Application for FCC Certification
On behalf of

Huang Zhou International(HK) Ltd

Product Name: Electric heater

Model No.: ND-36

FCC ID: 2ALY0SHWZ001

Prepared For : Huang Zhou International(HK) Ltd
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TESTING
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Date of Test : Jun. 01 – Jun. 12, 2017
Date of Report : Jun. 20, 2017

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Huang Zhou International(HK) Ltd

Manufacturer : Shanghai Huangzhou Industry Co.,Ltd

EUT Description : Electric heater

(A) Model No. : ND-36
(B) Power Supply : AC 120V/60Hz
(C) Test Voltage : AC 120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C
AND ANSI C63.10-2013

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: ND-36), which was tested on Jun. 01 – Jun. 12, 2017 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Jun. 01 – Jun. 12, 2017 Date of Report : Jun. 20, 2017

Producer : Alan He
ALAN HE / Assistant

Review : Byron Wu
BYRON WU / Deputy Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory :
Authorized Signature(s) BYRON KWO/Assistant General Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.207
Spurious Radiated Emissions Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.209(a) 15.205(a)(c)
20 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(1)
Peak Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(b)(1)
Spurious RF Conducted Emissions Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(d)
Band-edge Compliance of RF Conducted Emissions Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(d)
Number of Hopping Frequencies Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(1)
Carrier Frequency Separation Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(1)
Dwell Time Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(1)
N/A is an abbreviation for Not Applicable.			

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Electric heater
Model Number	:	ND-36
Type of EUT		☑ Production ☐ Pre-product ☐ Pro-type
Radio Tech	:	Bluetooth (GFSK, π/4-DQPSK)
Freq. Band	:	2402 MHz ~ 2480 MHz Total 79 Channels:
Tested Freq.	:	2402 MHz (Channel 00) 2441 MHz (Channel 39) 2480 MHz (Channel 78)
Antenna Type	:	PCB antenna
Antenna Gain	:	1.2 dBi
Applicant	:	Huang Zhou International(HK) Ltd Room 12B, no.83 An Shun Road Shanghai
Manufacturer	:	Shanghai Huangzhou Industry Co.,Ltd
Factory	:	Same as Applicant

2.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber)	: Sept. 17, 1998 file on Jan. 15, 2015 Renewed Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	: Audix Technology (Shanghai) Co., Ltd.
Site Location	: 3 F 34 Bldg 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China
FCC registration Number	: 91789
Accredited by NVLAP, Lab Code	: 200371-0

2.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty	:	U = 3.4dB
Radiated Emission Expanded Uncertainty (30-200MHz):		U = 4.6 dB (H) U = 4.3 dB (V)
Radiated Emission Expanded Uncertainty (200M-1GHz):		U = 5.4 dB (H) U = 4.5 dB (V)
Radiated Emission Expanded Uncertainty (Above 1GHz):		U = 5.1 dB
20 dB Bandwidth Expanded Uncertainty	:	U = $1x10^{-8}$ MHz
Peak Output Power Expanded Uncertainty	:	U = 1.56 dB
Spurious RF Conducted Emissions Expanded Uncertainty	:	U = 1.20 dB

3 CONDUCTED EMISSION TEST

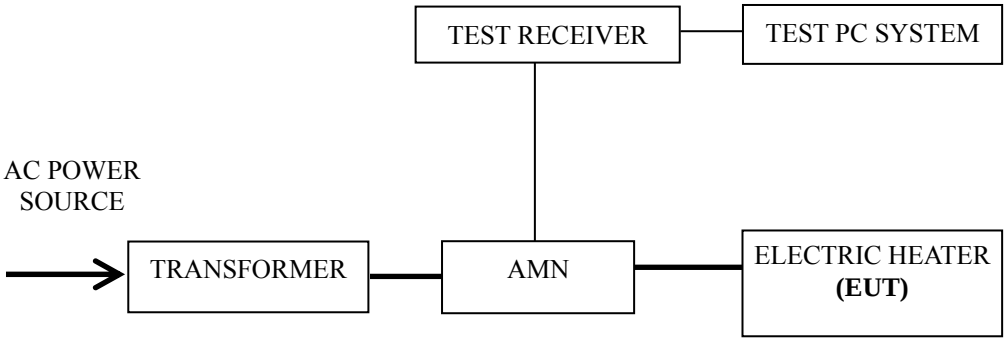
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2017	Apr 26, 2018
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2016	Jun 24, 2017
3.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2017	Sep 19, 2017
4.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

3.2.1 Conducted Disturbance Test Setup



—— : Signal Line
▬ : Power Line

3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.207]

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 The notebook control EUT transmit data at different channel frequency individually

3.5.4 Remove notebook, and then test.

3.6 Test Procedures

The EUT were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.10:2013 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

EUT	:	Electric heater	Temperature :	25℃	
Model No.	:	ND-36	Humidity	:	48%RH
Test Mode	:	Transmitting	Date of Test	:	Jun. 12, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	29.98	0.16	30.14	66.00	35.86	QP
	0.174	27.82	0.16	27.98	64.77	36.79	
	0.247	22.80	0.17	22.97	61.86	38.89	
	1.282	16.67	0.27	16.94	56.00	39.06	
	1.449	**15.58**	**0.28**	**15.86**	**56.00**	**40.14**	
	3.472	16.29	0.33	16.62	56.00	39.38	
	0.150	14.56	0.16	14.72	56.00	41.28	AV
	0.174	14.26	0.16	14.42	54.77	40.35	
	0.247	10.51	0.17	10.68	51.86	41.18	
	1.282	10.28	0.27	10.55	46.00	35.45	
	1.449	**10.45**	**0.28**	**10.73**	**46.00**	**35.27**	
	3.472	4.59	0.33	4.92	46.00	41.08	
Neutral	0.150	30.05	0.16	30.21	66.00	35.79	QP
	0.180	27.81	0.17	27.98	64.50	36.52	
	0.247	22.73	0.17	22.90	61.86	38.96	
	0.796	14.46	0.23	14.69	56.00	41.31	
	1.403	**15.18**	**0.28**	**15.46**	**56.00**	**40.54**	
	3.364	16.07	0.36	16.43	56.00	39.57	
	0.150	15.69	0.16	15.85	56.00	40.15	AV
	0.180	14.69	0.17	14.86	54.50	39.64	
	0.247	12.37	0.17	12.54	51.86	39.32	
	0.796	12.64	0.23	12.87	46.00	33.13	
	1.403	**13.58**	**0.28**	**13.86**	**46.00**	**32.14**	
	3.364	12.37	0.36	12.73	46.00	33.27	

TEST ENGINEER: Kalsi

4 RADIATED EMISSION TEST

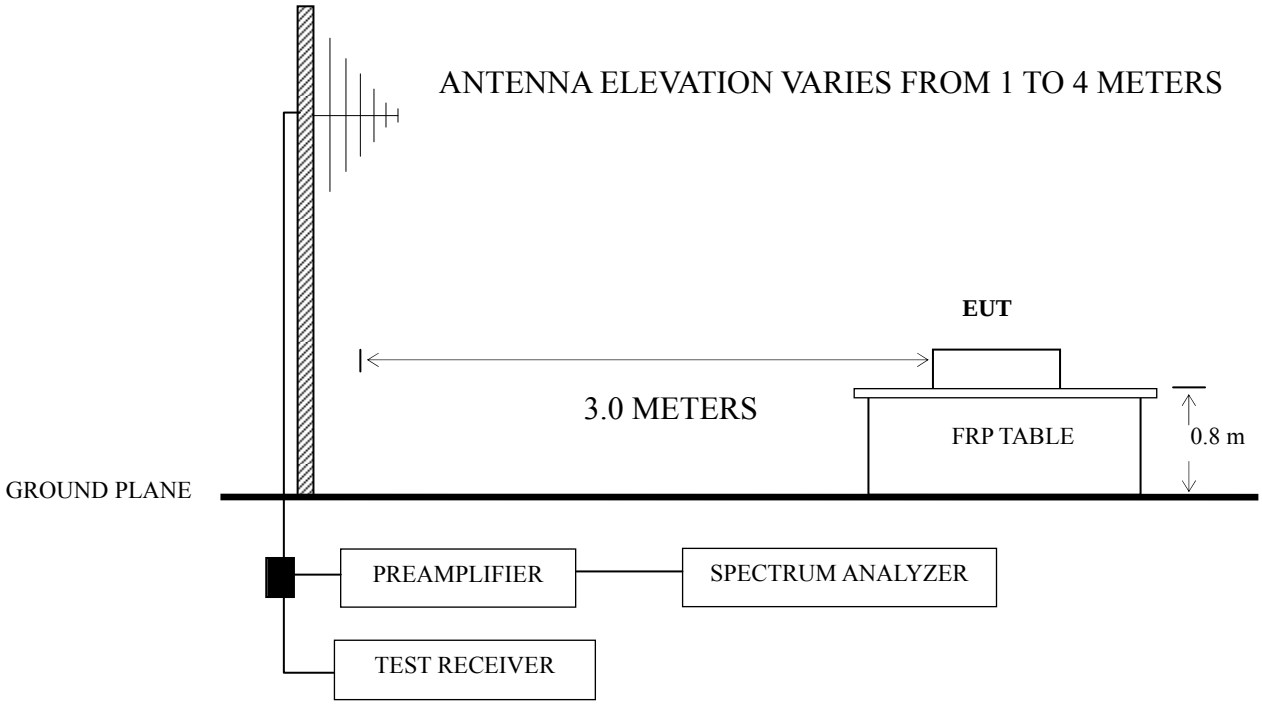
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2017	Apr 26, 2018
2.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2017	Mar 19, 2018
3.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017
4.	Test Receiver	R&S	ESCI	101303	May 07, 2017	May 06, 2018
5.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2017	May 14, 2018
6.	Horn Antenna	EMCO	3115	9607-4878	Jun 03, 2016	Jun 02, 2017
7.	Software	Audix	E3	6.2007-9-10	-	-

4.2 Block Diagram of Test Setup

4.2.1 Test Setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency (MHz)	Distance (m)	Field strength limits (μV/m)	
		(μV/m)	dB(μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 4.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10:2013 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz for Spectrum Agilent N9010A.

The frequency range from 30 MHz to 25 GHz (Up to 10^{th} harmonics from fundamental frequency) was checked.

The EUT was tested under the following test modes:

Mode	Operation	Channel	Frequency
1.	Transmitting	00	2402 MHz
2.		39	2441 MHz
3.		78	2480 MHz
4.	Receiving	--	--
5.	Transmitting Band-Edge	00	2402 MHz
6.		78	2480 MHz

All the test results are listed in Sec.3.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

No.	Operation	Channel	Frequency	Data Page
1.	Transmitting (DH1)	00	2402 MHz	P15
2.		39	2441 MHz	P16
3.		78	2480 MHz	P17
4.	Transmitting (2DH5)	00	2402 MHz	P18
5.		39	2441 MHz	P19
6.		78	2480 MHz	P20
7.	Receiving	--	--	P21
8.	Transmitting	Band Edge		P22

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)
NOTE 2 – Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor (>1GHz)
NOTE 3 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch00 (DH1)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	33.445	2.88	0.59	16.42	0	19.89	40	20.11	QP
	79.243	11.32	0.88	8.97	0	21.17	40	18.83	
	178.758	12.56	1.4	10.54	0	24.5	43.5	19.00	
	289.002	4.62	1.73	13.88	0	20.23	46	25.77	
	530.101	3.49	2.34	17.6	0	23.43	46	22.57	
	758.041	4.2	2.83	19.73	0	26.76	46	19.24	
	1149.302	46.8	3.52	24.22	36.24	38.3	74	35.70	PK
	2374.406	45.07	5.14	28.19	35.2	43.2	74	30.80	
	4278.791	43.15	7.19	33.26	34.11	49.49	74	24.51	
Vertical	32.749	4.08	0.58	16.82	0	21.48	40	18.52	QP
	56.991	19.04	0.75	6.95	0	26.74	40	13.26	
	113.714	18.48	1.09	12.52	0	32.09	43.5	11.41	
	169.599	15.41	1.36	10.77	0	27.54	43.5	15.96	
	339.589	4.55	1.87	14.9	0	21.32	46	24.68	
	618.537	3.87	2.56	19.6	0	26.03	46	19.97	
	1056.19	52.74	3.37	23.78	36.4	43.49	74	30.51	PK
	1757.819	45	4.41	26.65	35.45	40.61	74	33.39	
	3797.697	42.63	6.71	32.3	34.38	47.26	74	26.74	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch39 (DH1)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	78.139	9.8	0.88	8.84	0	19.52	40	20.48	QP
	105.272	3.77	1.04	12.66	0	17.47	43.5	26.03	
	154.821	6.15	1.3	11.7	0	19.15	43.5	24.35	
	207.85	3.97	1.51	10.06	0	15.54	43.5	27.96	
	490.745	3.43	2.25	17.2	0	22.88	46	23.12	
	824.597	3.61	2.94	20.6	0	27.15	46	18.85	
	1426.668	46.22	3.96	25.35	35.84	39.69	74	34.31	PK
	2681.853	45.29	5.52	29.2	35.2	44.81	74	29.19	
	4278.791	43.15	7.19	33.26	34.11	49.49	74	24.51	
Vertical	49.881	18.27	0.7	8.39	0	27.36	40	12.64	QP
	113.316	17.33	1.09	12.49	0	30.91	43.5	12.59	
	137.903	15.07	1.22	12.74	0	29.03	43.5	14.47	
	180.649	19.9	1.41	10.4	0	31.71	43.5	11.79	
	404.667	4.55	2.05	16.45	0	23.05	46	22.95	
	912.862	3.43	3.09	21.3	0	27.82	46	18.18	
	1169.468	46.83	3.58	24.31	36.21	38.51	74	35.49	PK
	1995.319	45.25	4.65	27.48	35.21	42.17	74	31.83	
	4564.358	42.42	7.44	33.67	34.02	49.51	74	24.49	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch78 (DH1)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	69.6	9.2	0.83	7.33	0	17.36	40	22.64	QP
	77.321	9.39	0.87	8.71	0	18.97	40	21.03	
	139.851	10.25	1.23	13.1	0	24.58	43.5	18.92	
	182.559	13.57	1.42	10.35	0	25.34	43.5	18.16	
	286.982	4.93	1.73	13.85	0	20.51	46	25.49	
	524.554	3.56	2.32	17.78	0	23.66	46	22.34	
	1357.498	46.02	3.88	25.09	35.93	39.06	74	34.94	PK
	2339.268	45.33	5.1	28.13	35.2	43.36	74	30.64	
	4553.03	42.7	7.44	33.65	34.02	49.77	74	24.23	
Vertical	49.187	14.75	0.7	8.66	0	24.11	40	15.89	QP
	78.965	15.31	0.88	8.93	0	25.12	40	14.88	
	118.601	17.29	1.12	12.6	0	31.01	43.5	12.49	
	170.793	16.3	1.37	10.73	0	28.4	43.5	15.10	
	247.682	9.94	1.63	12.66	0	24.23	46	21.77	
	647.386	3.32	2.61	19.63	0	25.56	46	20.44	
	1219.929	45.6	3.64	24.53	36.13	37.64	74	36.36	PK
	2225.852	44.45	4.97	27.93	35.2	42.15	74	31.85	
	4761.303	43.08	7.63	33.87	33.97	50.61	74	23.39	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch00 (2DH5)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	80.927	10.97	0.89	9.26	0	21.12	40	18.88	QP
	130.379	8.24	1.18	12.57	0	21.99	43.5	21.51	
	176.888	11.74	1.39	10.76	0	23.89	43.5	19.61	
	251.18	7.65	1.64	12.8	0	22.09	46	23.91	
	399.03	3.79	2.03	16.38	0	22.2	46	23.80	
	584.79	3.47	2.48	18.45	0	24.4	46	21.60	
	1140.766	47.16	3.52	24.19	36.25	38.62	74	35.38	PK
	1766.577	45.26	4.41	26.68	35.43	40.92	74	33.08	
	3051.774	43.12	5.91	30.61	35.14	44.5	74	29.50	
Vertical	49.187	14.69	0.7	8.66	0	24.05	40	15.95	QP
	109.796	15.46	1.07	12.3	0	28.83	43.5	14.67	
	142.824	13.81	1.25	12.66	0	27.72	43.5	15.78	
	170.793	18.26	1.37	10.73	0	30.36	43.5	13.14	
	255.623	9.6	1.65	13.2	0	24.45	46	21.55	
	640.611	3.34	2.59	19.7	0	25.63	46	20.37	
	1115.537	47.23	3.46	24.07	36.3	38.46	74	35.54	PK
	1529.467	45.6	4.11	25.73	35.7	39.74	74	34.26	
	2532.875	45.58	5.35	28.57	35.2	44.3	74	29.70	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch39 (2DH5)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	71.08	15.46	0.84	7.59	0	23.89	40	16.11	QP
	80.362	11.69	0.89	9.18	0	21.76	40	18.24	
	143.326	6.91	1.25	12.66	0	20.82	43.5	22.68	
	183.201	13.56	1.42	10.33	0	25.31	43.5	18.19	
	238.31	8.46	1.6	11.96	0	22.02	46	23.98	
	338.4	3.97	1.87	14.83	0	20.67	46	25.33	
	1235.18	46.75	3.67	24.59	36.11	38.9	74	35.10	PK
	2520.318	44.8	5.31	28.5	35.2	43.41	74	30.59	
	4278.791	43.15	7.19	33.26	34.11	49.49	74	24.51	
Vertical	30.853	5.56	0.57	17.99	0	24.12	40	15.88	QP
	80.644	12.92	0.89	9.18	0	22.99	40	17.01	
	111.347	16.36	1.07	12.38	0	29.81	43.5	13.69	
	173.205	17.34	1.38	10.81	0	29.53	43.5	13.97	
	346.809	5.35	1.9	15.11	0	22.36	46	23.64	
	642.861	3.11	2.59	19.67	0	25.37	46	20.63	
	1061.452	51.78	3.37	23.82	36.39	42.58	74	31.42	PK
	1599.43	45.47	4.2	26.02	35.62	40.07	74	33.93	
	2818.503	44.23	5.65	29.8	35.2	44.48	74	29.52	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃	
Model No.	:	ND-36	Humidity :	40%RH	
Test Mode	:	Transmitting Ch78 (2DH5)	Date of Test :	Jun. 01, 2017	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	49.707	17.38	0.7	8.48	0	26.56	40	13.44	QP
	112.92	17.16	1.08	12.49	0	30.73	43.5	12.77	
	140.342	15.1	1.23	13.1	0	29.43	43.5	14.07	
	173.814	19.76	1.38	10.84	0	31.98	43.5	11.52	
	410.383	4.18	2.06	16.5	0	22.74	46	23.26	
	679.96	3.36	2.67	19.5	0	25.53	46	20.47	
	1115.537	46.92	3.46	24.07	36.3	38.15	74	35.85	PK
	2102.206	46.01	4.81	27.7	35.2	43.32	74	30.68	
	3695.297	43.61	6.6	32.03	34.47	47.77	74	26.23	
Vertical	78.689	9.98	0.88	8.93	0	19.79	40	20.21	QP
	148.441	6.91	1.27	11.95	0	20.13	43.5	23.37	
	199.286	4.35	1.48	9.65	0	15.48	43.5	28.02	
	302.481	6.08	1.76	13.75	0	21.59	46	24.41	
	547.098	3.58	2.38	18.04	0	24	46	22.00	
	687.151	3.26	2.69	19.5	0	25.45	46	20.55	
	1166.566	46.7	3.55	24.3	36.21	38.34	74	35.66	PK
	2209.321	44.7	4.93	27.9	35.2	42.33	74	31.67	
	4485.651	42.42	7.38	33.58	34.05	49.33	74	24.67	

TEST ENGINEER: Leon

EUT	:	Electric heater	Temperature :	22℃
Model No.	:	ND-36	Humidity :	40%RH
Test Mode	:	Receiving	Date of Test :	Jun. 01, 2017

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	36.381	2.91	0.61	14.55	0	18.07	40	21.93	QP
	54.452	4.2	0.73	7.18	0	12.11	40	27.89	
	178.133	11.98	1.4	10.61	0	23.99	43.5	19.51	
	238.31	8.46	1.6	11.96	0	22.02	46	23.98	
	408.946	3.78	2.06	16.48	0	22.32	46	23.68	
	830.4	3.47	2.96	20.6	0	27.03	46	18.97	
	1143.604	47.3	3.52	24.19	36.25	38.76	74	35.24	PK
	1806.53	44.88	4.47	26.84	35.4	40.79	74	33.21	
	3105.322	43.52	5.97	30.73	35.08	45.14	74	28.86	
Vertical	56.395	17.47	0.75	7.06	0	25.28	40	14.72	QP
	72.338	13.85	0.85	7.9	0	22.6	40	17.40	
	98.833	11.61	0.99	12.32	0	24.92	43.5	18.58	
	119.856	16.41	1.13	12.6	0	30.14	43.5	13.36	
	176.888	19.55	1.39	10.76	0	31.7	43.5	11.80	
	232.532	11.36	1.58	11.82	0	24.76	46	21.24	
	1169.468	46.83	3.58	24.31	36.21	38.51	74	35.49	PK
	1537.087	45.32	4.11	25.77	35.7	39.5	74	34.50	
	2392.173	44.45	5.19	28.22	35.2	42.66	74	31.34	

TEST ENGINEER: Leon

Radiated Band Edge measurement:

DH1

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2389.858	49.28	5.12	28.65	35.26	47.79	74	26.21	PK
	2483.605	49.52	5.19	28.78	35.25	48.24	74	25.76	
	2389.948	51.77	5.12	28.65	35.26	50.28	54	3.72	AV
	2484.085	51.05	5.19	28.78	35.25	49.77	54	4.23	
Vertical	2389.948	46.62	5.12	28.65	35.26	45.13	74	28.87	PK
	2483.545	45.71	5.19	28.78	35.25	44.43	74	29.57	
	2389.948	50.01	5.12	28.65	35.26	48.52	54	5.48	AV
	2483.515	52.28	5.19	28.78	35.25	51	54	3.00	

2DH1

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2390.008	48.72	5.12	28.65	35.26	47.23	74	26.77	PK
	2483.875	49.04	5.19	28.78	35.25	47.76	74	26.24	
	2389.858	50.45	5.12	28.65	35.26	48.96	54	5.04	AV
	2483.665	51.19	5.19	28.78	35.25	49.91	54	4.09	
Vertical	2390.068	47.26	5.12	28.65	35.26	45.77	74	28.23	PK
	2483.695	45.6	5.19	28.78	35.25	44.32	74	29.68	
	2390.008	48.67	5.12	28.65	35.26	48.18	54	5.82	AV
	2483.545	52.05	5.19	28.78	35.25	50.77	54	3.23	

DH5

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2389.918	49.23	5.12	28.65	35.26	47.74	74	26.26	PK
	2483.605	45.95	5.19	28.78	35.25	44.67	74	29.33	
	2390.008	50.13	5.12	28.65	35.26	48.64	54	5.36	AV
	2483.635	50.07	5.19	28.78	35.25	48.79	54	5.21	
Vertical	2389.918	50.4	5.12	28.65	35.26	48.91	74	25.09	PK
	2483.815	49.48	5.19	28.78	35.25	48.2	74	25.80	
	2389.918	48.7	5.12	28.65	35.26	47.21	54	6.79	AV
	2483.725	49.56	5.19	28.78	35.25	48.28	54	5.72	

2DH5

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2389.948	45.43	5.12	28.65	35.26	43.94	74	30.06	PK
	2483.635	44.45	5.19	28.78	35.25	43.17	74	30.83	
	2389.948	48.79	5.12	28.65	35.26	47.30	54	6.70	AV
	2483.605	50.91	5.19	28.78	35.25	49.63	54	4.37	
Vertical	2389.978	47.52	5.12	28.65	35.26	46.03	74	27.97	PK
	2484.265	50.76	5.23	28.78	35.25	49.52	74	24.48	
	2389.978	49.92	5.12	28.65	35.26	48.43	54	5.57	AV
	2483.605	52.12	5.19	28.78	35.25	50.84	54	3.16	

TEST ENGINEER: Leon

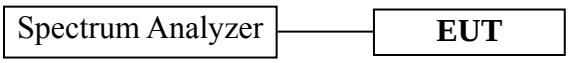
5 20 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

5.2 Block Diagram of Test Setup



5.3 Specification Limits (§15.247(a)(1))

For frequency hopping systems, hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

5.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer.
Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
The test procedure is defined in ANSI C63.10:2013.

5.6 Test Results

PASSED.

All the test results are attached in next pages.

(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

DH1

Channel	Frequency	**20dB Bandwidth**
00	2402 MHz	**0.8796 MHz**
39	2441 MHz	**0.8789 MHz**
78	2480 MHz	**0.8783 MHz**

2DH1

Channel	Frequency	**20dB Bandwidth**
00	2402 MHz	**0.9485 MHz**
39	2441 MHz	**0.9459 MHz**
78	2480 MHz	**0.9445 MHz**

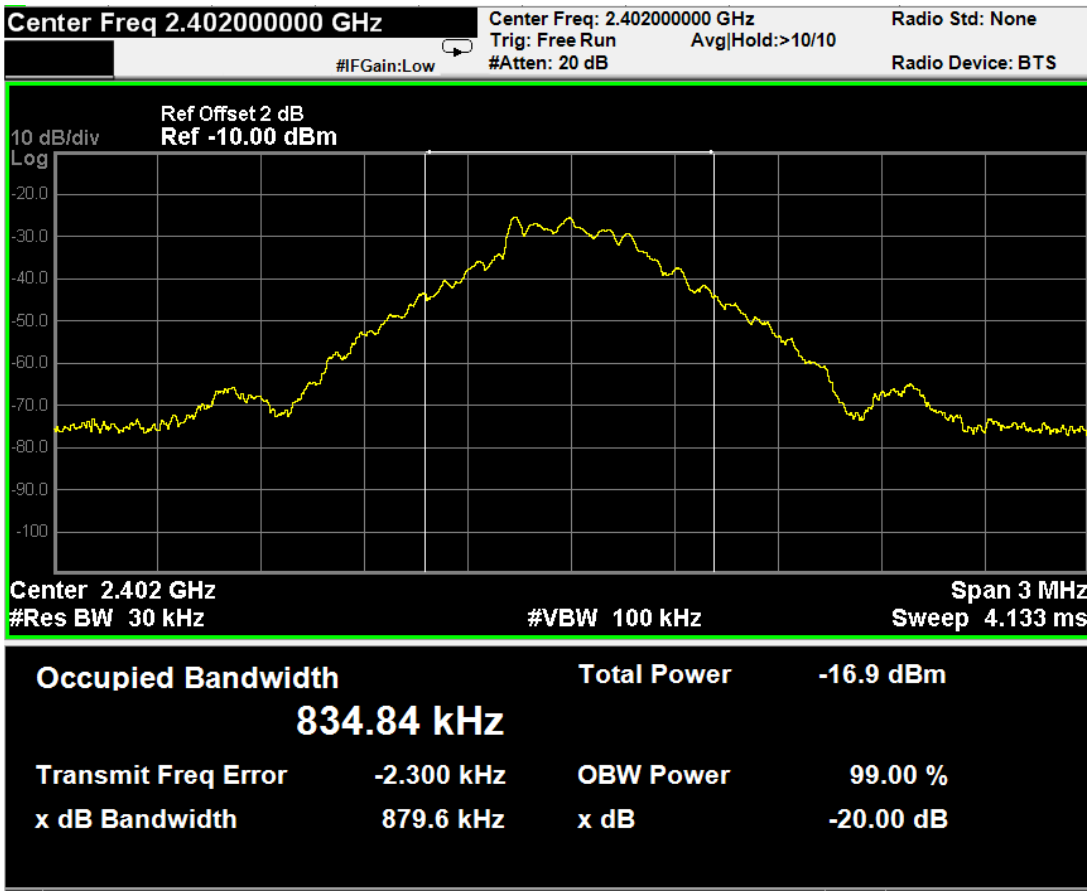
DH5

Channel	Frequency	**20dB Bandwidth**
00	2402 MHz	**1.230 MHz**
39	2441 MHz	**1.228 MHz**
78	2480 MHz	**1.261 MHz**

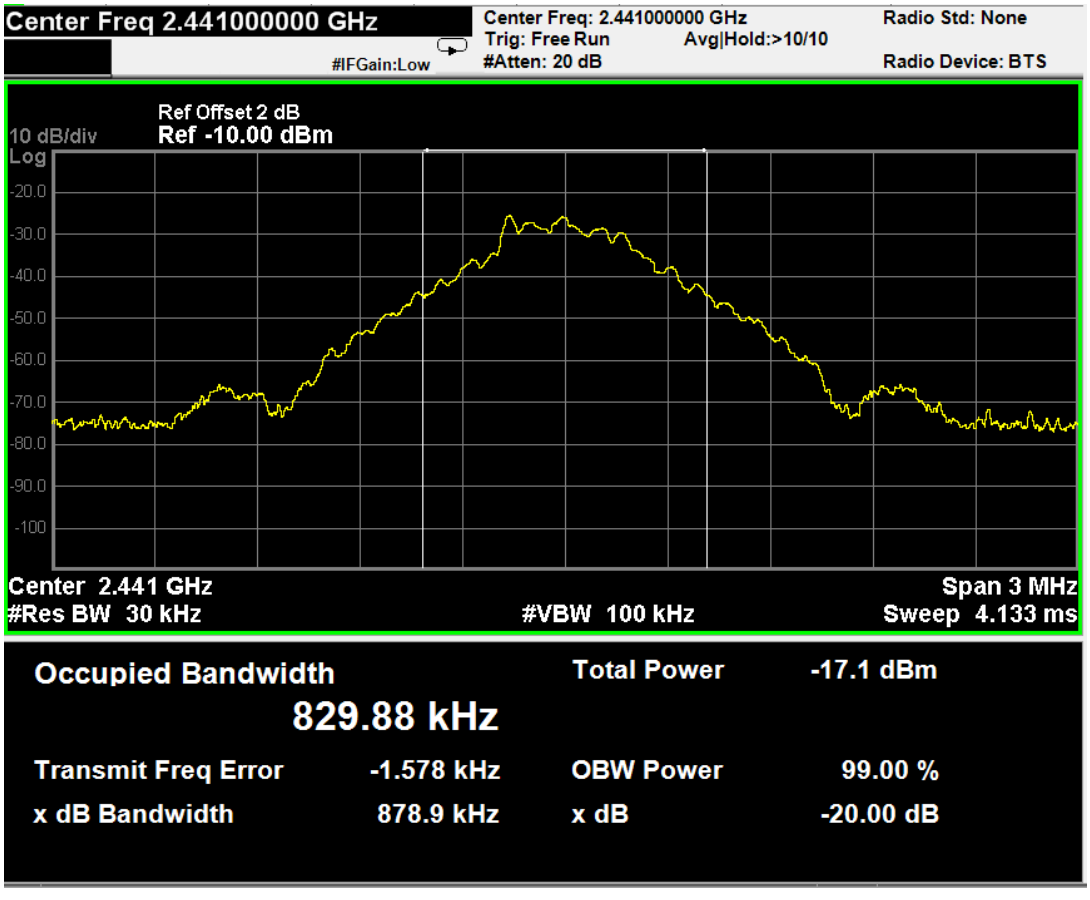
2DH5

Channel	Frequency	**20dB Bandwidth**
00	2402 MHz	**1.279 MHz**
39	2441 MHz	**1.282 MHz**
78	2480 MHz	**1.279 MHz**

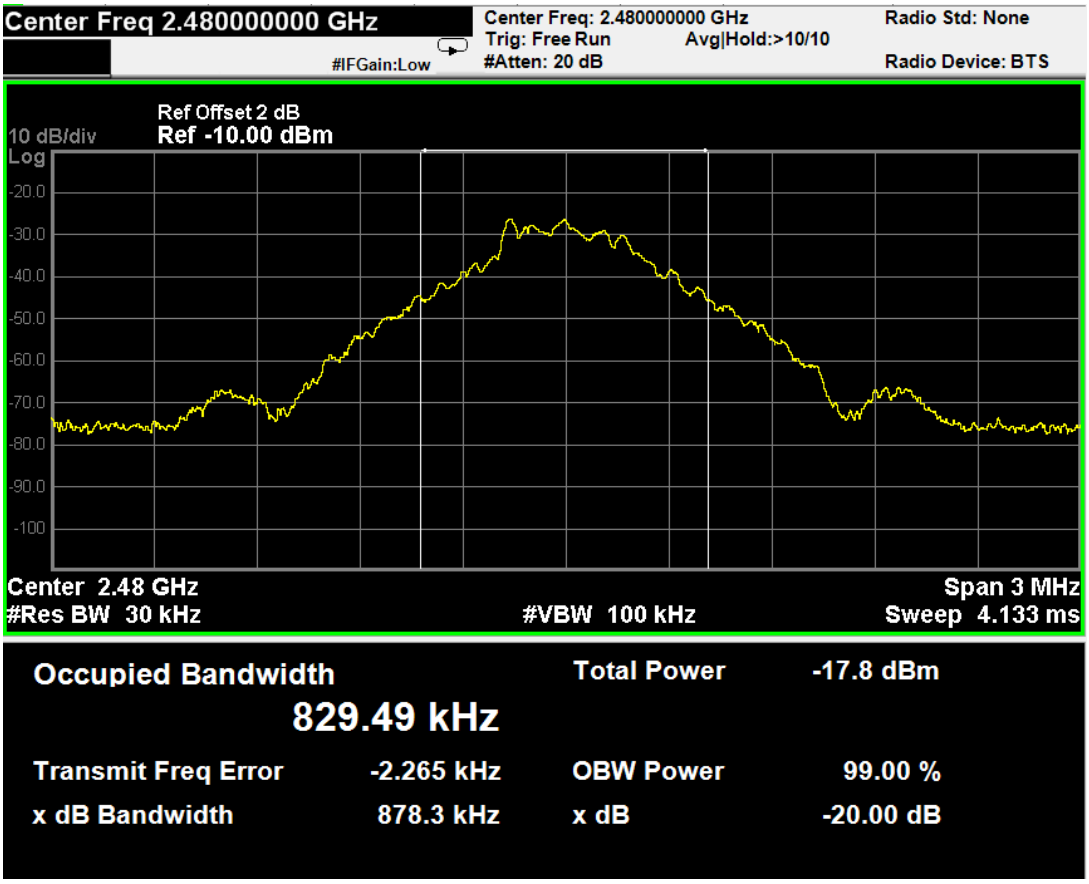
DH1Ch 00



DH1Ch 39



DH1Ch 78



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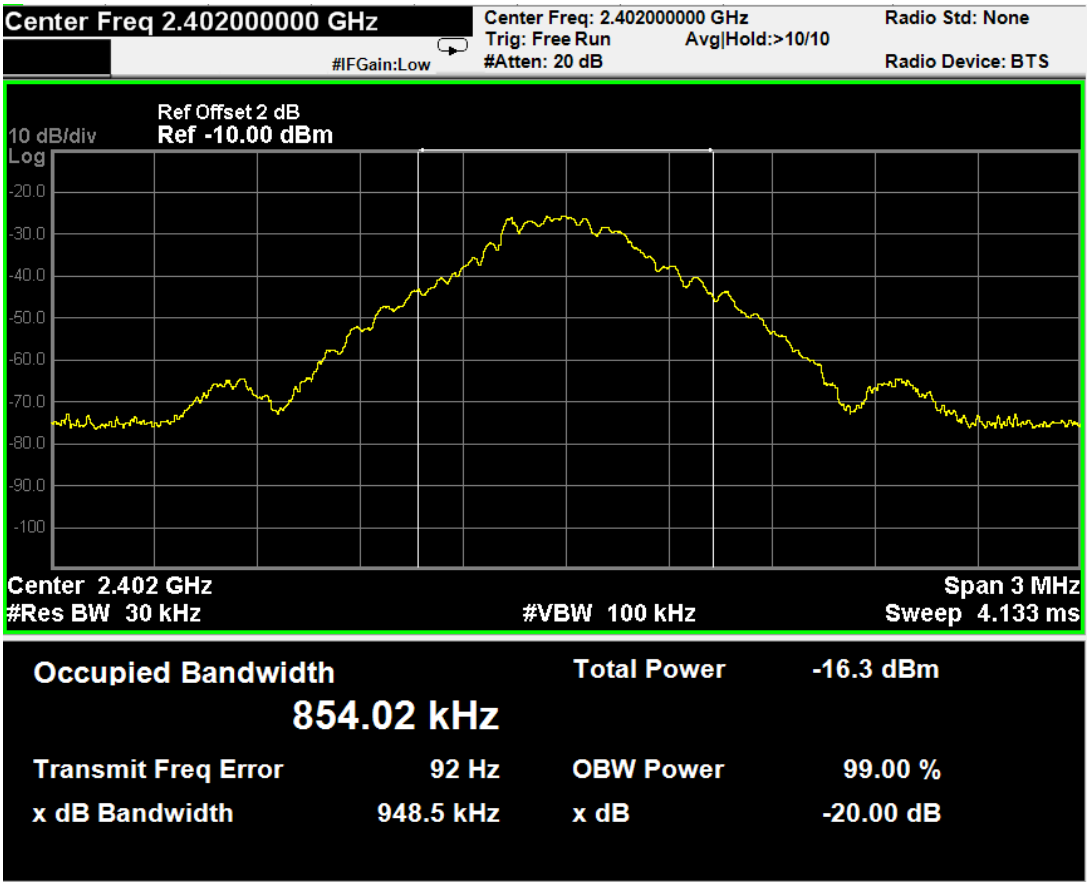

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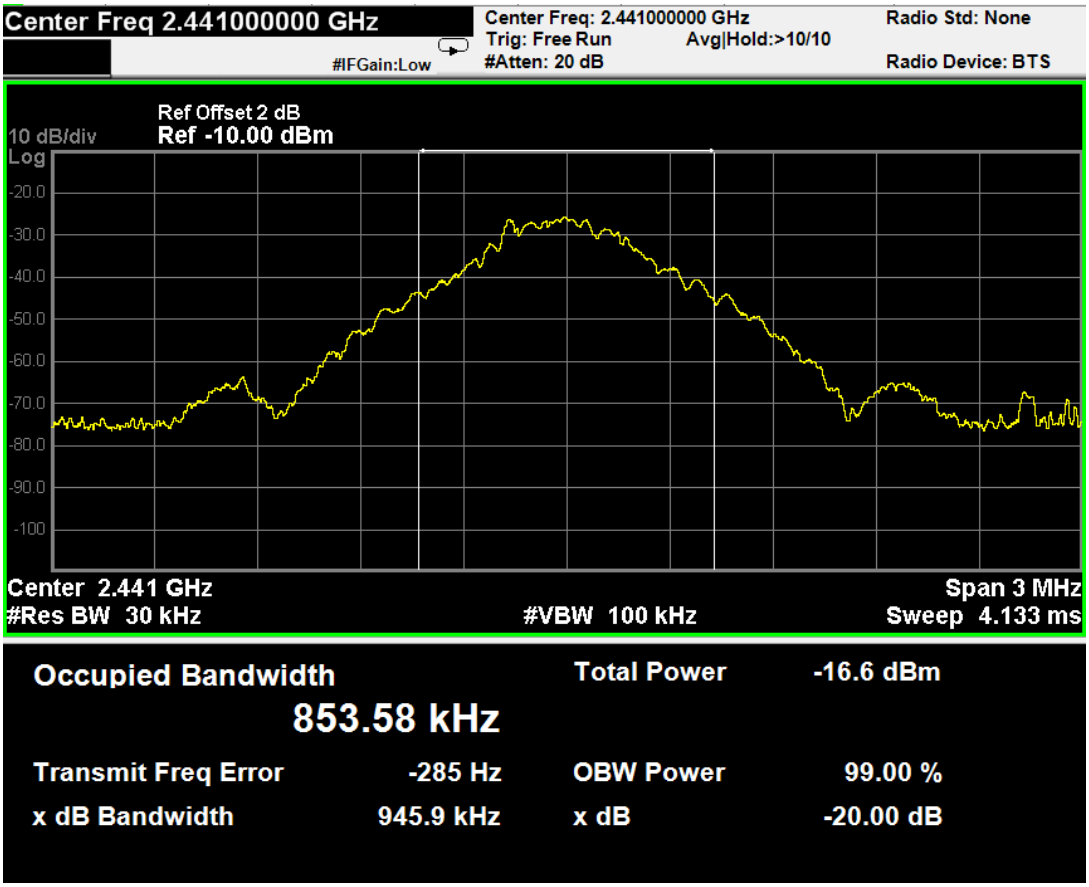

