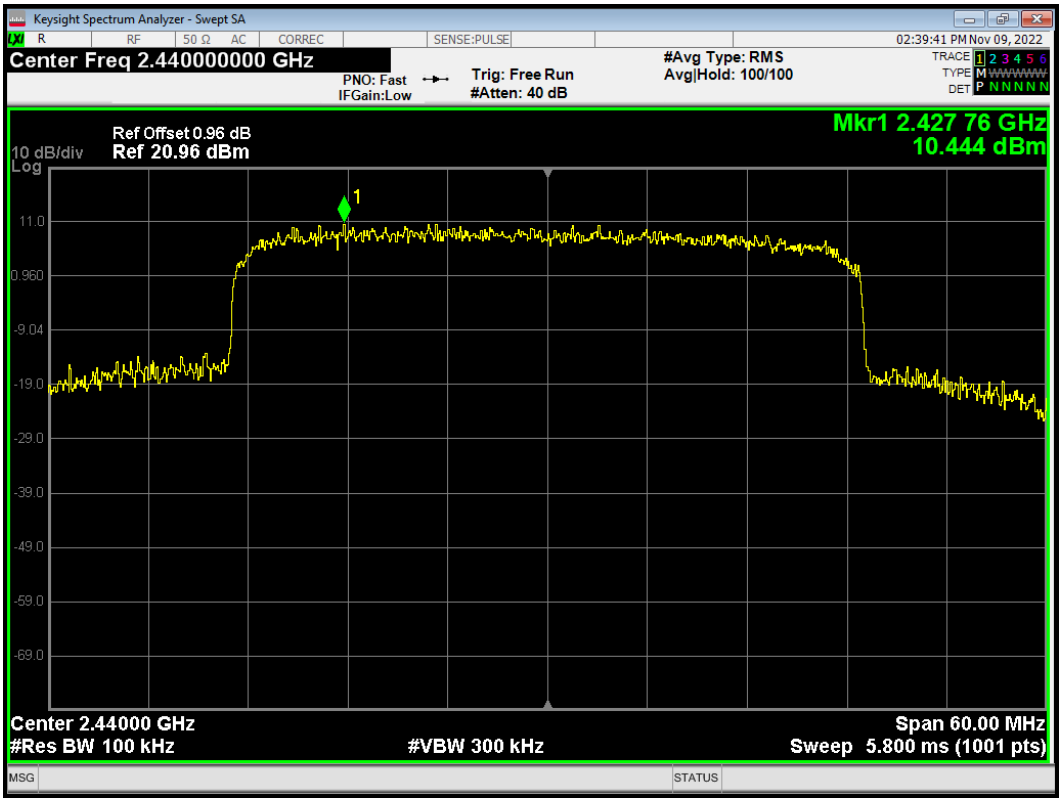
Band Edge slot 40M 2425MHz Ref



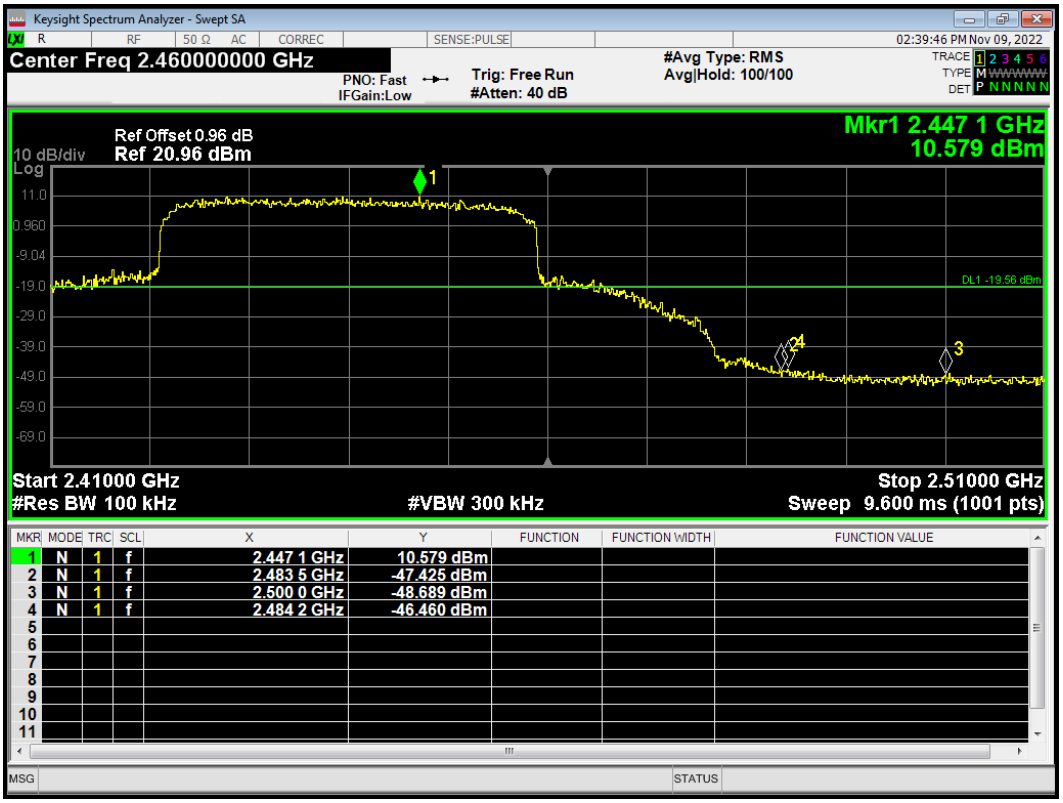
Band Edge slot 40M 2425MHz Emission



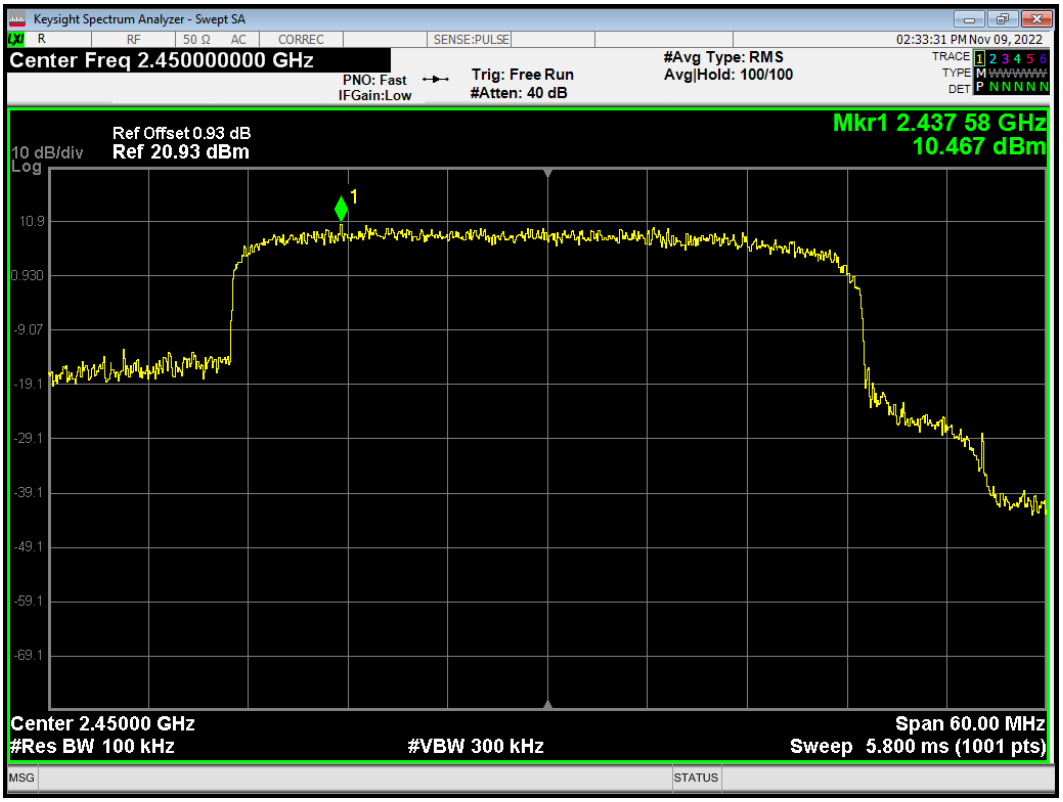
Band Edge slot 40M 2440MHz Ref



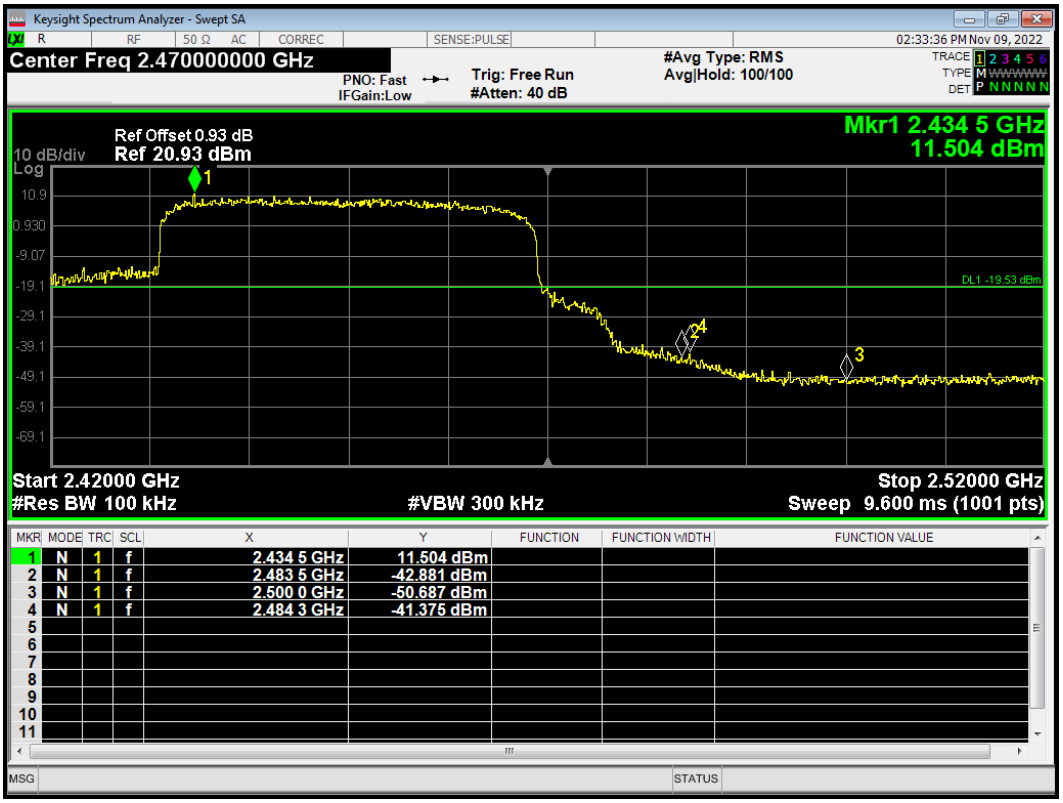
Band Edge slot 40M 2440MHz Emission



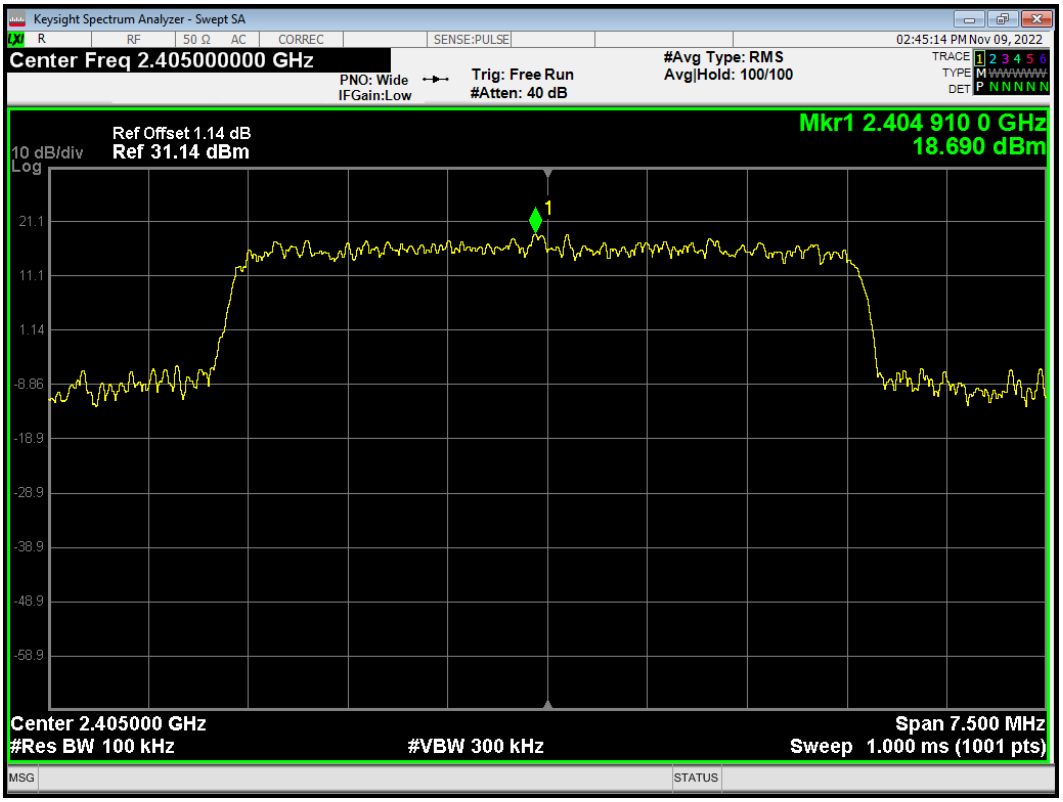
Band Edge slot 40M 2450MHz Ref



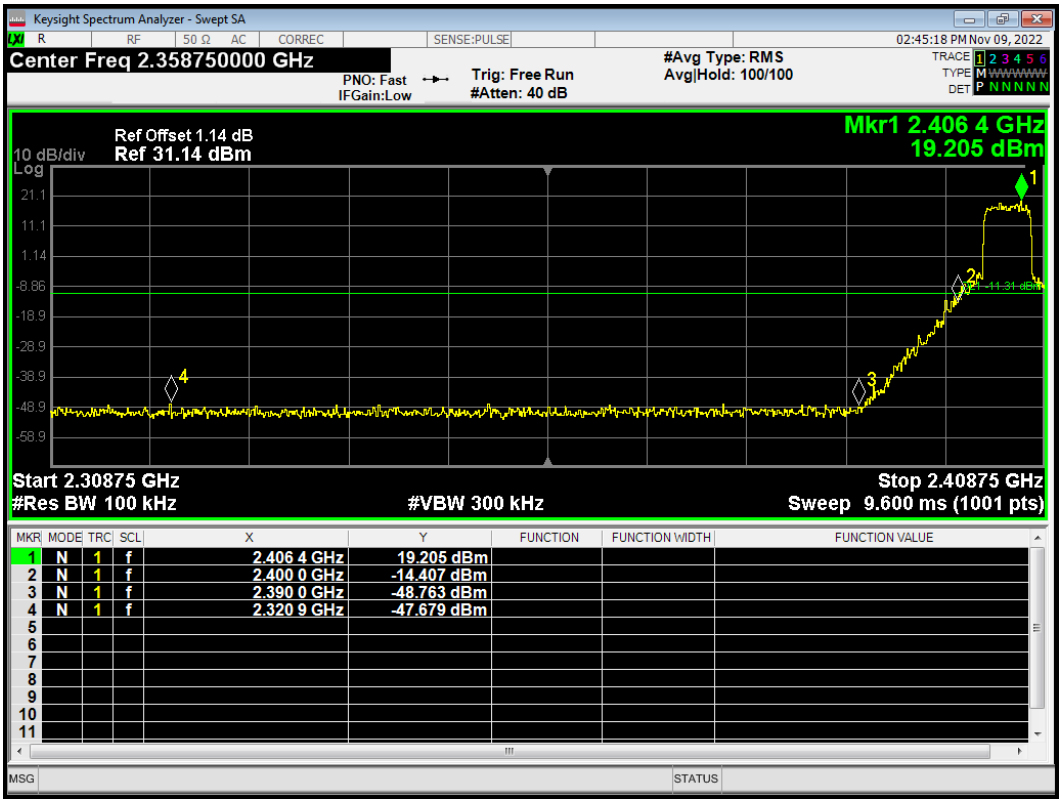
Band Edge slot 40M 2450MHz Emission



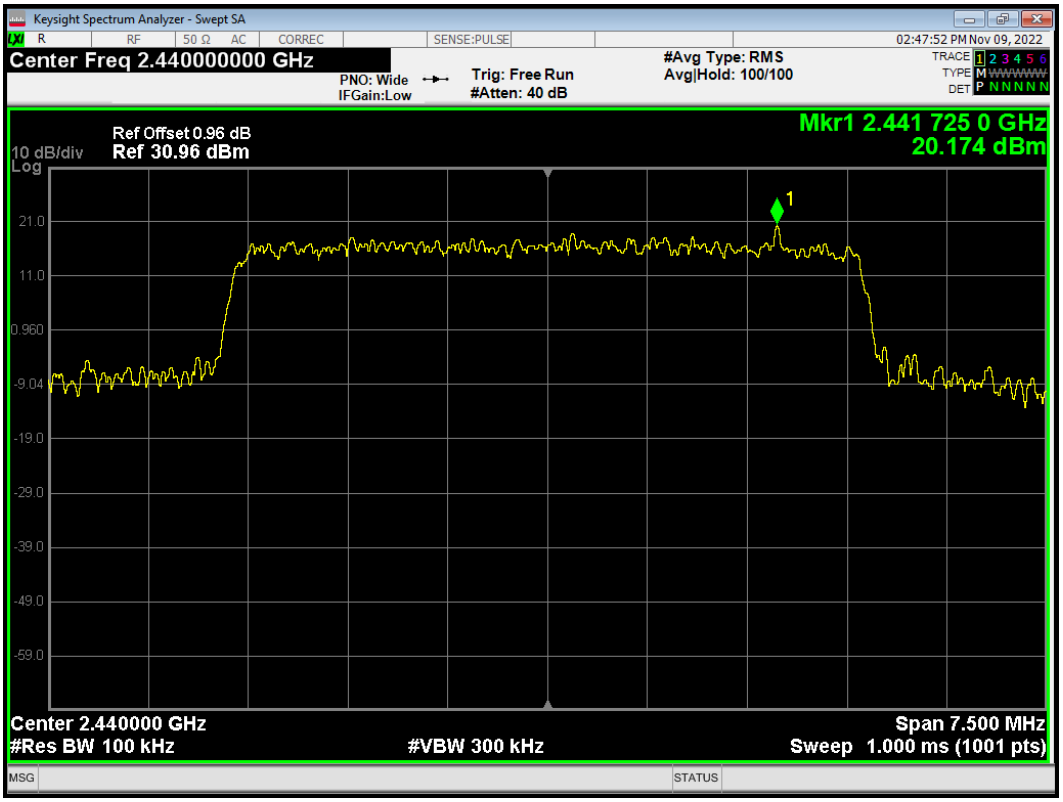
Band Edge slot 5M 2405MHz Ref



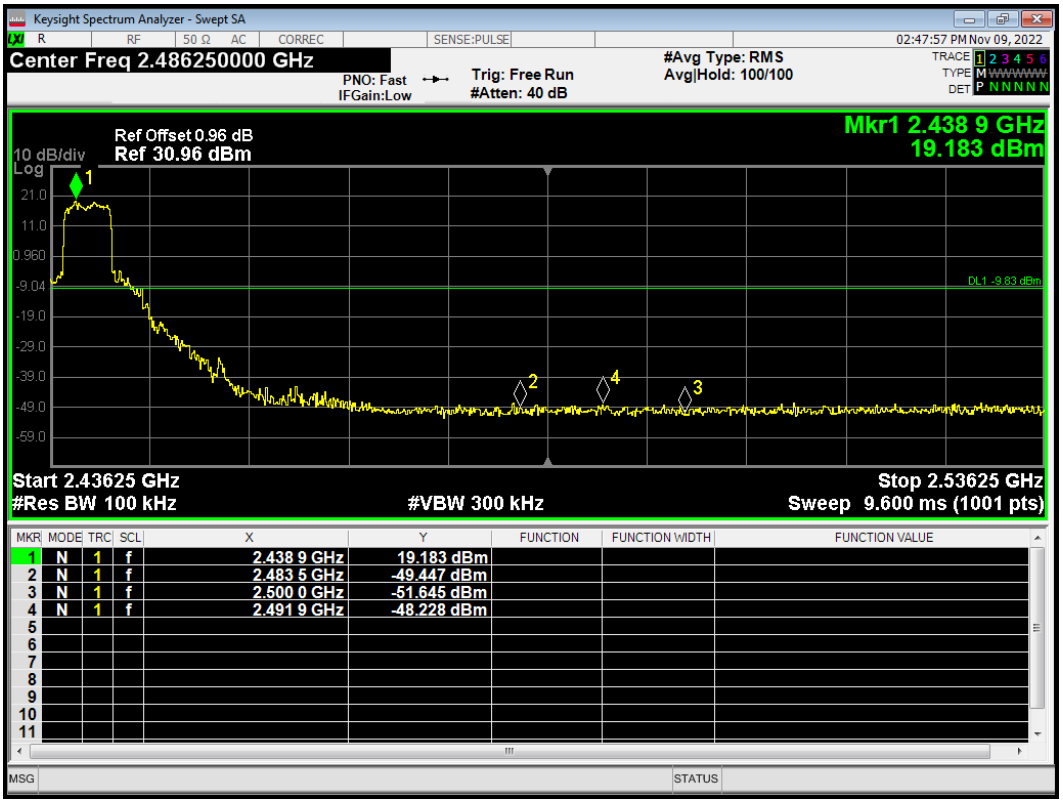
Band Edge slot 5M 2405MHz Emission



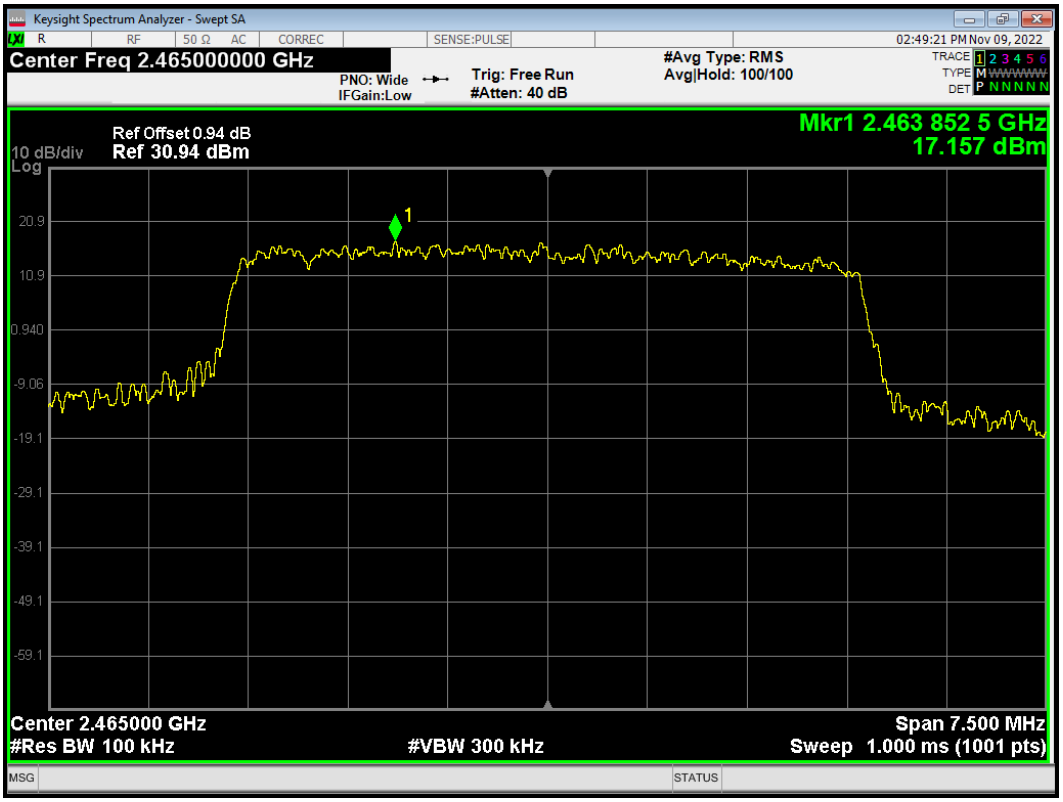
Band Edge slot 5M 2440MHz Ref



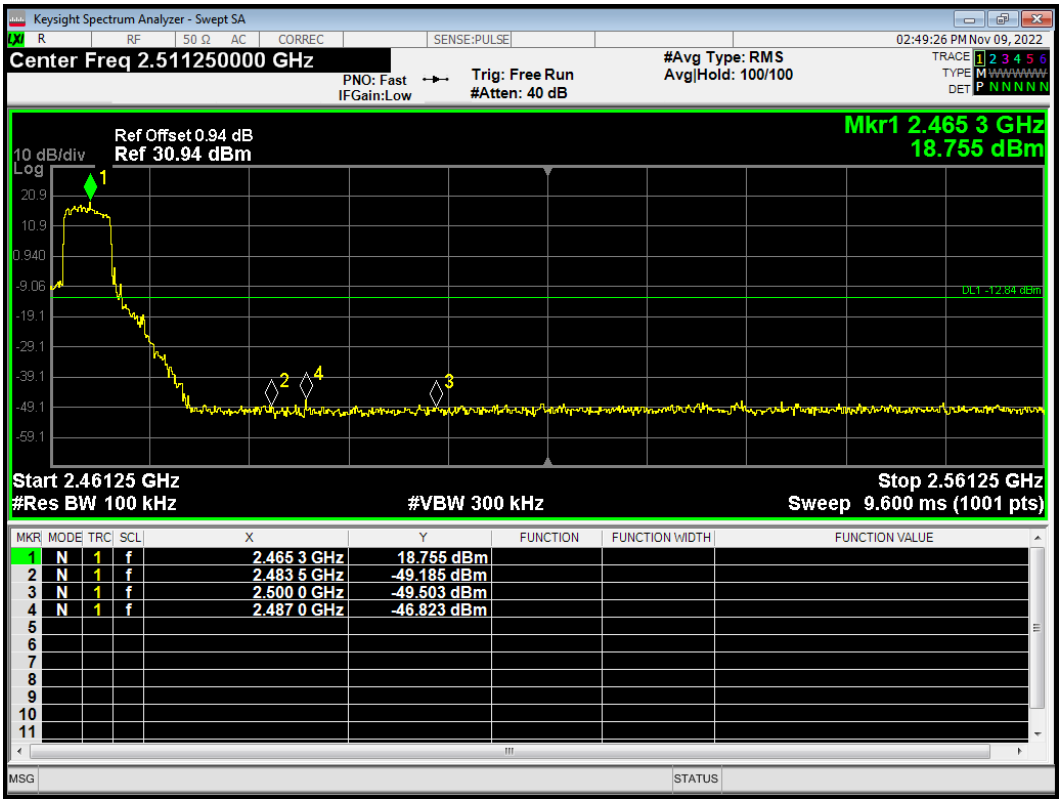
Band Edge slot 5M 2440MHz Emission



Band Edge slot 5M 2465MHz Ref

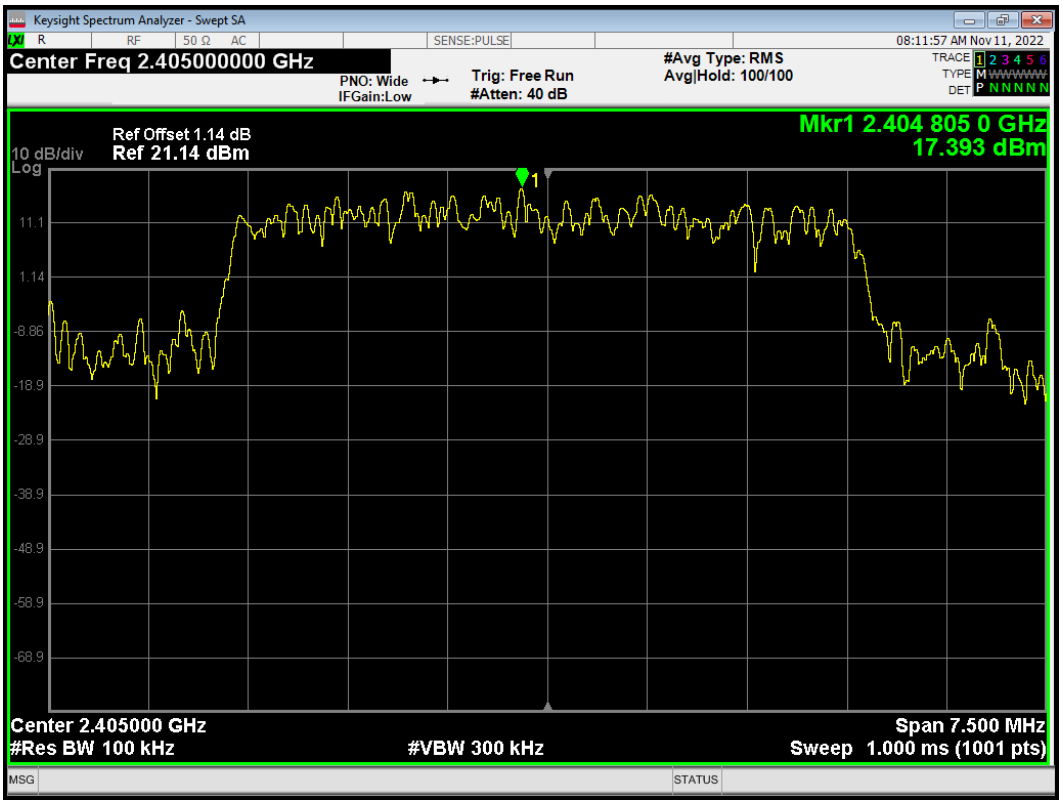


Band Edge slot 5M 2465MHz Emission

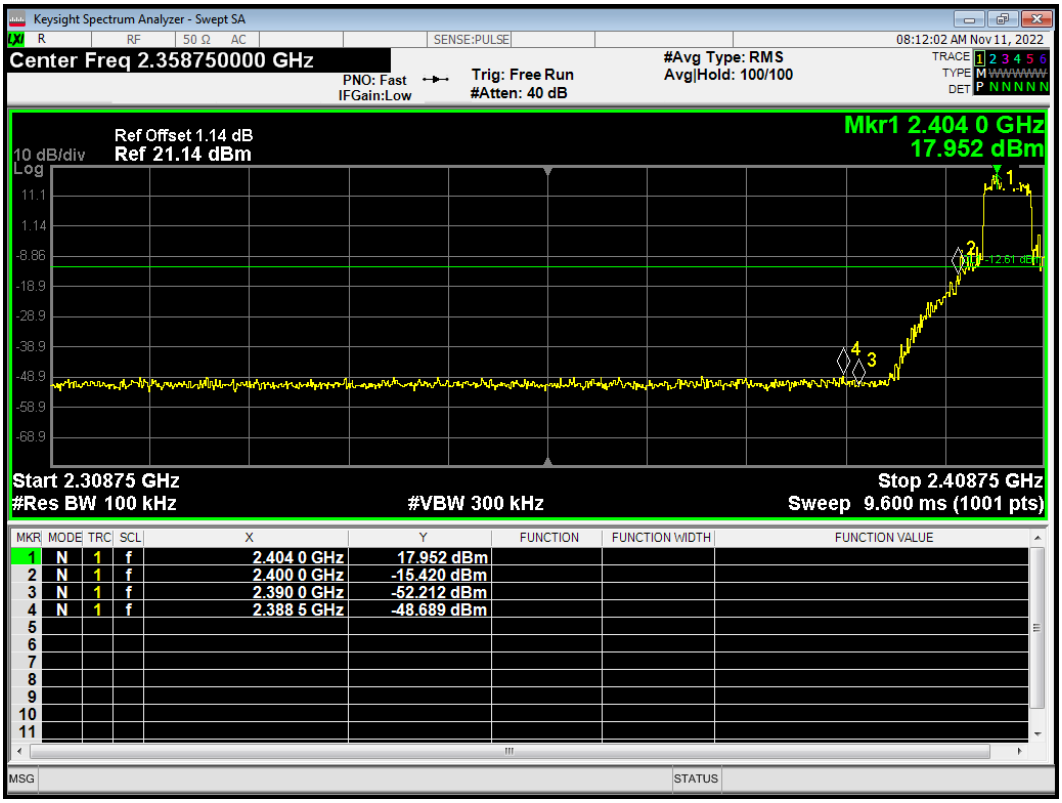


BR

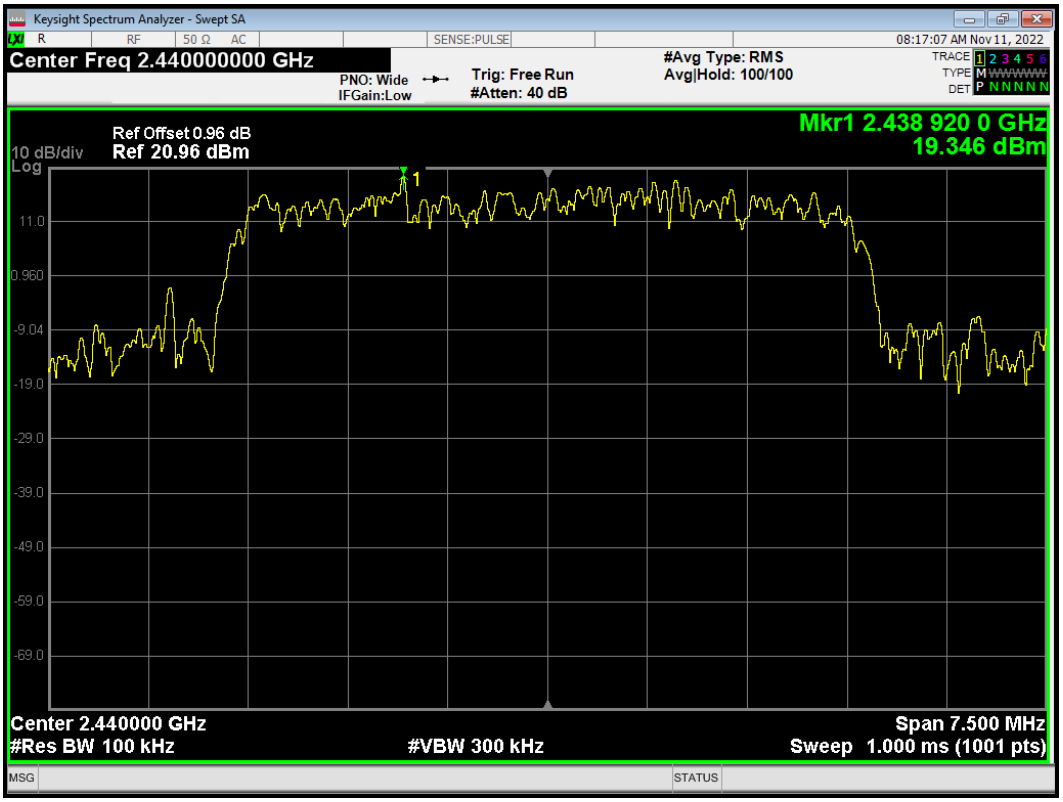
Band Edge BR 5M 2405MHz Ref



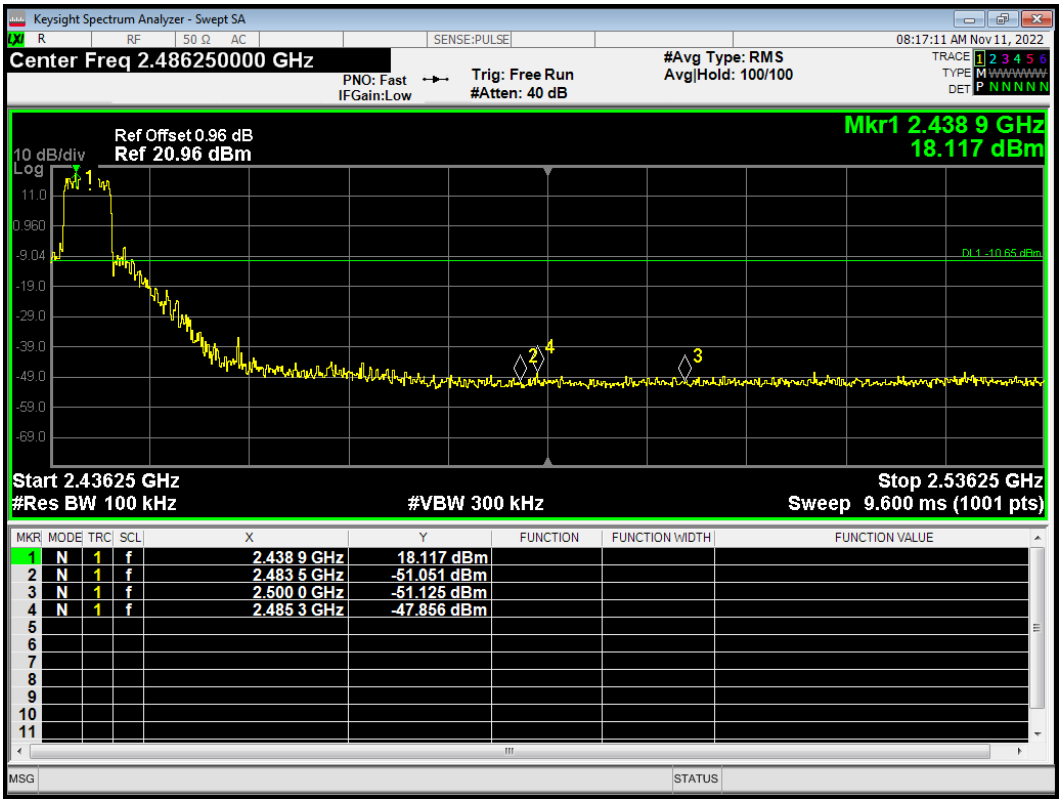
Band Edge BR 5M 2405MHz Emission



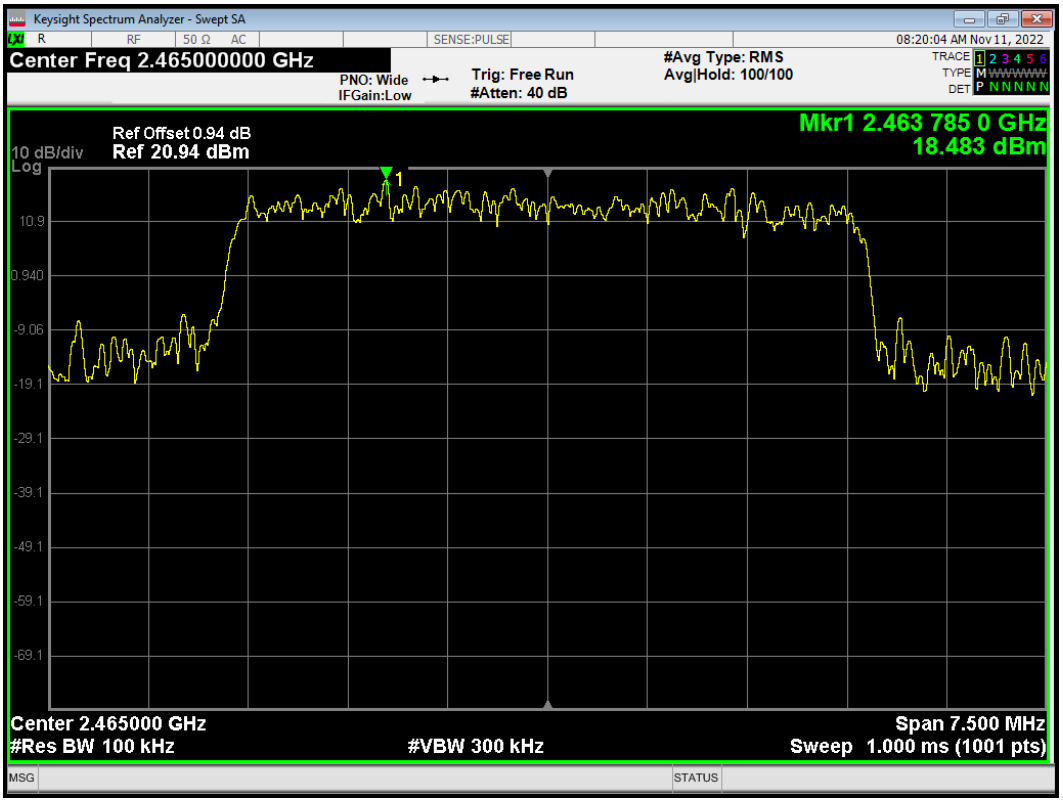
Band Edge BR 5M 2440MHz Ref



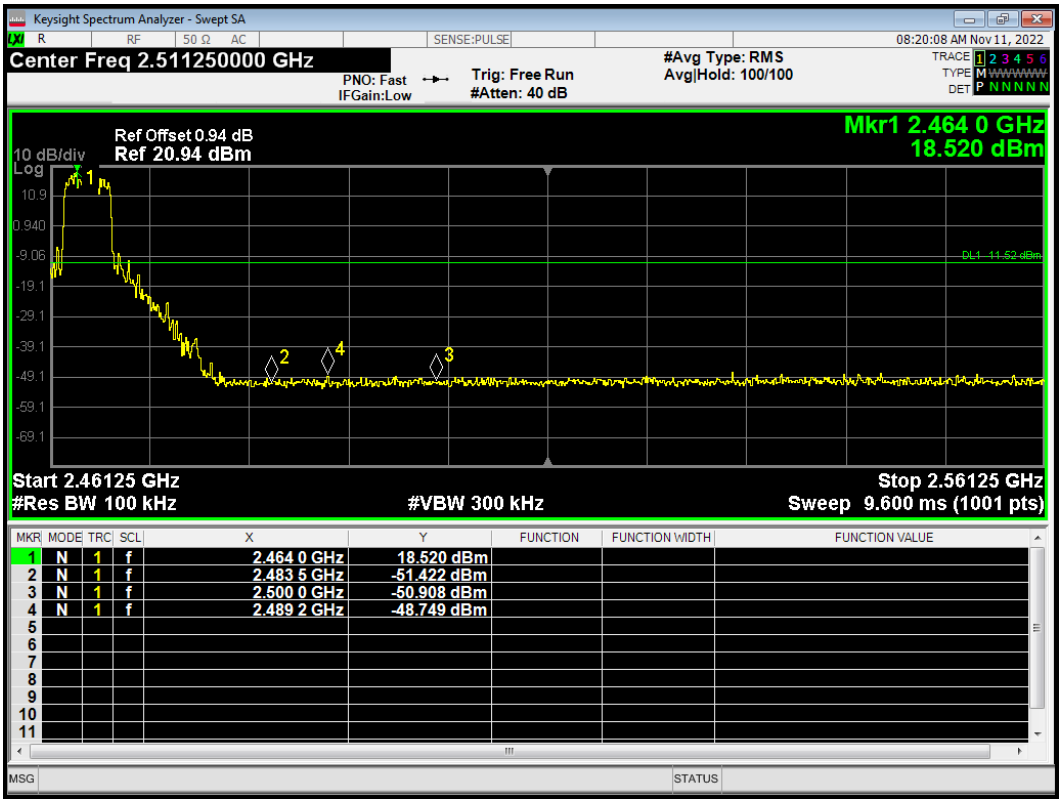
Band Edge BR 5M 2440MHz Emission



Band Edge BR 5M 2465MHz Ref



Band Edge BR 5M 2465MHz Emission



5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation.

Method AVGPSD-2 was used for this test.

a) Measure the duty cycle (D)of the transmitter output signal as described in 11.6

b) Set instrument center frequency to DTS channel center frequency

c) Set span to at least 1.5 times the OBW

d) Set RBW to:3kHz≤RBW≤100Kh

e) Set VBW≥[3x RBW]

