TEST REPORT

REPORT NUMBER: I23W00036-BT RF-FCC

ON

Type of Equipment:	POS System
Type of Designation:	L15A1，L15B1
Brand Name：	SUNMI
Manufacturer:	Shanghai Sunmi Technology Co.,Ltd.
FCC ID:	2AH25T3PRO

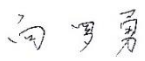
ACCORDING TO

FCC Part 15C

Chongqing Academy of Information and Communications Technology

Month date, year
October 20, 2023

Signature



Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date	Memo
I23W00036-BT RF-FCC	00	2023-09-13	Initial creation of test report
I23W00036-BT RF-FCC	01	2023-10-20	first change of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
Identifier Number:	CN0044
Designation Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	25-75%

1.3. Project data

Testing Start Date:	2023-07-20
Testing End Date:	2023-10-20

1.4. Signature

董俊鑫	2023-10-20
Dong Junxin **(Prepared this test report)**	**Date**
王丽	2023-10-20
Wang Lili **(Reviewed this test report)**	**Date**
向罗勇	2023-10-20
Xiang Luoyong **Director of the laboratory** **(Approved this test report)**	**Date**

2. Client Information

2.1. Applicant Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address /Post:	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
City:	Shanghai
Country:	China
Telephone:	+86 17302160204
Fax:	N/A
Email:	minfei.chen@sunmi.com
Contact Person:	Chen Minfei

2.2. Manufacturer Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address /Post:	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
City:	Shanghai
Country:	China
Telephone:	+86 17302160204
Fax:	N/A
Email:	minfei.chen@sunmi.com
Contact Person:	Chen Minfei

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	POS System
Model name	L15A1，L15B1
Brand name	SUNMI
BLUETOOTH Frequency Band	2402MHz-2480MHz
Type of BT modulation	GFSK; π/4 DQPSK; 8DPSK
Power Rating	DC 24 from Adapter

Note: Photographs of EUT are shown in ANNEX A of this test report.

Note: High and low voltage values in extreme condition test are given by manufacturer.

Technology	Band	UL Freq. (MHz)	DL Freq. (MHz)	Channel Separation
BLUETOOTH	CH0-78	2402-2480		1MHz

Test frequency list:

GFSK	Channel	0	39	78
	Freq. (MHz)	2402	2441	2480
π/4 DQPSK	Channel	0	39	78
	Freq. (MHz)	2402	2441	2480
8DPSK	Channel	0	39	78
	Freq. (MHz)	2402	2441	2480

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S3	T302D37140072	6490Coreboard_MB_V2.0	1.0.0	2023-07-20
S8	T302D37140061	6490Coreboard_MB_V2.0	1.0.0	2023-07-20
S11	TK02D37240116	6490Coreboard_MB_V2.0	1.0.0	2023-07-20

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

3.4. Internal Identification of AE used during the test

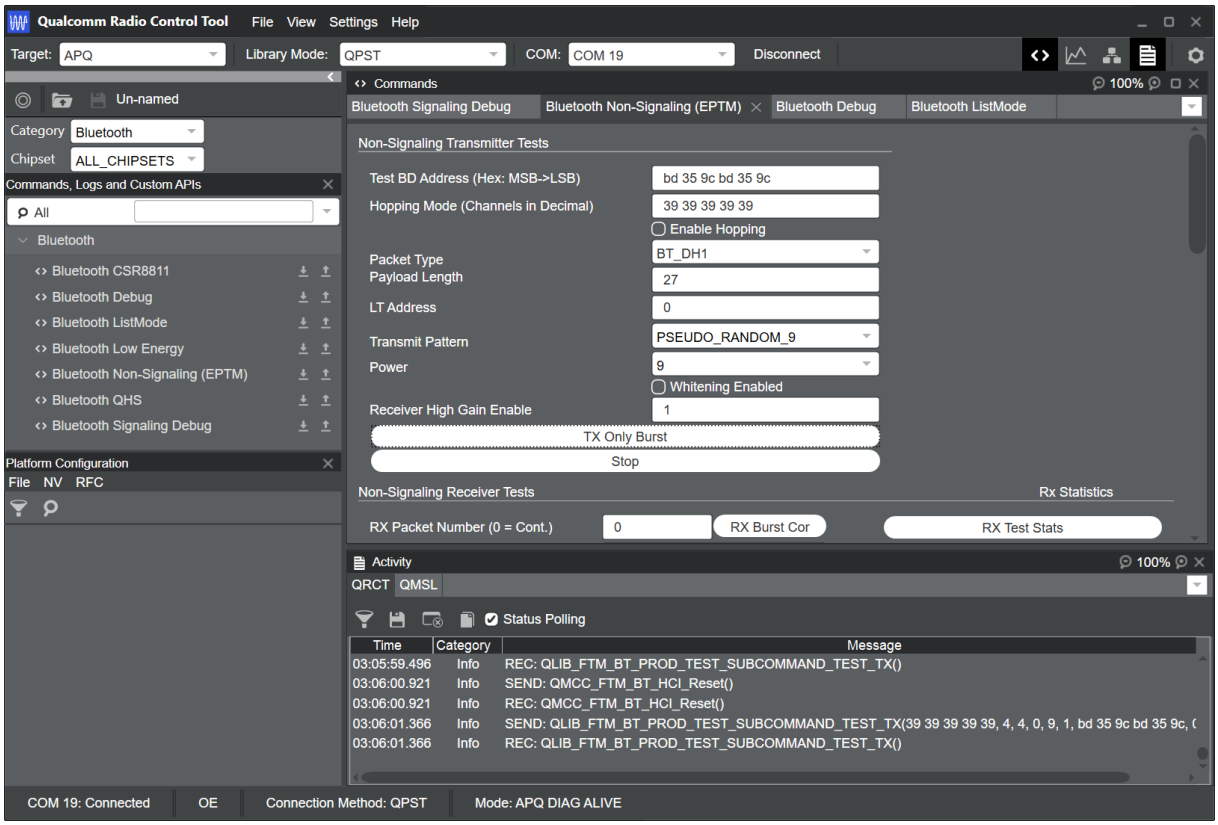
AE ID*	Description	Note
CB04	Adapter	Model: CYZSE65-240250 Input:100-240V~50/60Hz 1.7A Output: 24.0V⎓2.5A 60.0W
AE1	RF cable	1dB

*AE ID: is used to identify the test sample in the lab internally.

dB*： is provided customer.

3.5. EUT Test RF Configuration

EUT uses QRCT working control emission measurement, Change power level, channel, rate and HT.



Power Level:

Test Mode	Power Level
GFSK	17
π/4 DQPSK	17
8DPSK	17

Note:

a. All the test data for each data were verified, but only the worst case was reported.

b. The GFSK, π/4 DQPSK and 8DPSK were set in DH5 for GFSK, 2-DH5 for π/4 DQPSK, 3-DH5 for 8DPSK.

4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15C	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz	--
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	--
Note: KDB 558074 D01 15.247 Meas Guidance v05r02 is not A2LA certified.		

5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	Spectrum analyzer	FSQ 26	201137/026	--	--	R&S	1 Year	2024-06-28
2	Spectrum analyzer	FSW26	104280	--	--	R&S	1 Year	2024-06-28
3	DC Power Supply	62015L-60-6	L020000015 87	--	--	Chroma	1 Year	2024-06-28

5.2. RSE and CE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	EMI Test Receiver	ESU40	100307	--	--	R&S	1 Year	2024-06-28
2	TRILOG Broadband Antenna	VULB9163	9163-586	--	--	Schwarzbeck	2 Years	2023-10-29
3	Horn antenna	9120D	1083	--	--	Schwarzbeck	2 Years	2024-12-14
4	Horn antenna	DATE 1152	LM7127	--	--	ETS	2 Years	2024-09-06
5	Horn antenna	DATE 1012	LM5945	--	--	ETS	2 Years	2024-09-06
6	Loop Antenna	6502	00213256	--	--	ETS	1 Year	2024-06-29
7	Amplifier1	SCU-08F1	8320027	--	--	R&S	1 Year	2024-06-28
8	Amplifier2	SCU-18F	180093	--	--	R&S	1 Year	2024-06-28
9	2-Line V-Network	ENV216	102368	--	--	R&S	1 Year	2024-05-27
10	Test Receiver	ESR 3	101382	03	3.48 SP2	R&S	1 Year	2024-01-28
11	Test Receiver	ESW 26	101382	00	1.50 SP1	R&S	1 Year	2024-06-28

5.3. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
--	--	--	--	--	--	--

5.4. Anechoic chamber Vibration table

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
1	Fully-Anechoic Chamber	FAC5	--	TDK	3 Years	2024-09-22
2	Anechoic Chamber	SAC 10	--	TDK	3 Years	2024-08-26

5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32 (Transmitter Spurious Emission-Radiated Above 1GHz)	V 10.20.01	--	R&S
2	EMC32 (Transmitter Spurious Emission-Radiated Below 1GHz)	V9.26.01	--	R&S
3	EMC32 (AC Powerline Conducted Emission)	V 10.40.10	--	R&S

6. Test Results

6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
15.247(b)	Maximum Peak Output Power	Pass
15.247(a)	20dB Occupied Bandwidth	Pass
15.247(a)	99% Occupied Bandwidth	Pass
15.247(d)	Band Edges Compliance	Pass
15.247(a)	Time Of Occupancy (Dwell Time)	Pass
15.247(a)	Carrier Frequency Separation	Pass
15.247(a)	Number Of Hopping Channels	Pass
15.247(d)	Transmitter Spurious Emission-Conducted	Pass
15.247/15.209/15.205	Transmitter Spurious Emission-Radiated	Pass
15.207	AC Powerline Conducted Emission	Pass
15.203/15.247(c)	Antenna requirement	Pass Note 2

NOTE 1

The L15A1，L15B1, manufactured by Shanghai Sunmi Technology Co.,Ltd.is a new product for testing. There are two configurations S3 &S8 mainly supply (With Printer) & S11 secondary supply (Without Printer). We mainly tested S3 mainly supply (conducted), S8 mainly supply(radiated) and S11 secondary supply tested the worst mode of the S8 mainly supply and recorded the test results of the worst respectively in the report.

The description of the differences between S3&S8 and S11 is as follows:

EUT ID	SN or IMEI	Model	Printer
S3	T302D37140072	L15A1	80 Printer
S8	T302D37140061	L15A1	80 Printer
S11	TK02D37240116	L15B1	N/A

NOTE 2:

The EUT have one RF welding disc interfaces for connecting internal FPC antenna, the antenna gain refer to section 6.2, So this EUT complies with the FCC section 15.203/15.247(c) antenna requirements, please refer to the internal photos.

6.2. Peak Output Power-Conducted

Specifications:	FCC 47 Part 15.247(b)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Conducted Limit(dBm)
FCC 47 Part 15.247(b)	≤30

Measurement Uncertainty:

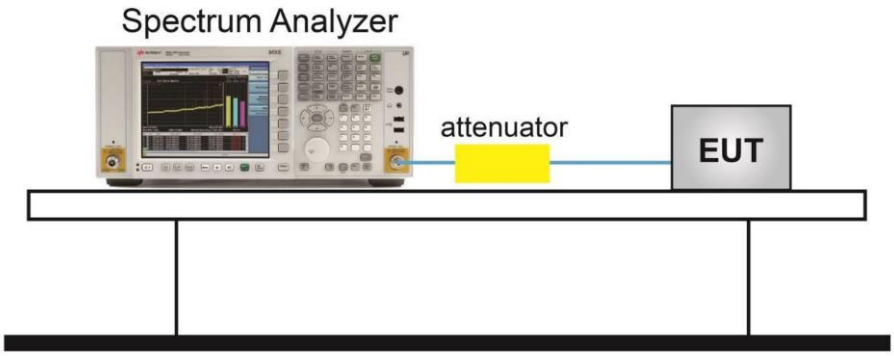
Measurement Uncertainty	±0.36dBm

Test Procedure

The measurement is according to ANSI C63.10 clause 7.8.5.

1. The output power of EUT was connected to the spectrum analyzer by cable and divide. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Use the following spectrum analyzer settings:
   a) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
   b) RBW > 20 dB bandwidth of the emission being measured.
   c) VBW ≥ RBW.
   d) Sweep: Auto.
   e) Detector function: Peak.
   f) Trace: Max hold.
4. Allow trace to stabilize.
5. Use the marker-to-peak function to set the marker to the peak of the emission.
6. The indicated level is the peak output power, after any corrections for external attenuators and cables.
7. Record the results.

Test setup:



Antenna gain of EUT:

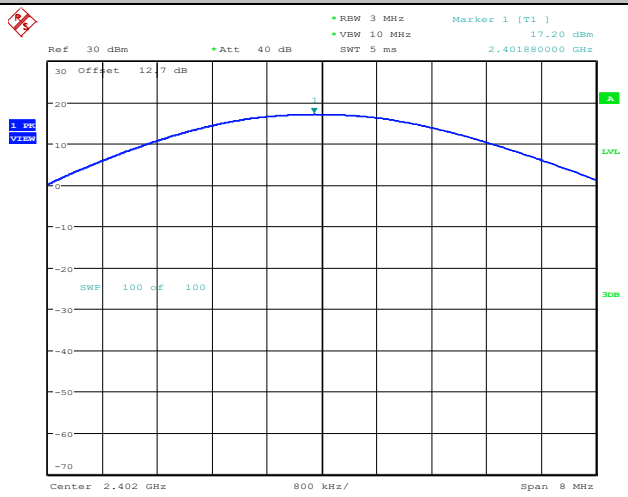
No.	Item(s)	Data
1	Antenna gain of EUT	2.6dBi
Note: The data is provided by the customer may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.		