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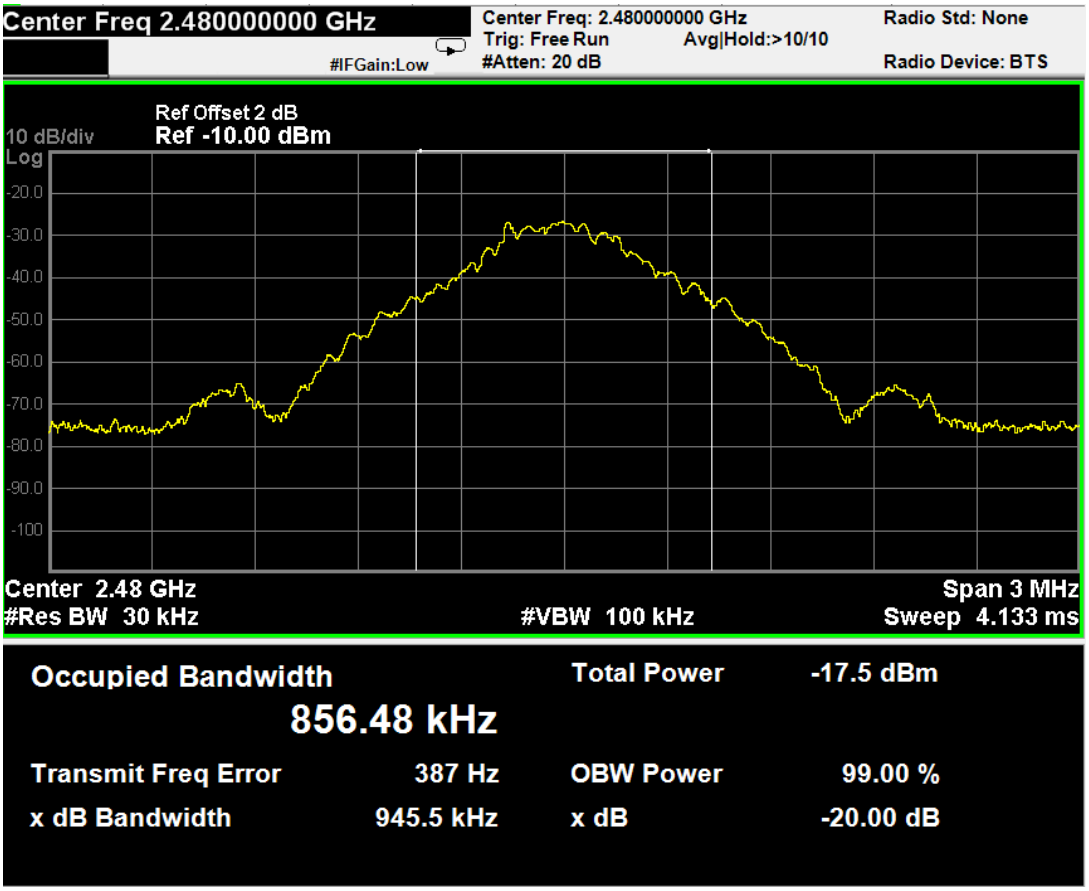

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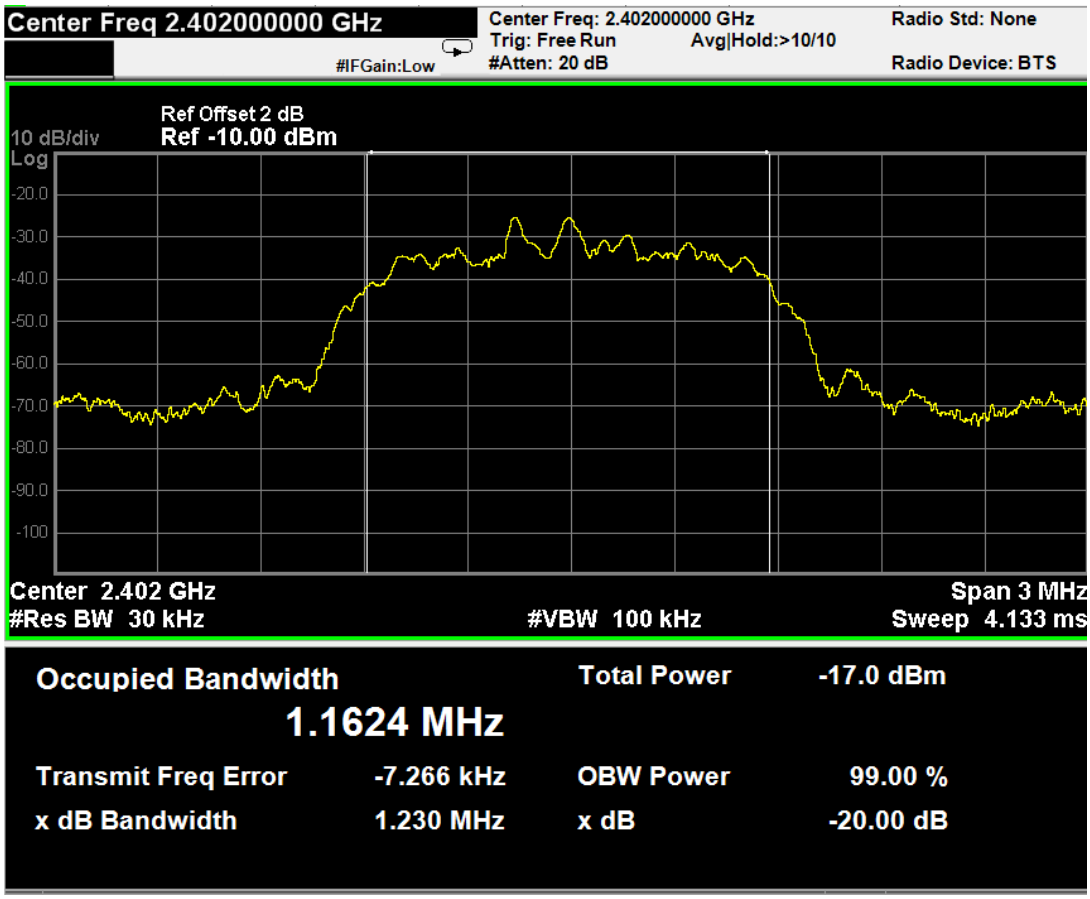

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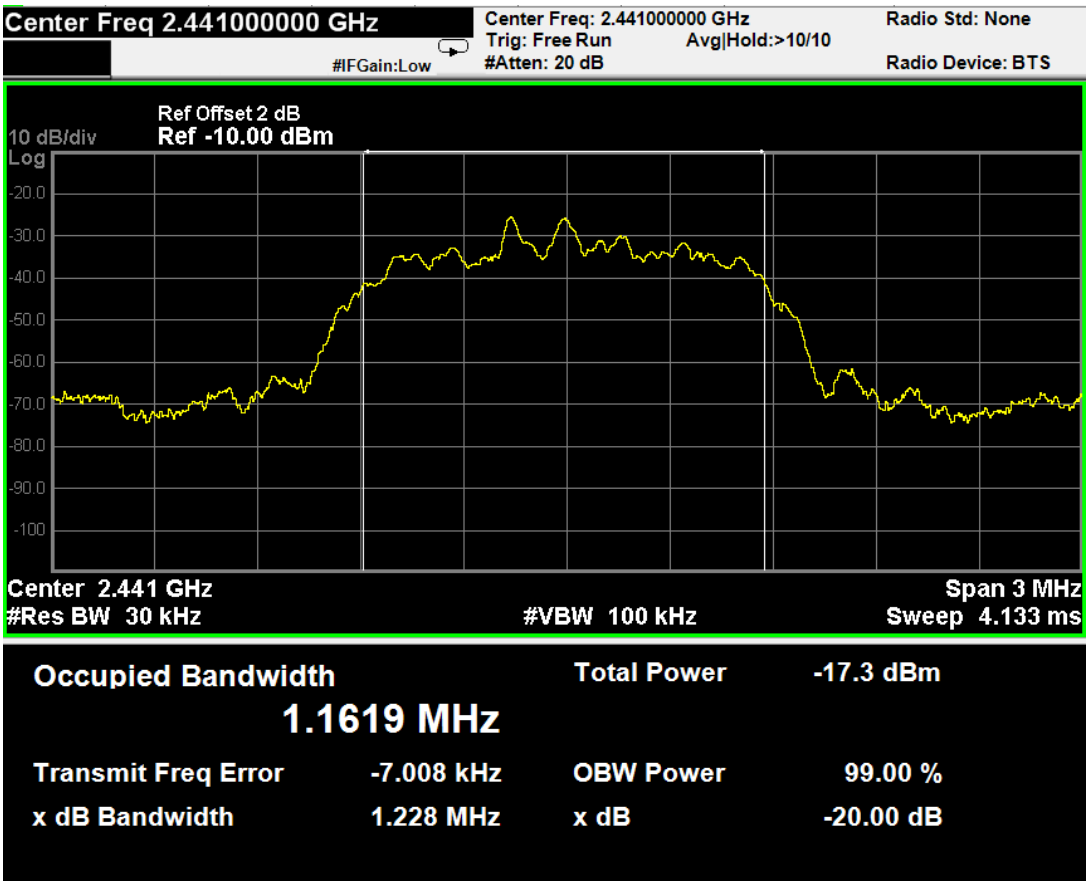

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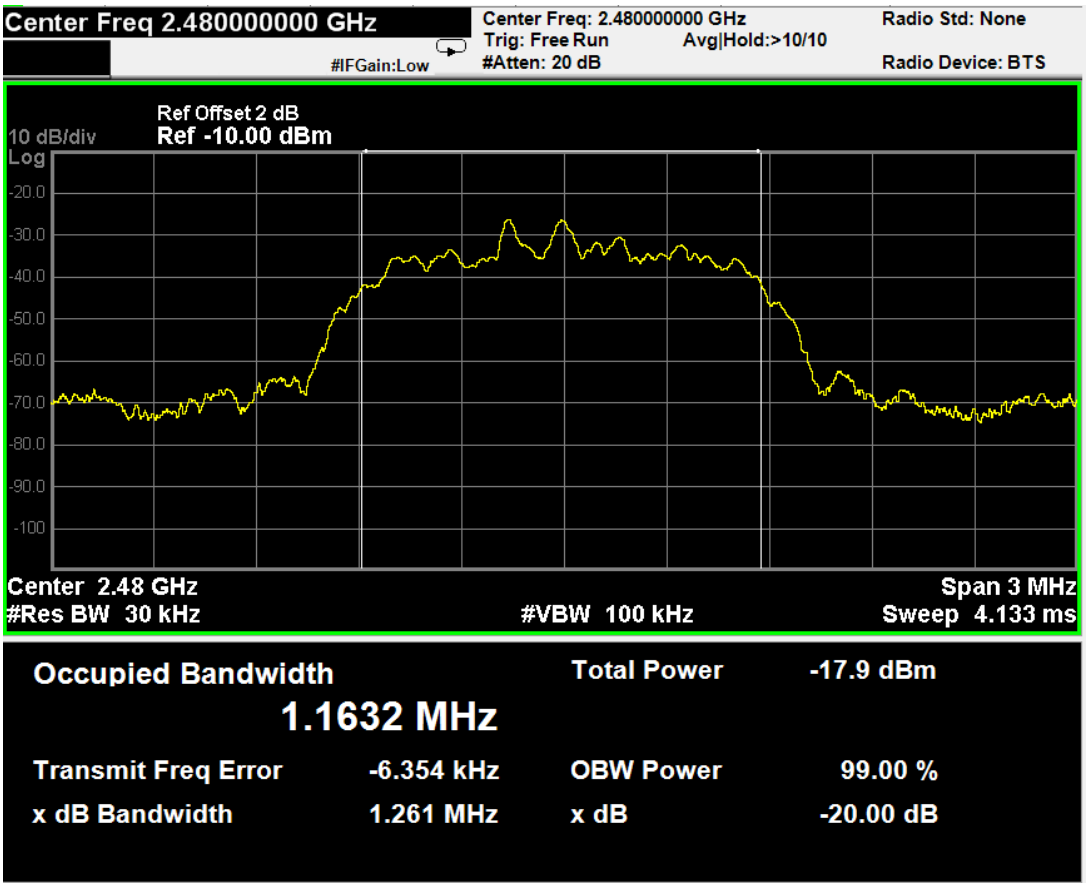
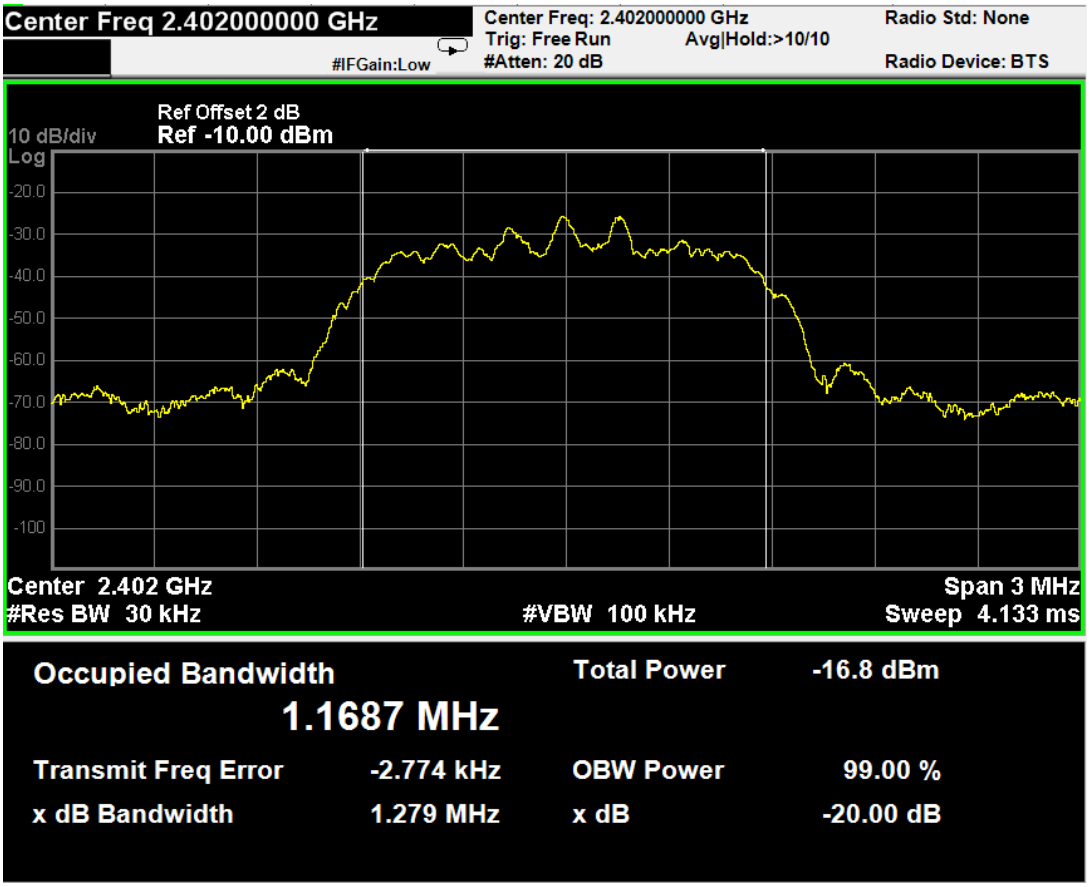
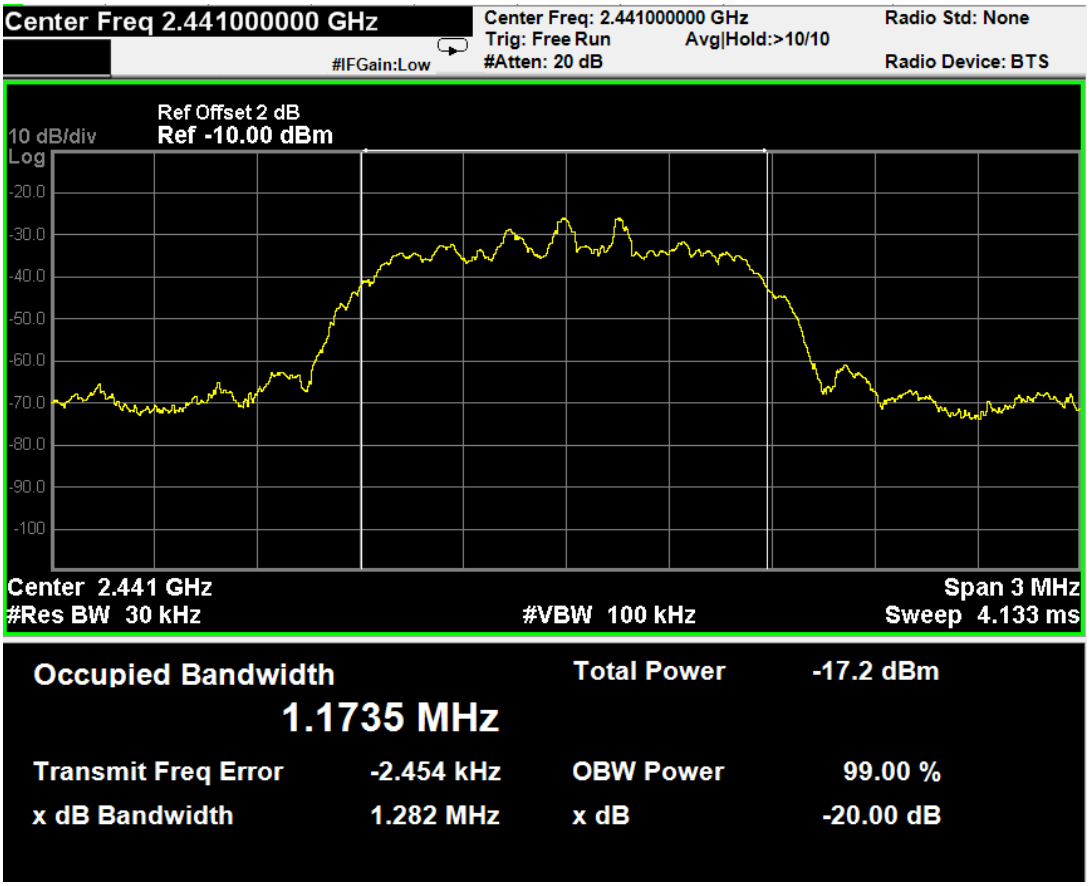


2DH5Ch 00



2DH5 Ch 39



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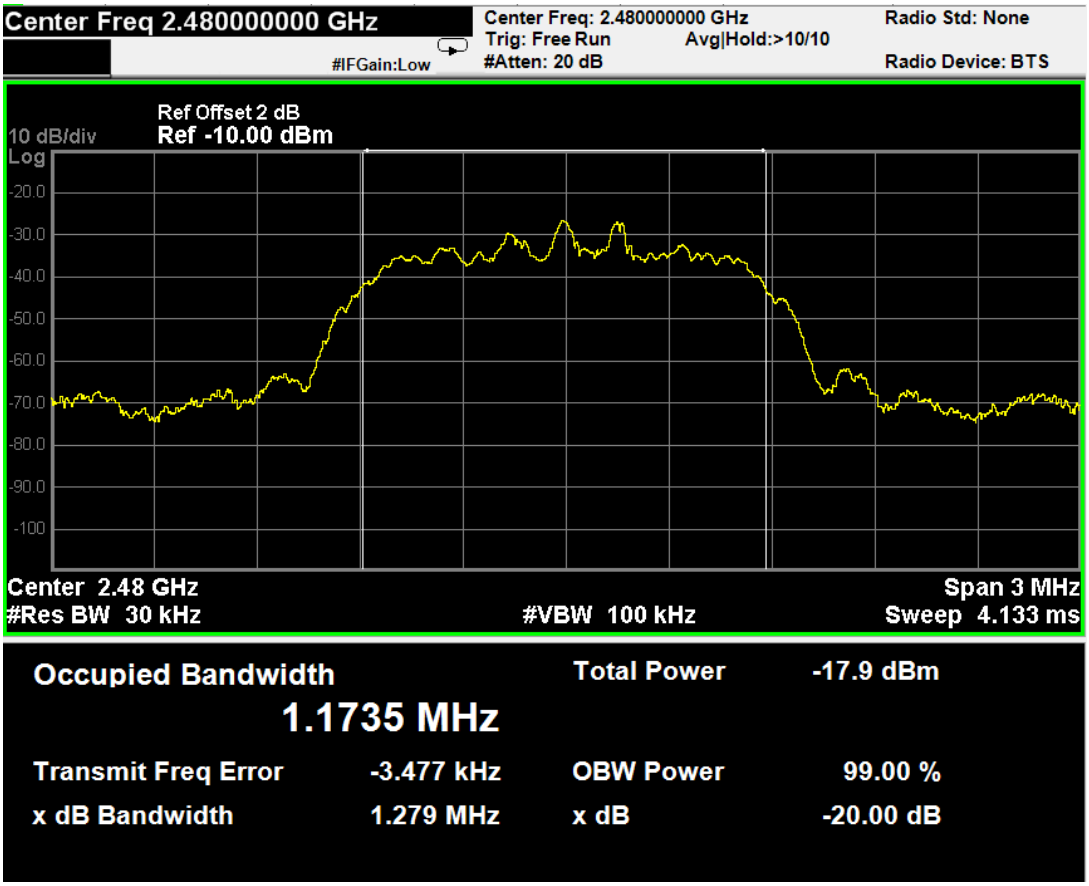


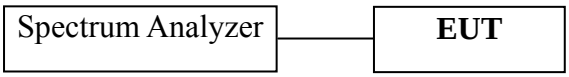
6 PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

6.2 Block Diagram of Test Setup



6.3 Specification Limits ((§15.247(b)(1))

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. (30 dBm)

6.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

6.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.
The test procedure is defined in ANSI C63.10:2013.

6.6 Test Results

PASSED.

(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

For DH1

Channel	Frequency	**Peak Output Power**	Limit
00	2402 MHz	**-1.244 dBm**	30 dBm
39	2441 MHz	**-0.923 dBm**	30 dBm
78	2480 MHz	**-1.757 dBm**	30 dBm

For 2DH1

Channel	Frequency	**Peak Output Power**	Limit
00	2402 MHz	**-1.306 dBm**	30 dBm
39	2441 MHz	**-1.861 dBm**	30 dBm
78	2480 MHz	**-2.611 dBm**	30 dBm

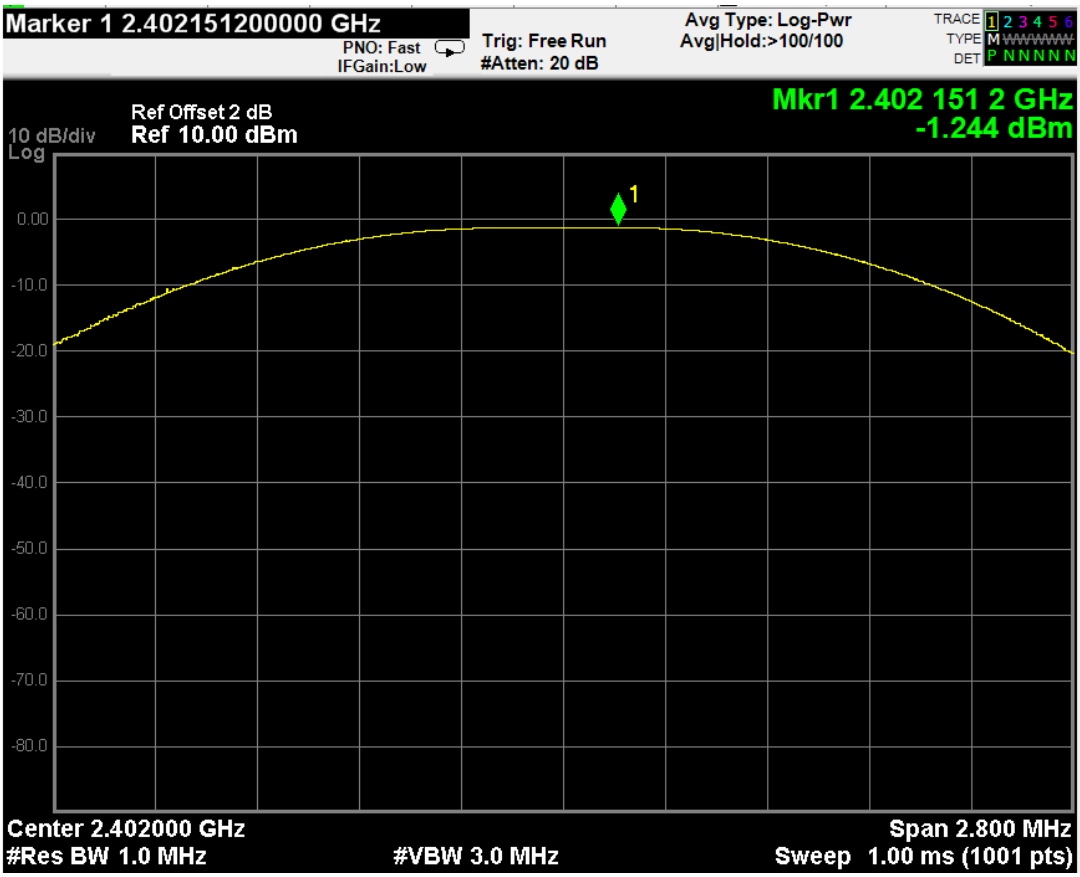
For DH5

Channel	Frequency	**Peak Output Power**	Limit
00	2402 MHz	**-0.444 dBm**	30 dBm
39	2441 MHz	**-1.001 dBm**	30 dBm
78	2480 MHz	**-2.697 dBm**	30 dBm

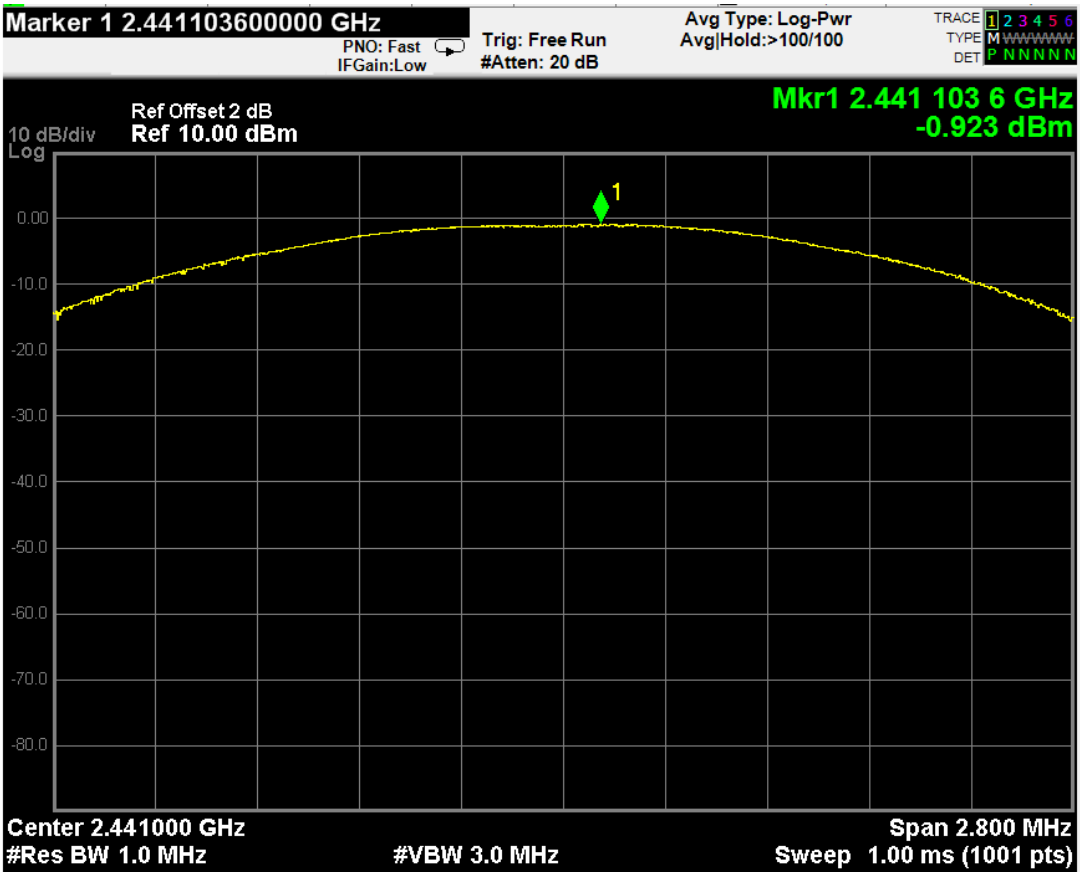
For 2DH5

Channel	Frequency	**Peak Output Power**	Limit
00	2402 MHz	**-0.408 dBm**	30 dBm
39	2441 MHz	**-1.778 dBm**	30 dBm
78	2480 MHz	**-1.833 dBm**	30 dBm

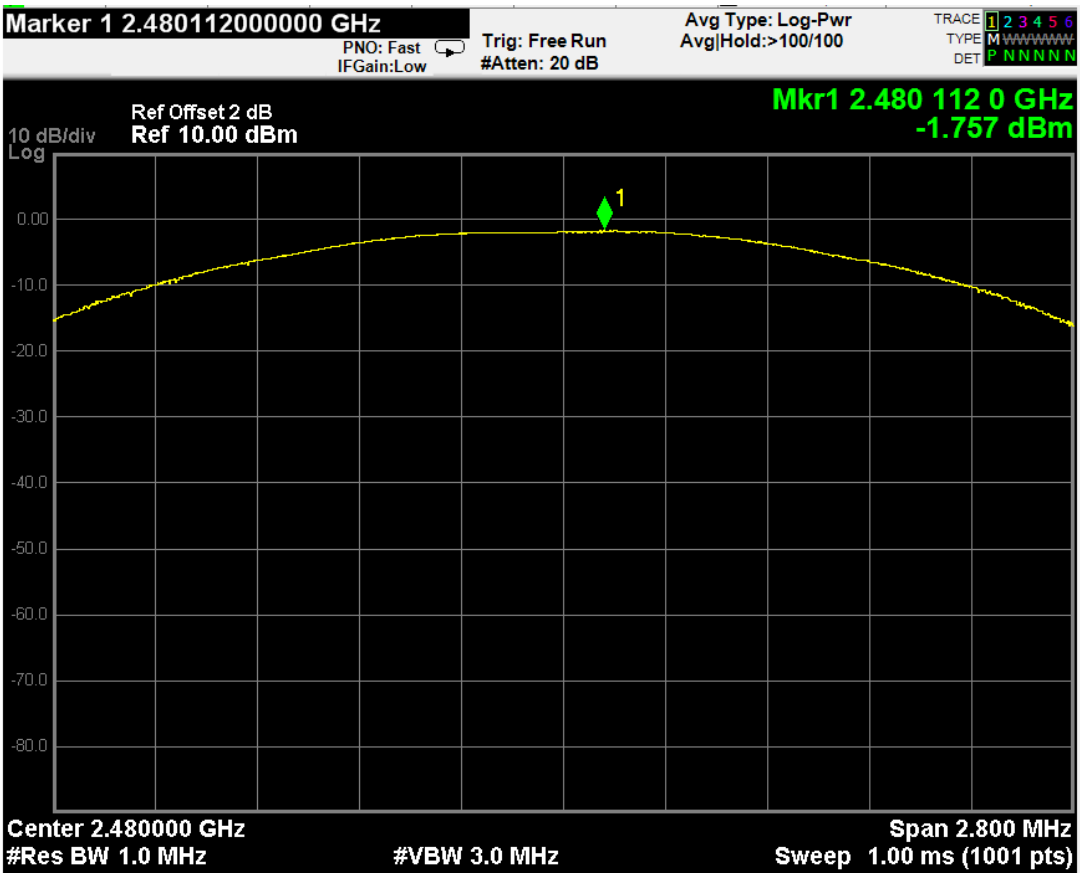
DH1Ch 00



DH1Ch 39



DH1Ch 78



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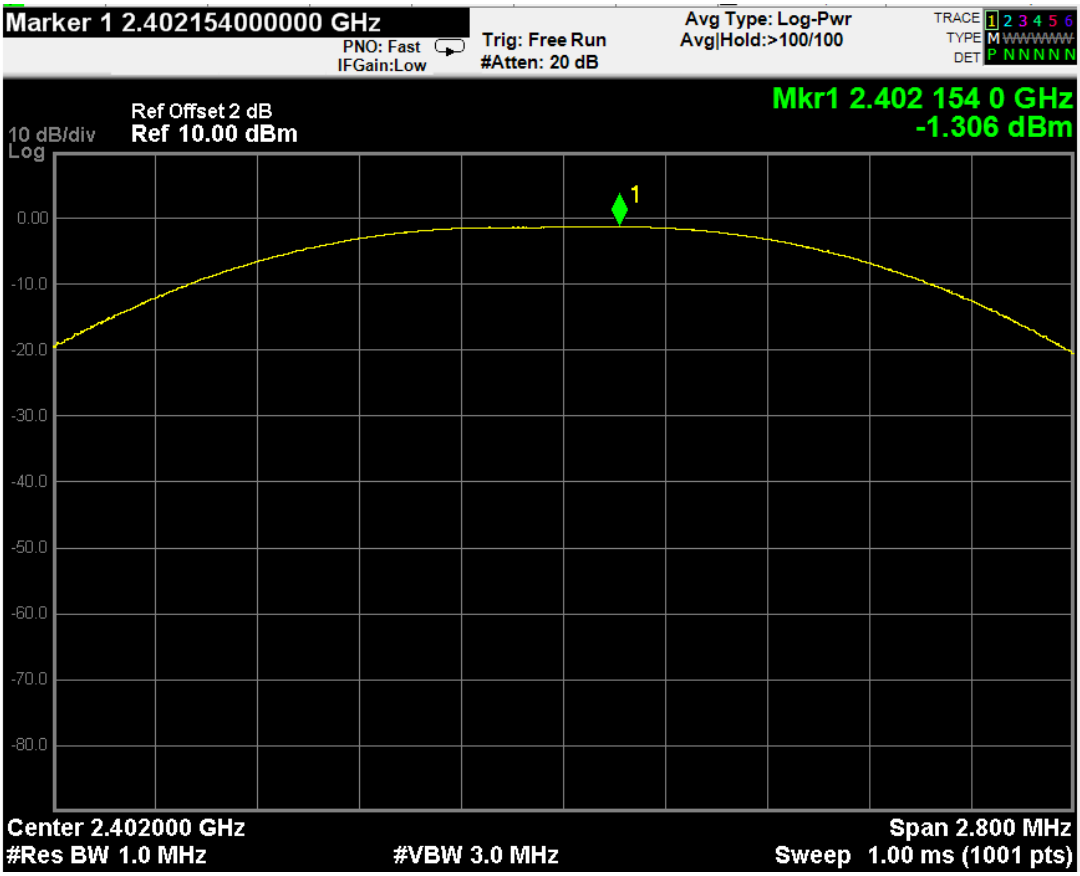

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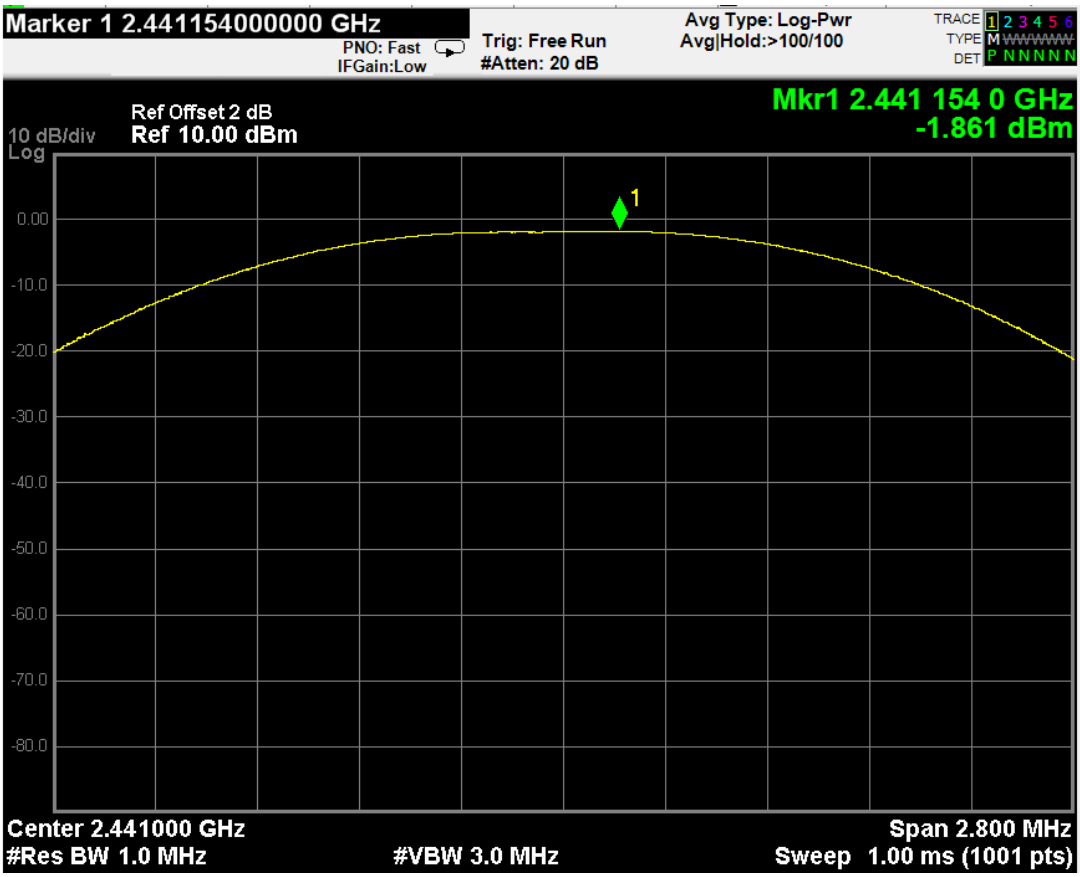