f) Detector= power averaging (rms) or sample detector (when rms not available)

g) Ensure that the number of measurement points in the sweep ≥ [2 X span/RBW]

h) Sweep time =auto couple

i) Do not use sweep triggering; allow sweep to "free run”

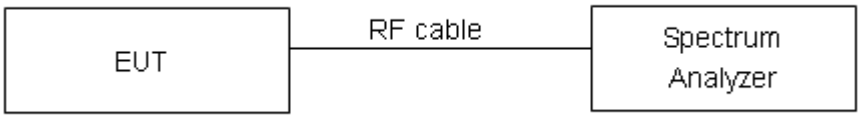
j) Employ trace averaging (rms) mode over a minimum of 100 traces

k) Use the peak marker function to determine the maximum amplitude level

l) Add [10 log(1/ D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time

m) If measured value exceeds requirement specified by regulatory agency then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

Test setup



Limits

Rule Part 15.247(e) specifies that” For digitally modulated systems, 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. ‘’

Limits	≤ 8 dBm / 3kHz

Measurement Uncertainty

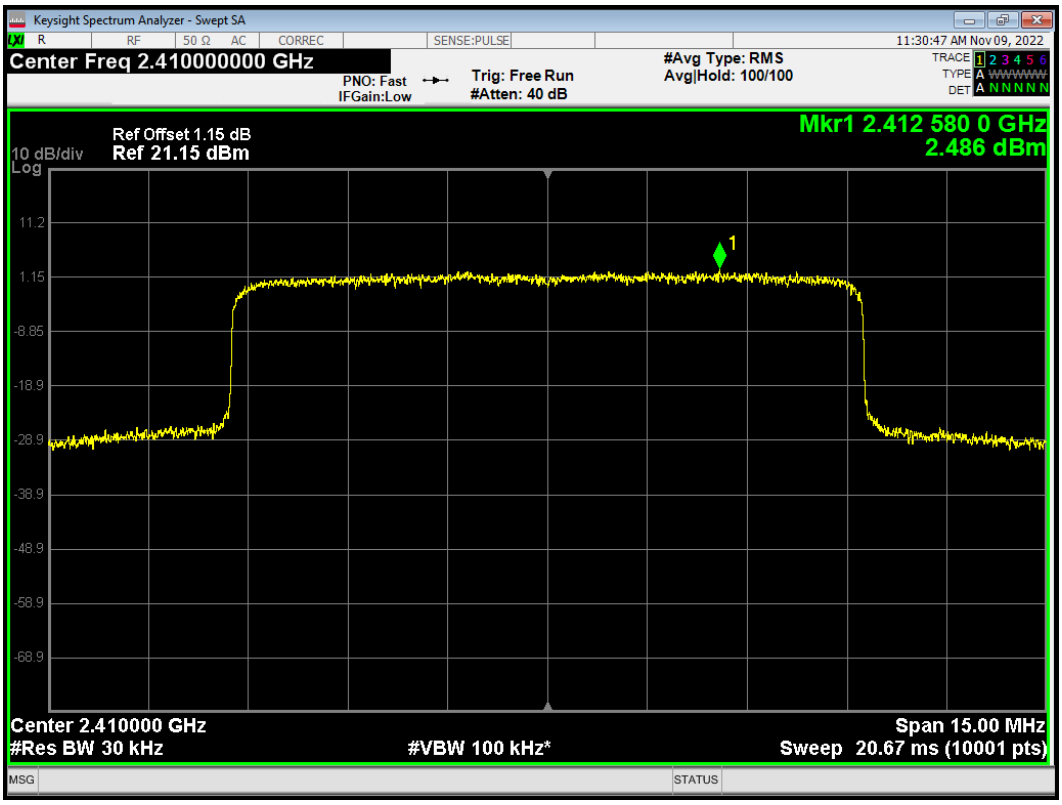
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

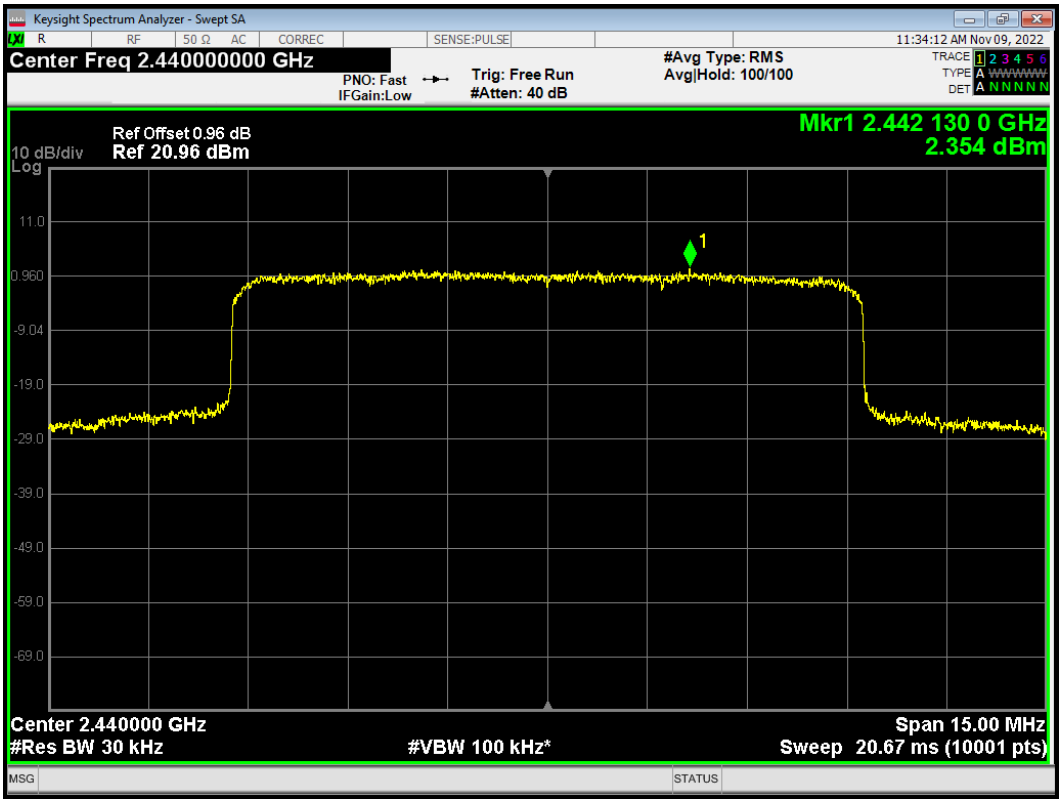
Test Mode	Carrier frequency (MHz)	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
2.4G Slot 5MHz	2405	4.41	-5.29	8	PASS
	2440	5.13	-4.57	8	PASS
	2465	3.71	-5.99	8	PASS
2.4G Slot 10MHz	2410	2.49	-7.21	8	PASS
	2440	2.35	-7.35	8	PASS
	2465	1.11	-8.59	8	PASS
2.4G Slot 20MHz	2415	0.24	-9.46	8	PASS
	2420	-0.14	-9.84	8	PASS
	2440	-0.12	-9.82	8	PASS
	2455	-0.31	-10.01	8	PASS
	2460	-0.73	-10.43	8	PASS
2.4G Slot 40MHz	2425	-3.25	-12.68	8	PASS
	2440	-3.66	-13.09	8	PASS
	2450	-3.81	-13.24	8	PASS
2.4G BR 5MHz	2405	-3.87	-2.93	8	PASS
	2440	-2.96	-2.02	8	PASS
	2465	-3.07	-2.13	8	PASS
Note: Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + 10*LOG10(3/30)					