Measurement Results:

Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	17.20	≤30	PASS
		2441	18.23	≤30	PASS
		2480	17.75	≤30	PASS
2DH5	Ant1	2402	16.46	≤20.97	PASS
		2441	17.45	≤20.97	PASS
		2480	16.98	≤20.97	PASS
3DH5	Ant1	2402	16.96	≤20.97	PASS
		2441	17.95	≤20.97	PASS
		2480	17.49	≤20.97	PASS

Test Graphs

DH5_Ant1_2402



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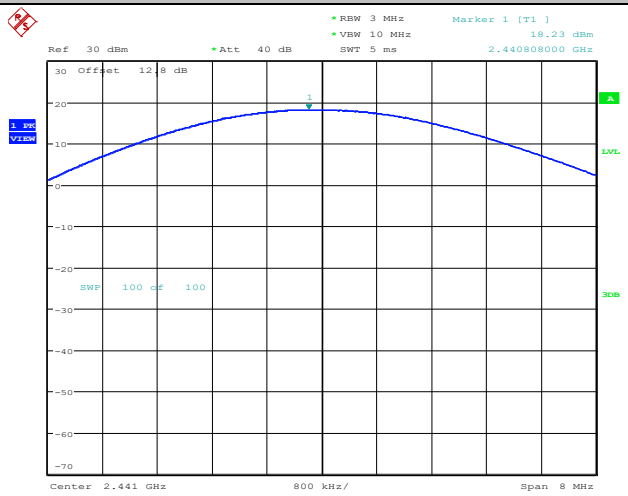

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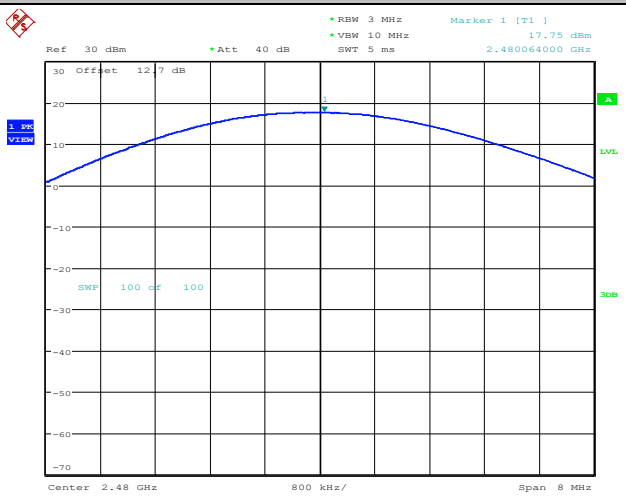

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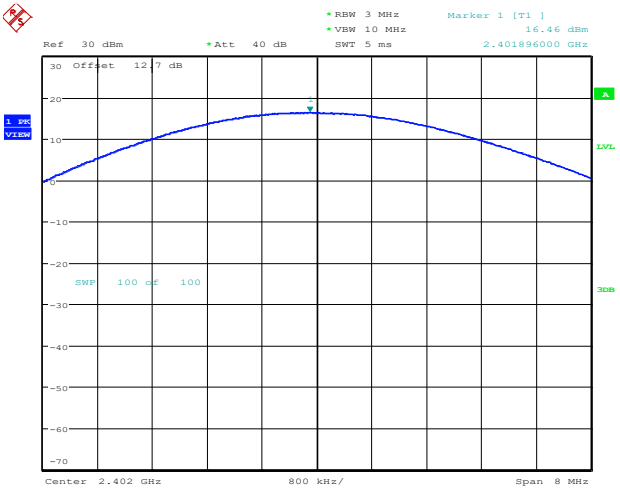

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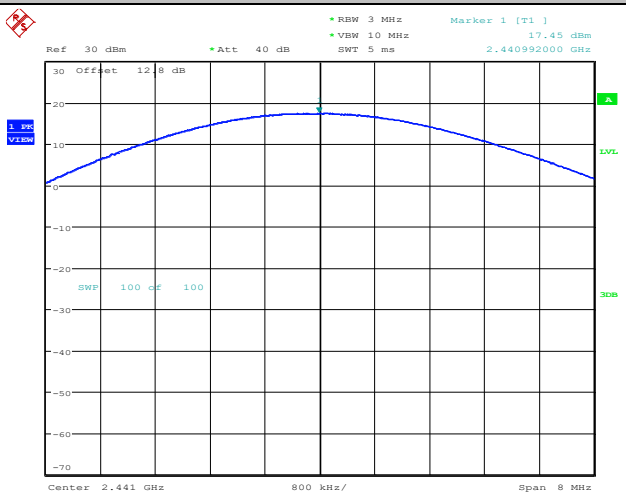

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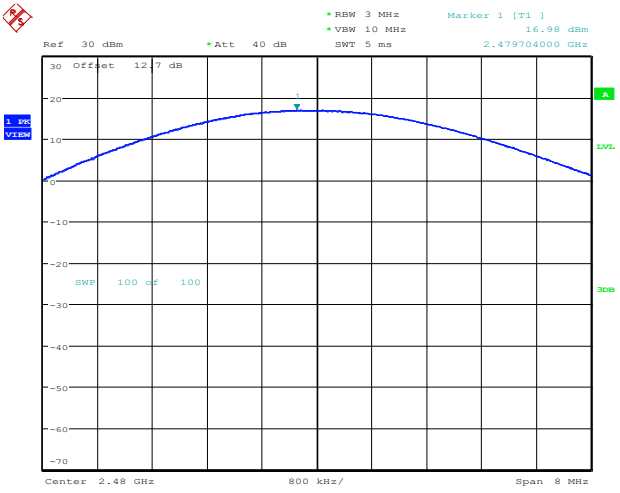
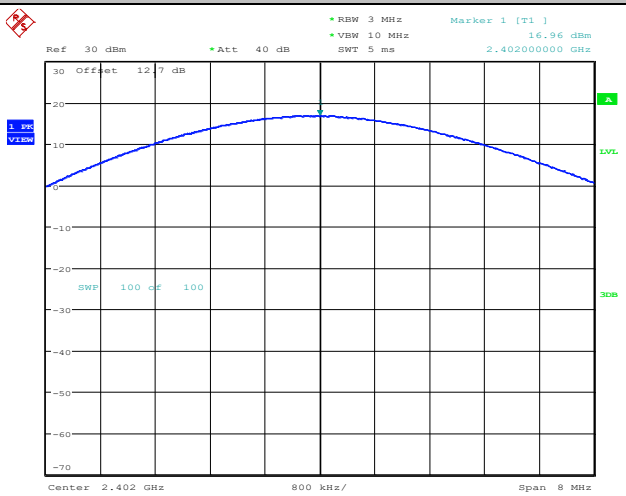


3DH5_Ant1_2402



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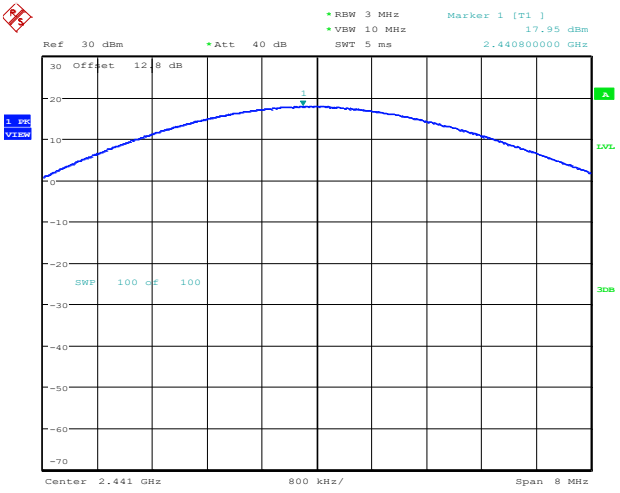

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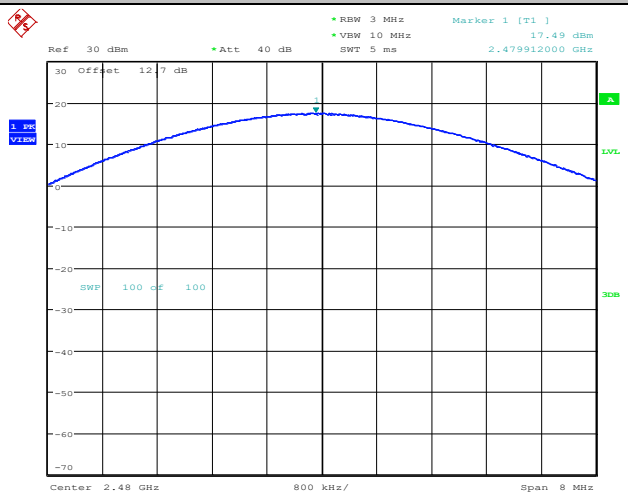


6.3. 20dB Bandwidth

Specifications:	FCC 47 Part 15.247(a)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(a)	N/A

Measurement Uncertainty:

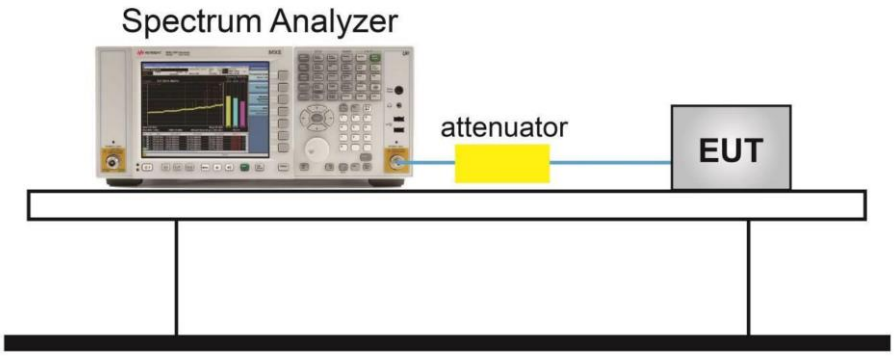
Measurement Uncertainty	±1.06KHz

Test procedures:

The measurement is according to ANSI C63.10 clause 7.8.7

1. Connect the EUT through cable and divide with spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 7.
4. Span: two or five times of OBW
5. RBW= 1% to 5% of the OBW; VBW is approximately three times of RBW; Max Hold.
6. Select the max peak, and N DB DOWN=20dB.
7. Record the results.

Test Setup:

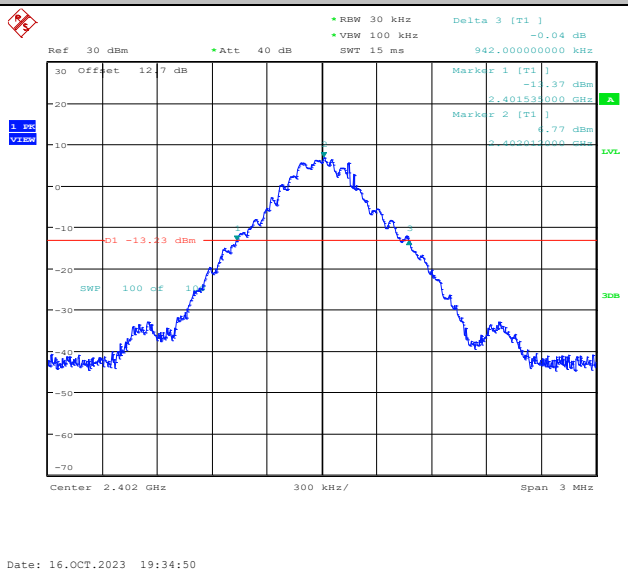


Measurement Results:

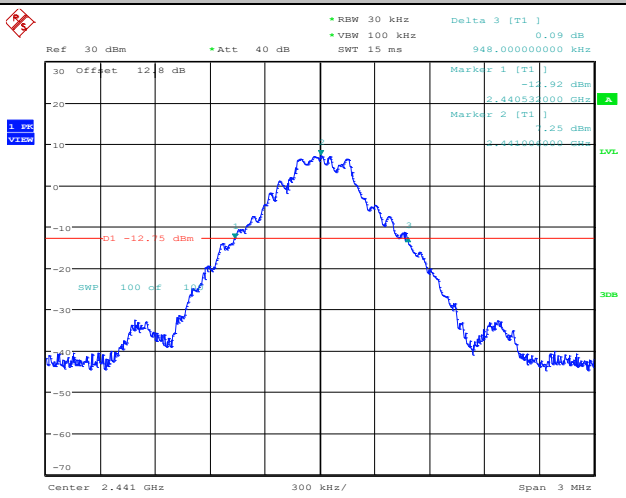
TestMode	Antenna	Frequency [MHz]	20db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	0.94	2401.54	2402.48	---	---
		2441	0.95	2440.53	2441.48	---	---
		2480	0.94	2479.53	2480.47	---	---
2DH5	Ant1	2402	1.32	2401.33	2402.65	---	---
		2441	1.32	2440.33	2441.65	---	---
		2480	1.34	2479.33	2480.66	---	---
3DH5	Ant1	2402	1.32	2401.33	2402.65	---	---
		2441	1.31	2440.34	2441.65	---	---
		2480	1.32	2479.33	2480.65	---	---

Test graphs

DH5_Ant1_2402



DH5_Ant1_2441



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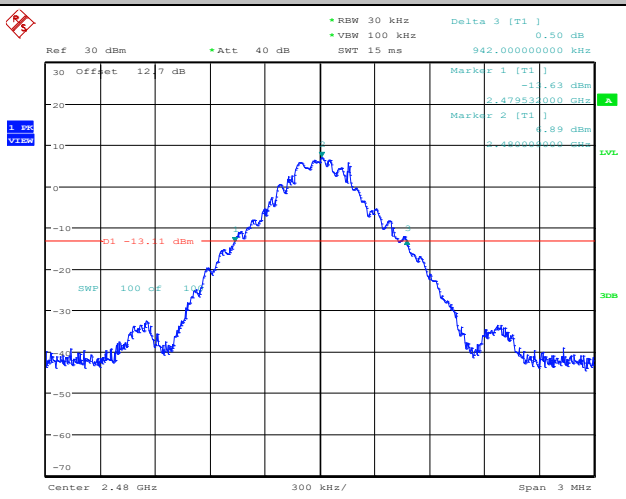

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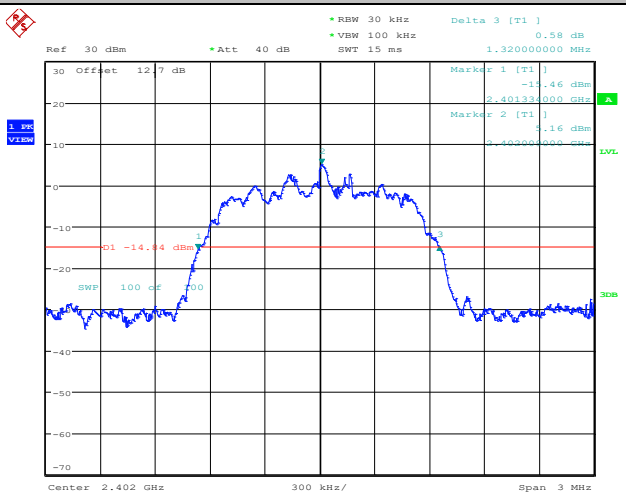

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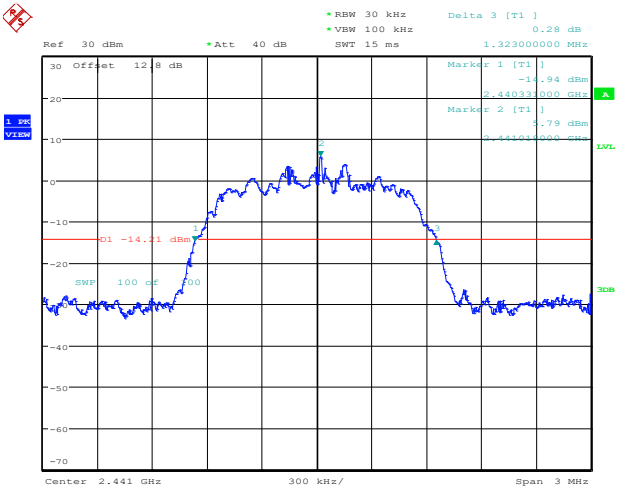
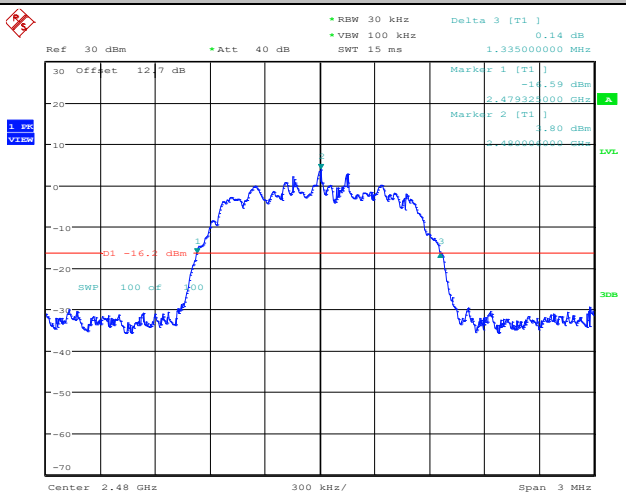


2DH5_Ant1_2480



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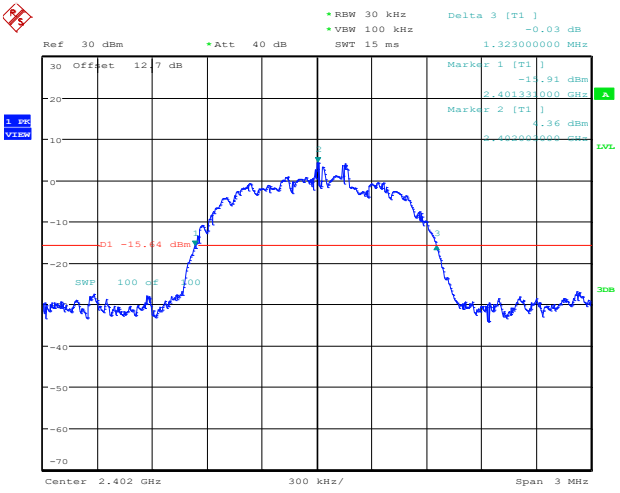
3DH5_Ant1_2402