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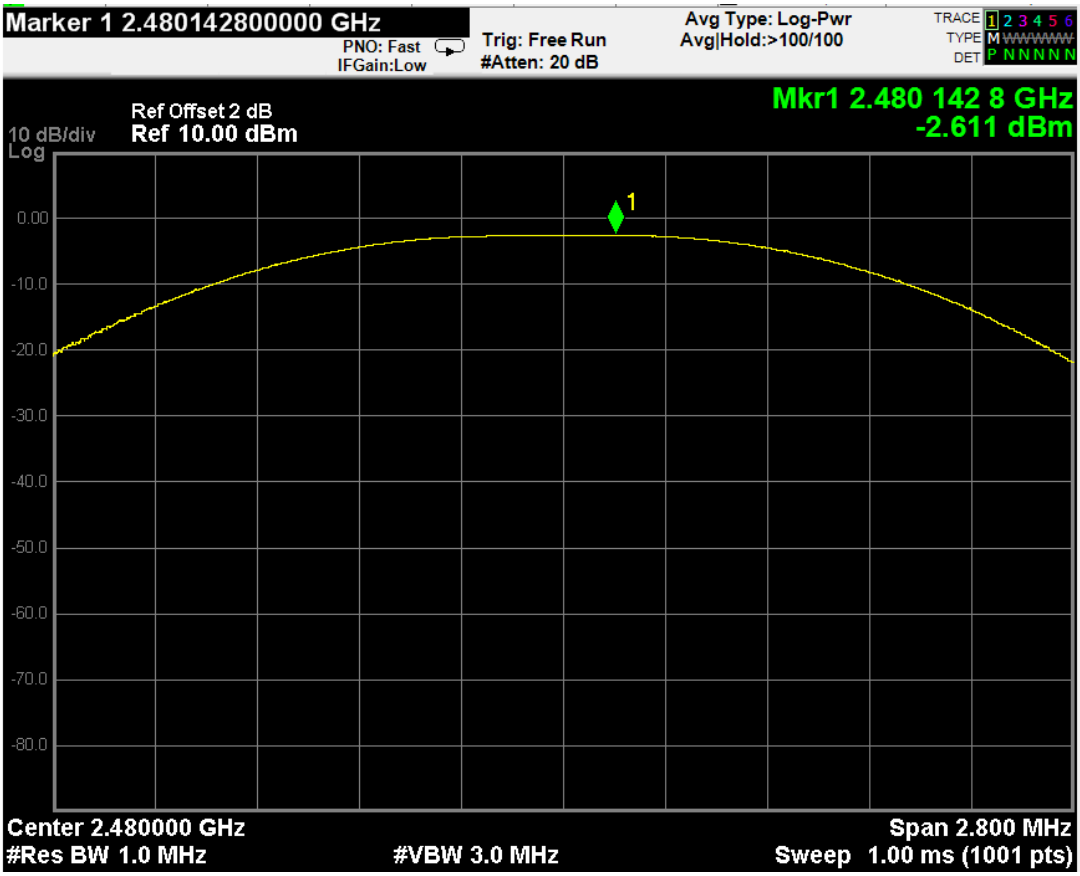
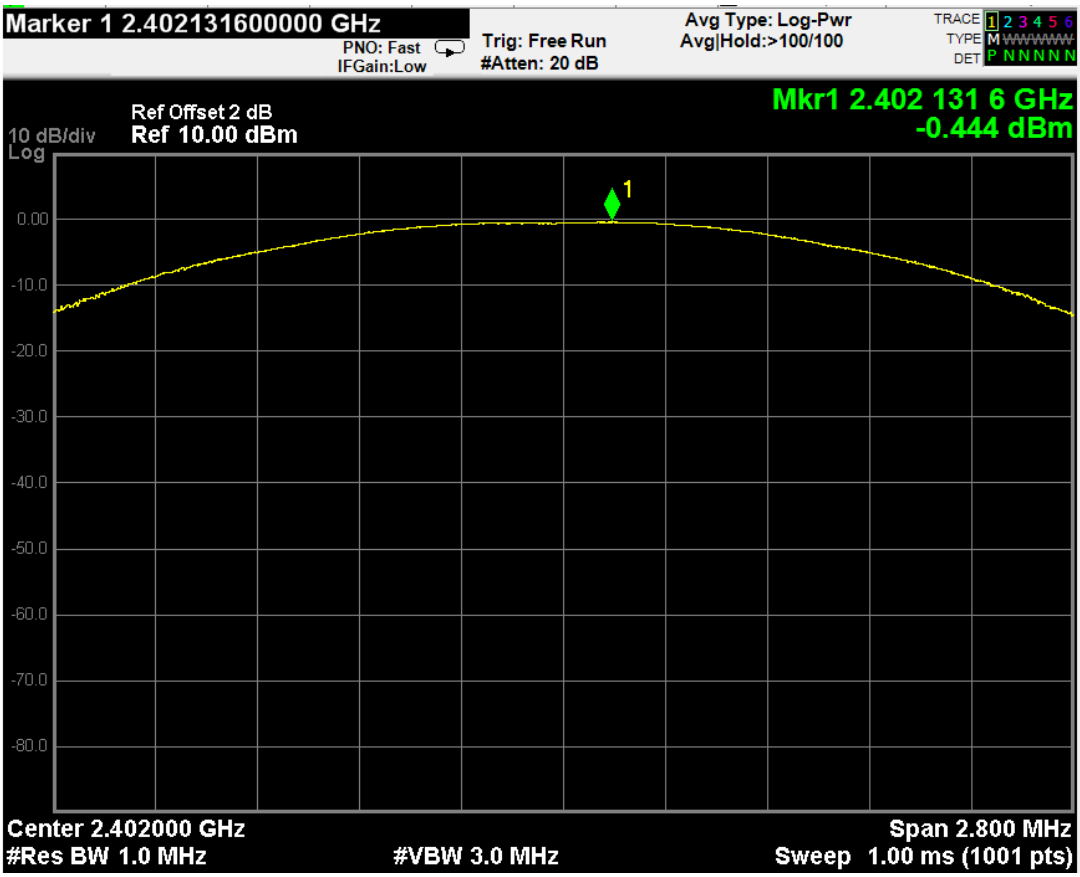
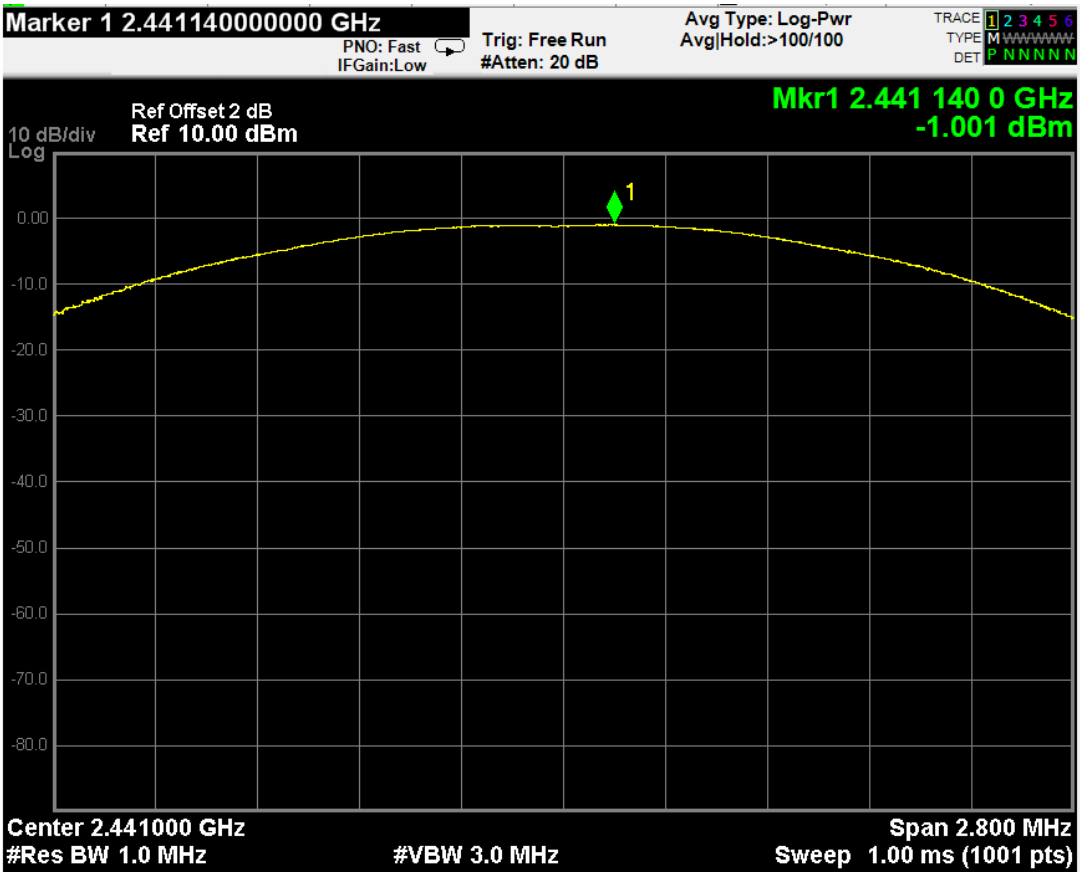


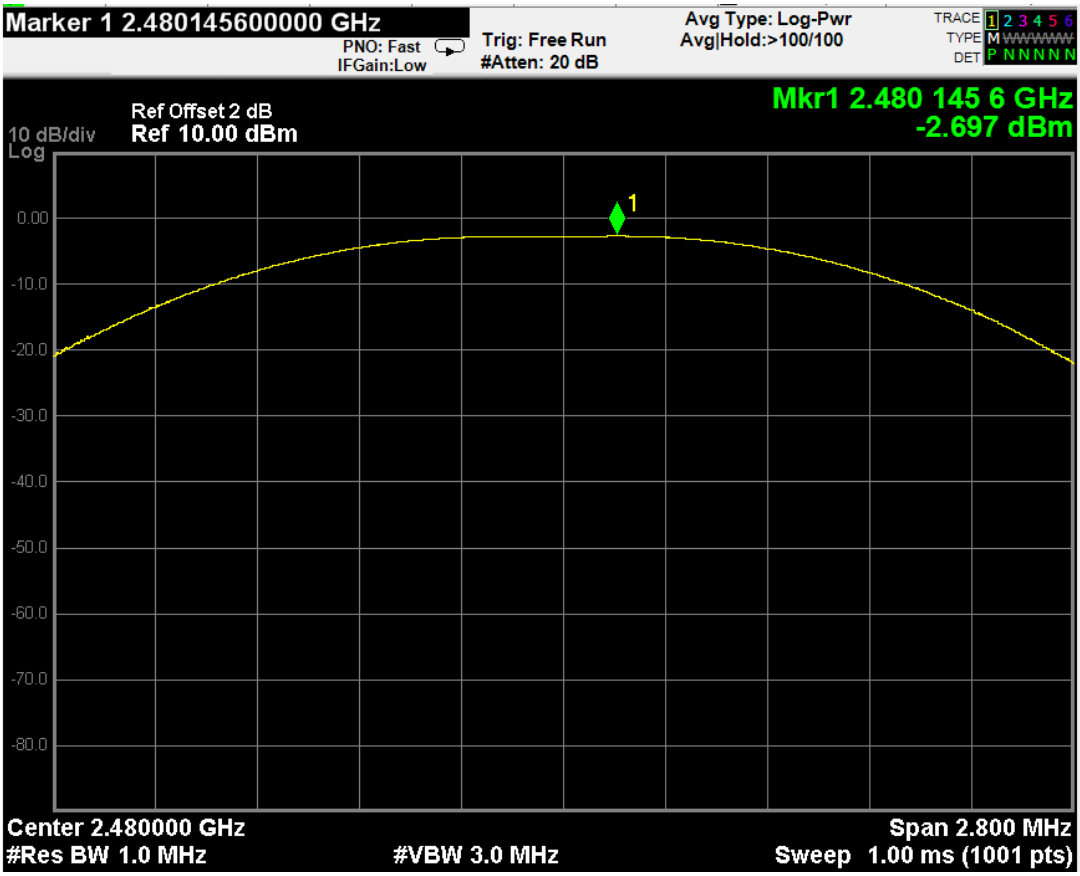
DH5Ch 00



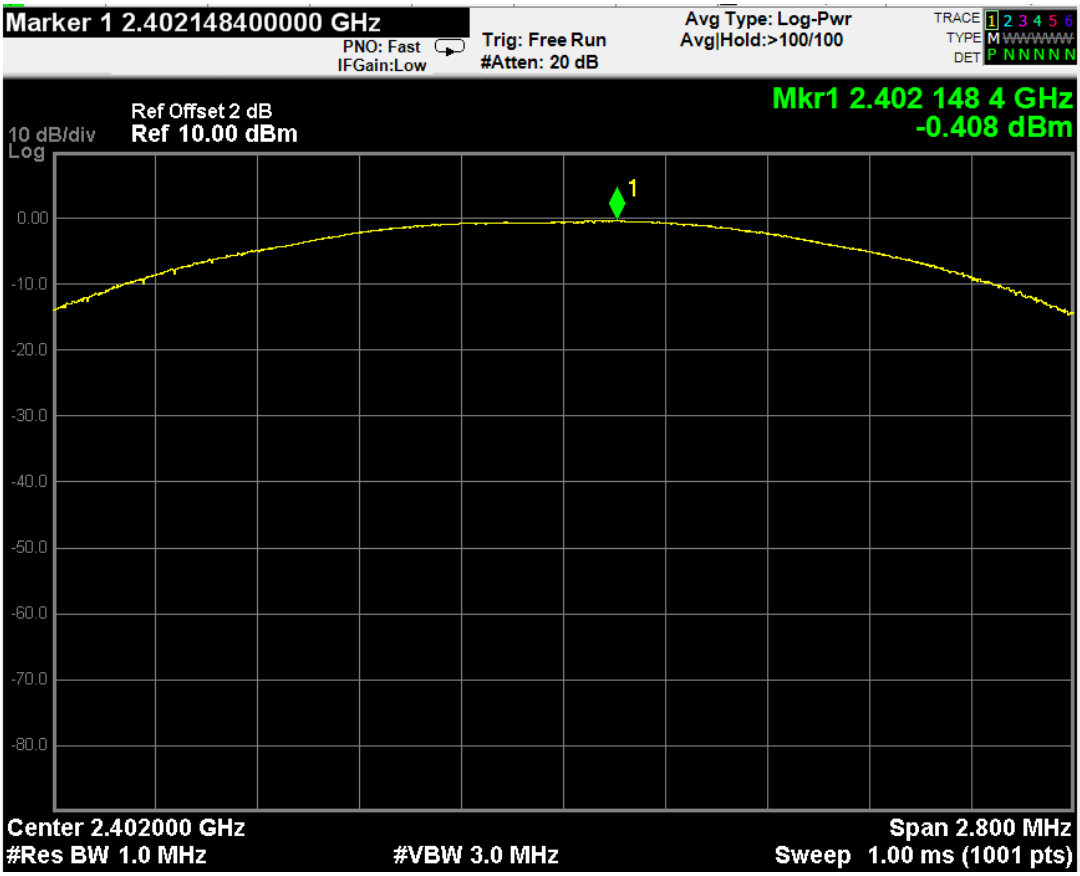
DH5 Ch 39



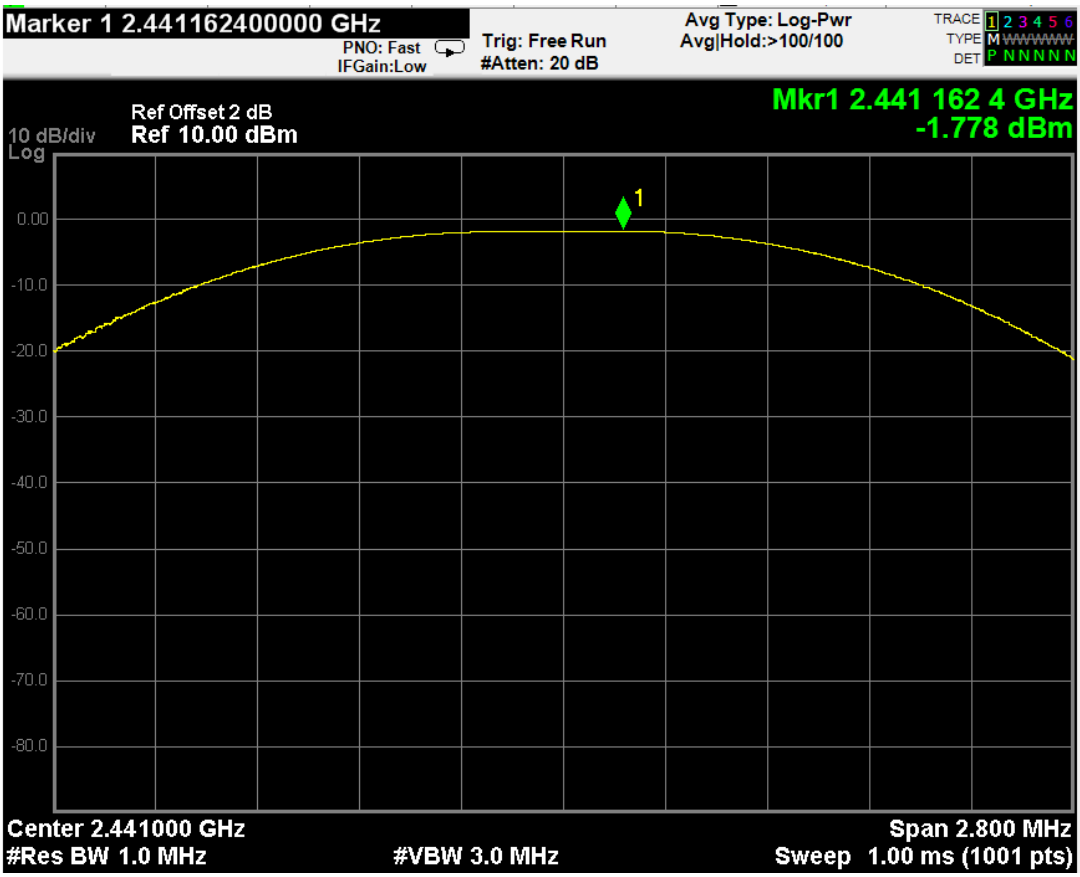
DH5Ch 78



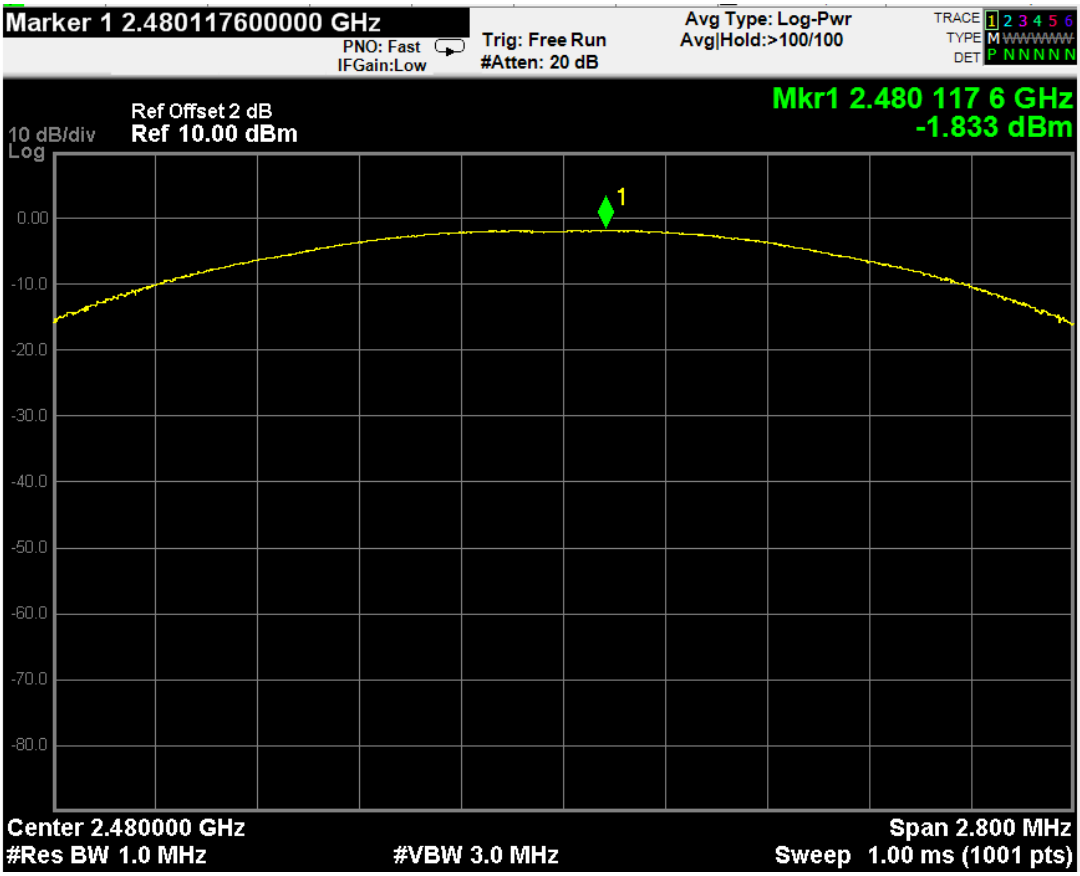
2DH5Ch 00



2DH5Ch 39



2DH5Ch 78



7 SPURIOUS RF CONDUCTED EMISSIONS MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test：

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

7.2 Block Diagram of Test Setup

The same as Section. 4.2.

7.3 Specification Limits (§15.247(d))

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. Attenuation below the general limits specified in Section 15.209(a) is not required.

In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※This test result attaching to Section. 4.7)

7.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

7.5 Test Procedure

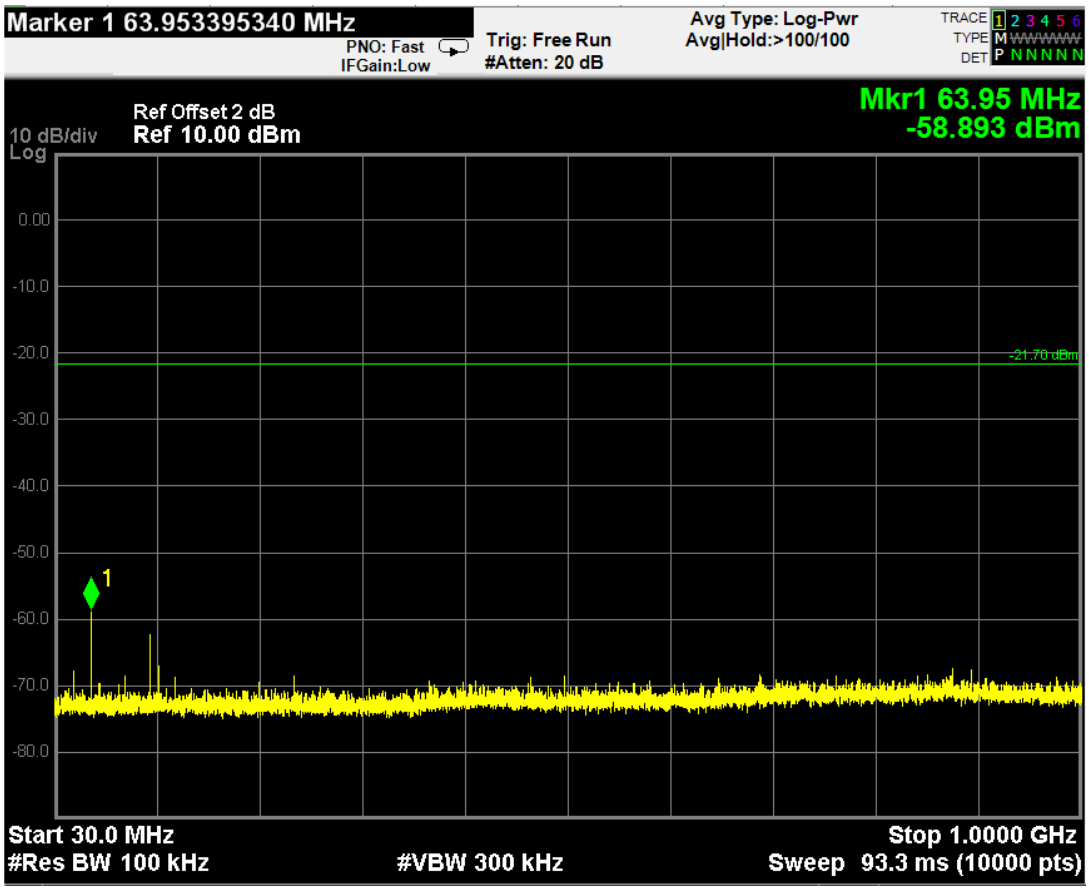
The transmitter output was connected to the spectrum analyzer. Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10^{th} harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
The test procedure is defined in ANSI C63.10:2013.

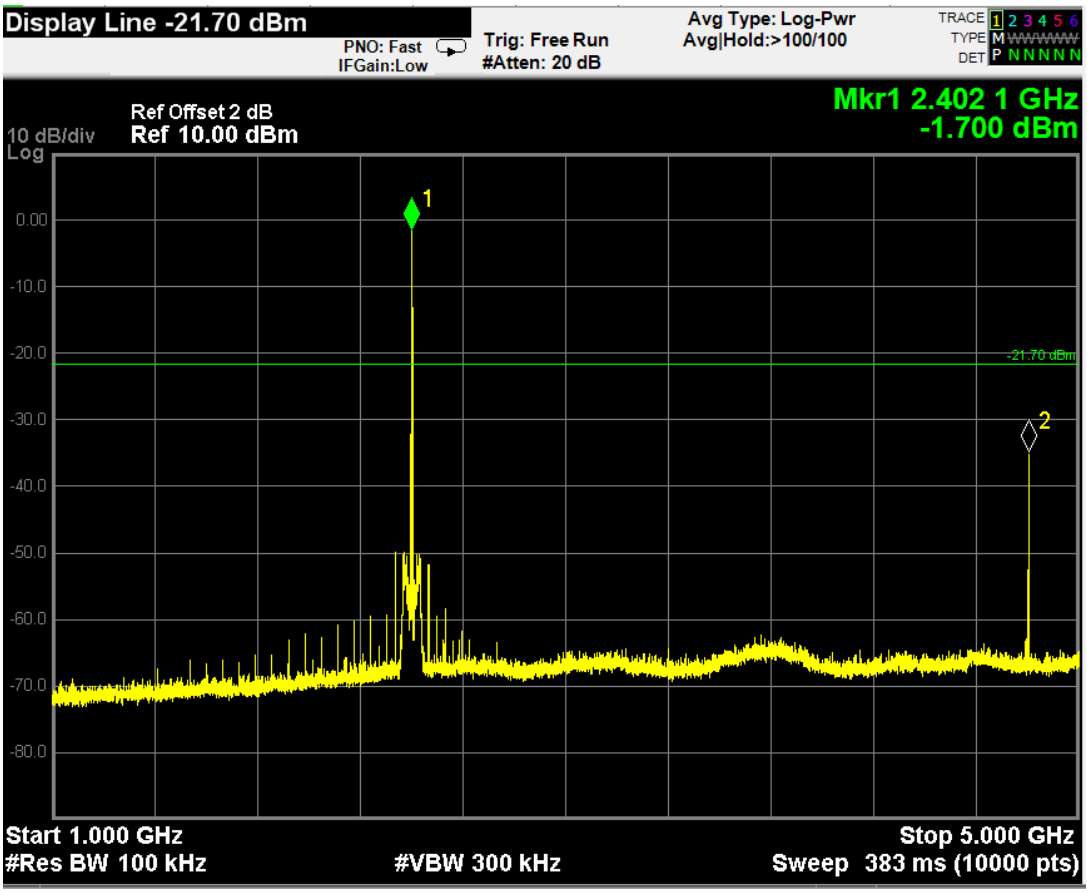
7.6 Test Results

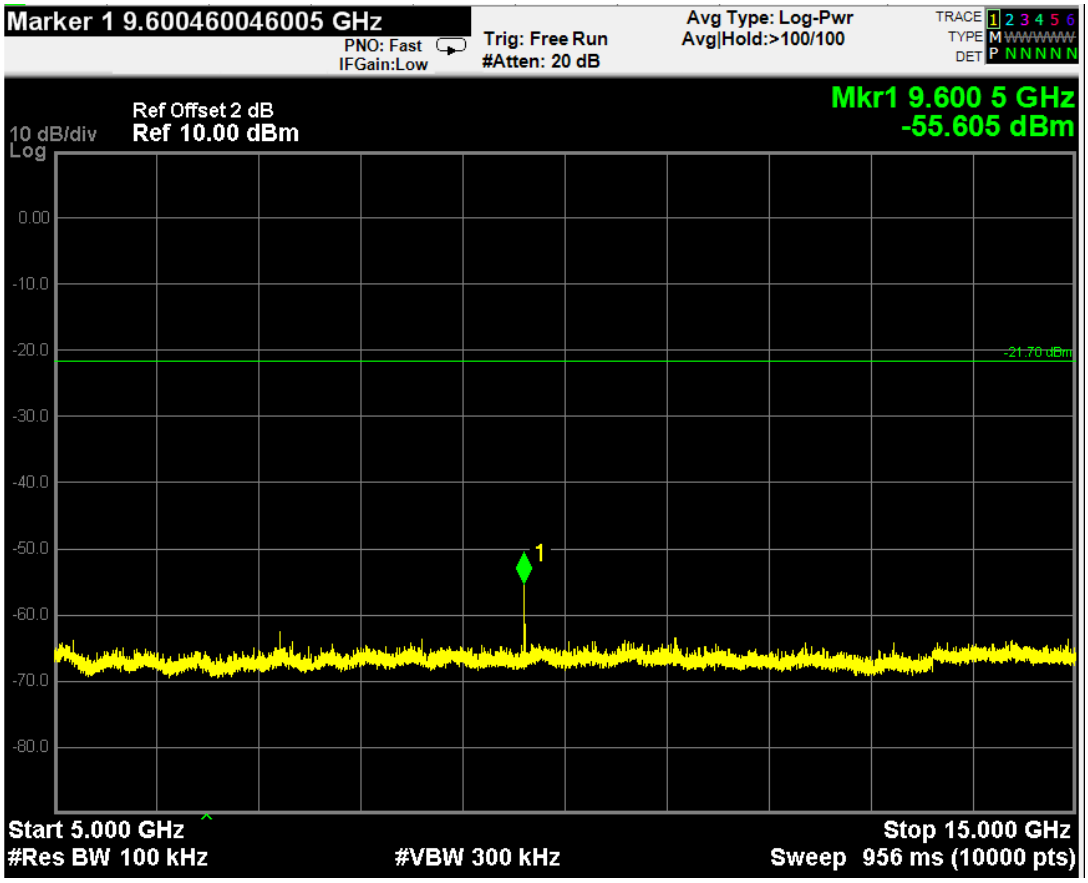
PASSED.
The test data was attached in the next pages.

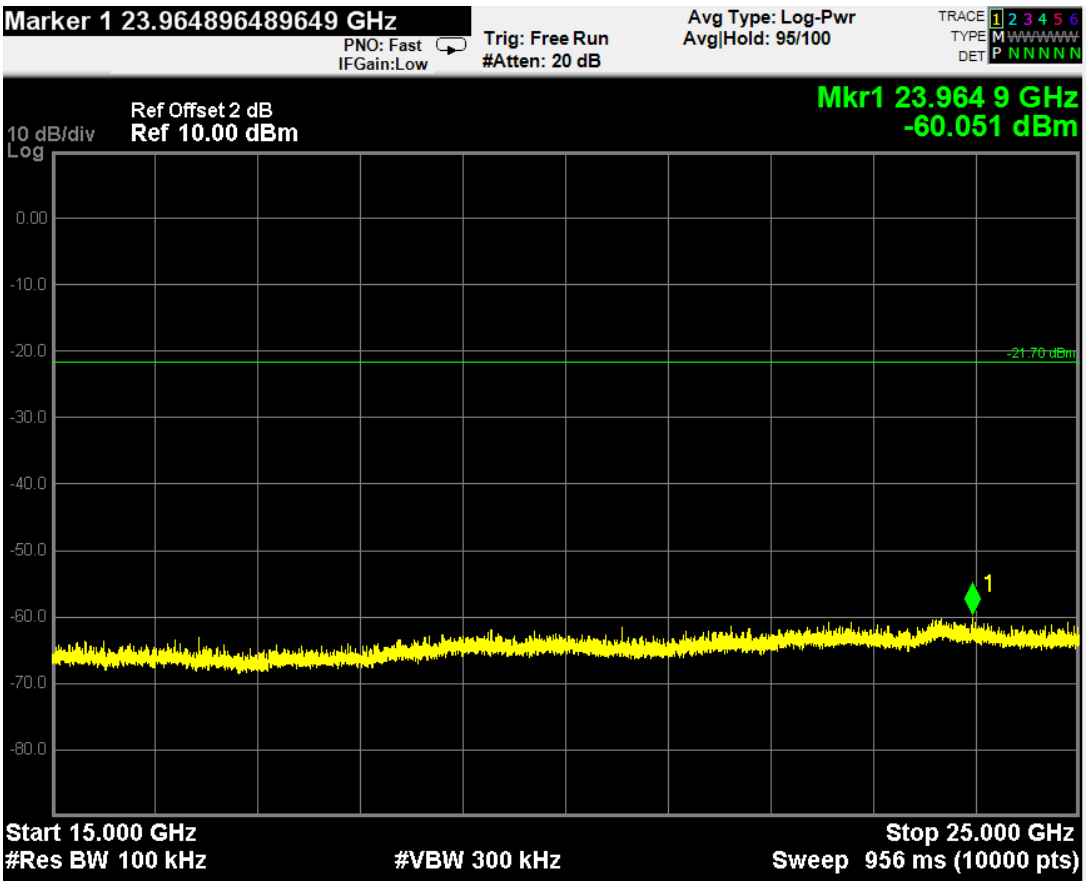
(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

DH1 Ch 00

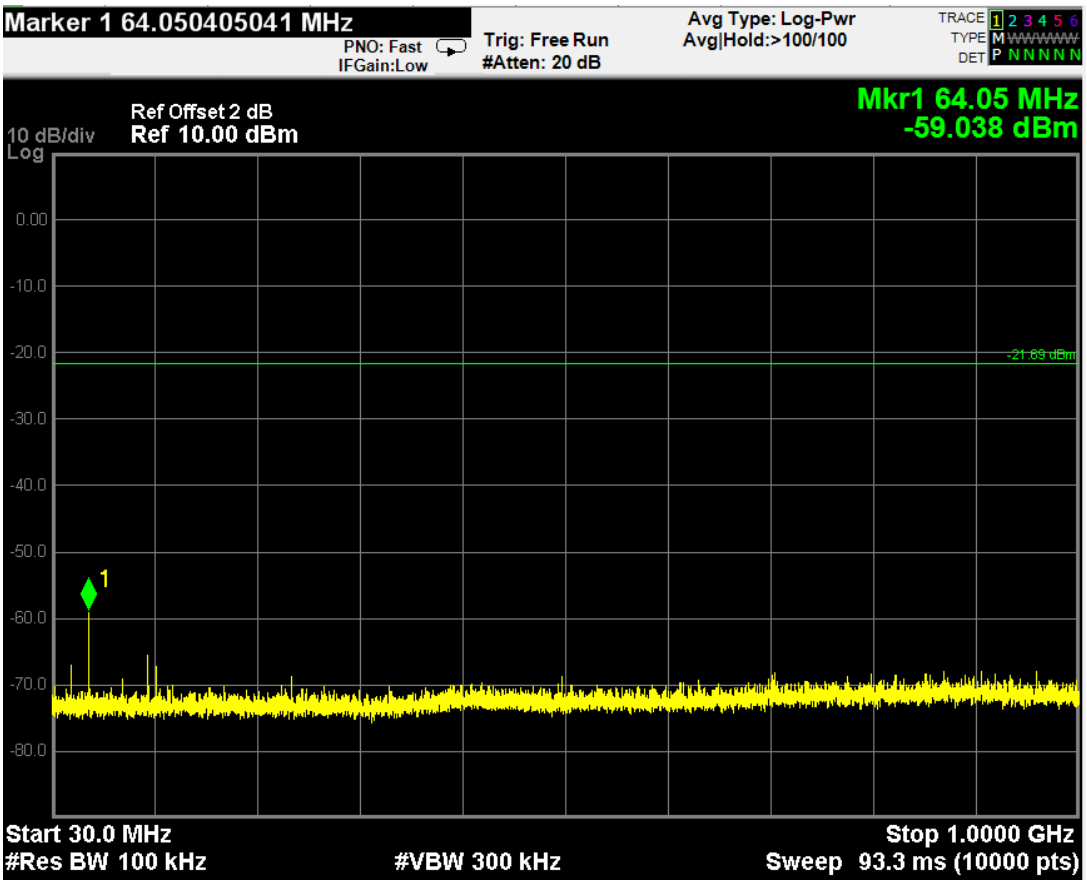

Marker 1 63.953395340 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 63.95 MHz
-58.893 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.70 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

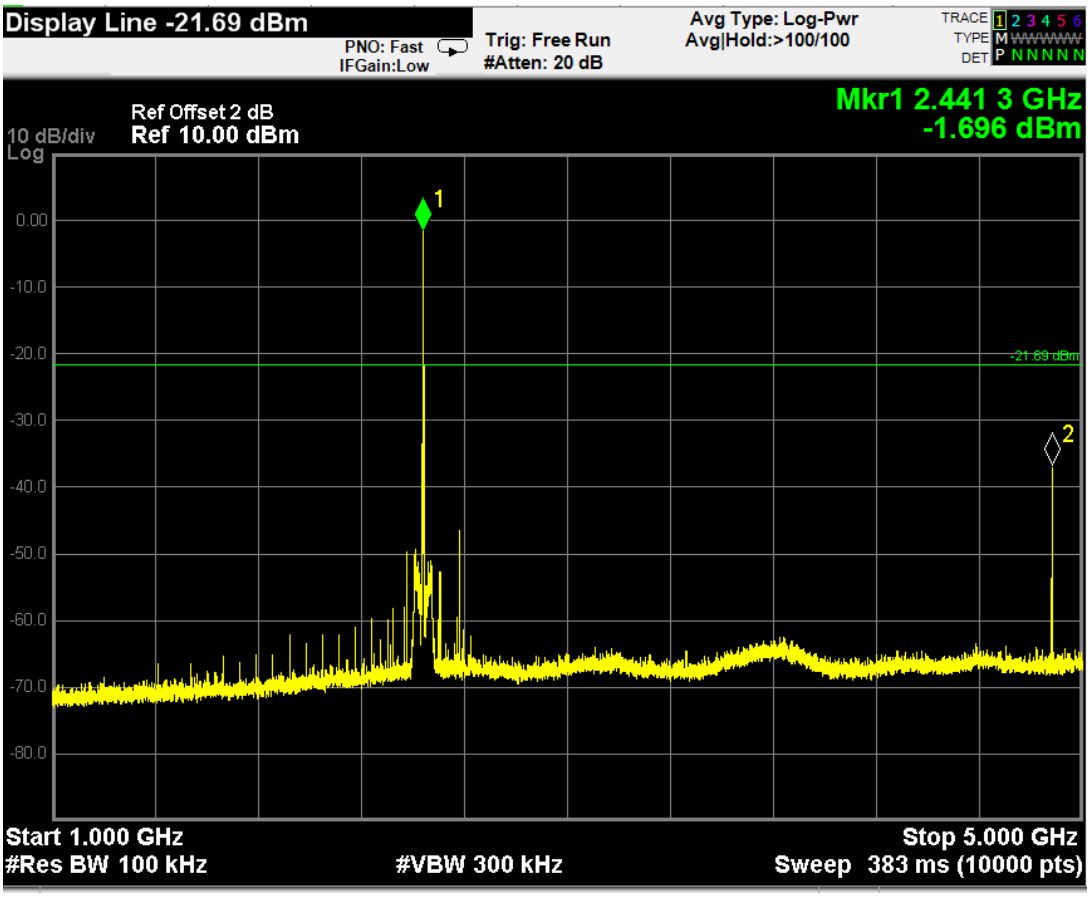

Display Line -21.70 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.402 1 GHz
-1.700 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.70 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

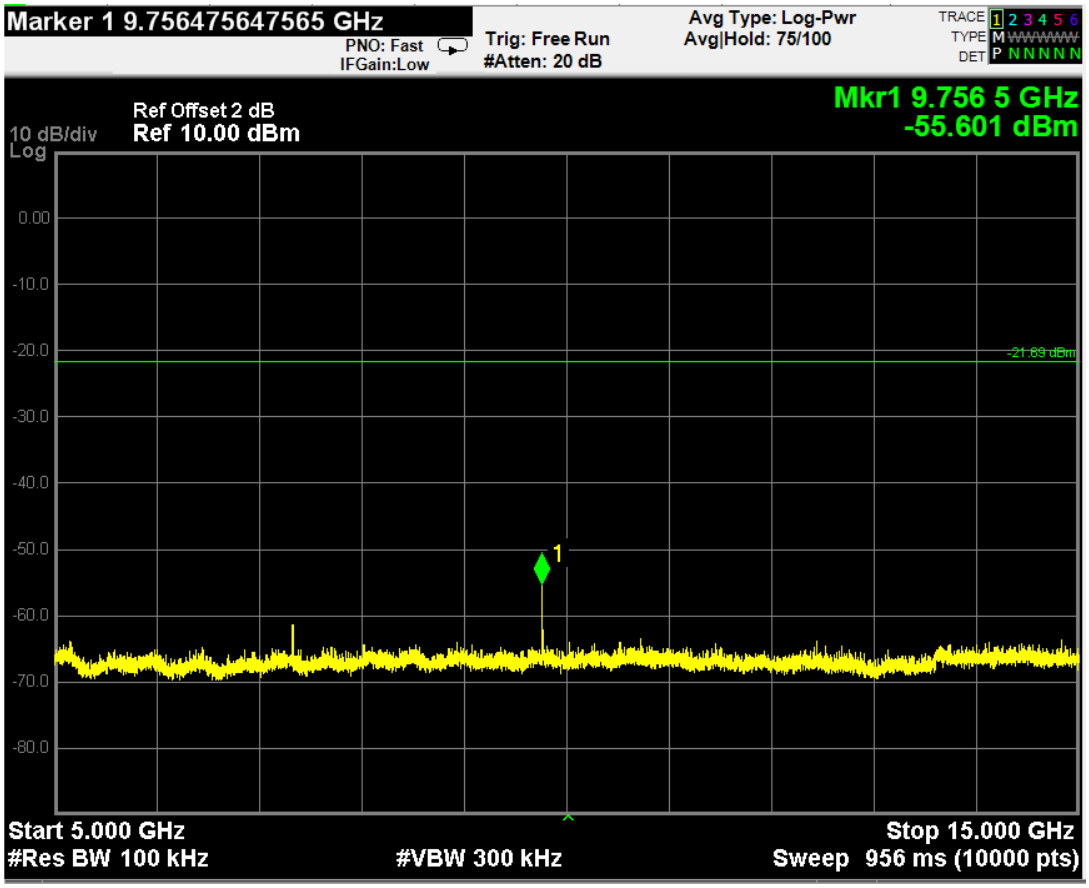

Marker 1 9.600460046005 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.600 5 GHz
-55.605 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.70 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

