FCC (USA)/ISED (Canada) TEST REPORT

FCC 47 CFR Part 15C

Industry Canada RSS-247

Frequency hopping systems operating within the 2400 – 2483.5 MHz band

Report Reference No:	SON20221114
Testing Laboratory:	ElectroMagnetic Investigations, LLC
Address:	8531 NE Cornell Road. Suite 600, Hillsboro, OR, USA
Accreditation:	A2LA Accredited Testing Laboratory
Applicant's name:	Sonetics Corporation
Address:	17600 SW 65th Ave. Lake Oswego OR 97035 United States
Testing specification	
Standard:	FCC 47 CFR Part 15C RSS-247 RSS-Gen ANSI C63.10 :2013 ANSI C63.4 :2014
Equipment Under test (EUT):	Gen 3.9 Wireless Headset
Serial Number:	APX37-9V2-FW-002
Product description:	DECT headset with Listen through capability and Bluetooth connectivity
Model No.	APX.V2
Hardware version:	APX.V2
Firmware / Software version:	N/A
FCC ID:	V9N950350000
IC ID	7895A-950350000
Test result:	Passed

Possible test case verdicts

Neither assessed nor tested:	N/N
Required by standard but not applicable:	N/A
Required by standard but not tested:	NOT PERFORMED
Not required by standard:	N/R
EUT meets the requirement:	P (Pass)
EUT does not meet the requirement:	F (Fail)

Testing

Test Lab Temperature:	20 – 28 C
Test Lab Humidity:	30 – 38 %
Date EUT received:	November 14, 2022
Date(s) of performance of tests:	November 14, 2022 to June 28, 2023
Complied by:	Ryan Benitez
Tested by:	Ryan Benitez
Approved by:	Henry Benitez
Date of issue:	June 28, 2023
Total number of pages:	72

General remarks

The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without written approval of the issuing test laboratory.

Revision History

Version	Date Issued	Description of Revision

Authorizations

FCC (USA): Accepted by FCC for performance of radiated emissions and conducted emissions measurements. FCC ID: US1092.

Industry Canada: Accepted by Industry Canada for performance of radiated emissions and conducted emissions measurements. ISED Canada CAB ID US0203.

European Union (CE): ElectroMagnetic Investigations, LLC is equipped and capable of performing EMC CE compliance testing to European Union EMC CE requirements for Information Technology Equipment (ITE), Measurement, Control and Laboratory Equipment (MCL), and other equipment.

American Association of Lab Accreditations (A2LA): ElectroMagnetic Investigations is accredited to perform the tests contained within this report to the standards listed.

Certificate #2569.01

Report Index

1 Equipment (Test item) Description
- 1.1 Photos – Equipment external
- 1.2 Photos - Equipment internal
- 1.3 Photos – Test setup
- 1.4 Supporting equipment used during testing
- 1.5 Test modes
- 1.6 Test equipment used during testing
- 1.7 Sample of emissions level calculations

2 Result Summary

3 Test Conditions and results
- 3.1 Antenna requirement
- 3.2 AC Power line conducted emissions
- 3.3 Occupied Bandwidth
- 3.4 20 dB Bandwidth
- 3.5 Number of hopping frequencies
- 3.6 Frequency hopping channel separation
- 3.7 Time of occupancy (Dwell time)
- 3.8 Peak Transmit Power
- 3.9 Band edge
- 3.10 Conducted spurious emissions
- 3.11 Radiated spurious emissions

1 Equipment (Test item) description

Description:	DECT headset with Listen through capability and Bluetooth connectivity
Model:	APX.V2
Brand Name(s):	Sonetics Corporation
Serial number:	None
Hardware version:	N/A
Software / Firmware version:	N/A
FCC-ID:	
IC:	
Equipment type:	End product
Radio type:	Transceiver
Number of radios:	1 DECT transceiver built into device and 1 Bluetooth transceiver built into device
Radio technology:	Bluetooth
Operating frequency range:	2402 – 2480 MHz
Assigned frequency band:	2400 – 2483.5 MHz
Number of RF channels:	79 hopping channels
Main test frequencies	F_{low} 2402 MHz F_{mid} 2441 MHz F_{high} 2480 MHz
Spreading	FHSS
Modulations	GFSK
Channel spacing	1 MHz
Number of antennas	1

Antenna	Type	integrated
	Model	W3008
	Manufacturer	Pulse
	Gain	1.1 dBi
Manufacturer	Sonetics Corporation 17600 SW 65th Ave. Lake Oswego OR 97035 United States	
Power supply	V_{nom}	12 V DC
	V_{min}	4.5 V DC
	V_{max}	15 V DC
AC/DC adaptor	Model	YMC06-3U
	Vendor	Ji Ming
	Input	100-240 V AC 50/60 Hz
	Output	12 V DC
Temperature	T_{nom}	20 C
	T_{min}	-20 C
	T_{max}	50 C

1.1 Photos – Equipment external

See dedicated report

1.2 Photos – Equipment internal

See dedicated report

1.3 Photos – Test setup

See dedicated report

1.4 Supporting equipment used during testing

Product type*	Device	Manufacturer	Model No.	Comments
None				

*Note: Use the following abbreviations:
AE : Auxiliary/Associated Equipment
SIM : Simulator (Not Subject to Test)
CABL : Connecting cables

1.5 Test modes

Mode #	Description	
DH5-Sngl	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 78% Power level = Maximum
DH5-Hop	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 78% Power level = Maximum
Receive	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone receive Spreading = Hopping
AC-Powerline	General conditions:	EUT powered by AC/DC-Adaptor
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Power level = Maximum

1.6 Test equipment used during testing

Conducted				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4440A	2023/05/12	2024/05/13
Signal generator	R&S	SME06	2021/09/03	2026/09/03

Radiated spurious emissions				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4440A	2022/01/28	2023/07/28
Antenna	Com-Power	AC-220	2021/08/30	2023/08/30
Antenna	Com-Power	AHA-118	2021/08/24	2023/08/24
Antenna	Com-Power	AH-1840	2022/11/11	2027/11/11
Pre-Amp	Amplifier Research	LN1000	2023/02/18	2024/02/18

AC powerline conducted emissions				
Description	Manufacturer	Model	Cal. Date	Cal. Due
Analyzer	Agilent	E4443A	2023/01/30	2026/01/30
LISN	Fischer Custom Communications	FCC-50-50-04-02	2020/12/08	2025/12/08

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric field strength to voltage that can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Measurement Uncertainty:

Test Measurement uncertainties (k=2.05):
Radiated Field strength at 3m measured with:
Bilog Antenna (30 MHz – 1 GHz)…… ±5.6 dB
Horn Antenna (1-18 GHz) …… ±4.0 dB

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log(µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A positive margin indicates the emission was below the limit. A negative margin indicates that the emission exceeds the emission was below the limit.

Example only:

Reading + A.F. =	Net Reading	:	FCC limit – Net reading =	Margin
21.5 dBµV + 26 db =	47.5 dBµV/m	:	57.0 dBµV/m – 47.5 dBµV/m =	9.5 dB

2 Result summary

Section	Requirement - Test	FCC	IC	ANSI	Result
3.1	Antenna requirement	15.207 & 15.247(c)	RSS-GEN 6.3	N/A	PASS
3.2	AC power line conducted emissions	15.207(a)	RSS-213 5.4 RSS-Gen 8.8	C63.10 6.2	PASS
3.3	Occupied Bandwidth	N/A	RSS-GEN 6.7	C63.10 7.8.7	PASS
3.4	20 dB Bandwidth	15.247(a)(1)	RSS-247 5.1(b)	C63.10 7.8.7	PASS
3.5	Number of hopping frequencies	15.247(a)(1)(iii)	RSS-247 5.1(d)	C63.10 7.8.3	PASS
3.6	Frequency hopping channel separation	15.247(a)(1)	RSS-247 5.1(b)	C63.10 7.8.3	PASS
3.7	Time of occupancy (Dwell time)	15.247(a)(1)(iii)	RSS-247 5.1(d)	C63.10 7.8.4	PASS
3.8	Peak Transmit Power	15.247(b)(3)	RSS-247 5.1(b)	C63.10 7.8.5	PASS
3.9	Band edge	15.247(d)	RSS-247 5.5	C63.10 7.8.8 & 11.13.3.2	PASS
3.10	Conducted spurious emissions	15.247(d)	RSS-247 5.5	C63.10 7.8.6 & 11.11	PASS
3.11	Radiated spurious emissions	15.209 15.247(d)	RSS-247 5.5	C63.10 6.4, 6.5, 6.6 & 6.10.5	PASS

N/T – Not tested and not included in the scope of this test report.

3 Test conditions and results

3.1 Antenna requirement

Antenna requirement			Verdict: PASS
Test according to Rule parts and clause	Reference		
	FCC 15.207, FCC 15.247(c), RSS-GEN 6.3		
Test according to measurement reference	Reference Method		
	Visual inspection & declaration		
Requirements			
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. When an antenna conducted measurement is used to determine the RF output power of the device, the effective gain of the antenna intended for the device must be stated based on measurement or on data from the measured RF output power before using the power limits.			
Results			
Antenna No.	Type	Antenna gain [dBi]	Antenna gain in excess of 3 dBi
1	internal	1.1	0
Comment:			

3.2 Test conditions and results – AC power line conducted emissions

Conducted emissions				Verdict: PASS
Test according to Rule parts and clause		Reference		
		FCC 15.207(a), RSS-Gen 8.8		
Test according to measurement reference		Reference Method		
		ANSI C63.4		
Fully configured sample scanned over the following frequency range		Frequency range		
		0.15 MHz to 30 MHz		
Points of Application		Application Interface		
AC Mains		LISN		
EUT test mode		AC-Powerline		
Limits and results				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 0.5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: *Limit decreases linearly with the logarithm of the frequency.				

Measurement Uncertainty

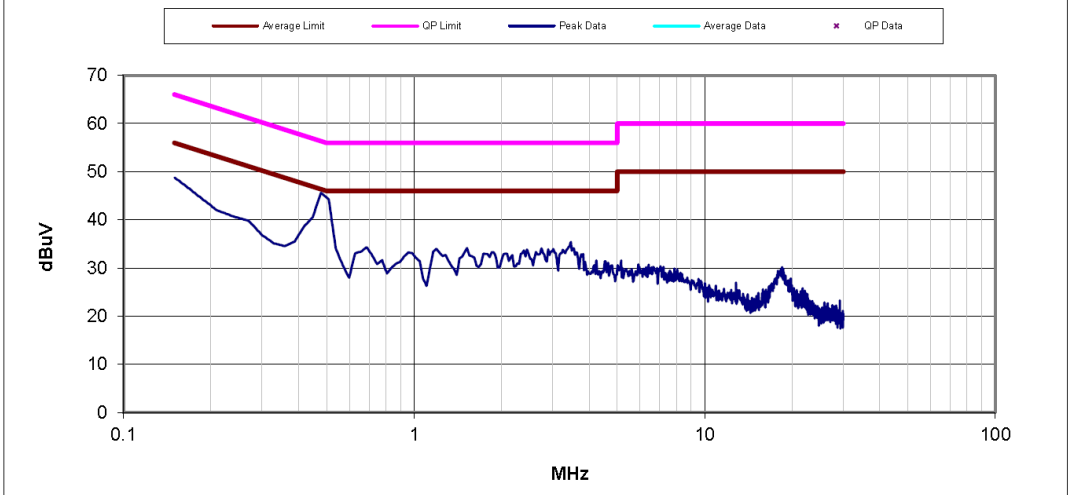
Test Measurement uncertainties (k=2.05):
Radiated Field strength at 3m measured with:
Bilog Antenna (30 MHz – 1 GHz)…… ±5.6 dB
Horn Antenna (1-18 GHz) …… ±4.0 dB

CONDUCTED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221113
Contact:	Michael Barger	Date:	11/14/2022
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.207		

TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Line	1



COMMENTS

120 V 60 Hz;

SIGNATURE

Ryan Benitez

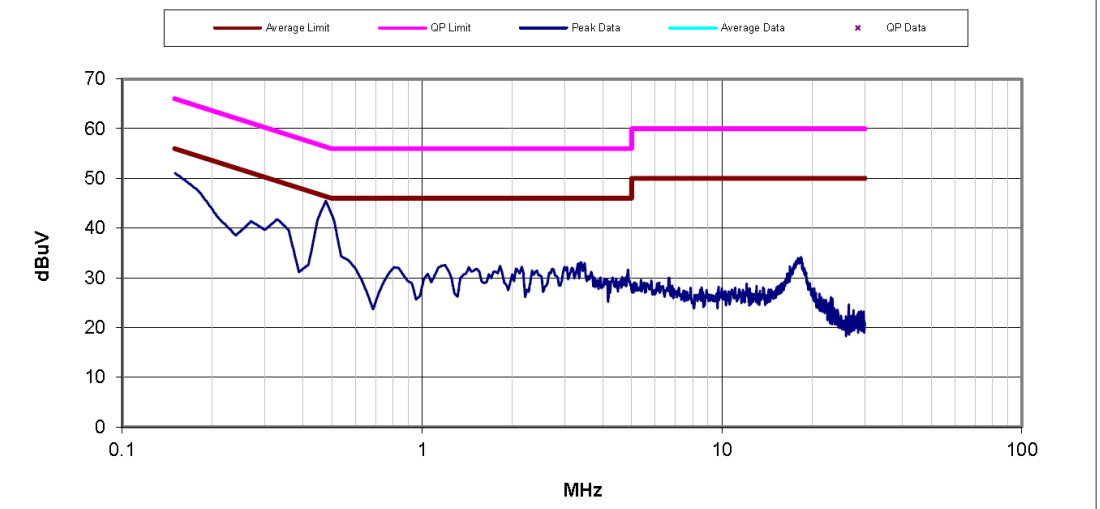
Peak Data			Average Data			QP Data		
Freq (MHz)	Amplitude (dBµV)	Margin (dB)	Amplitude (dBµV)	Limit (dBmV)	Margin (dB)	Amplitude (dBµV)	Limit (dBmV)	Margin (dB)
0.15	60.20	5.80	17.34	56.00	38.66	51.94	66.00	14.06
0.48	47.16	9.19	17.76	46.36	28.59	43.40	56.36	12.95
3.44	39.40	16.60	14.24	46.00	31.76	33.13	56.00	22.87
18.44	35.83	24.17	17.57	50.00	32.43	29.46	60.00	30.54

CONDUCTED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221113
Contact:	Michael Barger	Date:	11/14/2022
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20.9
Serial Number:	1	Relative Humidity (%):	30
Voltage/Freq:	120 V 60 Hz	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.207		

TEST RESULTS	TEST TYPE	LINE	RUN #
Pass	Compliance	Neutral	1



COMMENTS	SIGNATURE
120 V 60 Hz;	Ryan Benitez

Peak Data			Average Data			QP Data		
Freq (MHz)	Amplitude (dBµV)	Margin (dB)	Amplitude (dBµV)	Limit (dBmV)	Margin (dB)	Amplitude (dBµV)	Limit (dBmV)	Margin (dB)
0.15	59.36	6.64	14.68	56.00	41.32	50.50	66.00	15.50
0.48	49.45	6.94	21.77	46.39	24.62	46.21	56.39	10.18
3.41	38.14	17.86	11.64	46.00	34.36	30.98	56.00	25.03
18.30	38.20	21.80	21.45	50.00	28.55	32.57	60.00	27.43

3.3 Test conditions and results – Occupied bandwidth

Occupied Bandwidth		Verdict: PASS
Test according to Rule parts and clause	Reference Method	
	IC RSS-GEN 6.7	
Test according to measurement reference	Reference Method	
	ANSI C63.10 7.8.7	
Tested frequencies	F_{LOW} / F_{MID} / F_{HIGH}	
EUT test mode	DH5-Sngl	
Test results		
Channel	Center frequency [MHz]	99% Occupied Bandwidth [MHz]
F_{LOW}	2402	0.8315
F_{MID}	2441	0.8365
F_{HIGH}	2480	0.8330
Comments:		

F_{LOW}

Agilent 23:22:58 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.402 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
831.5313 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 51.908 kHz
x dB Bandwidth 842.146 kHz

F_{mid}

Agilent 23:26:13 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.441 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
836.5301 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 48.634 kHz
x dB Bandwidth 838.531 kHz

F_{HIGH}

Agilent 23:27:18 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.480 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
833.0418 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 47.291 kHz
x dB Bandwidth 850.248 kHz

3.4 Test conditions and results – Emission Bandwidth

Emission Bandwidth	Verdict: PASS
Test according to Rule parts and clause	Reference FCC 15.247(a)(1), IC RSS-247 5.1(b)
Test according to measurement reference	Reference Method ANSI C63.10 7.8.7
Tested frequencies	F_{LOW} / F_{MID} / F_{HIGH}
EUT test mode	DH5-Sngl
Limits	
Emission Bandwidth < 1.5 MHz	

Test results		
Channel	Center frequency [MHz]	20 dB Bandwidth [MHz]
F_{LOW}	2402	0.8421
F_{MID}	2441	0.8385
F_{HIGH}	2480	0.8502
Comments:		

F_{LOW}

Agilent 23:22:58 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.402 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
831.5313 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 51.908 kHz
x dB Bandwidth 842.146 kHz

F_{mid}

Agilent 23:26:13 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.441 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
836.5301 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 48.634 kHz
x dB Bandwidth 838.531 kHz

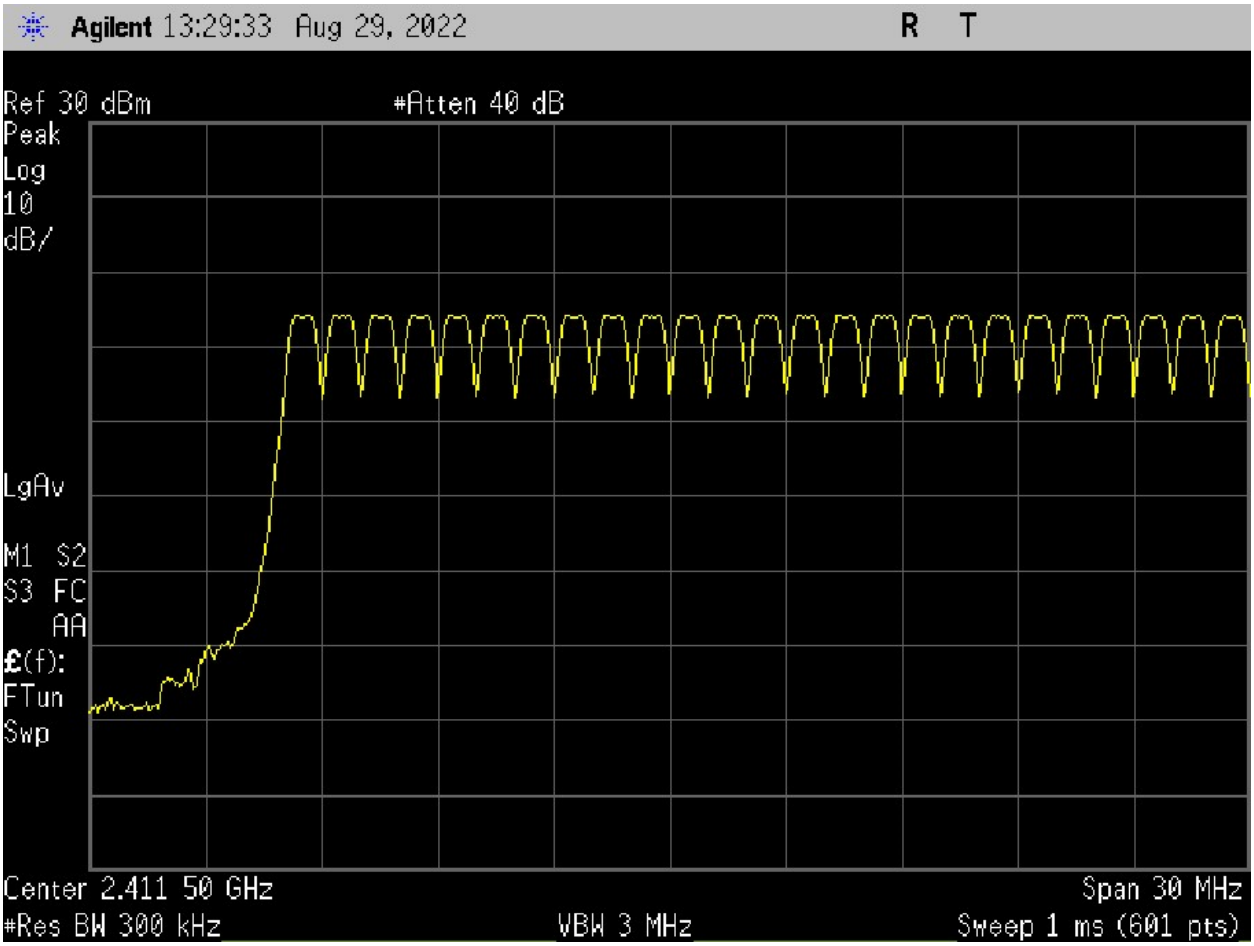
F_{HIGH}

Agilent 23:27:18 Apr 1, 2023
R T
Ref -30 dBm
#Atten 0 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 2.480 000 000 GHz
Span 3 MHz
#Res BW 30 kHz
#VBW 100 kHz
Sweep 3.2 ms (8001 pts)
Occupied Bandwidth
833.0418 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 47.291 kHz
x dB Bandwidth 850.248 kHz