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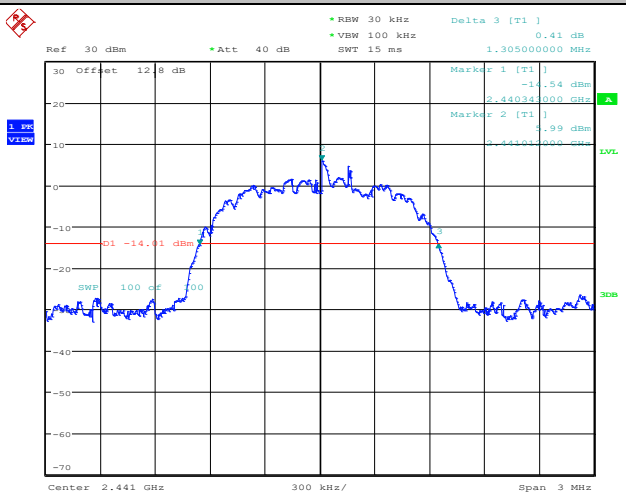
3DH5_Ant1_2441



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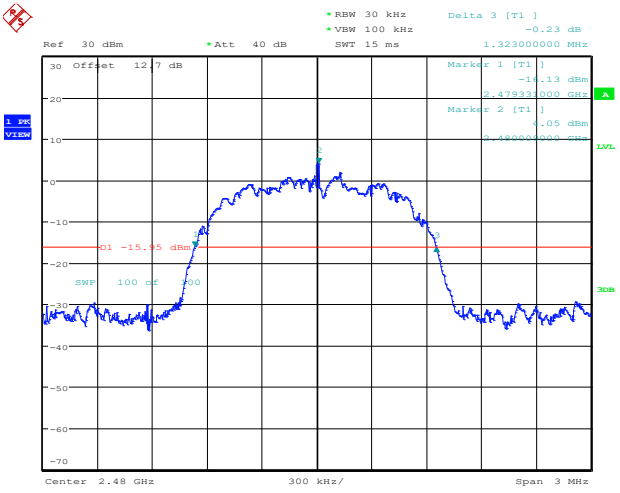
3DH5_Ant1_2480



Date: 16.OCT.2023 20:11:34

6.4. 99% Occupied Bandwidth

Specifications:	FCC 47 Part 15.247(a)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(a)	N/A

Measurement Uncertainty:

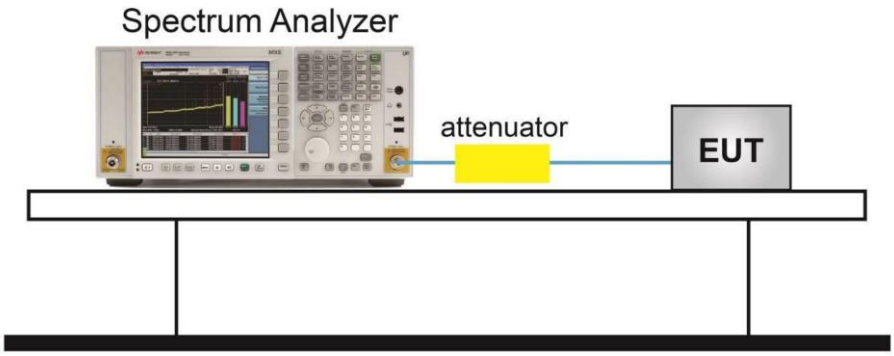
Measurement Uncertainty	±1.06/kHz

Test procedures:

The measurement is according to ANSI C63.10 clause 6.9.3.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW shall be in the range of 1% to 5% of the OBW.
4. Set the VBW ≥ [3 × RBW].
5. Detector = peak.
6. Trace mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize.
9. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Test setup:

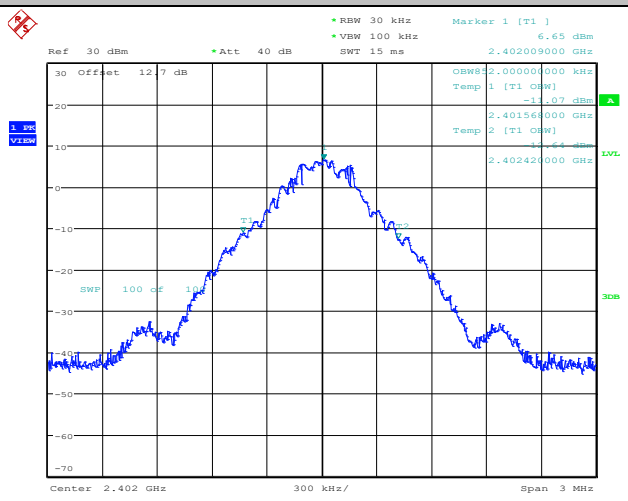


Measurement Results:

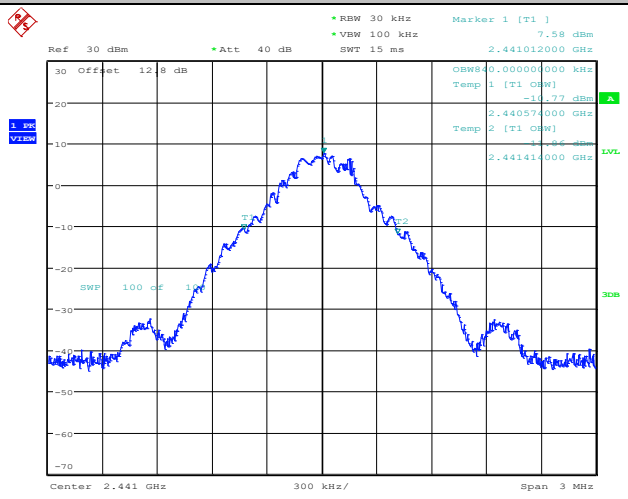
TestMode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.852	2401.5680	2402.4200	---	---
		2441	0.84	2440.5740	2441.4140	---	---
		2480	0.846	2479.5680	2480.4140	---	---
2DH5	Ant1	2402	1.209	2401.3940	2402.6030	---	---
		2441	1.209	2440.3940	2441.6030	---	---
		2480	1.197	2479.3970	2480.5940	---	---
3DH5	Ant1	2402	1.215	2401.3850	2402.6000	---	---
		2441	1.218	2440.3820	2441.6000	---	---
		2480	1.203	2479.3910	2480.5940	---	---

Test graph

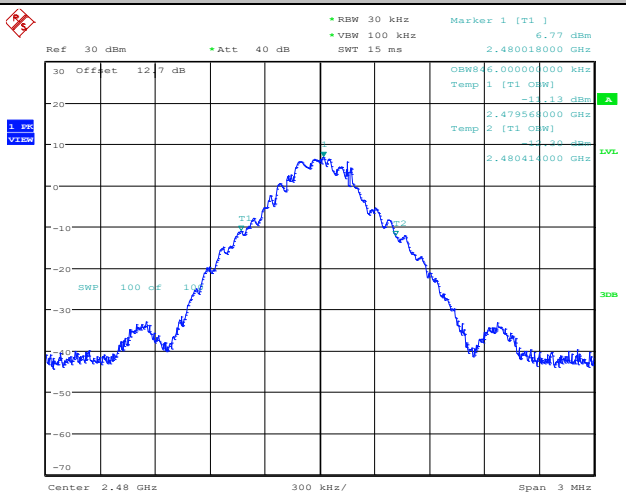
DH5_Ant1_2402



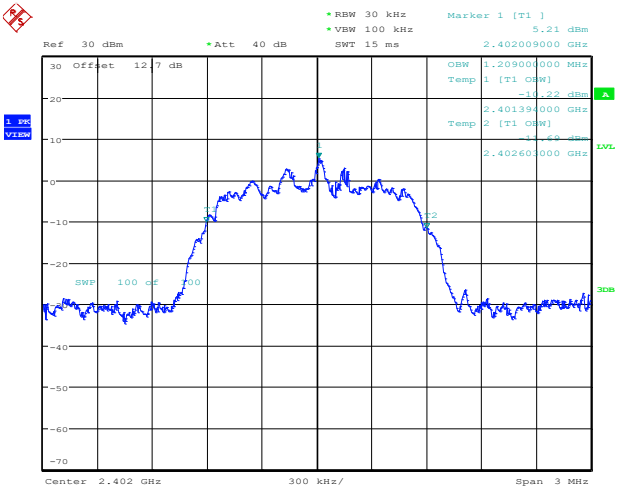
DH5_Ant1_2441



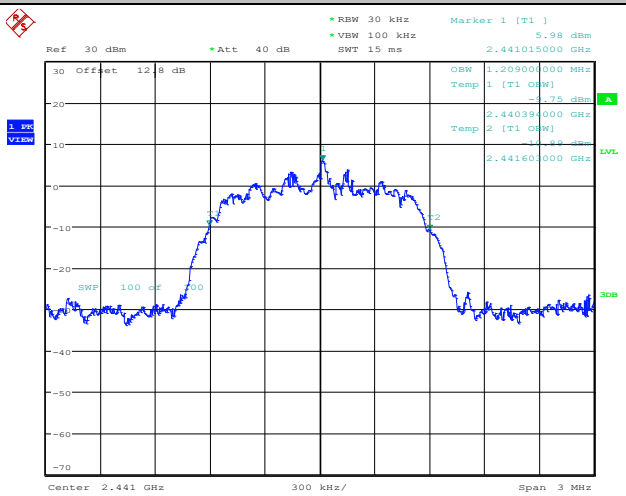
DH5_Ant1_2480



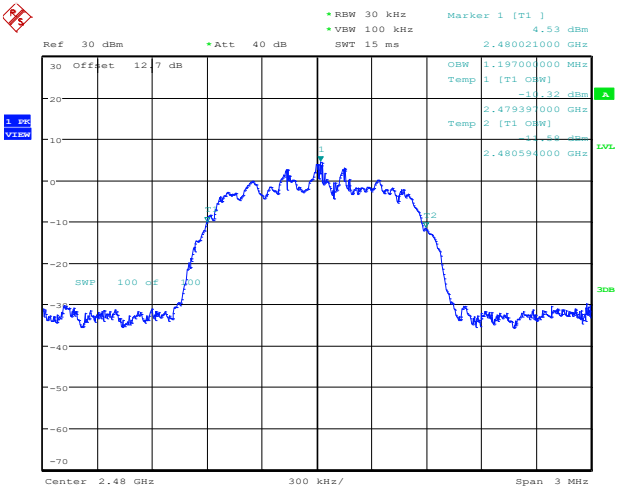
2DH5_Ant1_2402



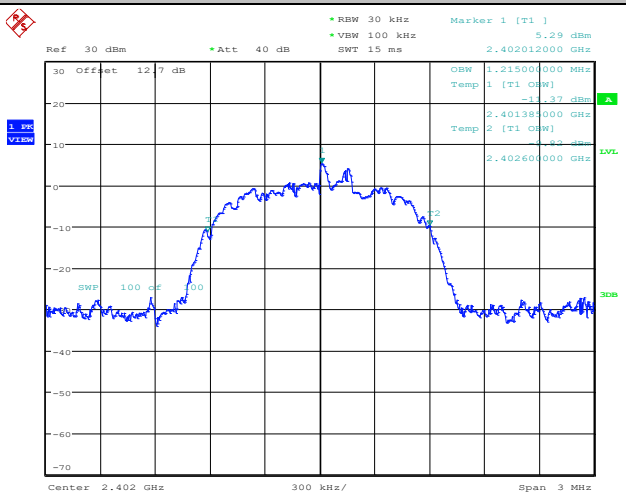
2DH5_Ant1_2441



2DH5_Ant1_2480

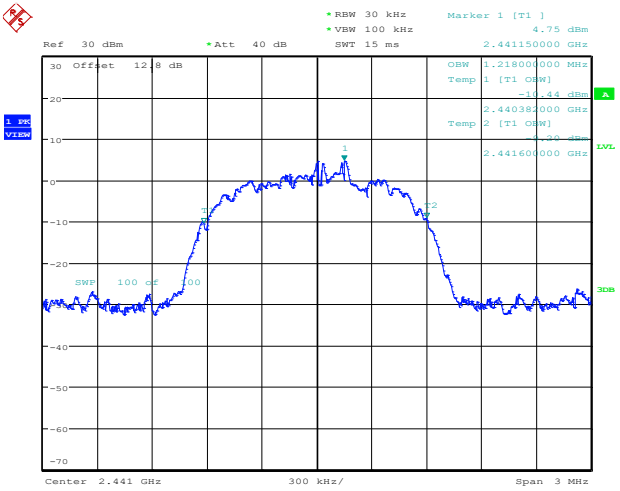


3DH5_Ant1_2402

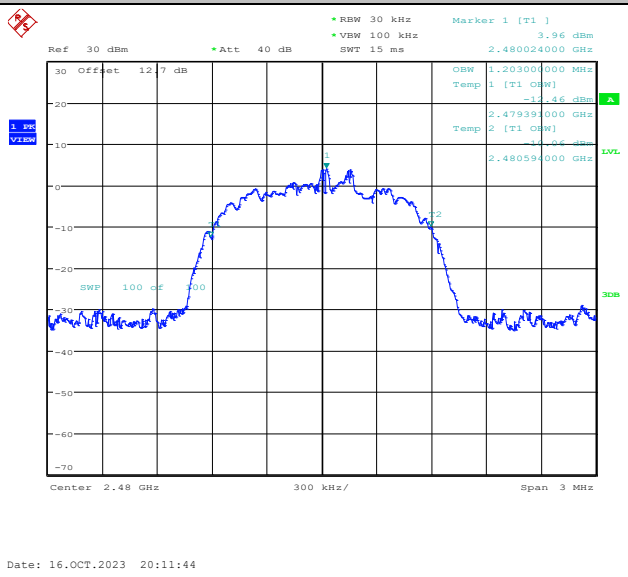


Date: 16.OCT.2023 20:02:16

3DH5_Ant1_2441



Date: 16.OCT.2023 20:08:17

3DH5_Ant1_2480


6.5. Frequency Band Edges-Conducted

Specifications:	FCC 47 Part 15.247(d)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit(dBc)
FCC 47 Part 15.247(d)	>20

Measurement Uncertainty:

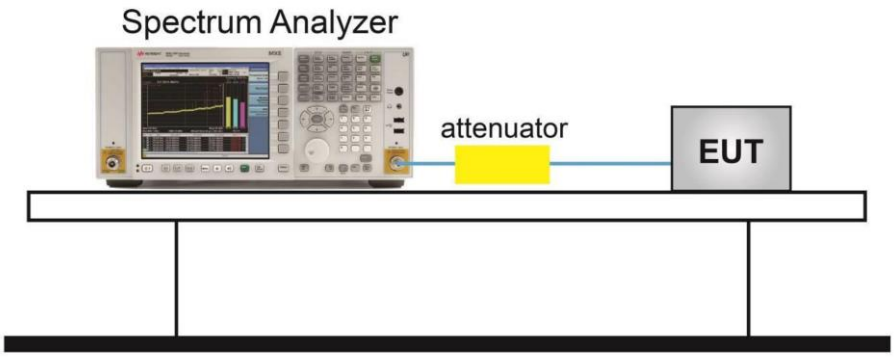
Measurement Uncertainty	±0.80dBm/kHz

Test procedures:

The measurement is according to ANSI C63.10 clause 7.8.6.

1. Connect the EUT to spectrum analyzer.
2. Set RBW=100k, VBW=300k, span more than 1.5 times channel bandwidth (2MHz).
3. Detector =peak, sweep time=auto couple, trace mode=max hold. Allow sweep to continue until the trace stabilizes.