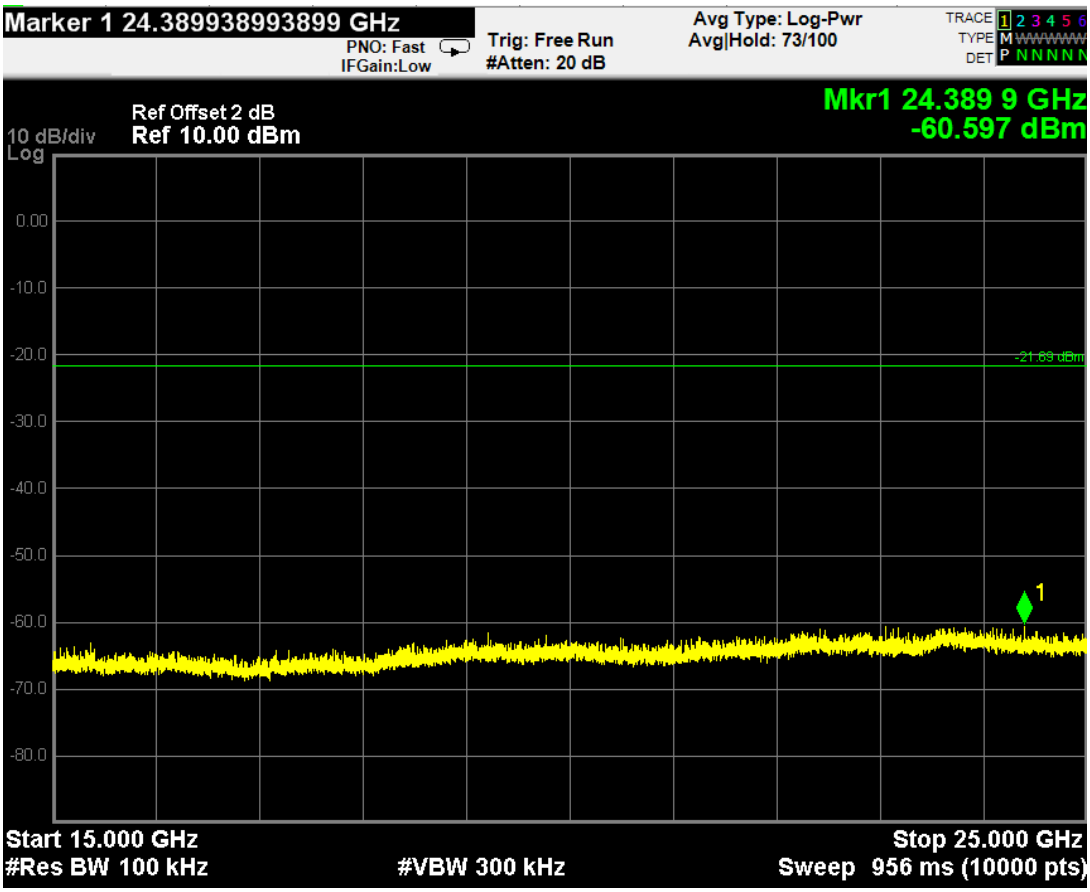

Marker 1 23.964896489649 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 95/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.964 9 GHz
-60.051 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.70 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

DH1 Ch 39

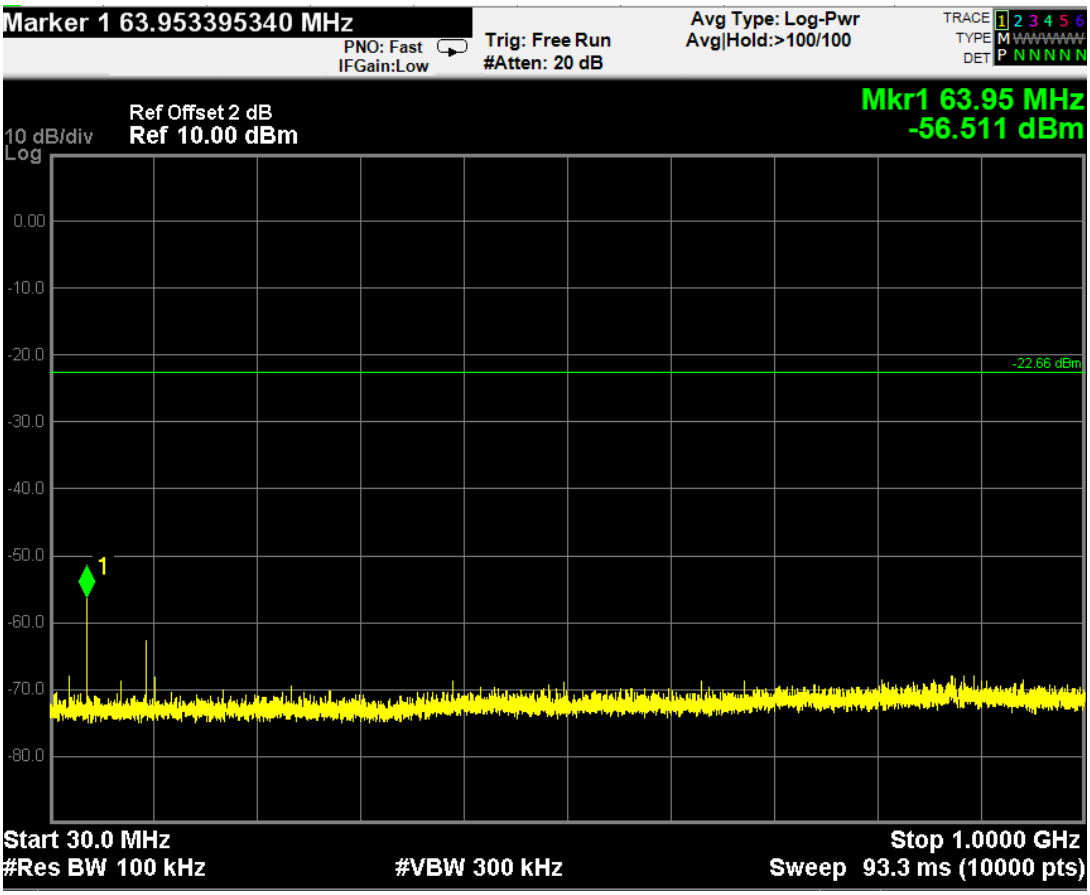

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-59.038 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.69 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

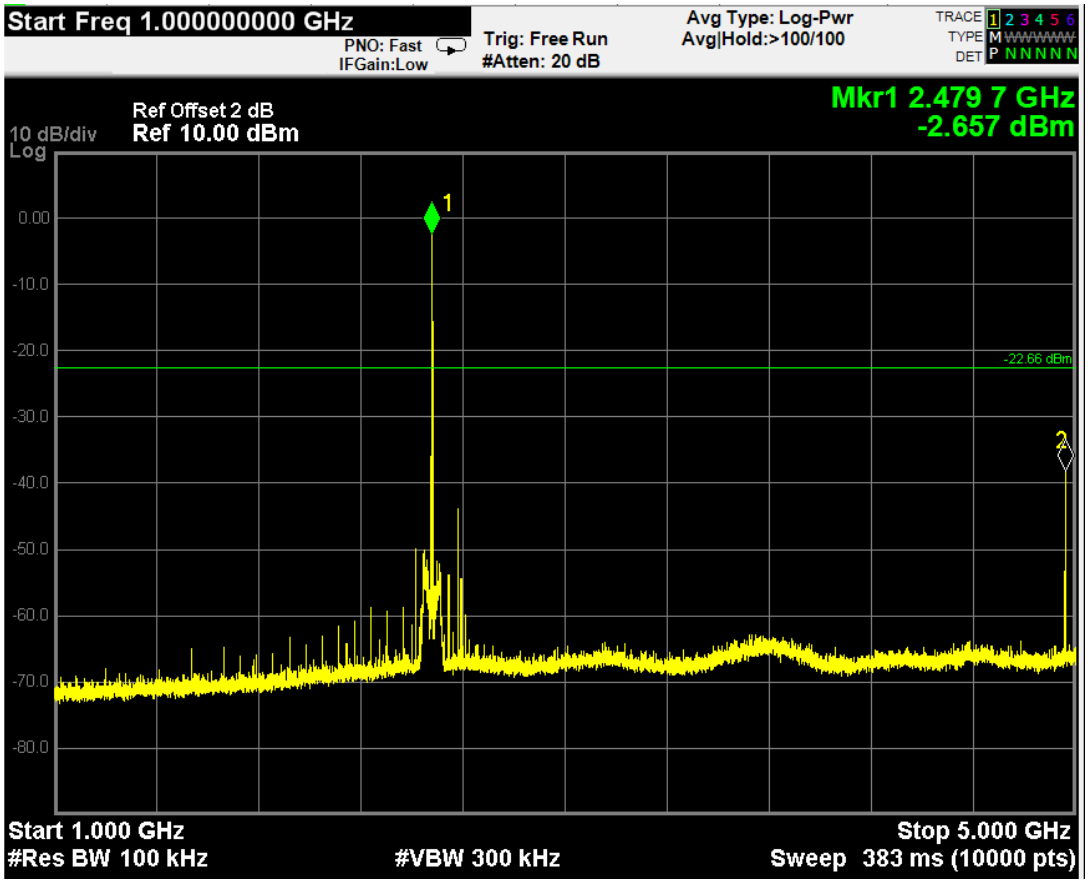

Display Line -21.69 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.441 3 GHz
-1.696 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.69 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

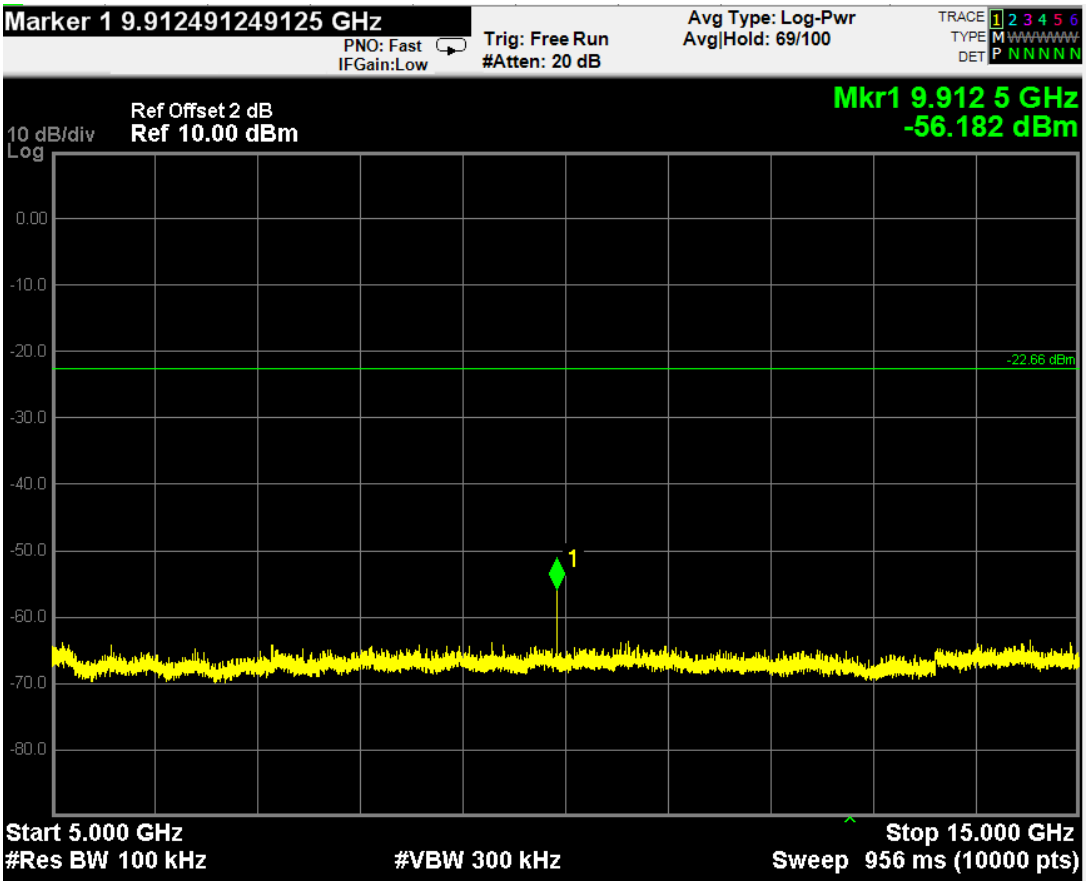

Marker 1 9.756475647565 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 75/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.756 5 GHz
-55.601 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.69 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

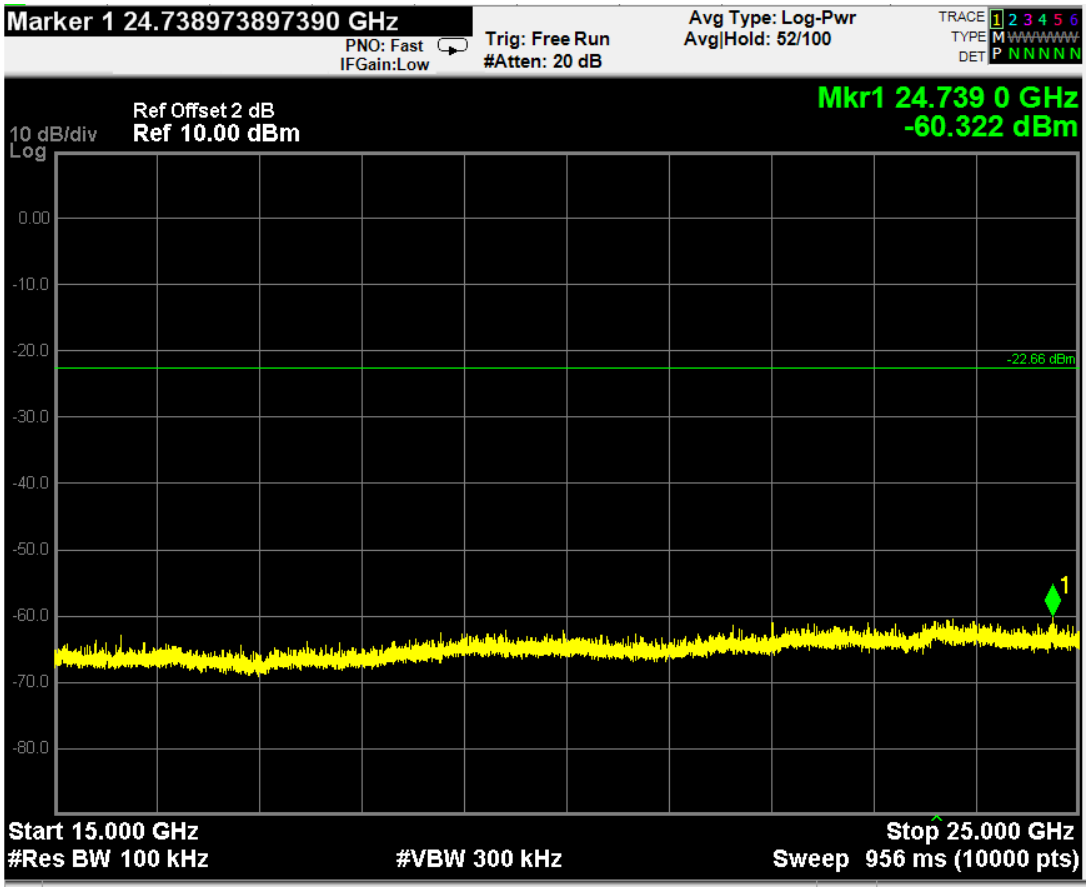

Marker 1 24.389938993899 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 73/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 24.389 9 GHz
-60.597 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.69 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

DH1Ch 78

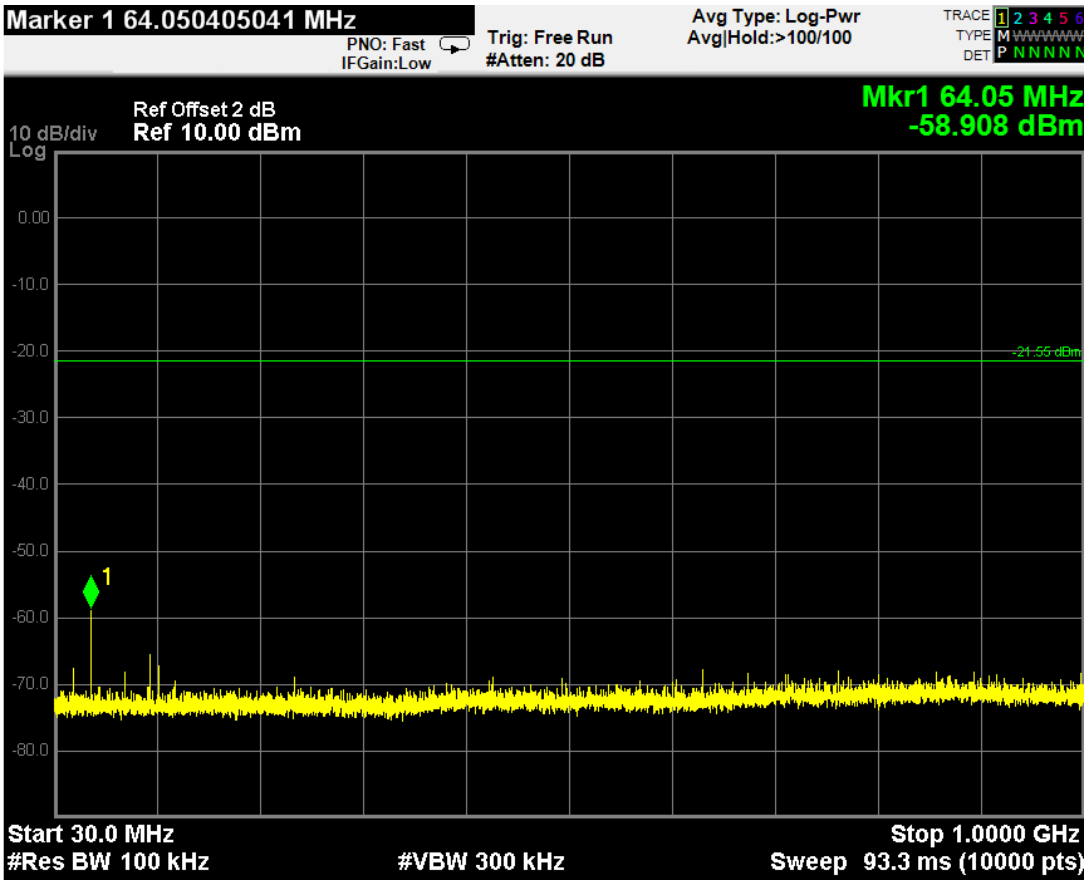

Marker 1 63.953395340 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 63.95 MHz
-56.511 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.66 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

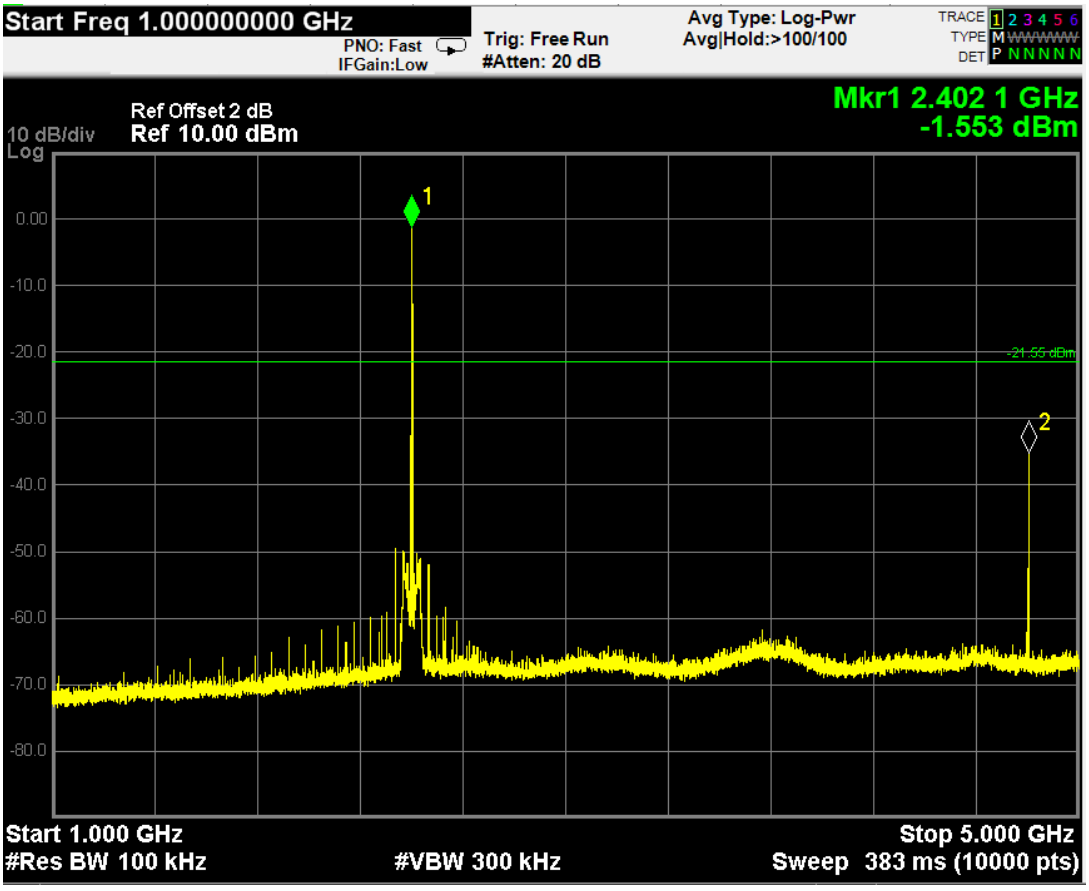

Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.479 7 GHz
-2.657 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.66 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

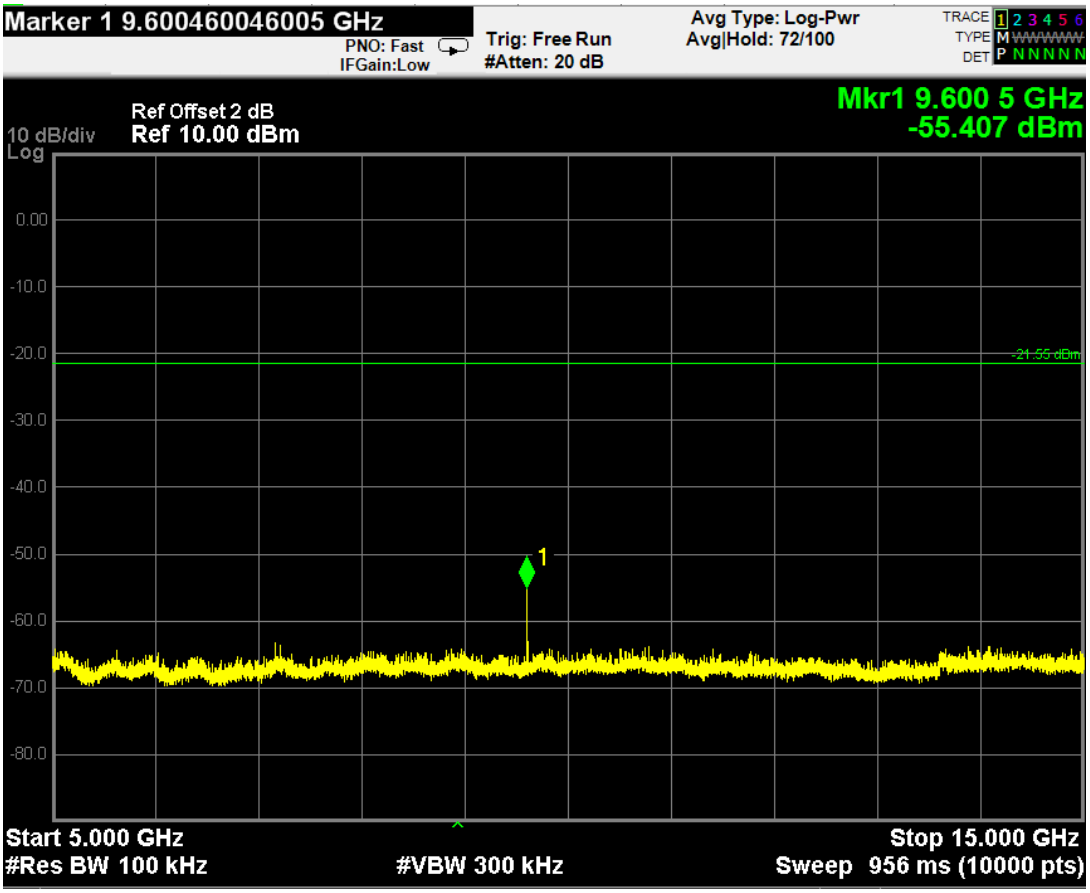

Marker 1 9.912491249125 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 69/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.912 5 GHz
-56.182 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.66 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

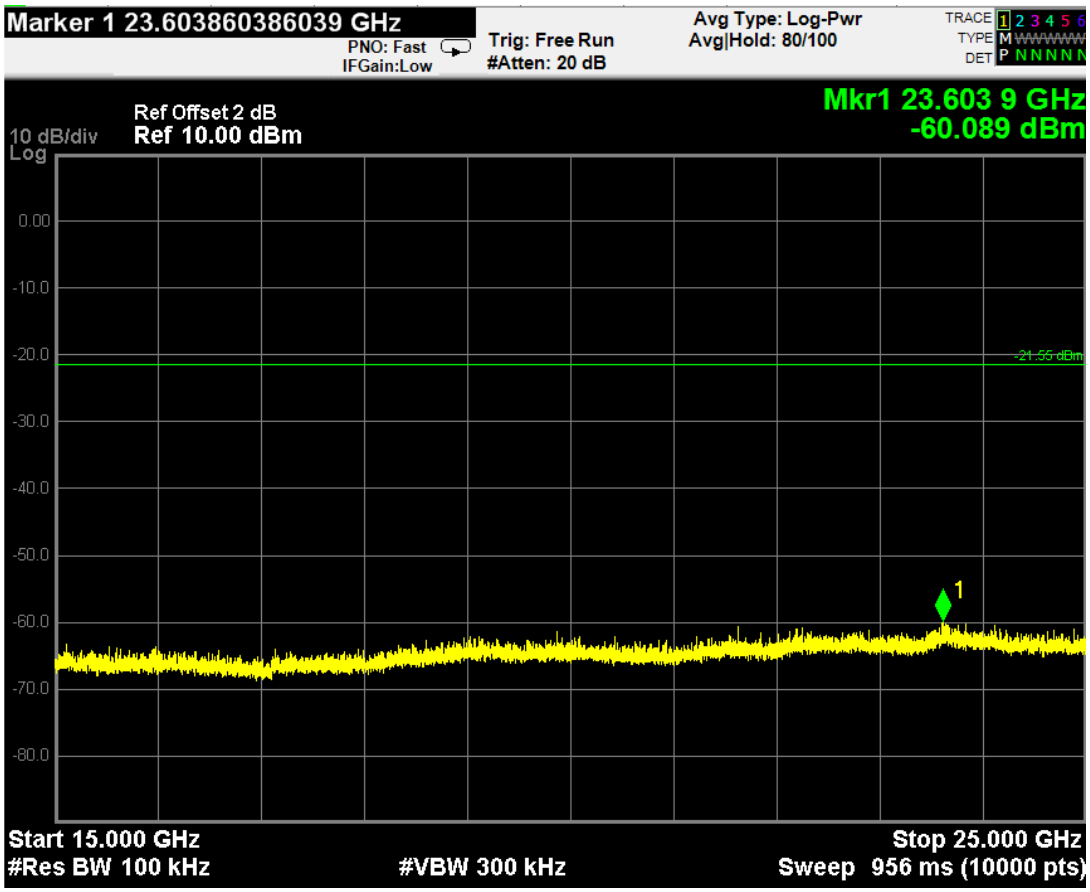

Marker 1 24.738973897390 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 52/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 24.739 0 GHz
-60.322 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.66 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH1 Ch 00

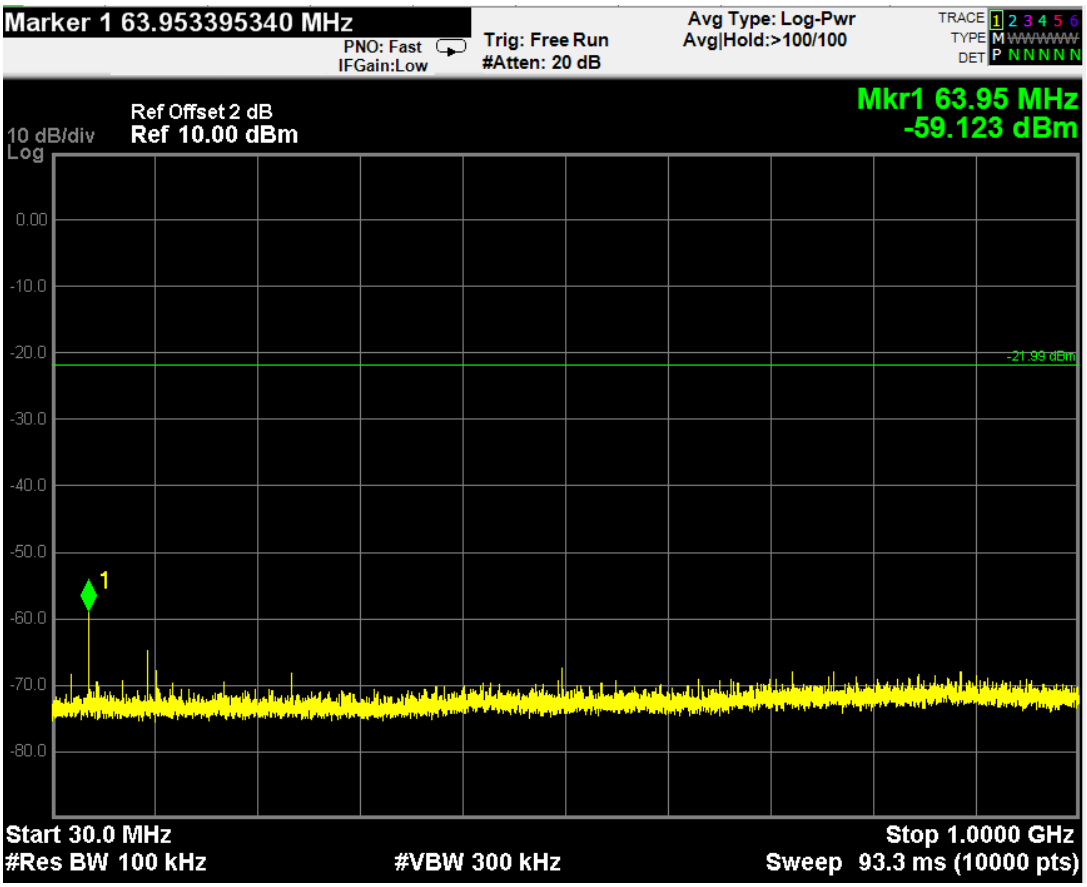

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-58.908 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.55 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

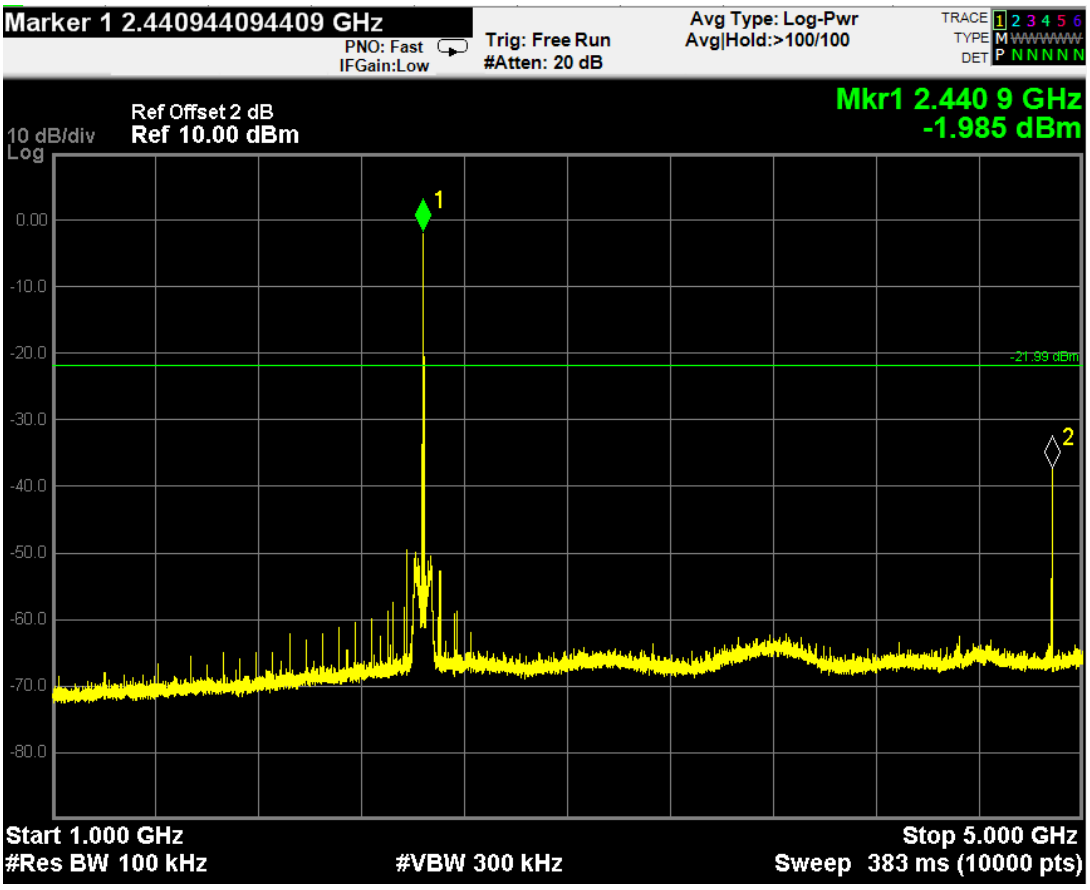

Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.402 1 GHz
-1.553 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.55 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

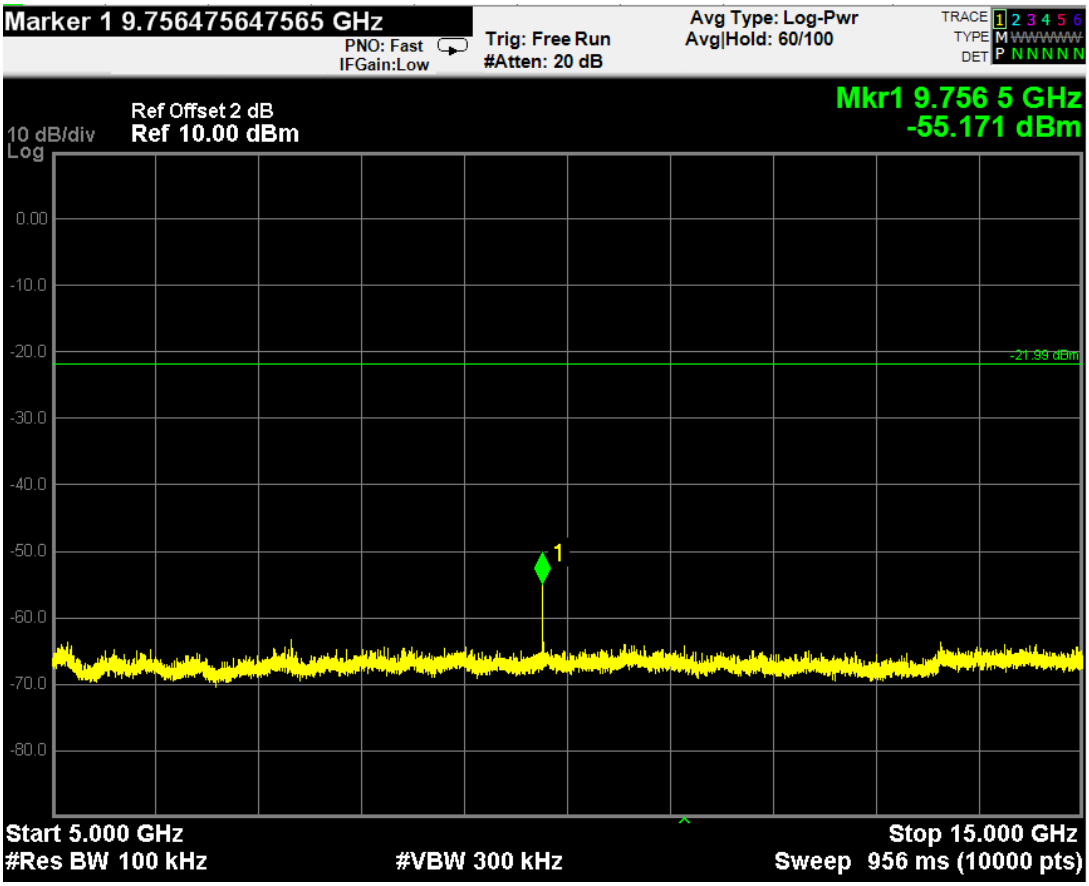

Marker 1 9.600460046005 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 72/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.600 5 GHz
-55.407 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.55 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

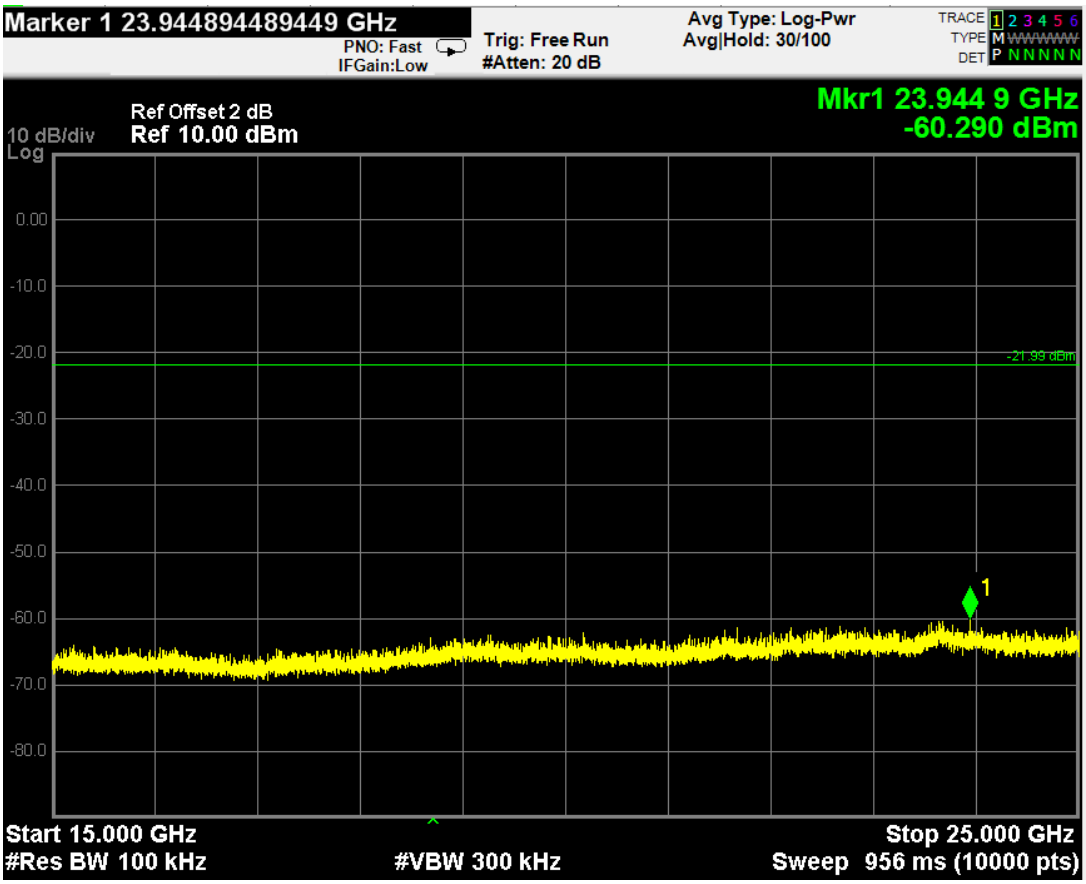

Marker 1 23.603860386039 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 80/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.603 9 GHz
-60.089 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.55 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH1 Ch 39