SLOT

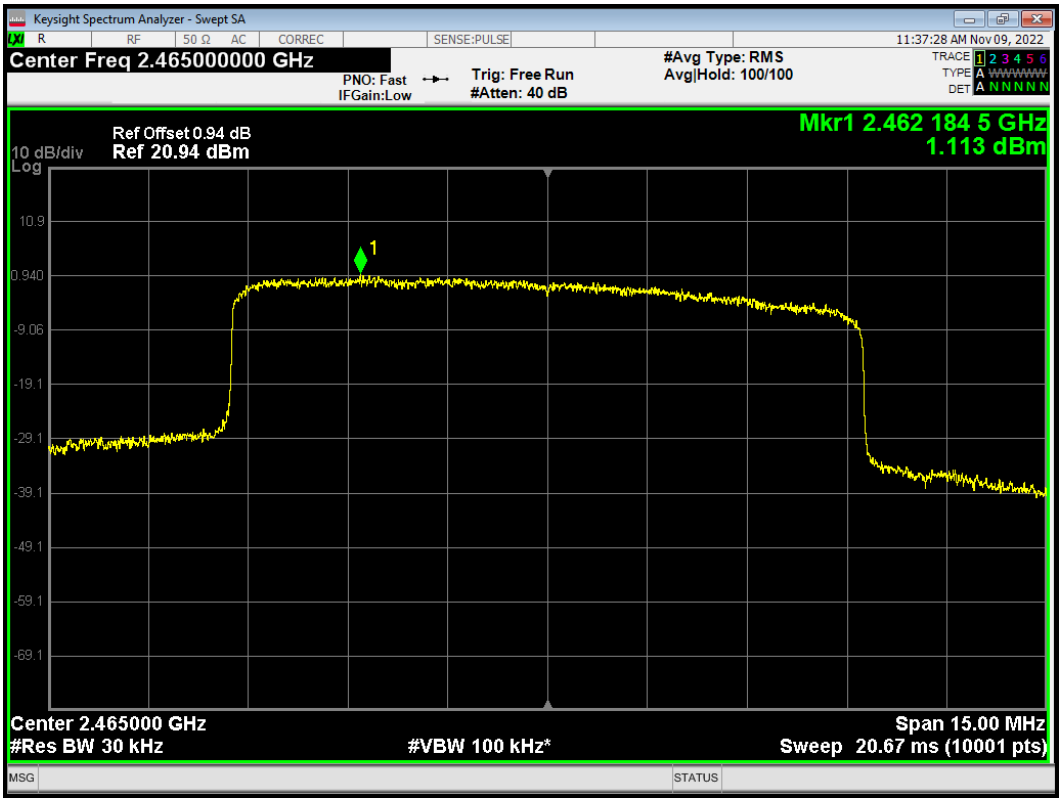
PSD slot 10M 2410MHz



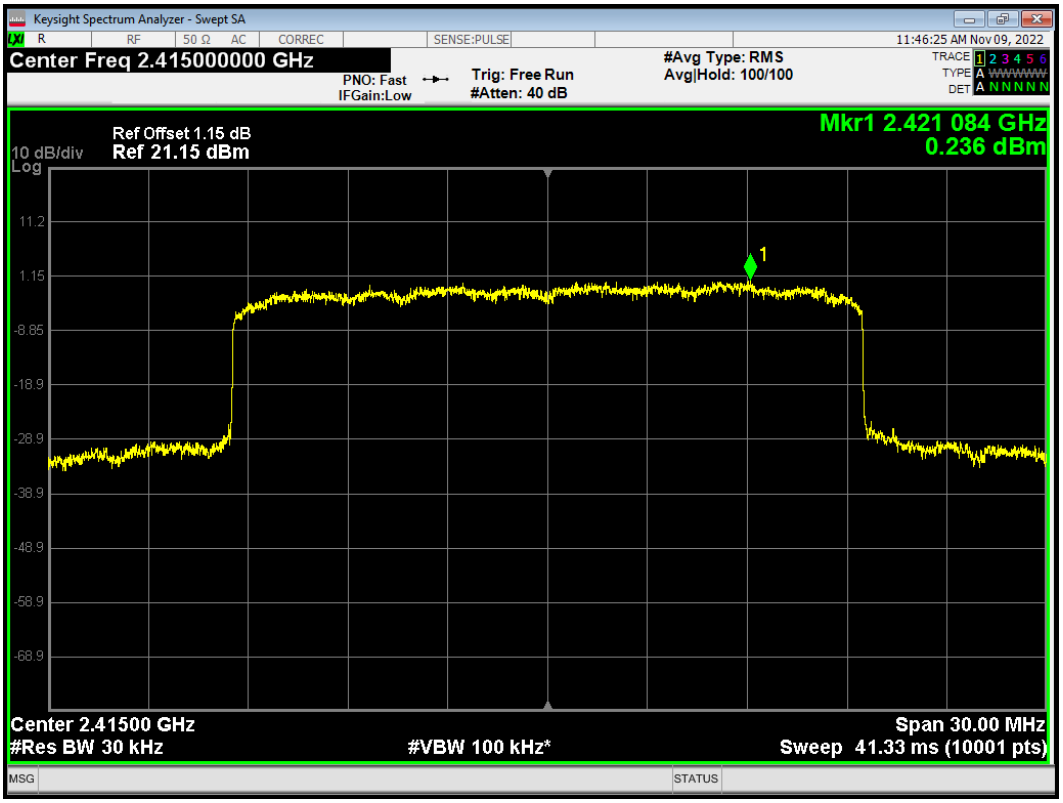
PSD slot 10M 2440MHz



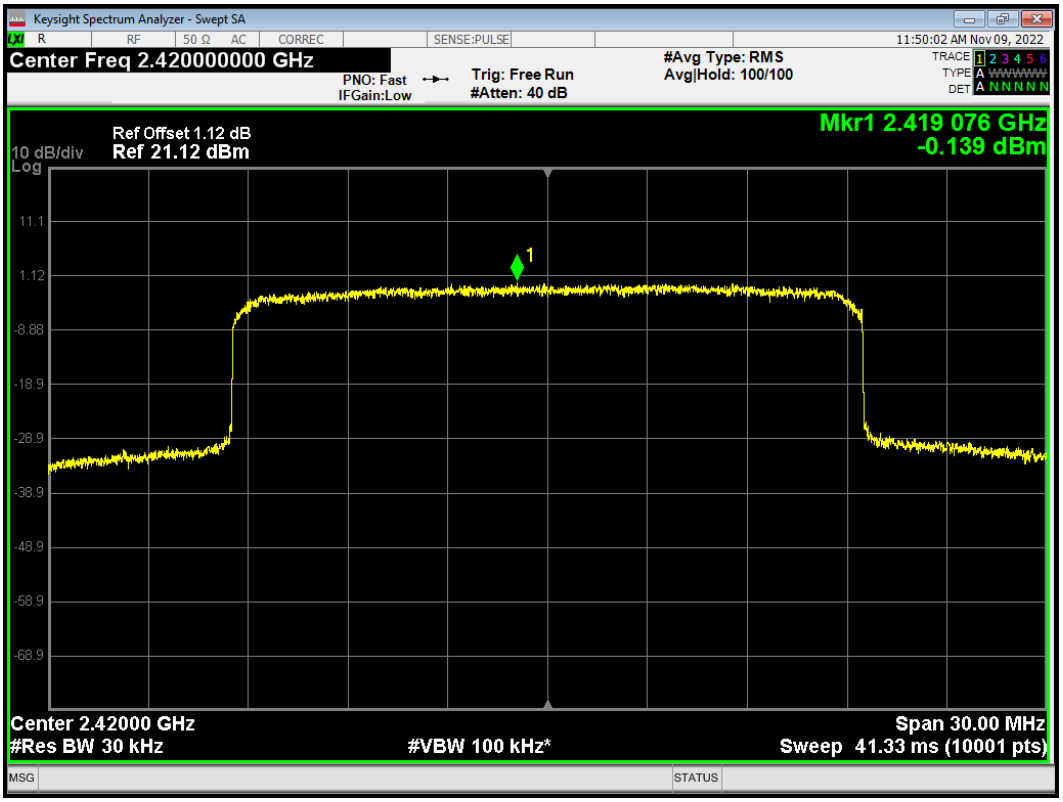
PSD slot 10M 2465MHz



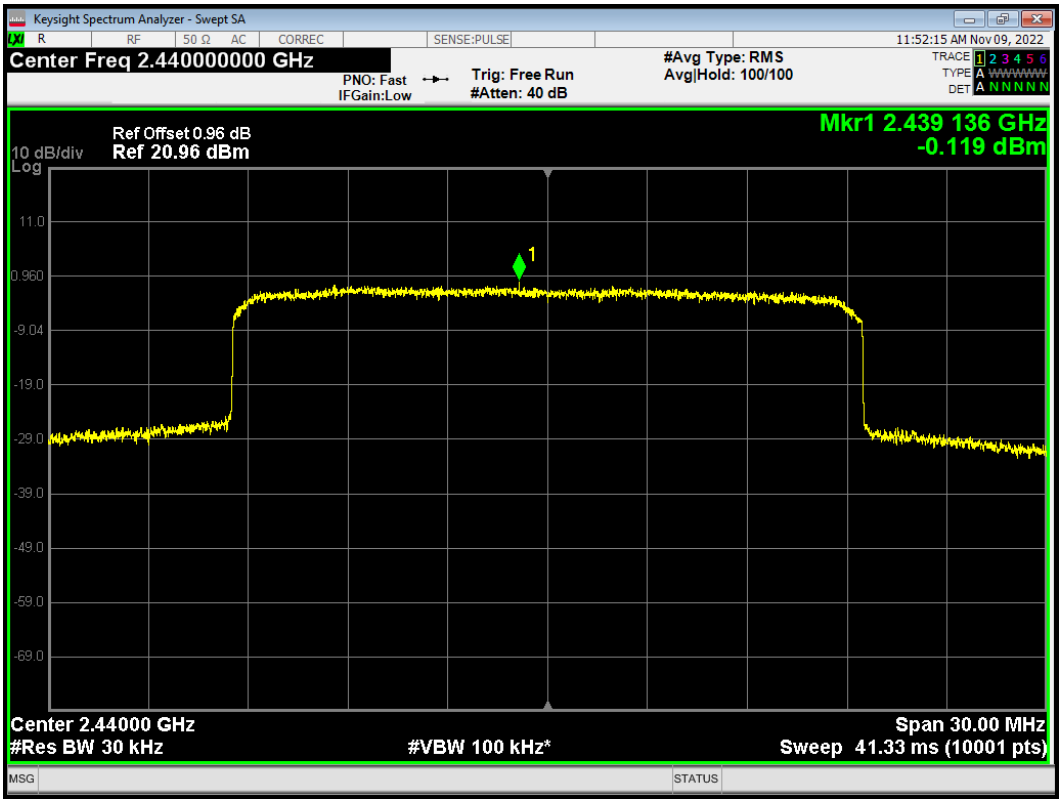
PSD slot 20M 2415MHz



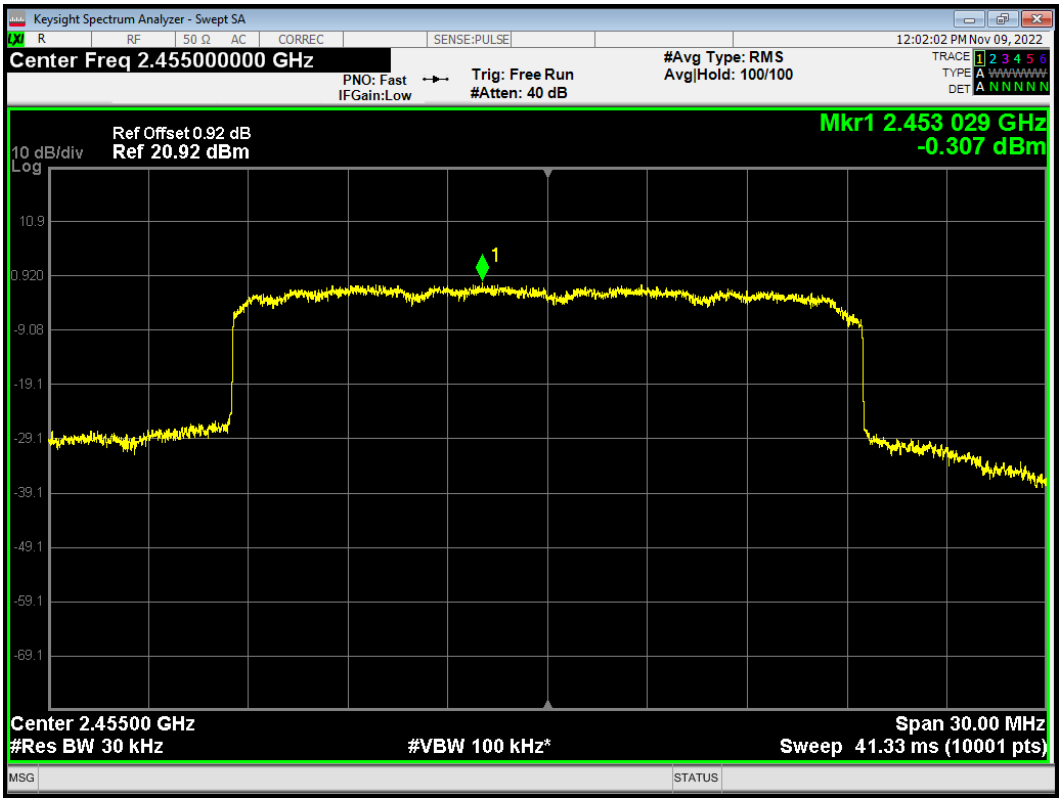
PSD slot 20M 2420MHz



PSD slot 20M 2440MHz

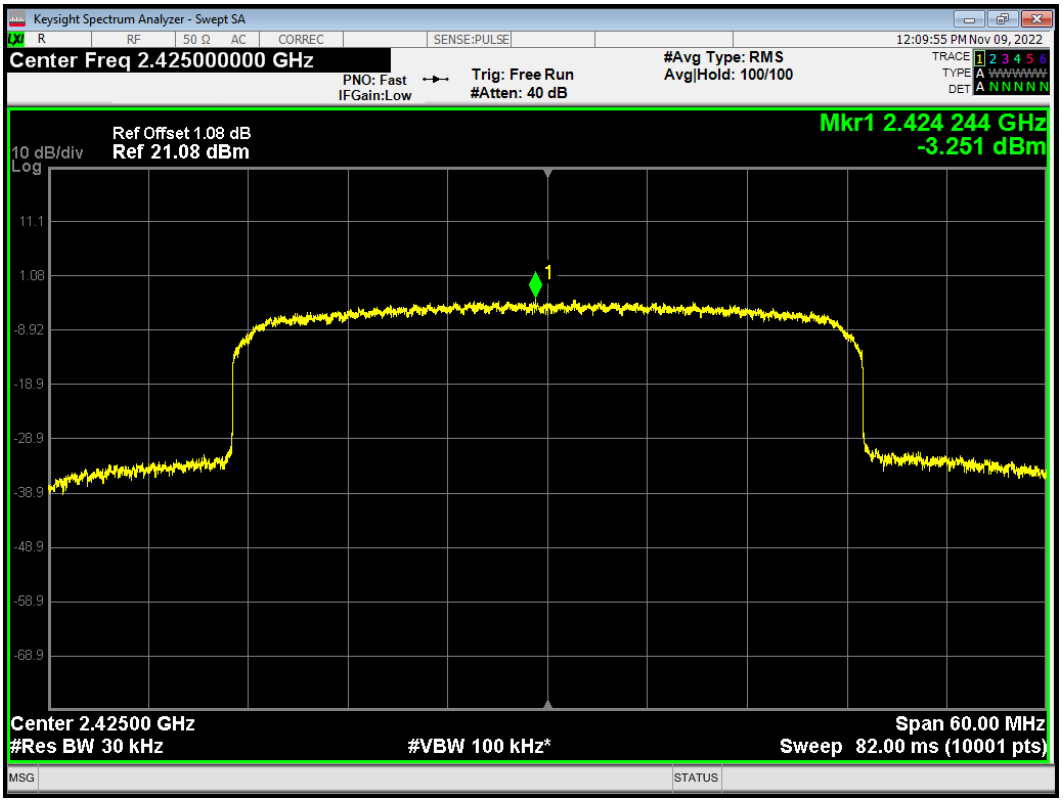


PSD slot 20M 2455MHz

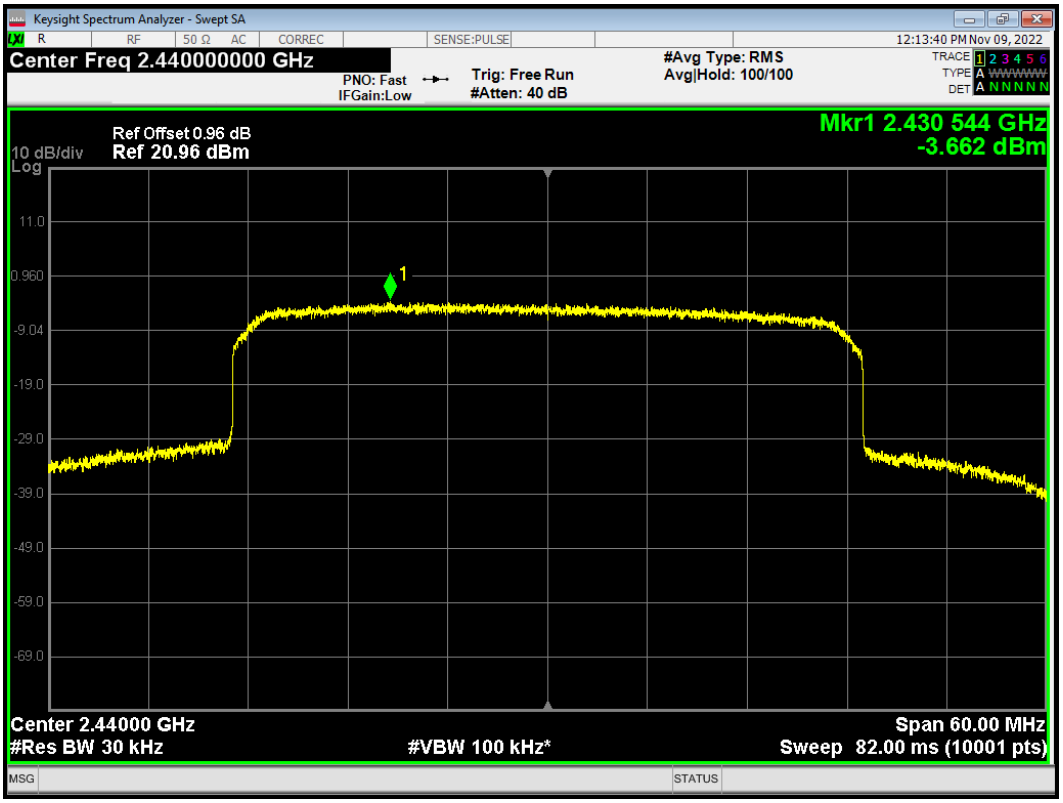


PSD slot 20M 2460MHz

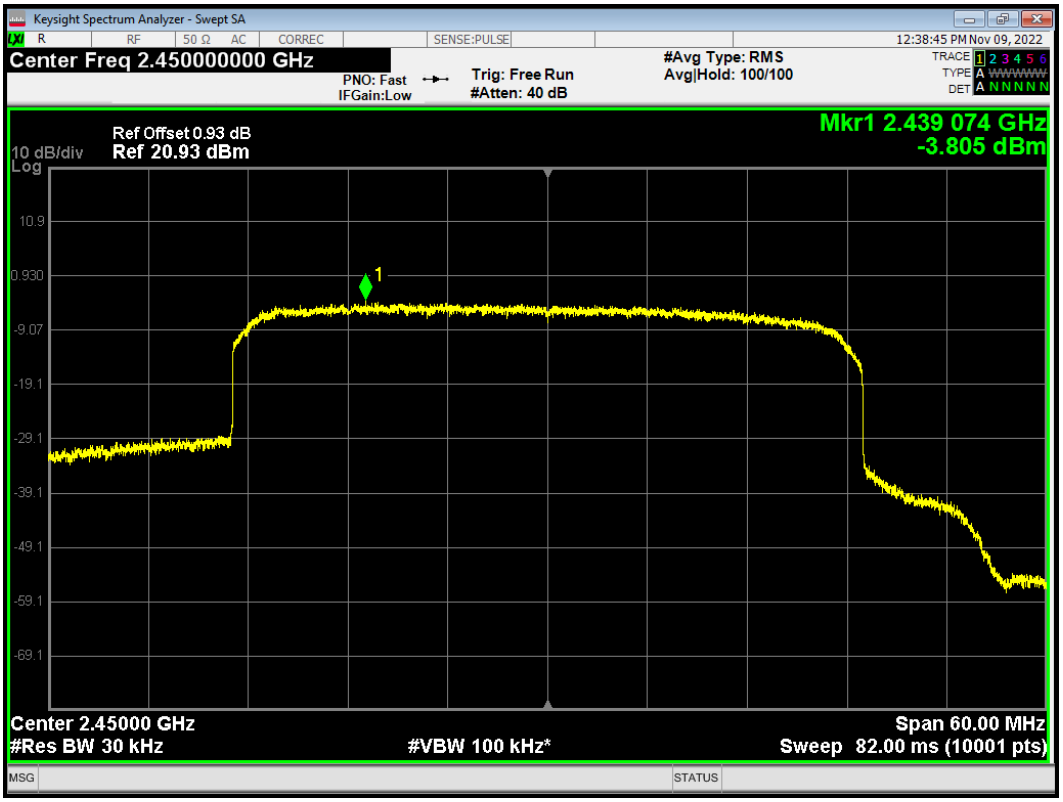
PSD slot 40M 2425MHz



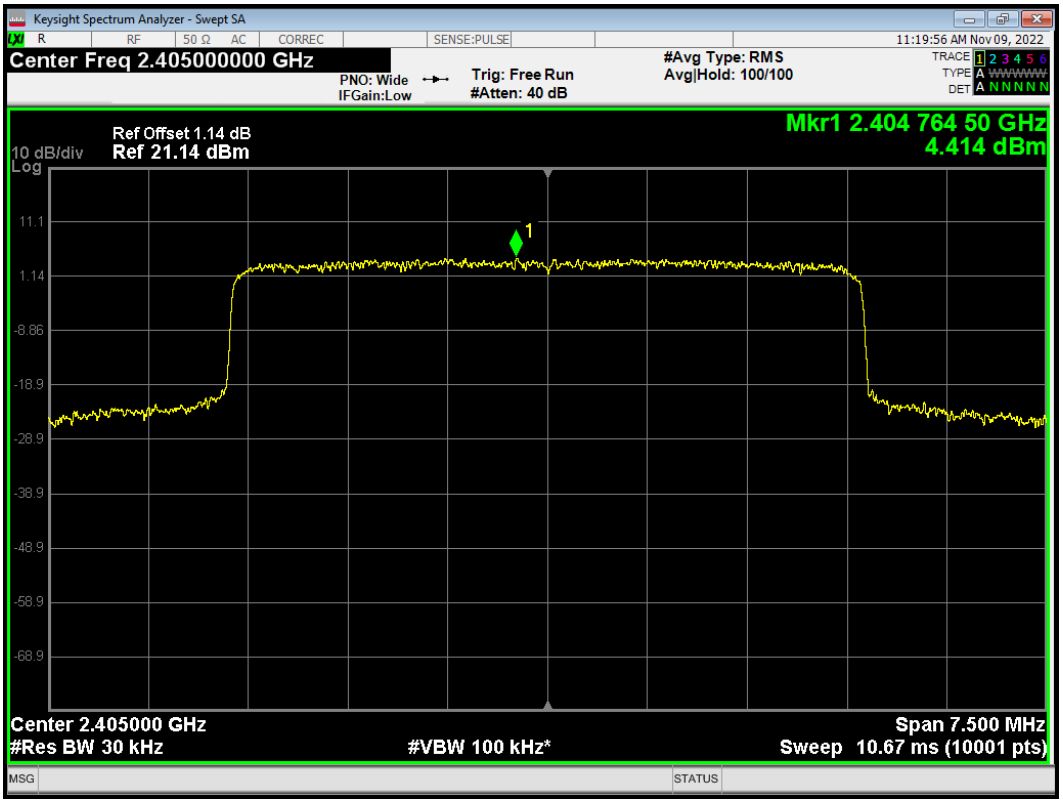
PSD slot 40M 2440MHz



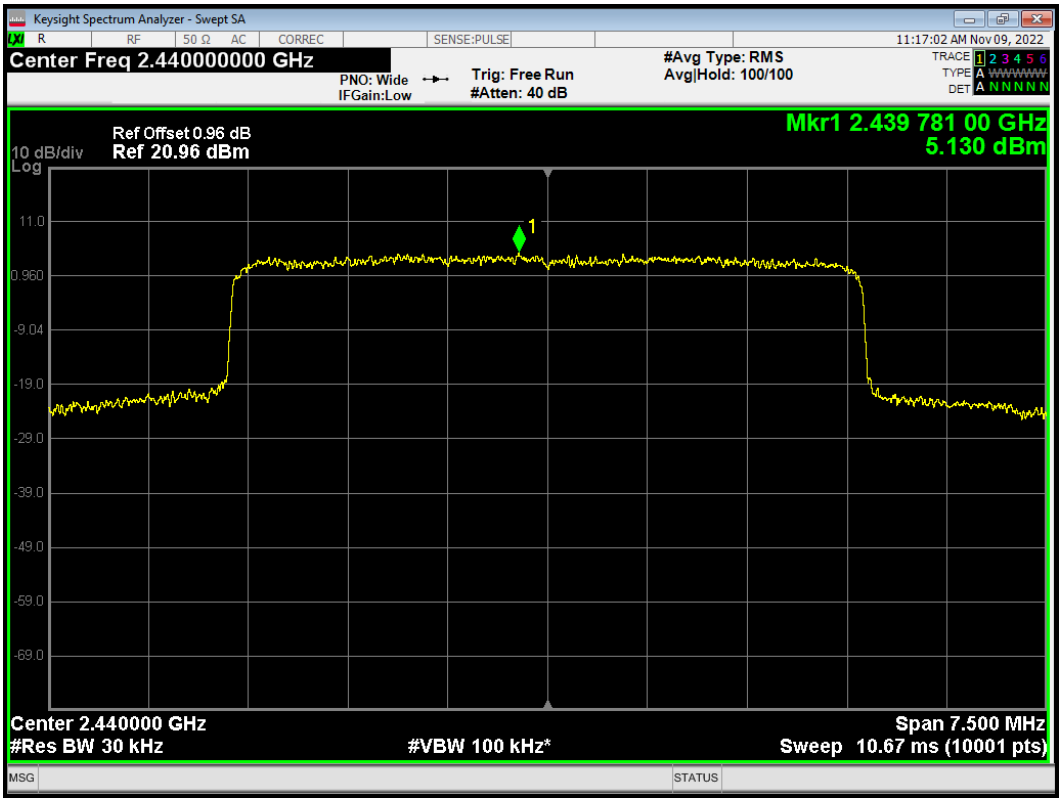
PSD slot 40M 2450MHz



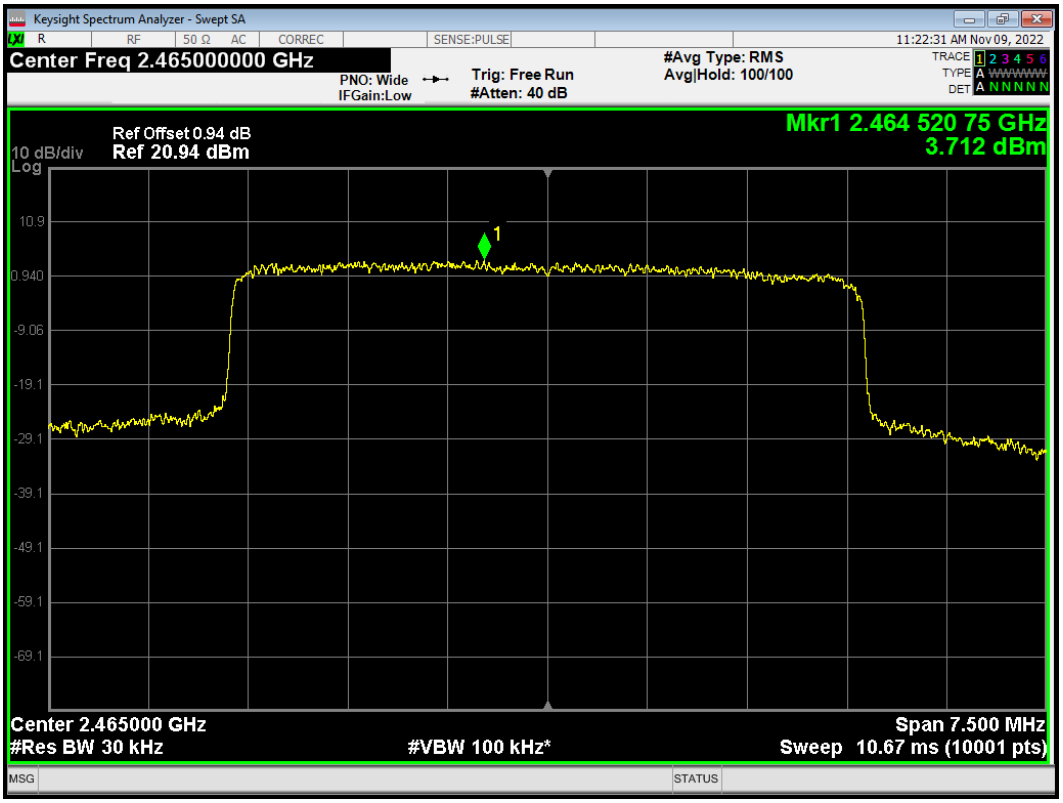
PSD slot 5M 2405MHz



PSD slot 5M 2440MHz

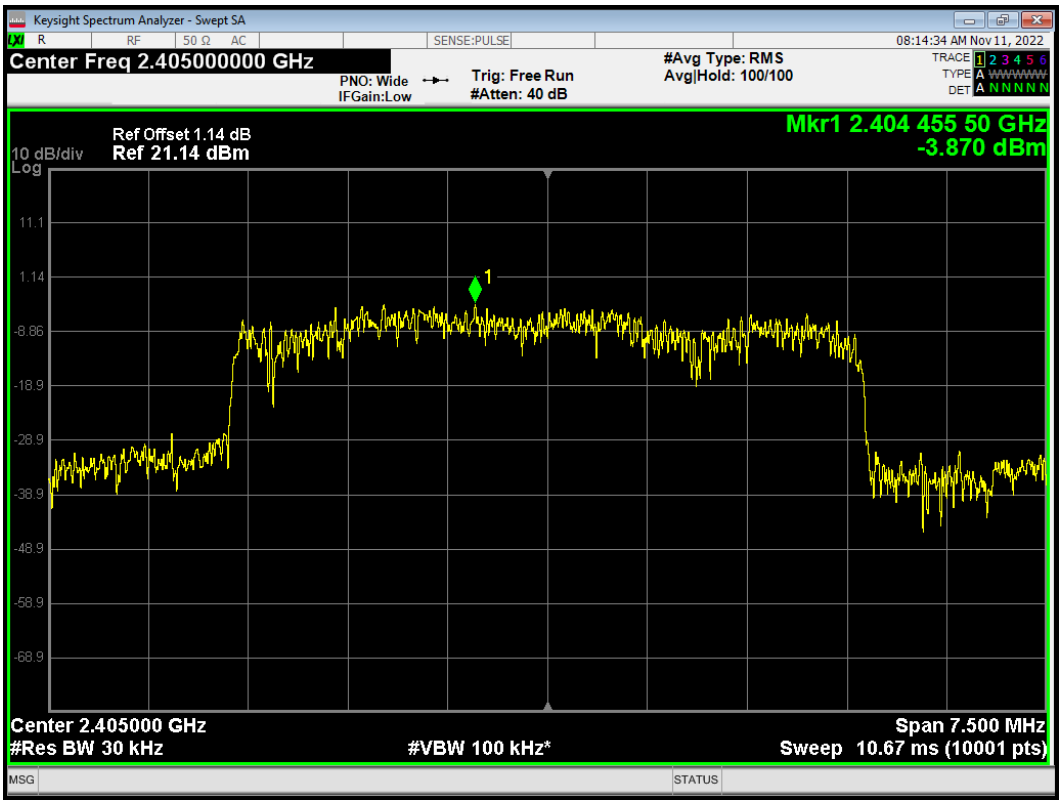


PSD slot 5M 2465MHz

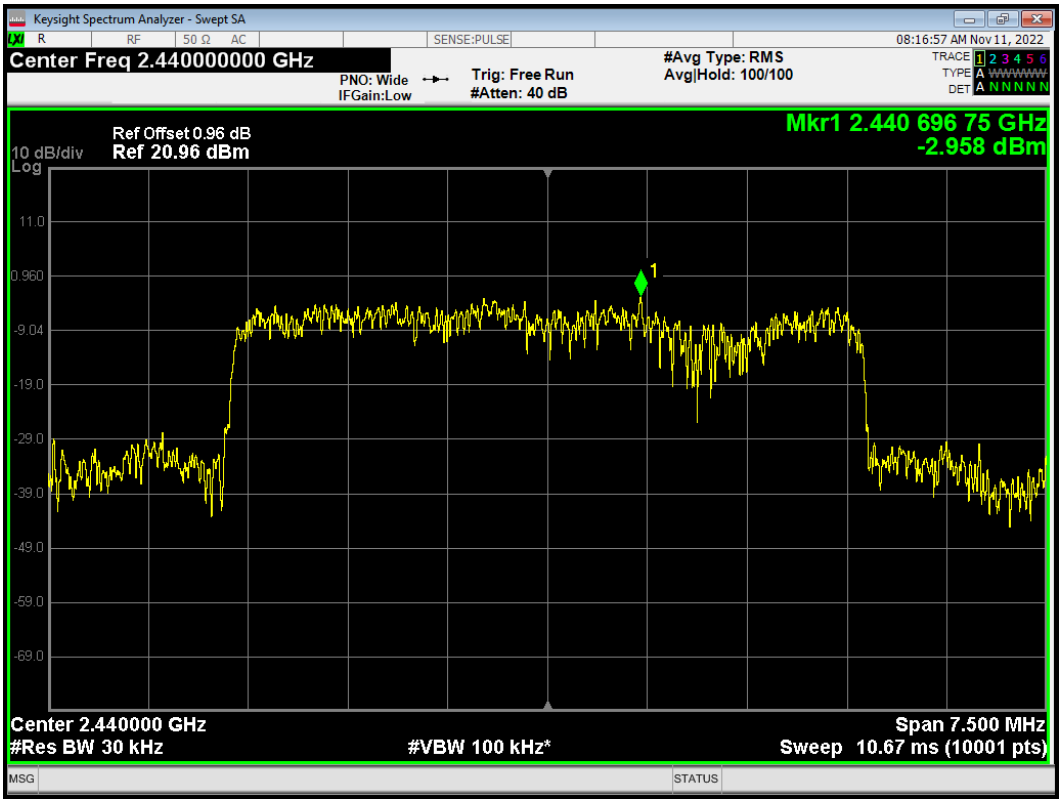


BR

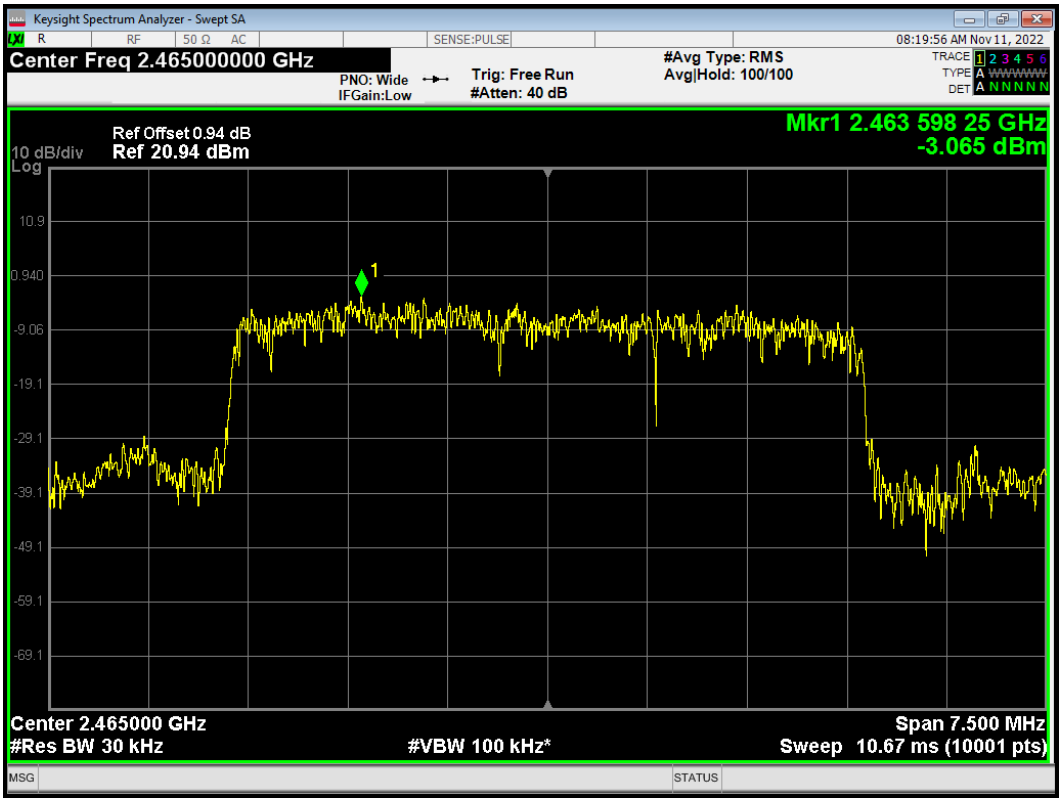
PSD BR 5M 2405MHz



PSD BR 5M 2440MHz



PSD BR 5M 2465MHz



5.5. Spurious RF Conducted Emissions

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to 100 kHz and VBW to 300 kHz, Sweep is set to ATUO.
The test is in transmitting mode.

Test setup

Limits

Rule Part 15.247(d) pacifies that “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 this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. ”

Test Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
2.4G Slot 5MHz	2405	20.81	-9.19
	2440	20.03	-9.97
	2465	16.82	-13.18
2.4G Slot 10MHz	2410	16.27	-13.73
	2440	15.85	-14.15
	2465	14.23	-15.77
2.4G Slot 20MHz	2415	14.97	-15.03
	2420	14.63	-15.37
	2440	13.89	-16.11
	2455	13.68	-16.32
	2460	14.30	-15.70

2.4G Slot 40MHz	2425	11.12	-18.88
	2440	10.78	-19.22
	2450	11.39	-18.61
2.4G BR 5MHz	2405	16.48	-13.52
	2440	19.61	-10.39
	2465	19.03	-10.97

Measurement Uncertainty

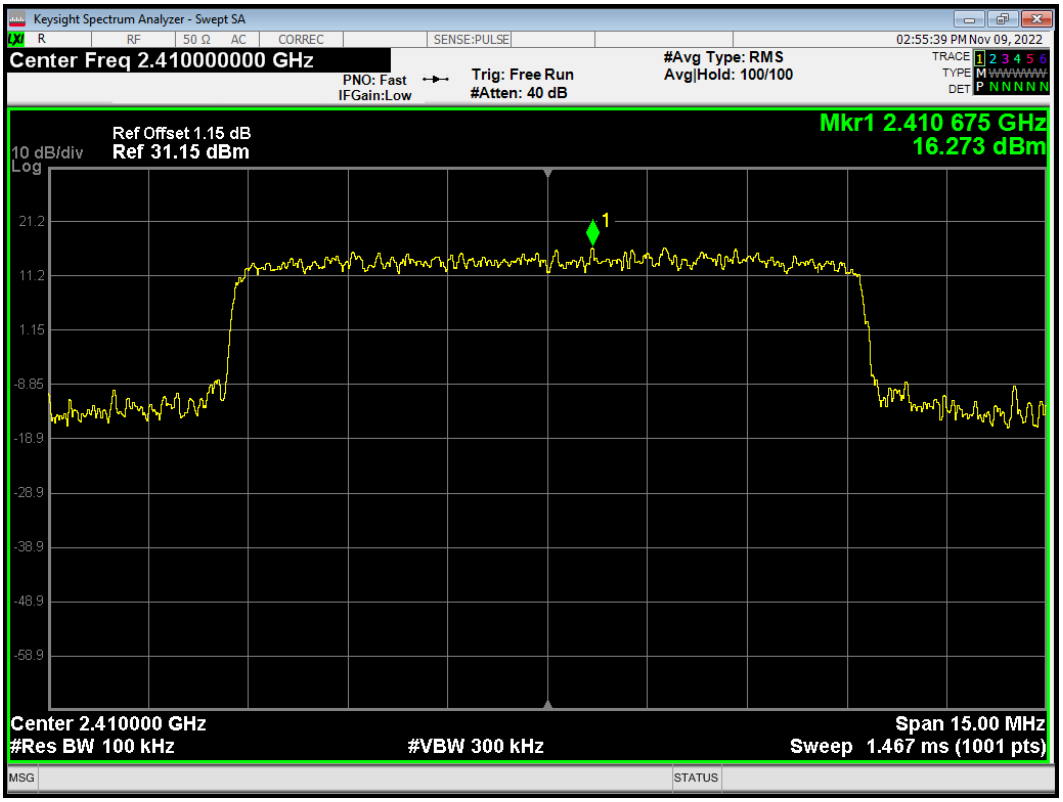
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

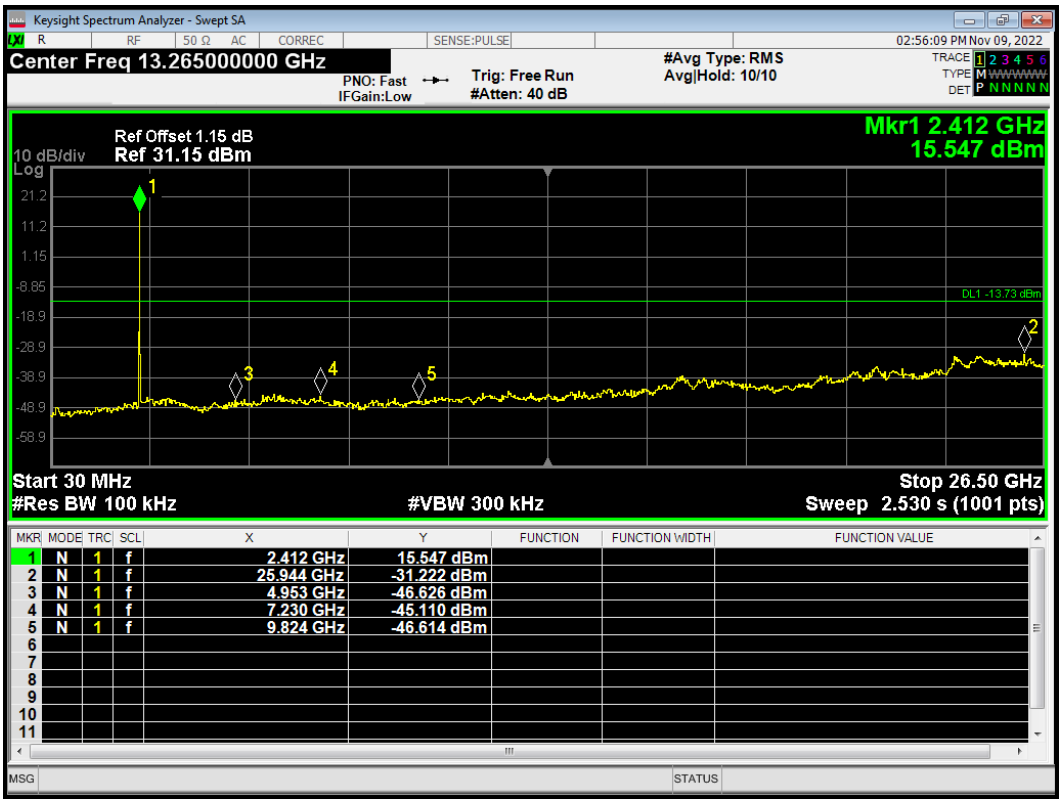
Test Results:

SLOT

Tx. Spurious slot 10M 2410MHz Ref

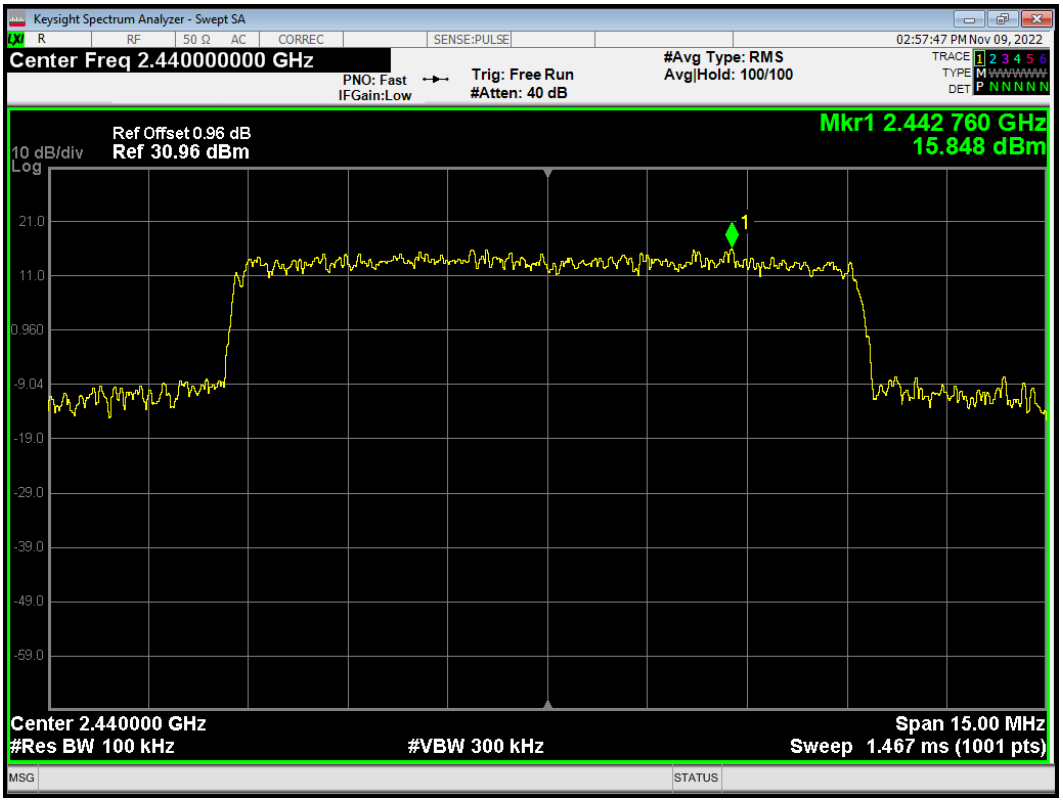


Tx. Spurious slot 10M 2410MHz Emission

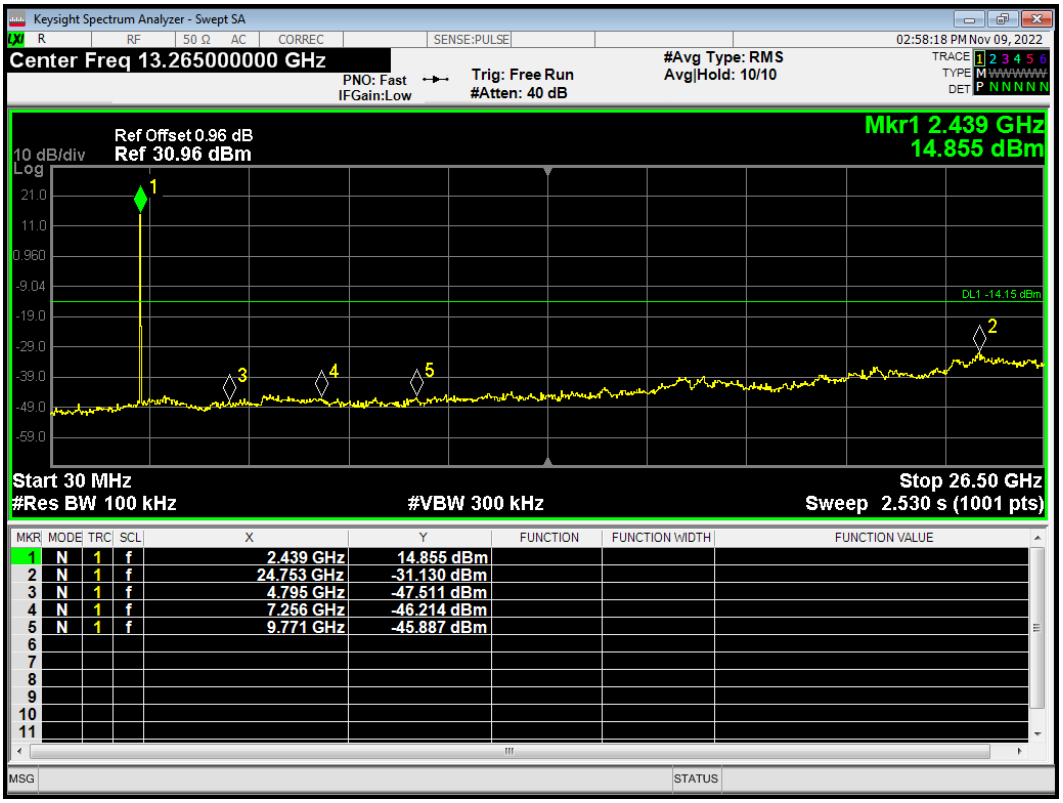


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 GHz	15.547 dBm			
2	N	1	f	25.944 GHz	-31.222 dBm			
3	N	1	f	4.953 GHz	-46.626 dBm			
4	N	1	f	7.230 GHz	-45.110 dBm			
5	N	1	f	9.824 GHz	-46.614 dBm			
6								
7								
8								
9								
10								
11								