Test setup:

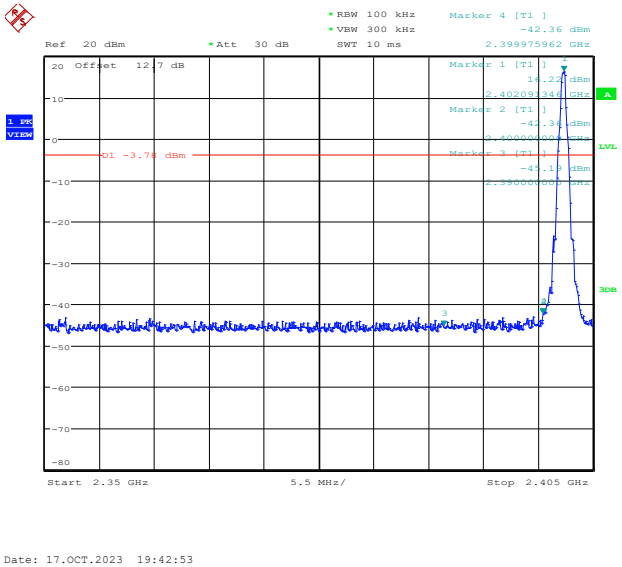


Measurement Results:

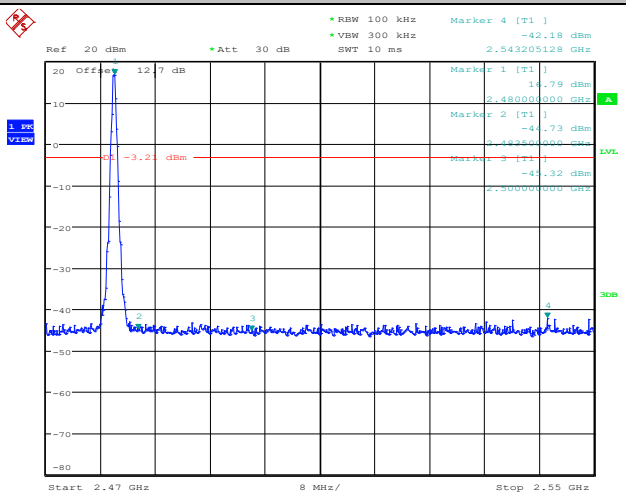
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	16.22	-42.36	≤-3.78	PASS
		High	2480	16.79	-42.18	≤-3.21	PASS
		Low	Hop_2402	16.15	-39.71	≤-3.85	PASS
		High	Hop_2480	17.09	-42.6	≤-2.91	PASS
2DH5	Ant1	Low	2402	13.76	-42.89	≤-6.24	PASS
		High	2480	14.41	-42.15	≤-5.59	PASS
		Low	Hop_2402	12.80	-42.43	≤-7.2	PASS
		High	Hop_2480	14.71	-42.69	≤-5.29	PASS
3DH5	Ant1	Low	2402	13.77	-42.95	≤-6.23	PASS
		High	2480	14.04	-42.31	≤-5.96	PASS
		Low	Hop_2402	13.34	-41.8	≤-6.66	PASS
		High	Hop_2480	12.12	-41.75	≤-7.88	PASS

Test Graphs

DH5_Ant1_Low_2402

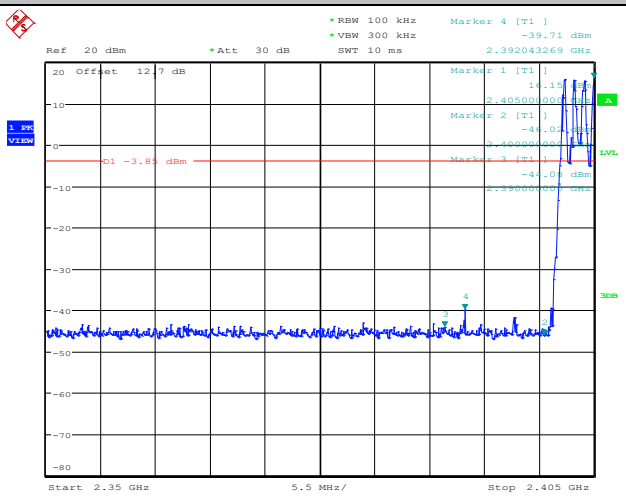


DH5_Ant1_High_2480



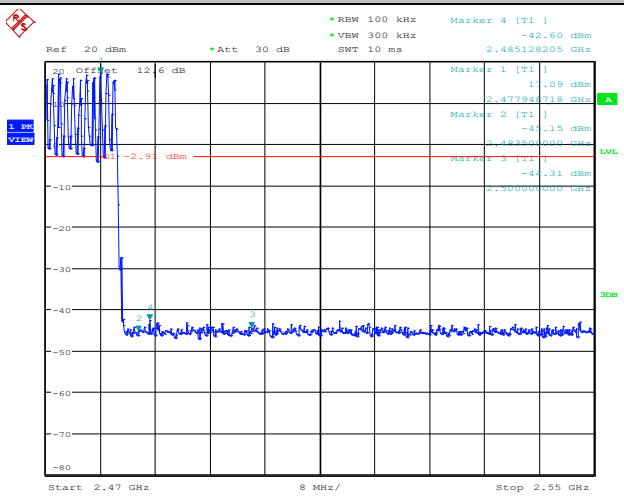
Date: 17.OCT.2023 19:50:42

DH5_Ant1_Low_Hop_2402



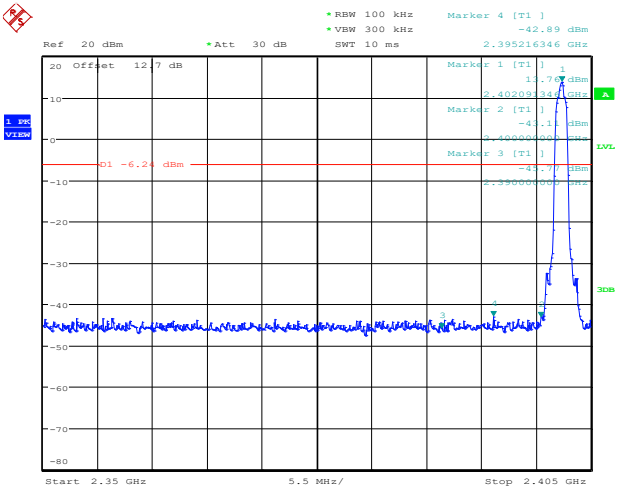
Date: 17.OCT.2023 13:52:42

DH5_Ant1_High_Hop_2480



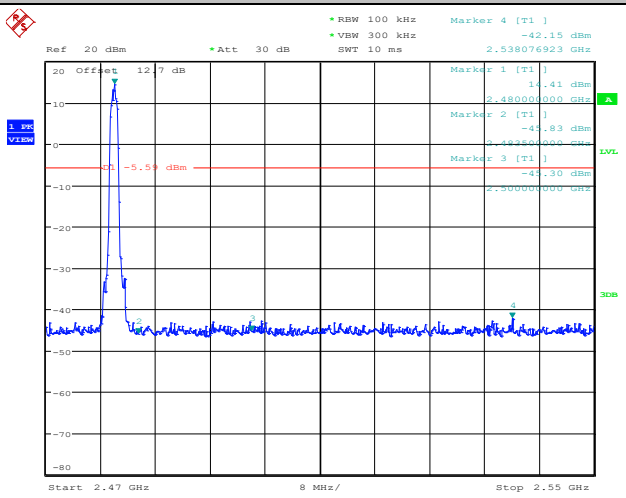
Date: 17.OCT.2023 13:55:50

2DH5_Ant1_Low_2402



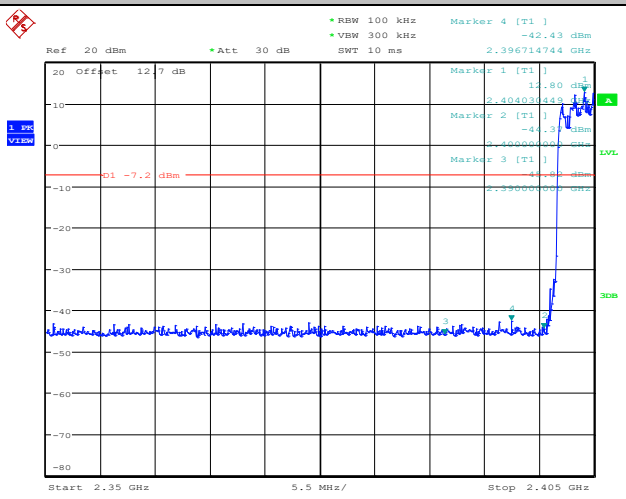
Date: 17.OCT.2023 19:53:38

2DH5_Ant1_High_2480



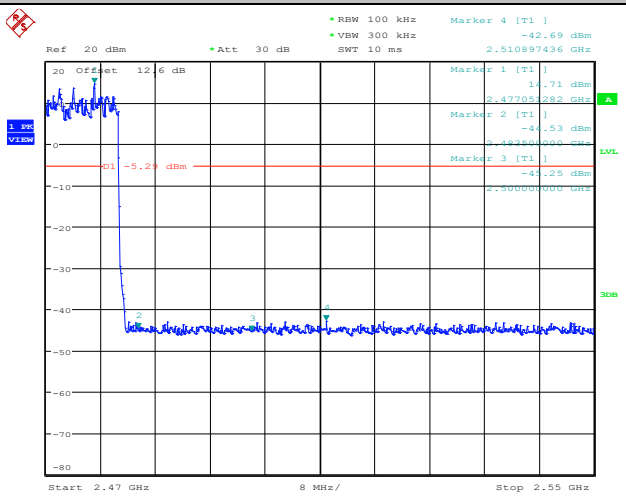
Date: 17.OCT.2023 19:58:45

2DH5_Ant1_Low_Hop_2402



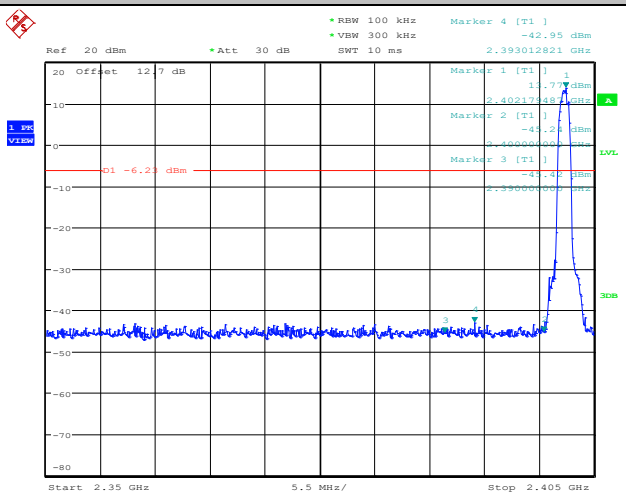
Date: 17.OCT.2023 13:56:31

2DH5_Ant1_High_Hop_2480



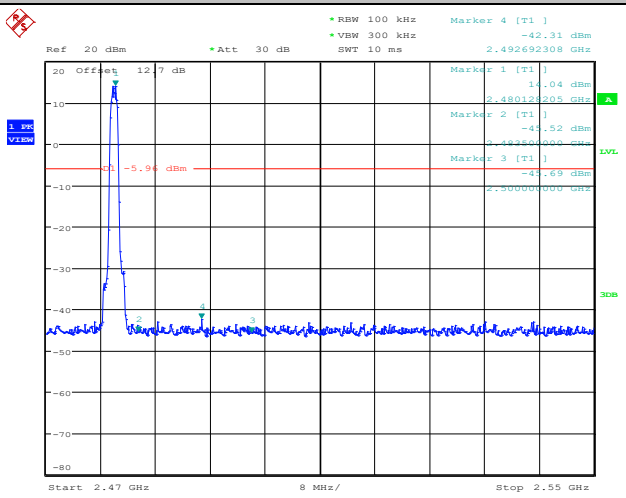
Date: 17.OCT.2023 13:57:13

3DH5_Ant1_Low_2402



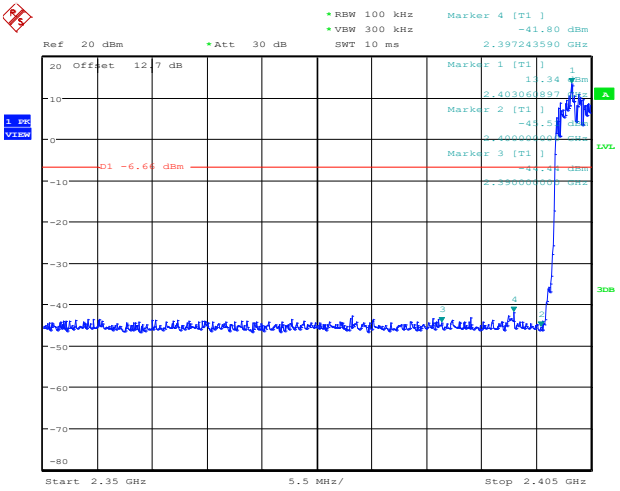
Date: 17.OCT.2023 20:01:37

3DH5_Ant1_High_2480

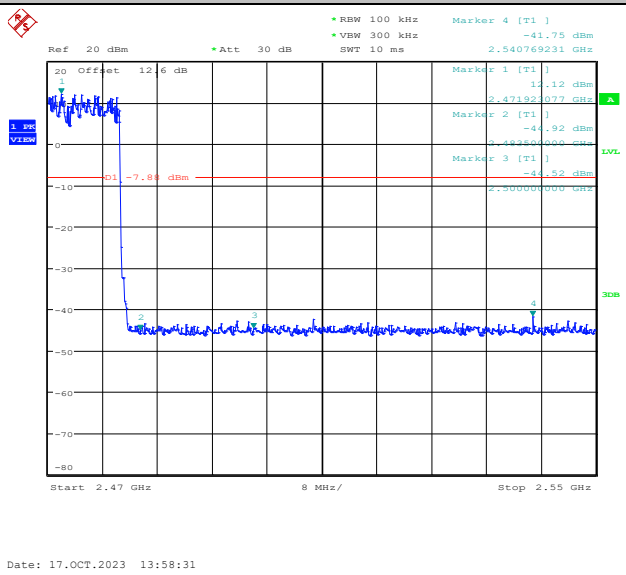


Date: 17.OCT.2023 20:06:23

3DH5_Ant1_Low_Hop_2402



Date: 17.OCT.2023 13:57:52

3DH5_Ant1_High_Hop_2480


6.6. Time Of Occupancy (Dwell Time)

Specifications:	FCC 47 Part 15.247(a)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(a)	<400ms

Measurement Uncertainty:

Measurement Uncertainty	0.52ms

Test procedures

The measurement is according to ANSI C63.10 clause 7.8.4

1. Connect the EUT through cable and divide with spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 8.
4. Span: Zero span, centered on a hopping channel.
5. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
6. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
7. Detector function: Peak.
8. Trace: Clear-write, single sweep
9. Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

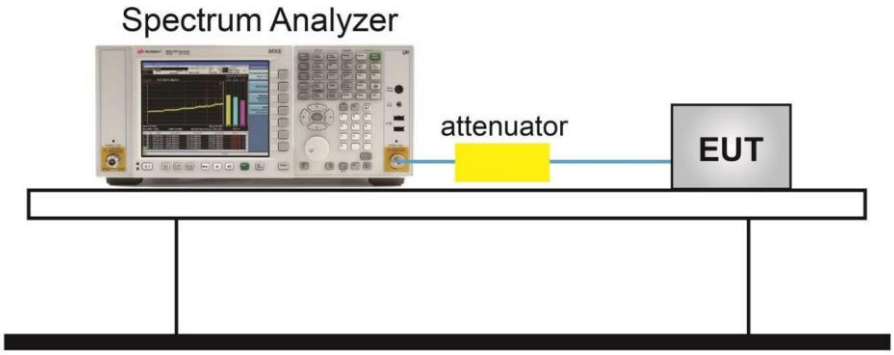
To determine the number of hops on a channel in the regulatory observation period repeat the measurement using a longer sweep time. When the device uses a single hopping sequence the period of measurement should be sufficient to capture at least 2 hops. When the device uses a dynamic hopping sequence, or the sequence varies, the period of measurement may need to capture multiple hops to better determine the average time of occupancy. Count the number of hops on the channel across the sweep time.