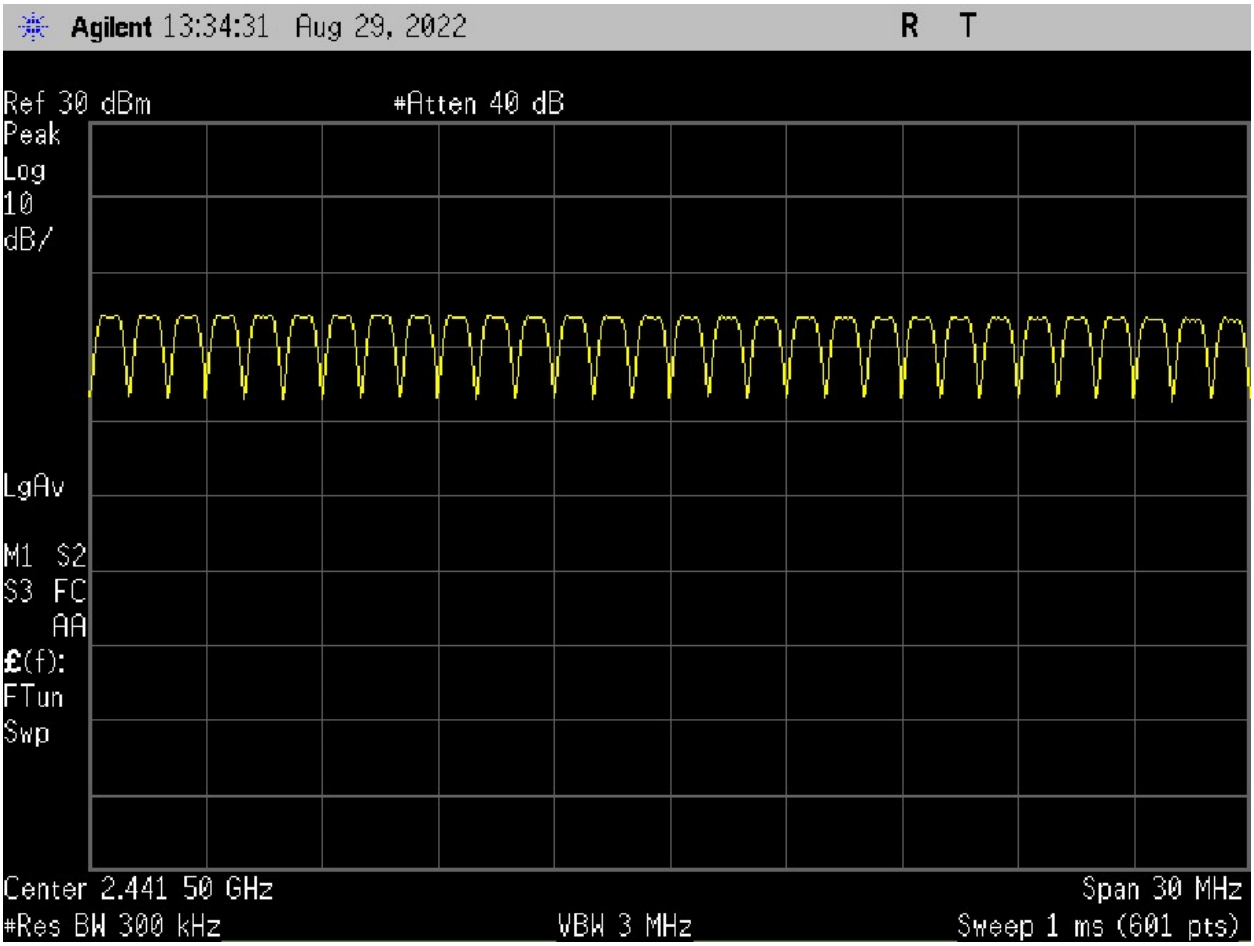
3.5 Number of Hopping Frequencies

Number of Hopping Frequencies		Verdict: PASS
Test according to Rule parts and clause	Reference	
	FCC 15.247(a)(1)(iii) / IC RSS-247 5.1(d)	
Test according to measurement reference	Reference Method	
	ANSI C63.10 7.8.3	
Tested frequencies	F_{LOW} / F_{HIGH}	
EUT test mode	DH5-Hop	
Test results		
Number of hopping frequencies	Limit	Result
79	>= 15	PASS
Comments:		

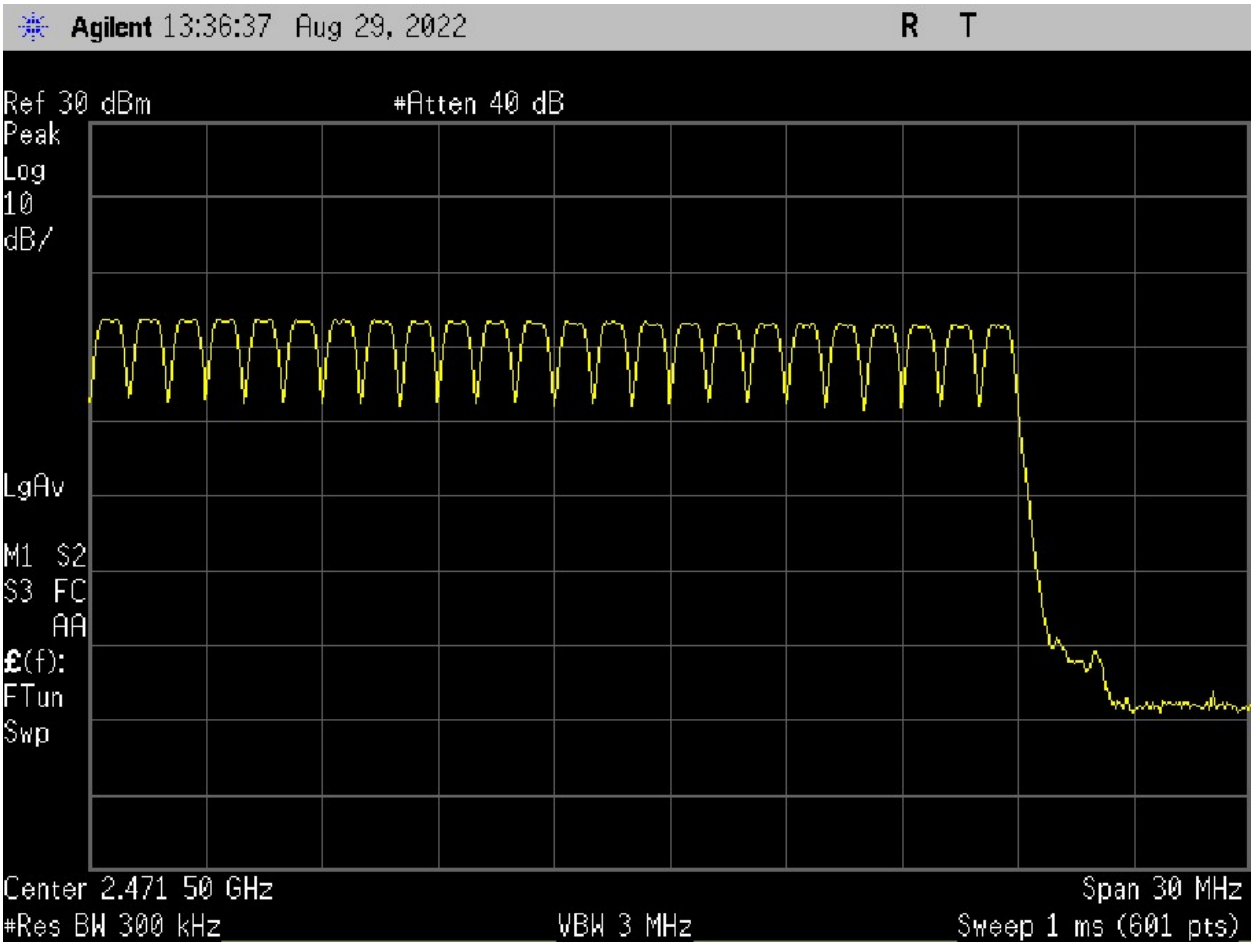
Hopping frequencies 0-24



Hopping frequencies 25-54

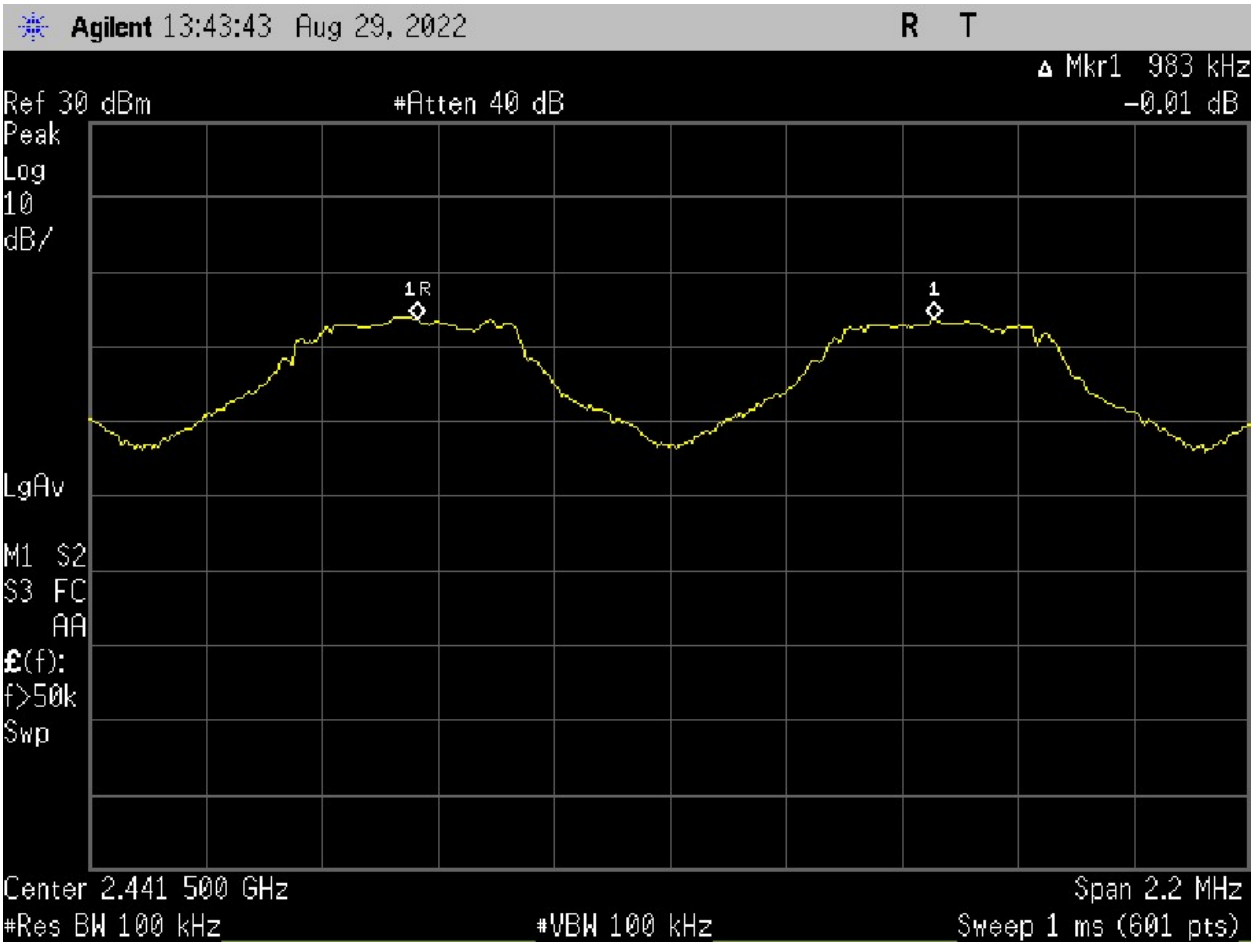


Hopping frequencies 55-78



3.6 Frequency Hopping channel separation

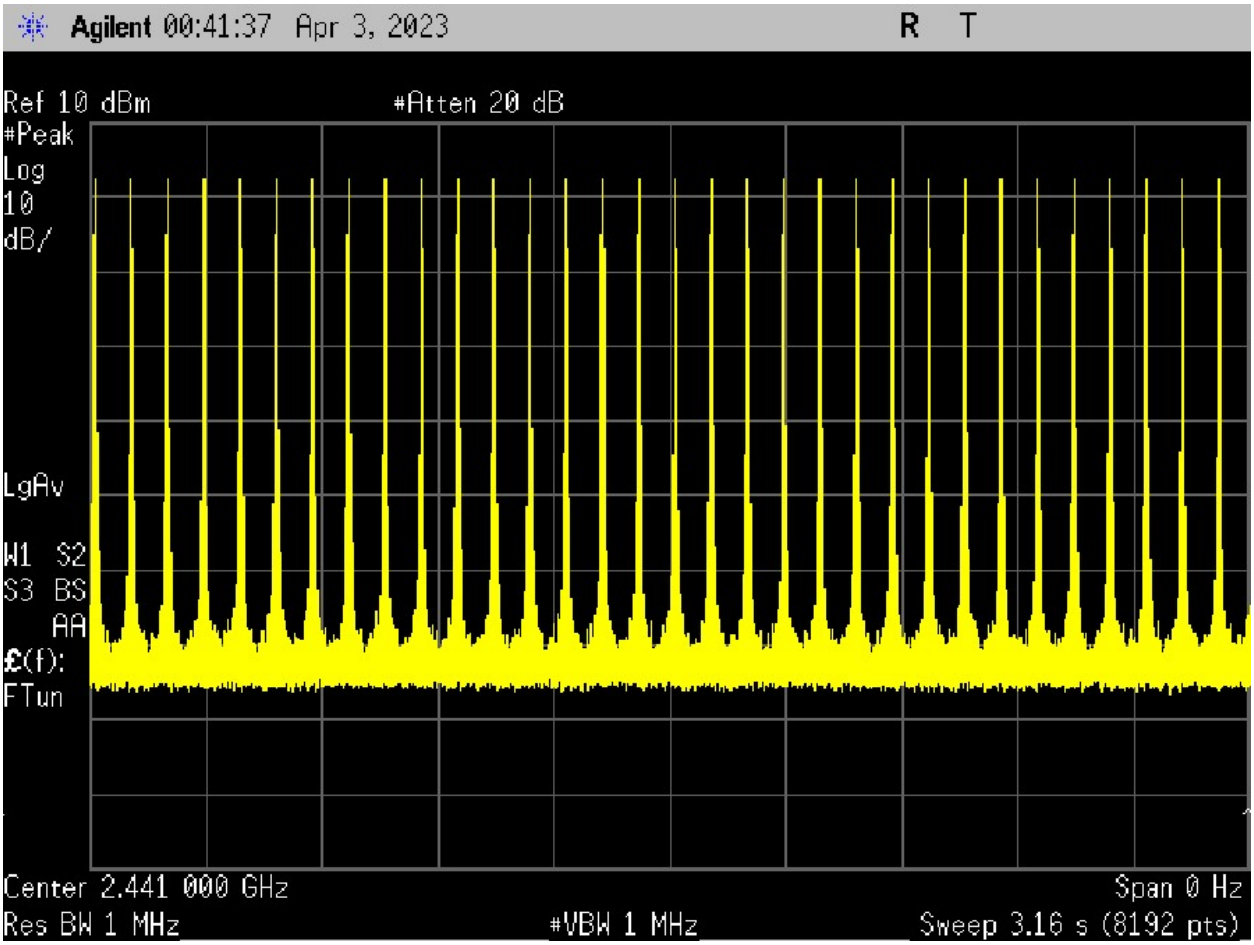
Number of Hopping Frequencies		Verdict: PASS
Test according to Rule parts and clause	Reference	
	FCC 15.247(a)(1) / IC RSS-247 5.1(d)	
Test according to measurement reference	Reference Method	
	ANSI C63.10 7.8.3	
Tested frequencies	2441 & 2442 MHz	
EUT test mode	DH5-HOP	
Test results		
Channel separation [kHz]	Limit	Result
983	>= 616.66	PASS
Comments:		

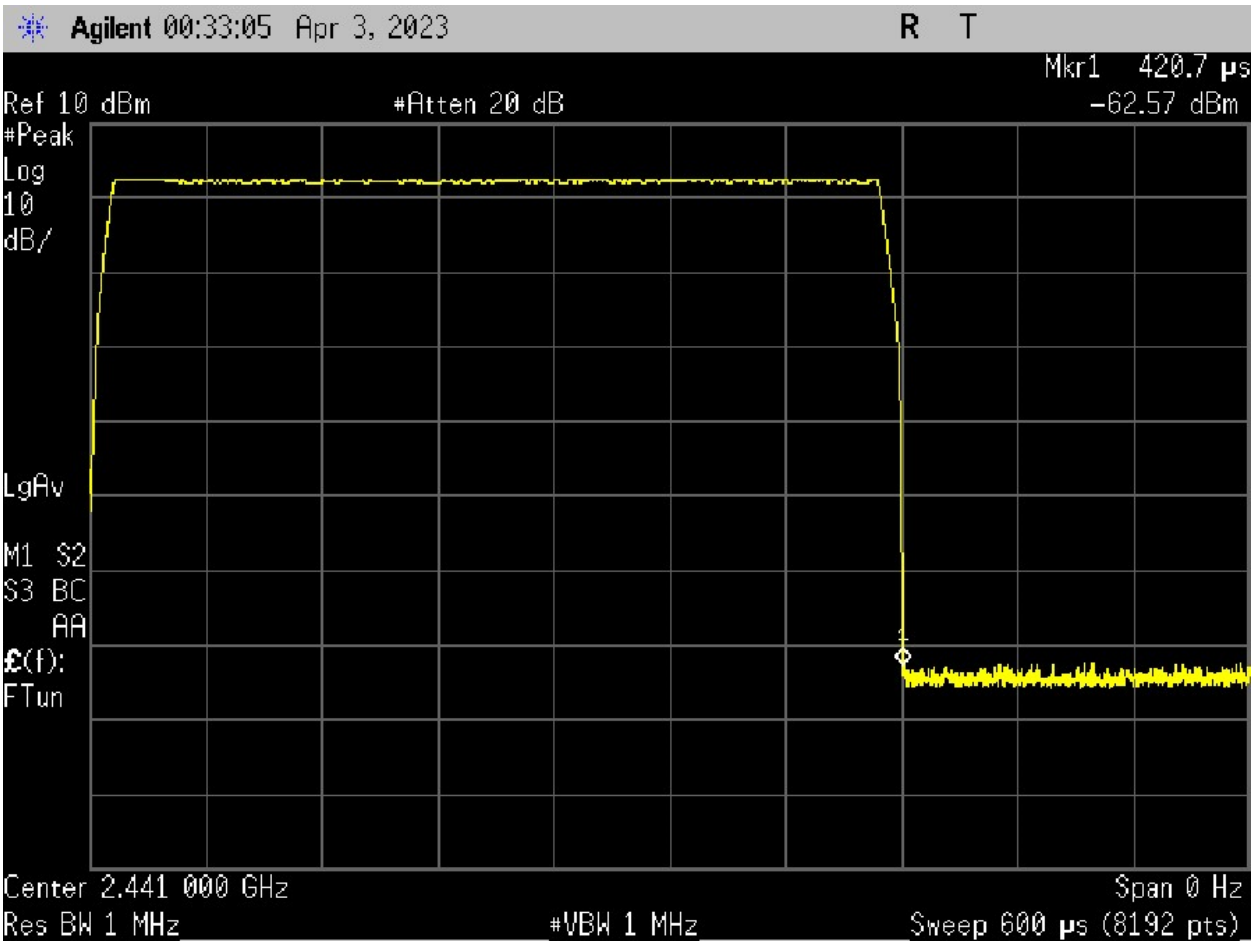

Agilent 13:43:43 Aug 29, 2022
R T
Mkr1 983 kHz
Ref 30 dBm
#Atten 40 dB
-0.01 dB
Peak
Log
10
dB/
1R
1
LgAv
M1 S2
S3 FC
AA
£(f):
f>50k
Swp
Center 2.441 500 GHz
Span 2.2 MHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 1 ms (601 pts)