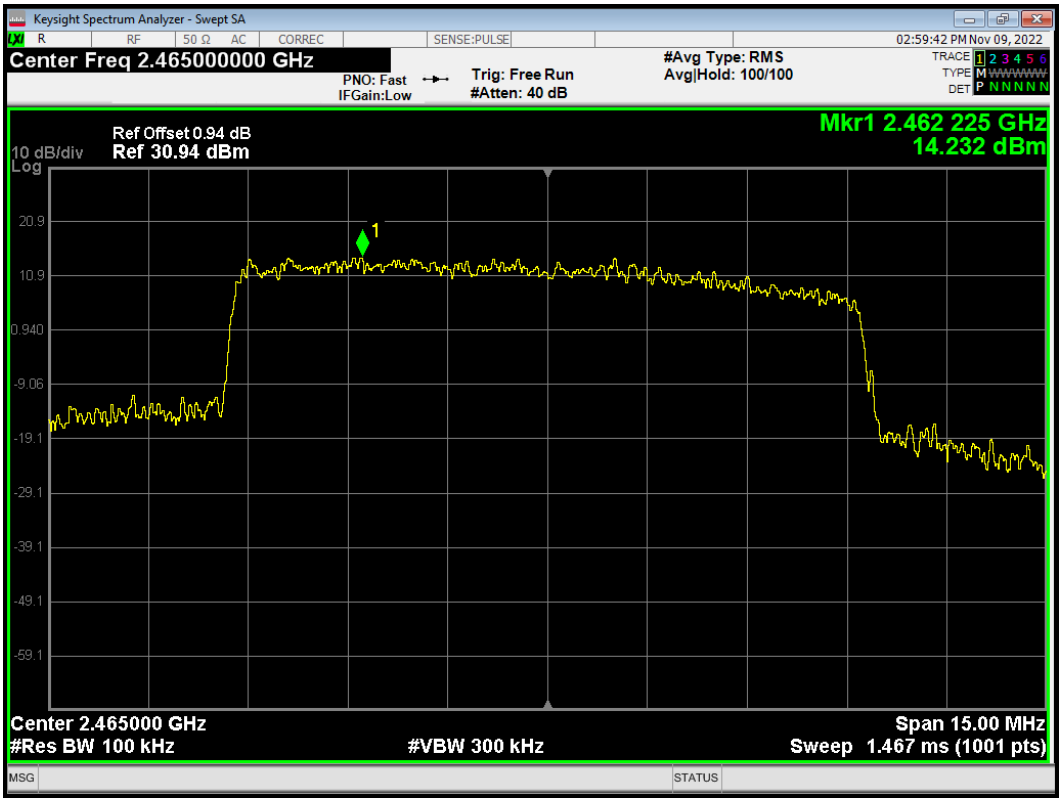
Tx. Spurious slot 10M 2440MHz Ref



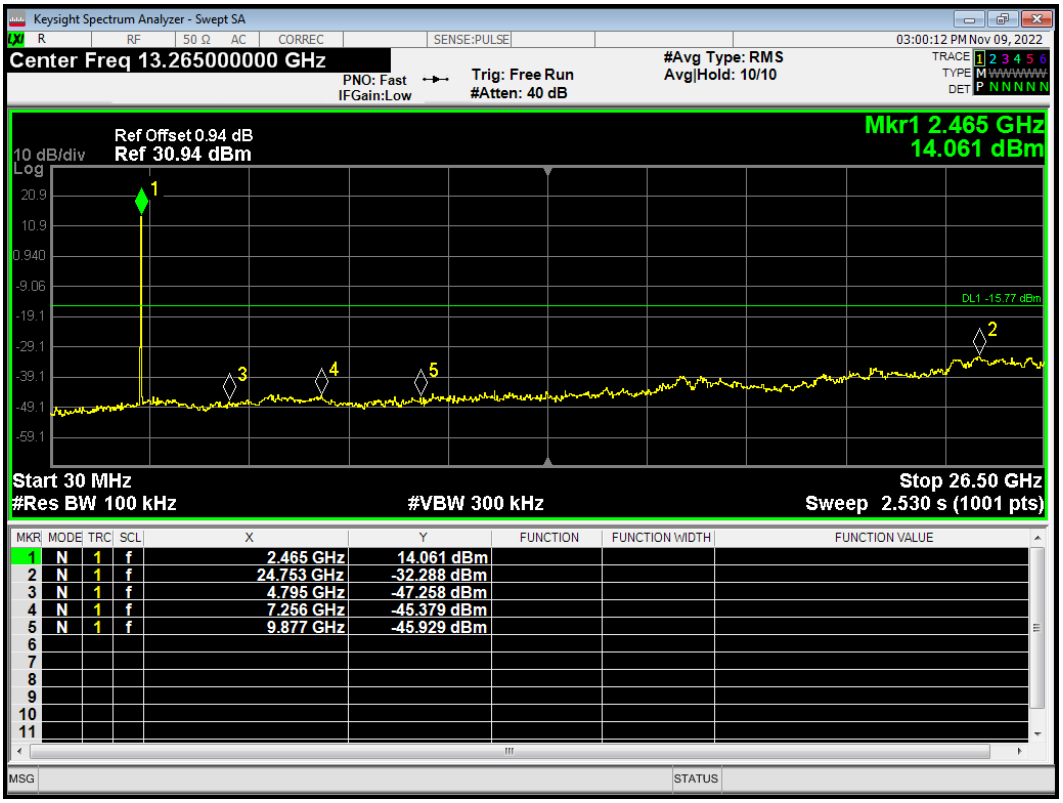
Tx. Spurious slot 10M 2440MHz Emission



Tx. Spurious slot 10M 2465MHz Ref

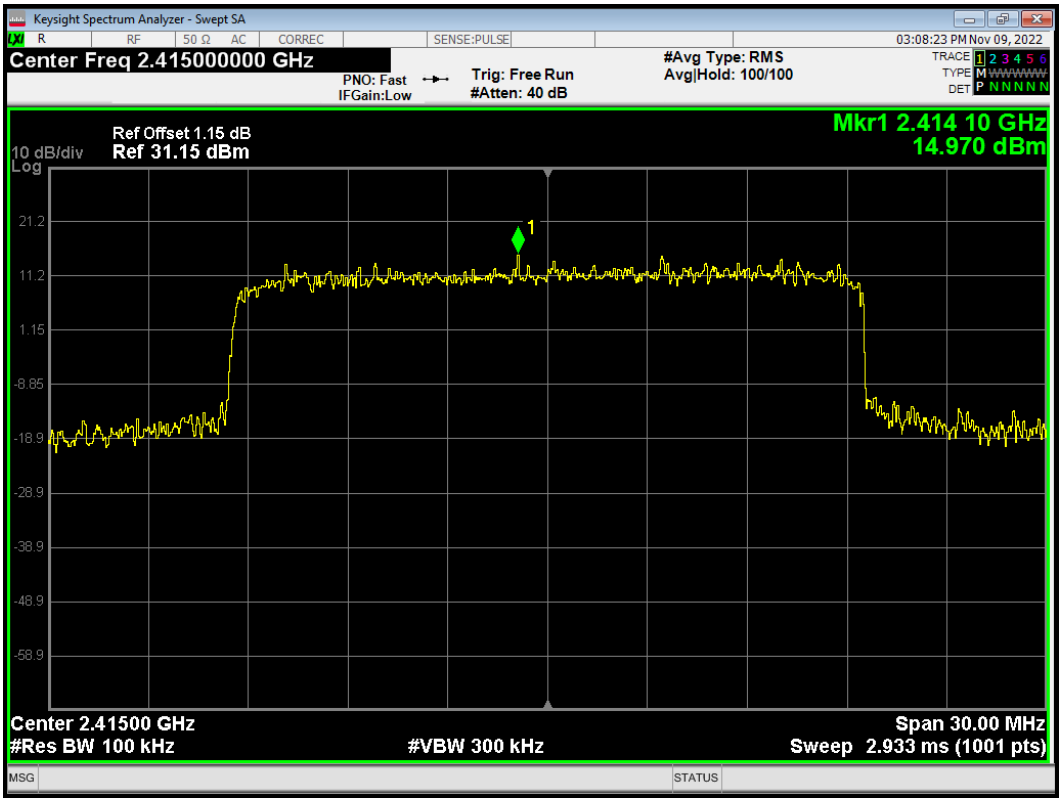


Tx. Spurious slot 10M 2465MHz Emission

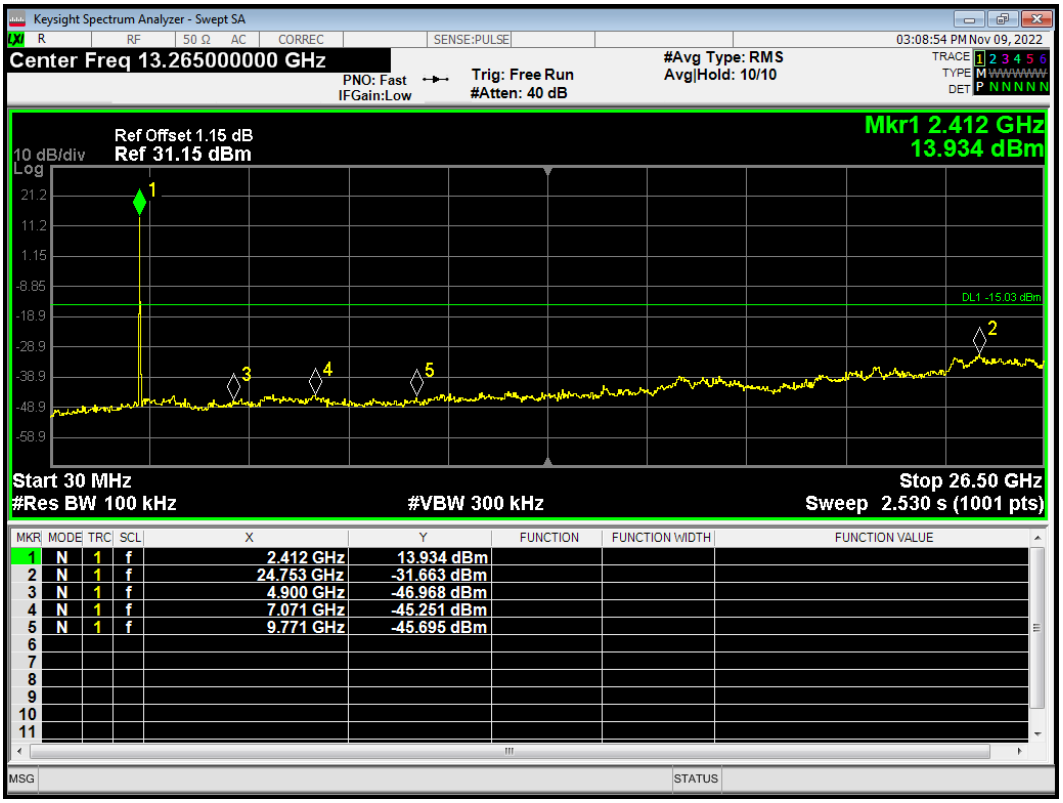


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.465 GHz	14.061 dBm			
2	N	1	f	24.753 GHz	-32.288 dBm			
3	N	1	f	4.795 GHz	-47.258 dBm			
4	N	1	f	7.256 GHz	-45.379 dBm			
5	N	1	f	9.877 GHz	-45.929 dBm			
6								
7								
8								
9								
10								
11								

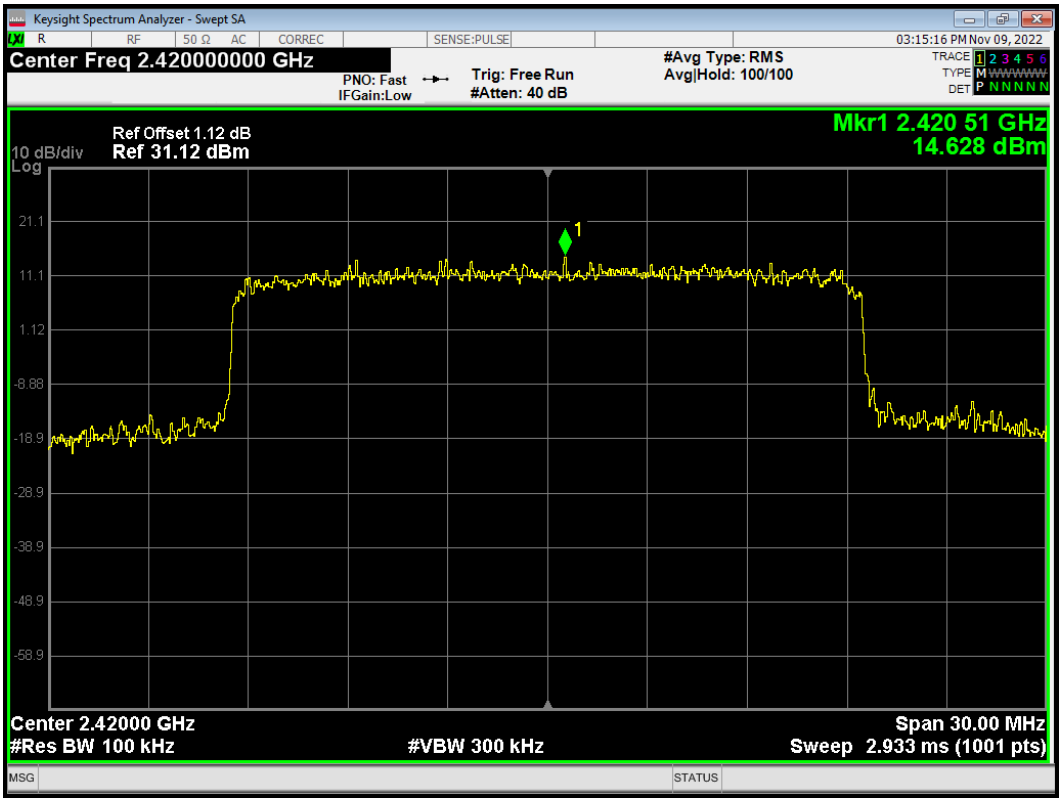
Tx. Spurious slot 20M 2415MHz Ref



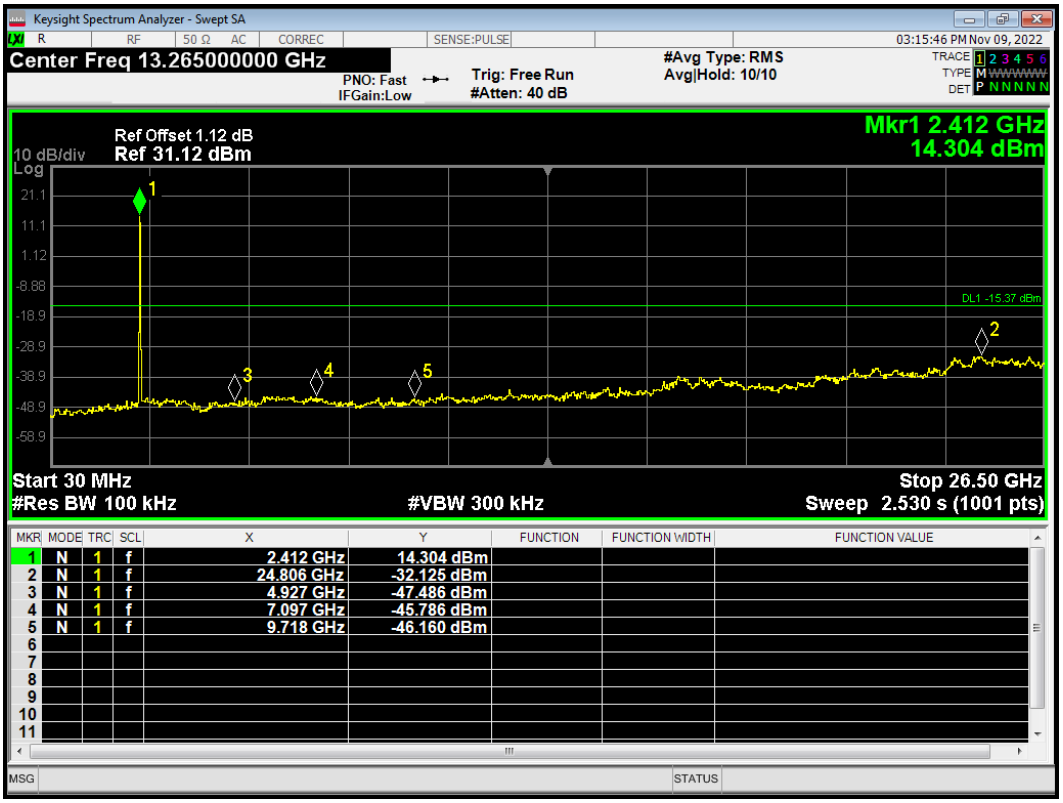
Tx. Spurious slot 20M 2415MHz Emission



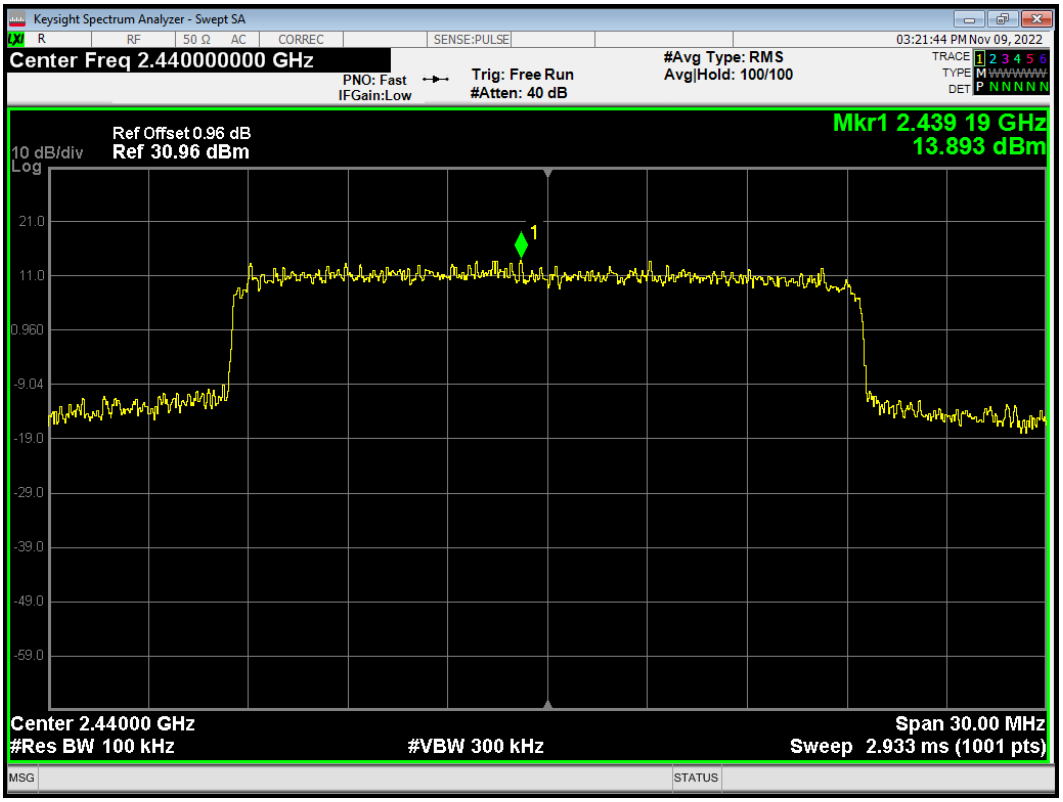
Tx. Spurious slot 20M 2420MHz Ref



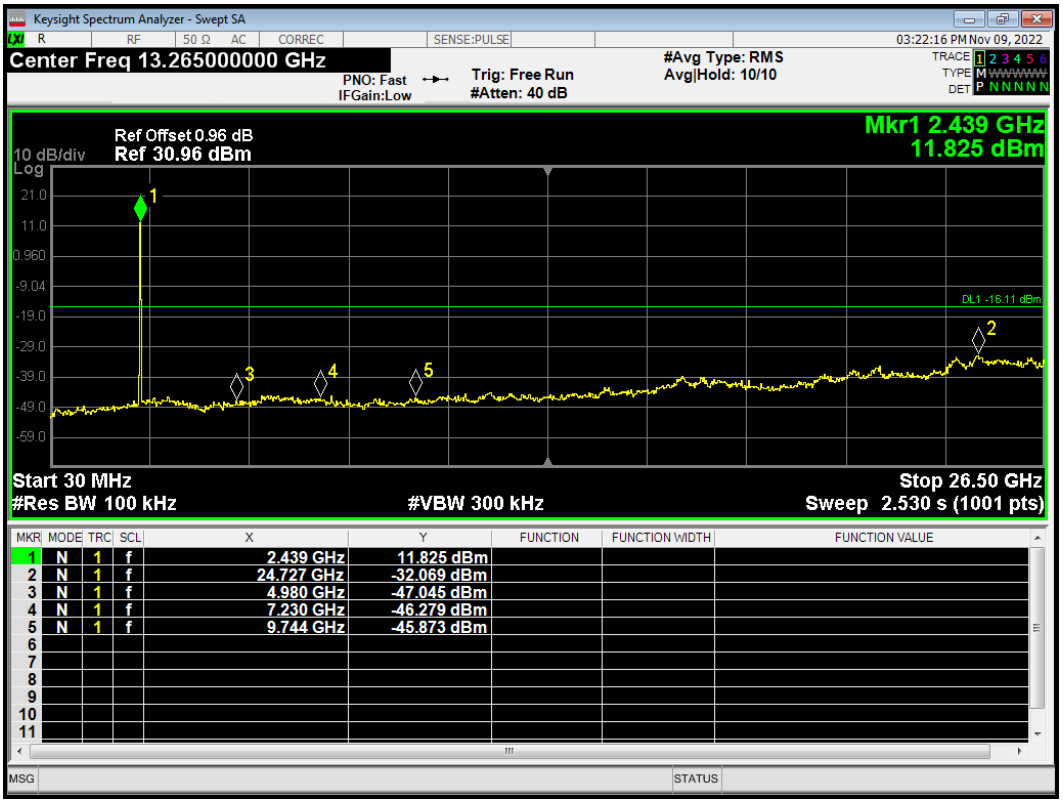
Tx. Spurious slot 20M 2420MHz Emission



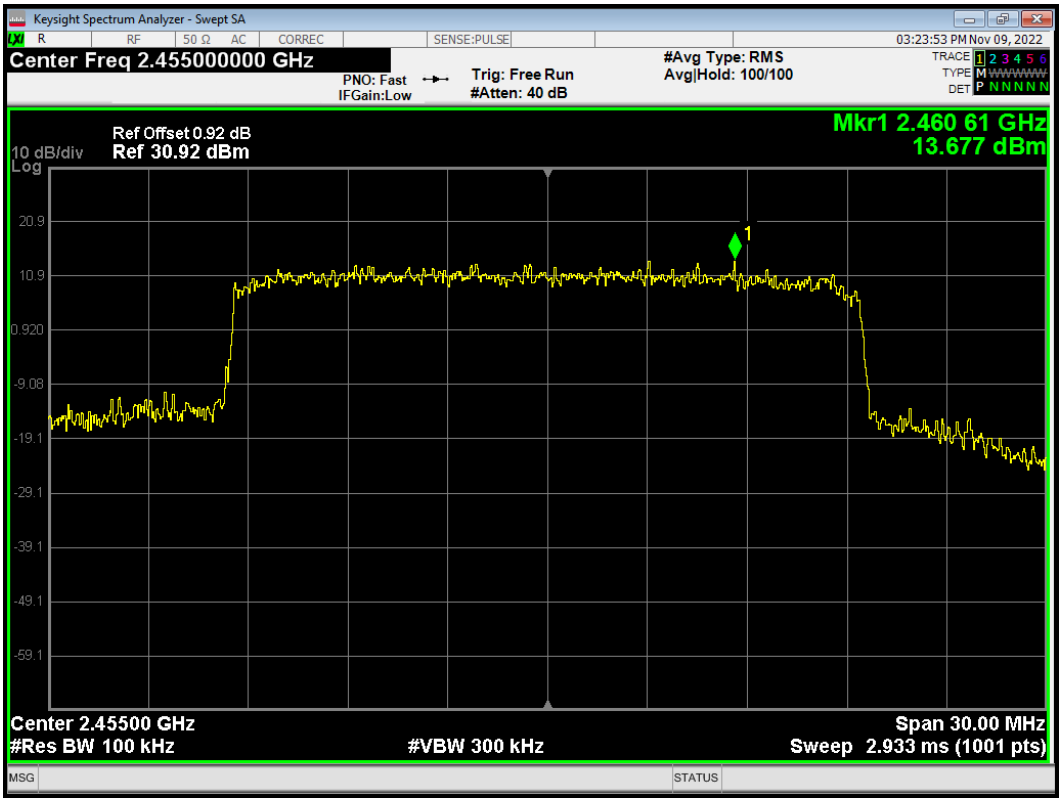
Tx. Spurious slot 20M 2440MHz Ref



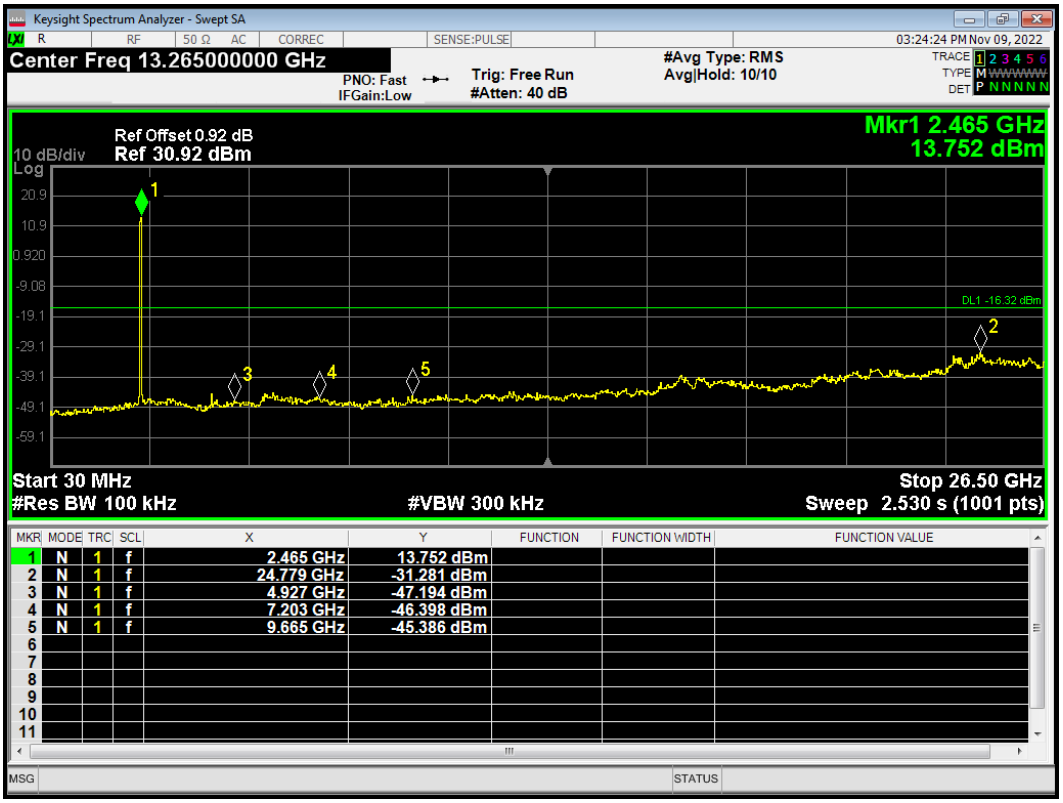
Tx. Spurious slot 20M 2440MHz Emission



Tx. Spurious slot 20M 2455MHz Ref

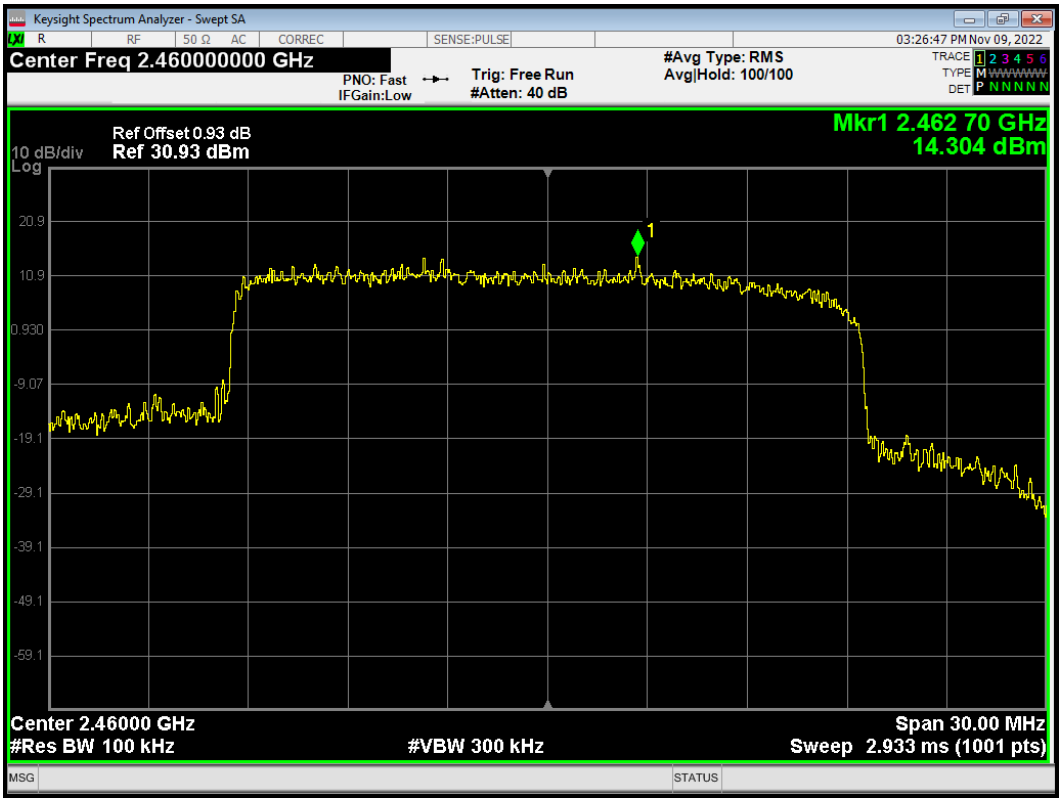


Tx. Spurious slot 20M 2455MHz Emission

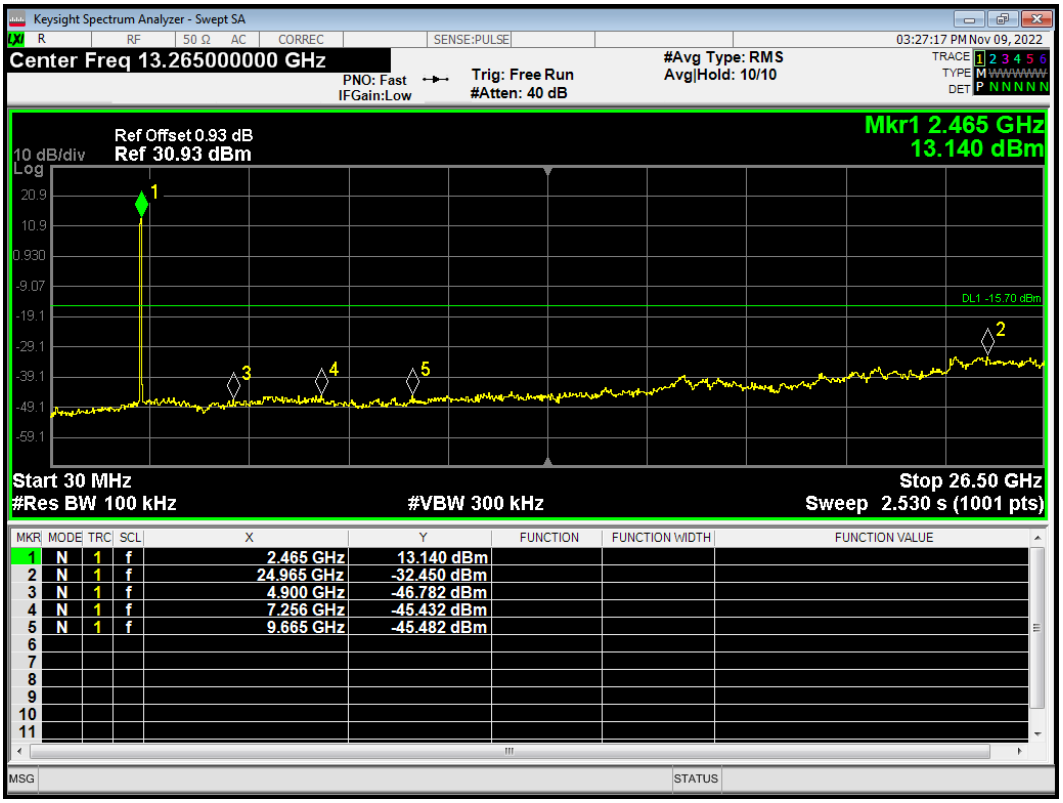


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.465 GHz	13.752 dBm			
2	N	1	f	24.779 GHz	-31.281 dBm			
3	N	1	f	4.927 GHz	-47.194 dBm			
4	N	1	f	7.203 GHz	-46.398 dBm			
5	N	1	f	9.665 GHz	-45.386 dBm			
6								
7								
8								
9								
10								
11								