The average number of hops on the same channel within the regulatory observation period is calculated from

the number of hops on the channel divided by the spectrum analyzer sweep time multiplied by the regulatory observation period. For example, if three hops are counted with an analyzer sweep time of 500 ms and the regulatory observation period is 10 s, then the number of hops in that ten seconds is 3 / 0.5 × 10, or 60 hops. The average time of occupancy is calculated by multiplying the dwell time per hop by the number of hops in the observation period. Where the device shares the same hopping algorithms (dwell time, channel selection) across multiple data rates or modulation schemes then the time of occupancy need only be measured for one of those modulation schemes or data rates. If the dwell time value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in dwell time.

Spectral plots of the channel occupancy shall be included in the report.

Test Setup



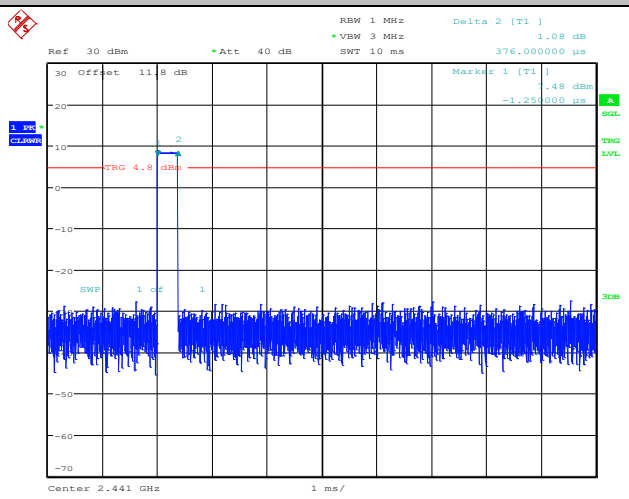
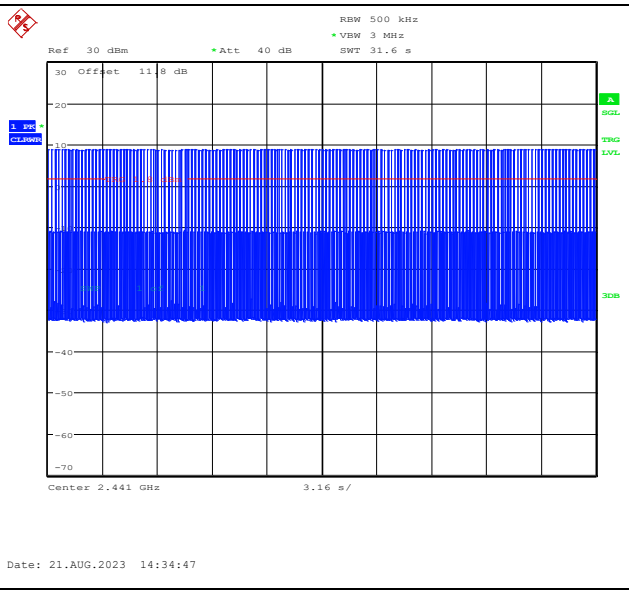
Measurement Results:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.376	321	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.633	164	0.268	≤0.4	PASS
DH5	Ant1	Hop	2.881	106	0.305	≤0.4	PASS
2DH1	Ant1	Hop	0.383	312	0.119	≤0.4	PASS
2DH3	Ant1	Hop	1.635	153	0.25	≤0.4	PASS
2DH5	Ant1	Hop	2.883	101	0.291	≤0.4	PASS
3DH1	Ant1	Hop	0.381	317	0.121	≤0.4	PASS
3DH3	Ant1	Hop	1.633	167	0.273	≤0.4	PASS
3DH5	Ant1	Hop	2.885	112	0.323	≤0.4	PASS

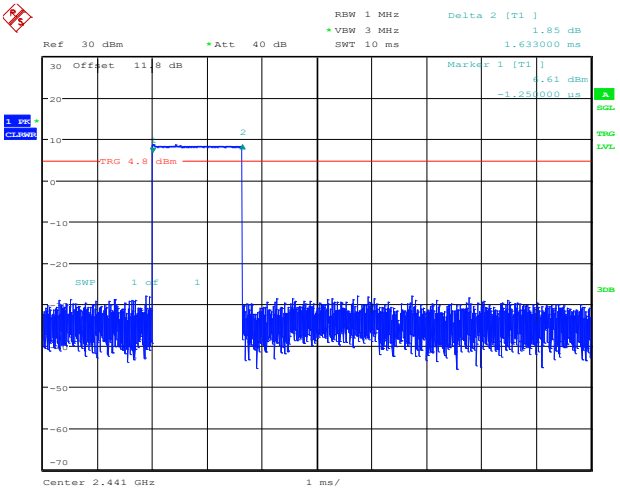
Note:

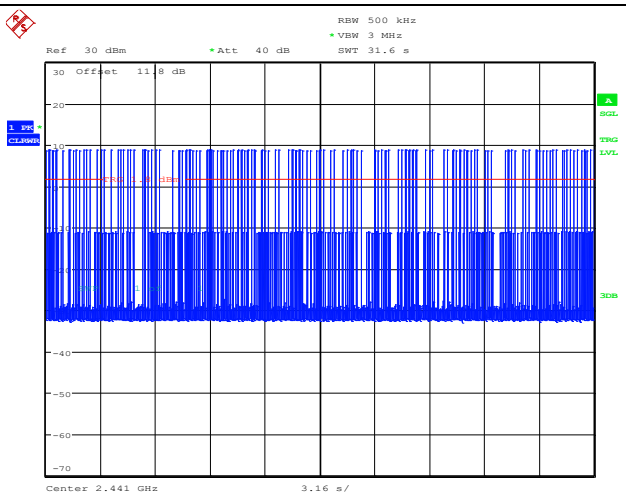
1. Result= BurstWidth* TotalHops.
2. All the test data for each data were verified, but only the worst case was reported.

Test Graphs

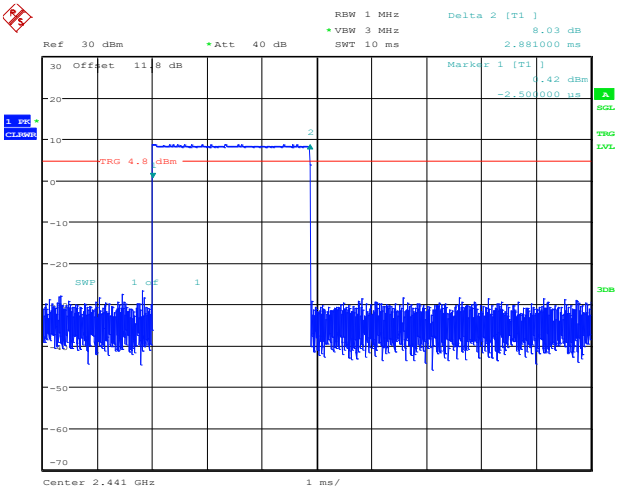
DH1_Ant1_Hop



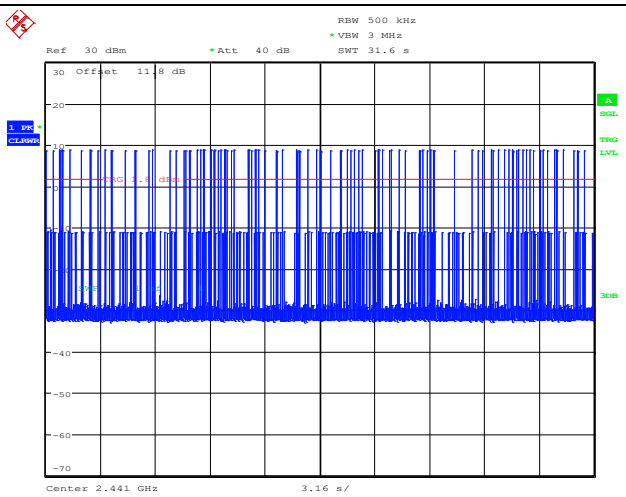
DH3_Ant1_Hop


RBW 1 MHz
VBW 3 MHz
SWT 10 ms
Delta 2 [T1]
1.85 dB
1.633000 ms
Ref 30 dBm
Att 40 dB
Offset 11.8 dB
Marker 1 [T1]
4.61 dBm
-1.254000 us
TRG 4.8 dBm
SWP 1 of 1
Center 2.441 GHz
1 ms/
Date: 21.AUG.2023 14:41:16

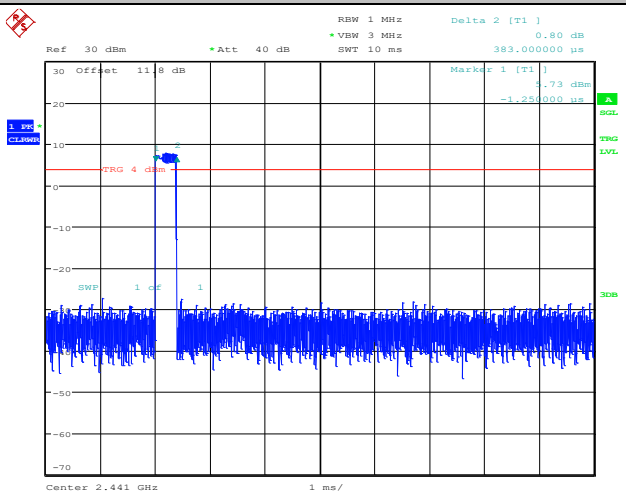

RBW 500 kHz
VBW 3 MHz
SWT 31.6 s
Ref 30 dBm
Att 40 dB
Offset 11.8 dB
Center 2.441 GHz
3.16 s/
Date: 21.AUG.2023 14:41:56

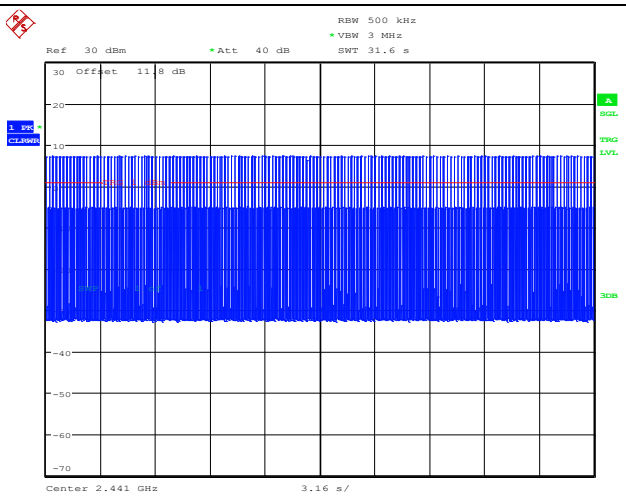
DH5_Ant1_Hop

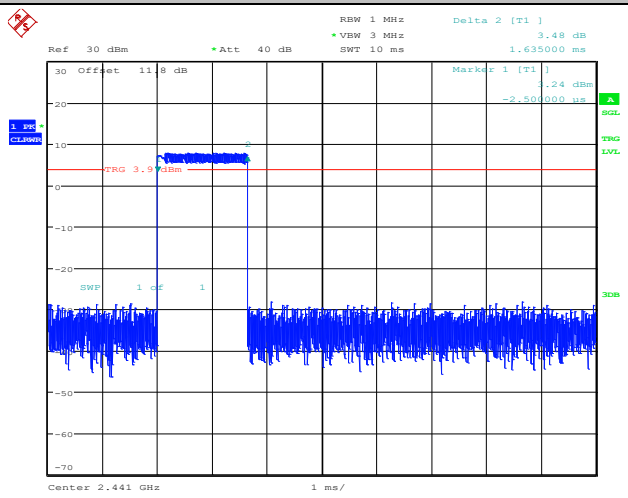
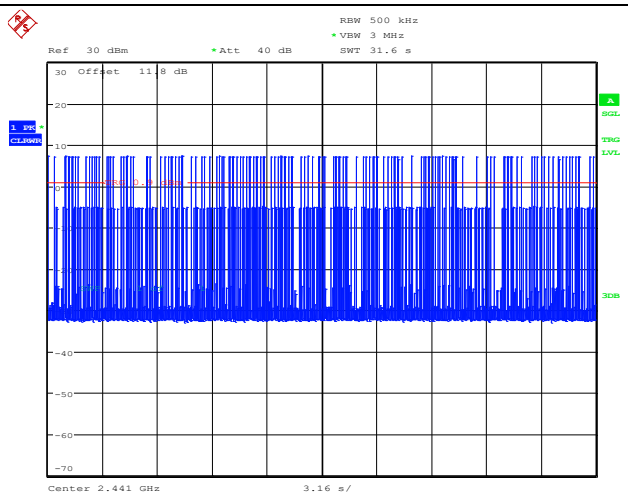

RBW 1 MHz
VBW 3 MHz
SWT 10 ms
Delta 2 [T1]
8.03 dB
2.881000 ms
Ref 30 dBm
Att 40 dB
Offset 11.8 dB
Marker 1 [T1]
0.42 dBm
-2.506000 us
TRG 4.8 dBm
SWP 1 of 1
Center 2.441 GHz
1 ms/
Date: 21.AUG.2023 14:43:10


RBW 500 kHz
VBW 3 MHz
SWT 31.6 s
Ref 30 dBm
Att 40 dB
Offset 11.8 dB
Center 2.441 GHz
3.16 s/
Date: 21.AUG.2023 14:43:50

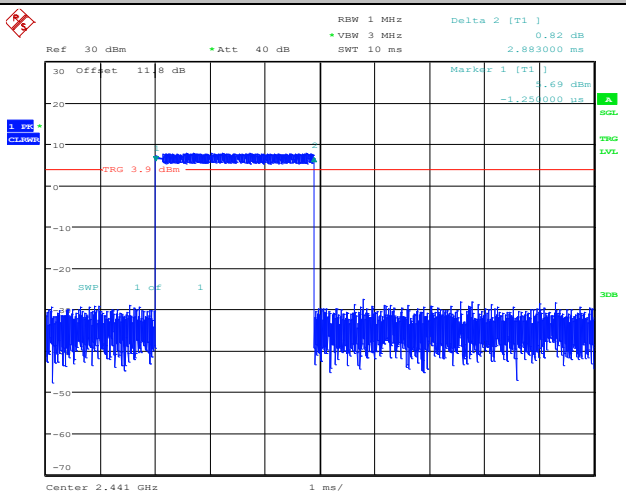
2DH1_Ant1_Hop

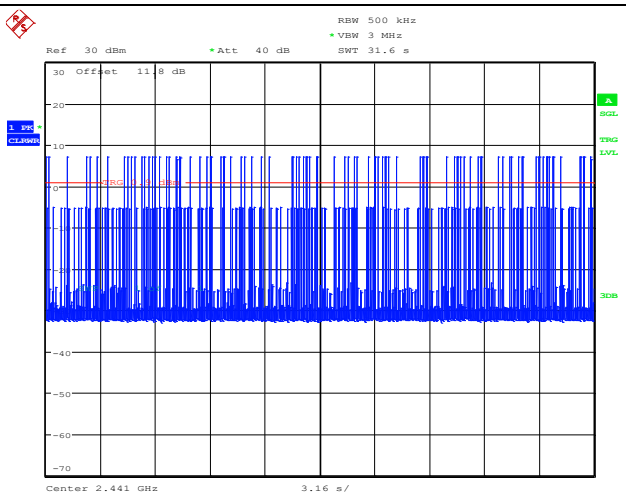




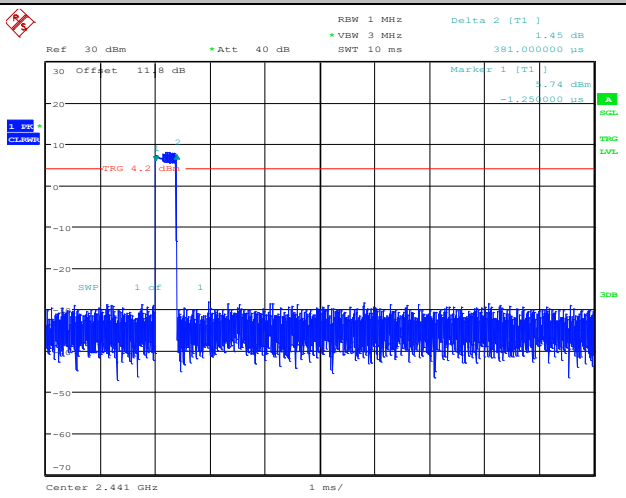
2DH3_Ant1_Hop
 Date: 21.AUG.2023 14:46:41
 Date: 21.AUG.2023 14:47:22