3.7 Time of occupancy (Dwell time)

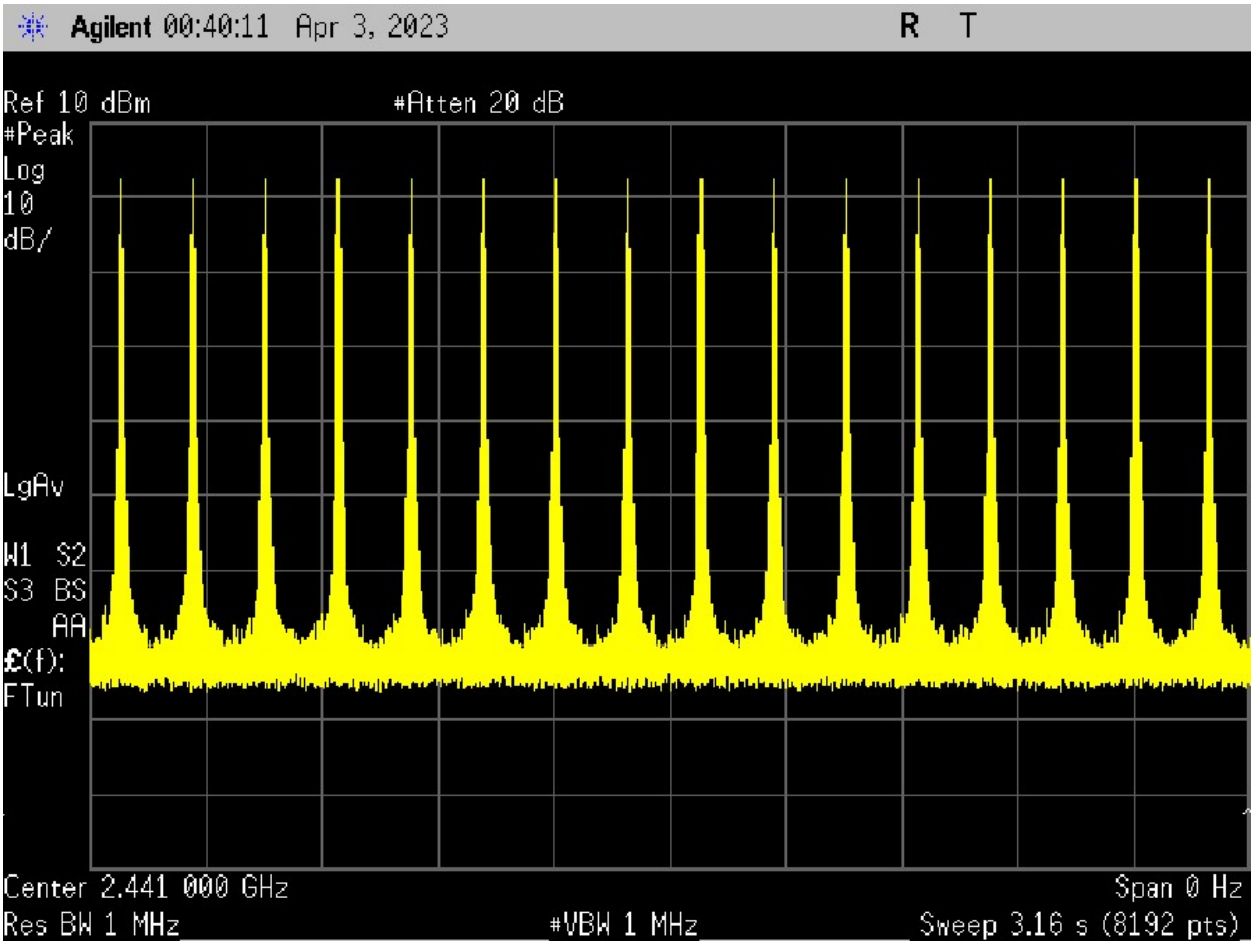
Time of occupancy (Dwell time)					Verdict: PASS
Test according to Rule parts and clause			Reference		
			FCC 15.247(a)(1)(iii) / IC RSS-247 5.1(d)		
Test according to measurement reference			Reference Method		
			ANSI C63.10 7.8.3		
Tested frequencies			2441 MHz		
Test results					
EUT test mode	Observation period [s]	No. of hops	Dwell time/hop [ms]	Time of occupancy [ms]	Limit [ms]
DH1	3.16 * 10	320	0.4207	134.624	<= 400
DH3	3.16 * 10	160	1.667	266.72	<= 400
DH5	3.16 * 10	110	2.918	320.98	<= 400
2-DH1	3.16 * 10	320	0.4269	136.608	<= 400
2-DH3	3.16 * 10	160	1.68	268.8	<= 400
2-DH5	3.16 * 10	110	2.934	322.74	<= 400
3-DH1	3.16 * 10	320	0.427	136.64	<= 400
3-DH3	3.16 * 10	160	1.678	268.48	<= 400
3-DH5	3.16 * 10	110	2.928	322.08	<= 400
Comments:					

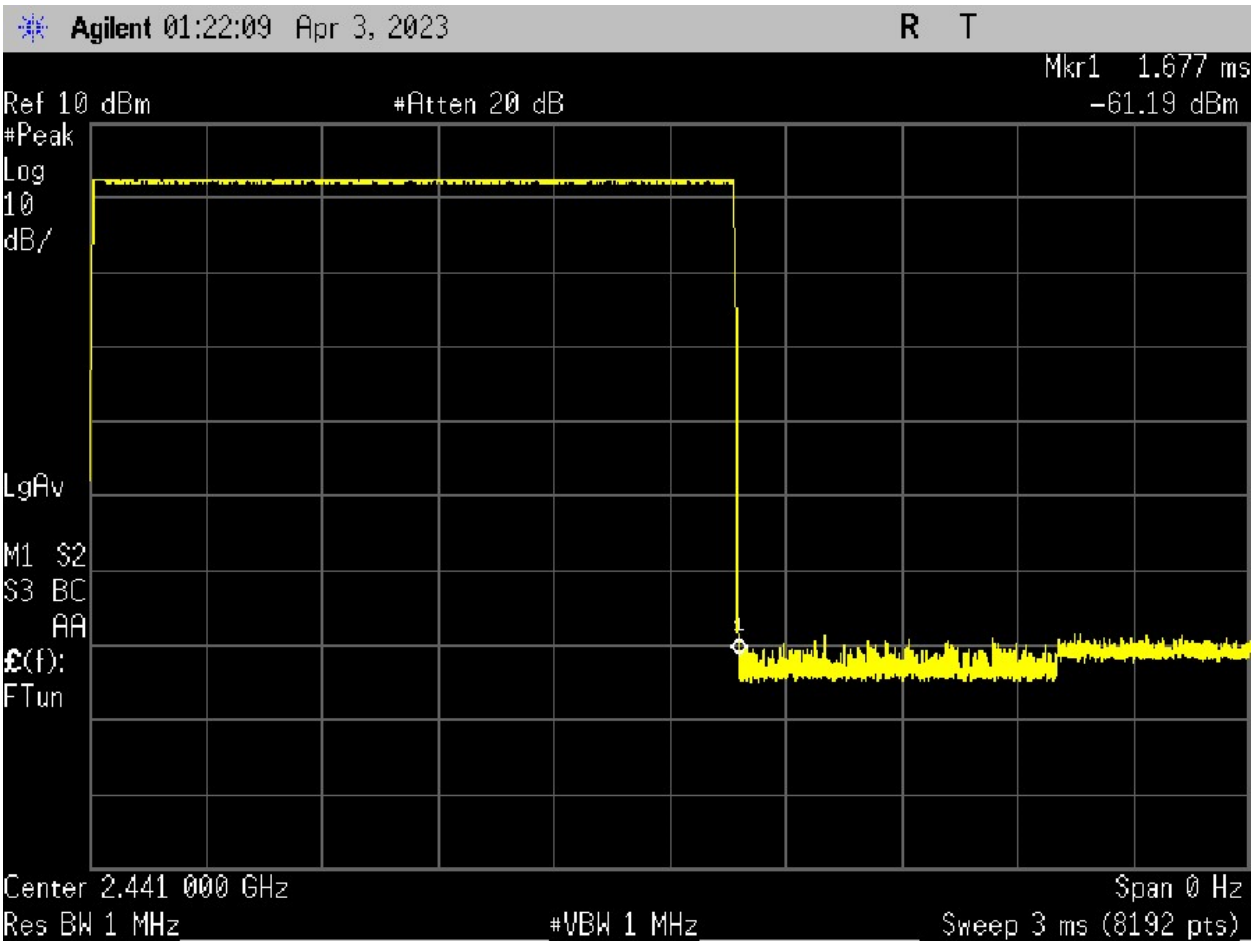
DH1


Agilent 00:41:37 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

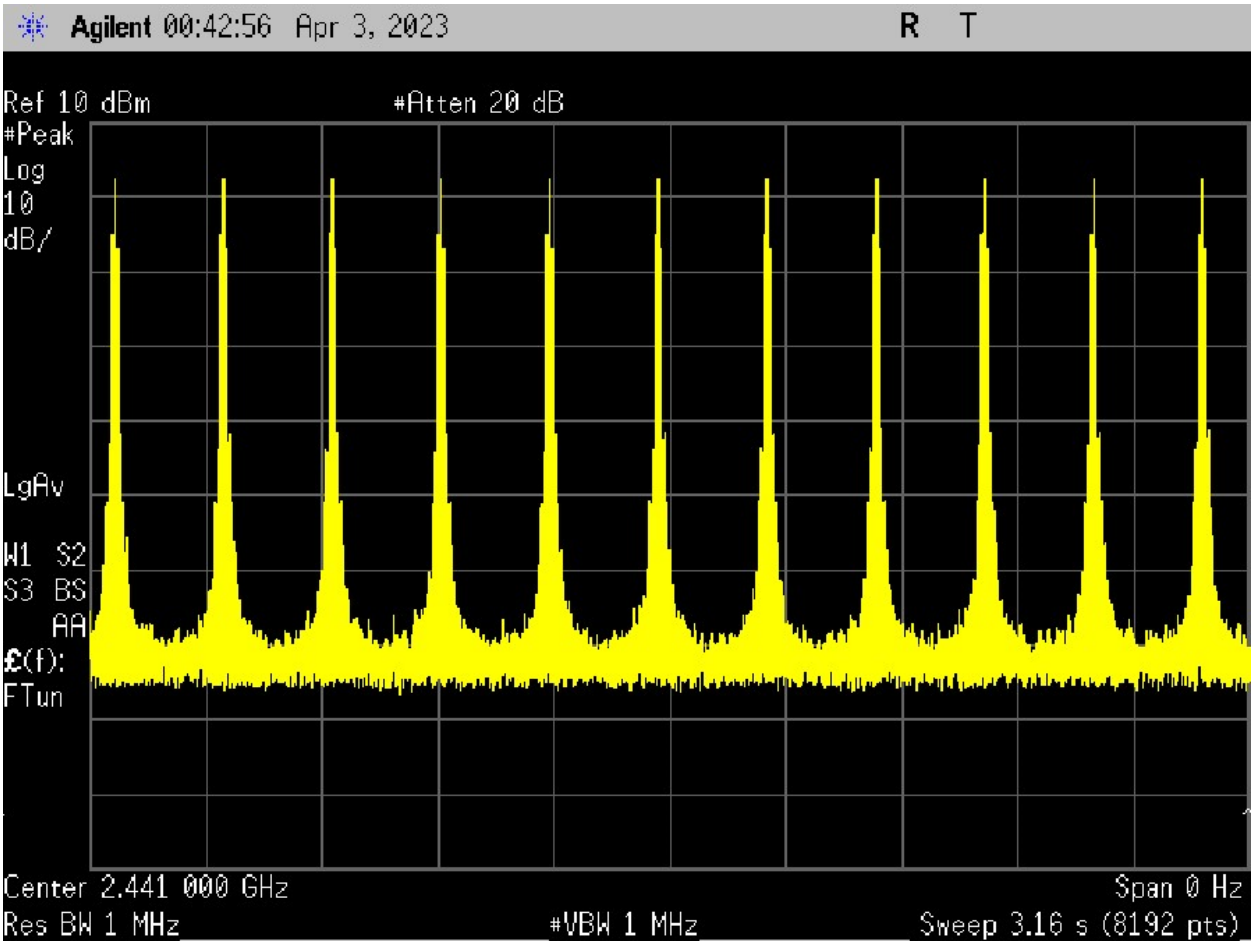

Agilent 00:33:05 Apr 3, 2023
R T
Mkr1 420.7 µs
Ref 10 dBm
#Atten 20 dB
−62.57 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 600 µs (8192 pts)

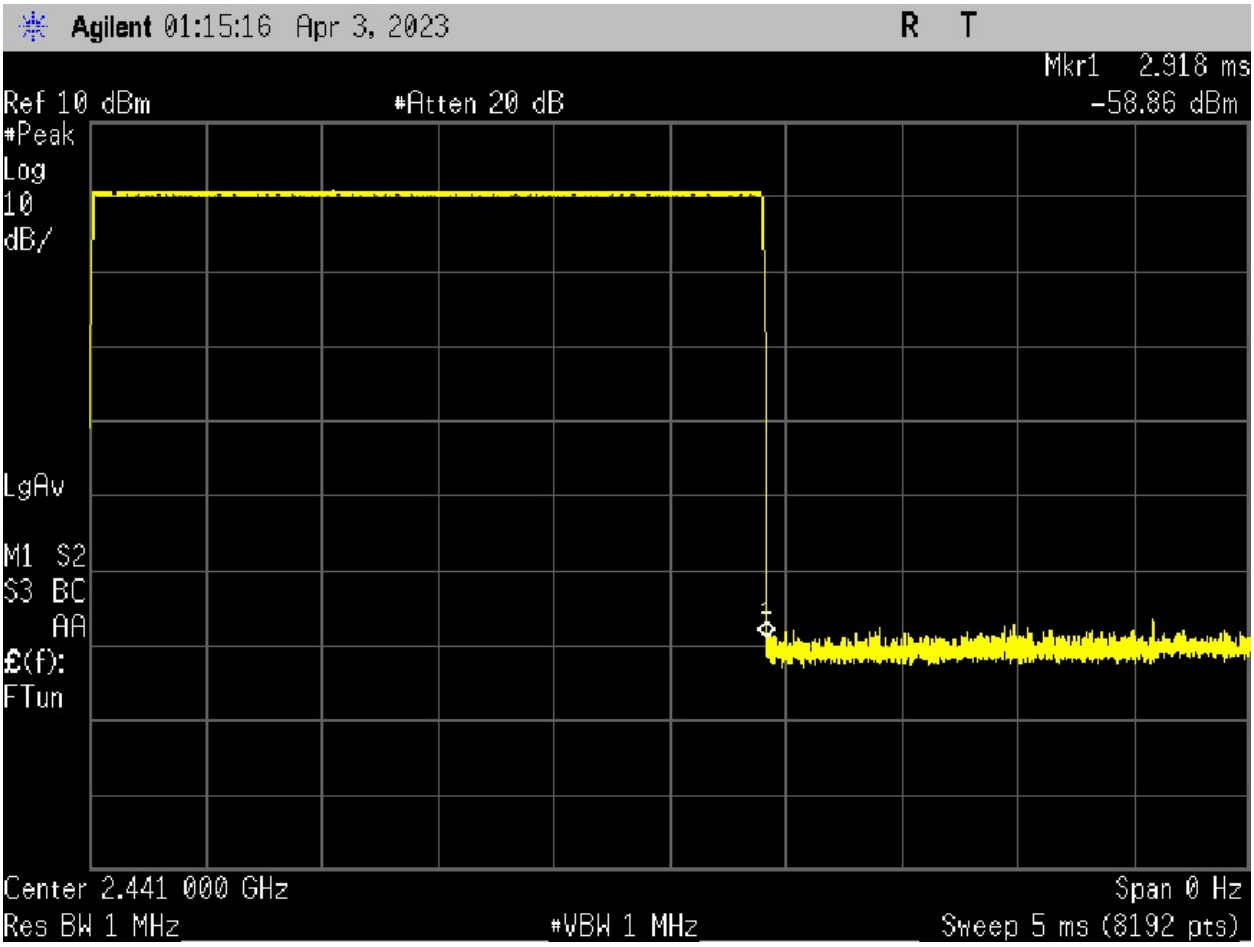
DH3


Agilent 00:40:11 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

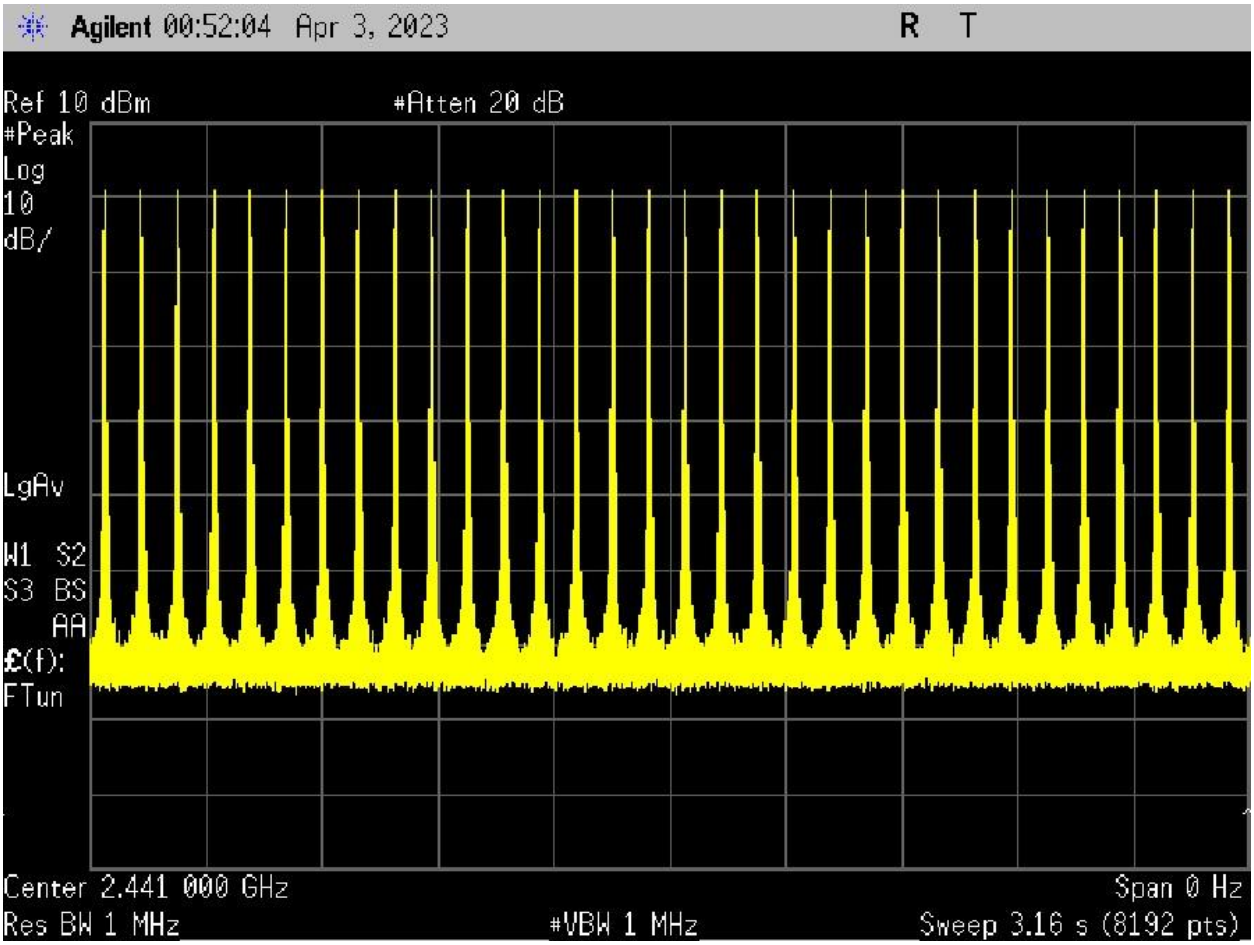

Agilent 01:22:09 Apr 3, 2023
R T
Mkr1 1.677 ms
Ref 10 dBm
#Atten 20 dB
-61.19 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3 ms (8192 pts)