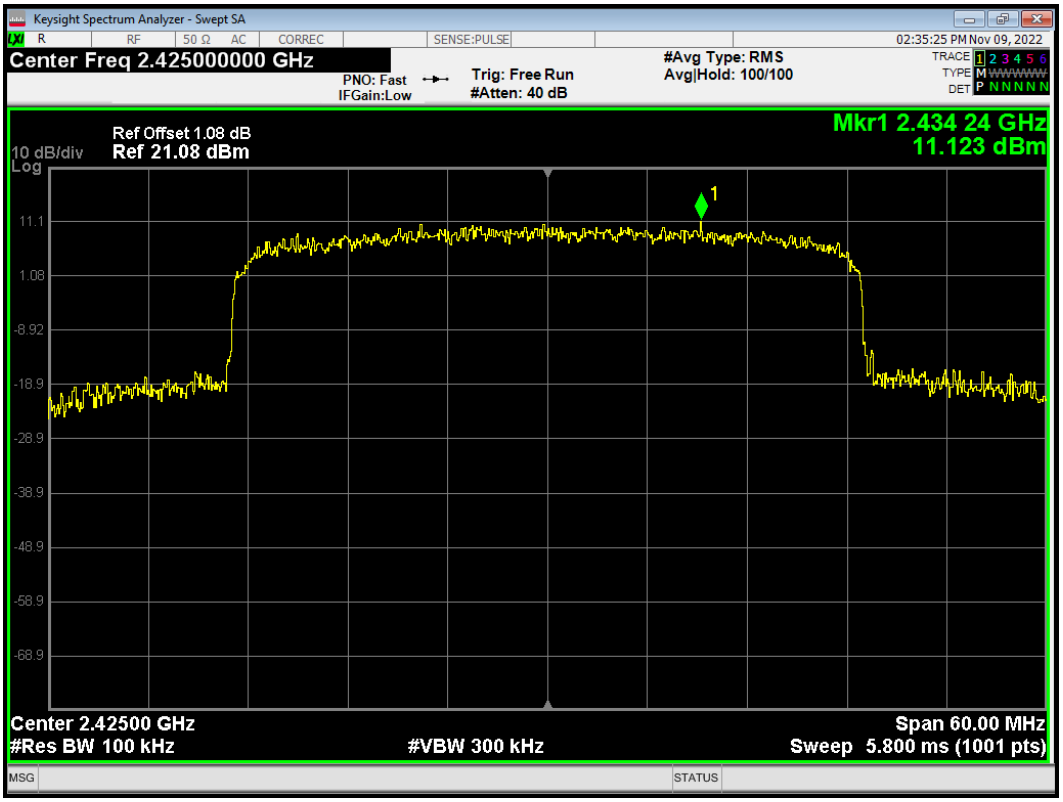
Tx. Spurious slot 20M 2460MHz Ref



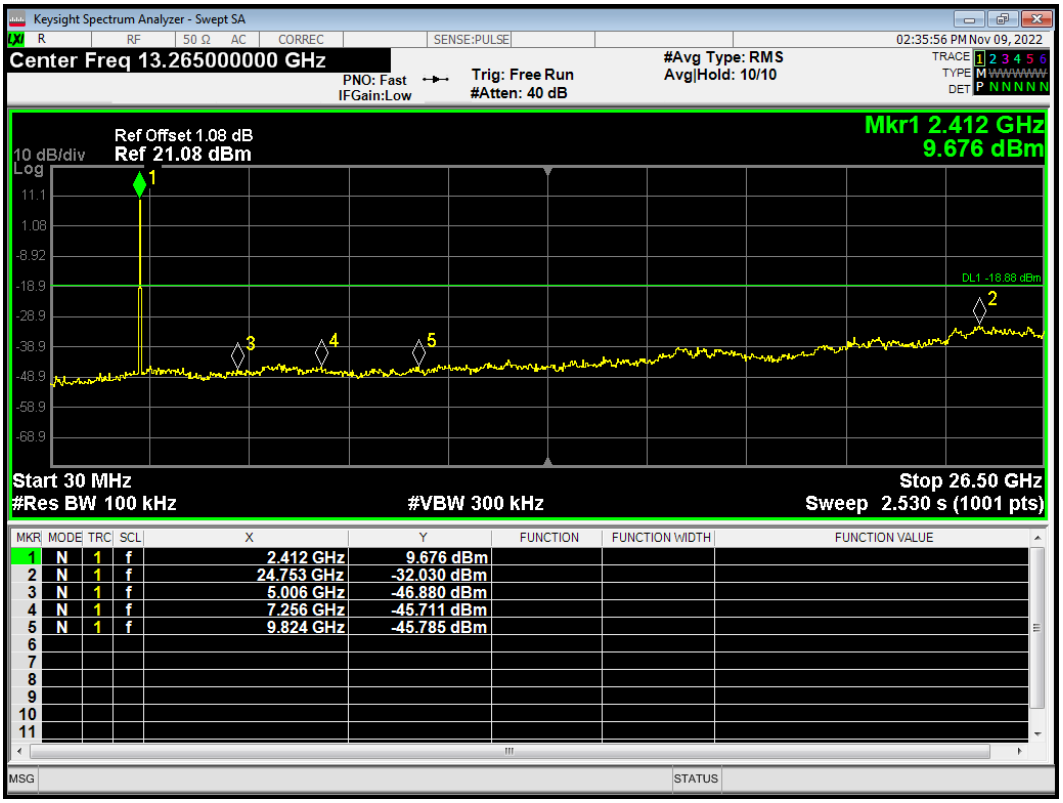
Tx. Spurious slot 20M 2460MHz Emission



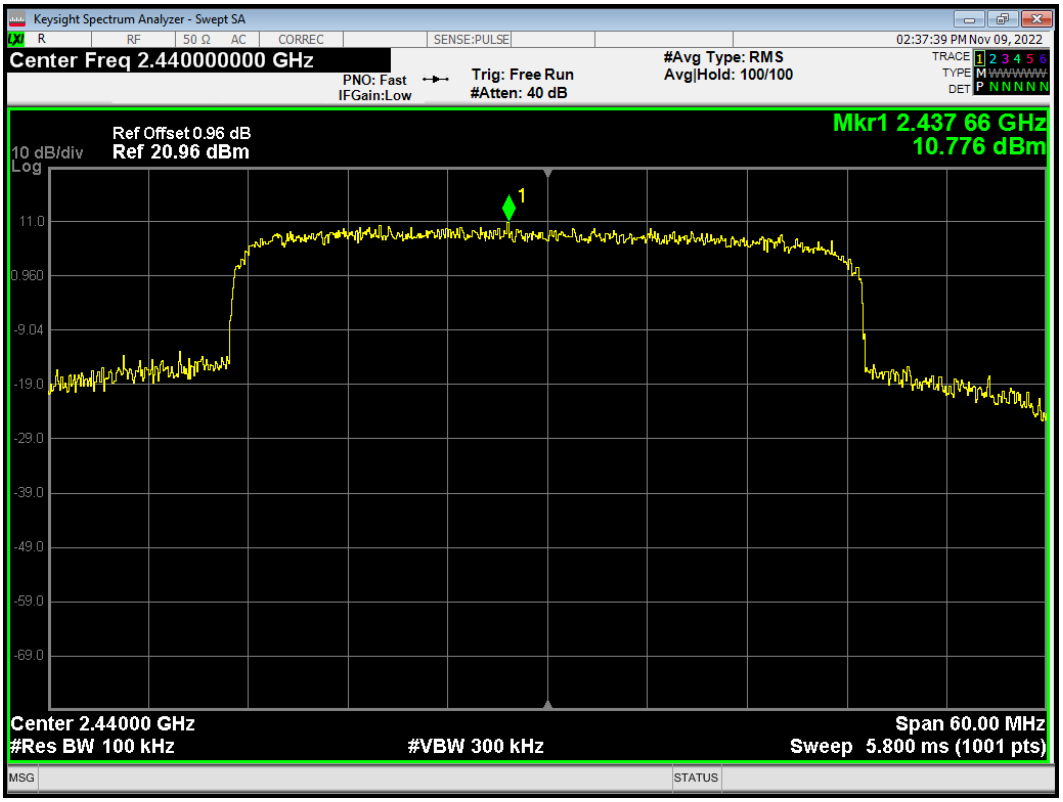
Tx. Spurious slot 40M 2425MHz Ref



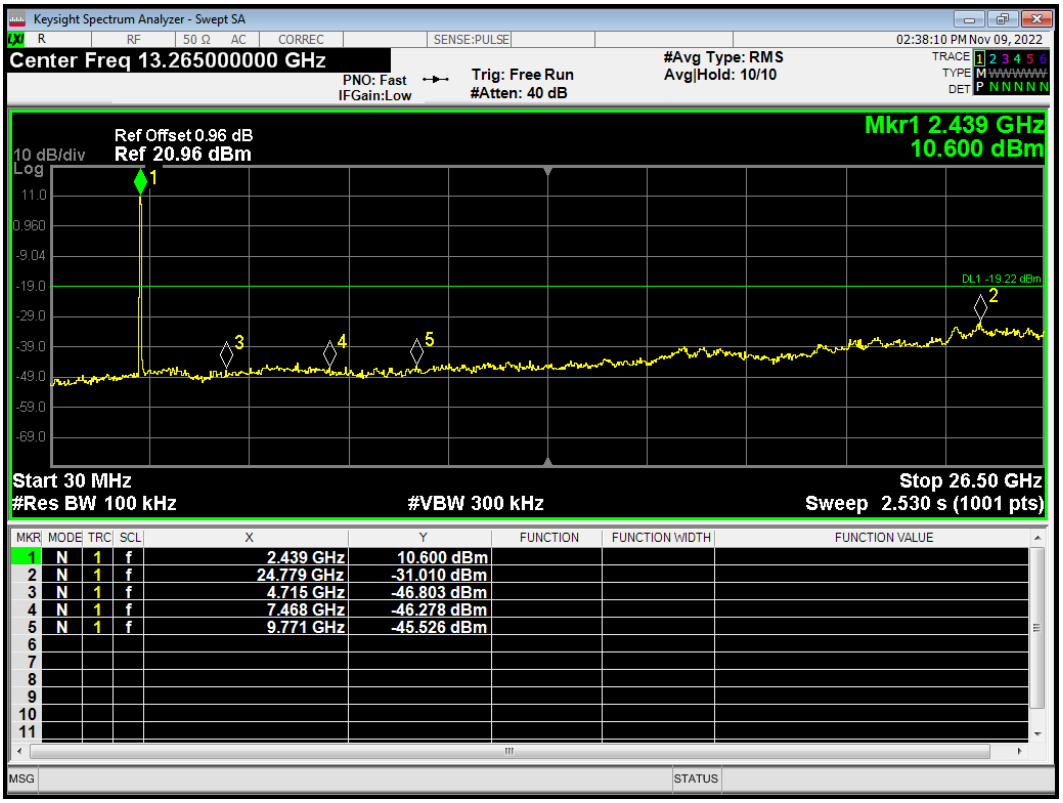
Tx. Spurious slot 40M 2425MHz Emission



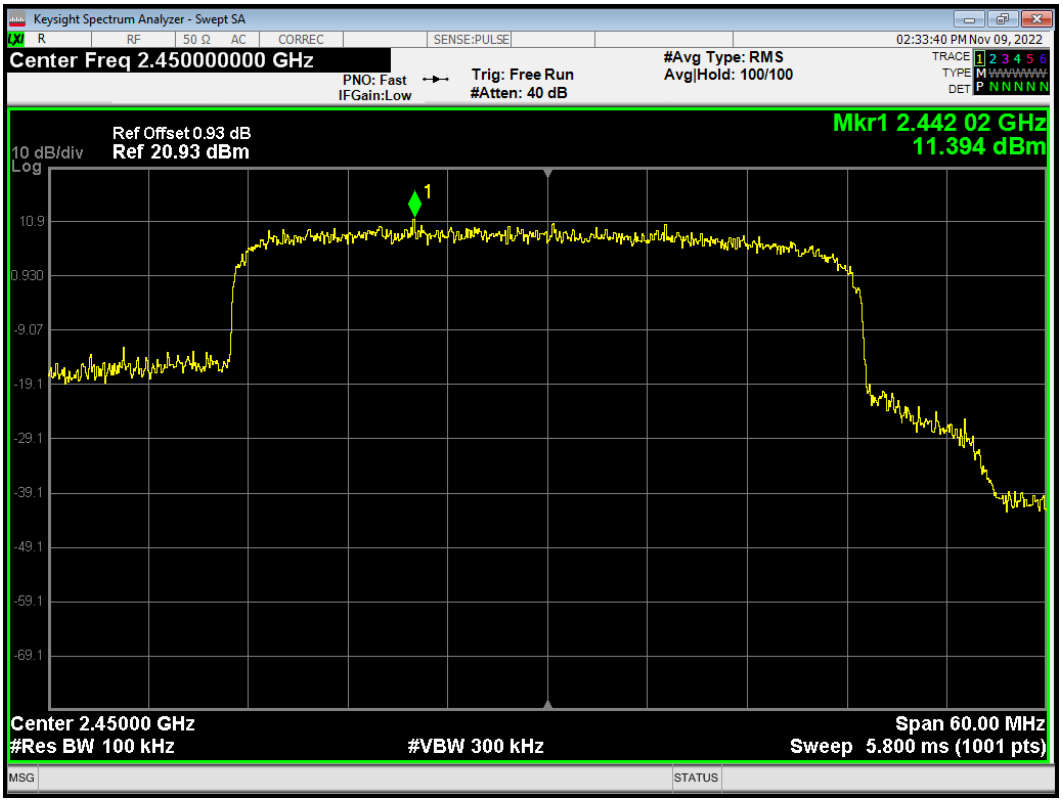
Tx. Spurious slot 40M 2440MHz Ref



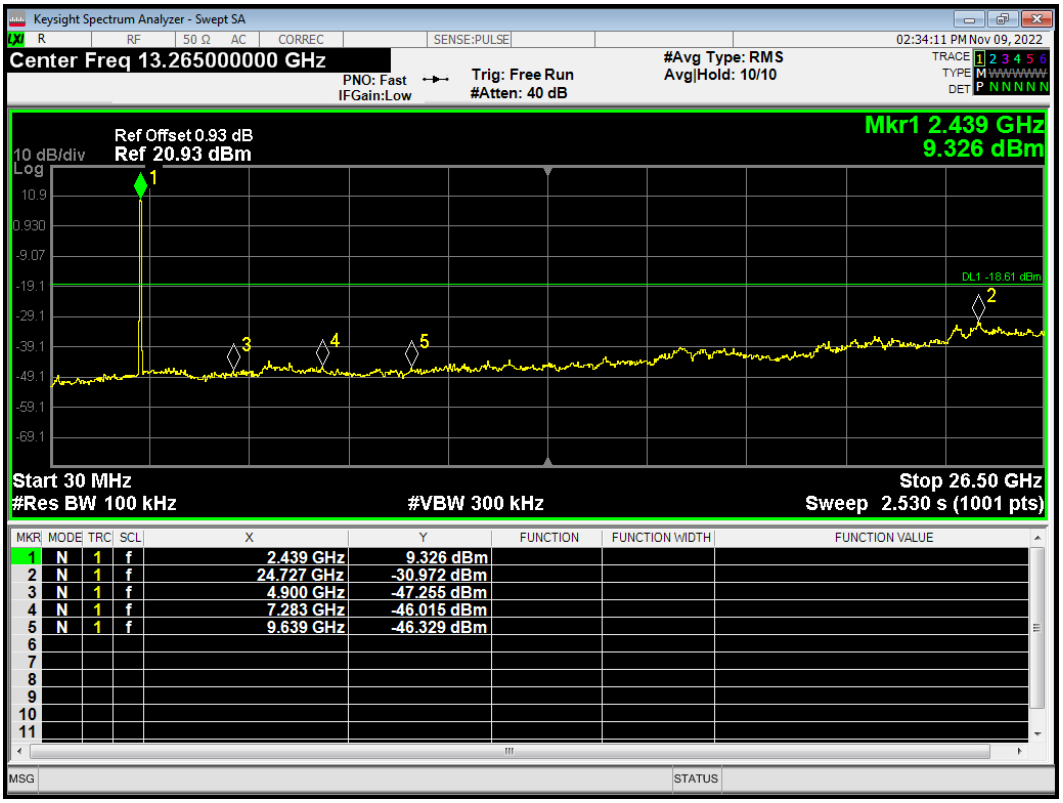
Tx. Spurious slot 40M 2440MHz Emission



Tx. Spurious slot 40M 2450MHz Ref

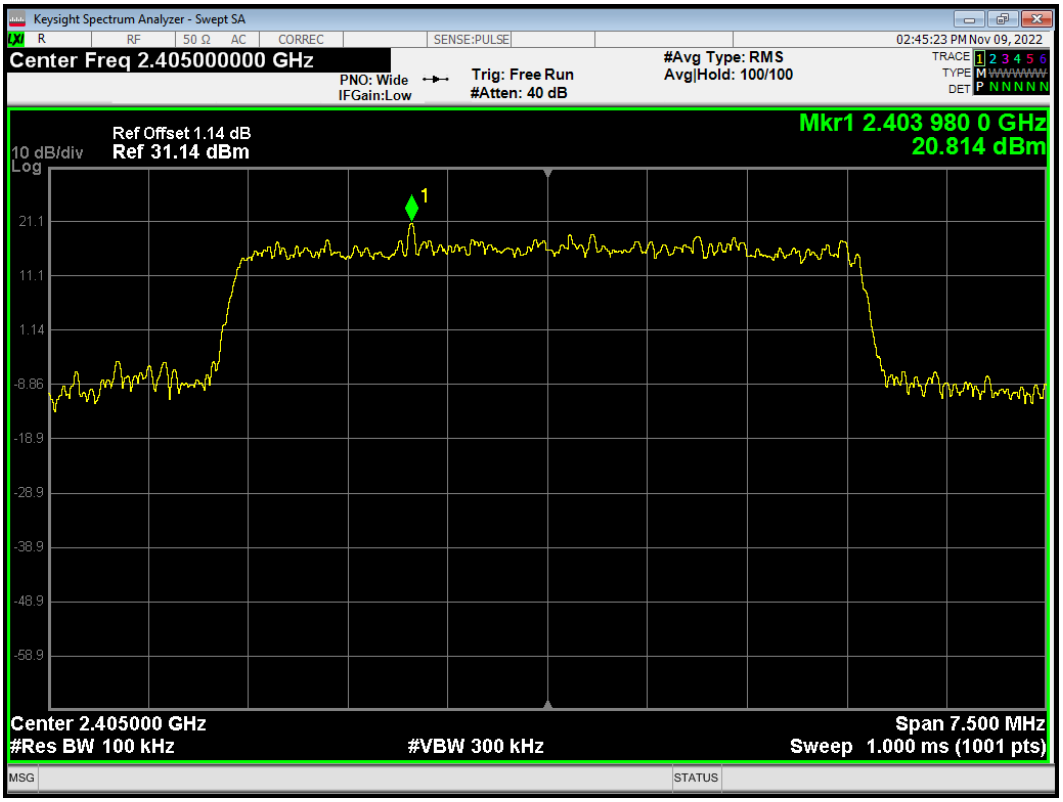


Tx. Spurious slot 40M 2450MHz Emission

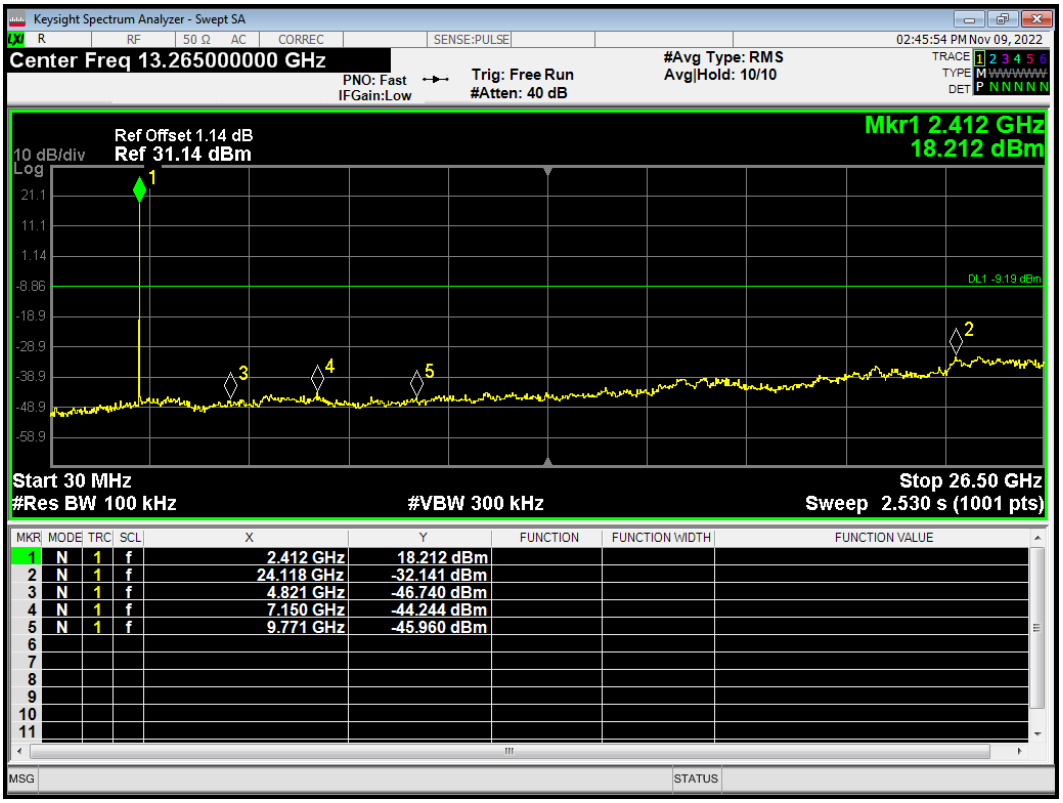


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.439 GHz	9.326 dBm			
2	N	1	f	24.727 GHz	-30.972 dBm			
3	N	1	f	4.900 GHz	-47.255 dBm			
4	N	1	f	7.283 GHz	-46.015 dBm			
5	N	1	f	9.639 GHz	-46.329 dBm			

Tx. Spurious slot 5M 2405MHz Ref

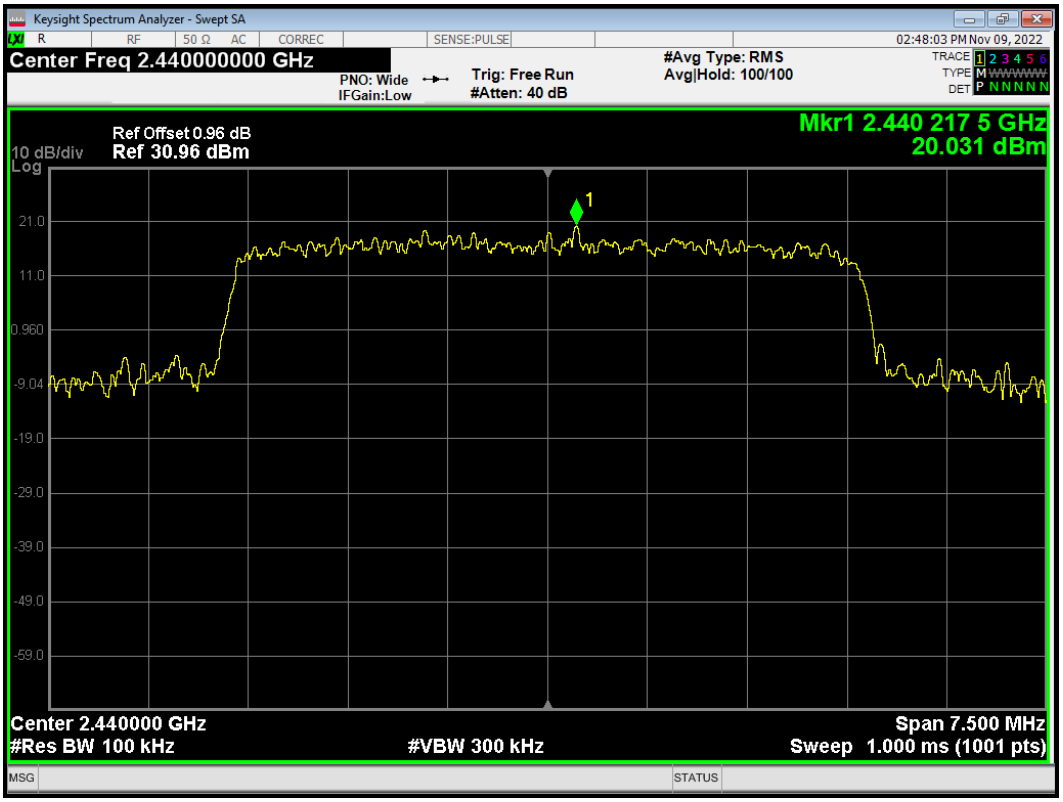


Tx. Spurious slot 5M 2405MHz Emission

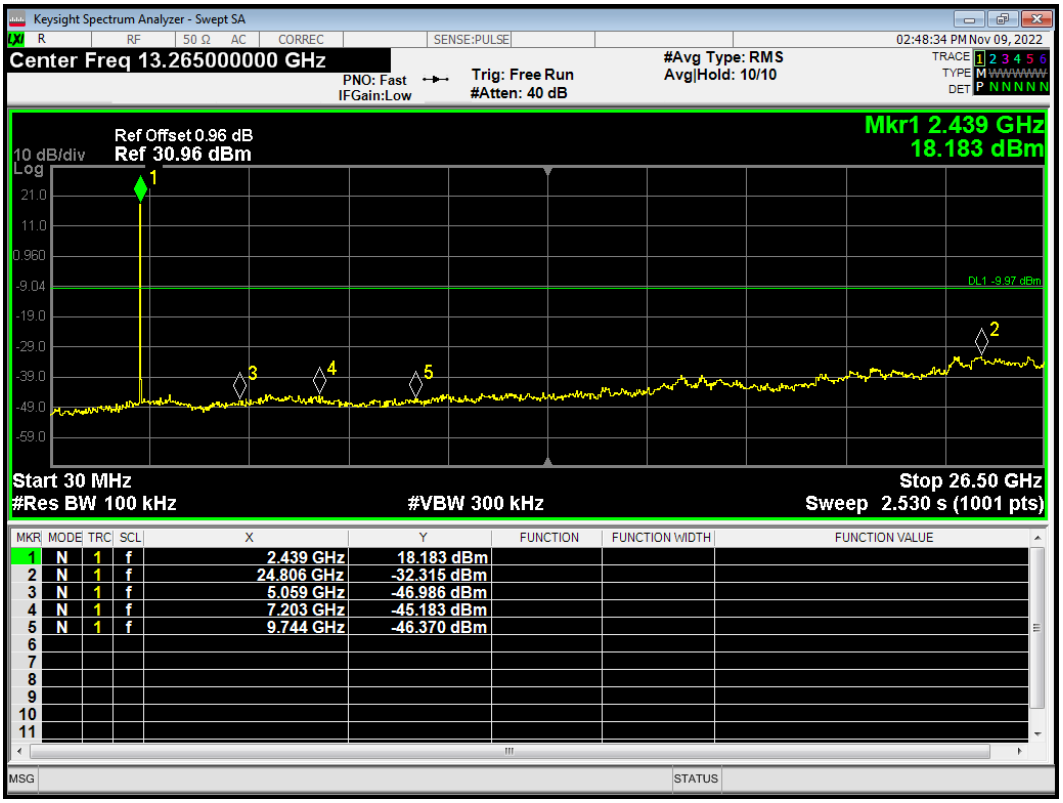


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 GHz	18.212 dBm			
2	N	1	f	24.118 GHz	-32.141 dBm			
3	N	1	f	4.821 GHz	-46.740 dBm			
4	N	1	f	7.150 GHz	-44.244 dBm			
5	N	1	f	9.771 GHz	-45.960 dBm			
6								
7								
8								
9								
10								
11								