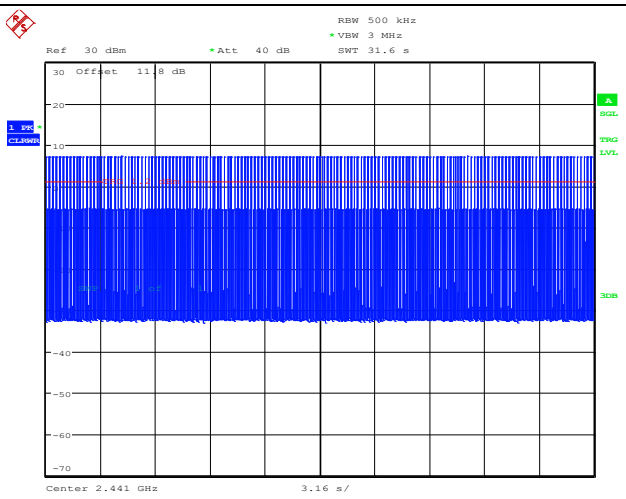
2DH5_Ant1_Hop

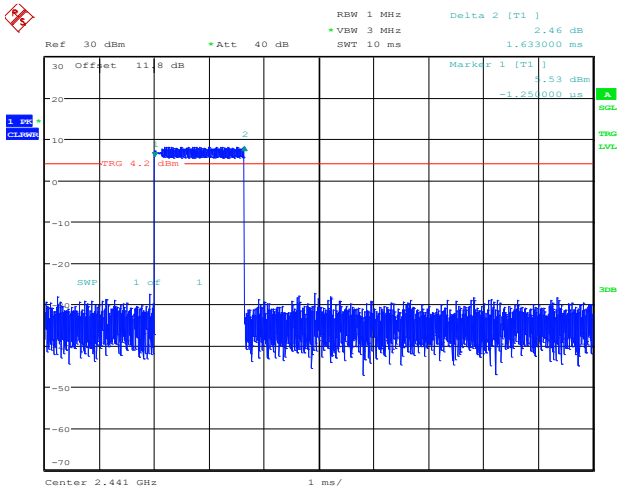
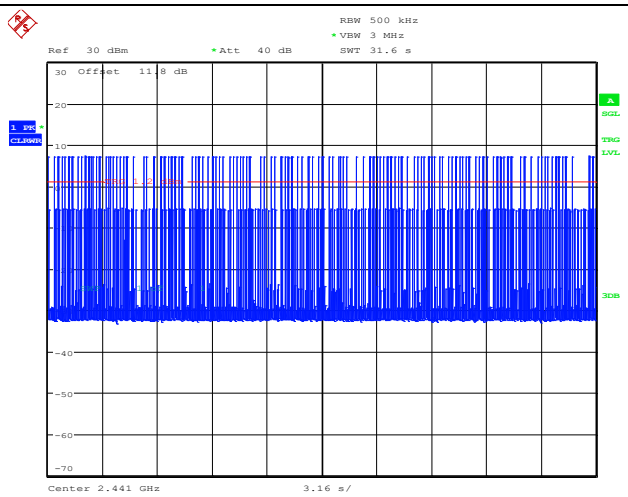


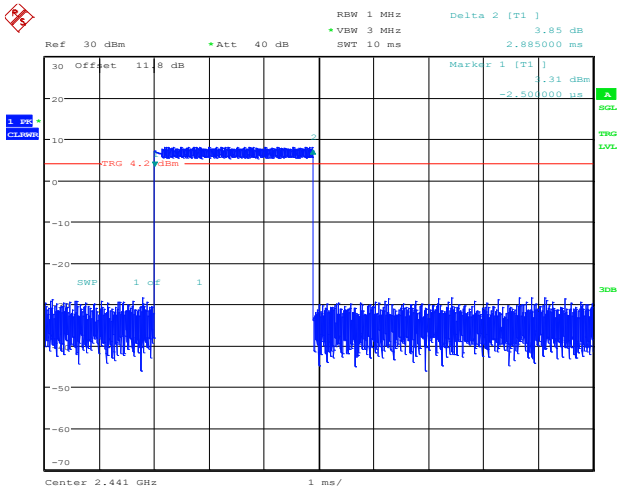
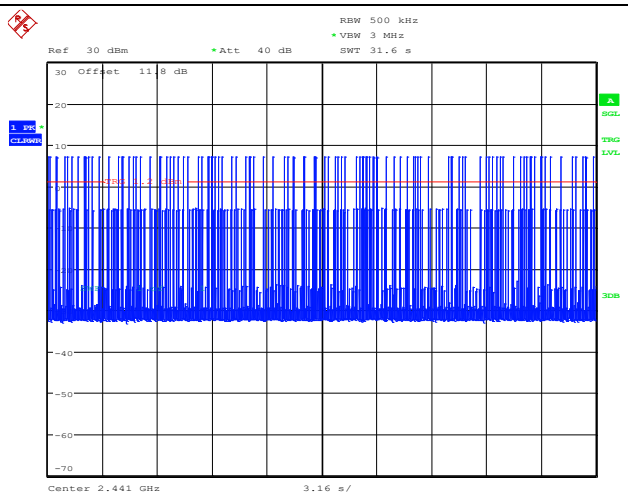


3DH1_Ant1_Hop





3DH3_Ant1_Hop



3DH5_Ant1_Hop



6.7. Carrier Frequency Separation

Specifications:	FCC 47 Part 15.247(a)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(a)	GFSK: Over 25kHz or 20dB bandwidth π/4 DQPSK; 8DPSK: Over 25kHz or (2/3)*20dB bandwidth

Measurement Uncertainty:

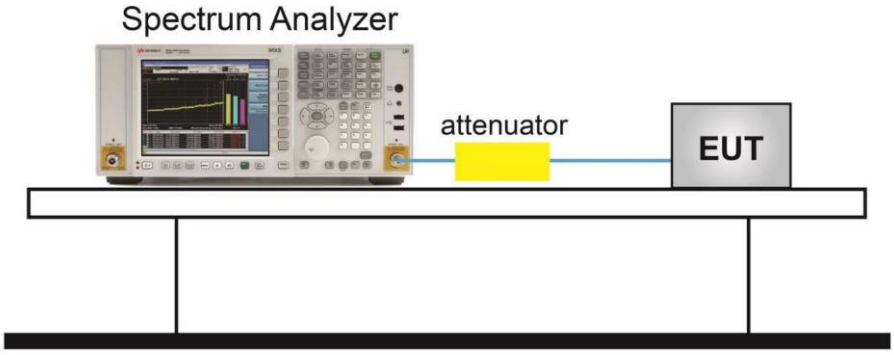
Measurement Uncertainty	4kHz

Test procedures:

The measurement is according to ANSI C63.10 clause 7.8.2.

1. Connect the EUT through cable and divide and spectrum analyzer.
2. Enable the EUT transmit in hopping mode.
3. Span: Wide enough to capture the peaks of two adjacent channels.
4. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
5. Video (or average) bandwidth (VBW) ≥ RBW.
6. Sweep: Auto.
7. Detector function: Peak.
8. Trace: Max hold.
9. Allow the trace to stabilize.

Test Setup:



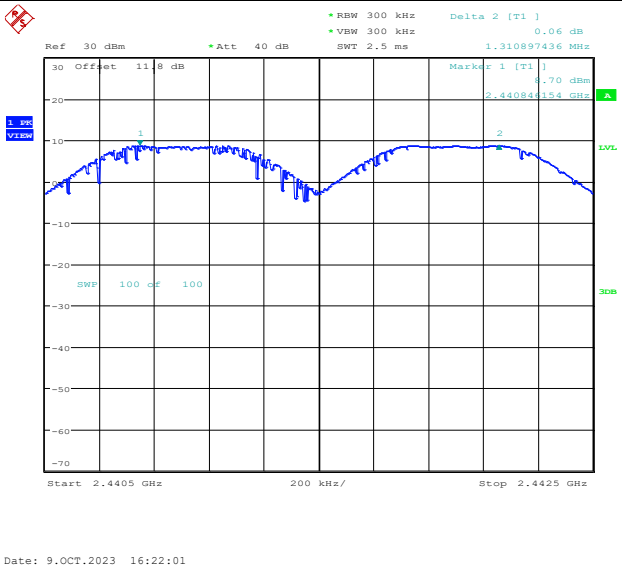
Measurement Results:

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.311	≥0.950	PASS
2DH5	Ant1	Hop	1.119	≥0.880	PASS
3DH5	Ant1	Hop	0.946	≥0.867	PASS

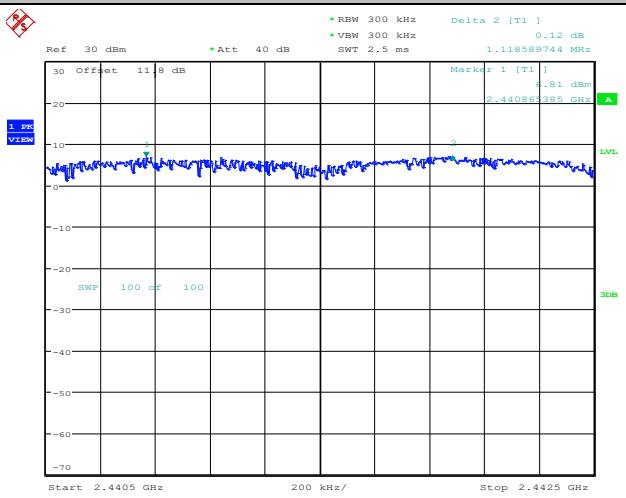
Note:

1. All the test data for each data were verified, but only the worst case was reported.

DH5_Ant1_Hop

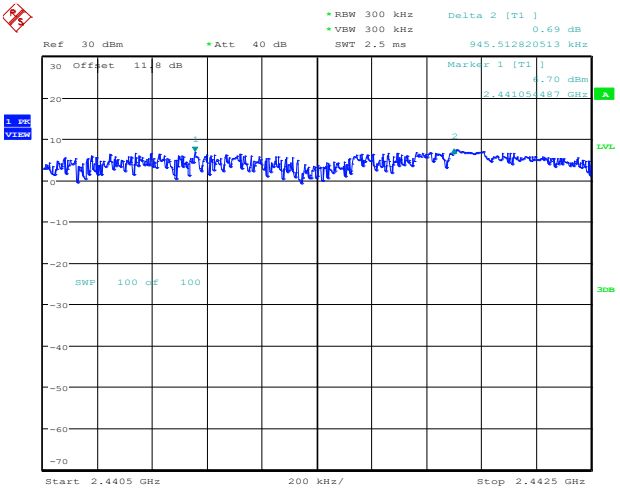


2DH5_Ant1_Hop



Date: 9.OCT.2023 16:22:54

3DH5_Ant1_Hop



Date: 9.OCT.2023 16:23:31

6.8. Number Of Hopping Channels

Specifications:	FCC 47 Part 15.247(a)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(a)	At least 15 non-overlapping channels

Measurement Uncertainty:

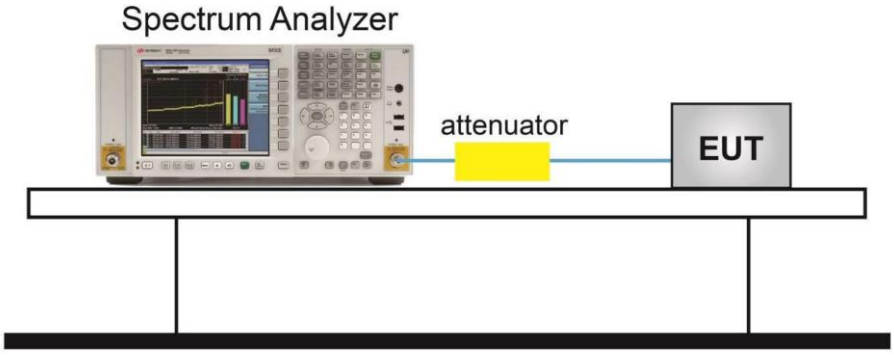
Measurement Uncertainty	±0.34dB

Test procedure:

The measurement is according to ANSI C63.10 clause 7.8.3.

1. Connect the EUT through cable and divide with spectrum analyzer.
2. Enable the EUT transmit in hopping mode.
3. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
4. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
5. VBW ≥ RBW.
6. Sweep: Auto.
7. Detector function: Peak.
8. Trace: Max hold.
9. Allow the trace to stabilize.
10. Record the test results.

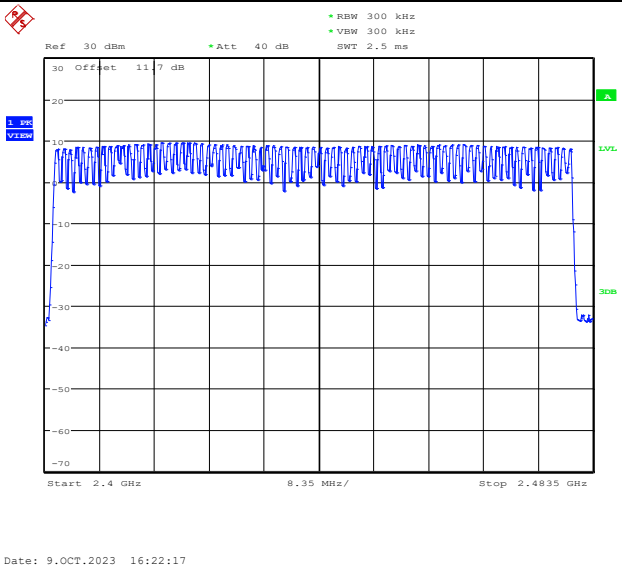
Test Setup:



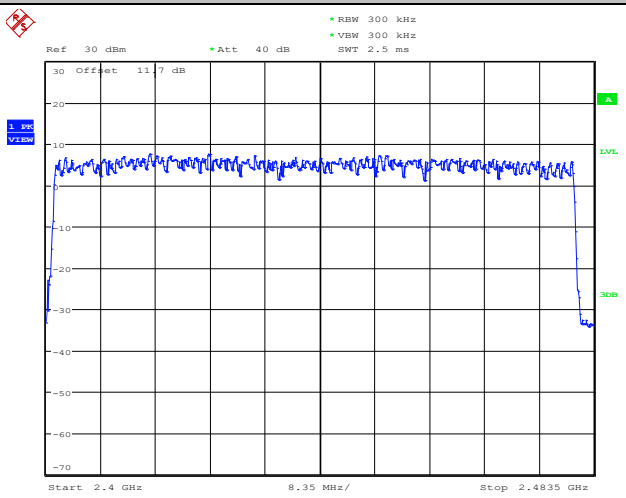
Measurement Results:

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

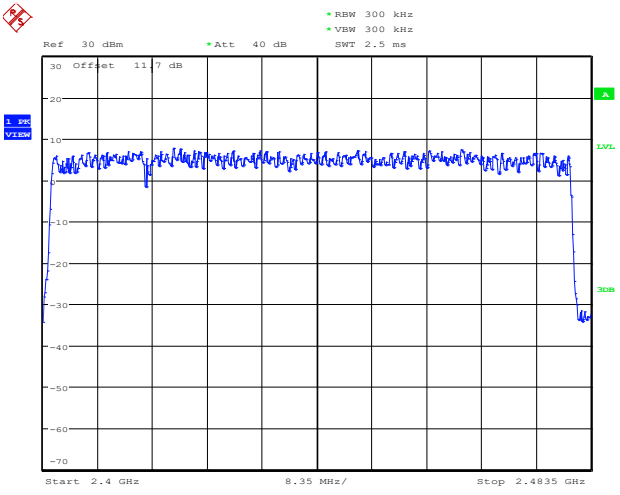
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop



6.9. Transmitter Spurious Emission-Conducted

Specifications:	FCC 47 Part 15.247(d)
DUT Serial Number:	S3
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(d)	20dB below peak output power in 100kHz

Measurement Uncertainty:

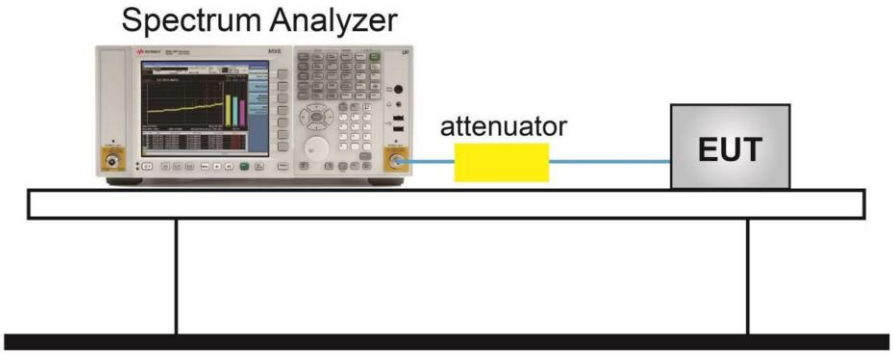
Measurement Uncertainty	±0.80dBm/kHz

Test procedures:

The measurement is according to ANSI C63.10 clause 7.8.8.