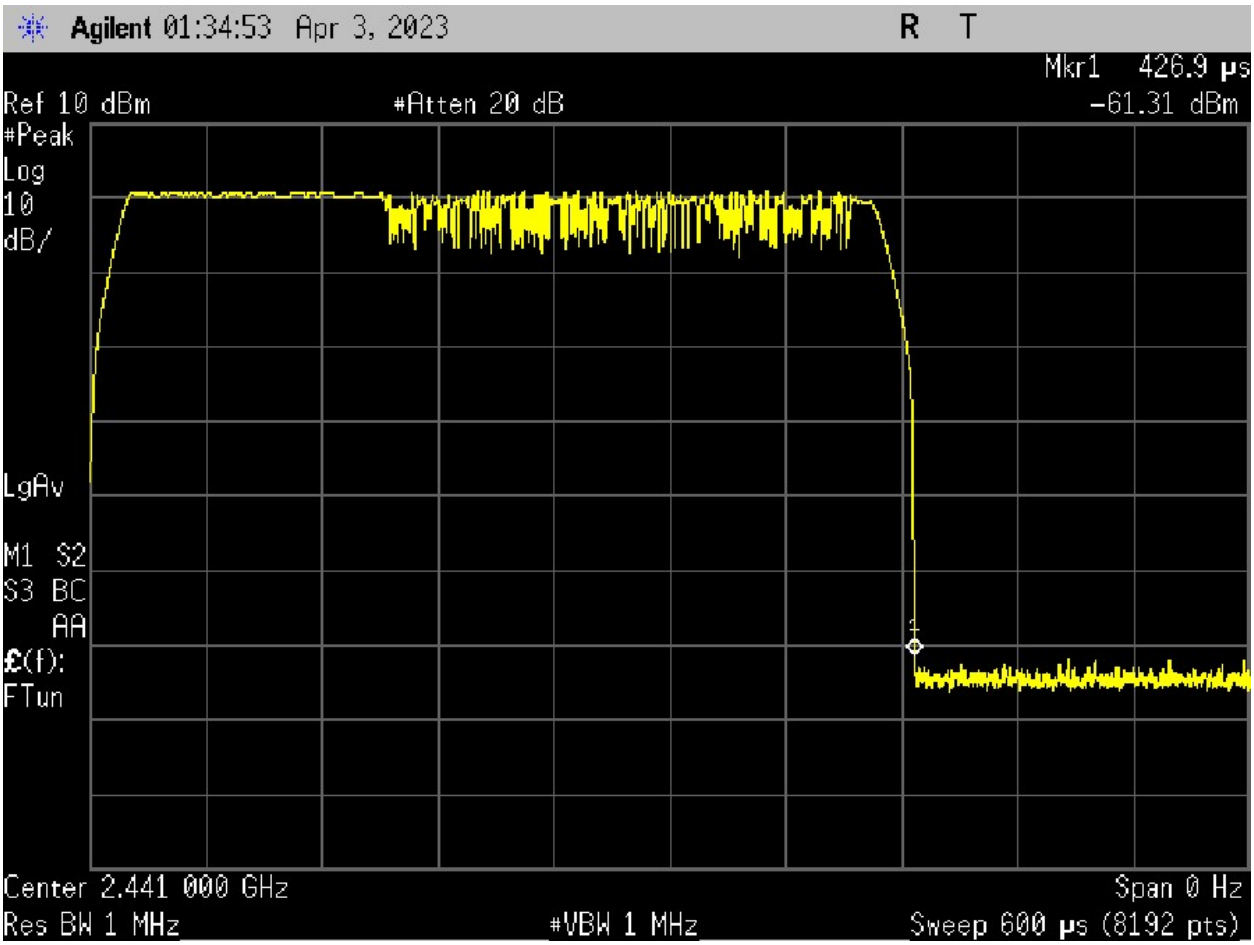
DH5


Agilent 00:42:56 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

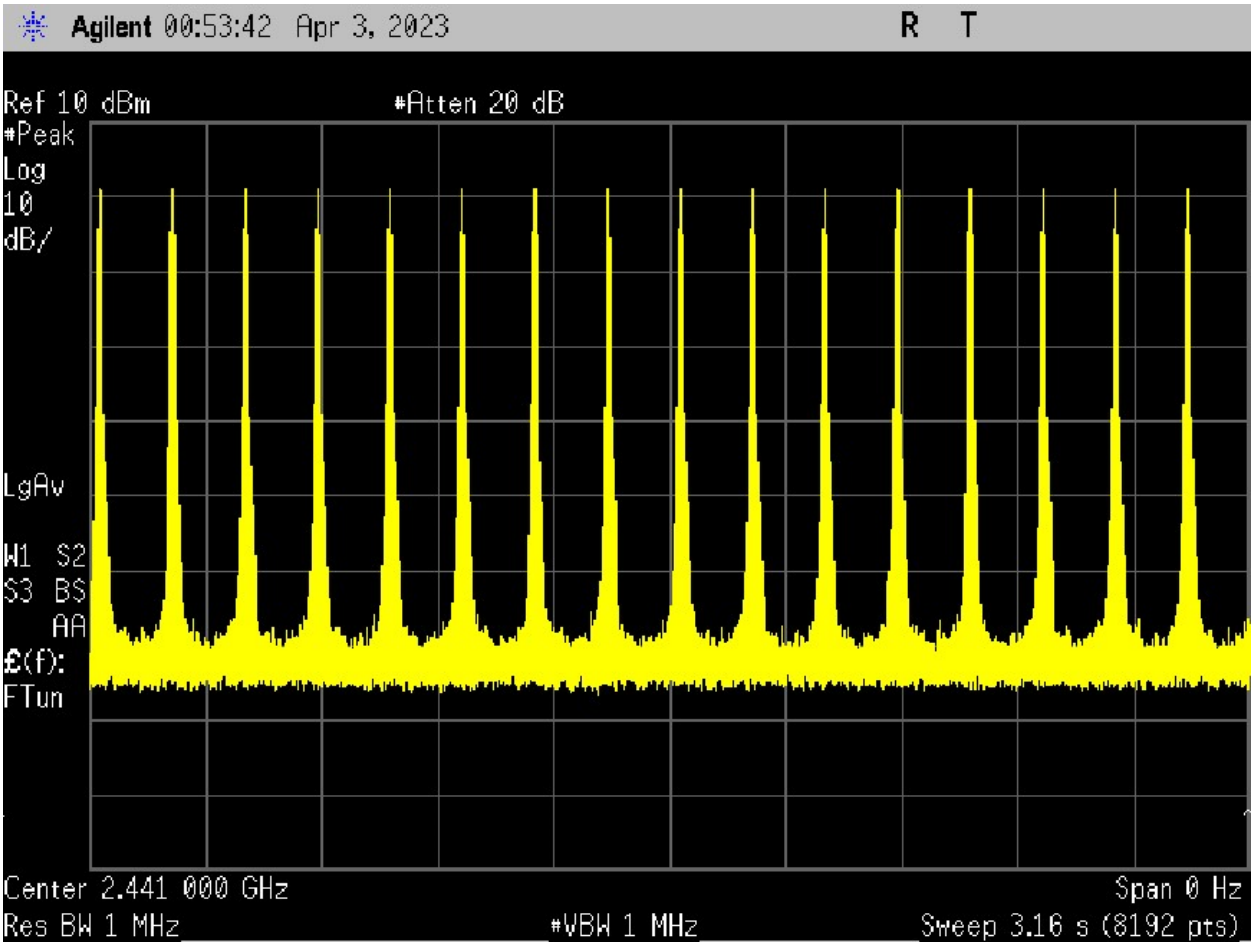

Agilent 01:15:16 Apr 3, 2023
R T
Mkr1 2.918 ms
Ref 10 dBm
#Atten 20 dB
-58.86 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 5 ms (8192 pts)

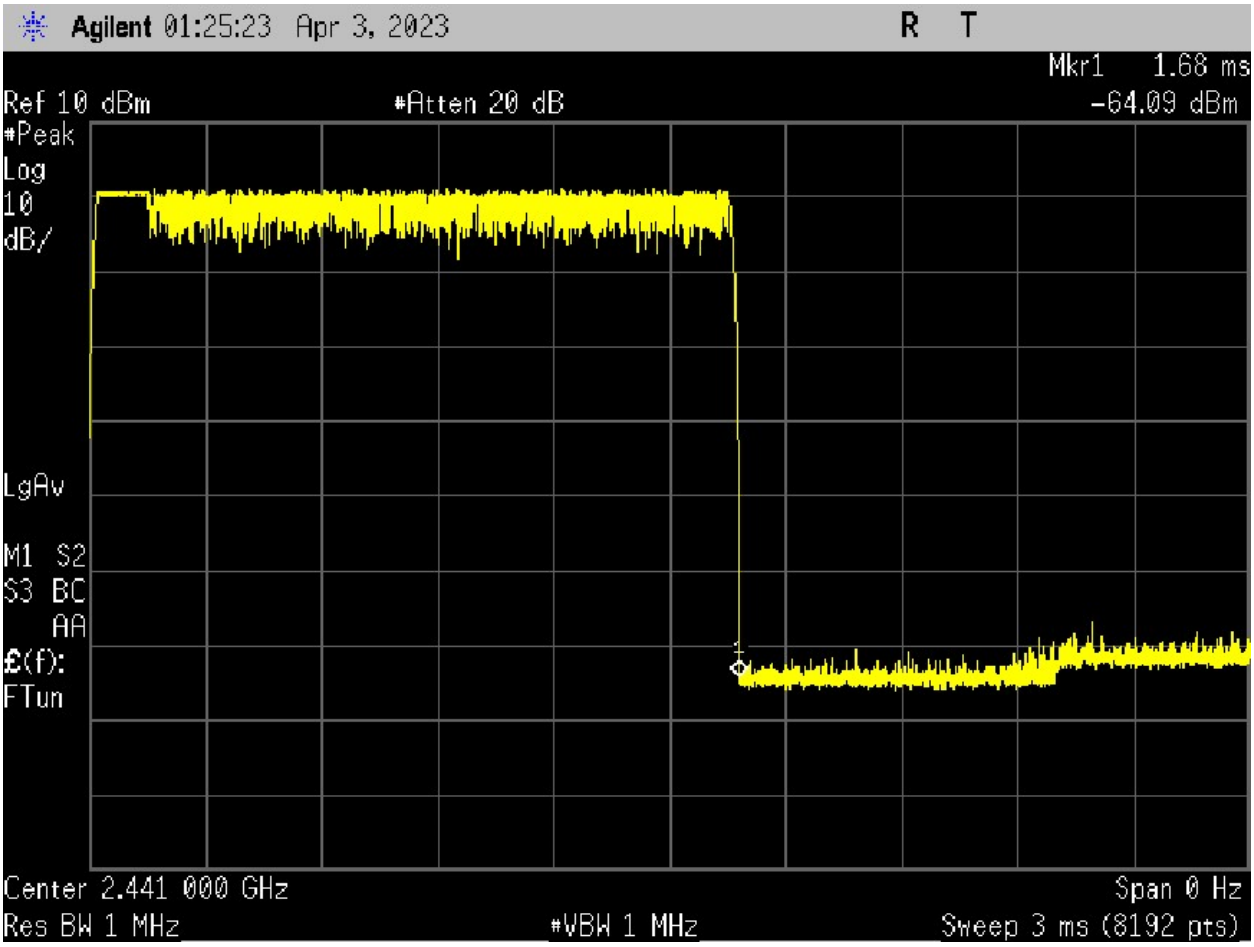
2-DH1


Agilent 00:52:04 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

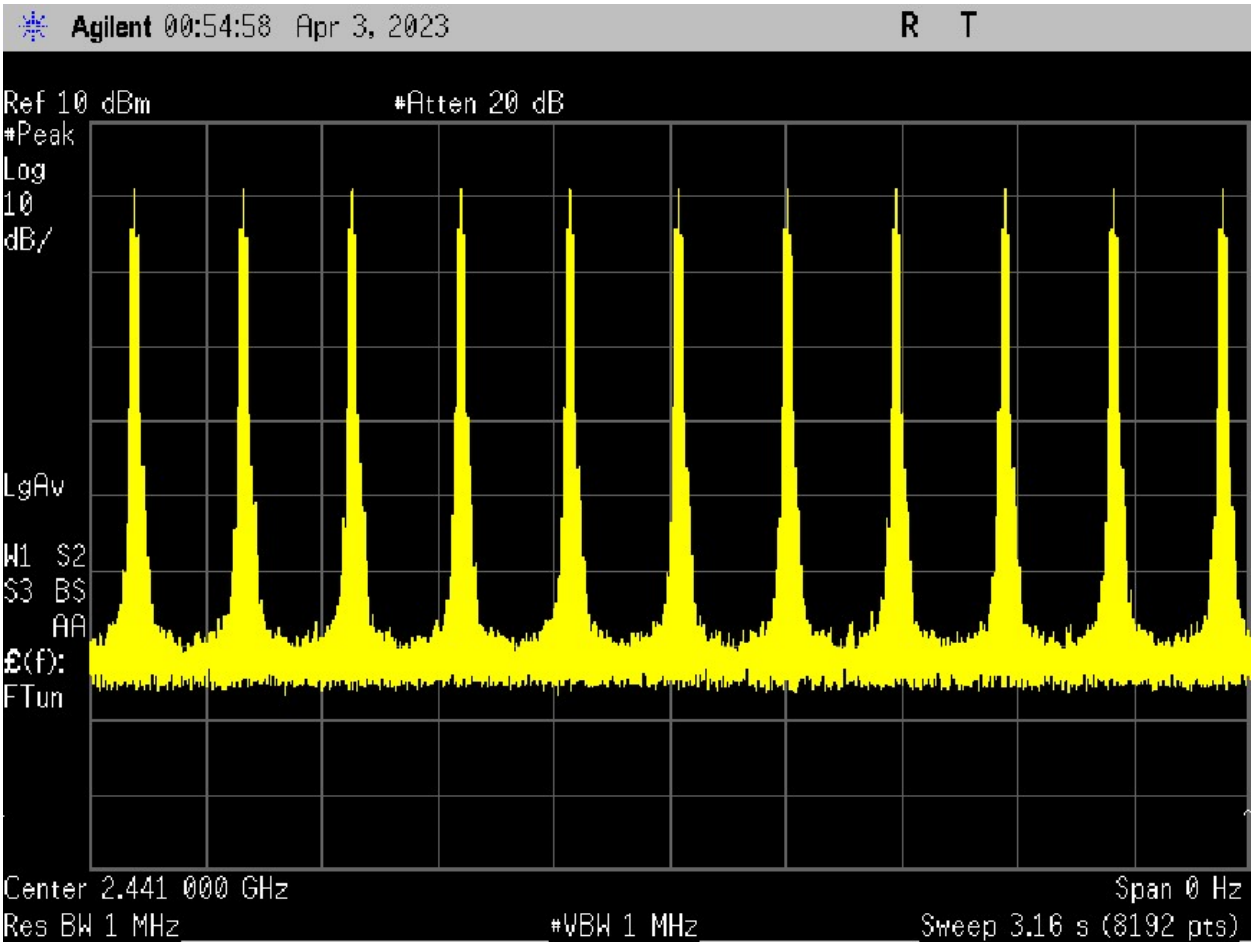

Agilent 01:34:53 Apr 3, 2023
R T
Mkr1 426.9 µs
Ref 10 dBm
#Atten 20 dB
−61.31 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 600 µs (8192 pts)

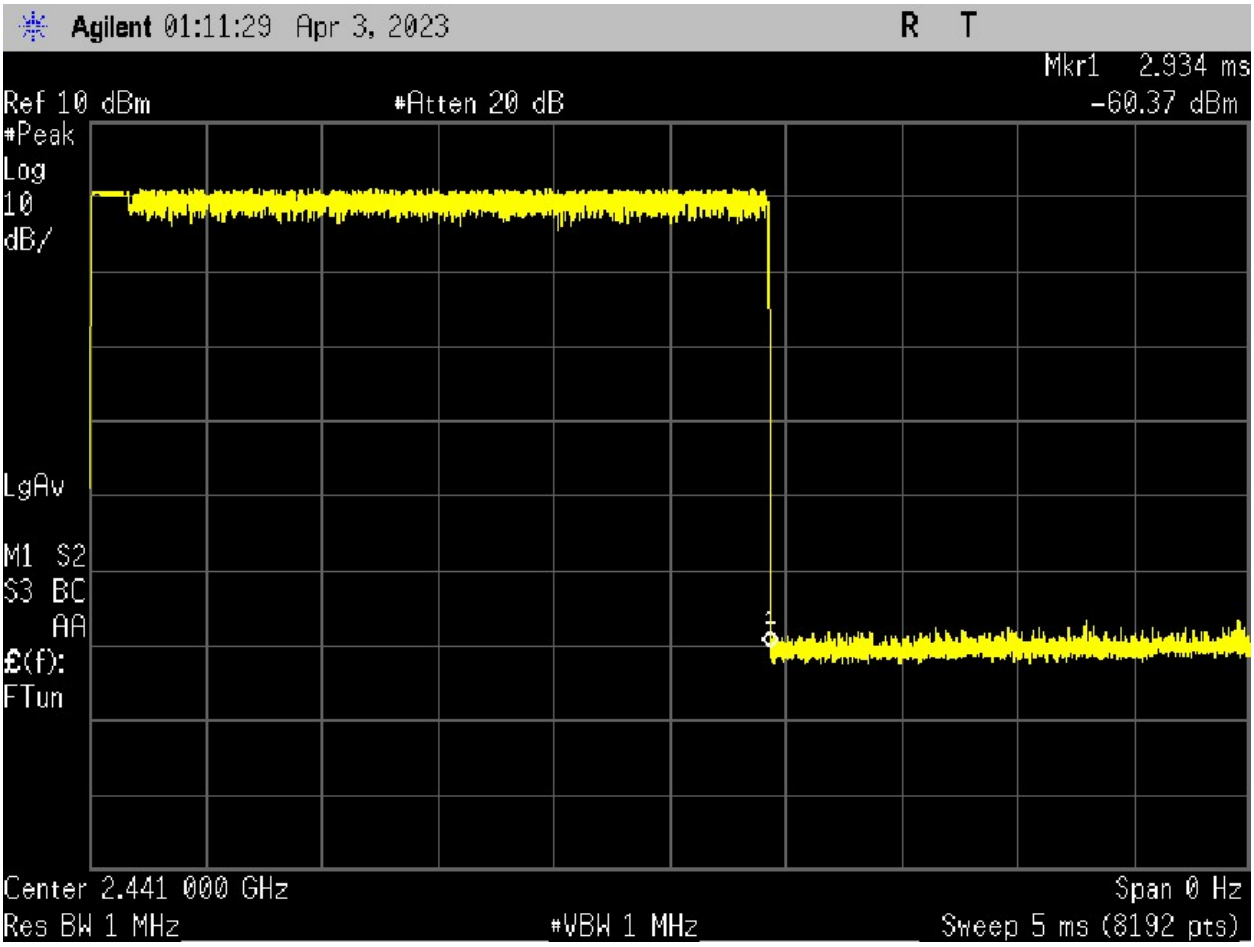
2-DH3


Agilent 00:53:42 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

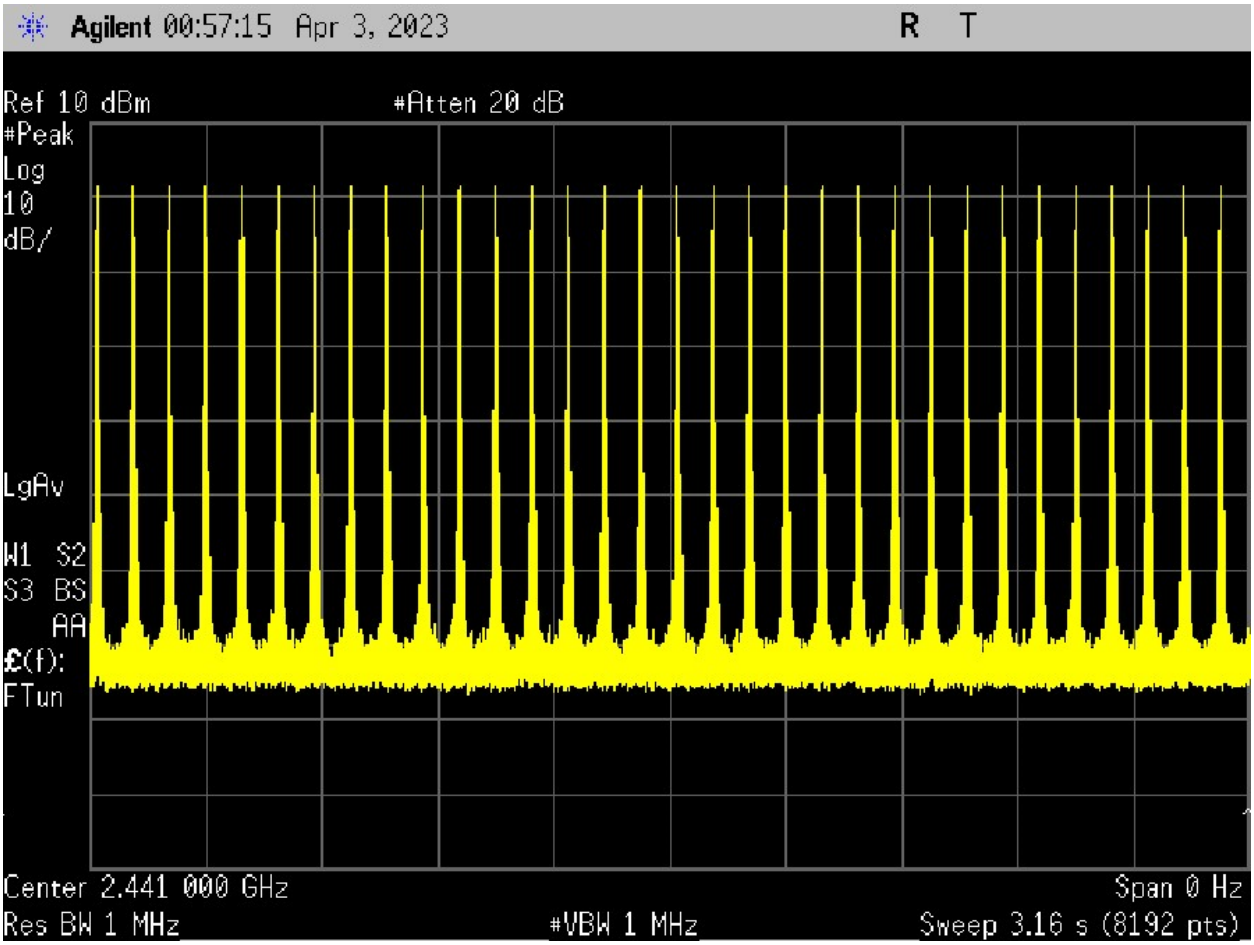

Agilent 01:25:23 Apr 3, 2023
R T
Mkr1 1.68 ms
Ref 10 dBm
#Atten 20 dB
-64.09 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3 ms (8192 pts)