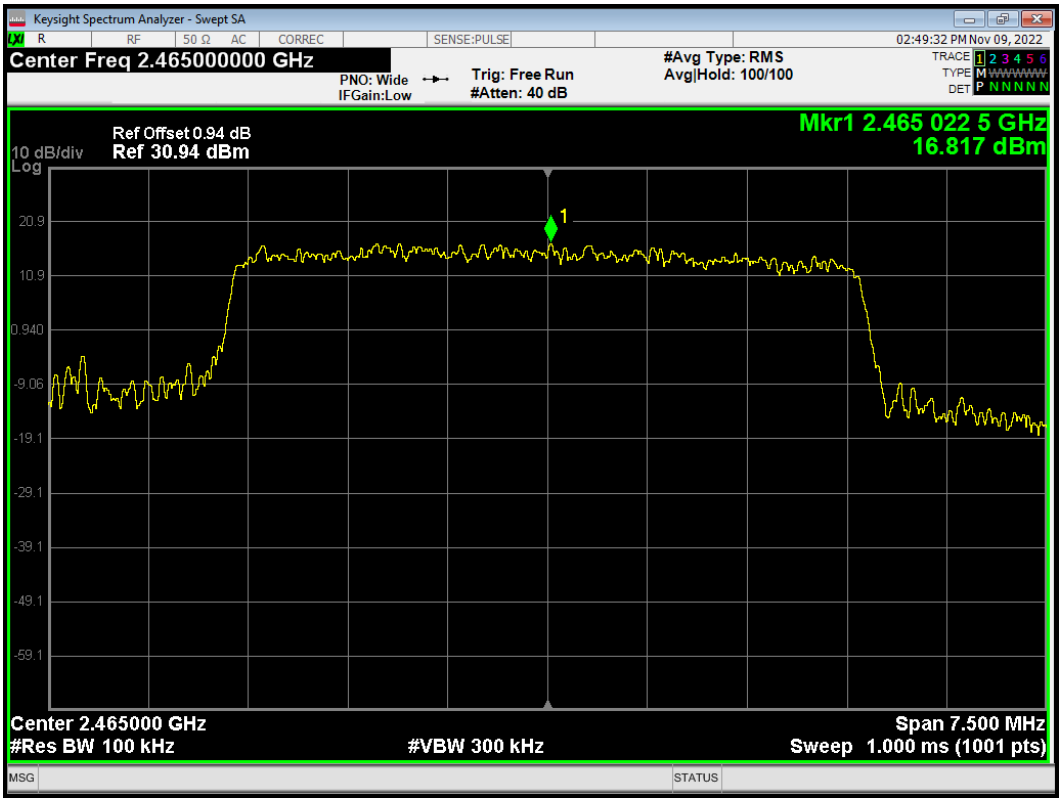
Tx. Spurious slot 5M 2440MHz Ref



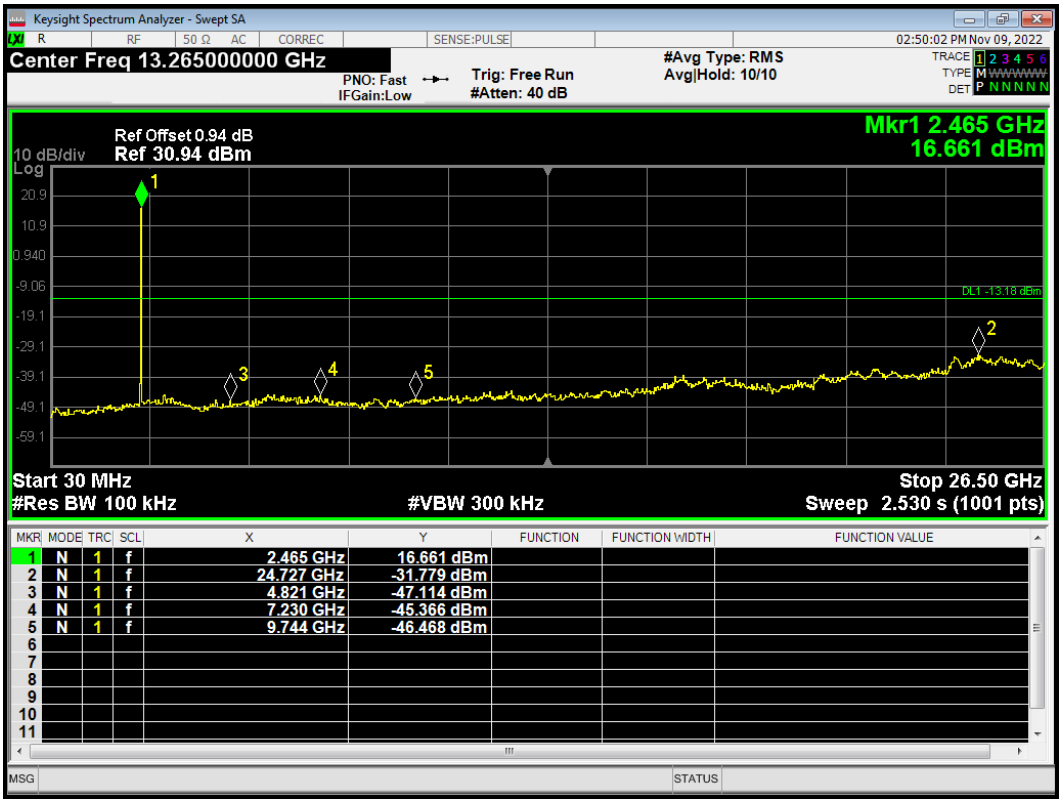
Tx. Spurious slot 5M 2440MHz Emission



Tx. Spurious slot 5M 2465MHz Ref

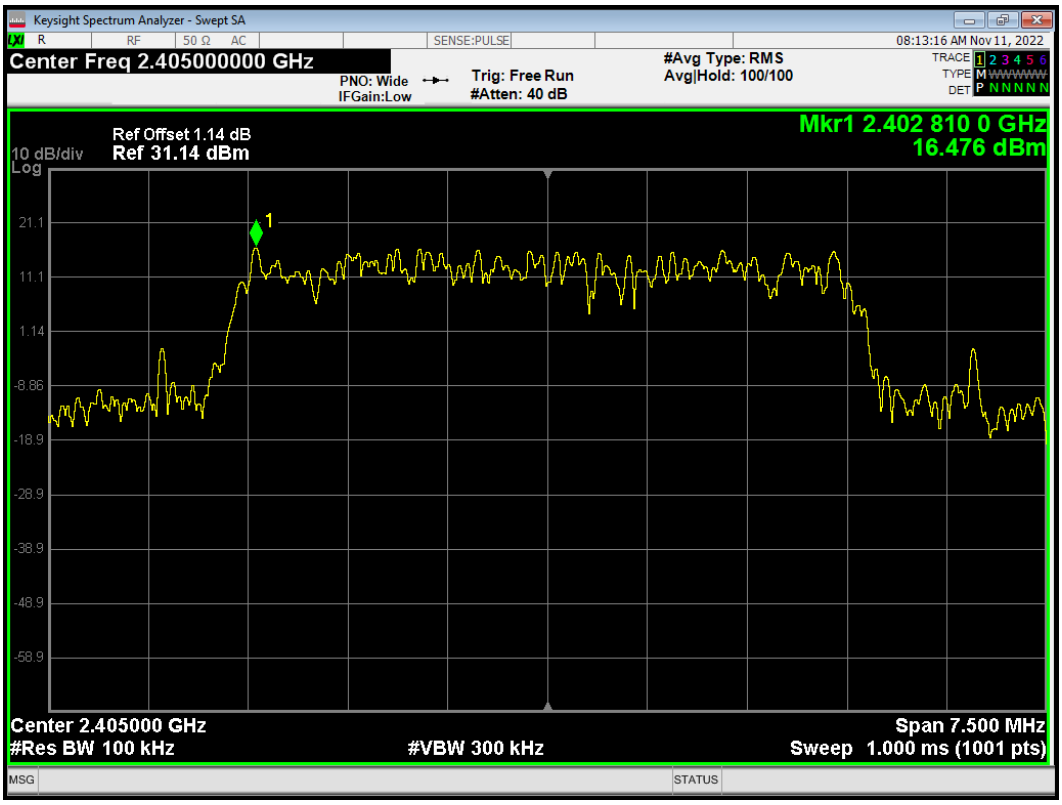


Tx. Spurious slot 5M 2465MHz Emission

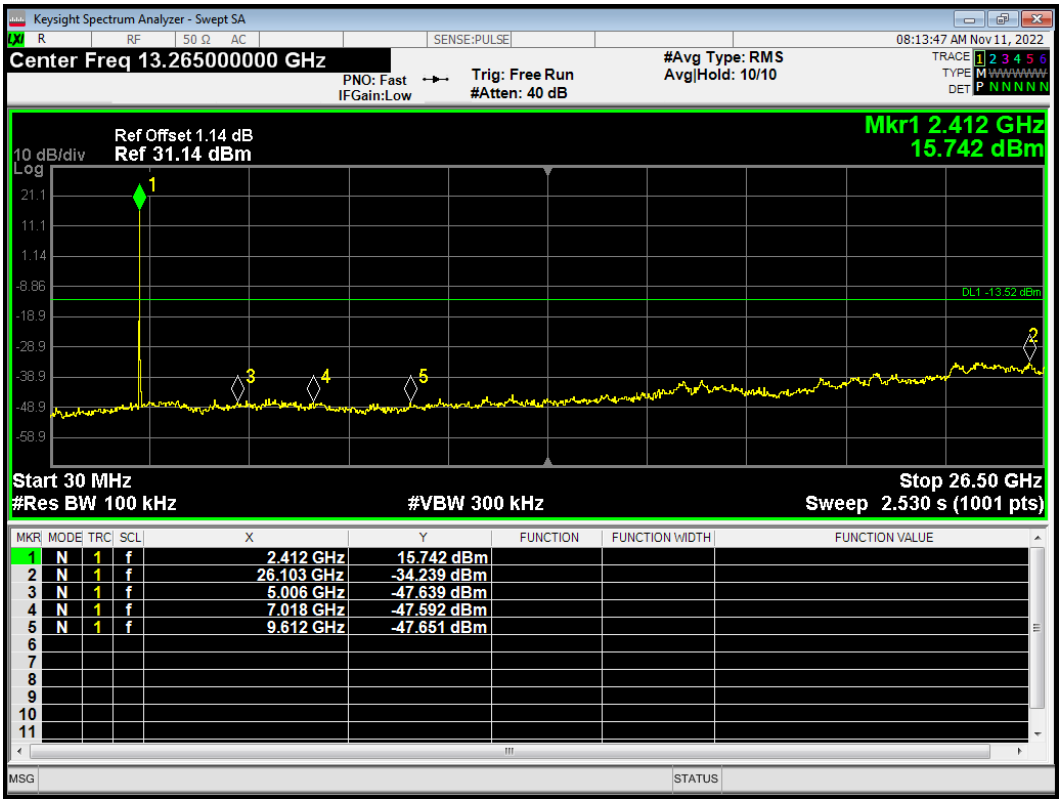


BR

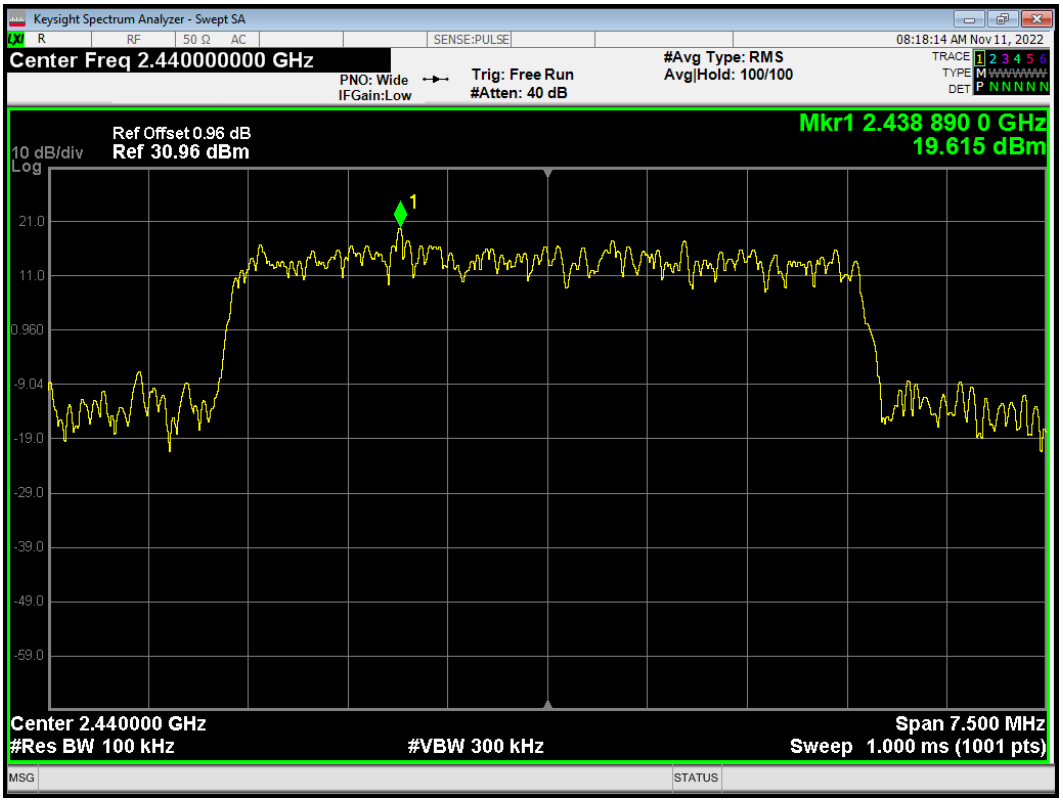
Tx. Spurious BR 5M 2405MHz Ref



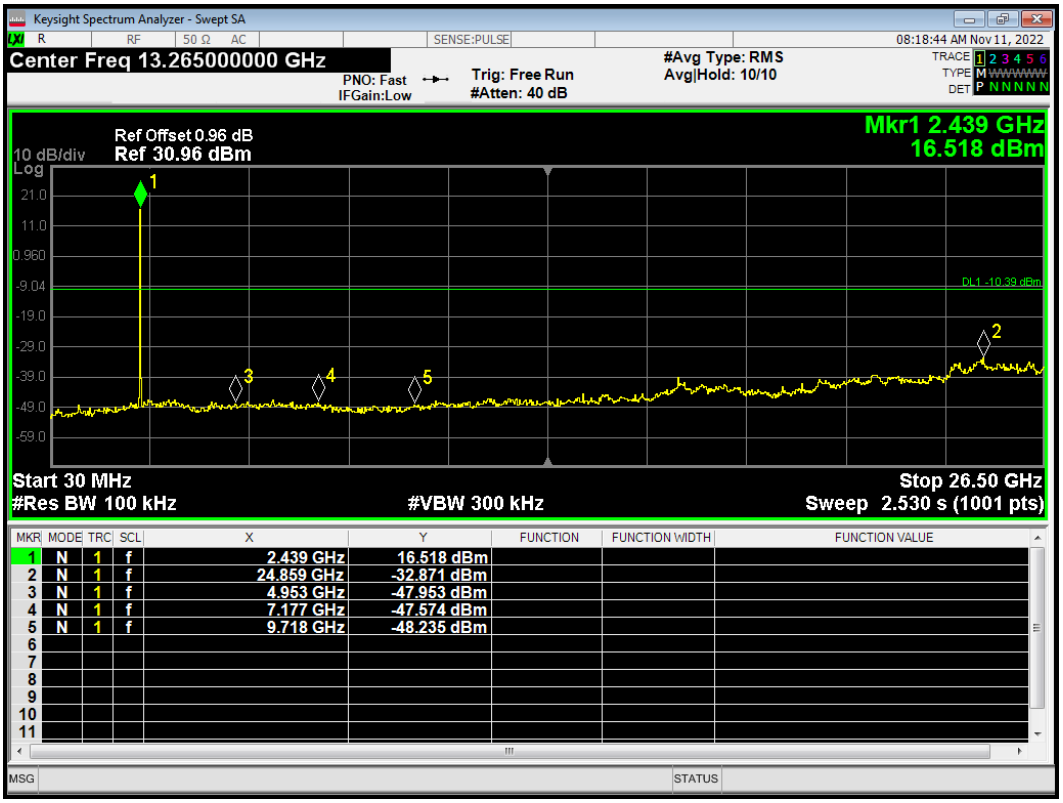
Tx. Spurious BR 5M 2405MHz Emission



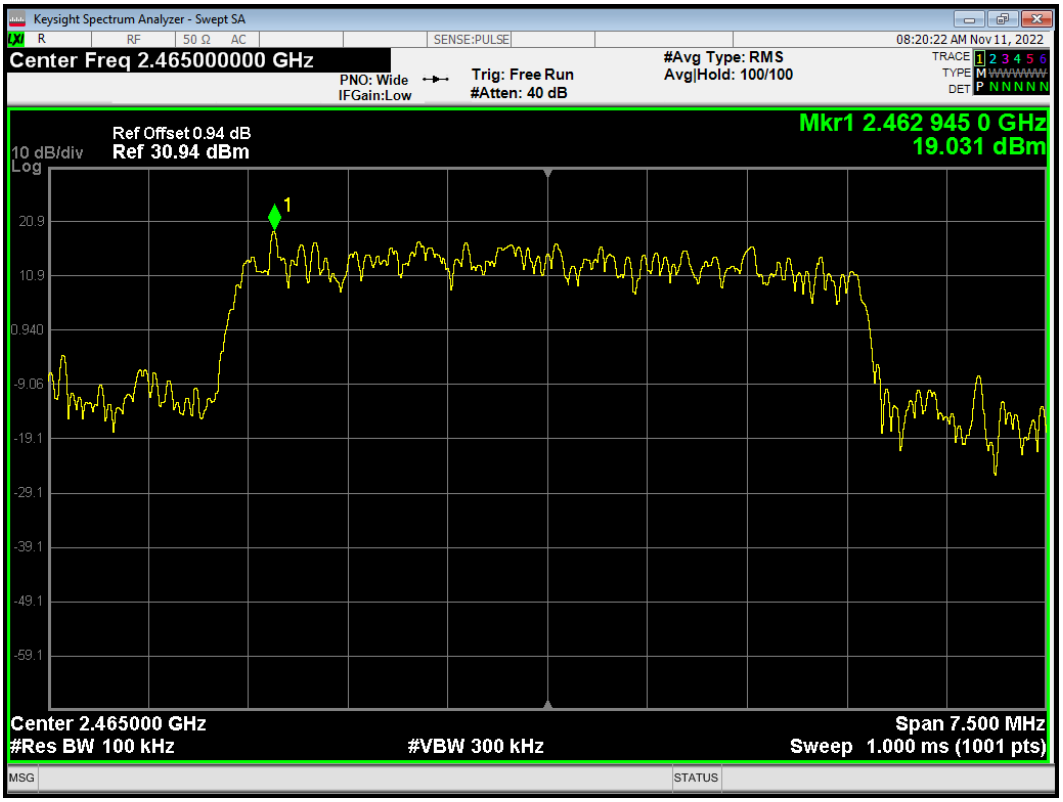
Tx. Spurious BR 5M 2440MHz Ref



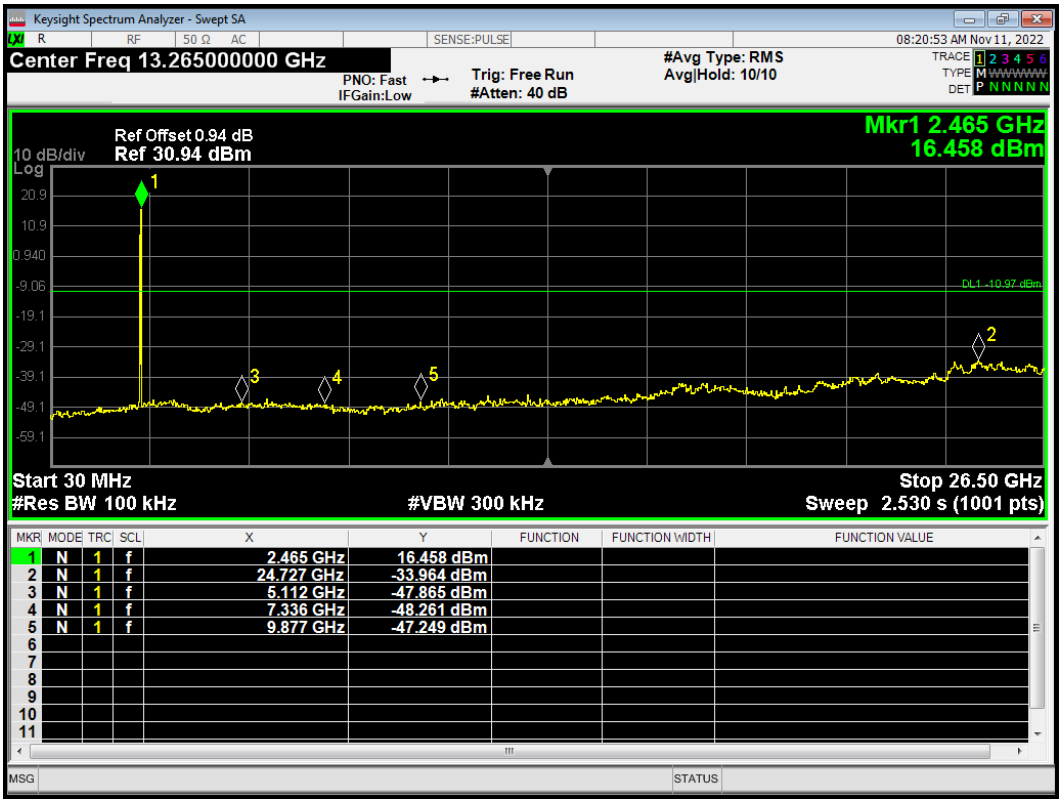
Tx. Spurious BR 5M 2440MHz Emission



Tx. Spurious BR 5M 2465MHz Ref



Tx. Spurious BR 5M 2465MHz Emission



5.6. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10.
The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna.The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. Sweep the Restricted Band and the emissions less than 20 dB below the permissible value are reported.
The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

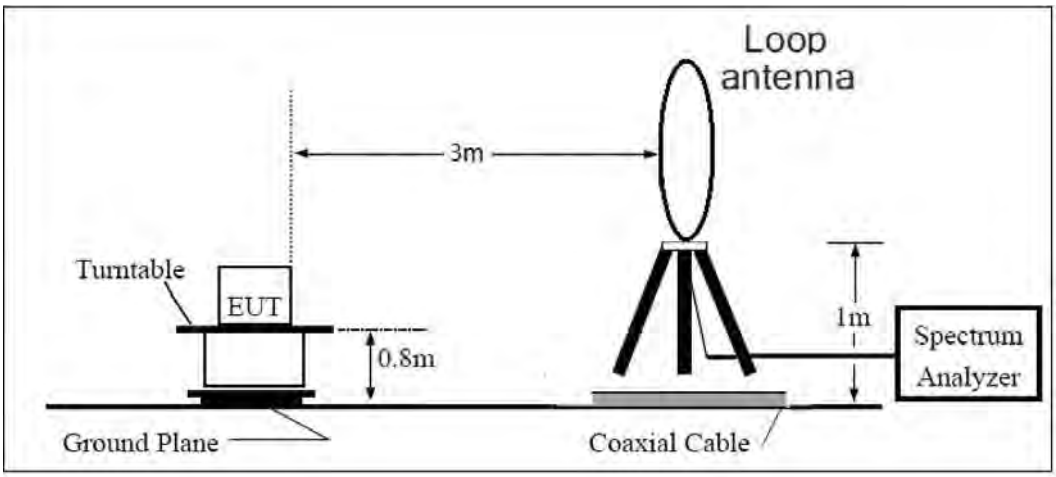
This method refer to ANSI C63.10.
The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:
Set the spectrum analyzer in the following:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9KHz, VBW=30KHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
a) Peak emission levels are measured by setting the instrument as follows:
Above 1GHz
PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
b) Average emission levels are measured by setting the instrument as follows:
Above 1GHz
AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage

averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

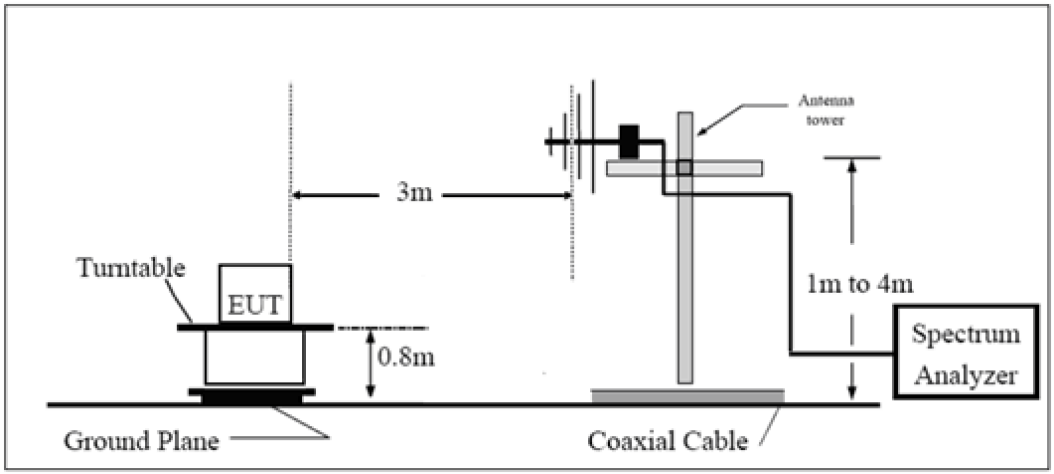
The test is in transmitting mode.

Test setup

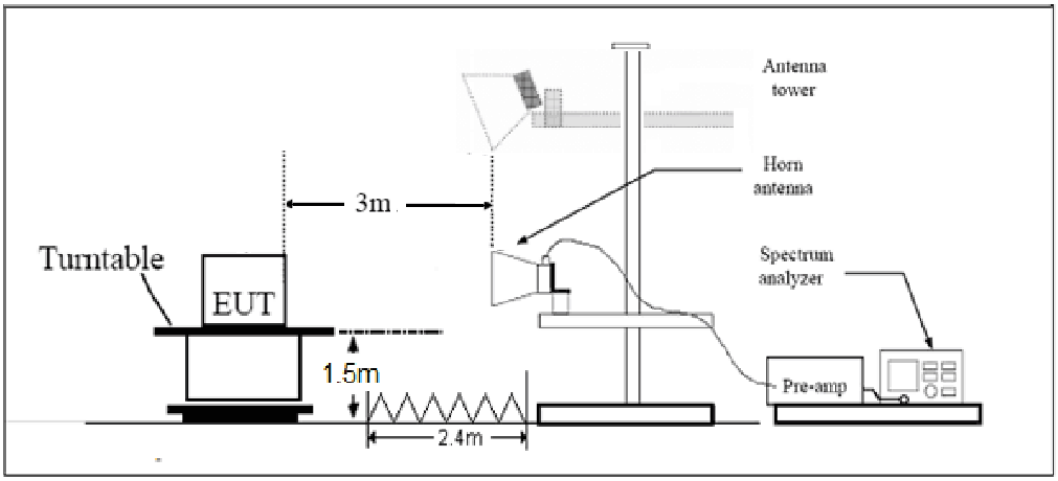
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 15.247(d) specifies that “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)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(μV/m)	Field strength(dBμV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBμV/m

Average Limit=54 dBμV/m

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1] 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

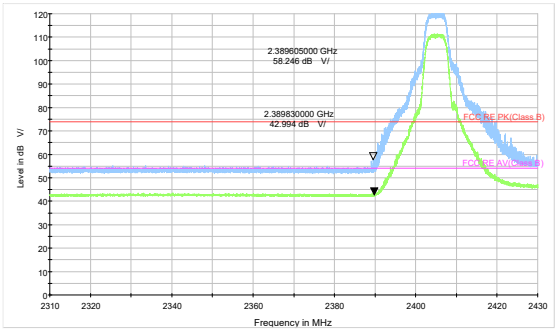
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

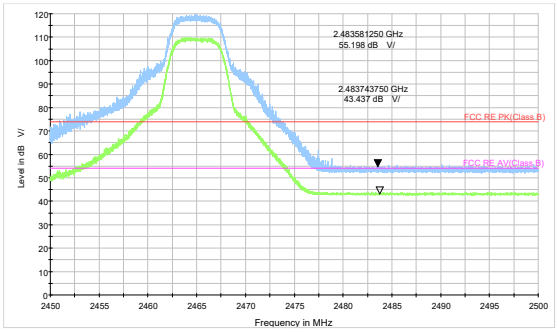
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

Test Results:

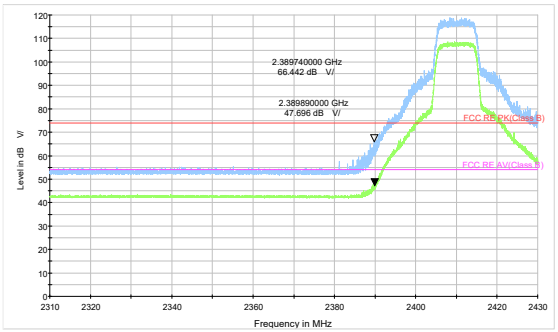
SLOT



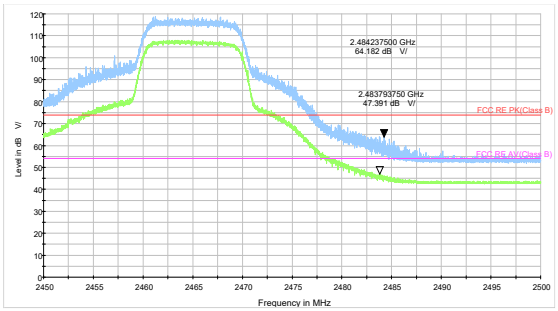
5M: 2405MHz Peak+ Average



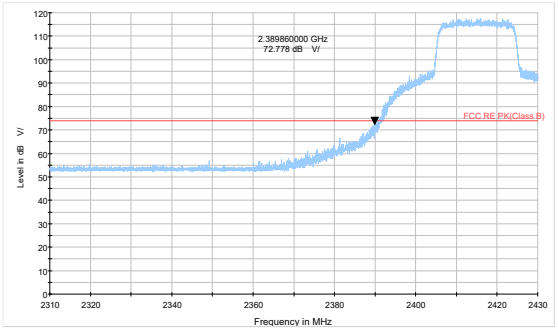
5M: 2465MHz Peak+ Average



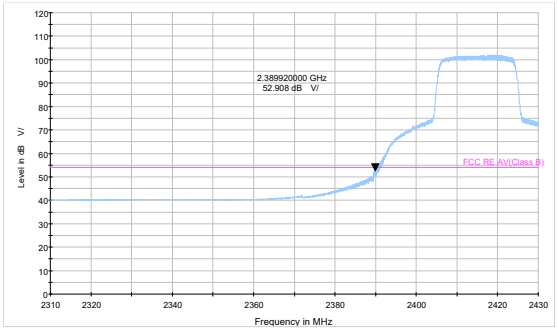
10M: 2410MHz Peak+ Average



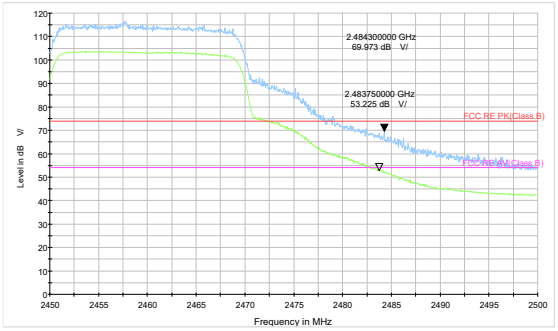
10M: 2465MHz Peak+ Average



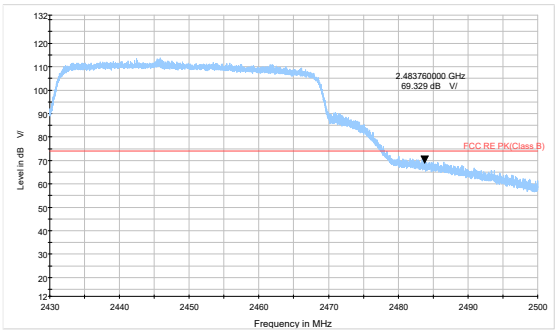
20M: 2415MHz Peak



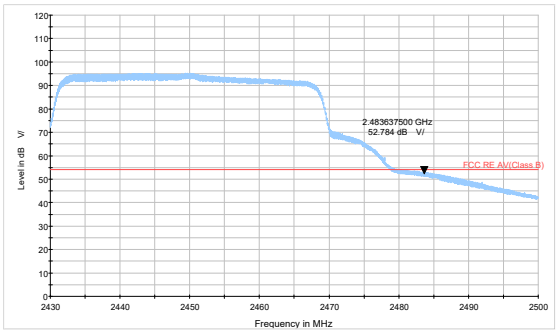
20M: 2415MHz Average



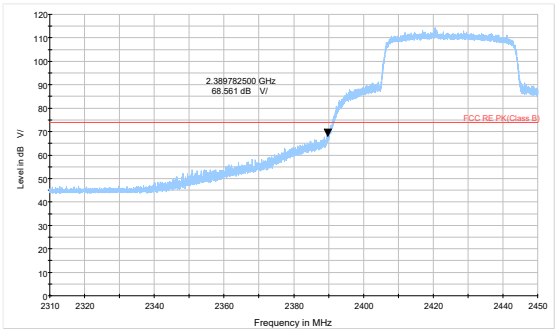
20M: 2460MHz Peak+ Average



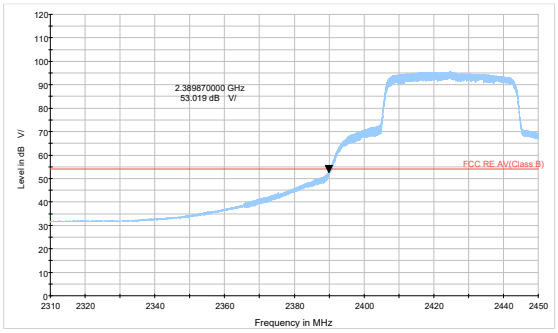
40M: 2450MHz Peak



40M: 2450MHz Average

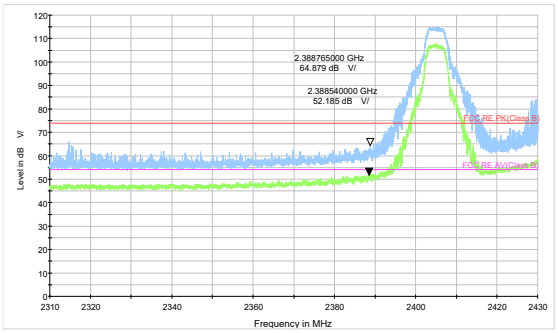


40M: 2425MHz Peak

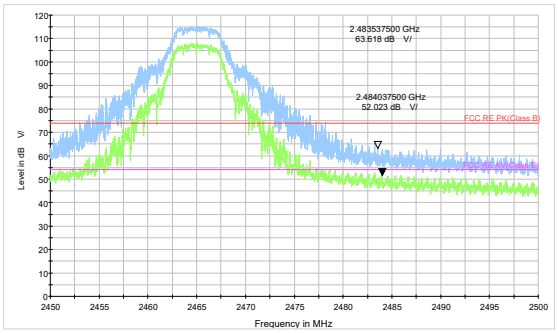


40M: 2425MHz Average

BR



5M: 2405MHz Peak+ Average



5M: 2465MHz Peak+ Average

Result of RE

Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 18GHz-26.5GHz are more than 20dB below the limit are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

A symbol (dB礦/m) in the test plot below means (dBμV/m)

A symbol (dBμV/) in the test plot below means (dBμV/m)

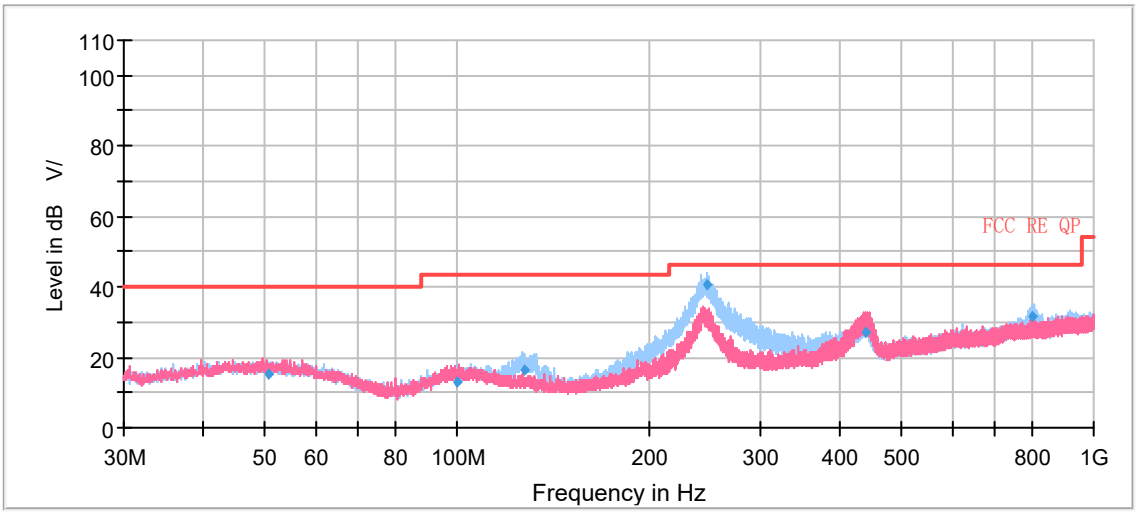
A symbol (dB V/) in the test plot below means (dBμV/m)

Continuous TX mode:

Wi-Fi 2.4G

SLOT

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 2.4G Slot 40MHz-2450MHz are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



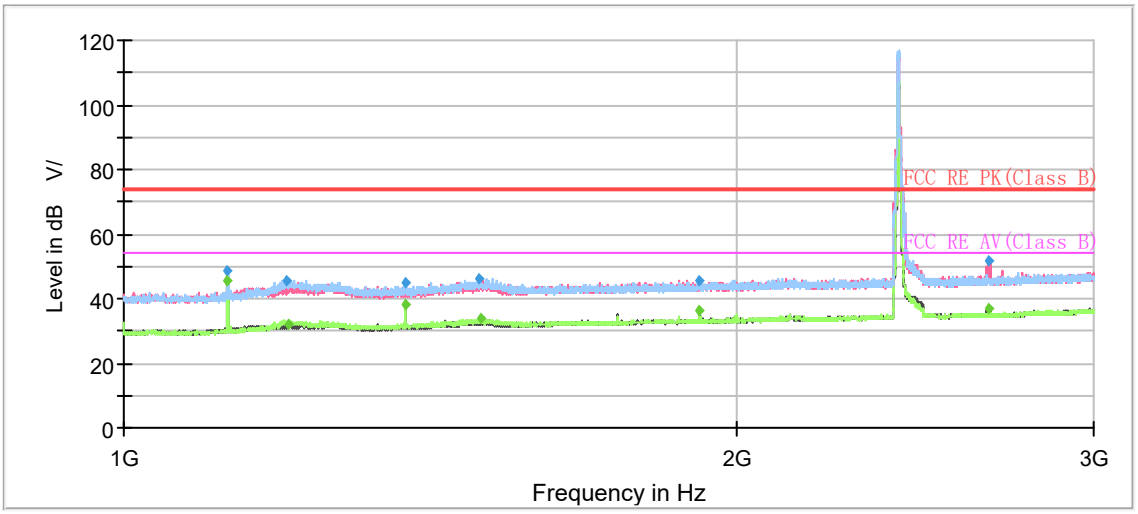
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
50.70	15.35	40.00	24.65	110.0	V	206.00	21
99.72	13.25	43.50	30.25	109.0	H	16.00	19
127.50	16.32	43.50	27.18	184.0	H	316.00	16
246.97	40.58	46.00	5.42	110.0	H	312.00	20
438.74	27.03	46.00	18.97	100.0	V	332.00	24
799.99	31.43	46.00	14.57	100.0	H	278.00	29

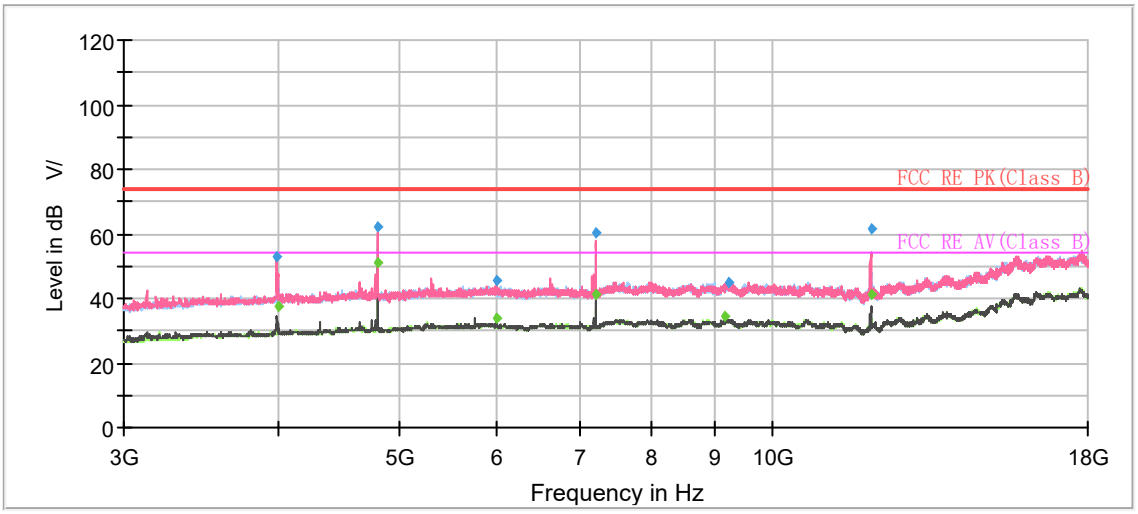
Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit – Quasi-Peak

5M: 2405MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

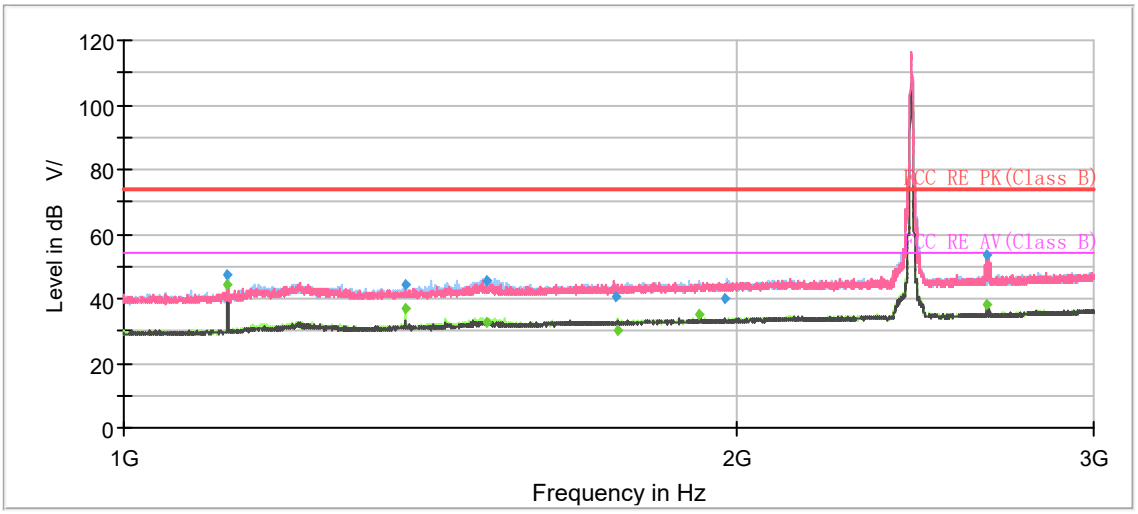


Radiates Emission from 3GHz to 18GHz

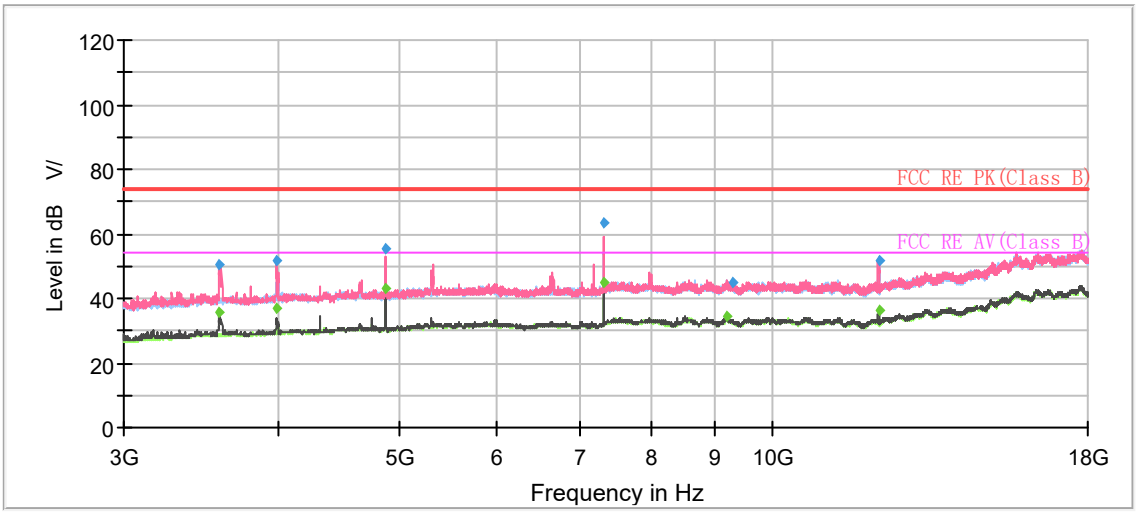
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.75	48.33	---	74.00	25.67	500.00	200.0	H	146.00	0
1125.00	---	45.52	54.00	8.48	500.00	200.0	H	142.00	0
1201.50	45.72	---	74.00	28.28	500.00	200.0	H	43.00	1
1205.75	---	32.07	54.00	21.93	500.00	200.0	H	48.00	1
1375.00	---	38.06	54.00	15.94	500.00	200.0	V	30.00	1
1375.00	44.68	---	74.00	29.32	500.00	200.0	V	30.00	1
1495.50	46.37	---	74.00	27.63	500.00	200.0	V	160.00	2
1499.75	---	34.14	54.00	19.86	500.00	200.0	H	146.00	2
1919.75	45.77	---	74.00	28.23	500.00	100.0	V	65.00	3
1920.00	---	36.21	54.00	17.79	500.00	200.0	V	13.00	3
2664.00	---	36.79	54.00	17.21	500.00	100.0	V	270.00	5
2665.00	51.63	---	74.00	22.37	500.00	100.0	V	275.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit –MAX Peak/ Average

5M: 2440MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



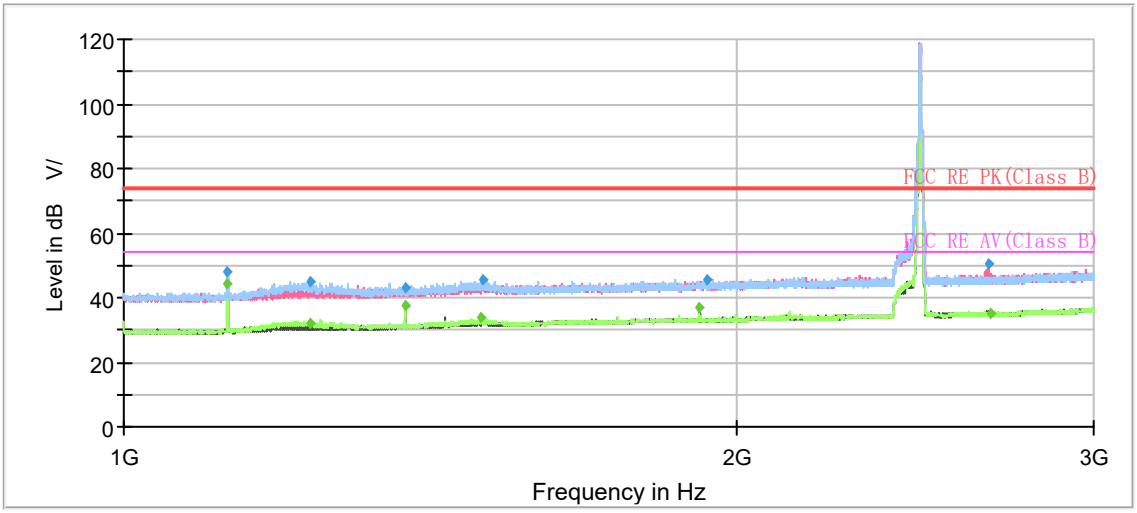
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.03	---	44.61	54.00	9.39	500.00	100.0	H	125.00	0
1125.06	47.66	---	74.00	26.34	500.00	100.0	H	125.00	0
1375.01	---	36.90	54.00	17.10	500.00	100.0	H	130.00	1
1375.34	44.15	---	74.00	29.85	500.00	100.0	H	135.00	1
1508.01	45.39	---	74.00	28.61	500.00	100.0	H	298.00	2
1508.84	---	32.42	54.00	21.58	500.00	100.0	H	130.00	2
1745.70	40.50	---	74.00	33.50	500.00	200.0	V	166.00	3
1750.04	---	29.87	54.00	24.13	500.00	200.0	H	165.00	3
1920.14	---	34.88	54.00	19.12	500.00	200.0	H	54.00	3
1976.62	40.29	---	74.00	33.71	500.00	200.0	H	242.00	3
2657.42	---	38.17	54.00	15.83	500.00	100.0	V	84.00	5
2657.70	53.49	---	74.00	20.51	500.00	100.0	V	89.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