1. Connect the EUT to spectrum analyzer.
2. Set RBW=100kHz, VBW=300kHz.
3. Detector =peak, sweep time=auto couple, trace mode=max hold

Test Setup:

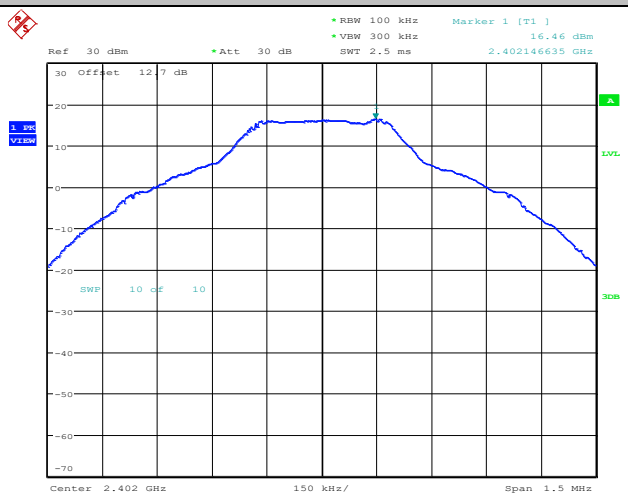


Measurement Results:

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	16.46	16.46	---	PASS
			30~1000	16.46	-42.14	≤-3.54	PASS
			1000~26500	16.46	-50.7	≤-3.54	PASS
		2441	Reference	17.59	17.59	---	PASS
			30~1000	17.59	-40.97	≤-2.41	PASS
			1000~26500	17.59	-50.81	≤-2.41	PASS
		2480	Reference	17.04	17.04	---	PASS
			30~1000	17.04	-39.32	≤-2.96	PASS
			1000~26500	17.04	-50.4	≤-2.96	PASS
2DH5	Ant1	2402	Reference	13.80	13.80	---	PASS
			30~1000	13.80	-46.96	≤-6.2	PASS
			1000~26500	13.80	-51.22	≤-6.2	PASS
		2441	Reference	14.93	14.93	---	PASS
			30~1000	14.93	-46.27	≤-5.07	PASS
			1000~26500	14.93	-50.15	≤-5.07	PASS
		2480	Reference	14.39	14.39	---	PASS
			30~1000	14.39	-48.05	≤-5.61	PASS
			1000~26500	14.39	-50.02	≤-5.61	PASS
3DH5	Ant1	2402	Reference	13.81	13.81	---	PASS
			30~1000	13.81	-48.48	≤-6.19	PASS
			1000~26500	13.81	-50.93	≤-6.19	PASS
		2441	Reference	14.98	14.98	---	PASS
			30~1000	14.98	-46.47	≤-5.02	PASS
			1000~26500	14.98	-50.7	≤-5.02	PASS
		2480	Reference	14.43	14.43	---	PASS
			30~1000	14.43	-47.45	≤-5.57	PASS
			1000~26500	14.43	-50.13	≤-5.57	PASS