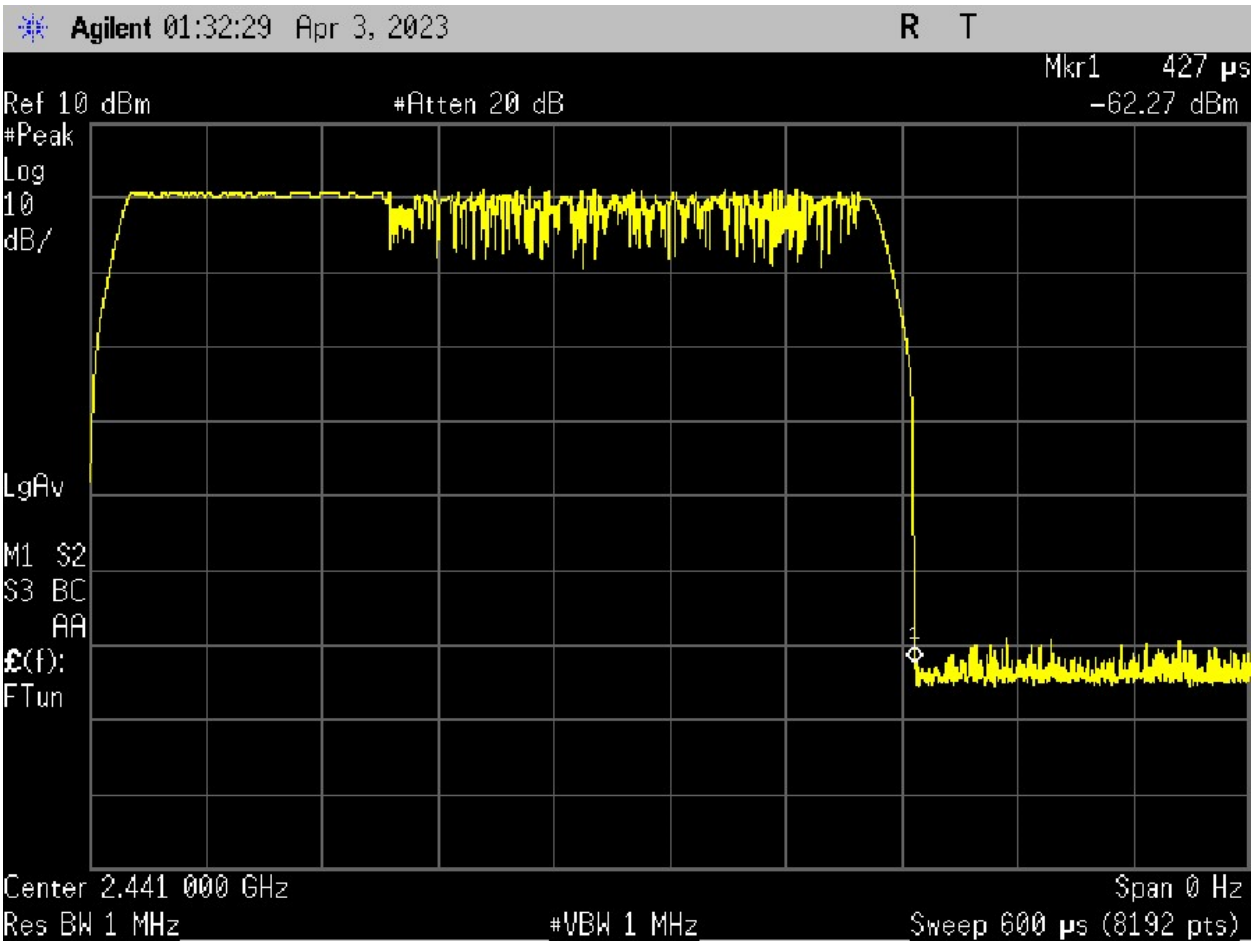
2-DH5


Agilent 00:54:58 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

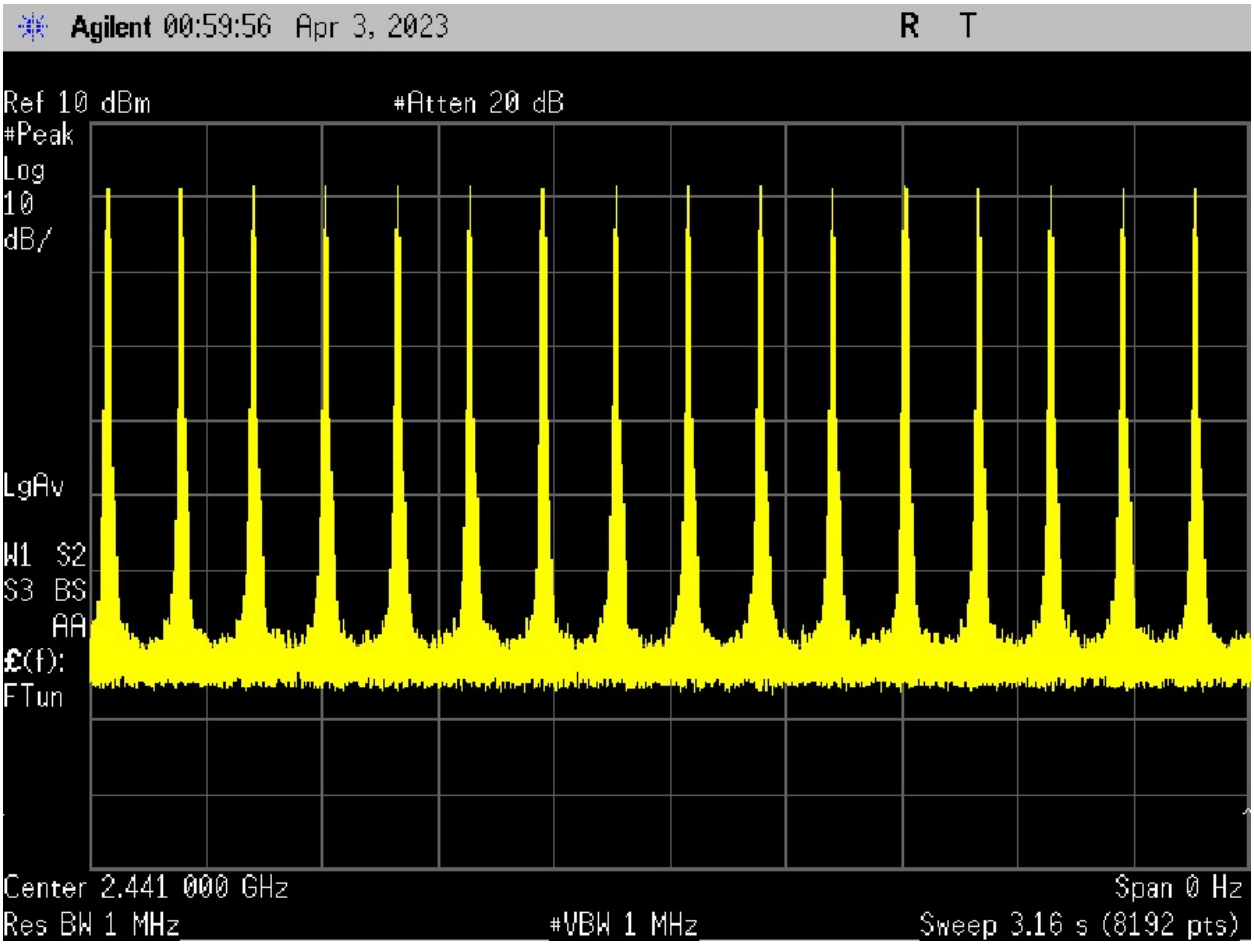

Agilent 01:11:29 Apr 3, 2023
R T
Mkr1 2.934 ms
Ref 10 dBm
#Atten 20 dB
-60.37 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 5 ms (8192 pts)

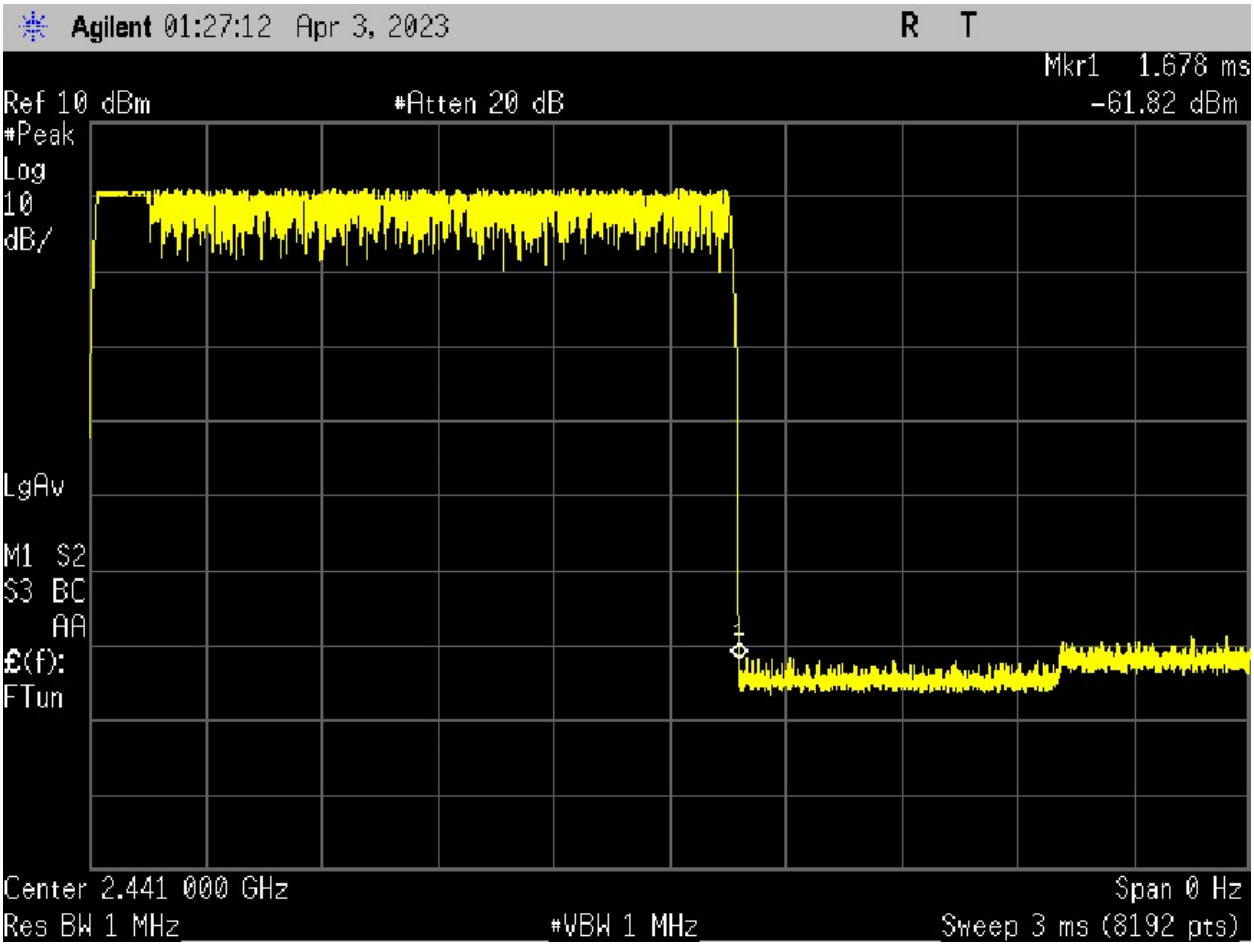
3-DH1


Agilent 00:57:15 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

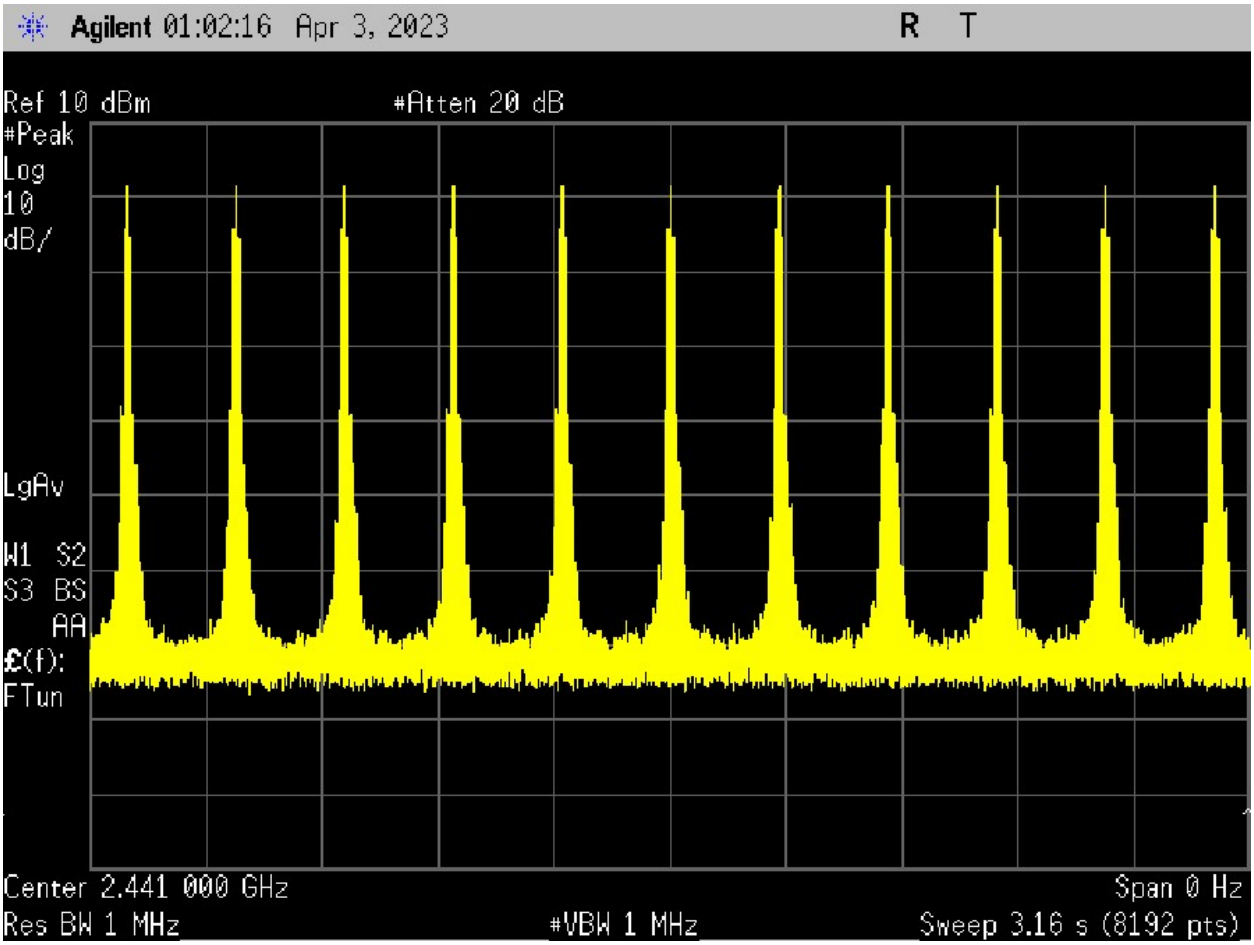

Agilent 01:32:29 Apr 3, 2023
R T
Mkr1 427 µs
Ref 10 dBm
#Atten 20 dB
−62.27 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 600 µs (8192 pts)

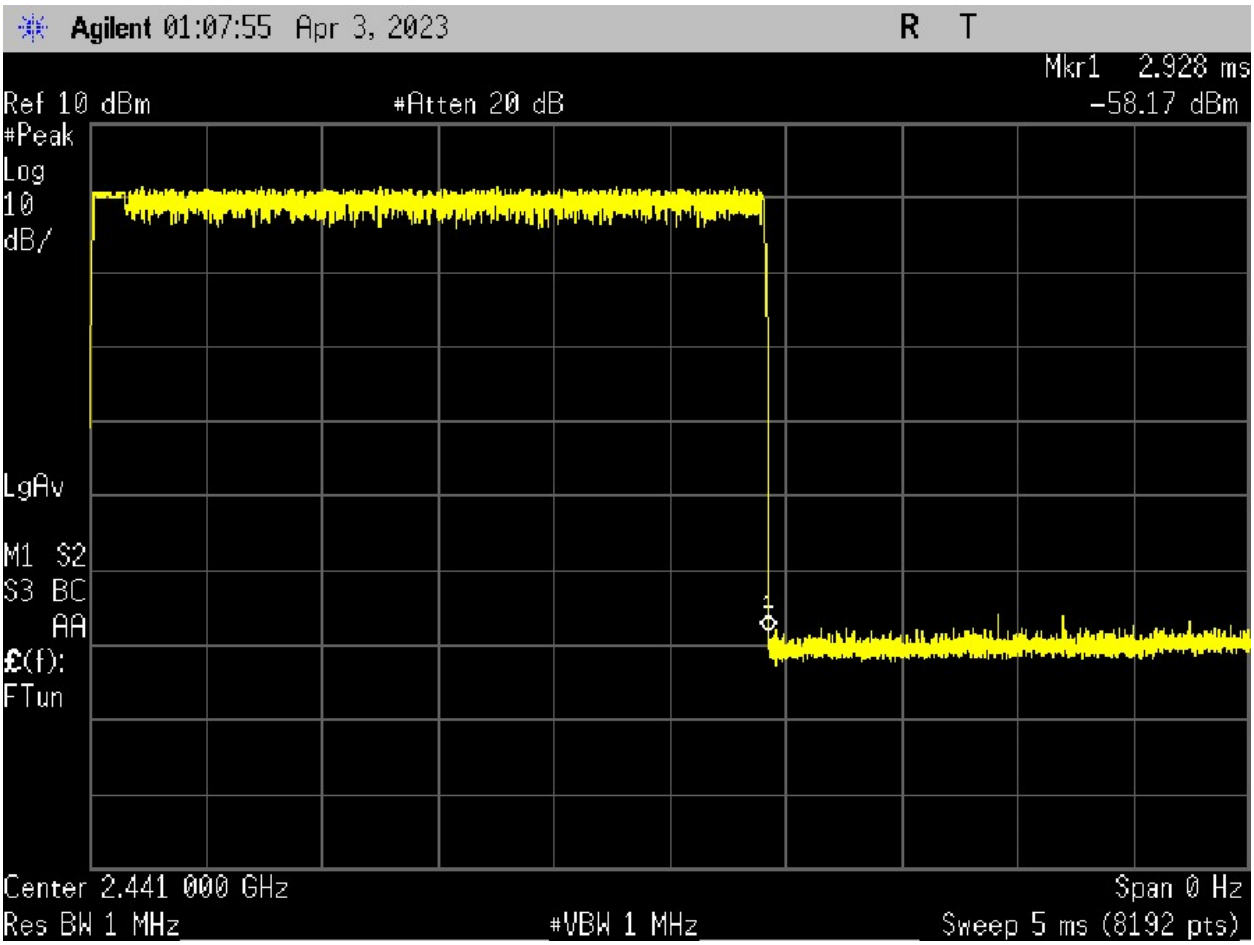
3-DH3


Agilent 00:59:56 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)


Agilent 01:27:12 Apr 3, 2023
R T
Mkr1 1.678 ms
Ref 10 dBm
#Atten 20 dB
-61.82 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3 ms (8192 pts)

3-DH5


Agilent 01:02:16 Apr 3, 2023
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
W1 S2
S3 BS
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 s (8192 pts)