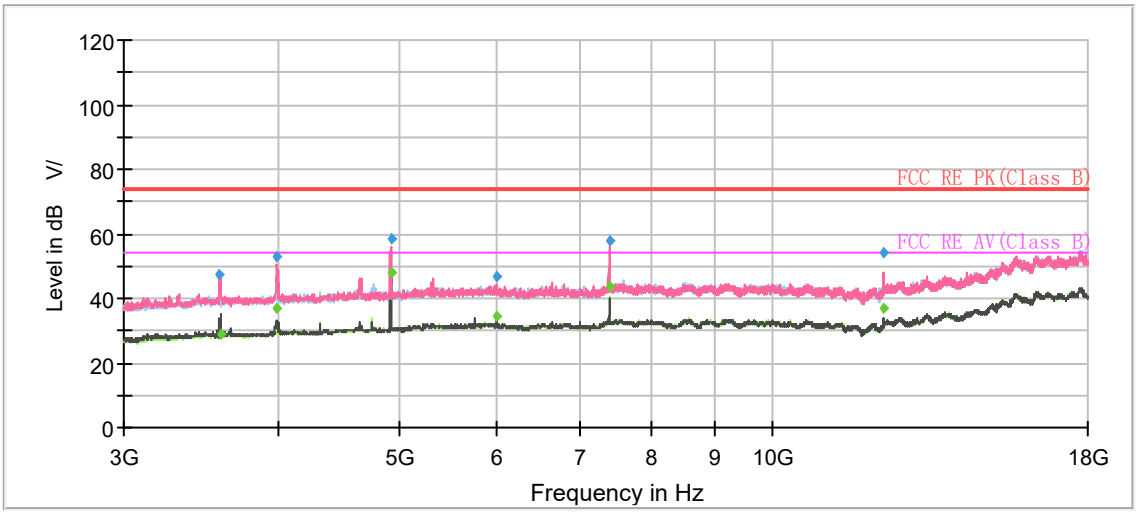
2. Margin = Limit –MAX Peak/ Average

5M: 2465MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



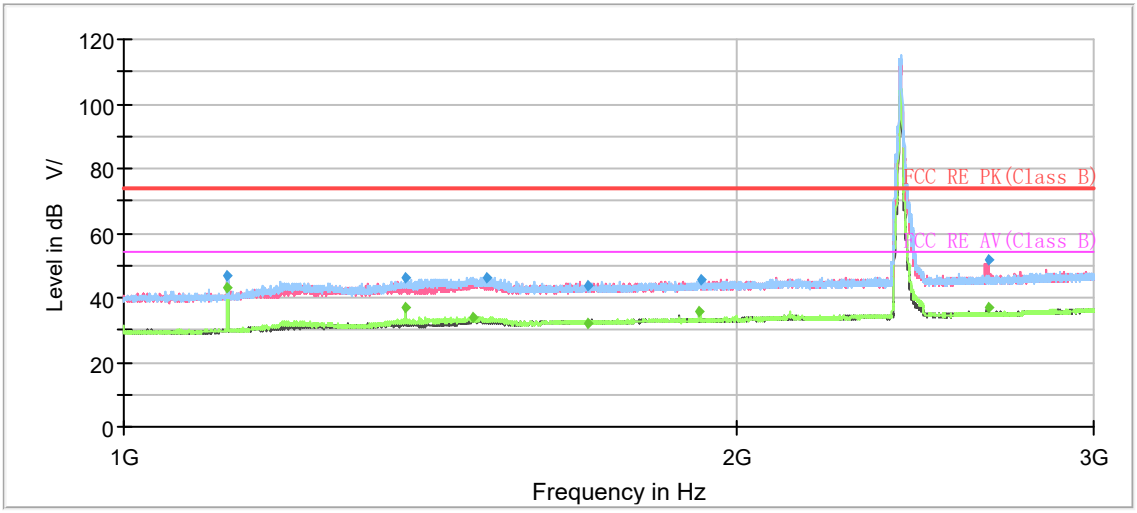
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	47.92	---	74.00	26.08	500.00	100.0	H	54.00	0
1125.00	---	44.58	54.00	9.42	500.00	100.0	H	54.00	0
1235.50	---	31.97	54.00	22.03	500.00	100.0	H	342.00	1
1235.75	44.76	---	74.00	29.24	500.00	100.0	H	244.00	1
1374.50	43.35	---	74.00	30.65	500.00	200.0	H	124.00	1
1374.75	---	37.71	54.00	16.29	500.00	100.0	H	96.00	1
1499.75	---	33.84	54.00	20.16	500.00	100.0	H	96.00	2
1501.25	45.36	---	74.00	28.64	500.00	100.0	H	320.00	2
1919.50	---	37.21	54.00	16.79	500.00	200.0	V	199.00	3
1937.00	45.60	---	74.00	28.40	500.00	100.0	H	9.00	3
2665.75	50.50	---	74.00	23.50	500.00	200.0	V	172.00	5
2671.00	---	35.28	54.00	18.72	500.00	100.0	V	27.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

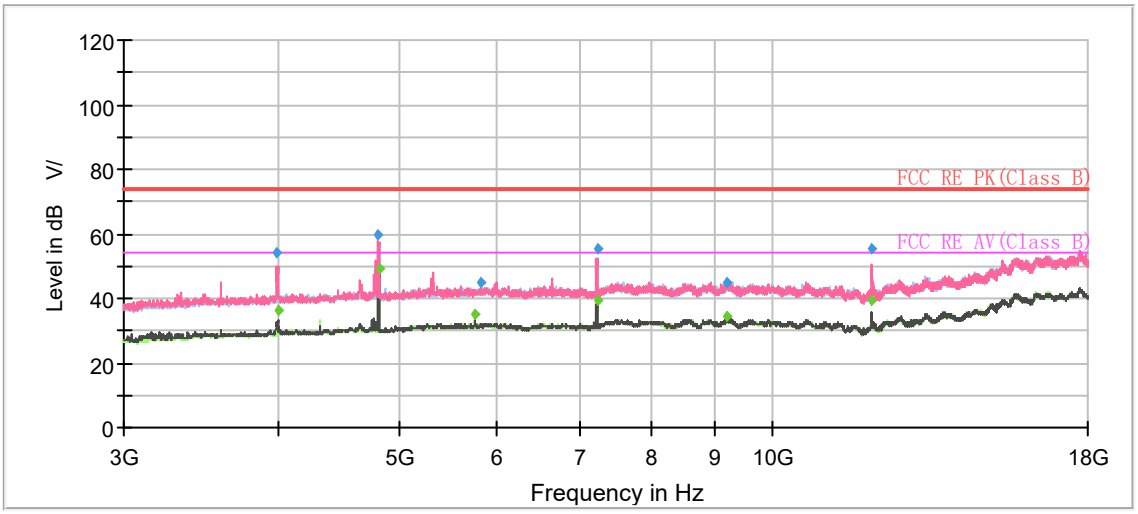
2. Margin = Limit –MAX Peak/ Average

10M: 2410MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



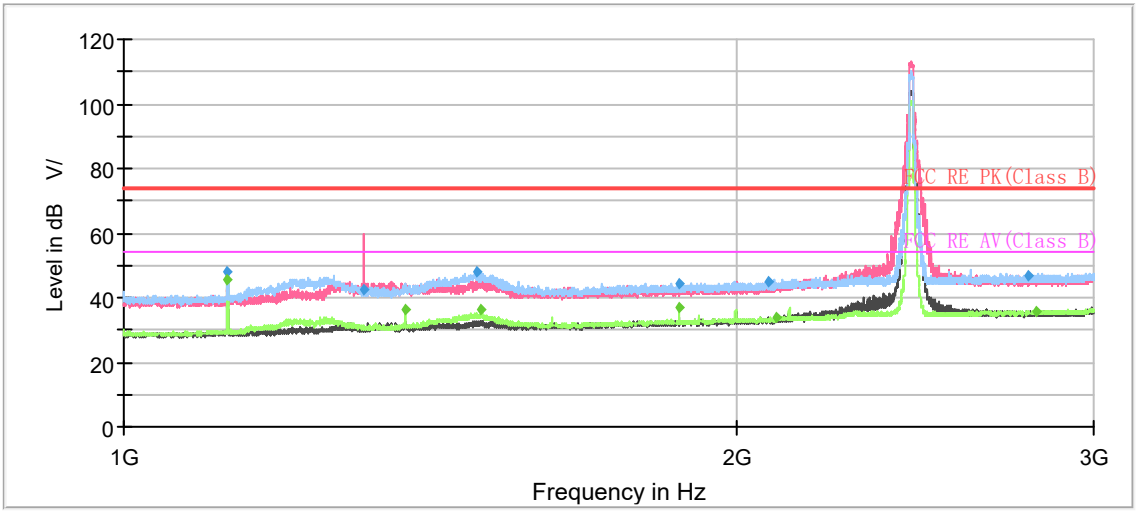
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	43.31	54.00	10.69	500.00	200.0	H	41.00	0
1125.00	46.75	---	74.00	27.25	500.00	200.0	H	41.00	0
1375.00	---	36.99	54.00	17.01	500.00	200.0	V	305.00	1
1375.00	46.24	---	74.00	27.76	500.00	200.0	H	128.00	1
1485.00	---	34.14	54.00	19.86	500.00	200.0	H	155.00	2
1509.50	46.26	---	74.00	27.74	500.00	200.0	H	159.00	2
1692.75	43.42	---	74.00	30.58	500.00	100.0	V	2.00	3
1693.50	---	32.29	54.00	21.71	500.00	100.0	V	47.00	3
1920.00	---	35.92	54.00	18.08	500.00	100.0	H	356.00	3
1920.75	45.61	---	74.00	28.39	500.00	200.0	V	62.00	3
2664.75	---	36.70	54.00	17.30	500.00	100.0	V	278.00	5
2664.75	51.72	---	74.00	22.28	500.00	100.0	V	278.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

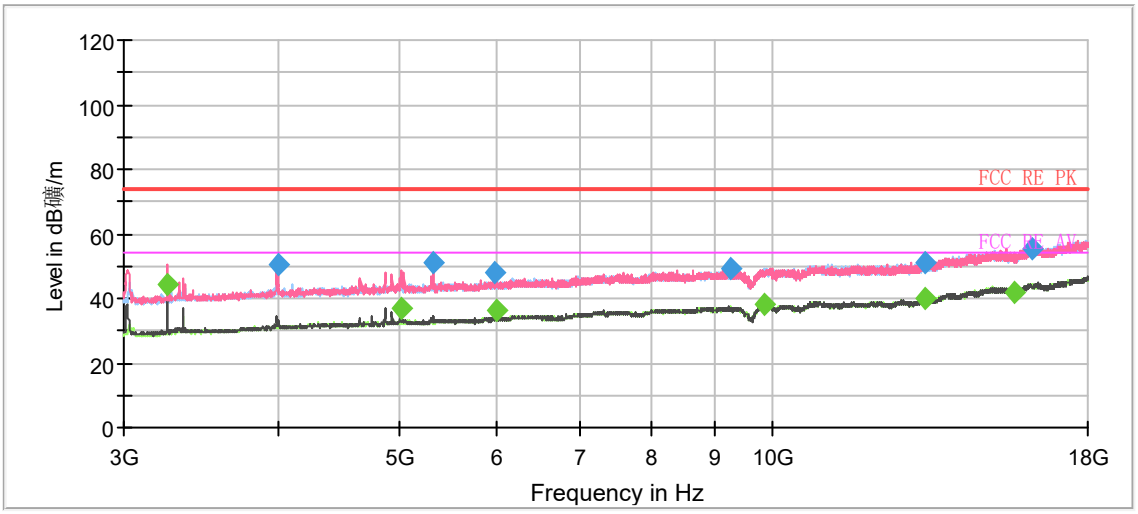
2. Margin = Limit –MAX Peak/ Average

10M: 2440MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



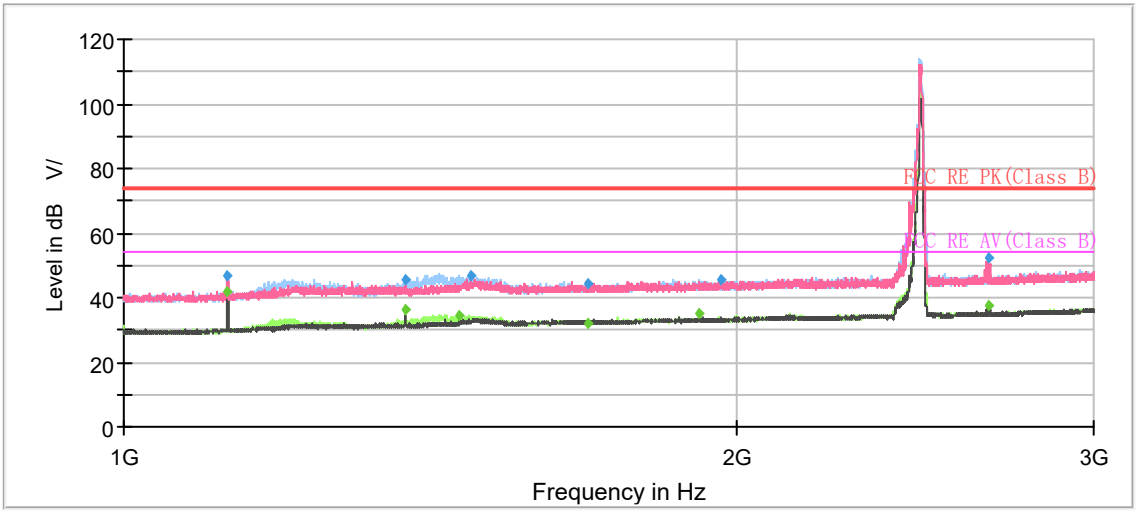
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	45.65	54.00	8.35	500.00	200.0	H	2.00	-8
1125.00	48.19	---	74.00	25.81	500.00	200.0	H	2.00	-8
1311.75	42.71	---	74.00	31.29	500.00	100.0	V	286.00	-7
1375.00	---	36.08	54.00	17.92	500.00	200.0	H	353.00	-6
1491.75	47.98	---	74.00	26.02	500.00	200.0	H	52.00	-6
1499.75	---	36.21	54.00	17.79	500.00	200.0	H	56.00	-6
1874.50	44.48	---	74.00	29.52	500.00	100.0	H	54.00	-4
1875.00	---	36.91	54.00	17.09	500.00	100.0	H	282.00	-4
2075.75	45.08	---	74.00	28.92	500.00	200.0	H	215.00	-3
2094.00	---	33.66	54.00	20.34	500.00	100.0	H	138.00	-2
2788.25	46.57	---	74.00	27.43	500.00	200.0	V	146.00	1
2811.50	---	35.96	54.00	18.04	500.00	200.0	V	247.00	1

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

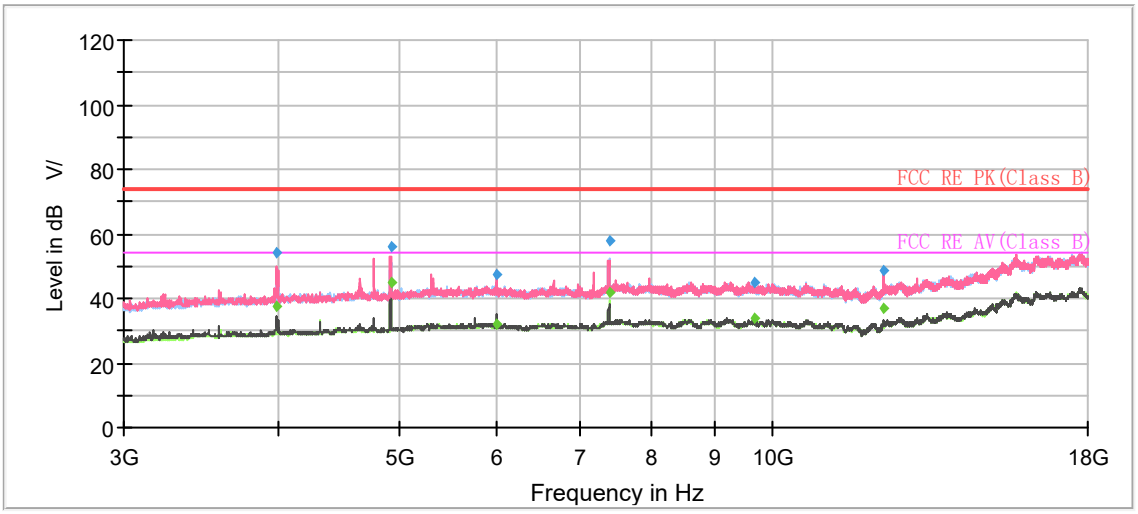
2. Margin = Limit –MAX Peak/ Average

10M: 2465MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



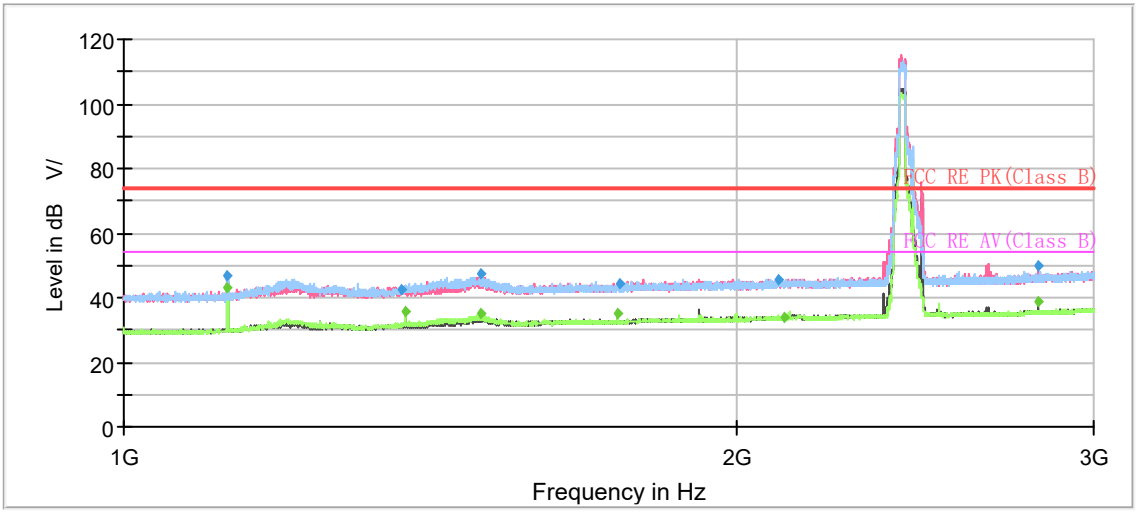
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	42.12	54.00	11.88	500.00	200.0	V	13.00	0
1125.00	46.46	---	74.00	27.54	500.00	100.0	H	132.00	0
1375.00	---	36.31	54.00	17.69	500.00	200.0	H	128.00	1
1375.00	45.76	---	74.00	28.24	500.00	200.0	H	128.00	1
1463.00	---	34.34	54.00	19.66	500.00	200.0	H	128.00	2
1481.75	46.53	---	74.00	27.47	500.00	200.0	H	157.00	2
1690.50	44.15	---	74.00	29.85	500.00	200.0	H	284.00	3
1691.25	---	32.28	54.00	21.72	500.00	200.0	H	243.00	3
1919.75	---	35.29	54.00	18.71	500.00	100.0	H	26.00	3
1968.00	45.60	---	74.00	28.40	500.00	100.0	H	65.00	3
2660.25	52.25	---	74.00	21.75	500.00	100.0	V	270.00	5
2660.50	---	37.71	54.00	16.29	500.00	100.0	V	270.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

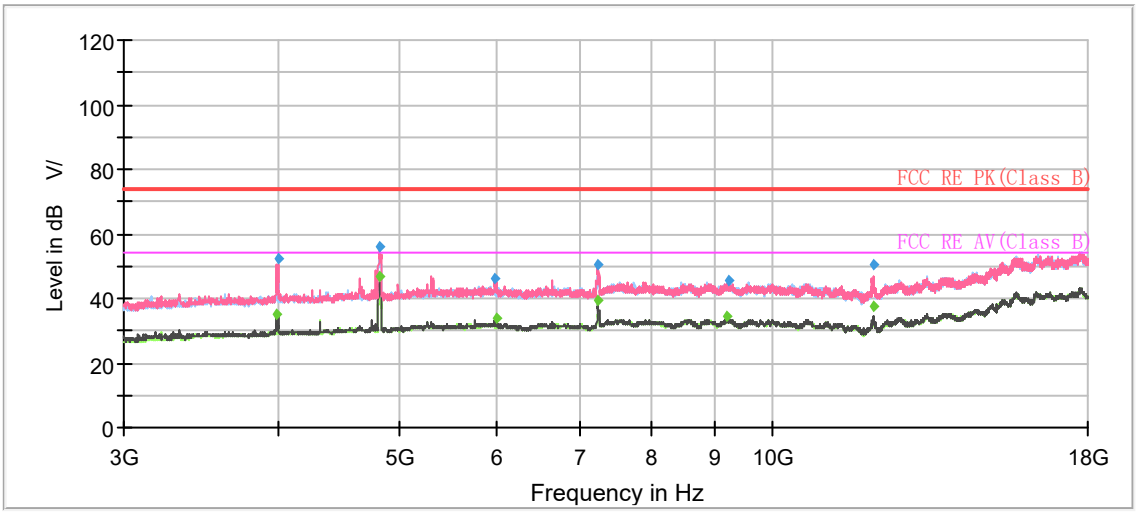
2. Margin = Limit –MAX Peak/ Average

20M: 2415MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



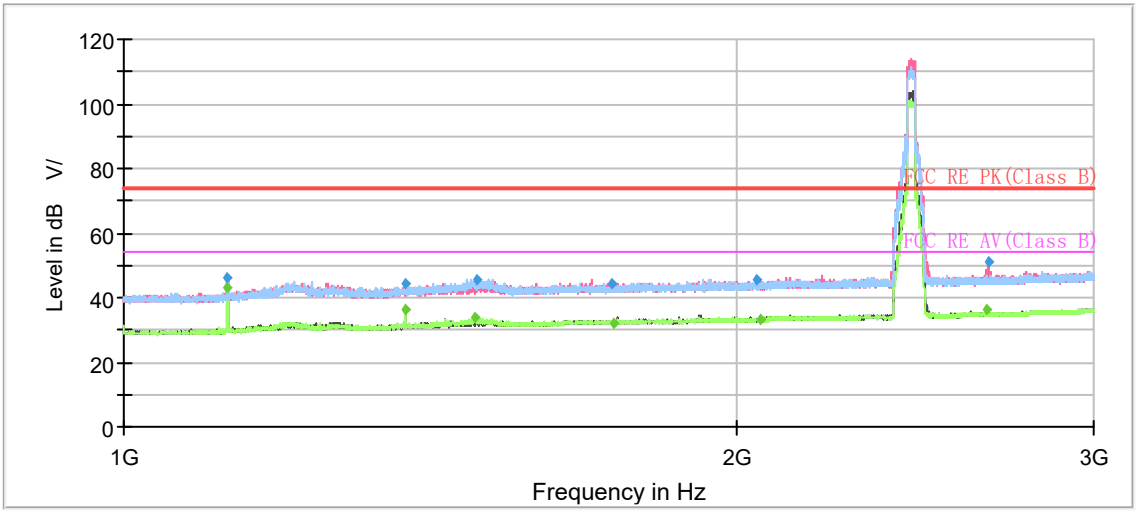
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.75	---	43.33	54.00	10.67	500.00	100.0	H	131.00	0
1125.00	46.58	---	74.00	27.42	500.00	100.0	H	131.00	0
1370.25	42.65	---	74.00	31.35	500.00	200.0	V	207.00	1
1374.75	---	35.73	54.00	18.27	500.00	200.0	H	119.00	1
1500.00	47.11	---	74.00	26.89	500.00	100.0	H	90.00	2
1500.00	---	34.82	54.00	19.18	500.00	200.0	H	123.00	2
1750.00	---	35.12	54.00	18.88	500.00	200.0	H	140.00	3
1751.75	44.19	---	74.00	29.81	500.00	100.0	H	144.00	3
2099.25	45.43	---	74.00	28.57	500.00	200.0	H	167.00	4
2113.25	---	33.98	54.00	20.02	500.00	200.0	V	312.00	4
2819.00	---	38.77	54.00	15.23	500.00	200.0	V	357.00	5
2819.25	49.72	---	74.00	24.28	500.00	200.0	V	357.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

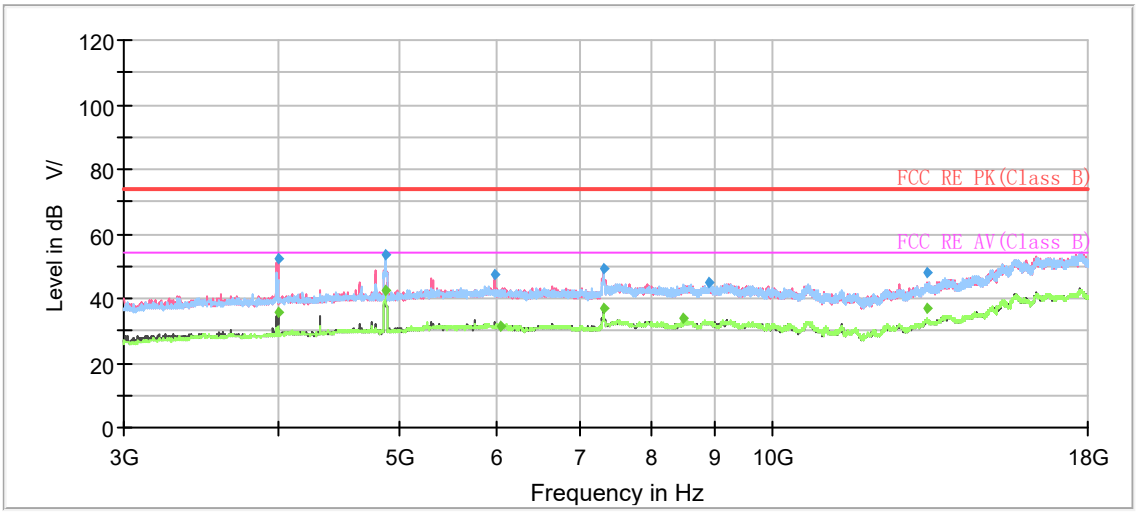
2. Margin = Limit –MAX Peak/ Average

20M: 2440MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



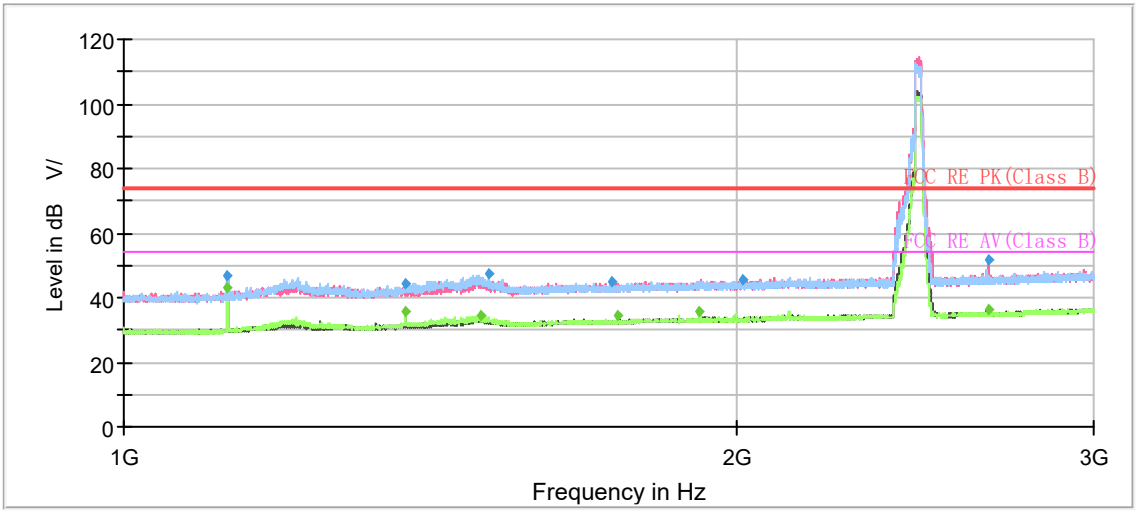
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.75	46.11	---	74.00	27.89	500.00	100.0	H	168.00	0
1125.00	---	42.97	54.00	11.03	500.00	200.0	H	243.00	0
1375.00	---	36.06	54.00	17.94	500.00	200.0	V	322.00	1
1375.00	44.56	---	74.00	29.44	500.00	200.0	H	65.00	1
1487.75	---	33.80	54.00	20.20	500.00	100.0	H	213.00	2
1491.50	45.61	---	74.00	28.39	500.00	100.0	V	117.00	2
1736.50	44.41	---	74.00	29.59	500.00	100.0	V	136.00	3
1740.50	---	32.20	54.00	21.80	500.00	100.0	V	131.00	3
2048.50	45.58	---	74.00	28.42	500.00	100.0	H	313.00	4
2058.00	---	33.31	54.00	20.69	500.00	100.0	V	69.00	4
2659.50	---	36.01	54.00	17.99	500.00	100.0	V	284.00	5
2664.00	51.03	---	74.00	22.97	500.00	100.0	V	163.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

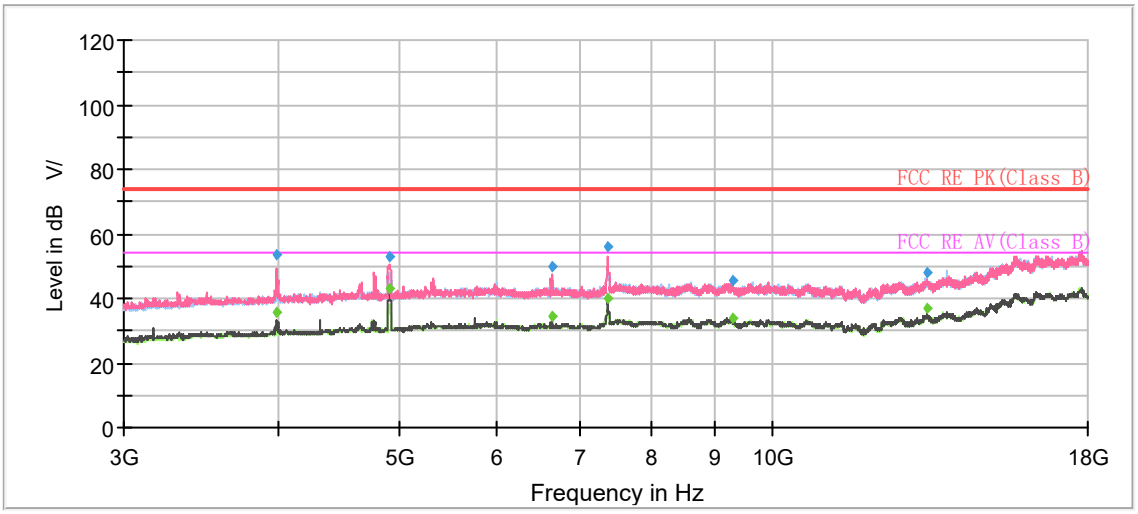
2. Margin = Limit –MAX Peak/ Average

20M: 2460MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



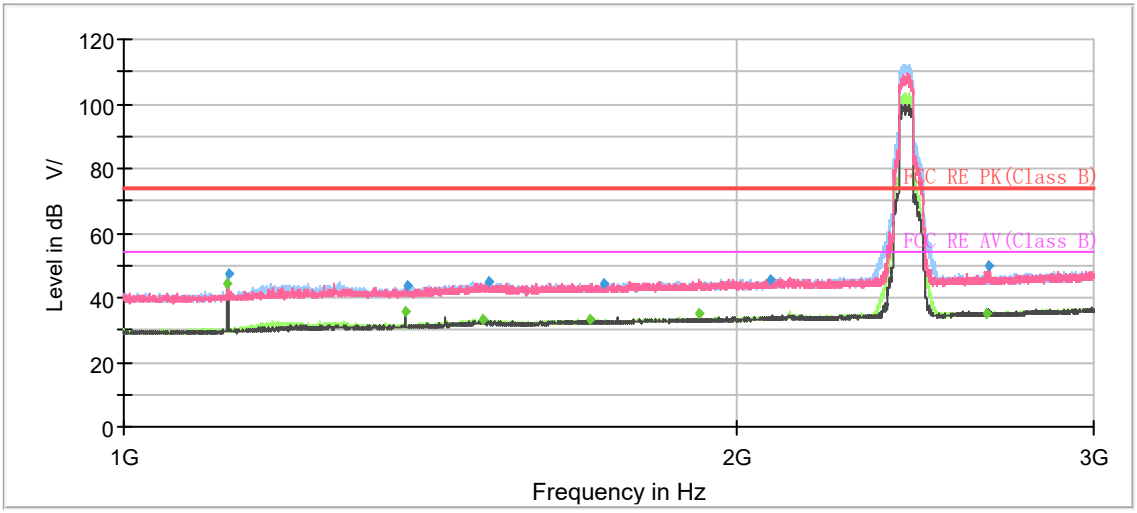
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	43.16	54.00	10.84	500.00	200.0	H	193.00	0
1125.00	46.79	---	74.00	27.21	500.00	100.0	H	126.00	0
1375.00	---	35.48	54.00	18.52	500.00	200.0	H	92.00	1
1375.00	44.47	---	74.00	29.53	500.00	200.0	H	92.00	1
1499.50	---	34.49	54.00	19.51	500.00	100.0	H	89.00	2
1511.00	47.21	---	74.00	26.79	500.00	100.0	H	89.00	2
1739.50	44.71	---	74.00	29.29	500.00	200.0	H	105.00	3
1750.00	---	34.58	54.00	19.42	500.00	200.0	H	8.00	3
1920.00	---	35.54	54.00	18.46	500.00	200.0	V	208.00	3
2016.00	45.52	---	74.00	28.48	500.00	100.0	V	35.00	4
2662.25	---	36.45	54.00	17.55	500.00	100.0	V	268.00	5
2665.50	51.69	---	74.00	22.31	500.00	100.0	V	278.00	5

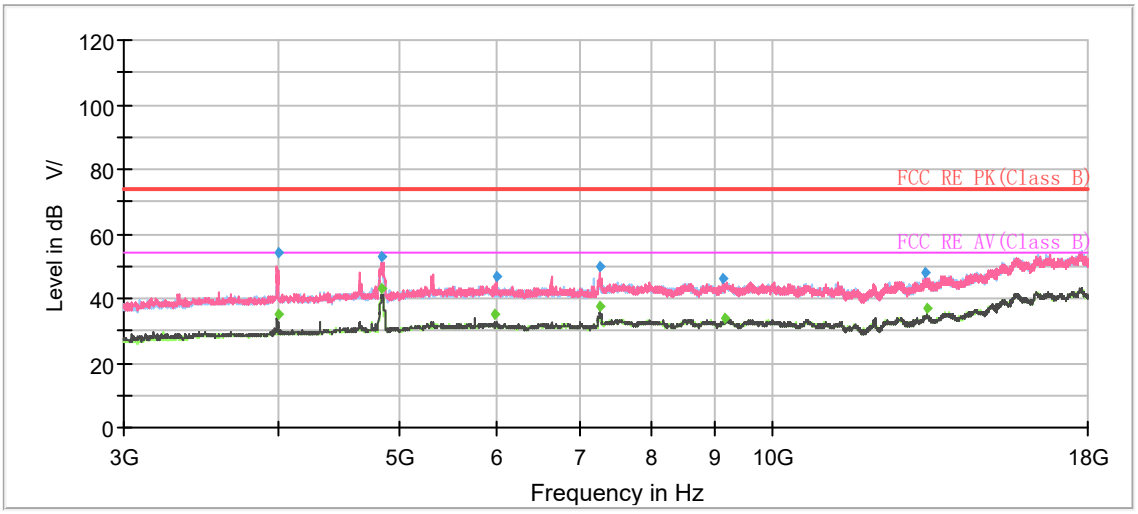
Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit –MAX Peak/ Average