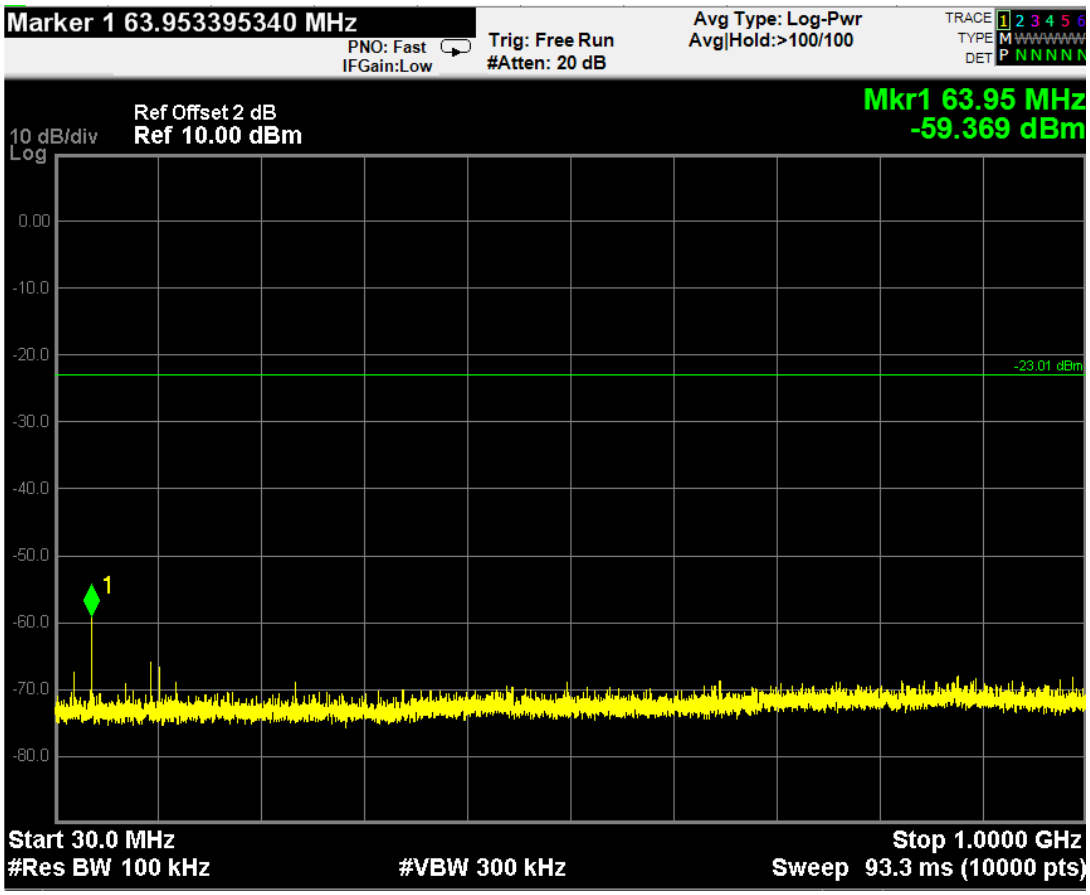

Marker 1 63.953395340 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 63.95 MHz
-59.123 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.99 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

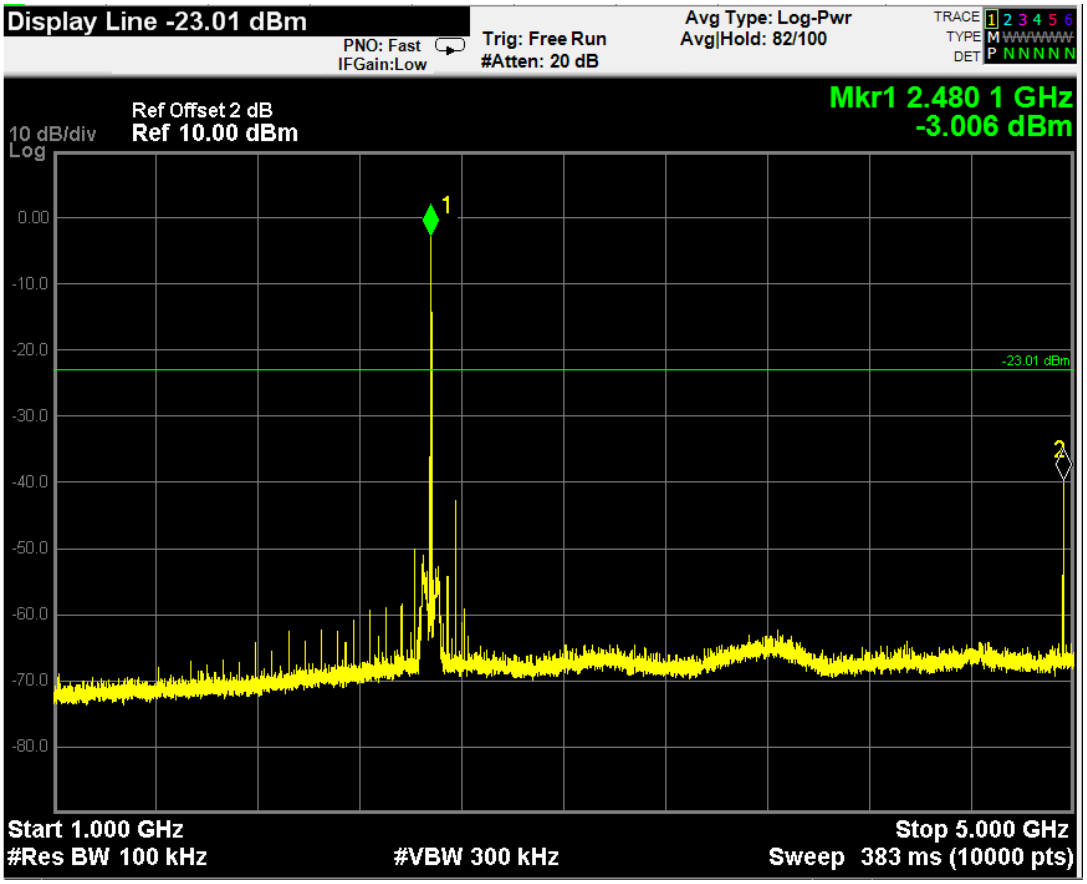

Marker 1 2.440944094409 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.440 9 GHz
-1.985 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.99 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

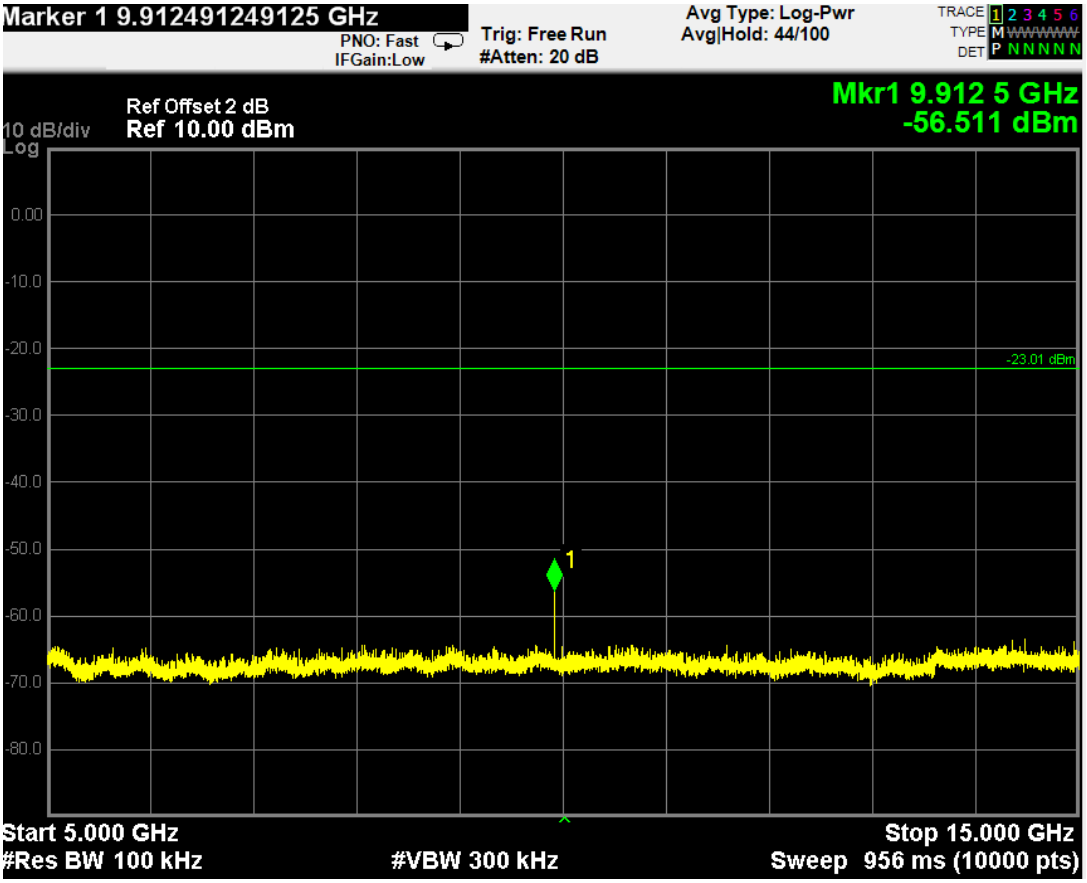

Marker 1 9.756475647565 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 60/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.756 5 GHz
-55.171 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.99 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

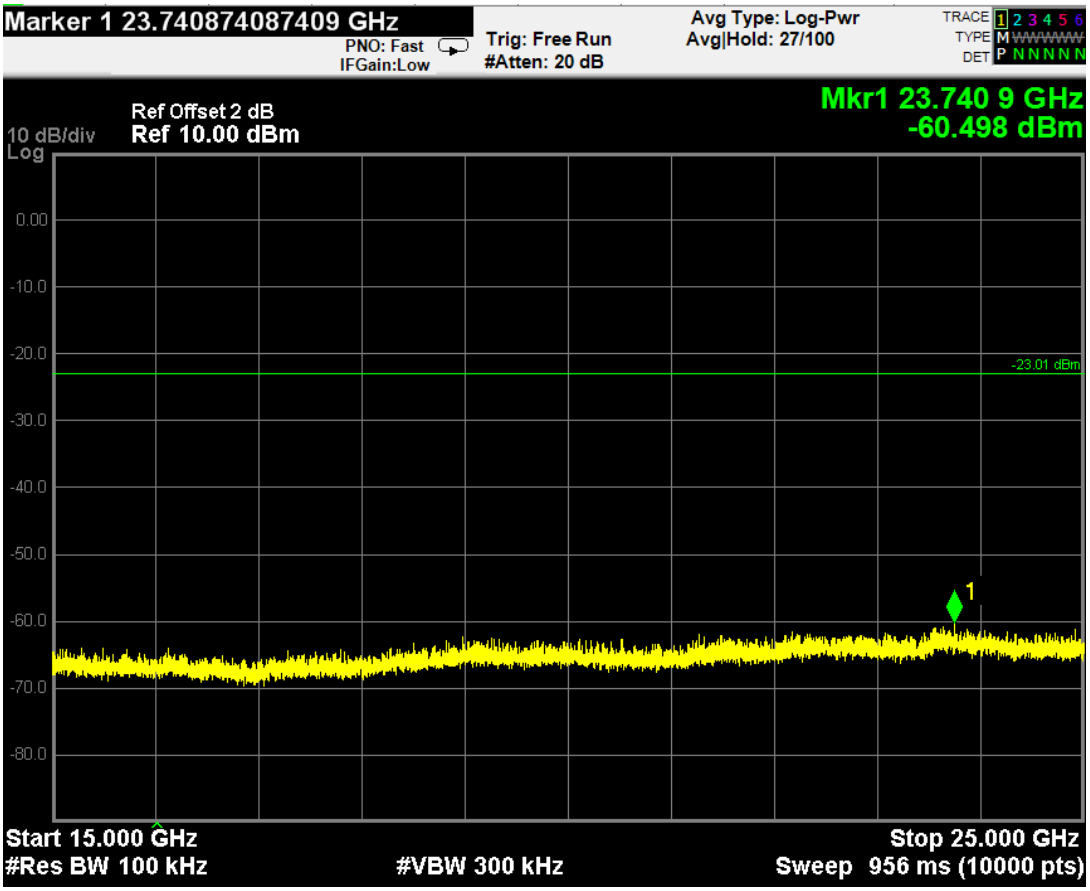

Marker 1 23.944894489449 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 30/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.944 9 GHz
-60.290 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.99 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH1 Ch 78

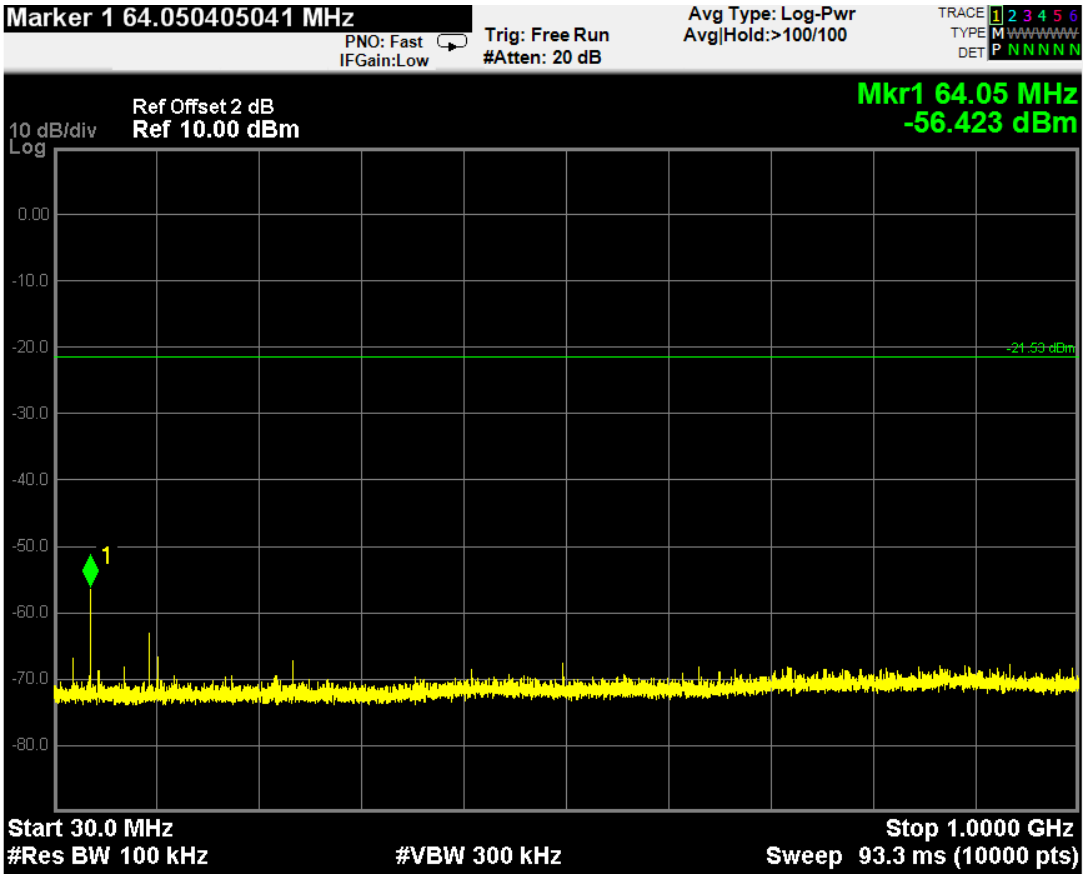

Marker 1 63.953395340 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 63.95 MHz
-59.369 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.01 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

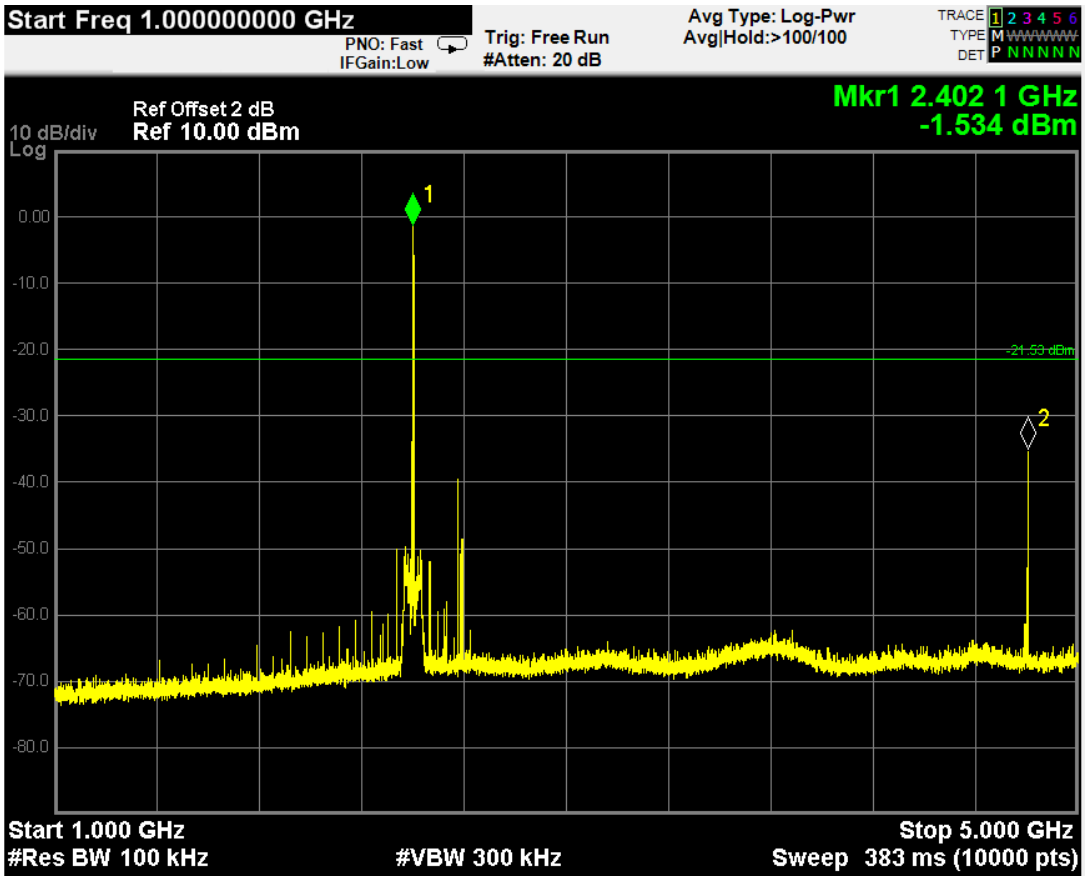

Display Line -23.01 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 82/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.480 1 GHz
-3.006 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.01 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

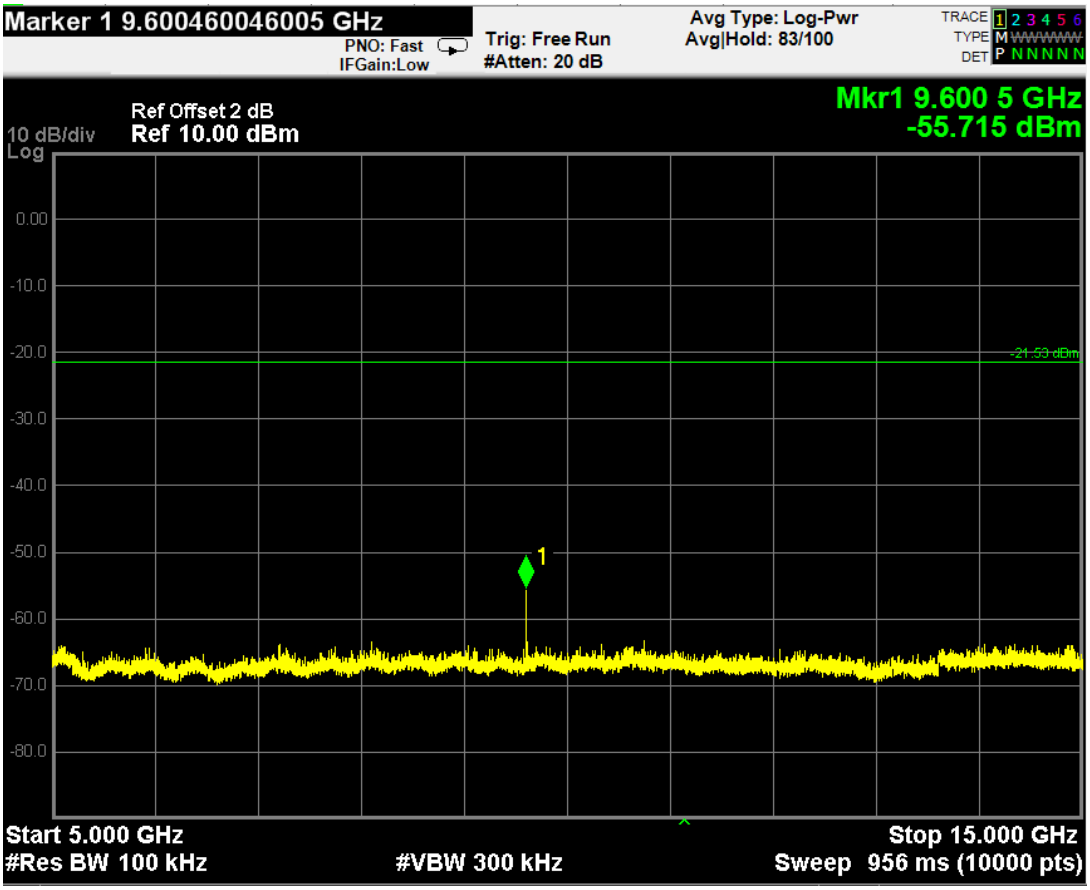

Marker 1 9.912491249125 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 44/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.912 5 GHz
-56.511 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.01 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

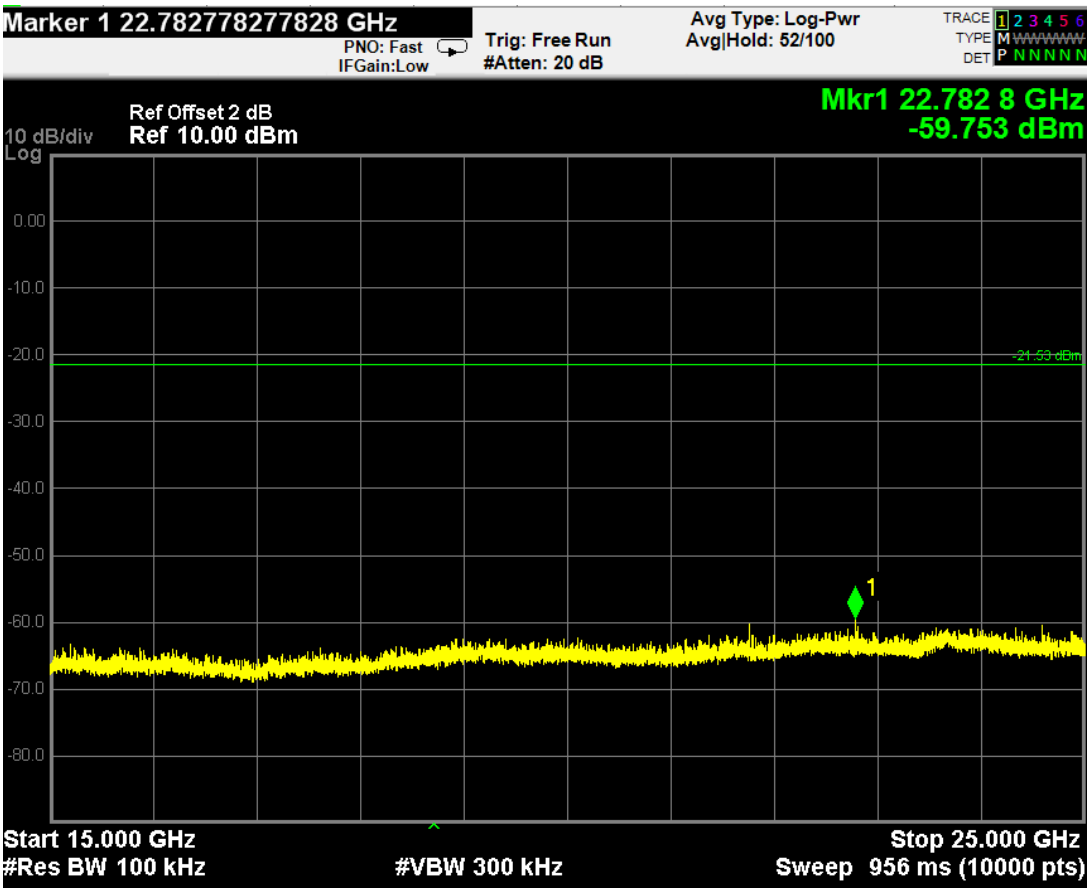

Marker 1 23.740874087409 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 27/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.740 9 GHz
-60.498 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.01 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

DH5 Ch 00

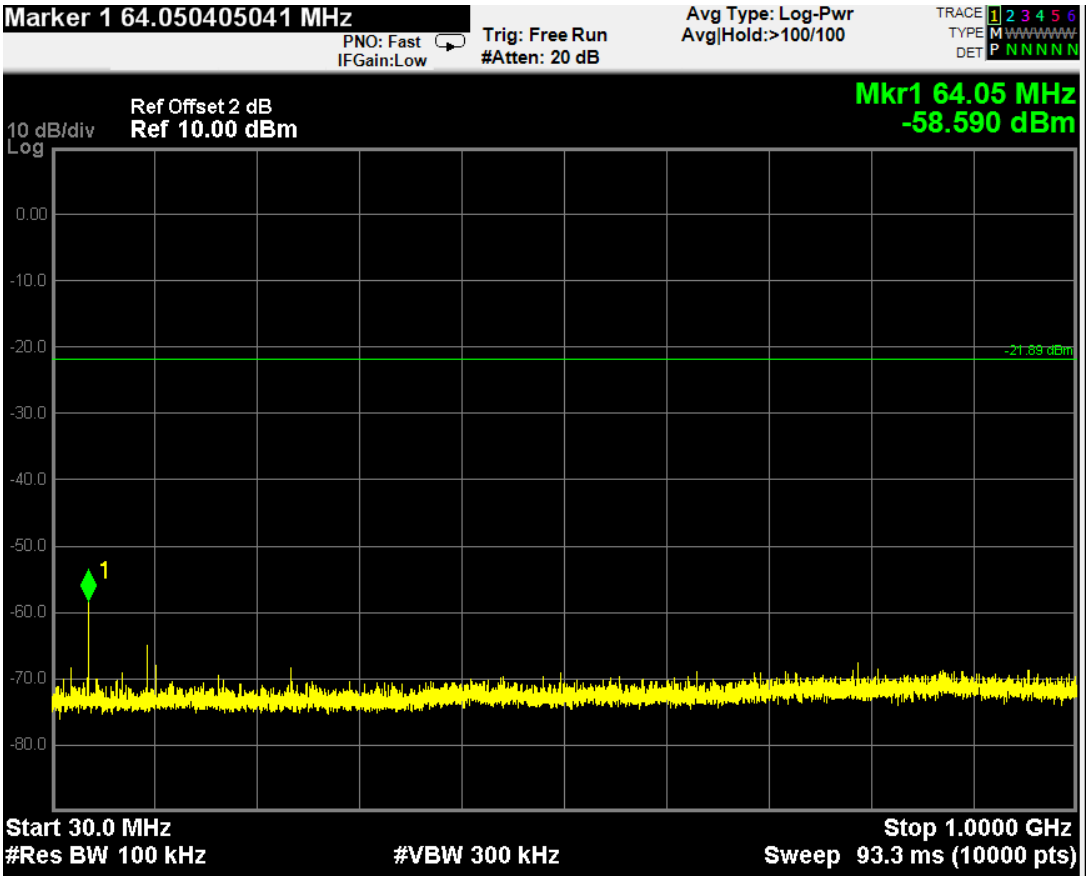

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-56.423 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.53 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

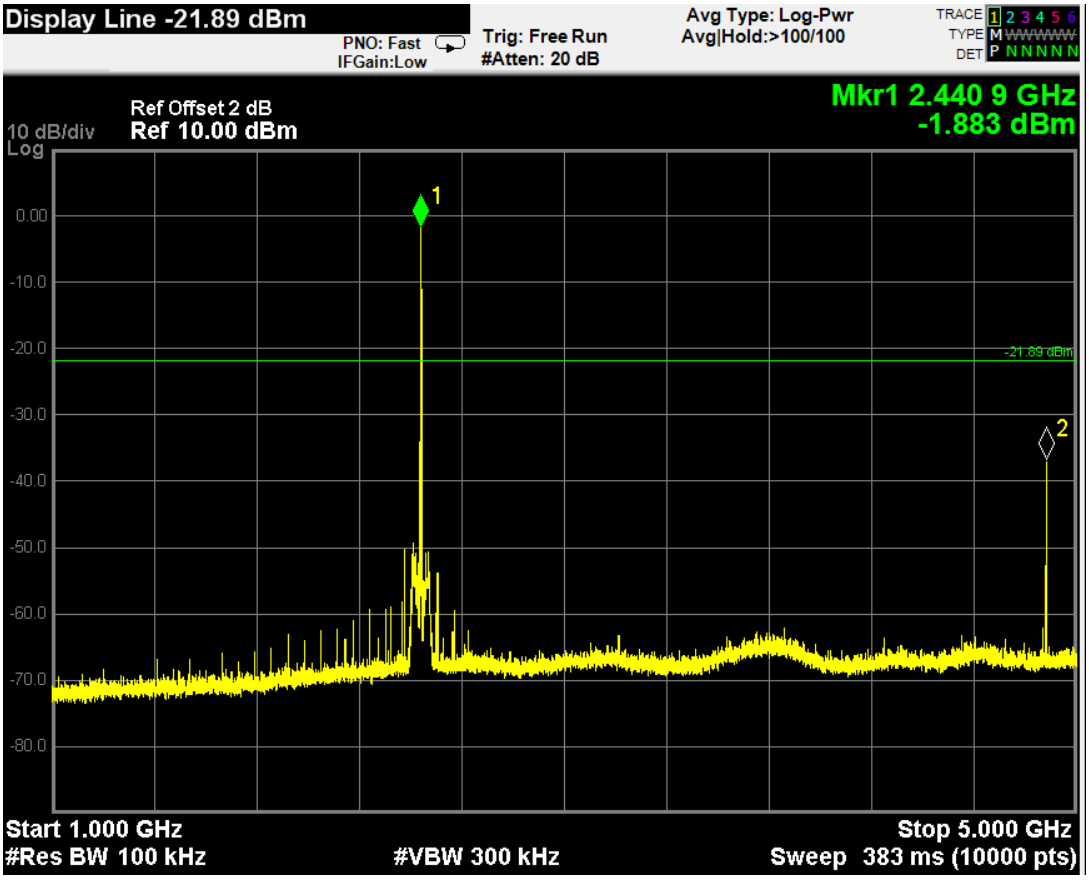

Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.402 1 GHz
-1.534 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.53 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

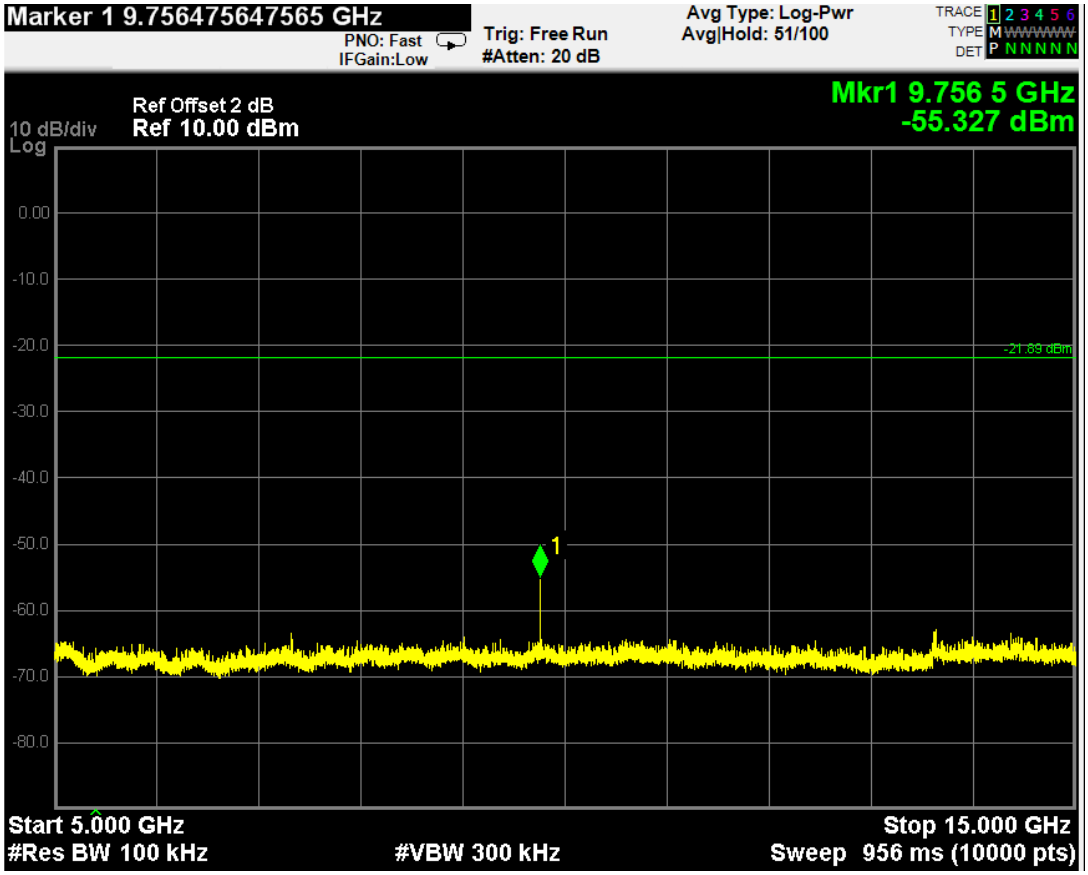

Marker 1 9.600460046005 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 83/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.600 5 GHz
-55.715 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.53 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

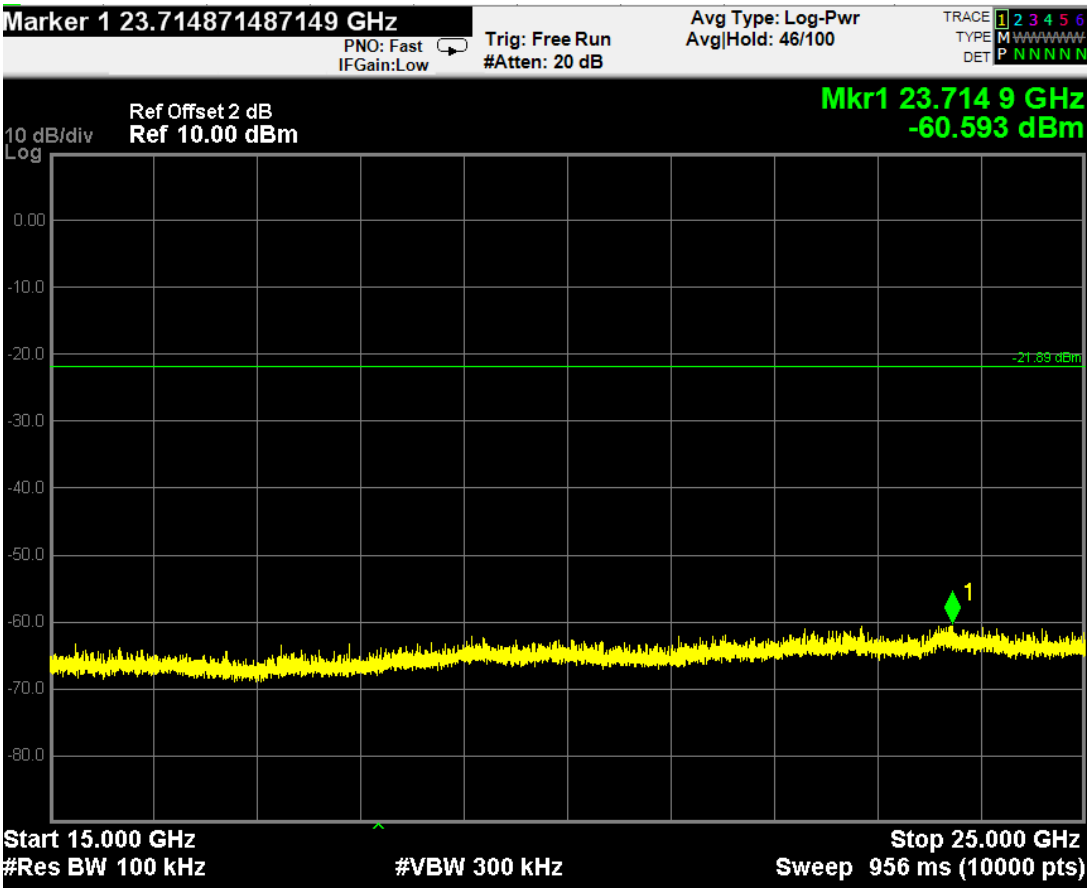

Marker 1 22.782778277828 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 52/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 22.782 8 GHz
-59.753 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.53 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

DH5 Ch 39

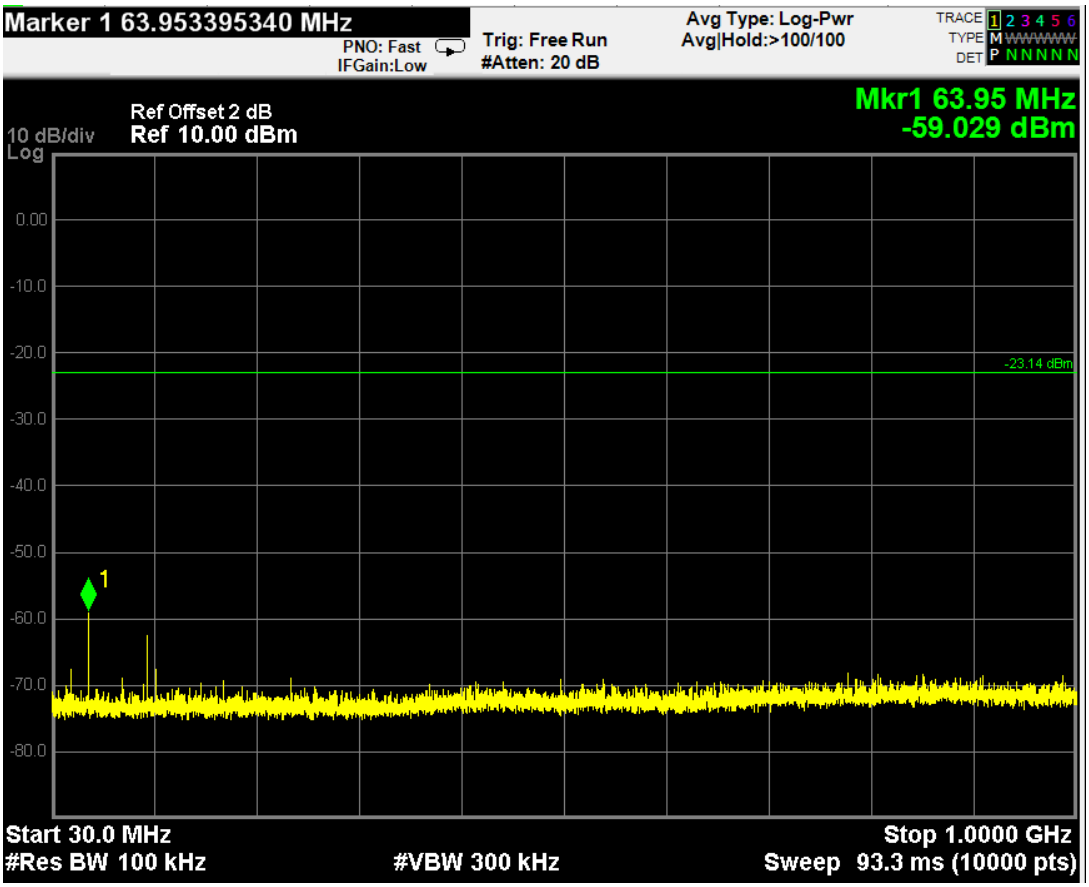

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-58.590 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.89 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