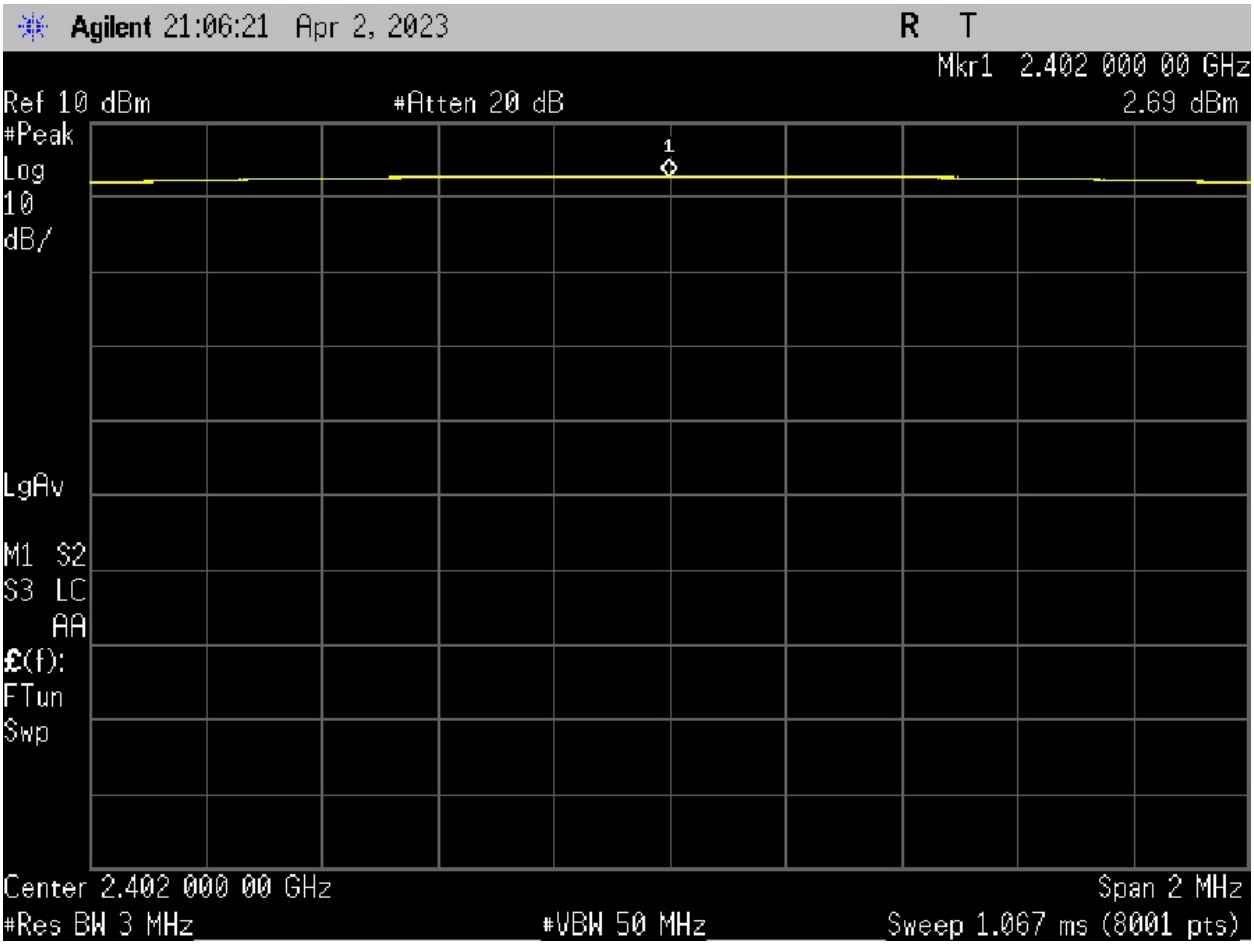

Agilent 01:07:55 Apr 3, 2023
R T
Mkr1 2.928 ms
Ref 10 dBm
#Atten 20 dB
-58.17 dBm
#Peak
Log
10
dB/
LgAv
M1 S2
S3 BC
AA
£(f):
FTun
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 5 ms (8192 pts)

3.8 Test conditions and results – Peak transmit power

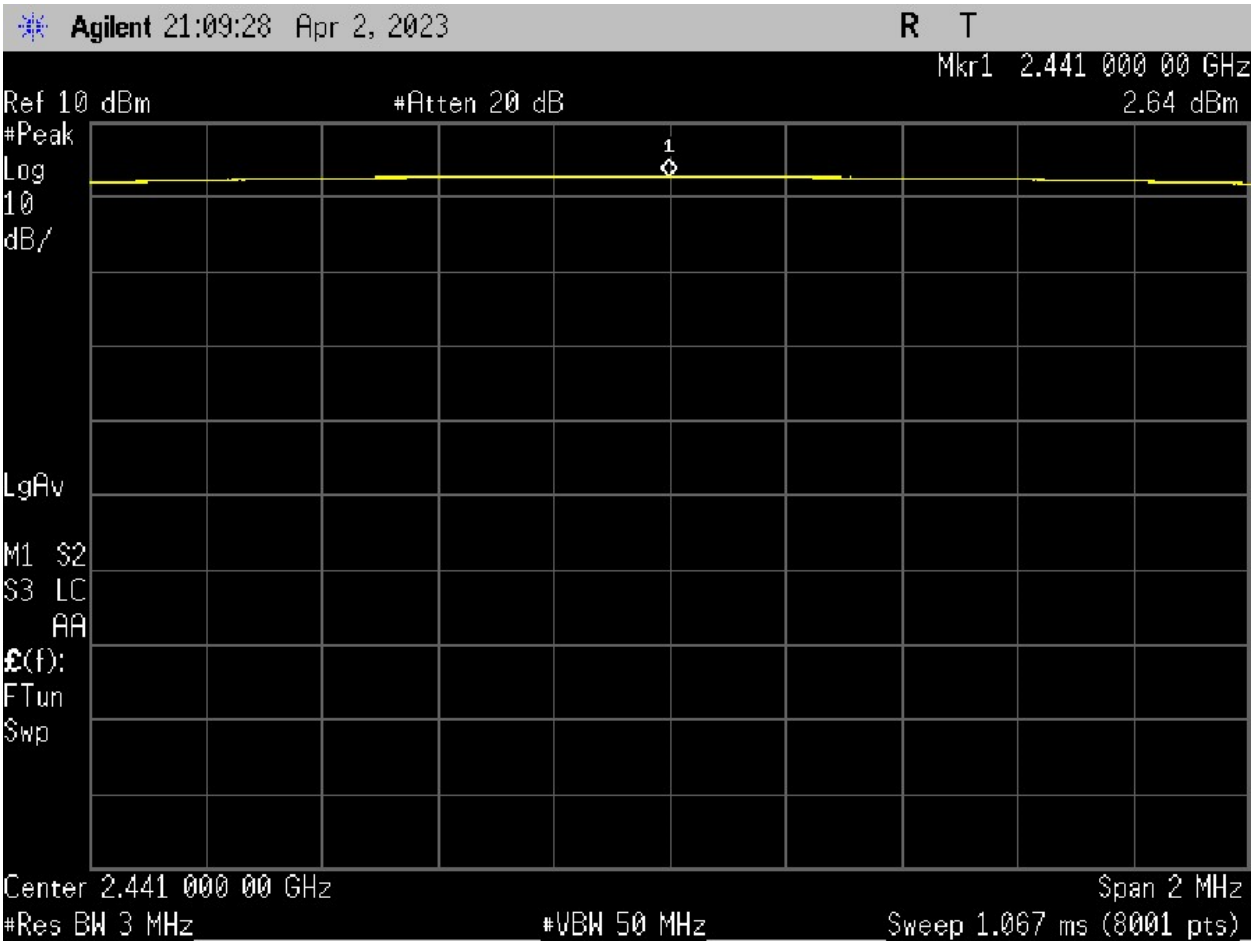
Peak transmit power	Verdict: PASS
EUT requirement rule parts and clause	Reference FCC 15.247(b)(3), IC RSS-247 5.1(b)
Test according to measurement reference	Reference Method ANSI C63.10 7.8.5
Tested frequencies	F_{LOW} / F_{MID} / F_{HIGH}
Measurement mode	Peak

Test results - FCC					
Channel	Frequency [MHz]	Mode	Peak power [dBm]	Limit [dBm]	Margin [dB]
F_{LOW}	2402	DH5-Sngl	2.69	30	27.31
F_{MID}	2441	DH5-Sngl	2.64	30	27.36
F_{HIGH}	2480	DH5-Sngl	1.72	30	28.28
Comments:					

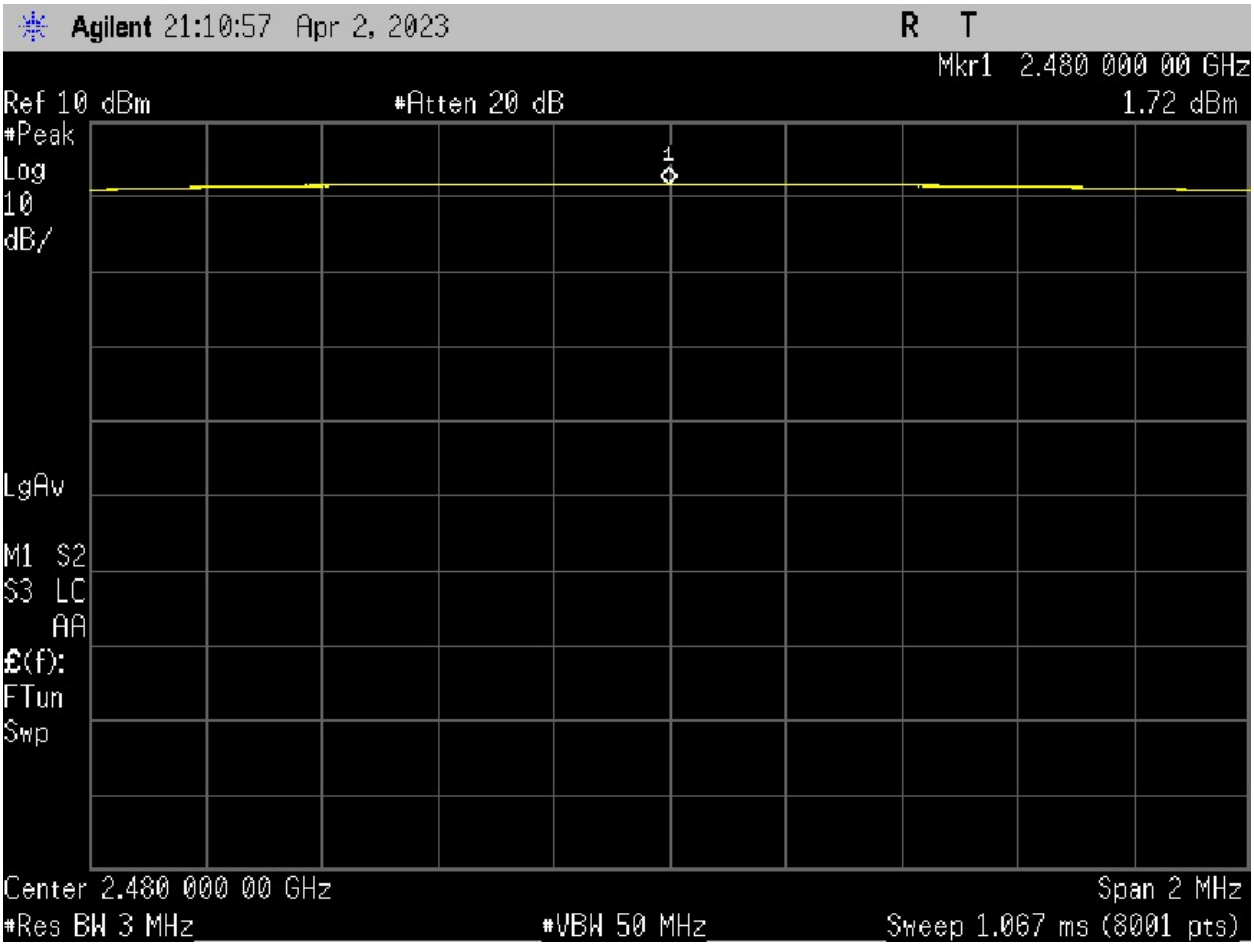
F_{LOW}


Agilent 21:06:21 Apr 2, 2023
R T
Mkr1 2.402 000 00 GHz
Ref 10 dBm
#Atten 20 dB
2.69 dBm
#Peak
Log
10
dB/
1
LgAv
M1 S2
S3 LC
AA
£(f):
FTun
Swp
Center 2.402 000 00 GHz
Span 2 MHz
#Res BW 3 MHz
#VBW 50 MHz
Sweep 1.067 ms (8001 pts)

F_{MID}


Agilent 21:09:28 Apr 2, 2023
R T
Mkr1 2.441 000 00 GHz
Ref 10 dBm
#Atten 20 dB
2.64 dBm
#Peak
Log
10
dB/
1
LgAv
M1 S2
S3 LC
AA
£(f):
FTun
Swp
Center 2.441 000 00 GHz
Span 2 MHz
#Res BW 3 MHz
#VBW 50 MHz
Sweep 1.067 ms (8001 pts)

F_{HIGH}

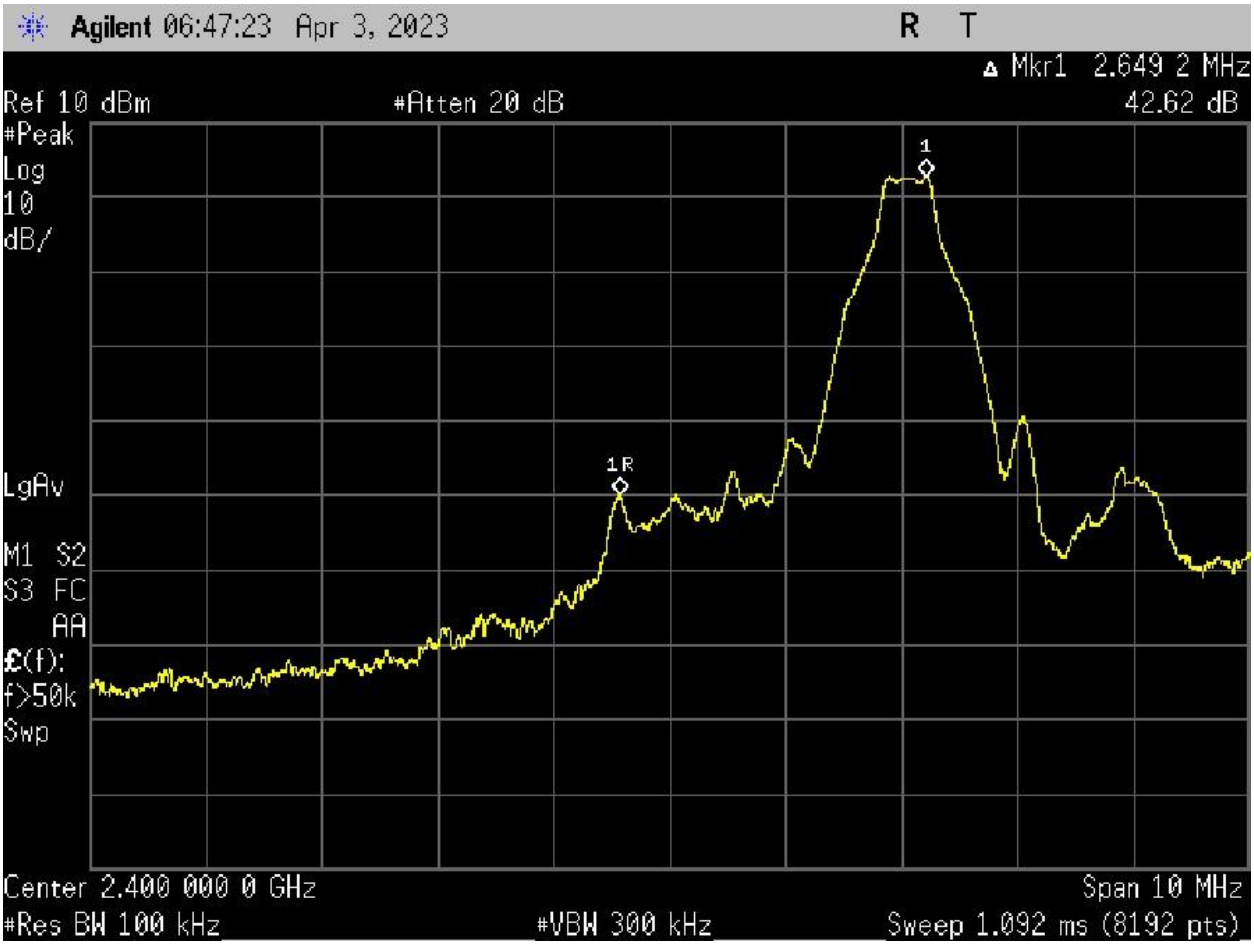

Agilent 21:10:57 Apr 2, 2023
R T
Mkr1 2.480 000 00 GHz
Ref 10 dBm
#Atten 20 dB
1.72 dBm
#Peak
Log
10
dB/
1
LgAv
M1 S2
S3 LC
AA
£(f):
FTun
Swp
Center 2.480 000 00 GHz
Span 2 MHz
#Res BW 3 MHz
#VBW 50 MHz
Sweep 1.067 ms (8001 pts)

3.9 Band edge

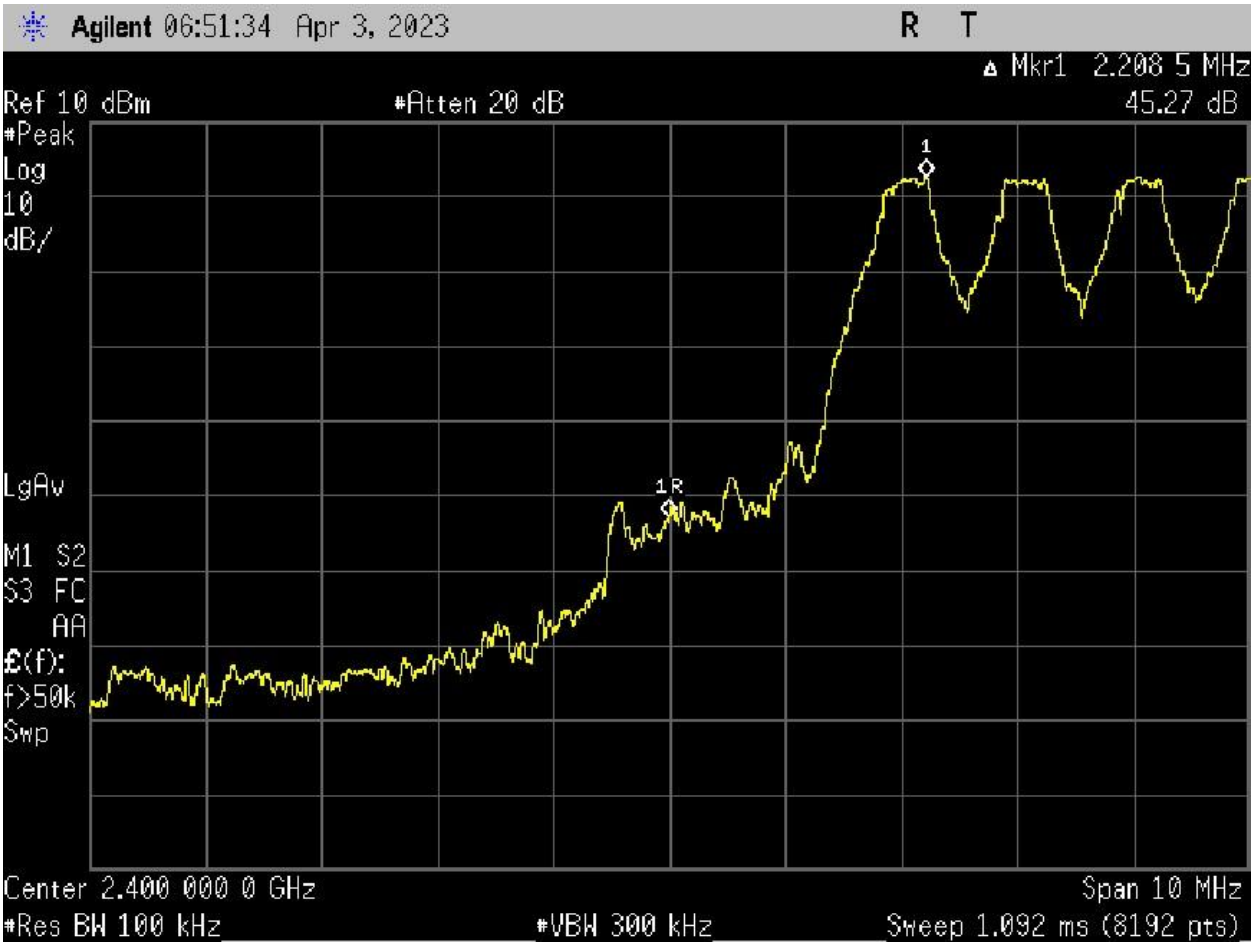
Band edge	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.247(d), IC RSS-247 5.5
Test according to measurement reference	Reference Method
	ANSI C63.10 7.8.8 & 11.13.3.2
Tested frequencies	F_{low} / F_{high}
Measurement mode	Peak

Test results					
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBm]	Margin [dB]
F_{LOW}	2402	DH5-Sngl	-42.62	-20	22.62
F_{HIGH}	2402	DH5-Hop	-45.27	-20	25.27
F_{LOW}	2480	DH5-Sngl	-59.93	-20	39.93
F_{HIGH}	2480	DH5-Hop	-61.91	-20	41.91
Comments:					