40M: 2425MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



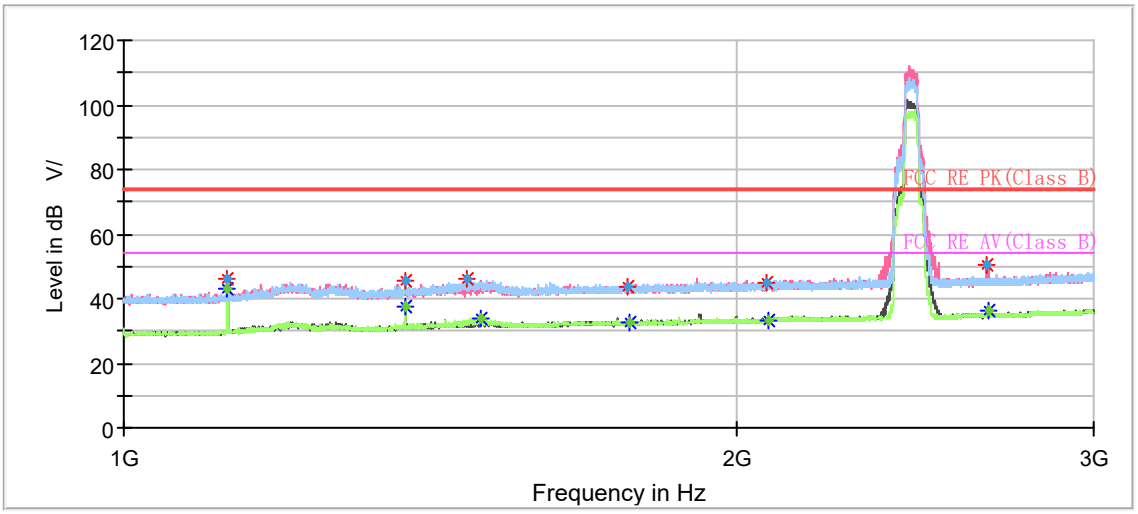
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	44.25	54.00	9.75	500.00	200.0	H	131.00	0
1125.25	47.09	---	74.00	26.91	500.00	200.0	H	127.00	0
1375.00	---	35.81	54.00	18.19	500.00	100.0	H	118.00	1
1377.50	43.47	---	74.00	30.53	500.00	100.0	H	29.00	1
1500.50	---	33.31	54.00	20.69	500.00	200.0	H	180.00	2
1511.50	44.99	---	74.00	29.01	500.00	200.0	V	163.00	2
1694.50	---	33.07	54.00	20.93	500.00	100.0	V	112.00	3
1723.50	44.11	---	74.00	29.89	500.00	100.0	H	128.00	3
1920.25	---	35.08	54.00	18.92	500.00	200.0	H	208.00	3
2079.75	45.76	---	74.00	28.24	500.00	200.0	V	338.00	4
2656.25	---	35.26	54.00	18.74	500.00	200.0	V	121.00	5
2665.75	49.63	---	74.00	24.37	500.00	100.0	V	104.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

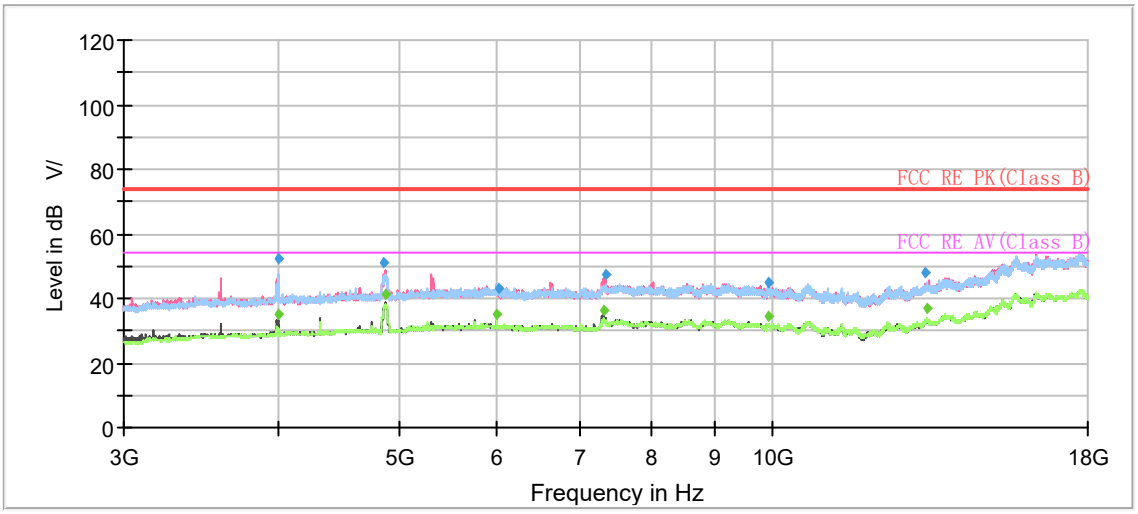
2. Margin = Limit –MAX Peak/ Average

40M: 2440MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



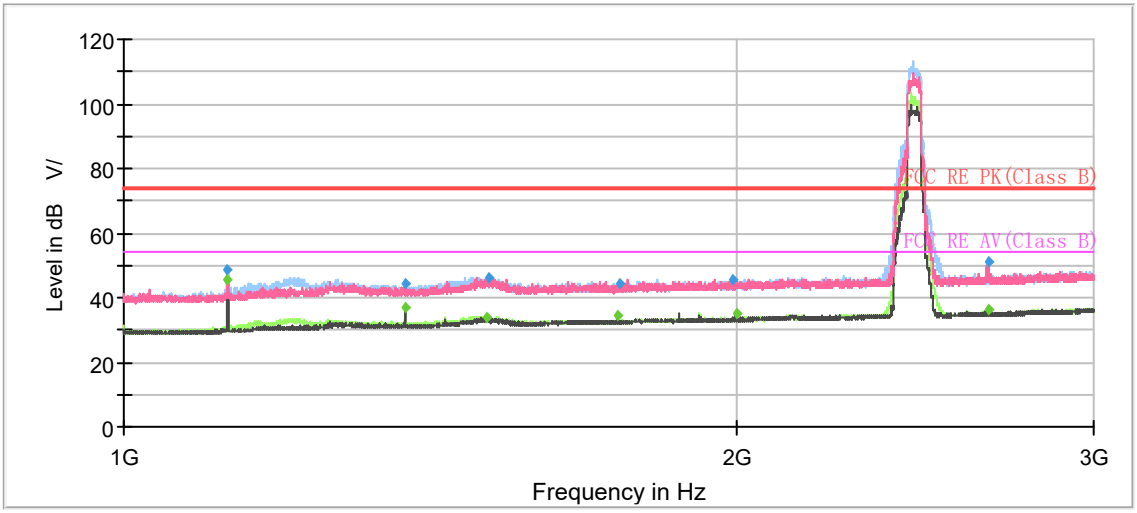
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1124.75	46.07	---	74.00	27.93	500.00	200.0	V	289.00	0
1125.00	---	42.87	54.00	11.13	500.00	200.0	H	250.00	0
1374.50	45.34	---	74.00	28.66	500.00	200.0	H	144.00	1
1375.00	---	37.46	54.00	16.54	500.00	200.0	V	320.00	1
1475.75	45.99	---	74.00	28.01	500.00	100.0	H	39.00	2
1500.00	---	33.83	54.00	20.17	500.00	200.0	H	144.00	2
1770.50	43.95	---	74.00	30.05	500.00	100.0	H	231.00	3
1773.00	---	32.66	54.00	21.34	500.00	100.0	V	94.00	3
2071.50	44.94	---	74.00	29.06	500.00	100.0	V	166.00	4
2076.00	---	33.31	54.00	20.69	500.00	100.0	V	284.00	4
2655.75	50.57	---	74.00	23.43	500.00	100.0	V	284.00	5
2662.00	---	36.41	54.00	17.59	500.00	100.0	V	293.00	5

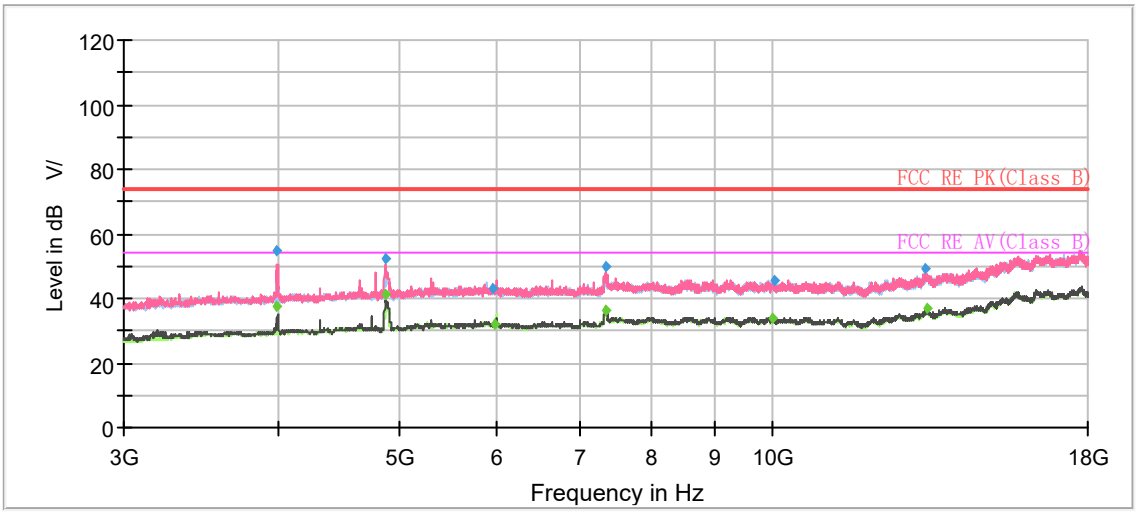
Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit –MAX Peak/ Average

40M: 2450MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



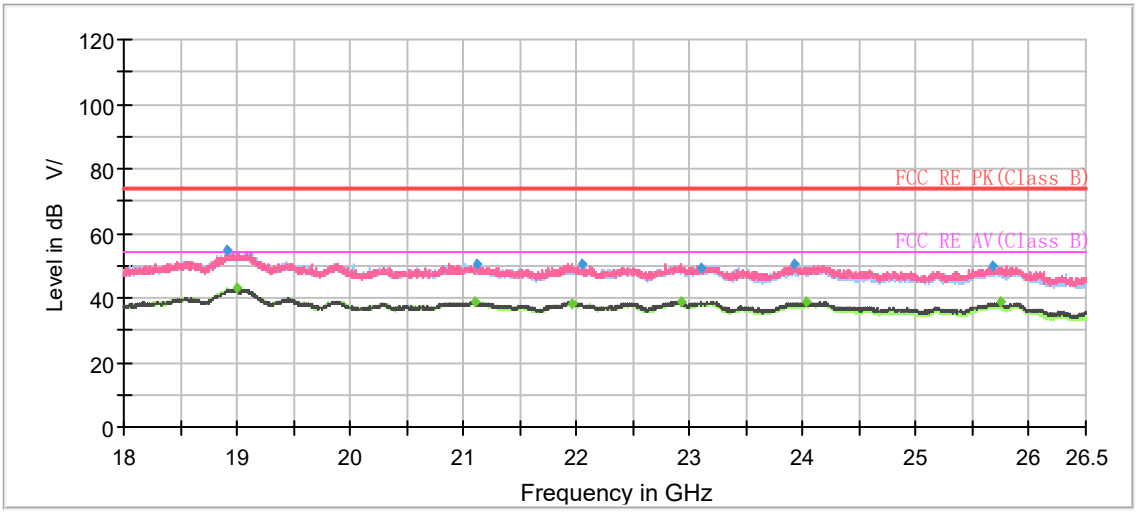
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	45.74	54.00	8.26	500.00	200.0	H	122.00	0
1125.00	48.68	---	74.00	25.32	500.00	200.0	H	122.00	0
1374.50	44.08	---	74.00	29.92	500.00	200.0	H	44.00	1
1375.00	---	36.74	54.00	17.26	500.00	200.0	H	39.00	1
1508.75	---	34.11	54.00	19.89	500.00	100.0	V	185.00	2
1510.75	46.23	---	74.00	27.77	500.00	200.0	H	90.00	2
1750.25	---	34.26	54.00	19.74	500.00	200.0	H	39.00	3
1752.50	44.26	---	74.00	29.74	500.00	200.0	H	344.00	3
1991.00	45.82	---	74.00	28.18	500.00	200.0	V	83.00	3
2000.00	---	35.21	54.00	18.79	500.00	200.0	H	153.00	3
2660.50	50.81	---	74.00	23.19	500.00	100.0	V	285.00	5
2666.00	---	36.18	54.00	17.82	500.00	100.0	V	162.00	5

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit –MAX Peak/ Average

During the test, the Radiates Emission from 18GHz to 26.5GHz was performed in all modes with all channels, 2.4G Slot 40MHz (2450MHz) are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

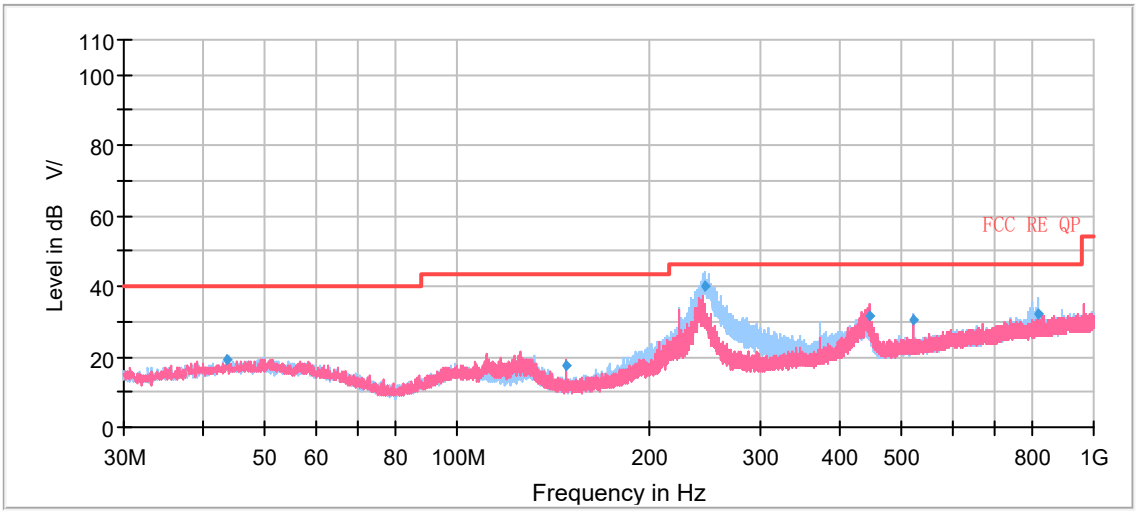


Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18915.88	54.48	---	74.00	19.52	500.00	200.0	H	19.00	1
18996.63	---	42.90	54.00	11.10	500.00	200.0	H	98.00	2
21100.38	---	38.96	54.00	15.04	500.00	100.0	V	31.00	0
21120.56	50.59	---	74.00	23.41	500.00	100.0	V	26.00	0
21963.13	---	38.29	54.00	15.71	500.00	100.0	V	11.00	1
22043.88	50.51	---	74.00	23.49	500.00	100.0	V	0.00	0
22918.31	---	38.89	54.00	15.11	500.00	100.0	V	249.00	2
23093.63	49.33	---	74.00	24.67	500.00	100.0	H	342.00	2
23920.25	50.52	---	74.00	23.48	500.00	100.0	V	195.00	2
24026.50	---	38.56	54.00	15.44	500.00	100.0	V	177.00	2
25681.88	49.93	---	74.00	24.07	500.00	100.0	V	249.00	2
25754.13	---	38.49	54.00	15.51	500.00	100.0	V	157.00	3

BR

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 2.4G BR 5MHz (2405MHz) are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



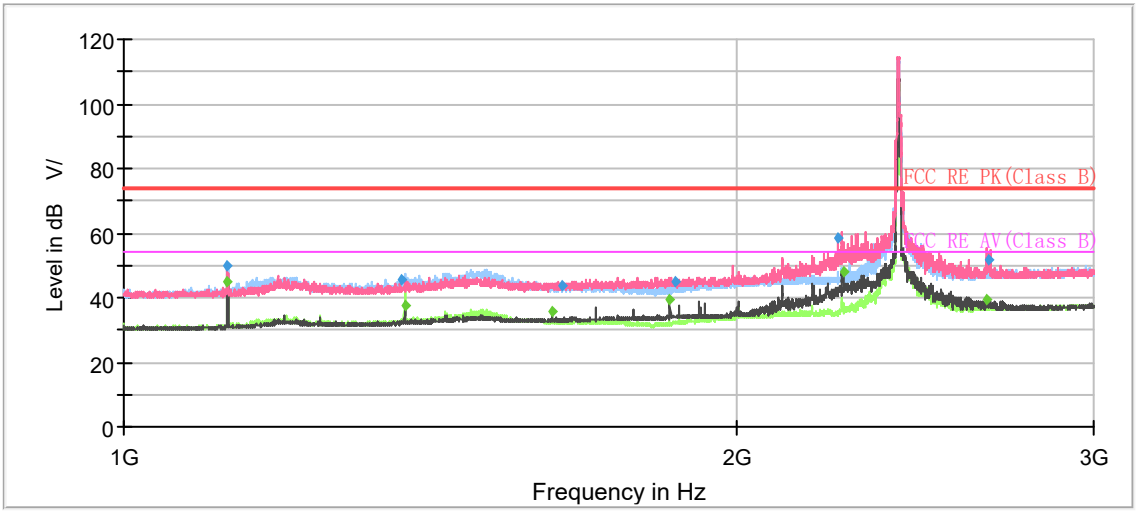
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
43.71	19.23	40.00	20.77	185.0	V	112.00	20
148.47	17.52	43.50	25.98	184.0	H	124.00	20
245.39	39.90	46.00	6.10	100.0	H	315.00	20
445.52	31.48	46.00	14.52	125.0	V	87.00	24
519.72	30.22	46.00	15.78	110.0	V	0.00	16
816.72	32.26	46.00	13.74	100.0	H	287.00	29

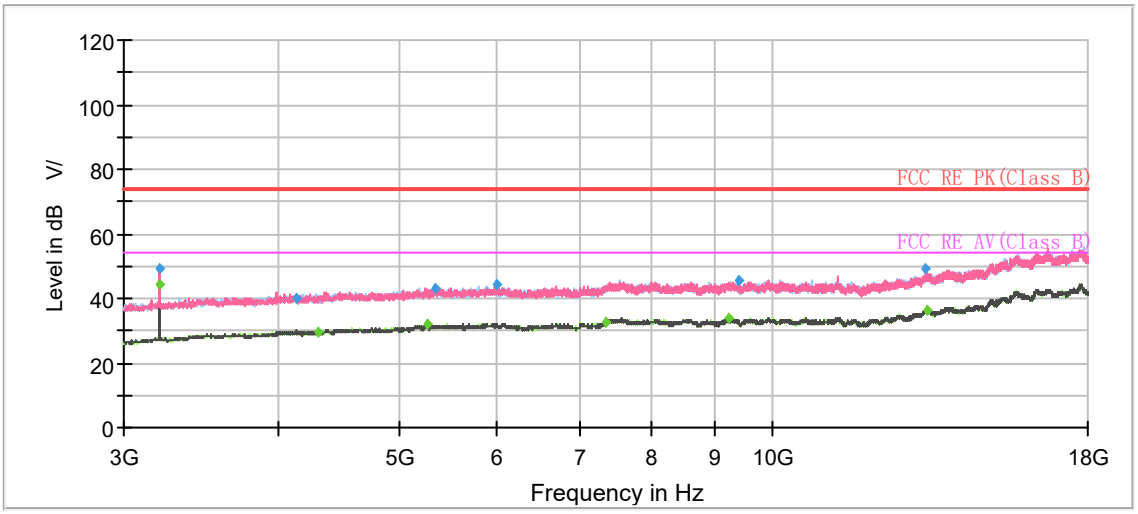
Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit – Quasi-Peak

5M: 2405MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

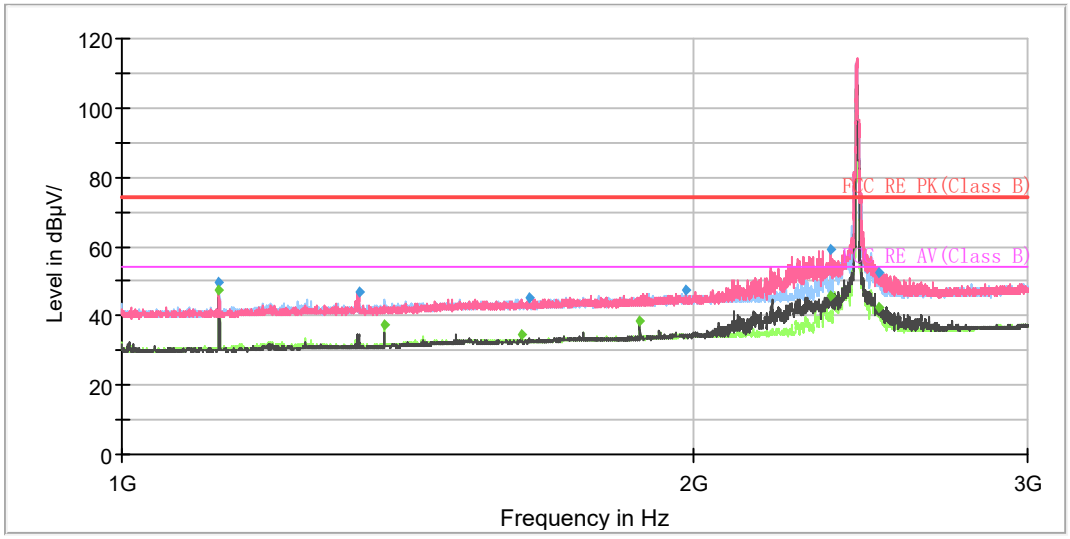


Radiates Emission from 3GHz to 18GHz

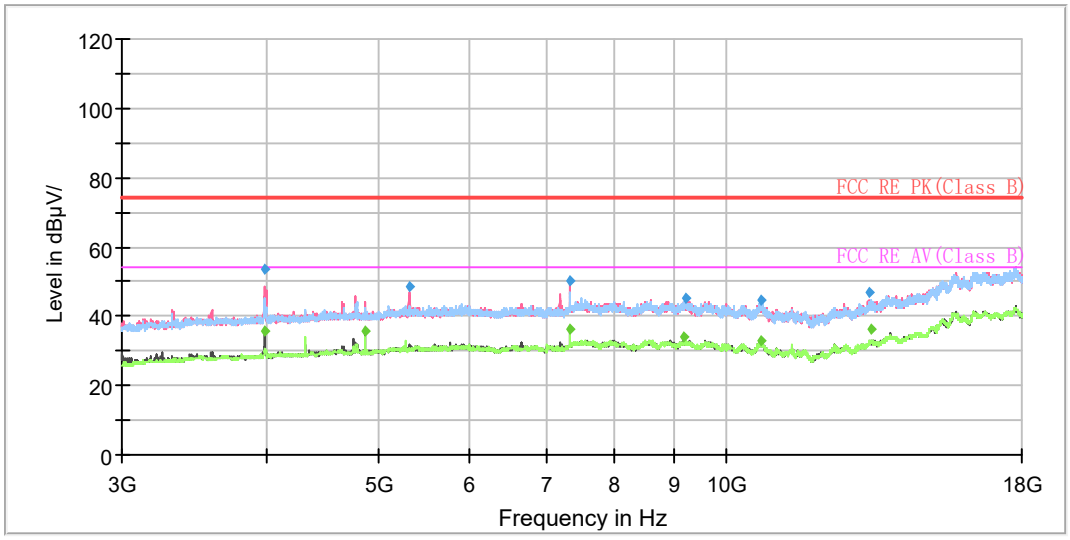
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	50.15	---	74.00	23.85	500.00	200.0	H	129.00	-8
1125.00	---	44.93	54.00	9.07	500.00	200.0	V	304.00	-8
1370.75	45.60	---	74.00	28.40	500.00	100.0	H	90.00	-6
1374.25	---	37.50	54.00	16.50	500.00	200.0	H	191.00	-6
1624.75	---	35.44	54.00	18.57	500.00	200.0	V	336.00	-5
1643.00	43.99	---	74.00	30.01	500.00	200.0	H	263.00	-5
1856.25	---	39.56	54.00	14.44	500.00	200.0	V	299.00	-4
1869.25	45.18	---	74.00	28.82	500.00	200.0	V	304.00	-4
2244.00	58.69	---	74.00	15.31	500.00	100.0	V	128.00	-2
2258.25	---	47.87	54.00	6.13	500.00	200.0	V	279.00	-2
2656.75	---	39.35	54.00	14.65	500.00	100.0	V	177.00	0
2661.25	51.65	---	74.00	22.35	500.00	100.0	V	177.00	0

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit –MAX Peak/ Average

5M: 2440MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

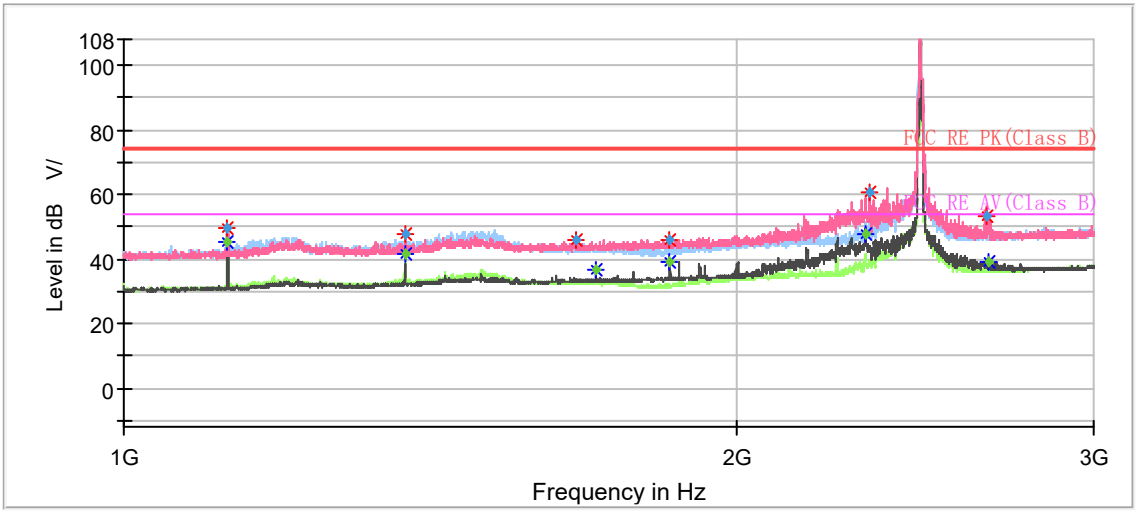


Radiates Emission from 3GHz to 18GHz

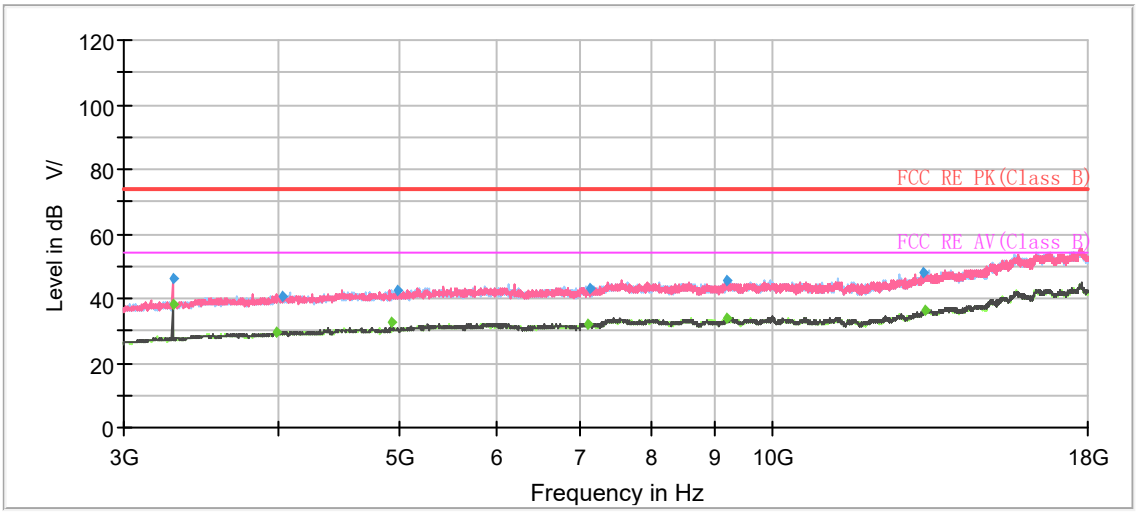
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	49.52	---	74.00	24.48	500.00	100.0	H	242.00	-8
1125.00	---	47.26	54.00	6.74	500.00	200.0	H	235.00	-8
1332.75	46.99	---	74.00	27.01	500.00	100.0	V	179.00	-7
1375.00	---	37.33	54.00	16.67	500.00	200.0	H	73.00	-6
1625.00	---	34.37	54.00	19.63	500.00	200.0	H	309.00	-5
1639.50	45.12	---	74.00	28.88	500.00	200.0	H	341.00	-5
1875.00	---	38.70	54.00	15.30	500.00	200.0	V	20.00	-4
1980.25	47.52	---	74.00	26.48	500.00	200.0	V	150.00	-3
2359.75	---	45.93	54.00	8.07	500.00	100.0	V	0.00	-1
2360.75	59.16	---	74.00	14.84	500.00	100.0	V	118.00	-1
2502.25	52.74	---	74.00	21.26	500.00	100.0	V	260.00	-1
2502.75	---	42.37	54.00	11.63	500.00	100.0	H	78.00	-1

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit –MAX Peak/ Average

5M: 2465MHz



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

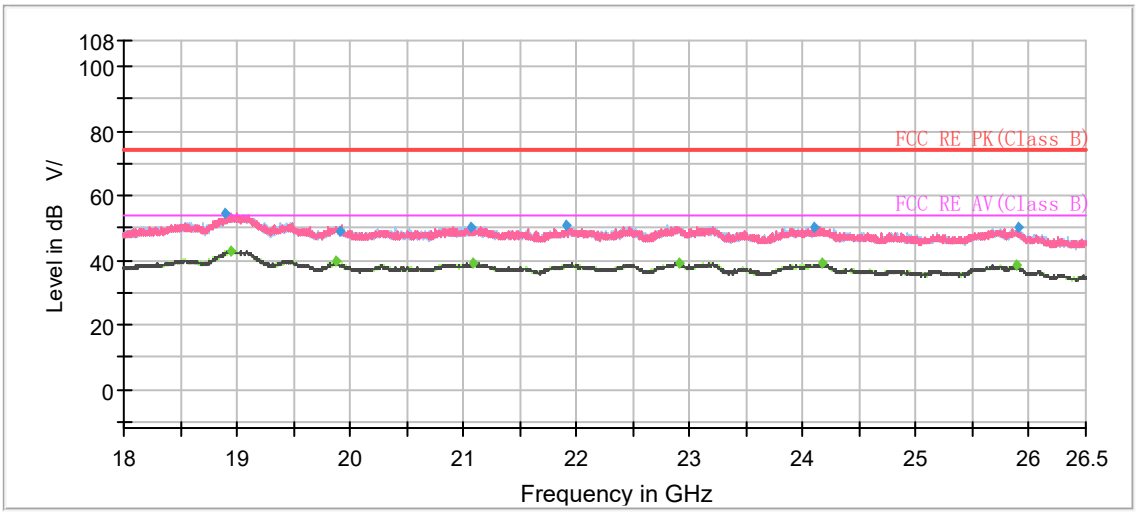


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.00	---	45.14	54.00	8.86	500.00	200.0	V	306.00	-8
1125.00	49.83	---	74.00	24.17	500.00	200.0	H	127.00	-8
1374.75	---	41.49	54.00	12.51	500.00	200.0	H	198.00	-6
1374.75	47.68	---	74.00	26.32	500.00	200.0	H	198.00	-6
1669.75	45.58	---	74.00	28.42	500.00	200.0	V	84.00	-5
1707.50	---	36.40	54.00	17.60	500.00	200.0	V	66.00	-4
1856.00	46.10	---	74.00	27.90	500.00	200.0	V	92.00	-4
1856.25	---	39.26	54.00	14.74	500.00	200.0	V	301.00	-4
2316.50	---	47.62	54.00	6.38	500.00	200.0	V	315.00	-2
2325.25	60.84	---	74.00	13.16	500.00	200.0	V	49.00	-2
2656.00	52.99	---	74.00	21.01	500.00	100.0	V	287.00	0
2661.25	---	39.35	54.00	14.65	500.00	100.0	V	171.00	0

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit –MAX Peak/ Average

During the test, the Radiates Emission from 18GHz to 26.5GHz was performed in all modes with all channels, 2.4G BR 5MHz (2405MHz) are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18898.88	54.60	---	74.00	19.40	500.00	200.0	V	197.00	1
18949.88	---	42.85	54.00	11.15	500.00	100.0	V	214.00	2
19881.69	---	39.40	54.00	14.60	500.00	100.0	H	88.00	-1
19910.38	48.93	---	74.00	25.07	500.00	100.0	H	98.00	-1
21070.63	50.29	---	74.00	23.71	500.00	200.0	V	136.00	-1
21092.94	---	39.09	54.00	14.91	500.00	200.0	V	10.00	0
21907.88	50.50	---	74.00	23.50	500.00	100.0	H	79.00	1
22903.44	---	39.05	54.00	14.95	500.00	100.0	H	18.00	2
24101.94	50.07	---	74.00	23.93	500.00	200.0	V	356.00	2
24161.44	---	38.78	54.00	15.22	500.00	100.0	H	0.00	2
25890.13	---	38.25	54.00	15.75	500.00	100.0	V	0.00	2
25906.06	50.12	---	74.00	23.88	500.00	100.0	V	69.00	2

5.7. Conducted Emission

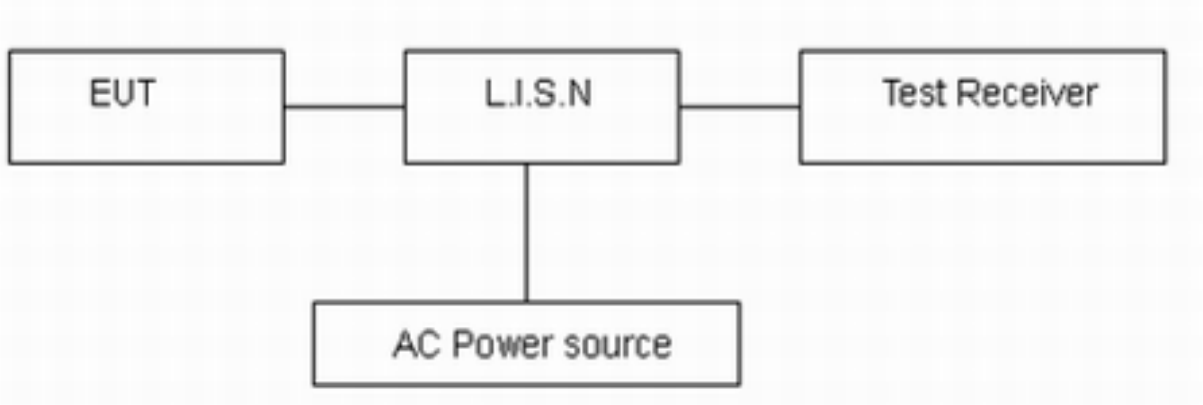
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz.
The measurement result should include both L line and N line.
The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.69 dB.

Test Results:

The equipment doesn't connected to public network, therefore this requirement do not apply.

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Power sensor	R&S	OSP-B157W8	100924	2021-12-12	2022-12-11
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2021-12-12	2022-12-11
DC Power Supply	GWINSTEK	GPS-3030D	GEQ875952	2022-05-14	2023-05-13
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2022-05-25	2023-05-24
Spectrum Analyzer	R&S	FSV40	100816	2021-12-12	2022-12-11
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2020-05-05	2023-05-04
Horn Antenna	R&S	HF907	102723	2020-08-11	2023-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Software	R&S	EMC32	9.26.01	/	/

********END OF REPORT ********

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.