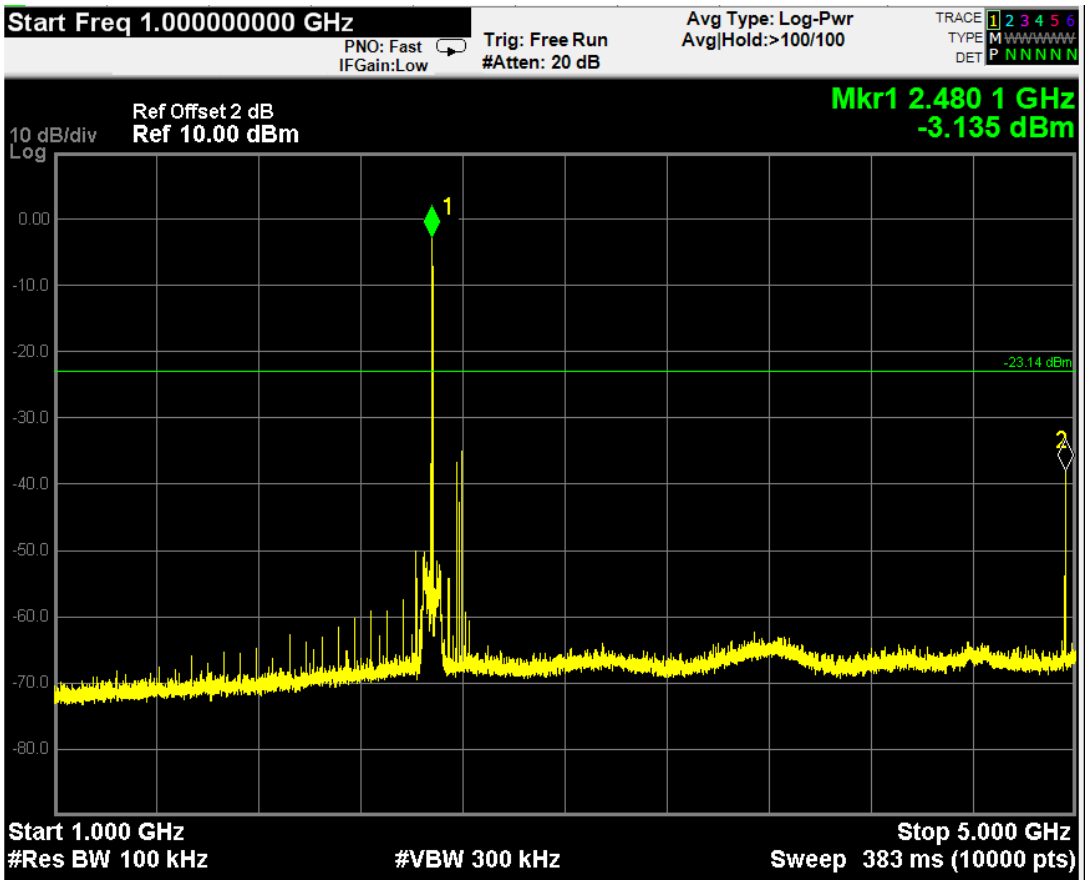

Display Line -21.89 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.440 9 GHz
-1.883 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.89 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

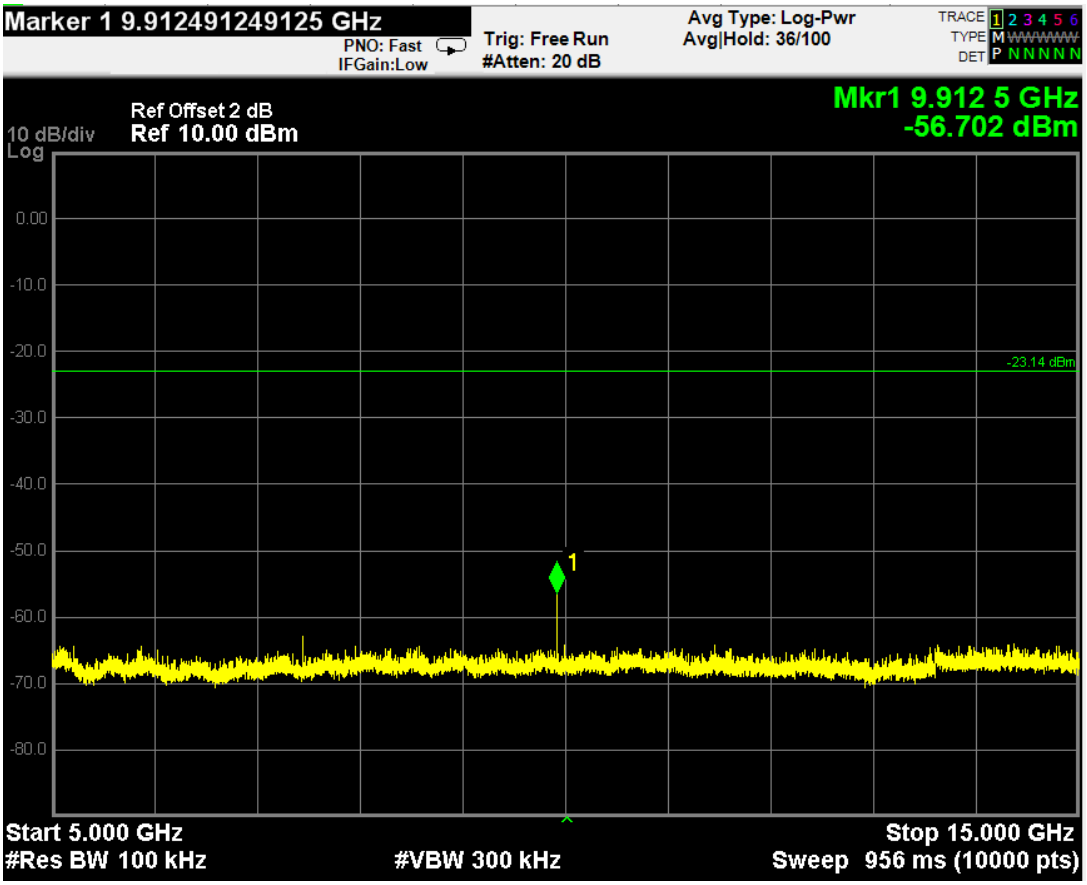

Marker 1 9.756475647565 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 51/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.756 5 GHz
-55.327 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.89 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

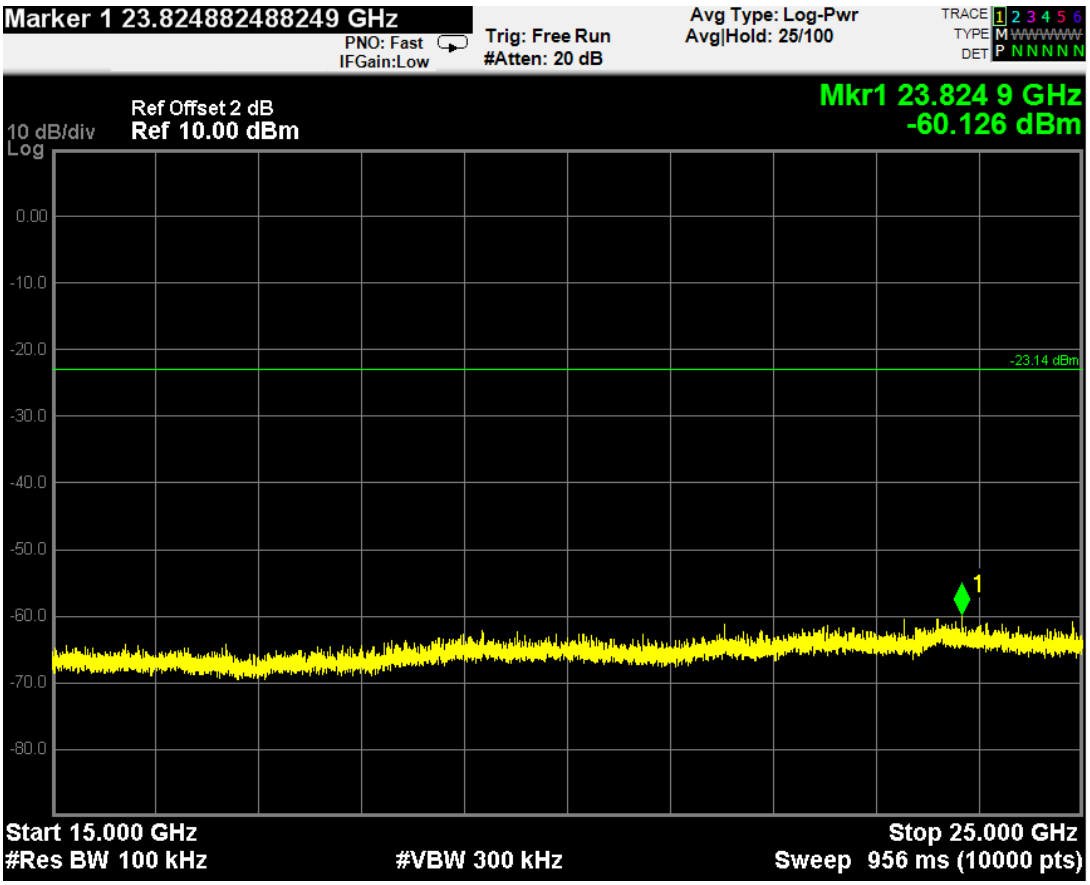

Marker 1 23.714871487149 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 46/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.714 9 GHz
-60.593 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.89 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

DH5 Ch 78

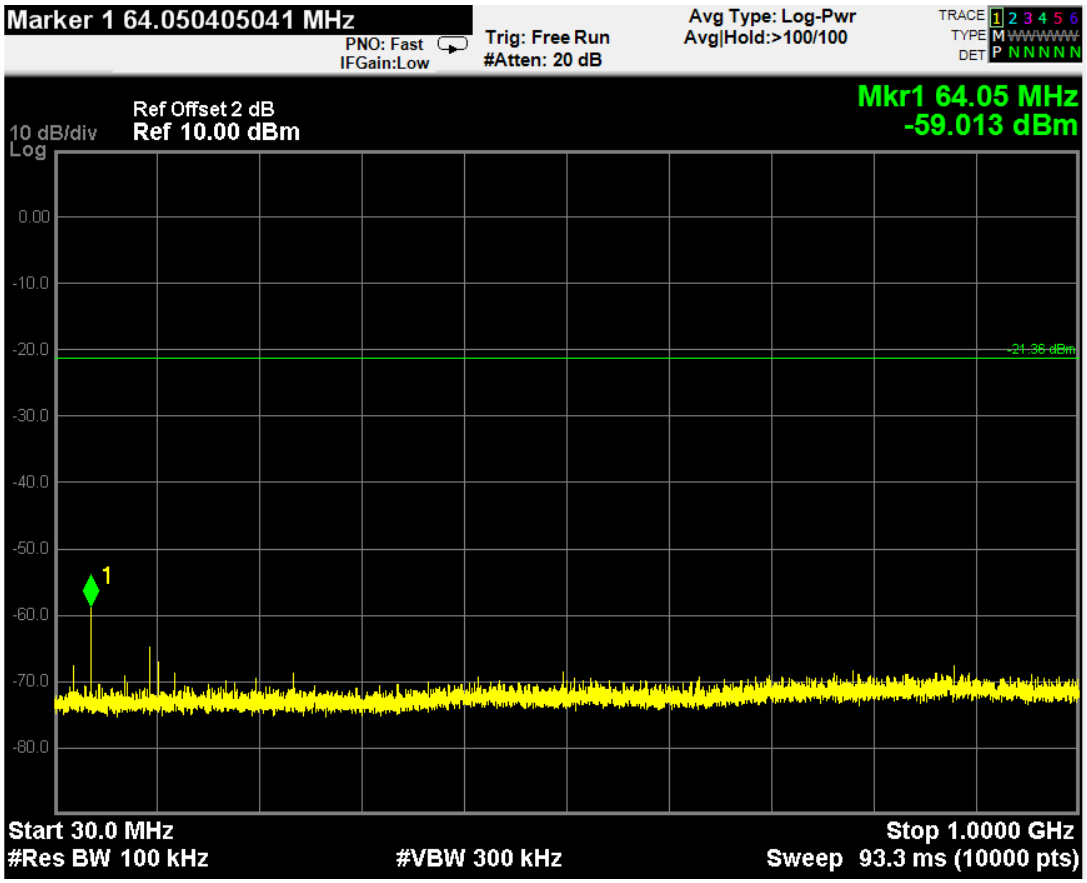

Marker 1 63.953395340 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 63.95 MHz
-59.029 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.14 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

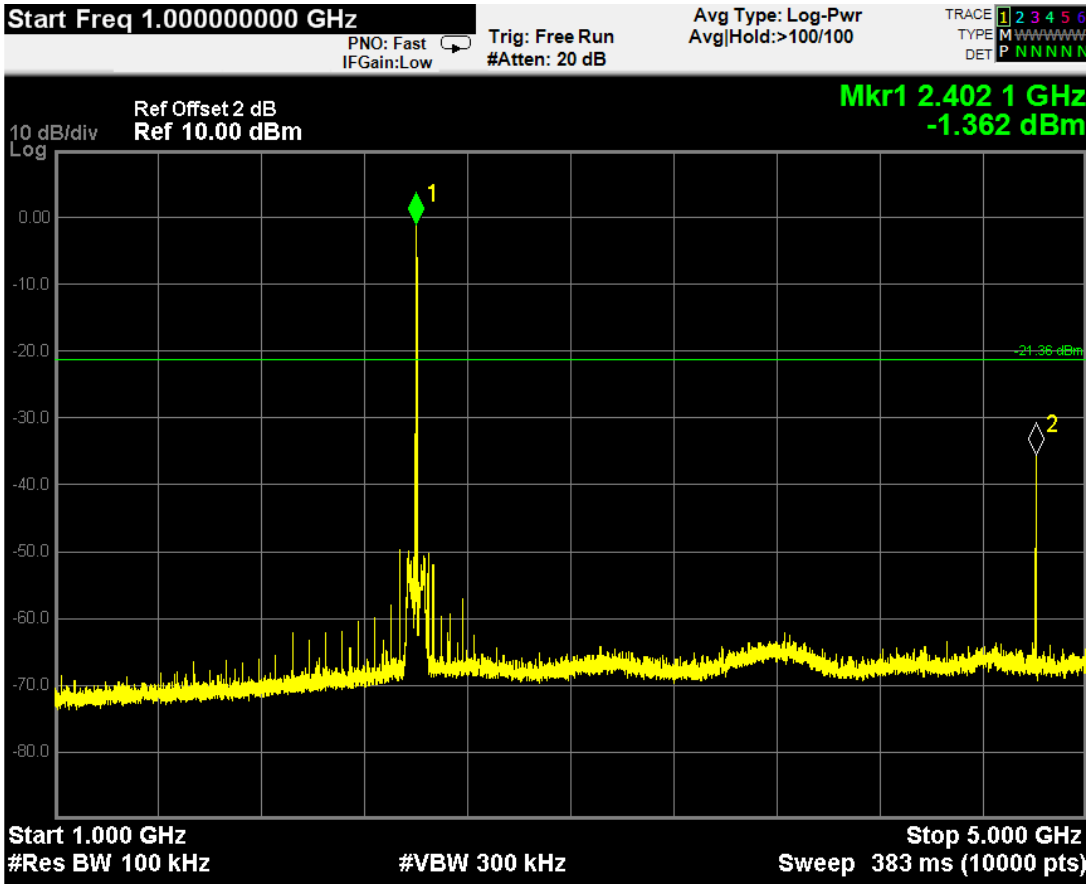

Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.480 1 GHz
-3.135 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.14 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

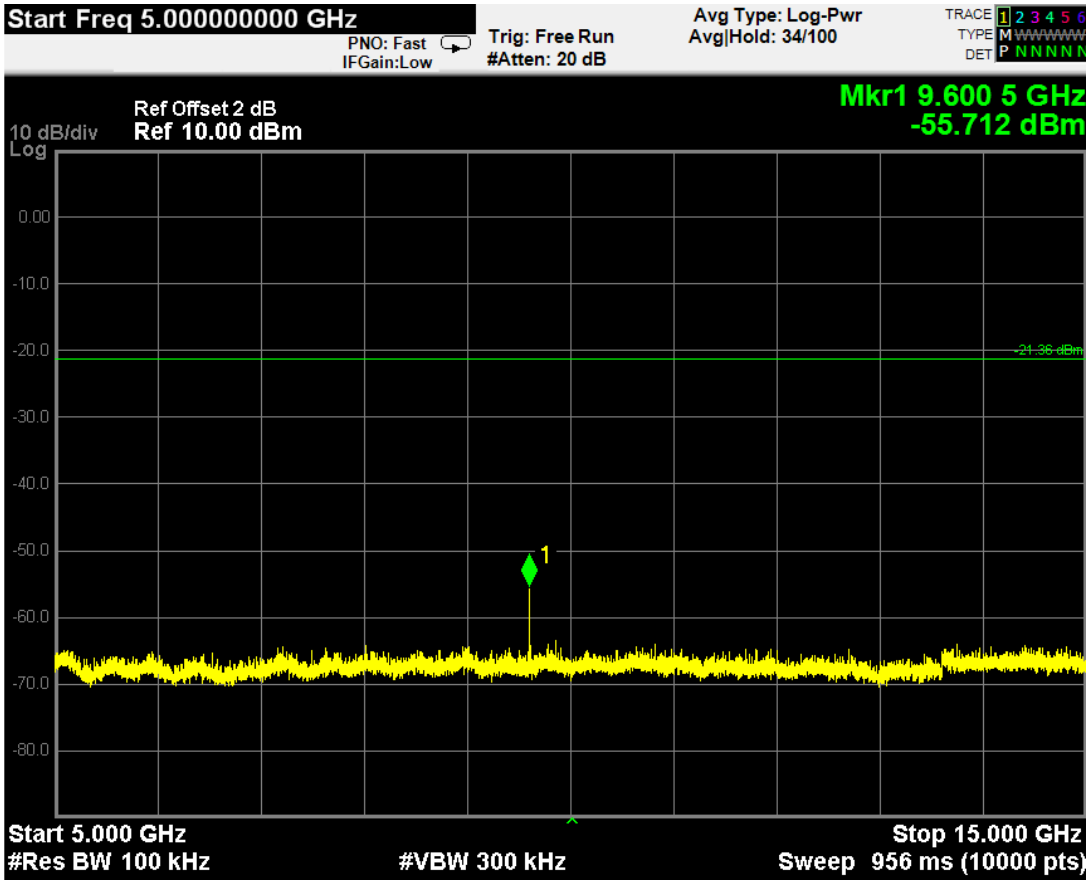

Marker 1 9.912491249125 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 36/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.912 5 GHz
-56.702 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.14 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

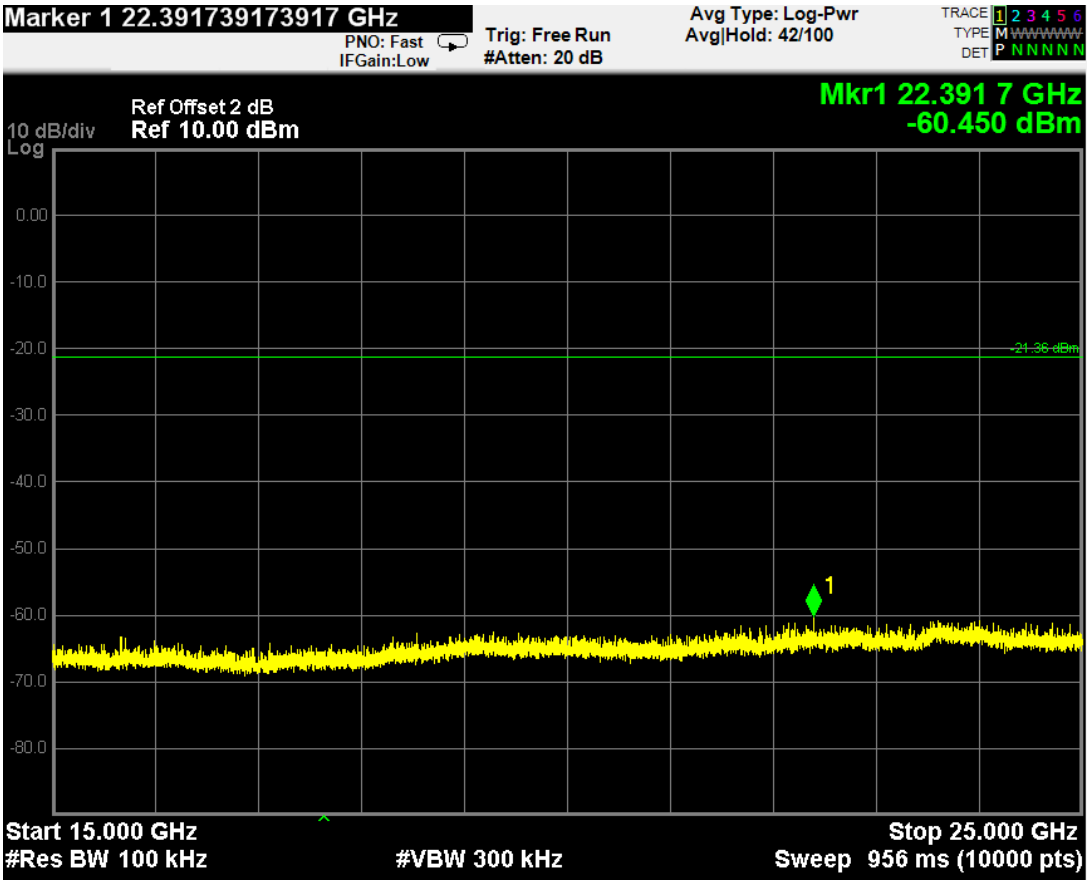

Marker 1 23.824882488249 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 25/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.824 9 GHz
-60.126 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-23.14 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH5 Ch 00

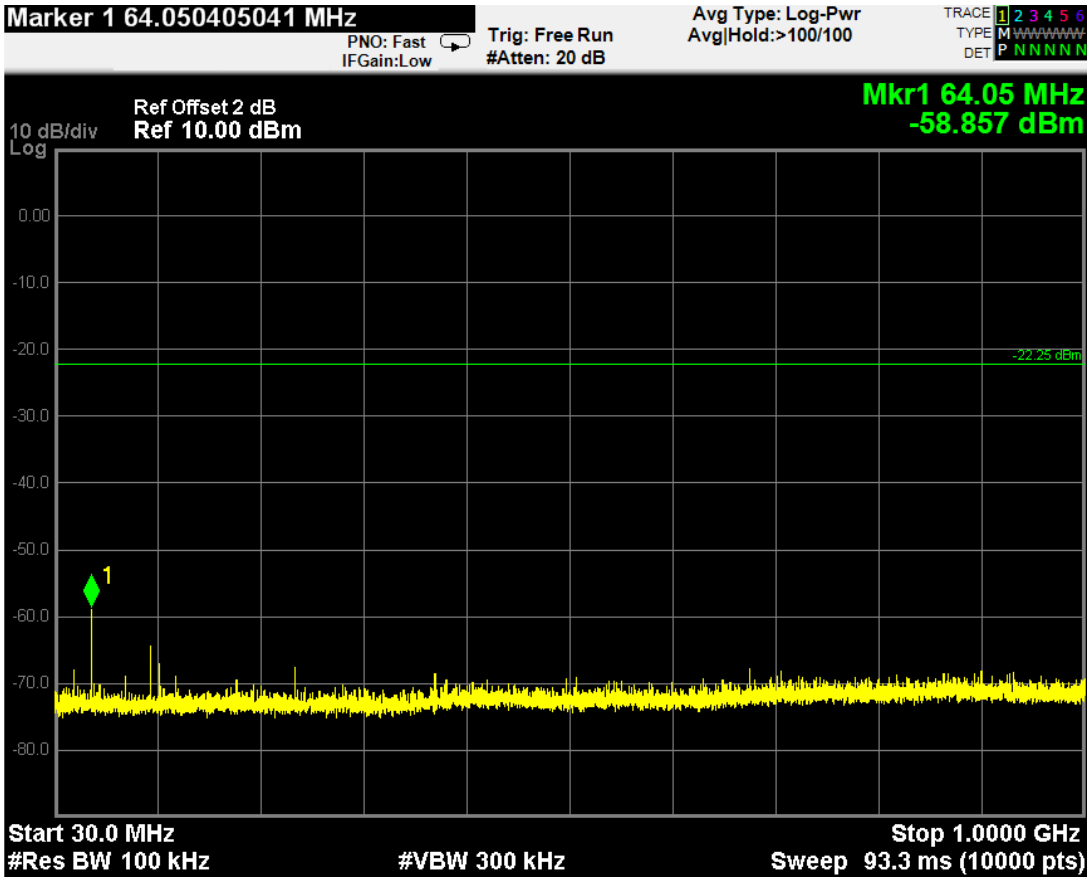

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-59.013 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.36 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

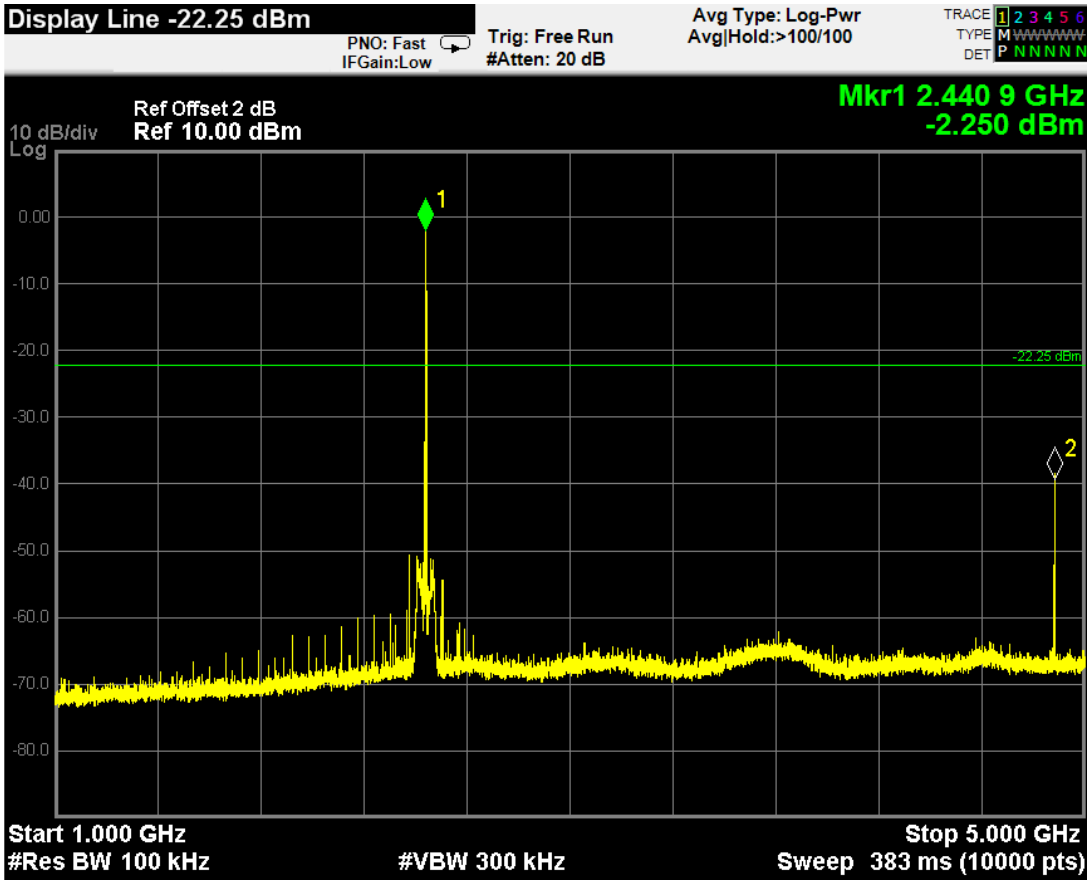

Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.402 1 GHz
-1.362 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.36 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

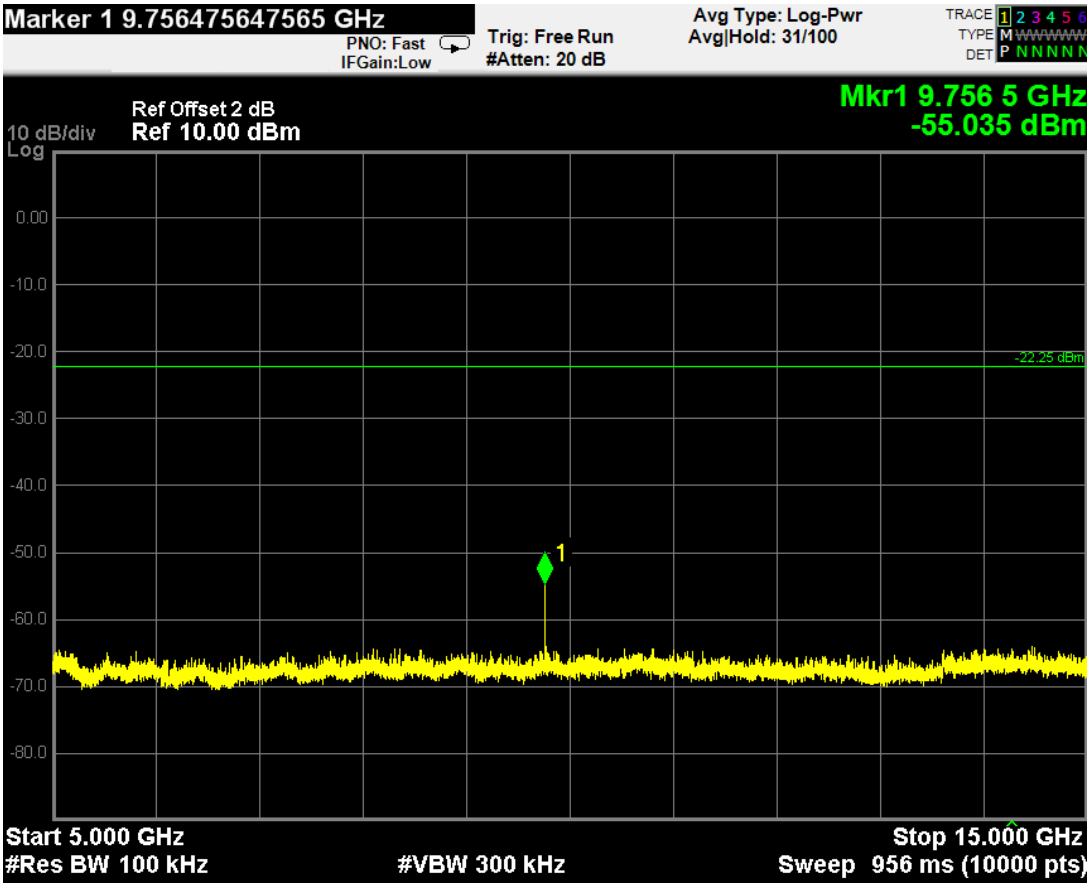

Start Freq 5.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 34/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.600 5 GHz
-55.712 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.36 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

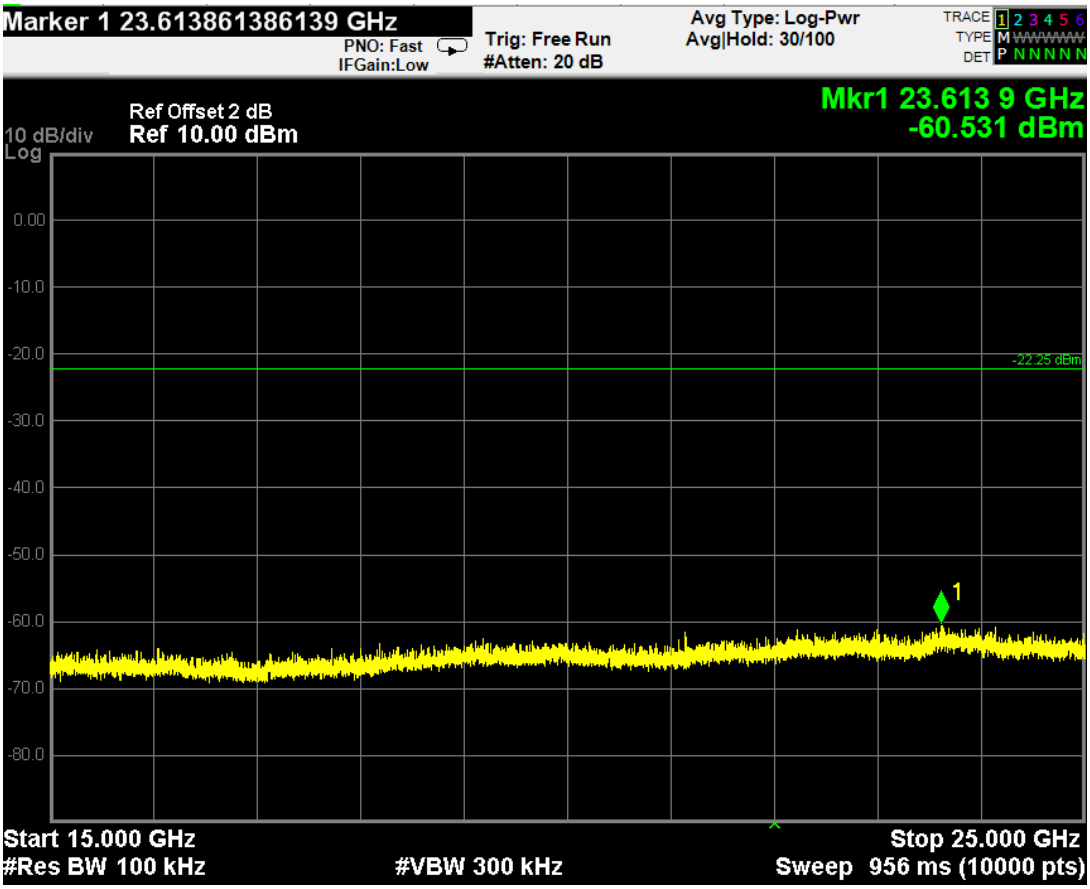

Marker 1 22.391739173917 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 42/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 22.391 7 GHz
-60.450 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-21.36 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH5 Ch 39

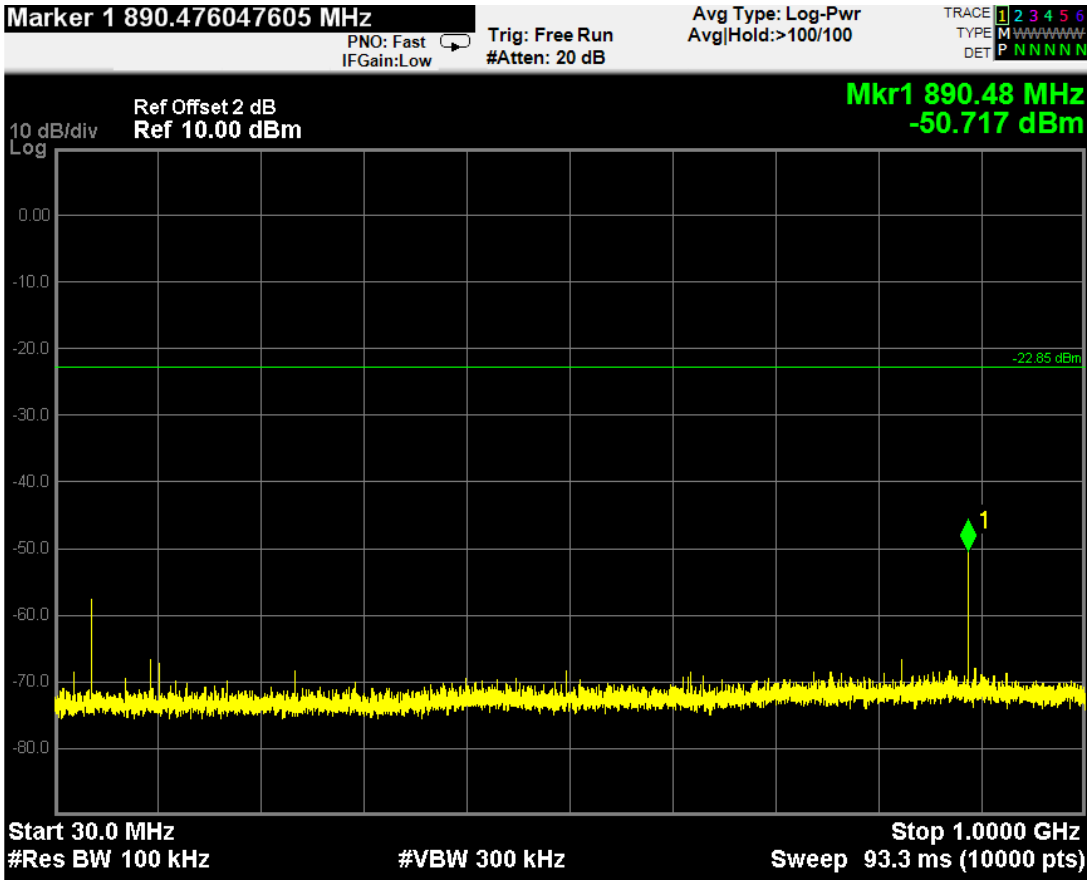

Marker 1 64.050405041 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 64.05 MHz
-58.857 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.25 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)

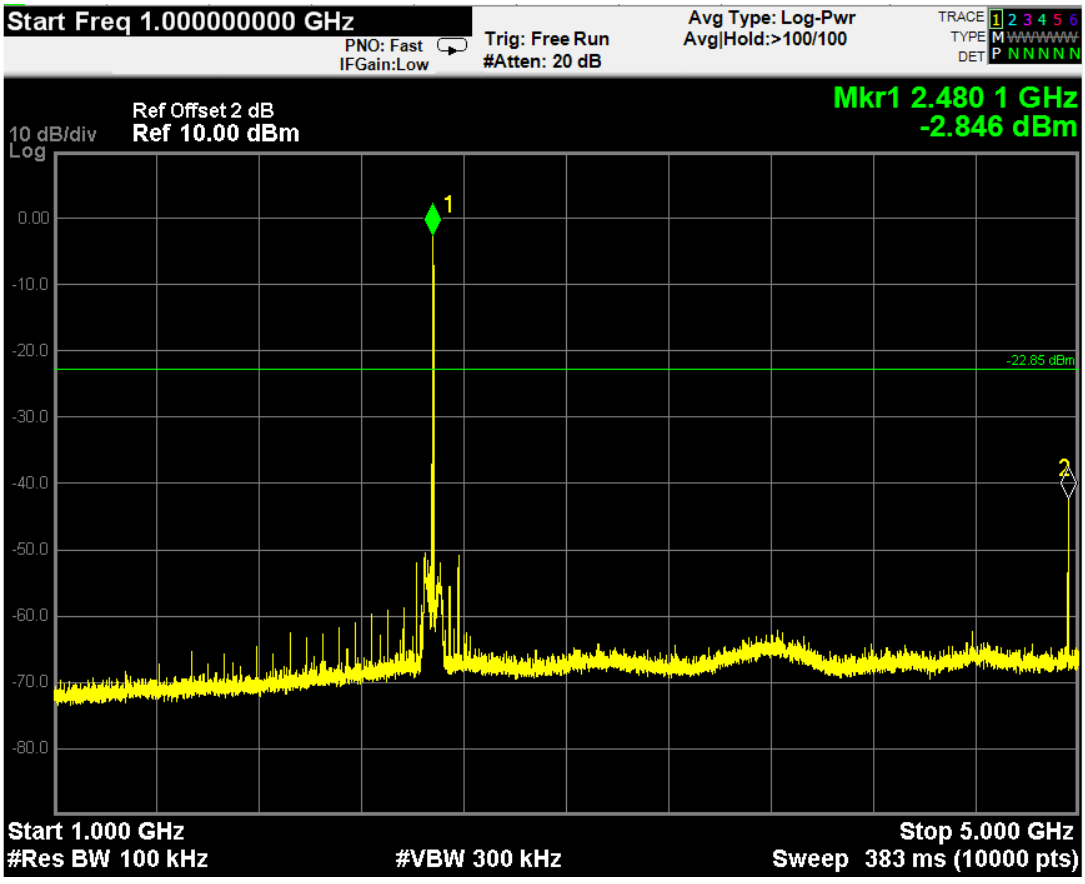

Display Line -22.25 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.440 9 GHz
-2.250 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.25 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)