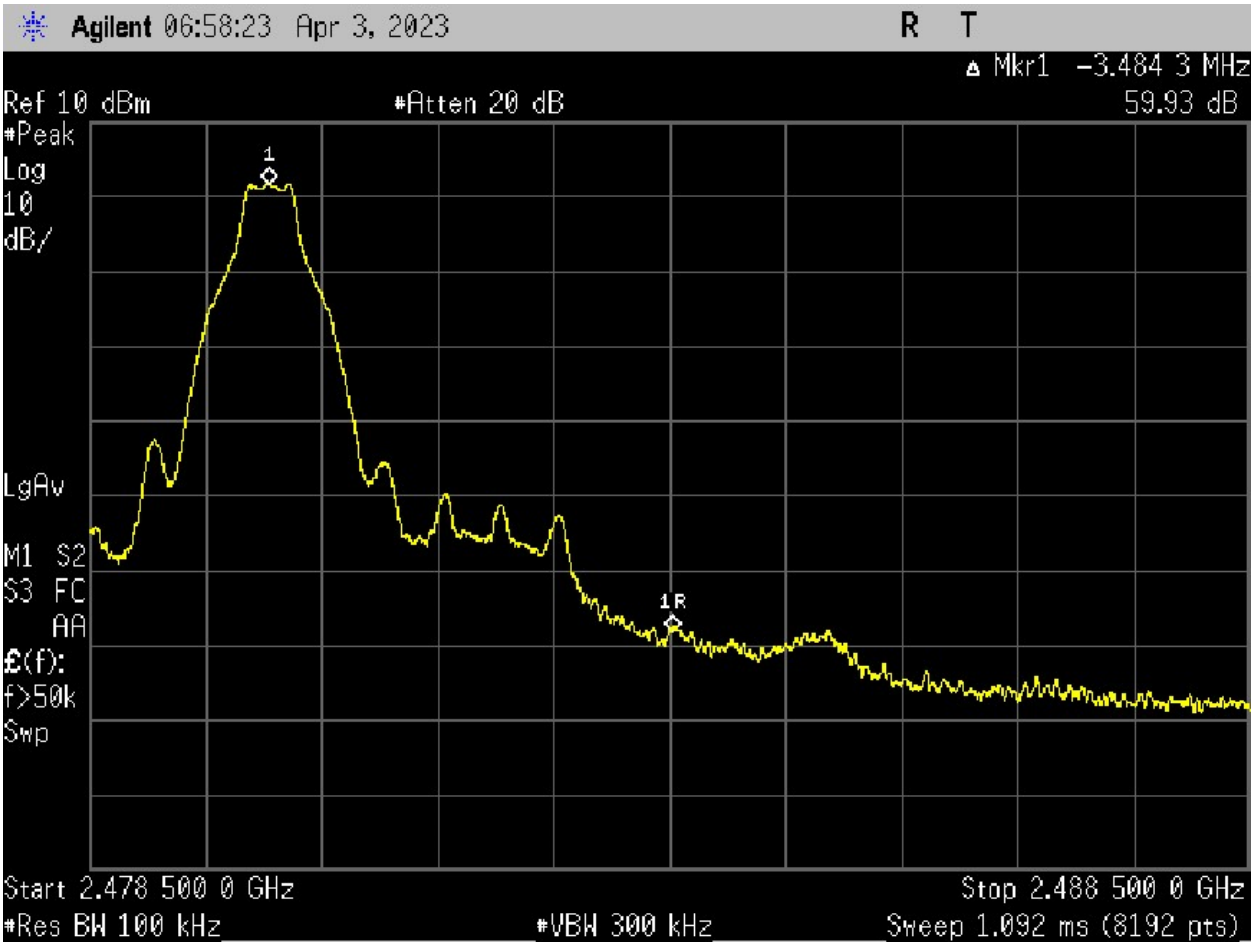
F_{LOW} DH5-Sngl



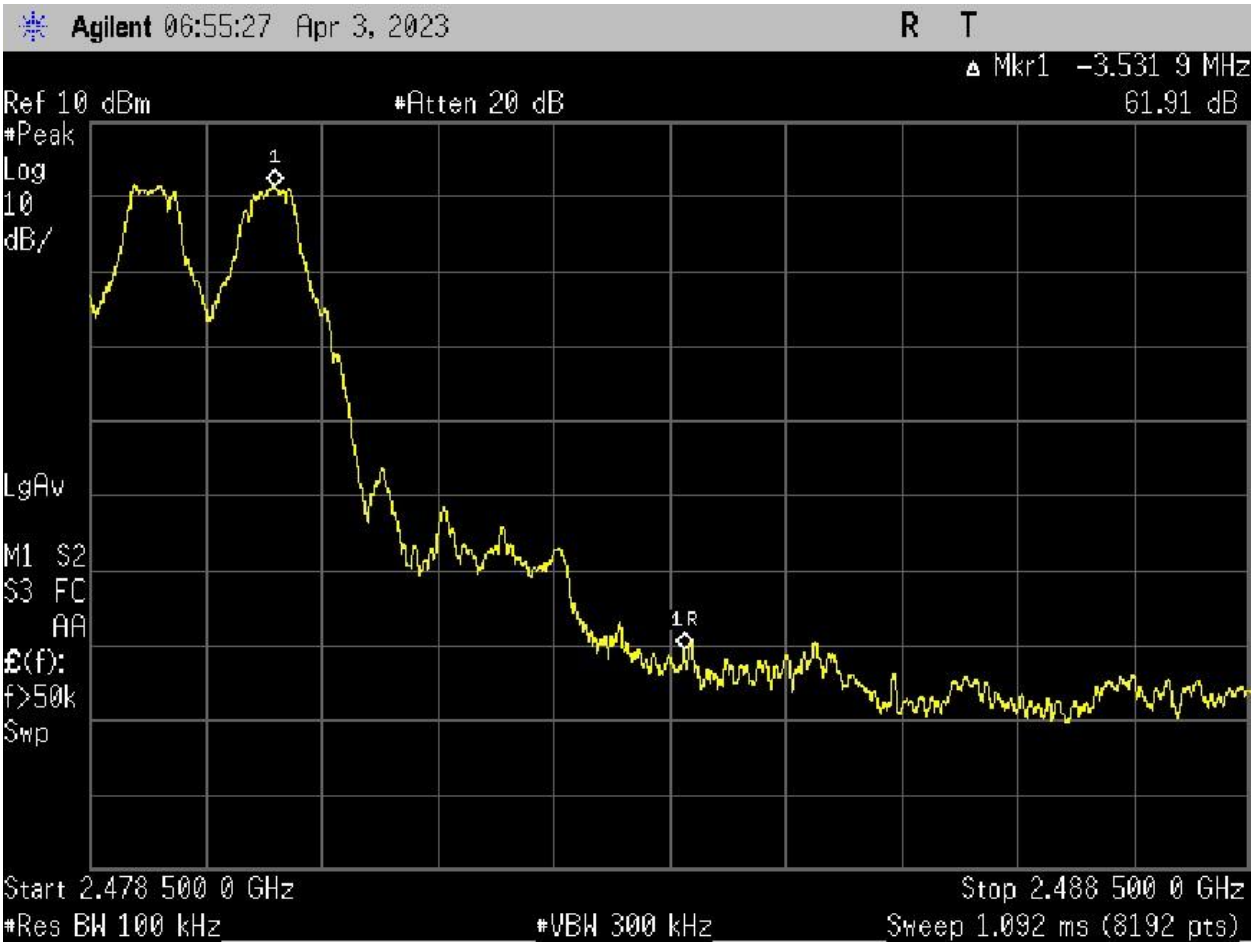
F_{LOW} DH5-Hop


Agilent 06:51:34 Apr 3, 2023
R T
Mkr1 2.208 5 MHz
45.27 dB
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
LgAv
M1 S2
S3 FC
AA
£(f):
f>50k
Swp
1
1R
Center 2.400 000 0 GHz
Span 10 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 1.092 ms (8192 pts)

F_{HIGH} DH5-Sngl



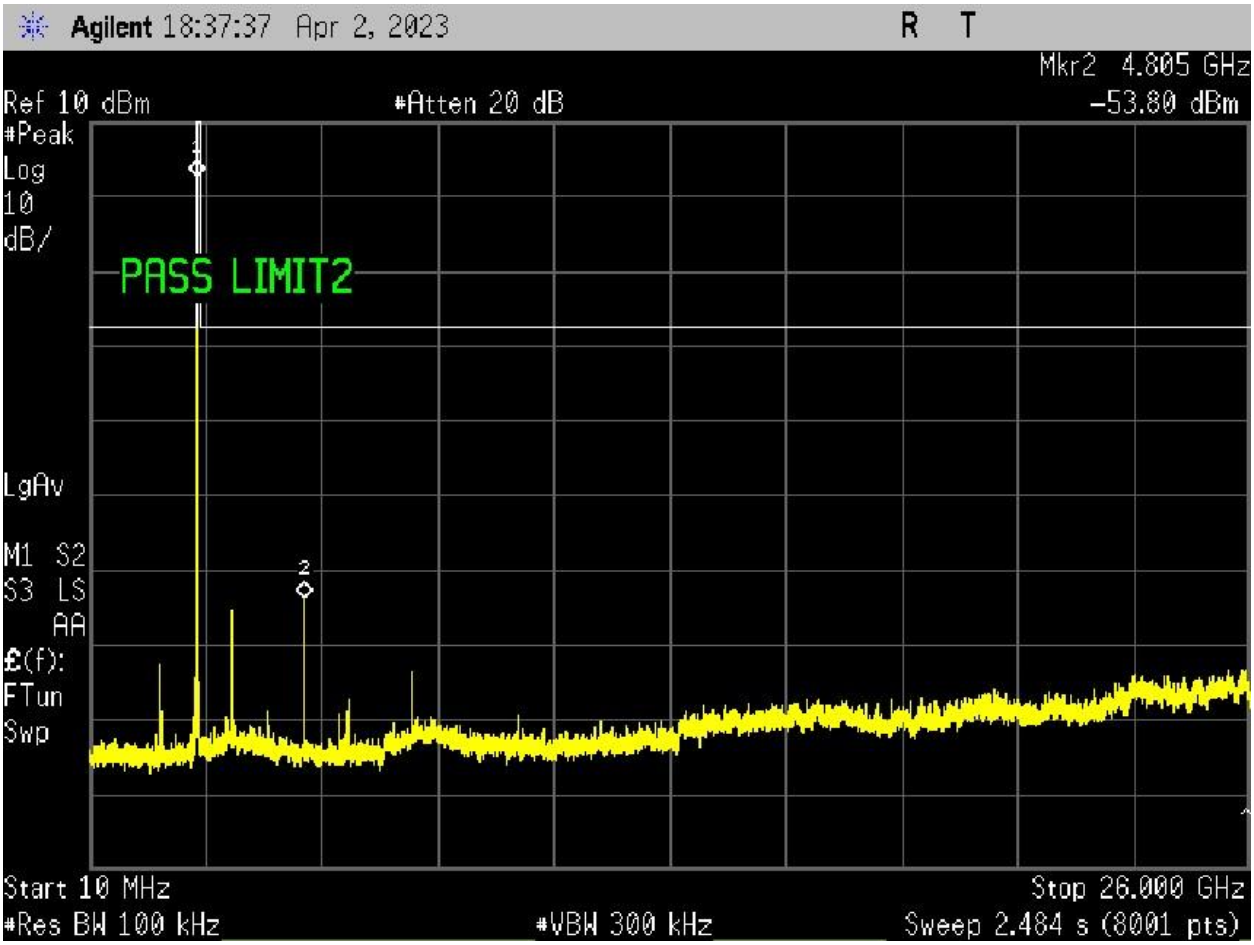
F_{HIGH} DH5-Hop



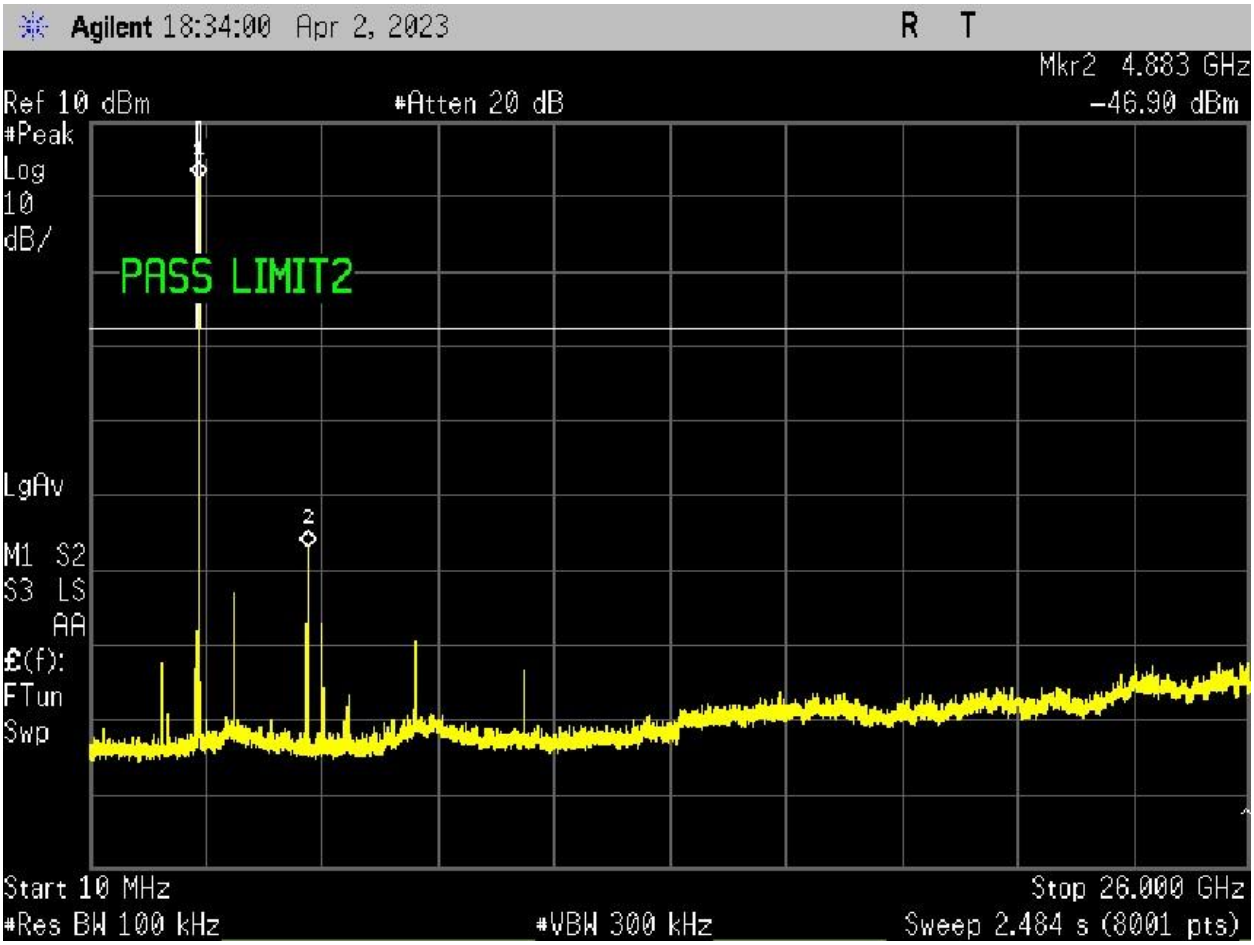
3.10 Conducted spurious emissions

Conducted spurious emissions					Verdict: PASS
EUT requirement rule parts and clause				Reference	FCC 15.247(d) / IC RSS-247 5.5
Test according to measurement reference				Reference Method	ANSI C63.10 7.8.6 & 11.11
Tested frequencies					F_{LOW} / F_{MID} / F_{HIGH}
Mode					DH5-Sngl
Limits					
Channel	Emission [MHz]	Emission Level [dBm]	Peak power [dBm]	Limit [dBm]	Margin [dB]
F_{LOW}	4805	-53.8	2.66	-17.34	36.46
F_{MID}	4883	-46.9	2.34	-17.66	29.24
F_{HIGH}	4961	-43	1.45	-18.55	24.45
Comments:					

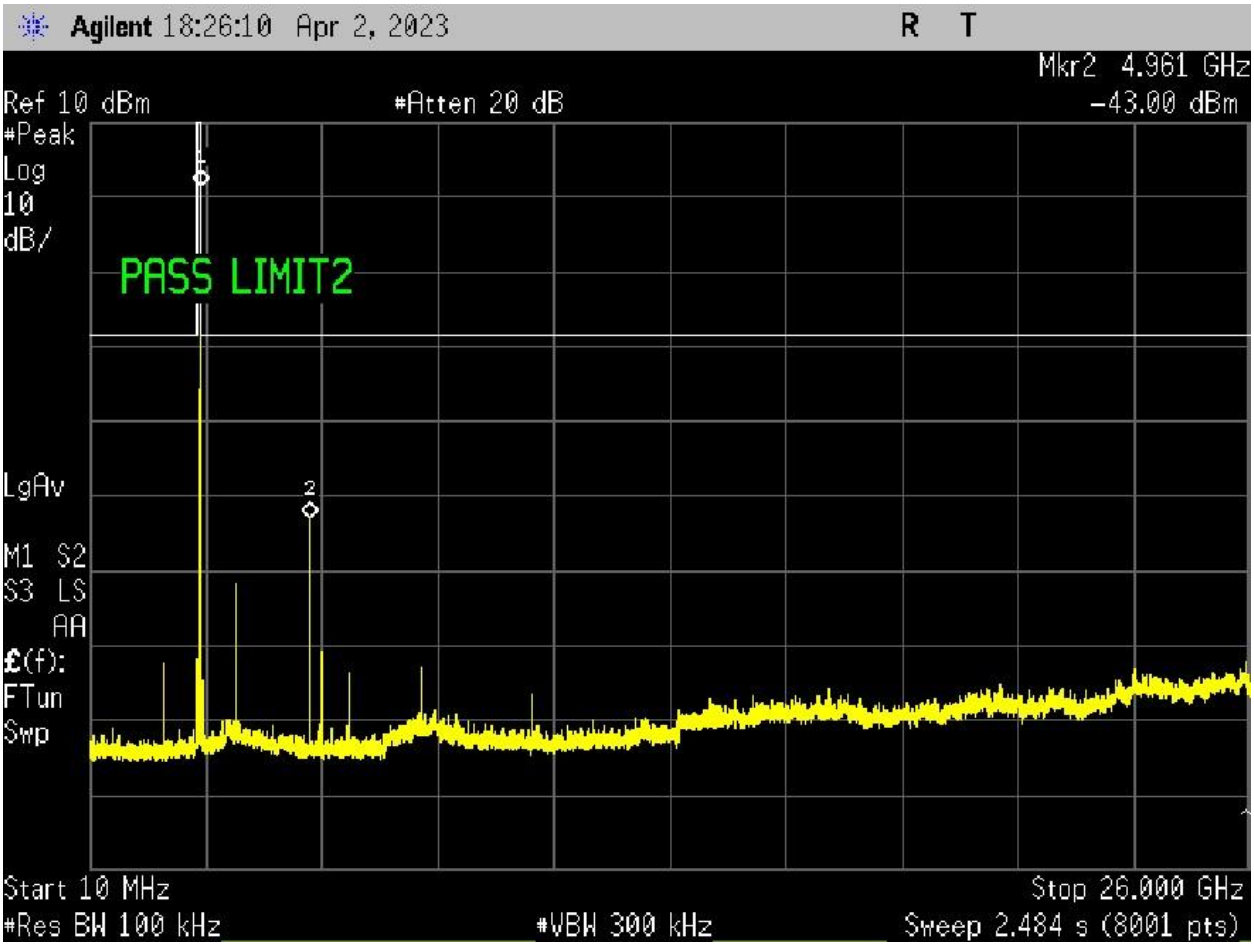
F_{LOW}


Agilent 18:37:37 Apr 2, 2023
R T
Mkr2 4.805 GHz
Ref 10 dBm
#Atten 20 dB
-53.80 dBm
#Peak
Log
10
dB/
PASS LIMIT2
LgAv
M1 S2
S3 LS
AA
£(f):
FTun
Swp
Start 10 MHz
Stop 26.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.484 s (8001 pts)

F_{MID}


Agilent 18:34:00 Apr 2, 2023
R T
Mkr2 4.883 GHz
Ref 10 dBm
#Atten 20 dB
-46.90 dBm
#Peak
Log
10
dB/
PASS LIMIT2
LgAv
M1 S2
S3 LS
AA
£(f):
FTun
Swp
Start 10 MHz
Stop 26.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.484 s (8001 pts)

F_{HIGH}


Agilent 18:26:10 Apr 2, 2023
R T
Mkr2 4.961 GHz
Ref 10 dBm
#Atten 20 dB
-43.00 dBm
#Peak
Log
10
dB/
PASS LIMIT2
LgAv
M1 S2
S3 LS
AA
£(f):
FTun
Swp
Start 10 MHz
Stop 26.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 2.484 s (8001 pts)

3.11 Radiated emissions

Radiated emissions			Verdict: PASS
EUT requirement rule parts and clause		Reference	
		FCC 15.209 & 15.247(d) / IC RSS-247 5.5	
Test according to measurement reference		Reference Method	
		ANSI C63.10 6.4, 6.5, 6.6, 6.10.5	
Tested frequencies		F_{low} / F_{high}	
Test frequency range		30 MHz – 10th Harmonic	
Limits			
Frequency range [MHz]	Detector	Limit	Limit Distance [meters]
30 – 88	Quasi-Peak	100 µV/m (40 dBµV/m)	3
88 – 216	Quasi-Peak	150 µV/m (43.5 dBµV/m)	3
216 – 960	Quasi-Peak	200 µV/m (46 dBµV/m)	3
960 – 1000	Quasi-Peak	500 µV/m (54 dBµV/m)	3
960 - 26000	Average	500 µV/m (54 dBµV/m)	3
Radiated emissions which fall in the 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)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. *Measurement is performed with conducted measurement setup			
Comments: 9 kHz to 30 MHz not tested due to high frequency application of this product.			