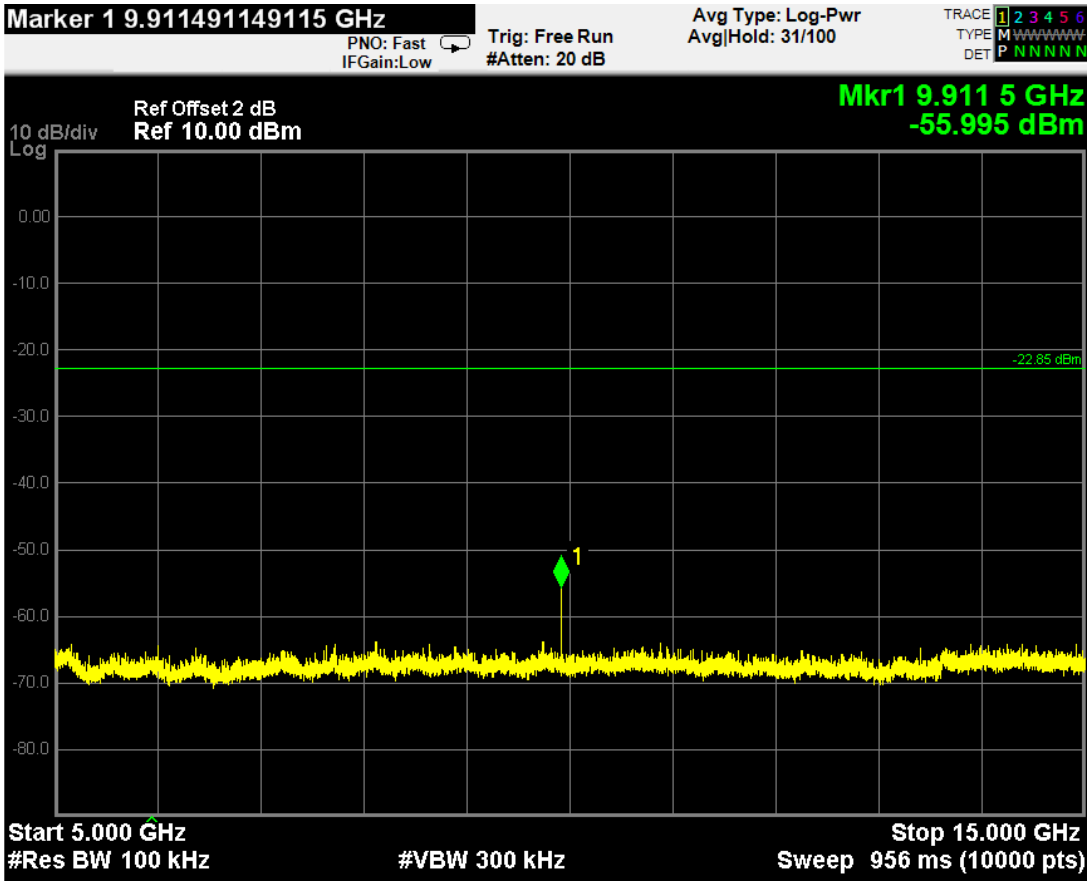

Marker 1 9.756475647565 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 31/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.756 5 GHz
-55.035 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.25 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)

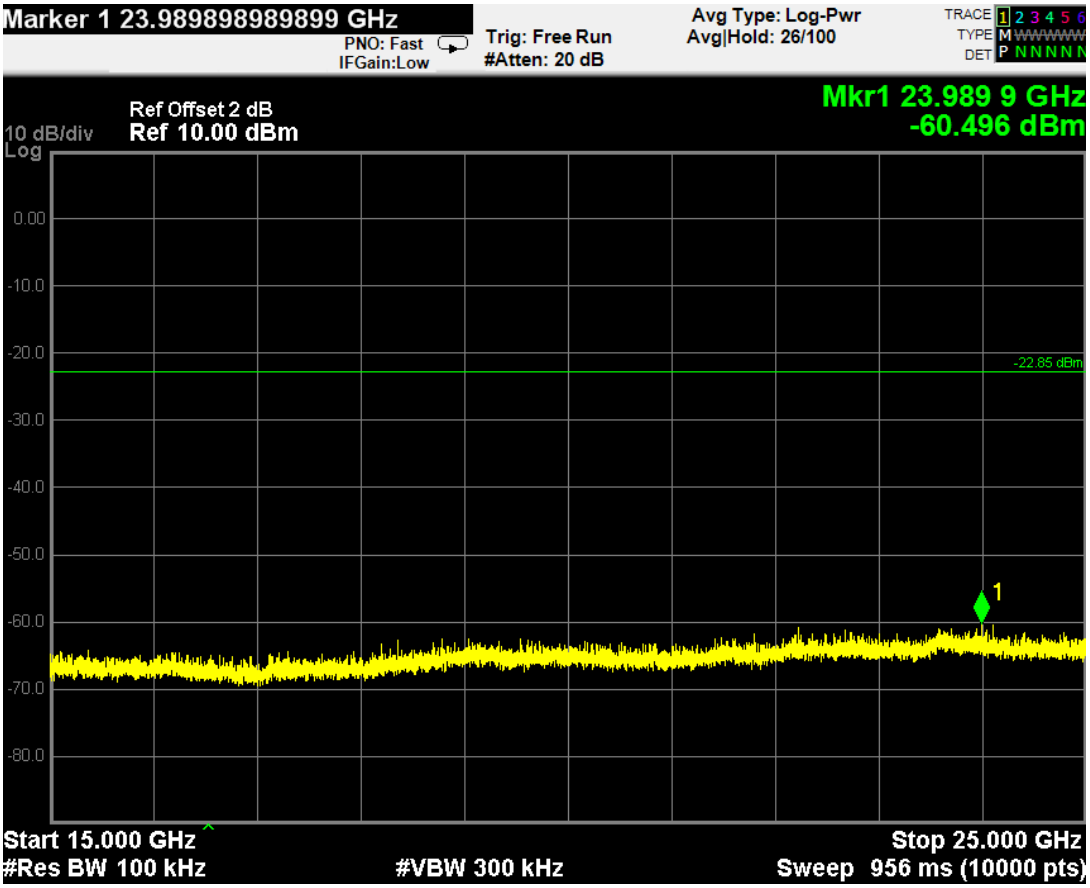

Marker 1 23.613861386139 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 30/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.613 9 GHz
-60.531 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.25 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

2DH5 Ch 78


Marker 1 890.476047605 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 890.48 MHz
-50.717 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.85 dBm
1
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (10000 pts)


Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.480 1 GHz
-2.846 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.85 dBm
1
2
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 383 ms (10000 pts)


Marker 1 9.911491149115 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 31/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 9.911 5 GHz
-55.995 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.85 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 956 ms (10000 pts)


Marker 1 23.989898989899 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 26/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 23.989 9 GHz
-60.496 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-22.85 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (10000 pts)

8 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS MEASUREMENT

8.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

8.2 Block Diagram of Test Setup

The same as section.4.2.

8.3 Specification Limits (§15.247(d))

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.

8.4 Operating Condition of EUT

Enable the EUT to transmit data at different channel frequency individually.

8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with span wide enough to fully capture the emission being measured.
The test procedure is defined in ANSI C63.10:2013.

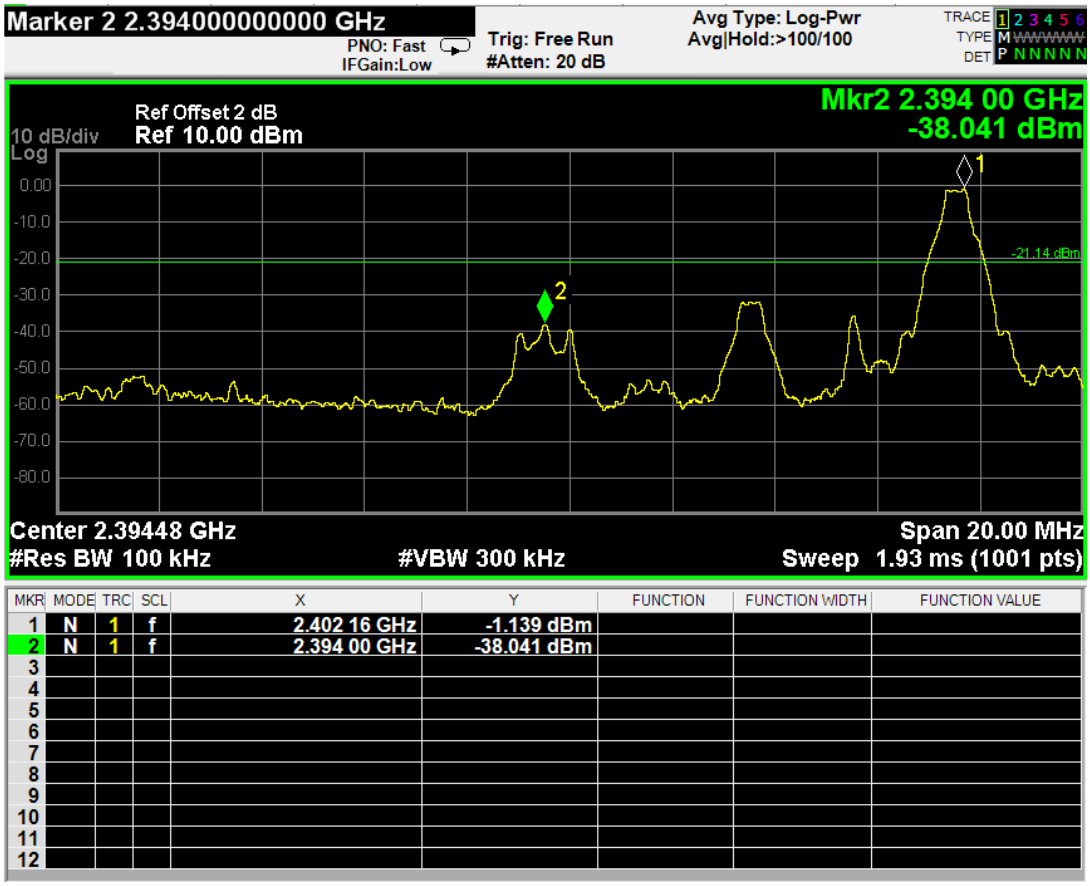
8.6 Test Results

PASSED. All the test results are attached in next pages.

(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

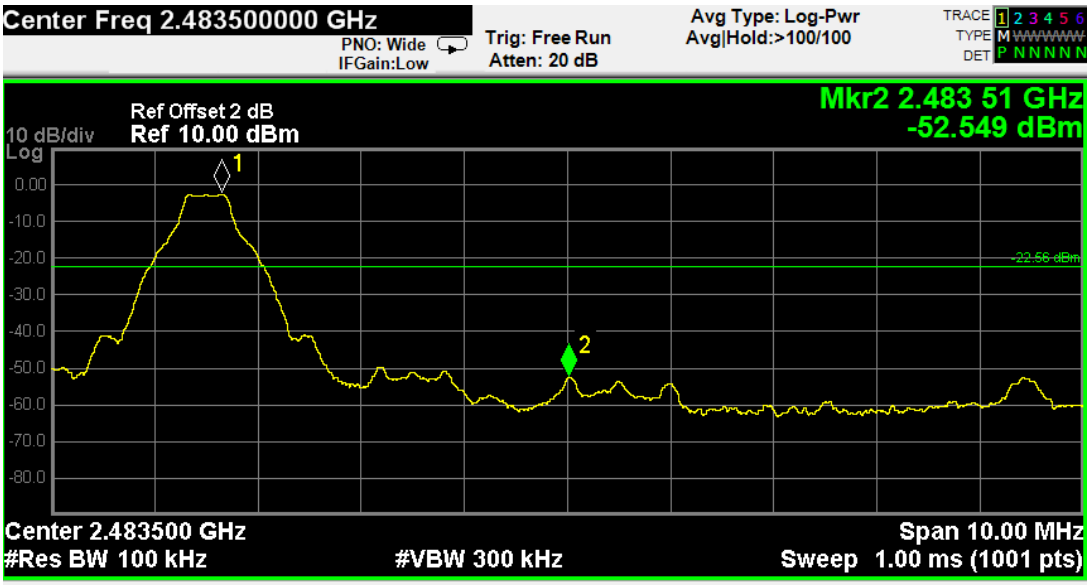
Hopping off

DH1 CH0



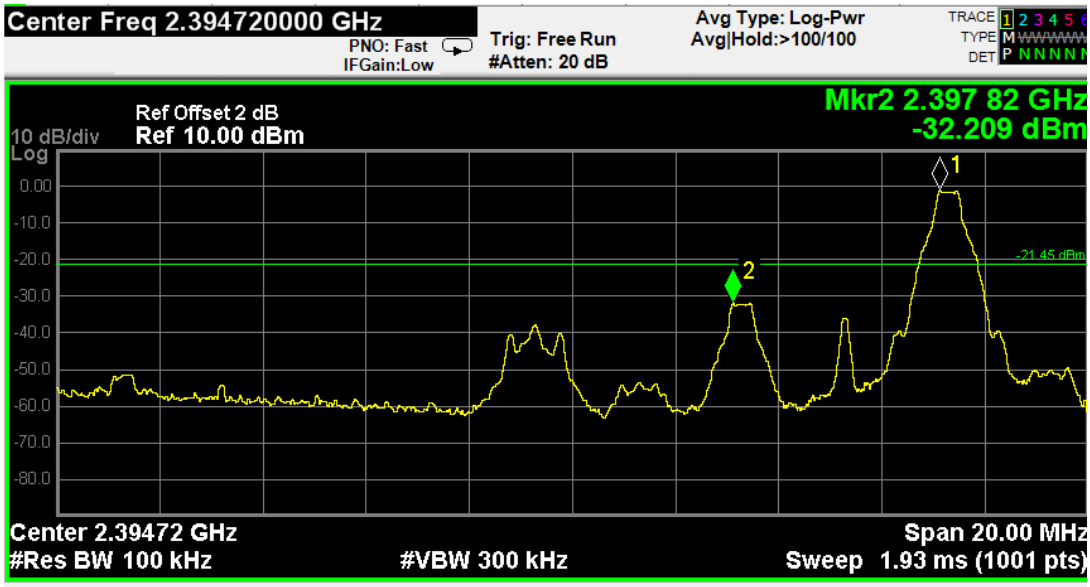
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.402 16 GHz	-1.139 dBm			
2	N	1	f	2.394 00 GHz	-38.041 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH1 CH78



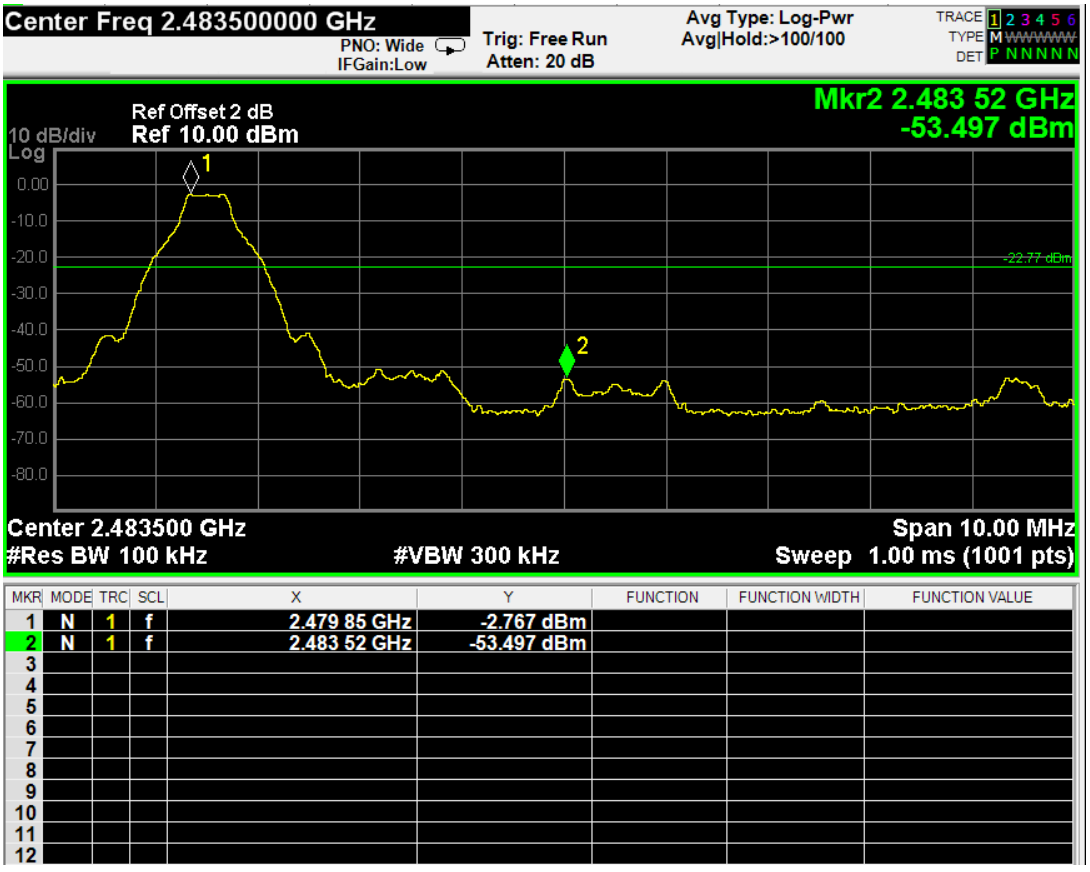
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.480 15 GHz	-2.558 dBm			
2	N	1	f	2.483 51 GHz	-52.549 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH CH0



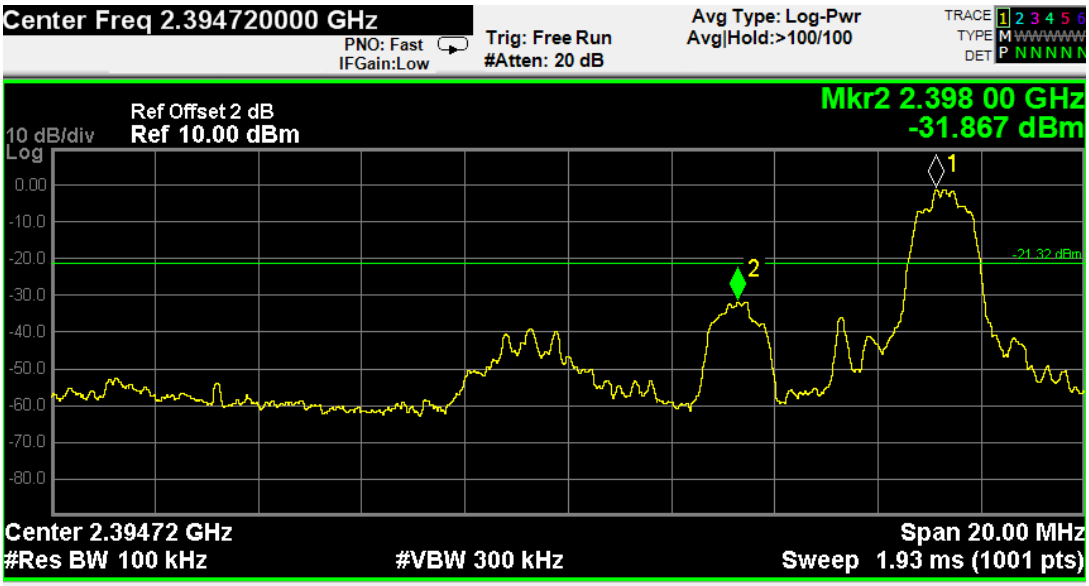
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401 84 GHz	-1.435 dBm			
2	N	1	f	2.397 82 GHz	-32.209 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH1 CH78



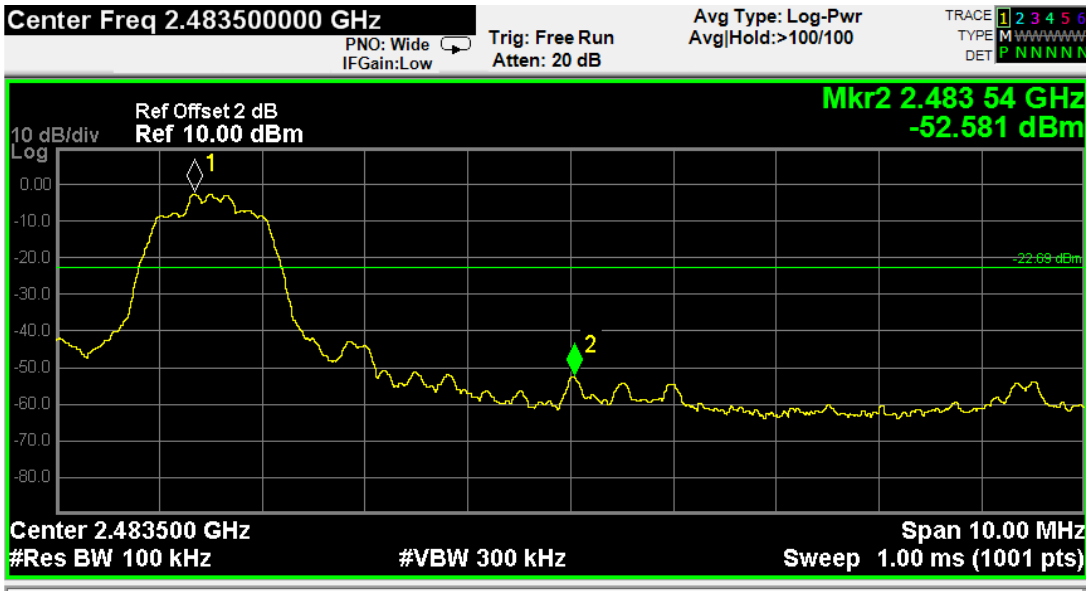
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.479 85 GHz	-2.767 dBm			
2	N	1	f	2.483 52 GHz	-53.497 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH5 CH0



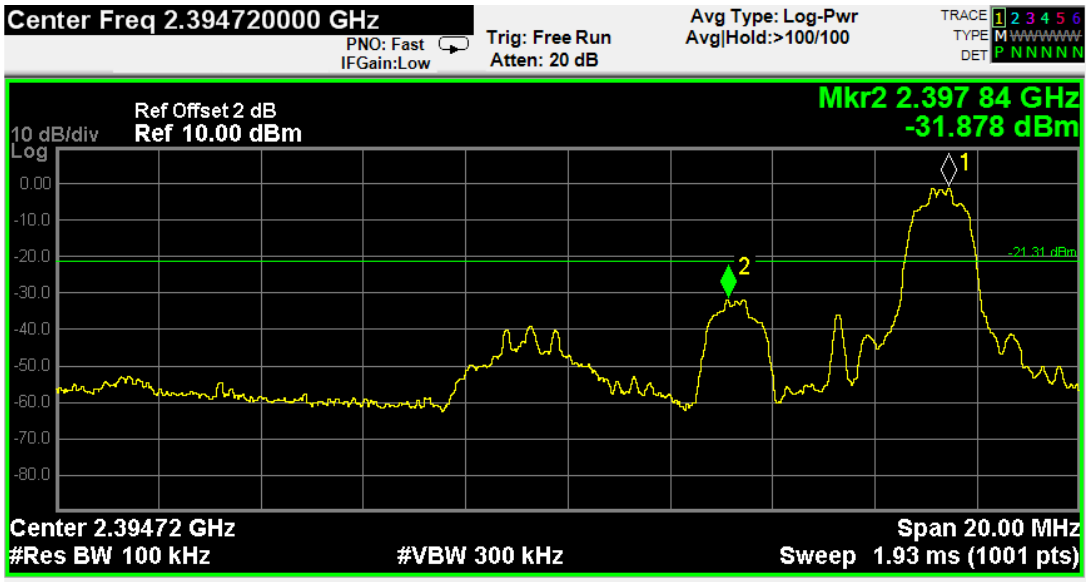
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401 84 GHz	-1.299 dBm			
2	N	1	f	2.398 00 GHz	-31.867 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH5 CH78



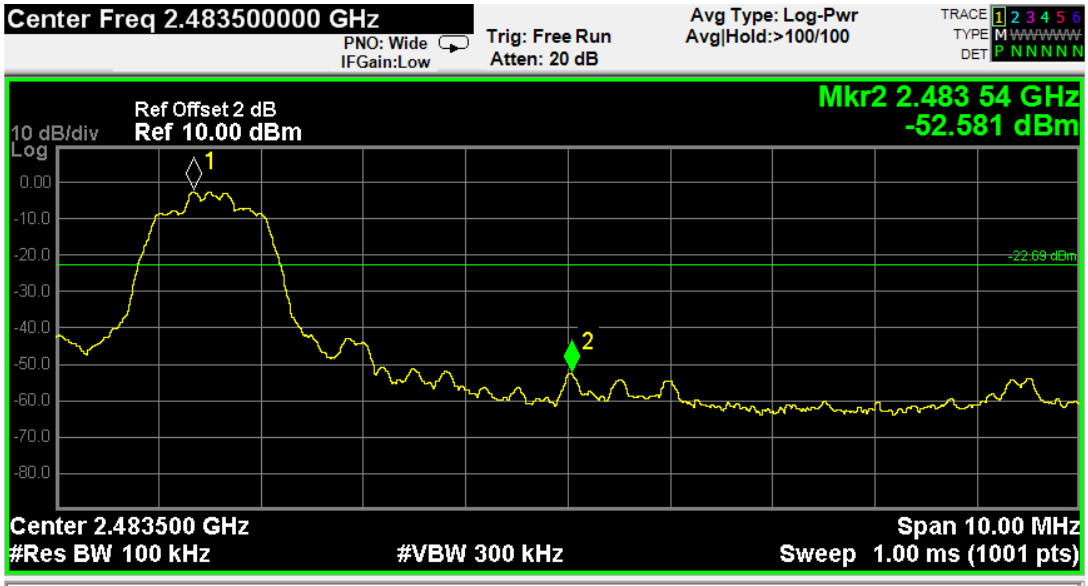
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.479 85 GHz	-2.657 dBm			
2	N	1	f	2.483 54 GHz	-52.581 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH5 CH0



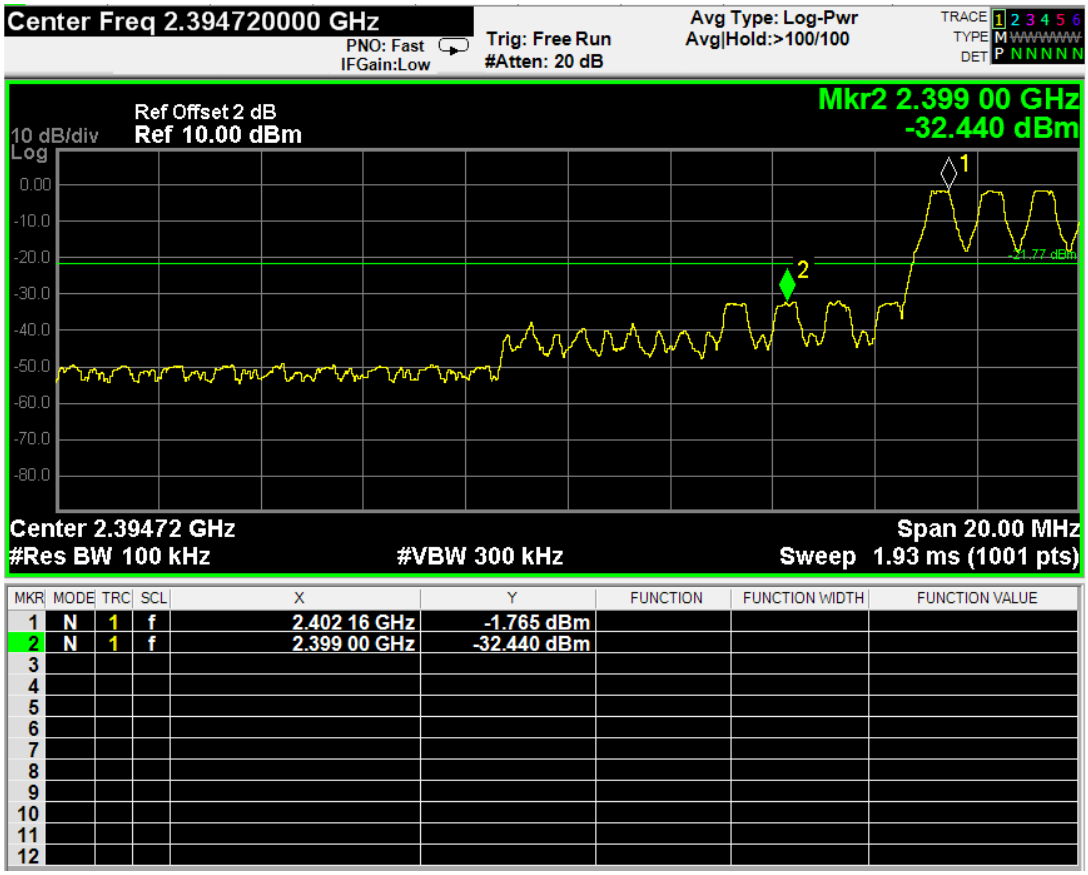
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.402 16 GHz	-1.306 dBm			
2	N	1	f	2.397 84 GHz	-31.878 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH5 CH78



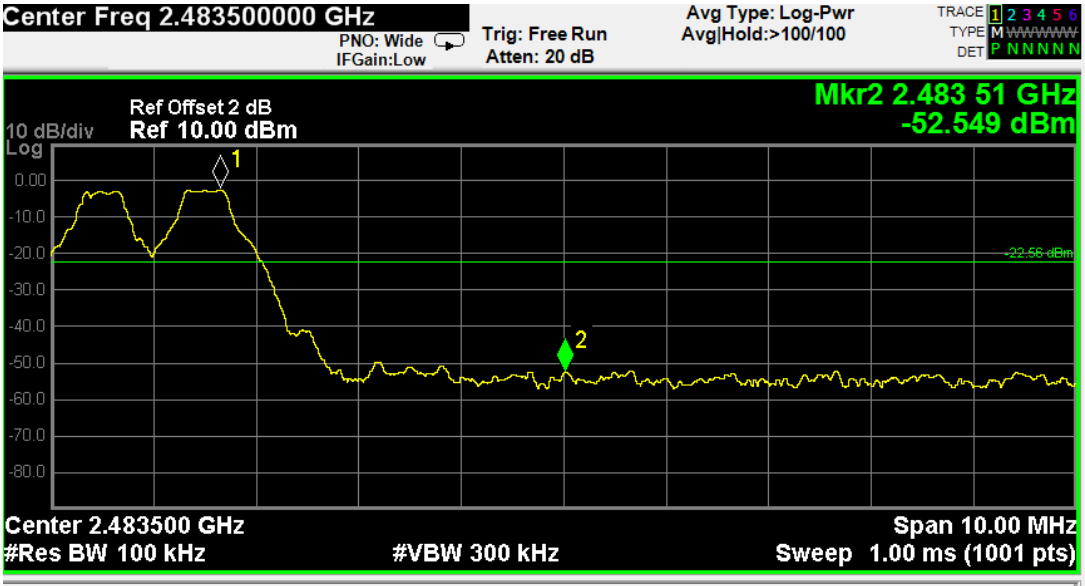
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.479 85 GHz	-2.657 dBm			
2	N	1	f	2.483 54 GHz	-52.581 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Hopping
DH1 CH0



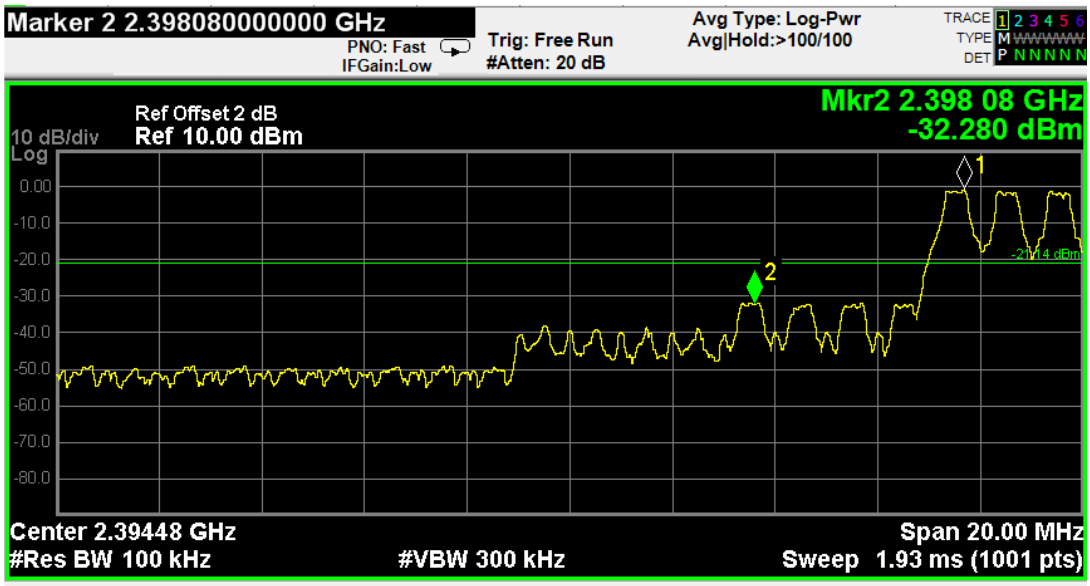
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.402 16 GHz	-1.765 dBm			
2	N	1	f	2.399 00 GHz	-32.440 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH1 CH78



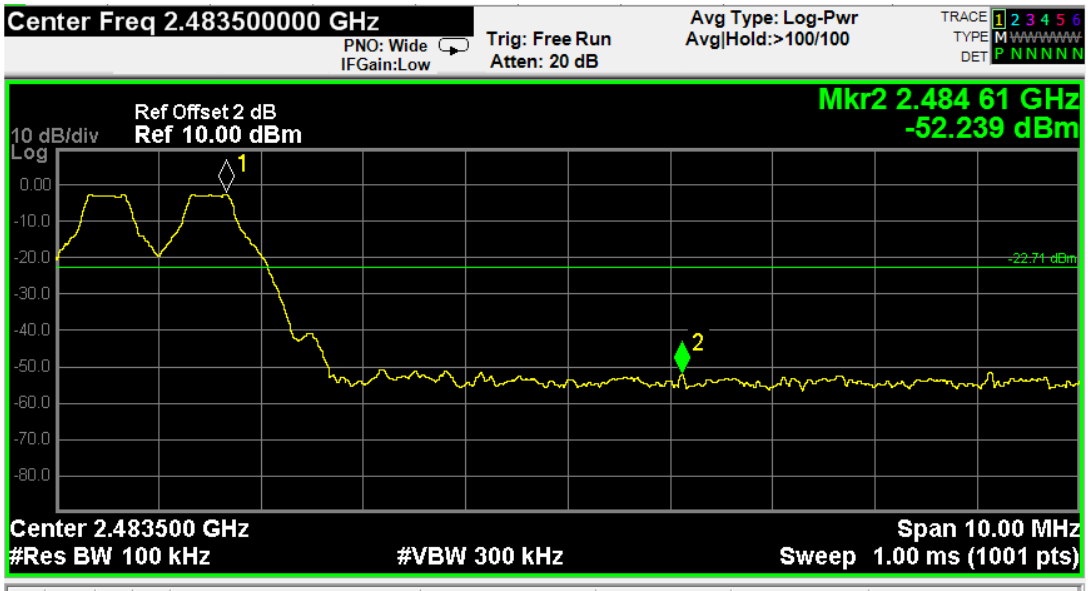
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.480 15 GHz	-2.558 dBm			
2	N	1	f	2.483 51 GHz	-52.549 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH1 CH0



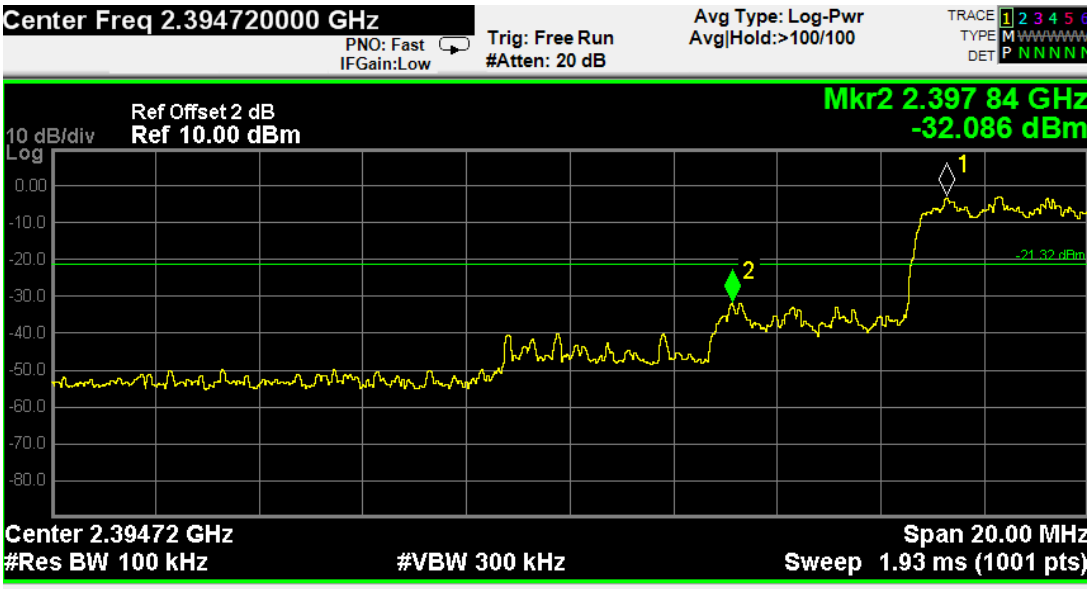
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.402 16 GHz	-1.139 dBm			
2	N	1	f	2.398 08 GHz	-32.280 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH1 CH78



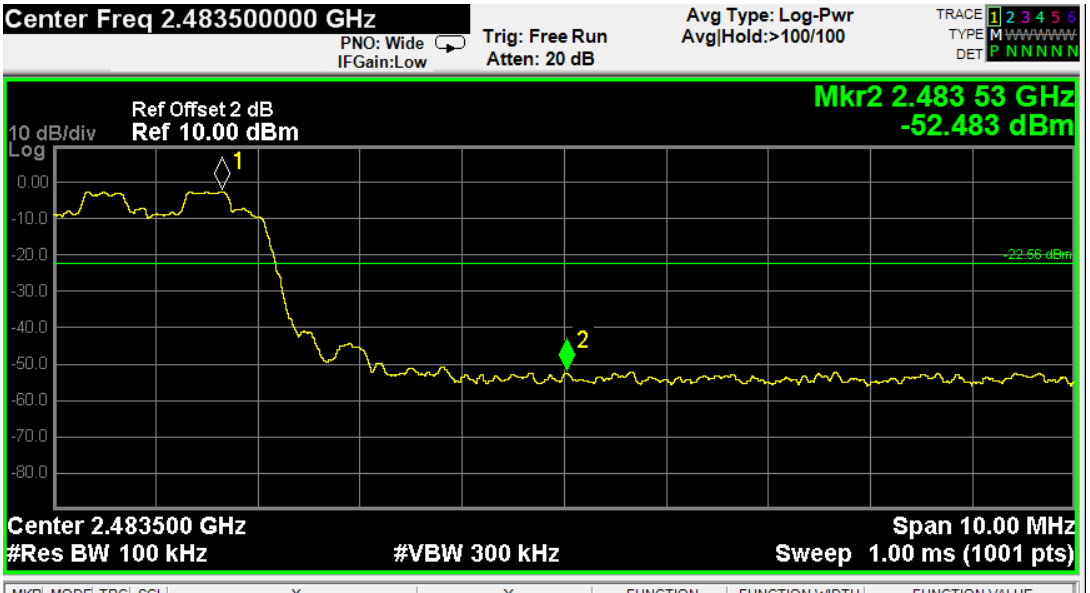
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.480 16 GHz	-2.705 dBm			
2	N	1	f	2.484 61 GHz	-52.239 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH5 CH0



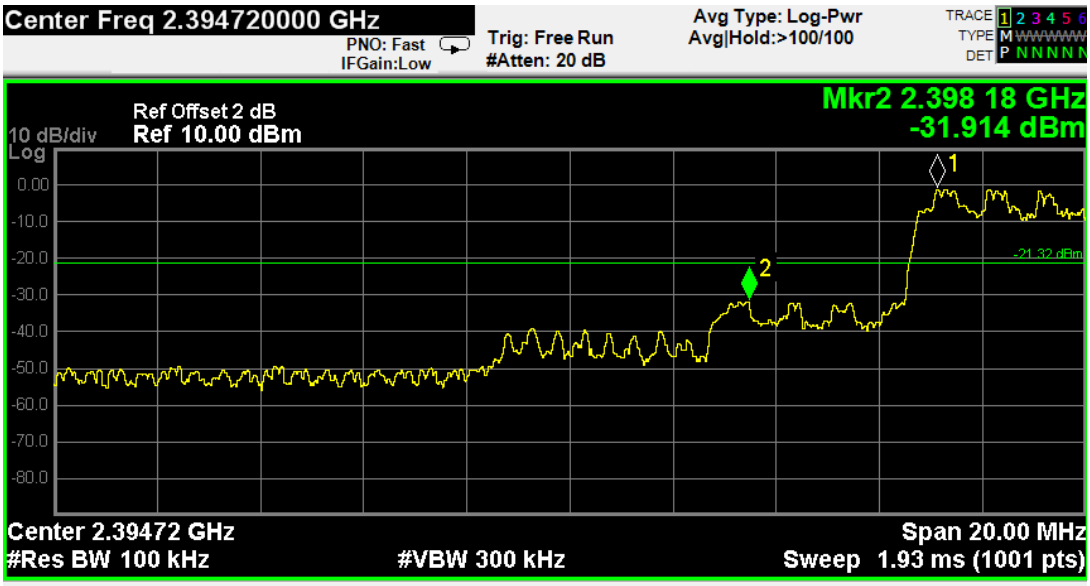
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401 98 GHz	-3.250 dBm			
2	N	1	f	2.397 84 GHz	-32.086 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

DH5 CH78



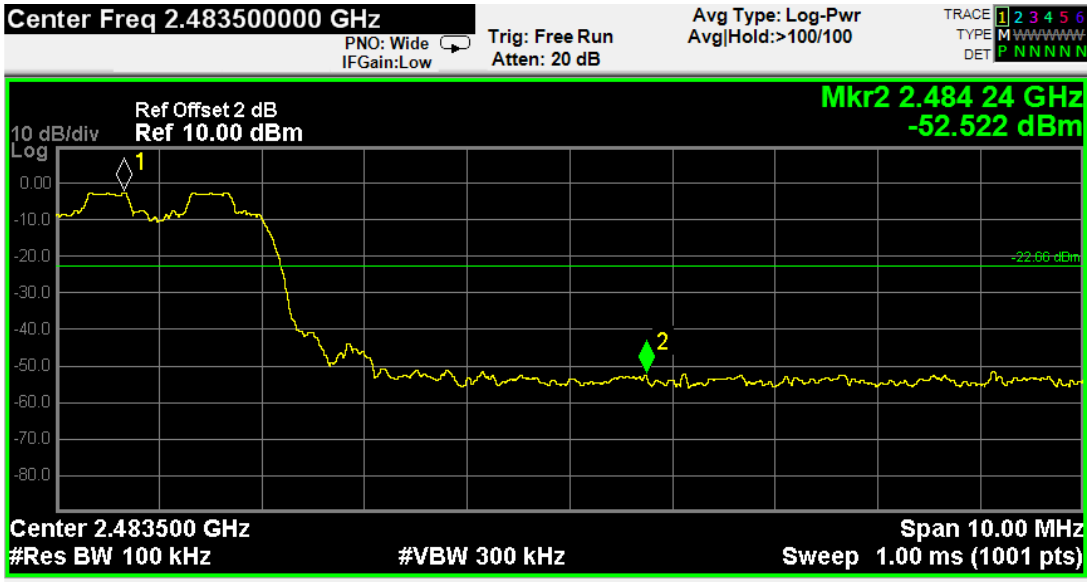
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.480 15 GHz	-2.558 dBm			
2	N	1	f	2.483 53 GHz	-52.483 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH5 CH0



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401 84 GHz	-1.262 dBm			
2	N	1	f	2.398 18 GHz	-31.914 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH5 CH78



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.479 16 GHz	-2.662 dBm			
2	N	1	f	2.484 24 GHz	-52.522 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

9 NUMBER OF HOPPING FREQUENCIES MEASUREMENT

9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

9.2 Block Diagram of Test Setup

The same as section.4.2.