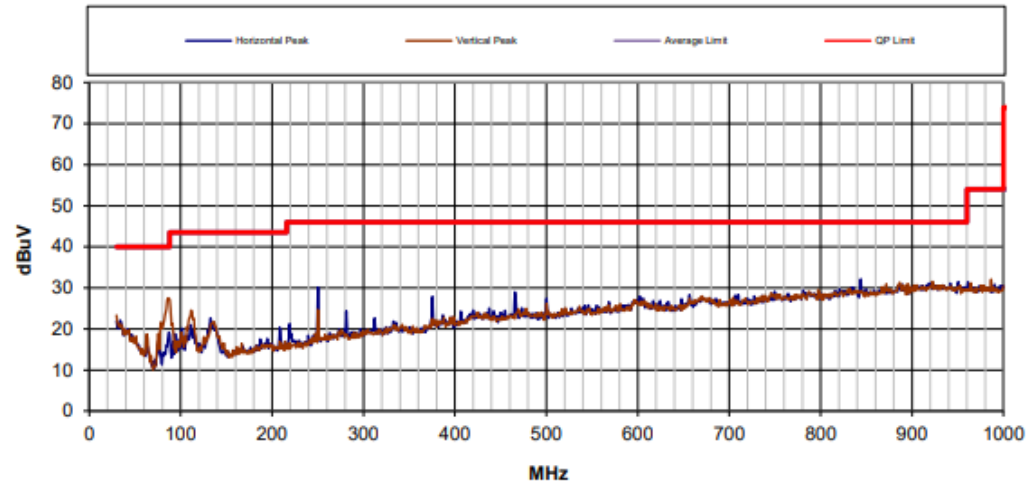
TX; GFSK; DH5; 2402 MHz

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/30/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	1



COMMENTS

BT at 2402;

SIGNATURE

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
34.02	20.07	15.63	22.08	40.00	40.00	281°/152cm	19.93	24.37
249.99	31.79	30.84	18.36	46.02	46.02	203°/123cm	14.23	15.18
843.77	33.73	31.20	29.98	46.02	46.02	230°/99cm	12.29	14.82

Vertical

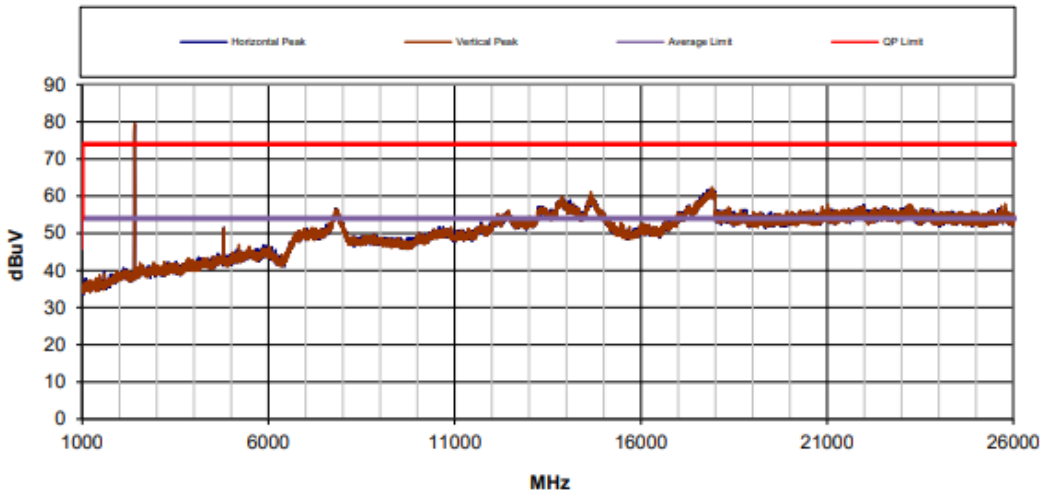
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
30.05	24.47	18.14	23.05	40.00	40.00	316°/400cm	15.53	21.86
86.16	27.62	22.21	13.07	40.00	40.00	181°/164cm	12.38	17.79
111.52	19.37	12.55	15.61	43.52	43.52	191°/99cm	24.15	30.97
986.54	29.53	24.13	31.53	53.98	53.98	208°/232cm	24.45	29.85

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/31/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	1



COMMENTS	SIGNATURE
BT at 2402;	Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2402.04	83.11	82.93	-9.48	73.98	53.98	68°/144cm	-9.13	N/A
4804.08	50.97	50.46	-3.44	73.98	53.98	12°/129cm	23.01	3.52
7798.61	42.16	39.26	10.61	73.98	53.98	202°/100cm	31.82	14.72
14665.04	45.07	42.69	11.94	73.98	53.98	145°/179cm	28.91	11.29
17843.55	47.30	44.46	17.43	73.98	53.98	176°/100cm	26.68	9.52

Vertical

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2402.04	84.57	84.46	-9.48	73.98	53.98	169°/100cm	-10.59	N/A
4804.08	50.39	49.80	-3.44	73.98	53.98	113°/169cm	23.59	4.18
7803.56	41.73	39.38	10.67	73.98	53.98	158°/200cm	32.25	14.60
14658.02	47.52	42.60	11.96	73.98	53.98	190°/174cm	26.46	11.38
17909.99	49.91	44.58	17.75	73.98	53.98	302°/200cm	24.07	9.40

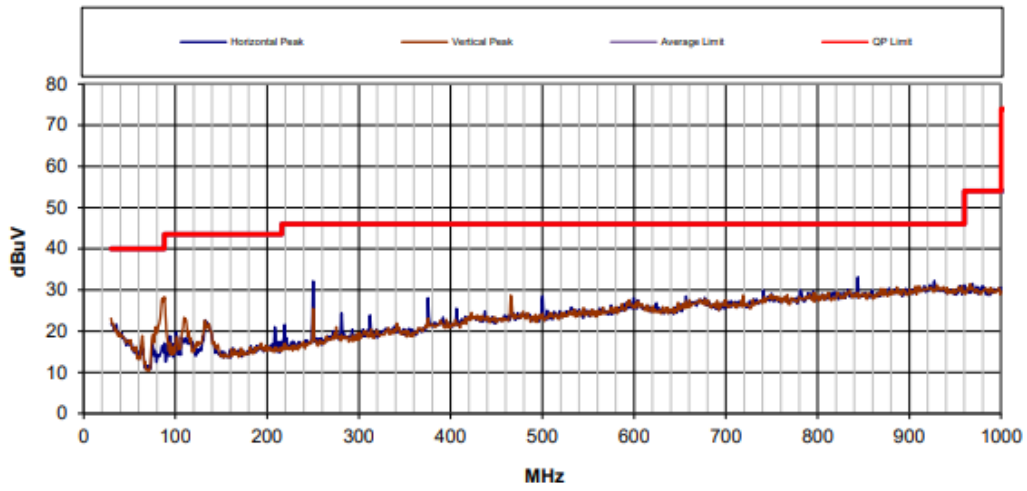
TX; GFSK; DH5; 2441 MHz

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/30/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	2



COMMENTS

BT at 2441;

SIGNATURE

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
31.37	21.10	15.31	22.73	40.00	40.00	315°/325cm	18.90	24.69
250.01	33.22	32.43	18.36	46.02	46.02	203°/102cm	12.80	13.59
843.73	35.94	32.70	29.98	46.02	46.02	316°/102cm	10.08	13.32

Vertical

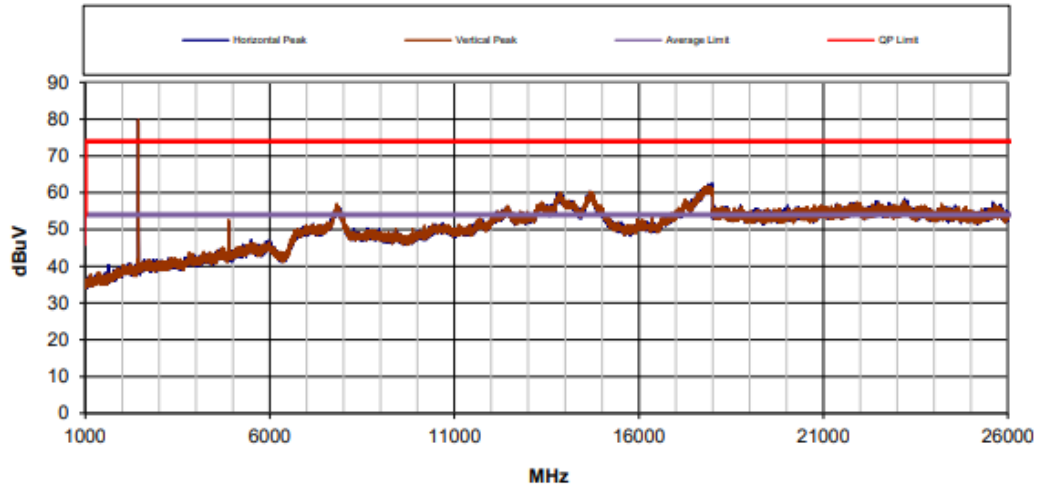
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
30.18	23.53	17.93	23.01	40.00	40.00	247°/400cm	16.47	22.07
87.72	27.15	21.64	13.36	40.00	40.00	22°/175cm	12.85	18.36
966.17	28.97	24.29	31.09	53.98	53.98	0°/196cm	25.01	29.69

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/31/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (ºC):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	2



COMMENTS	SIGNATURE
BT at 2441;	Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2441.04	84.83	84.80	-9.11	73.98	53.98	221º/130cm	-10.85	N/A
4882.10	51.25	50.62	-3.32	73.98	53.98	-1º/154cm	22.73	3.36
7809.45	41.06	39.41	10.73	73.98	53.98	0º/143cm	32.92	14.57
14681.42	47.78	42.73	11.92	73.98	53.98	0º/168cm	26.20	11.25
17984.08	46.61	44.22	17.89	73.98	53.98	100º/124cm	27.37	9.76

Vertical

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2441.04	87.09	86.88	-9.11	73.98	53.98	202º/101cm	-13.11	N/A
4882.10	51.13	50.71	-3.32	73.98	53.98	112º/128cm	22.85	3.27
7806.32	42.21	39.40	10.69	73.98	53.98	35º/169cm	31.77	14.58
14673.31	47.72	42.76	11.93	73.98	53.98	302º/100cm	26.26	11.22
17874.87	47.54	44.64	17.54	73.98	53.98	203º/125cm	26.44	9.34

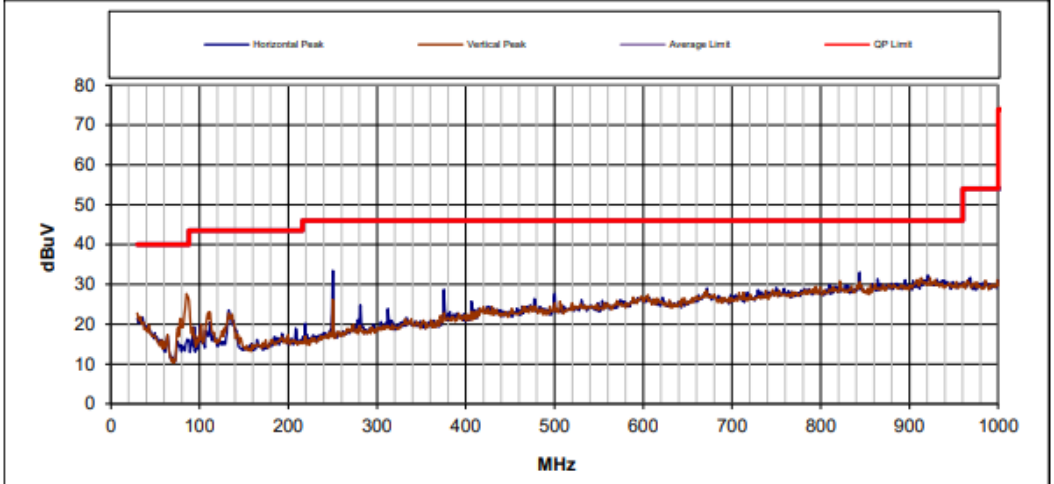
TX; GFSK; DH5; 2480 MHz

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/30/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	3



COMMENTS	SIGNATURE
BT at 2480;	Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
34.81	19.90	15.29	21.91	40.00	40.00	113°/100cm	20.10	24.71
133.11	19.98	15.51	15.43	43.52	43.52	126°/131cm	23.54	28.01
250.00	33.60	32.69	18.36	46.02	46.02	0°/101cm	12.42	13.33
843.74	34.74	32.46	29.98	46.02	46.02	315°/101cm	11.28	13.56

Vertical

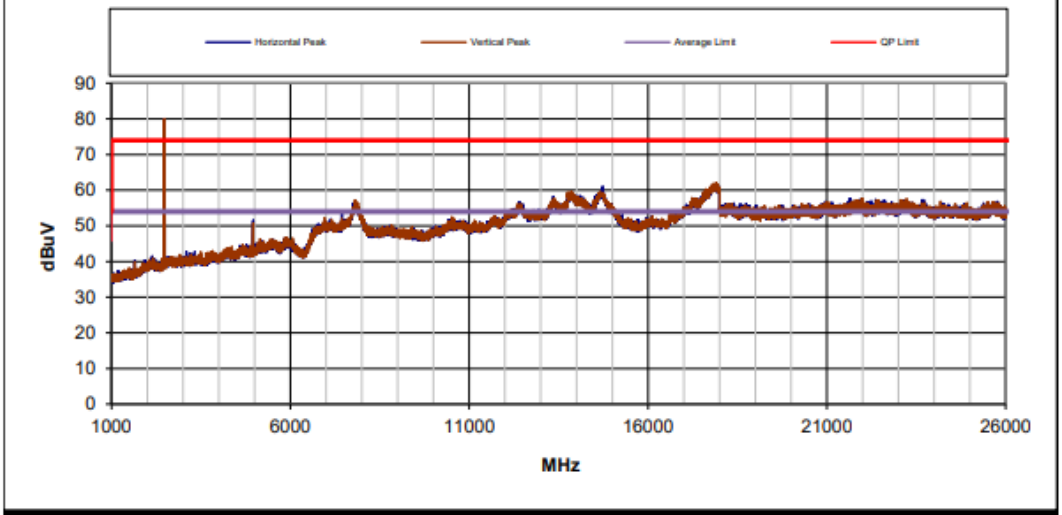
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
30.11	23.00	17.81	23.03	40.00	40.00	98°/400cm	17.00	22.19
85.53	26.83	22.54	12.96	40.00	40.00	185°/161cm	13.17	17.46
923.45	29.33	24.75	31.49	46.02	46.02	-1°/247cm	16.69	21.27

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/30/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (ºC):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	3



COMMENTS

BT at 2480;

SIGNATURE

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2480.05	86.20	86.12	-8.89	73.98	53.98	158º/129cm	-12.22	N/A
4960.09	50.64	50.08	-3.11	73.98	53.98	41º/120cm	23.34	3.90
7748.71	40.04	37.89	9.65	73.98	53.98	22º/101cm	33.94	16.09
14731.19	45.47	42.48	11.83	73.98	53.98	12º/122cm	28.51	11.50
17920.79	46.89	44.57	17.72	73.98	53.98	228º/102cm	27.09	9.41

Vertical

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
2480.04	89.04	88.56	-8.89	73.98	53.98	12º/144cm	-15.06	N/A
7812.05	42.21	39.38	10.75	73.98	53.98	94º/175cm	31.77	14.60
13853.91	41.53	39.30	9.35	73.98	53.98	12º/100cm	32.45	14.68
17892.94	46.05	44.63	17.69	73.98	53.98	111º/169cm	27.93	9.35

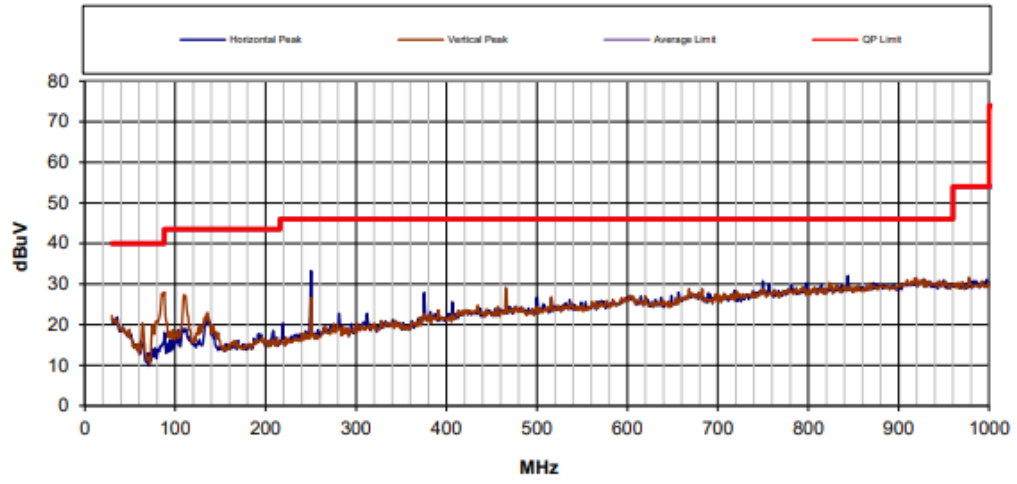
Antenna: integrated / Channel 3

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/26/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	5



COMMENTS

BT at 2441; DECT mid chan;

SIGNATURE

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
35.82	19.63	14.83	21.68	40.00	40.00	50°/173cm	20.37	25.17
249.98	33.69	32.97	18.36	46.02	46.02	-1°/100cm	12.33	13.05
843.73	32.01	29.04	29.98	46.02	46.02	29°/101cm	14.01	16.98

Vertical

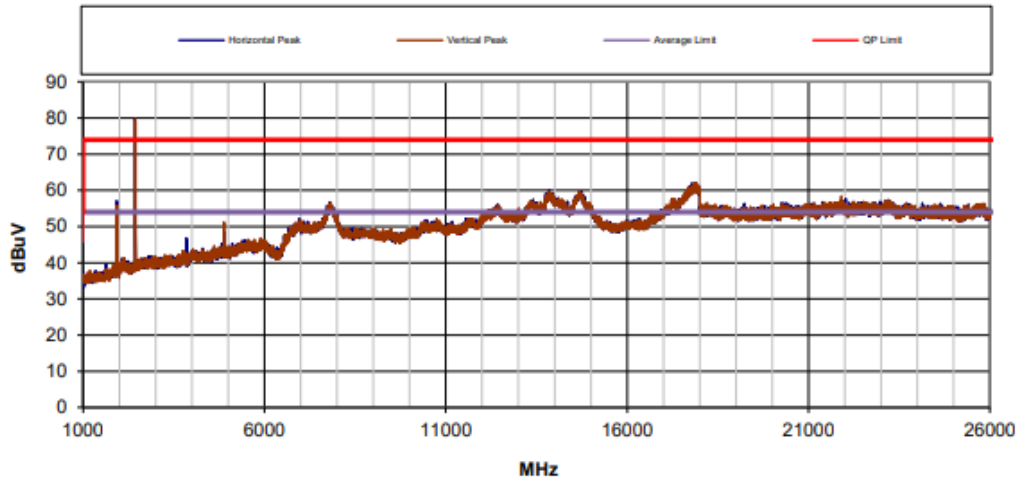
Freq (MHz)	Peak (dBµV)	QP (dBµV)	Factors (dB)	Peak Limit (dBµV)	QP Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	QP Margin (dB)
30.17	21.87	16.40	23.01	40.00	40.00	67°/373cm	18.13	23.60
88.15	26.41	20.99	13.44	43.52	43.52	315°/121cm	17.11	22.53
109.62	15.08	9.75	15.50	43.52	43.52	91°/160cm	28.44	33.77
977.83	28.85	24.14	31.32	53.98	53.98	315°/101cm	25.13	29.84

RADIATED EMISSIONS DATA SHEET

Revision 11
6/30/2021

Customer:	Sonetics	Job Reference#:	SON20221114
Contact:	Michael Barger	Date:	5/26/2023
DUT:	Gen 3.9 Wireless Headset	Temperature (°C):	20
Serial Number:	1	Relative Humidity (%):	37
Voltage/Freq:	N/A	Barometric Pressure:	30
Tested by:	Ryan Benitez	Location:	Hillsboro
Product Standards:	FCC Part 15 Subpart C		
	N/A		
Test Standard:	FCC Part 15.209		

TEST RESULTS	TEST TYPE	DISTANCE	RUN #
Pass	Compliance	3 meters	5



COMMENTS

BT at 2441; DECT mid chan; notch filter at 1.9 GHz

SIGNATURE

Ryan Benitez

Horizontal

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
1924.99	56.32	29.47	-10.05	73.98	53.98	158°/100cm	17.66	N/A
2441.03	87.40	87.16	-9.11	73.98	53.98	247°/175cm	-13.42	N/A
7805.28	42.97	39.33	10.68	73.98	53.98	0°/101cm	31.01	14.65
13850.63	41.61	39.24	9.34	73.98	53.98	68°/175cm	32.37	14.74
17792.00	49.56	44.36	17.44	73.98	53.98	315°/150cm	24.42	9.62

Vertical

Freq (MHz)	Peak (dBµV)	Final (dBµV)	Factors (dB)	Peak Limit (dBµV)	Final Limit (dBµV)	Turntable (deg) / Height (cm)	Peak Margin (dB)	Final Margin (dB)
1924.99	53.34	28.84	-10.05	73.98	53.98	49°/200cm	20.64	N/A
2441.04	87.77	87.64	-9.11	73.98	53.98	157°/125cm	-13.79	N/A
4882.08	49.20	48.52	-3.32	73.98	53.98	113°/130cm	24.78	5.46
7819.83	41.60	39.33	10.79	73.98	53.98	315°/101cm	32.38	14.65
14682.03	44.81	42.59	11.92	73.98	53.98	68°/175cm	29.17	11.39
17873.03	49.50	44.47	17.54	73.98	53.98	0°/168cm	24.48	9.51

END OF REPORT