9.3 Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

9.4 Operating Condition of EUT

Enable the EUT hopping function.

9.5 Test Procedure

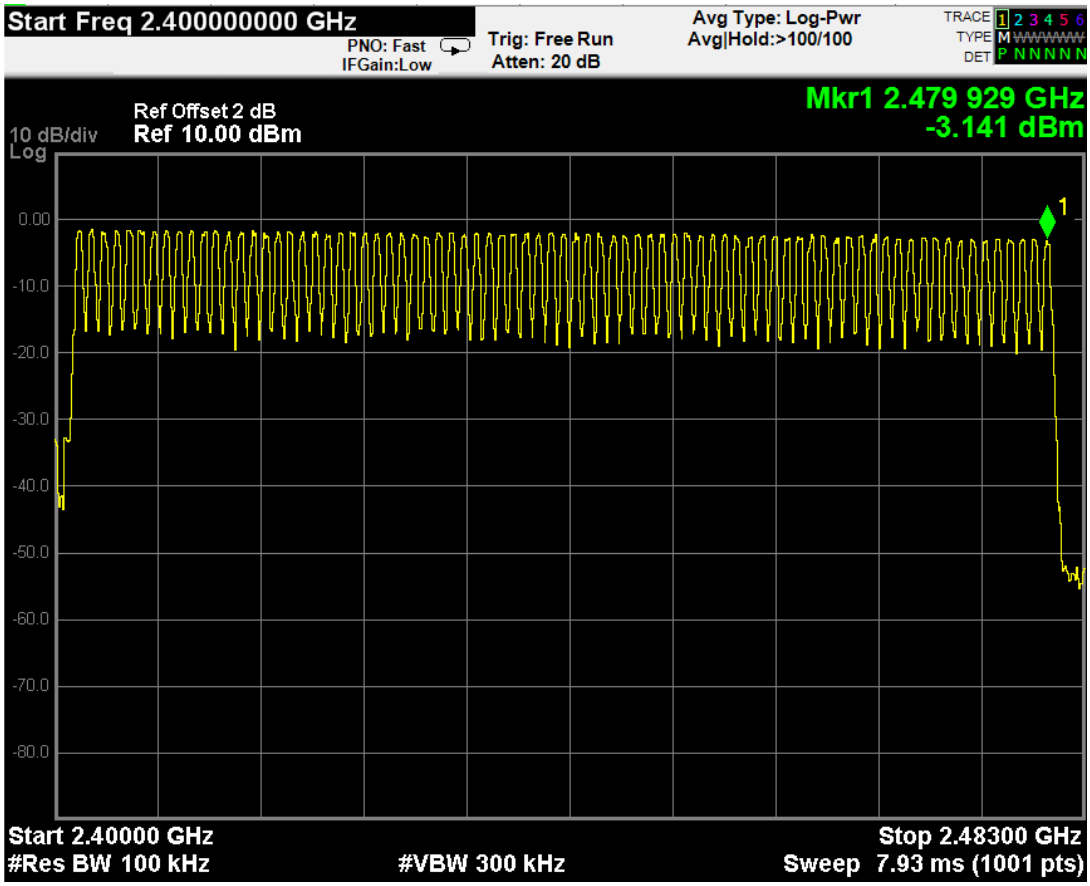
The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 300kHz, VBW = 300kHz, count the number of hopping frequencies used and recorded.
The test procedure is defined in ANSI C63.10:2013.

9.6 Test Results

PASSED. All the test results are attached in next pages.

(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

Result	Limit	Conclusion
79	> 15	Pass


Start Freq 2.400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 2.479 929 GHz
-3.141 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48300 GHz
Sweep 7.93 ms (1001 pts)

10 CARRIER FREQUENCY SEPARATION MEASUREMENT

10.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

10.2 Block Diagram of Test Setup

The same as section.4.2.

10.3 Specification Limits (§15.247(a)(1))

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

10.4 Operating Condition of EUT

Enable the EUT hopping function.

10.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 100 kHz, VBW = 300 kHz, span = wide enough to capture the peaks of two adjacent channels. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.
The test procedure is defined in ANSI C63.10:2013.

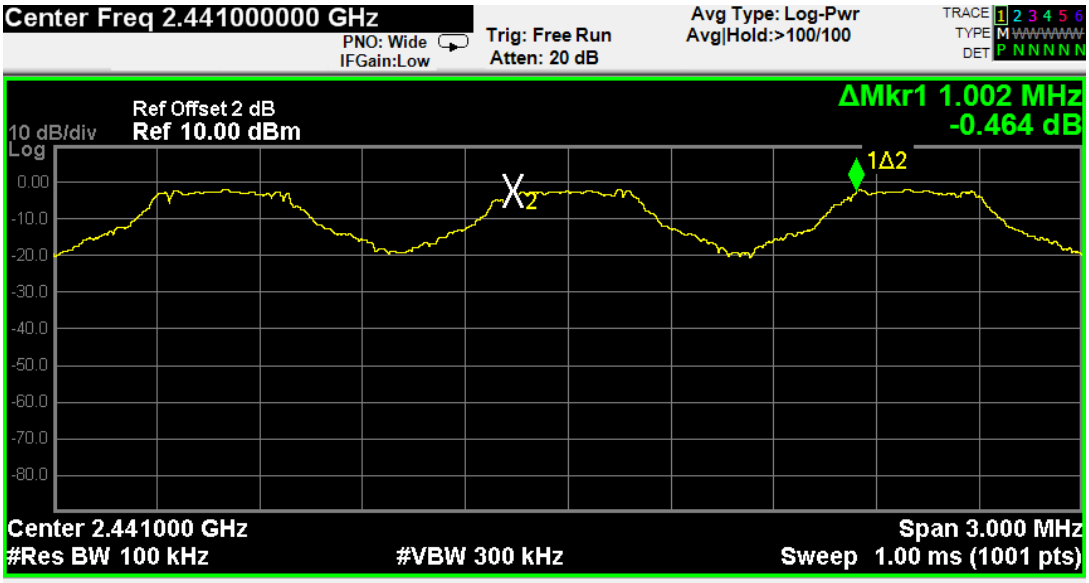
10.6 Test Results

PASSED. All the test results are attached in next pages.

(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

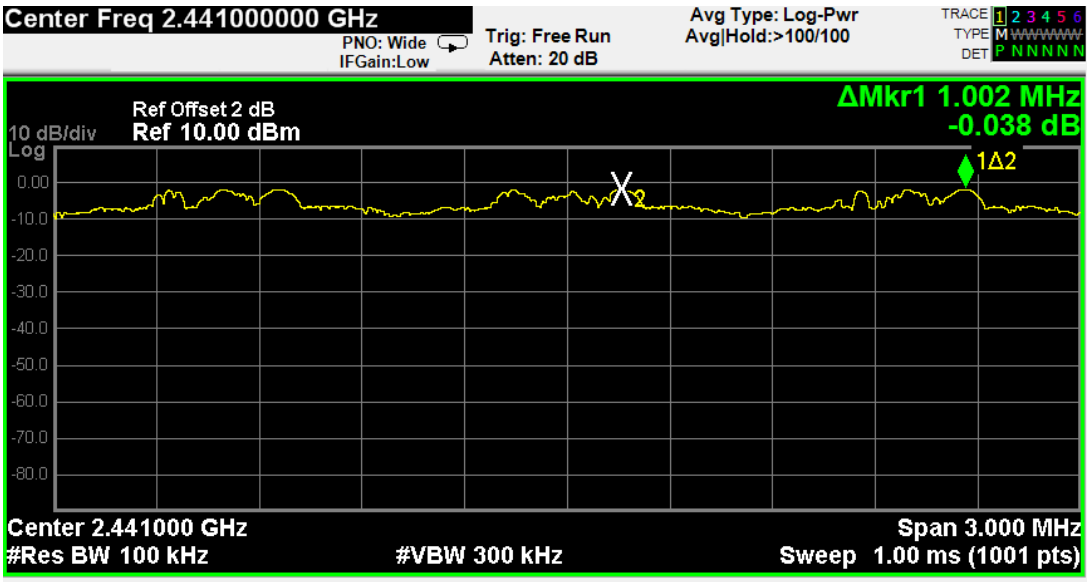
Mode	Result	Limit (2/3 of the 20dB bandwidth)	Conclusion
DH1	1.002 MHz	> 0.560 MHz	Pass
3DH5	1.002 MHz	> 0.804 MHz	Pass

DH1



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 1.002 MHz	(Δ) -0.464 dB			
2	F	1	f	2.440 838 GHz	-2.486 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

2DH5



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 1.002 MHz	(Δ) -0.038 dB			
2	F	1	f	2.441 159 GHz	-1.851 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

11 DEWLL TIME MEASUREMENT

11.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	EXA Signal Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2016	Jun 11, 2017

11.2 Block Diagram of Test Setup

The same as section.4.2.

11.3 Specification Limits (§15.247(a)(1)(iii))

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.4 Operating Condition of EUT

Enable the EUT hopping function.

11.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 1MHz, VBW = 1MHz, span = zero span, centered on a hopping channel. Use the marker-delta function to calculate the dwell time.
The test procedure is defined in ANSI C63.10:2013.

11.6 Test Results

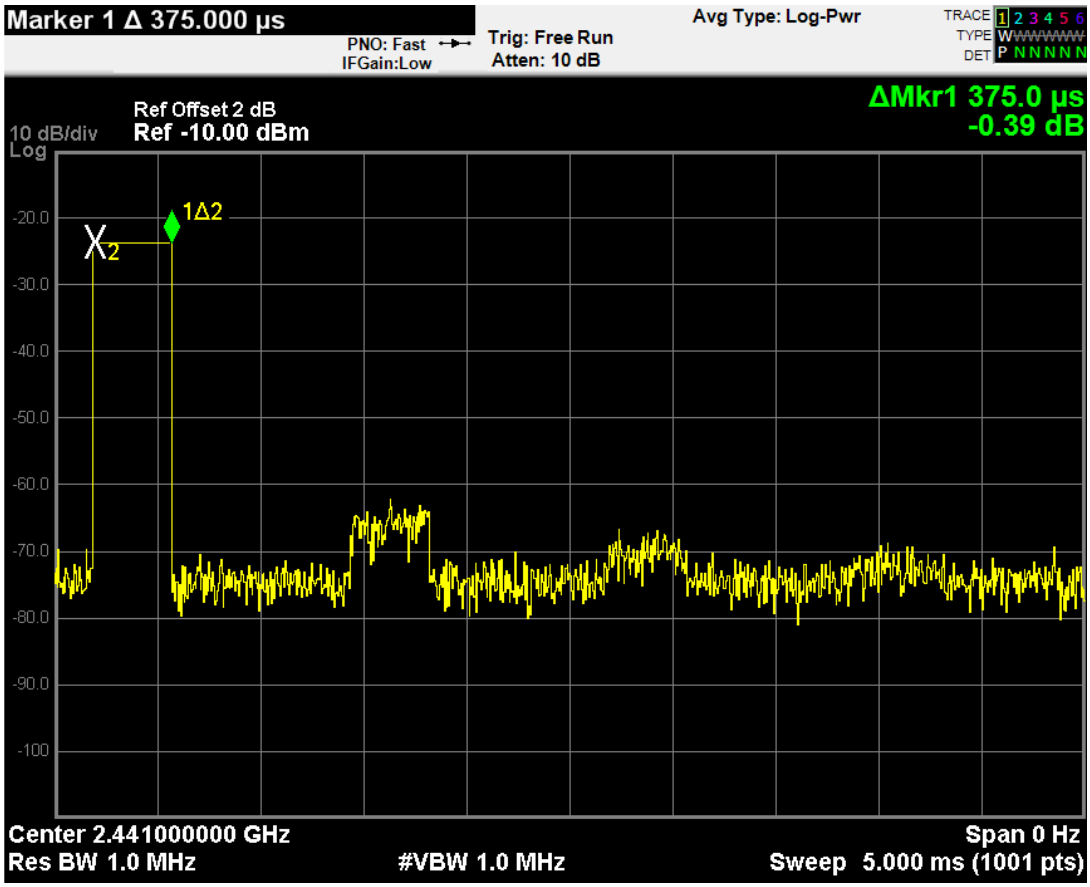
PASSED. All the test results are attached in next pages.

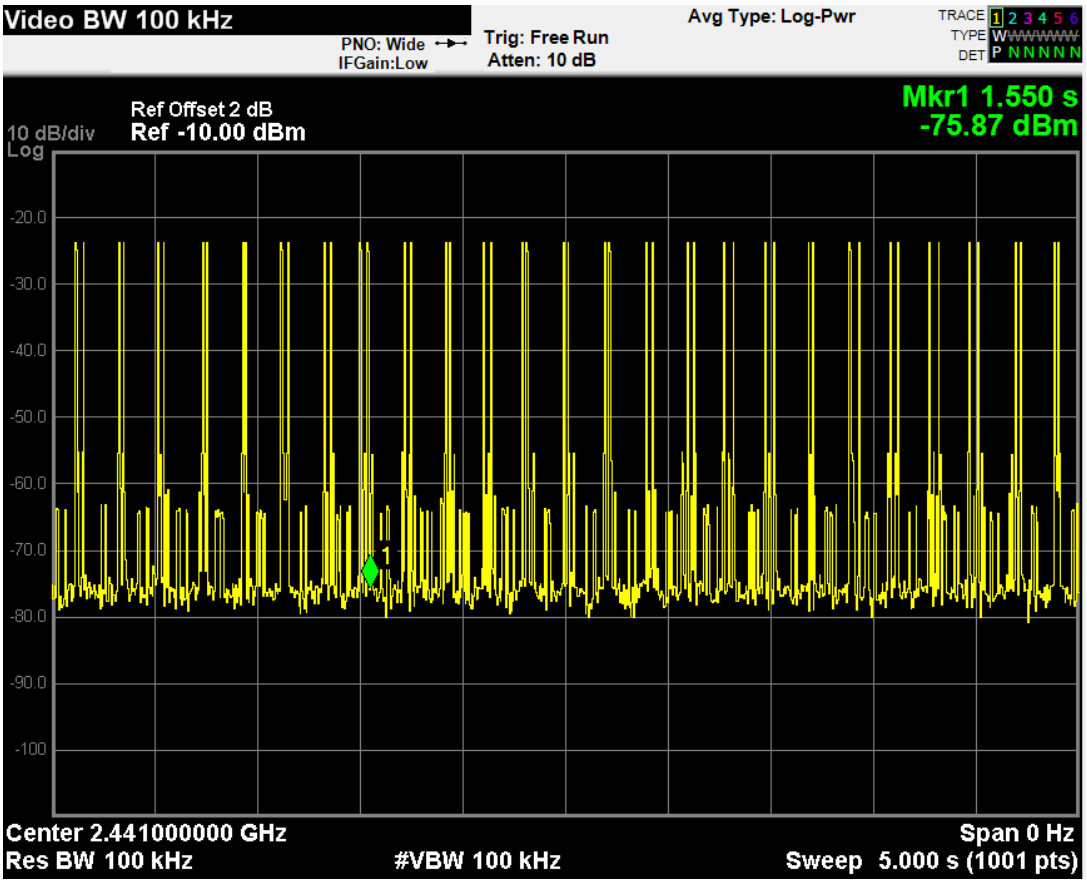
(Test Date: Jun. 01, 2017 Temperature: 23℃ Humidity: 47 %)

Mode	Number of transmission in a 31.6 (79 hopping*0.4) second period	Length of transmission time (msec)	Result (msec)	Limit (msec)	Conclusion
DH1	50 times/5 sec * 31.6=316 times	0.375	316*0.375 = 118.5	< 400	Pass
DH5	16 times/5 sec * 31.6=101.12 times	2.870	101.12*2.870 = 290.21	< 400	Pass

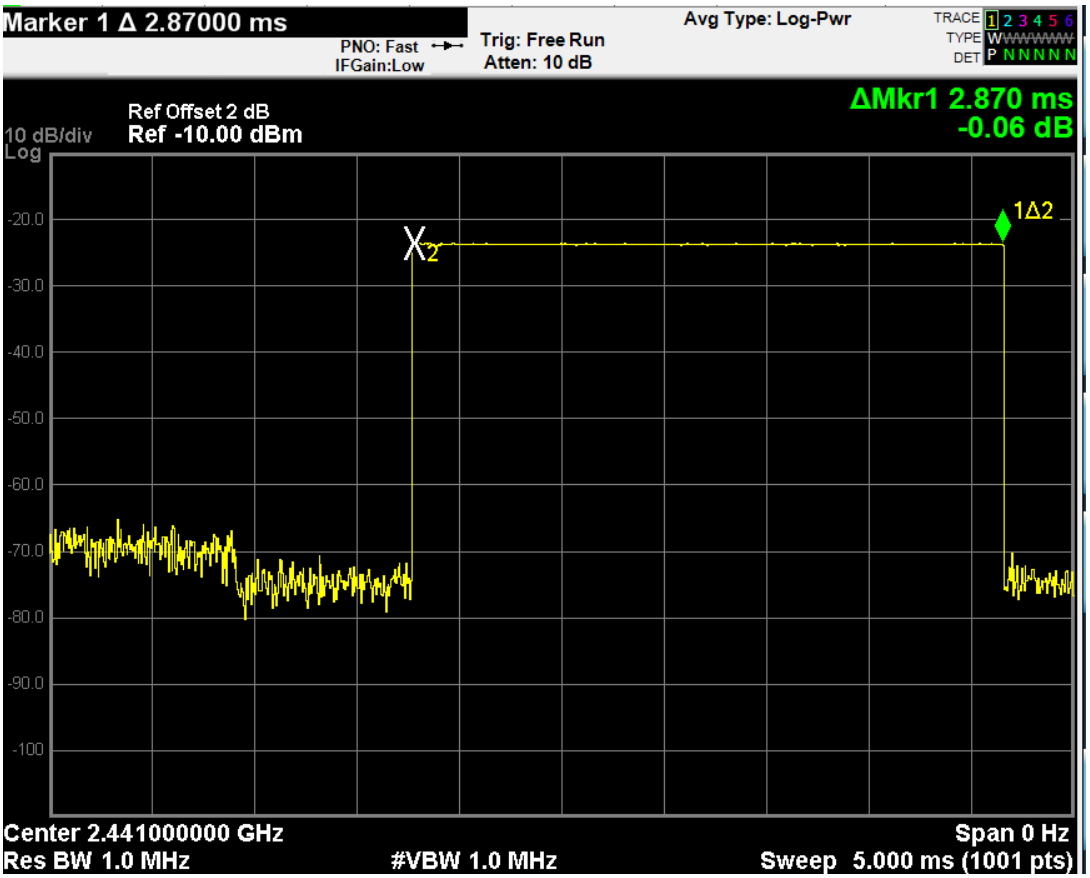
Mode	Number of transmission in a 31.6 (79 hopping*0.4) second period	Length of transmission time (msec)	Result (msec)	Limit (msec)	Conclusion
2DH1	50 times/5 sec * 31.6=316 times	0.390	316*0.390 = 123.24	< 400	Pass
2DH5	16 times/5 sec * 31.6=101.12 times	2.875	101.12*2.875 = 290.72	< 400	Pass

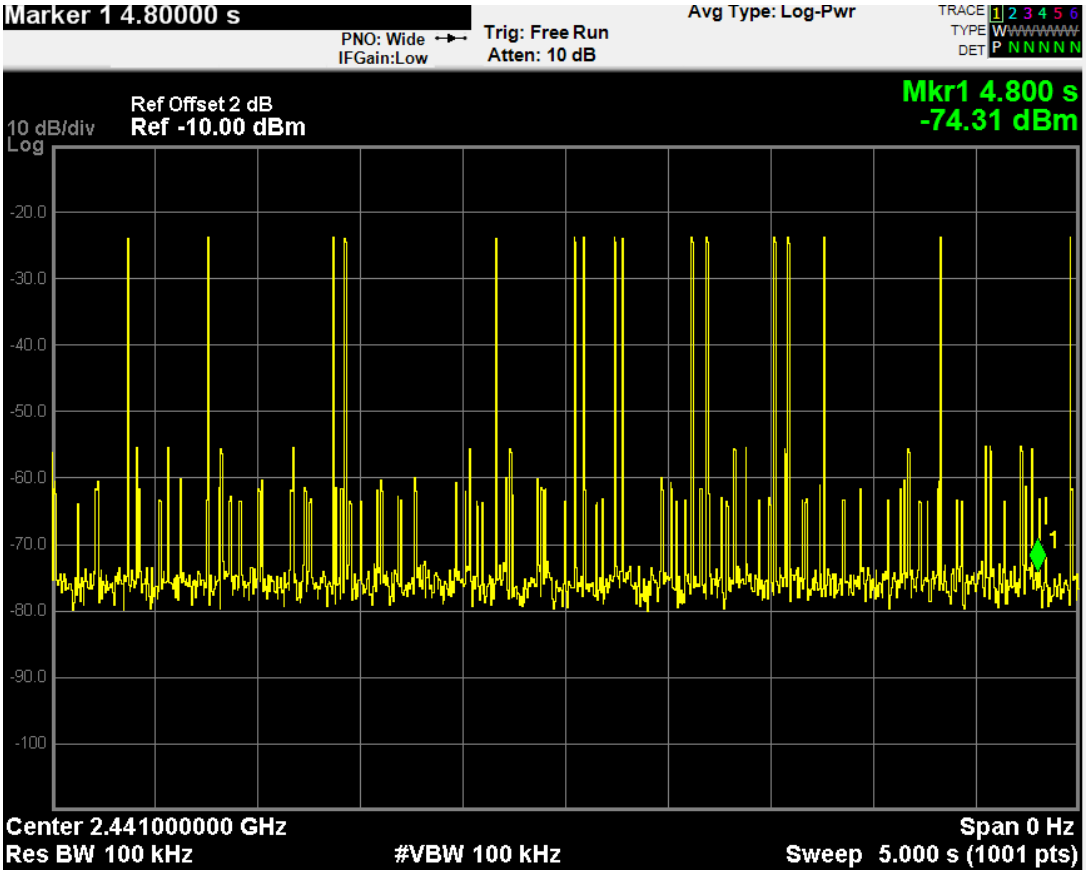
DH1


Marker 1 Δ 375.000 µs
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
ΔMkr1 375.0 µs
-0.39 dB
1Δ2
X2
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)

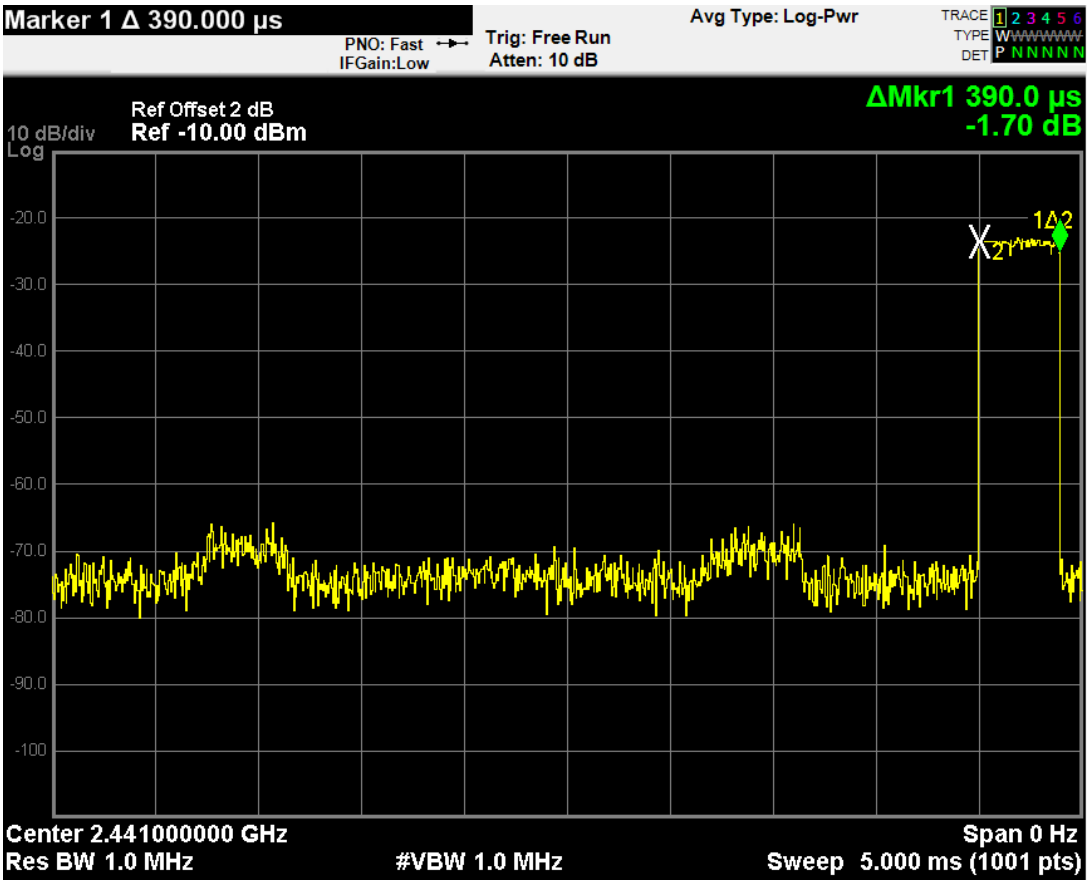

Video BW 100 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
Mkr1 1.550 s
-75.87 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 100 kHz
#VBW 100 kHz
Span 0 Hz
Sweep 5.000 s (1001 pts)

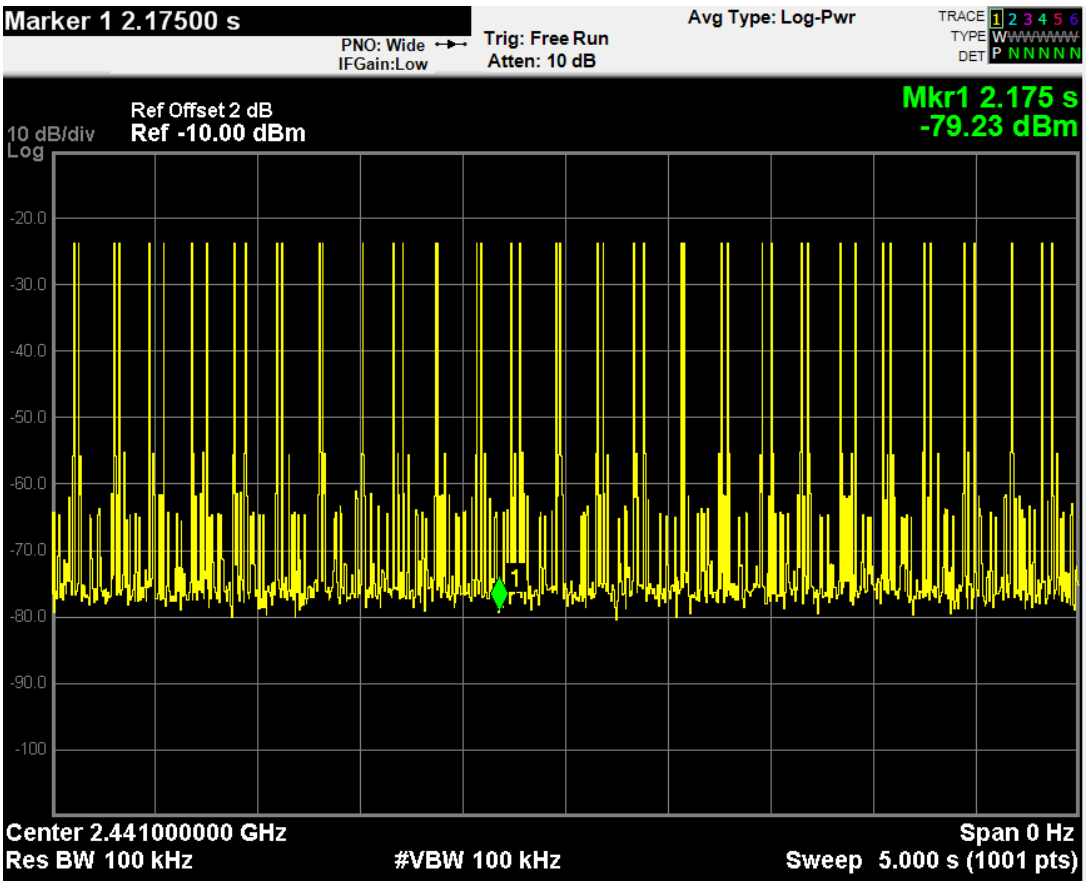
DH5


Marker 1 Δ 2.87000 ms
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
ΔMkr1 2.870 ms
-0.06 dB
1Δ2
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)

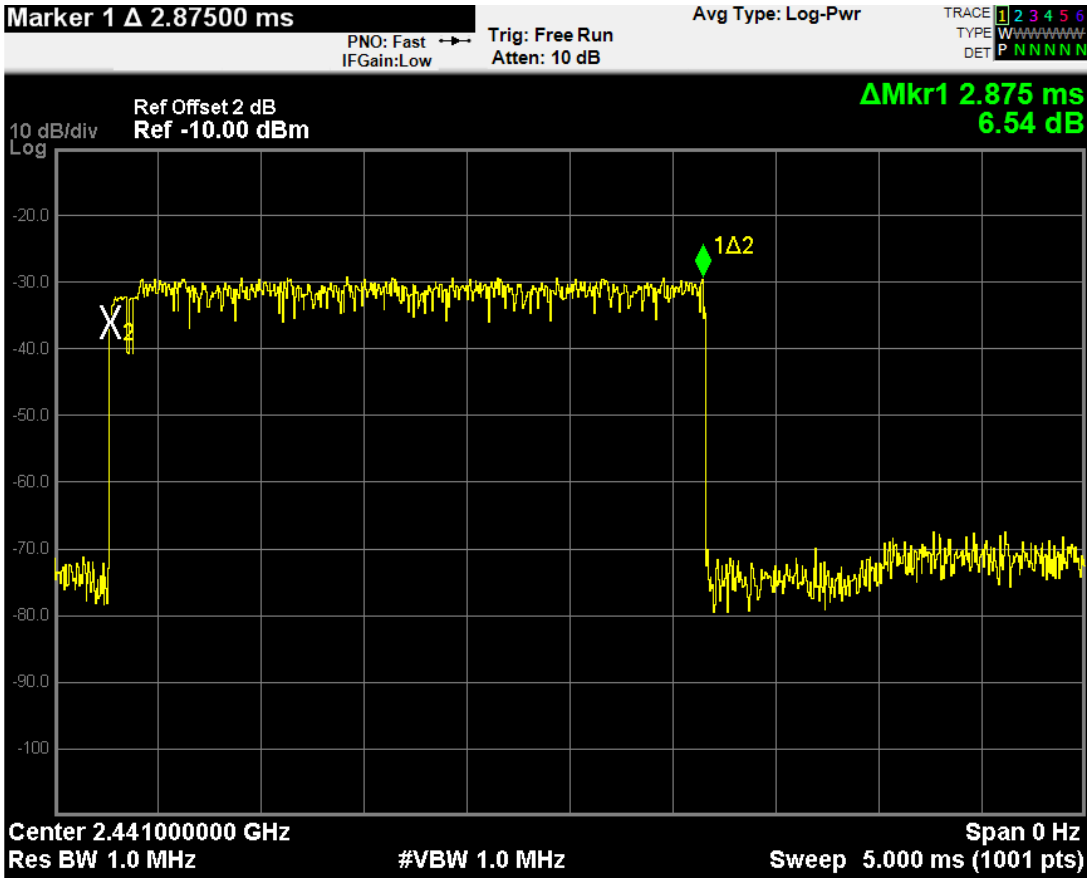

Marker 1 4.80000 s
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
Mkr1 4.800 s
-74.31 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 100 kHz
#VBW 100 kHz
Span 0 Hz
Sweep 5.000 s (1001 pts)

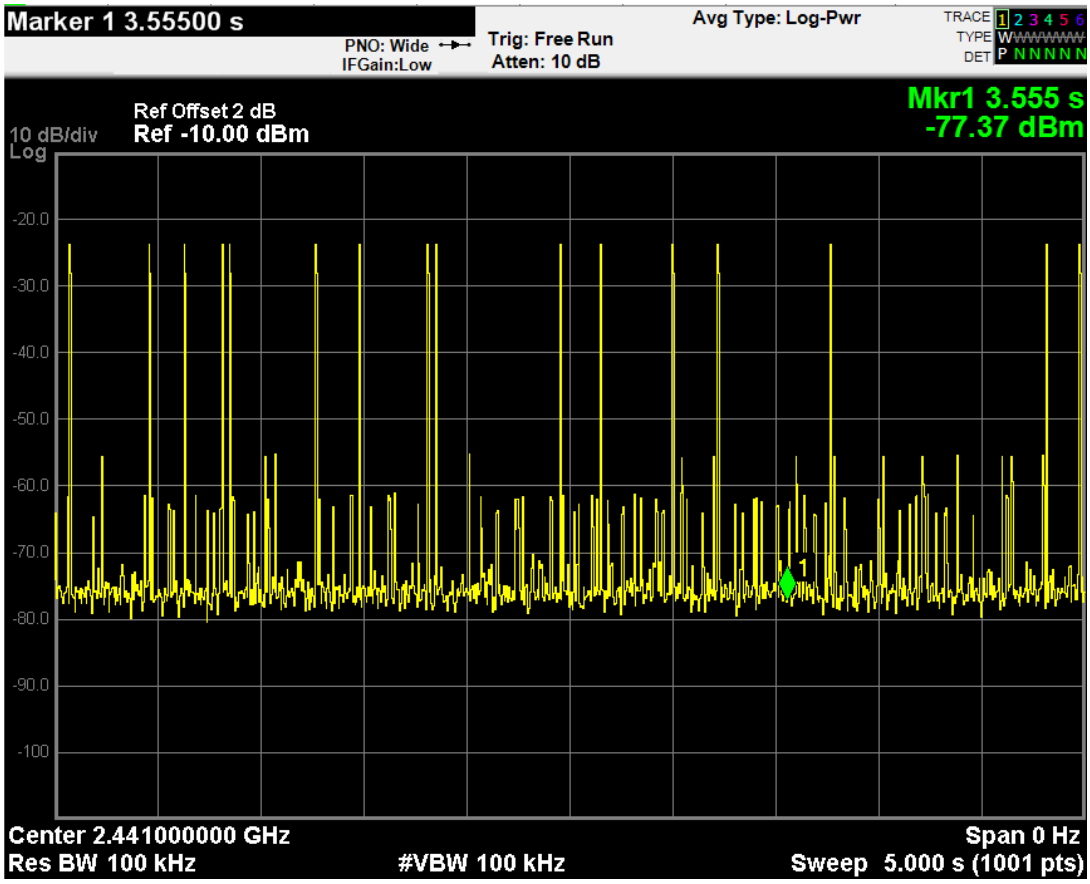
2DH1


Marker 1 Δ 390.000 µs
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
ΔMkr1 390.0 µs
-1.70 dB
1Δ2
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)


Marker 1 2.17500 s
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
Mkr1 2.175 s
-79.23 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center 2.441000000 GHz
Res BW 100 kHz
#VBW 100 kHz
Span 0 Hz
Sweep 5.000 s (1001 pts)

2DH5


Marker 1 Δ 2.87500 ms
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
ΔMkr1 2.875 ms
6.54 dB
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
1Δ2
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 5.000 ms (1001 pts)


Marker 1 3.55500 s
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W
DET P N N N N N
Ref Offset 2 dB
10 dB/div
Log
Ref -10.00 dBm
Mkr1 3.555 s
-77.37 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
1
Center 2.441000000 GHz
Res BW 100 kHz
#VBW 100 kHz
Span 0 Hz
Sweep 5.000 s (1001 pts)

12 DEVIATION TO TEST SPECIFICATIONS

None.