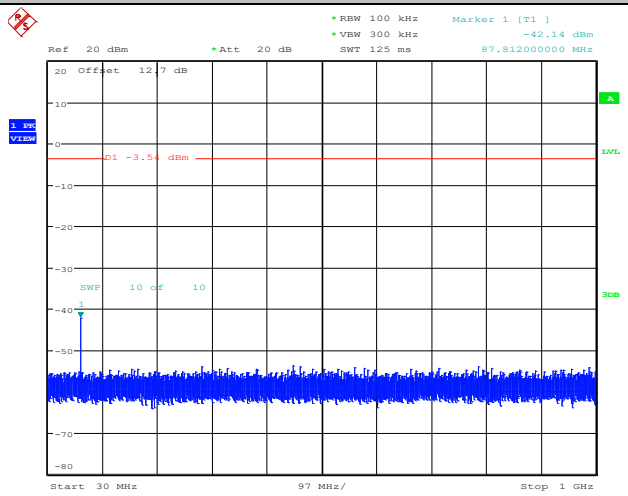
Test Graphs

DH5_Ant1_2402_0~Reference



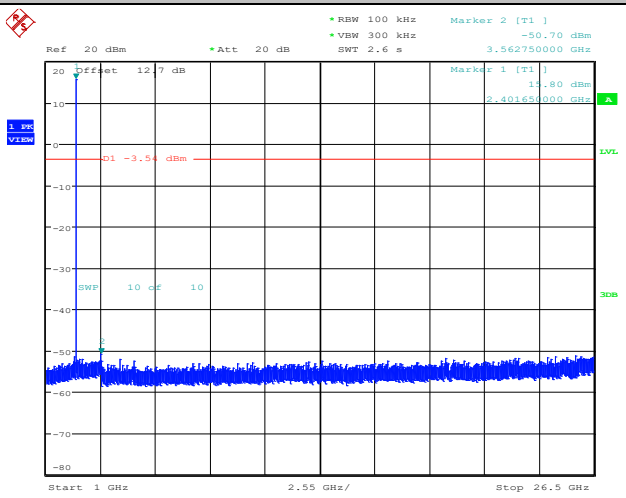
Date: 17.OCT.2023 19:43:02

DH5_Ant1_2402_30~1000



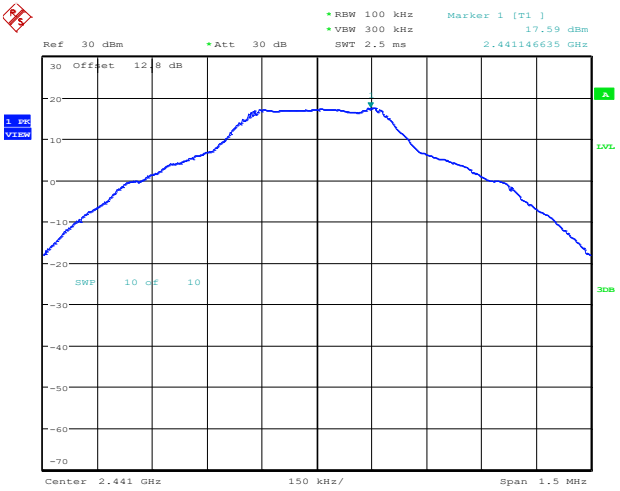
Date: 17.OCT.2023 19:43:15

DH5_Ant1_2402_1000~26500



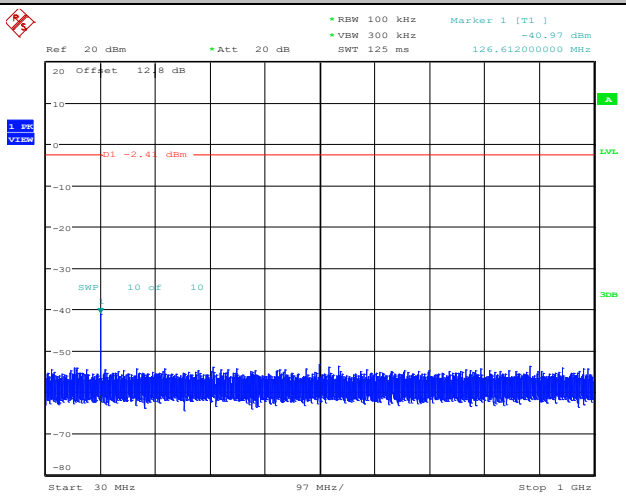
Date: 17.OCT.2023 19:45:01

DH5_Ant1_2441_0~Reference



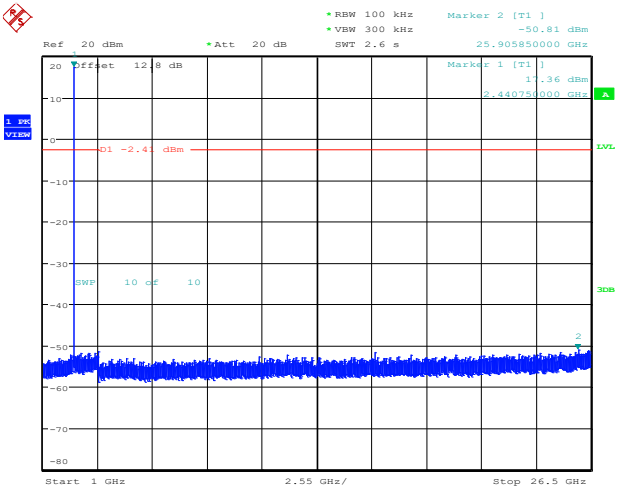
Date: 17.OCT.2023 19:48:21

DH5_Ant1_2441_30~1000



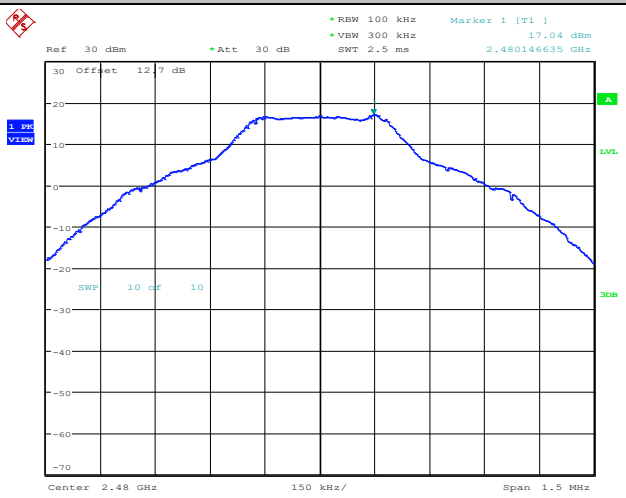
Date: 17.OCT.2023 19:48:33

DH5_Ant1_2441_1000~26500

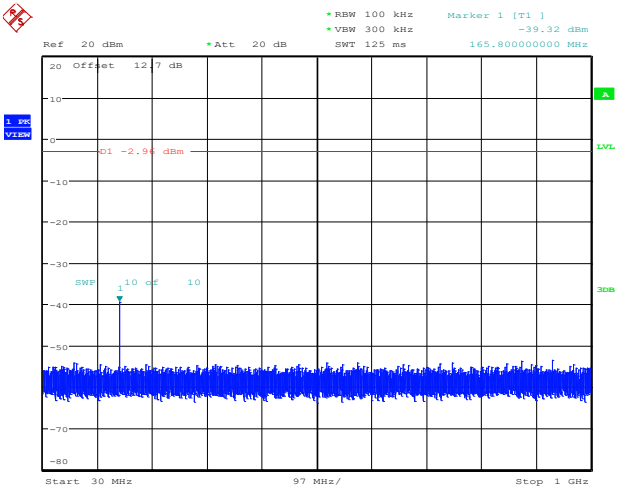


Date: 17.OCT.2023 19:50:20

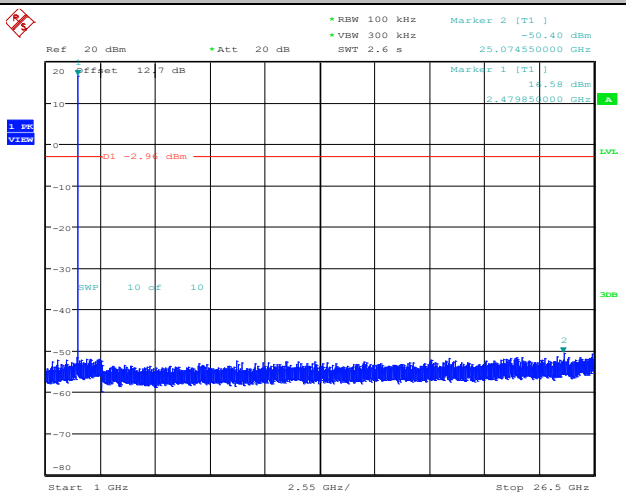
DH5_Ant1_2480_0~Reference



DH5_Ant1_2480_30~1000

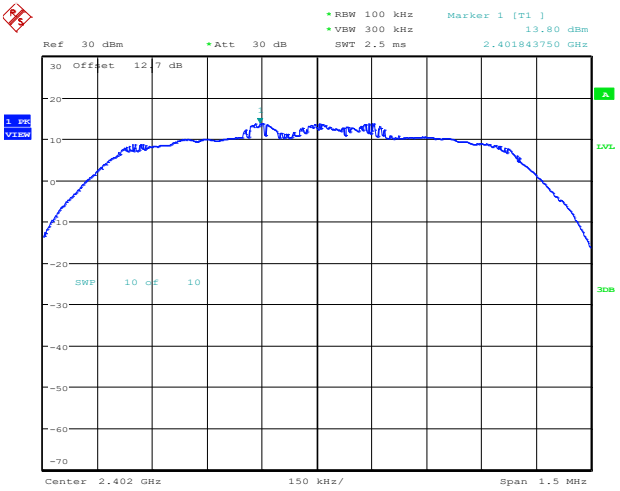


DH5_Ant1_2480_1000~26500



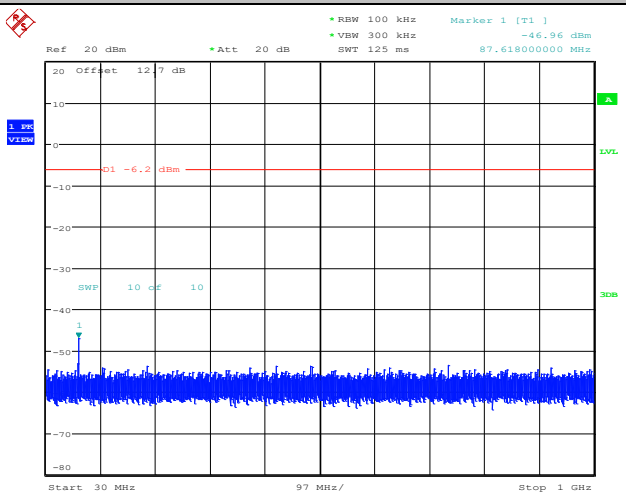
Date: 17.OCT.2023 19:52:50

2DH5_Ant1_2402_0~Reference

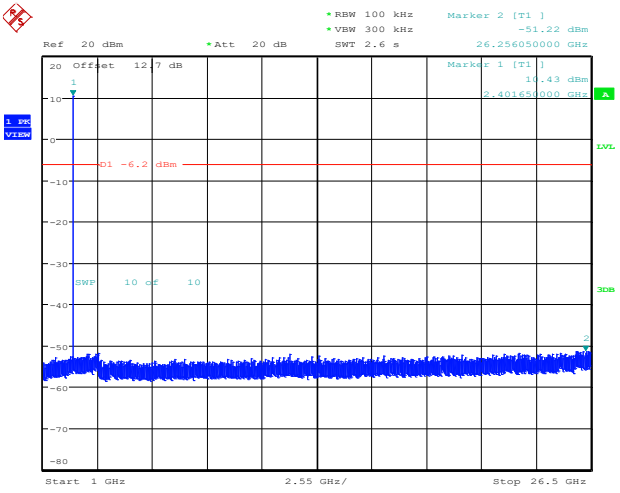


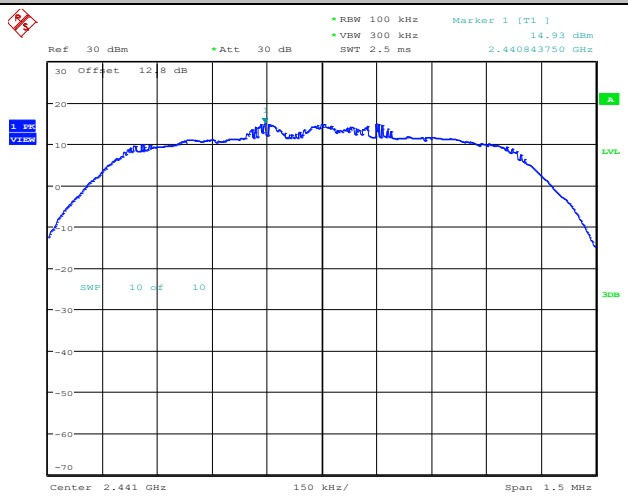
Date: 17.OCT.2023 19:53:47

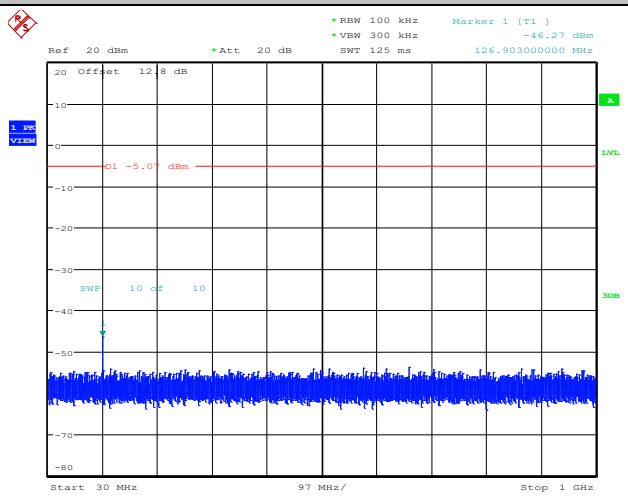
2DH5_Ant1_2402_30~1000



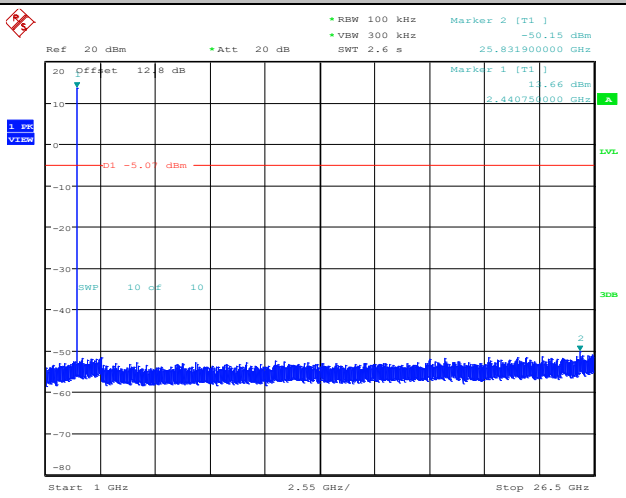
2DH5_Ant1_2402_1000~26500



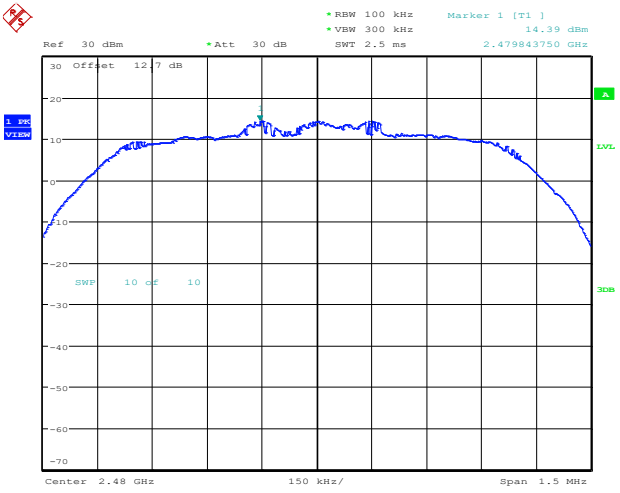
2DH5_Ant1_2441_0~Reference


2DH5_Ant1_2441_30~1000


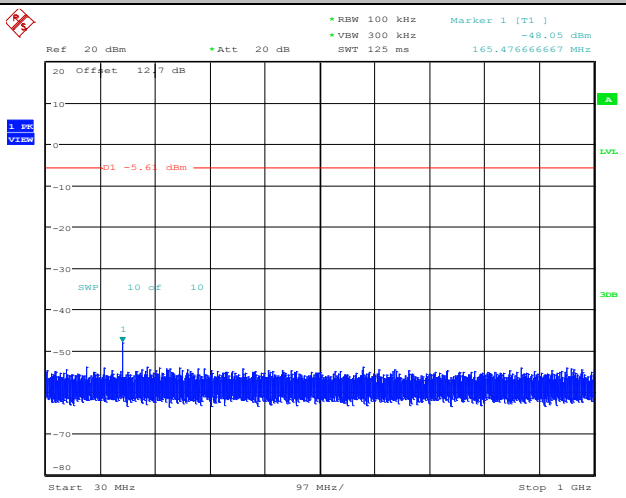
2DH5_Ant1_2441_1000~26500



2DH5_Ant1_2480_0~Reference

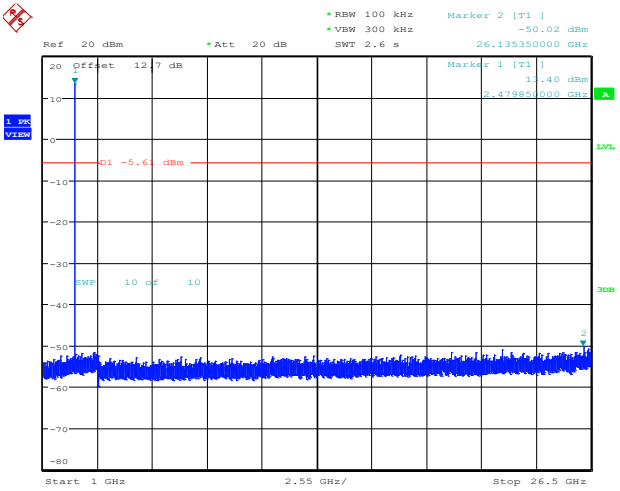


2DH5_Ant1_2480_30~1000

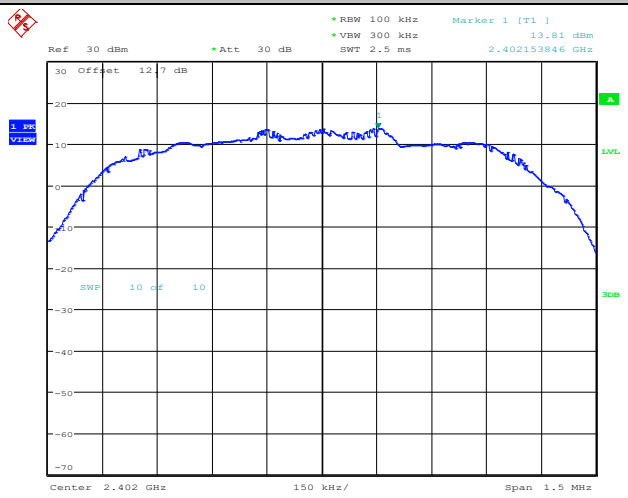
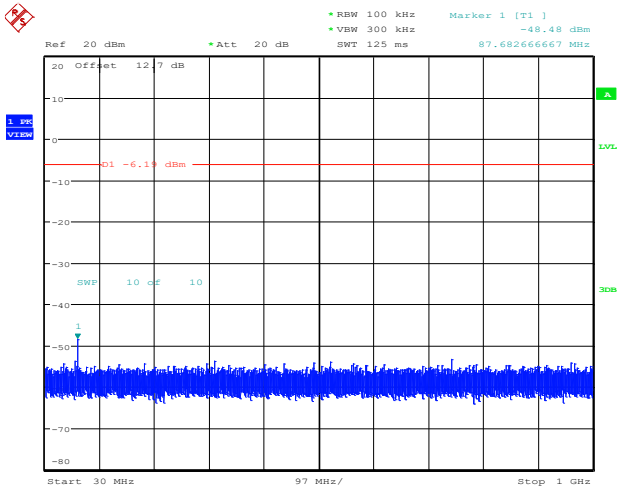


Date: 17.OCT.2023 19:59:06

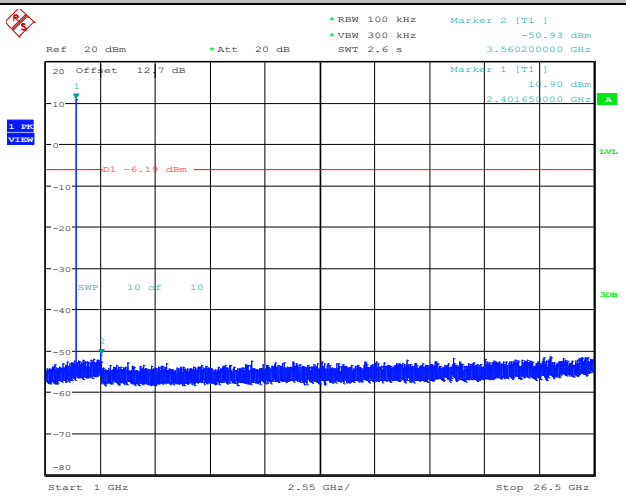
2DH5_Ant1_2480_1000~26500



Date: 17.OCT.2023 20:00:53

3DH5_Ant1_2402_0~Reference
 Date: 17.OCT.2023 20:01:47
3DH5_Ant1_2402_30~1000
 Date: 17.OCT.2023 20:01:59

3DH5_Ant1_2402_1000~26500



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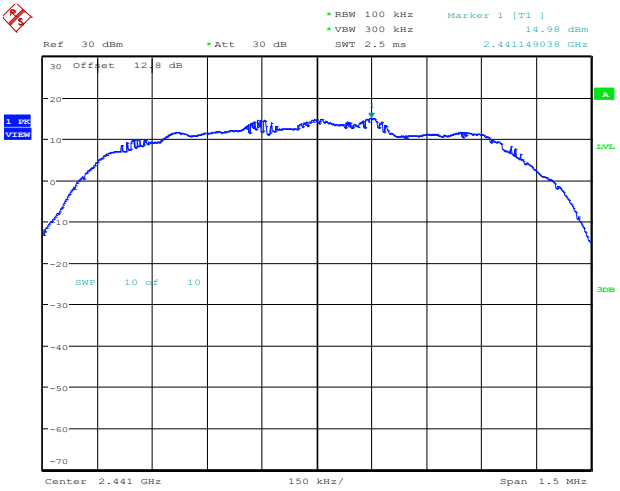
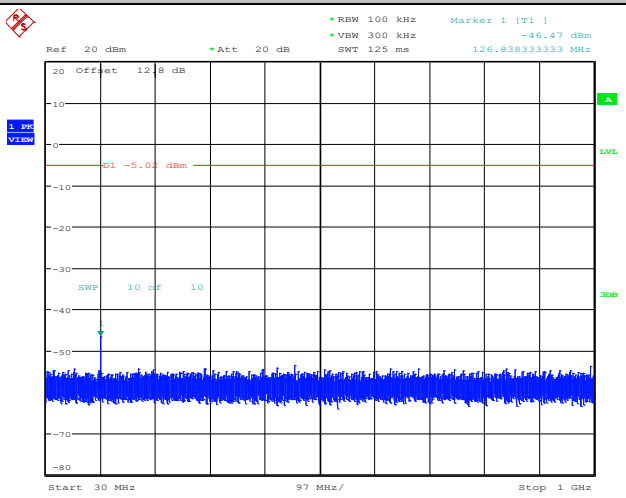
3DH5_Ant1_2441_0~Reference

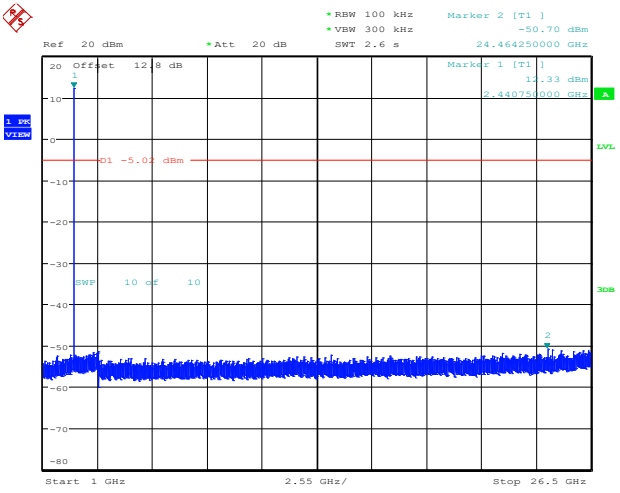


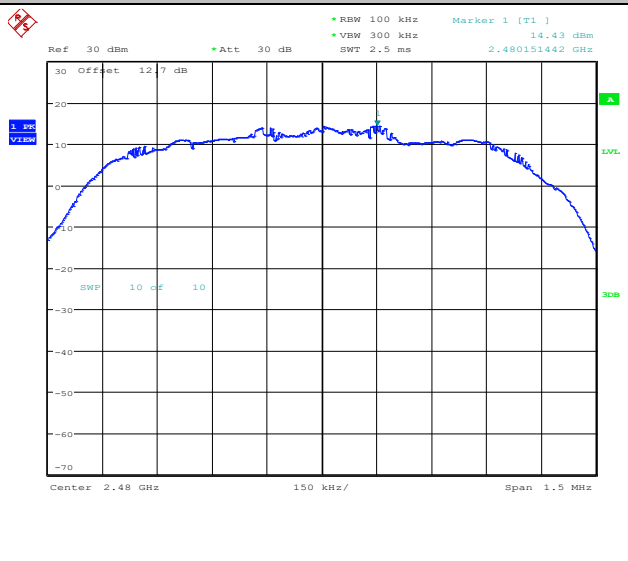
Date: 17.OCT.2023 20:04:05

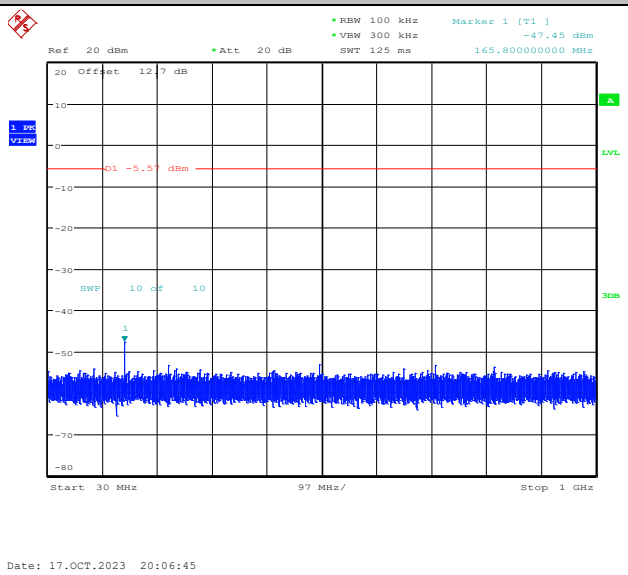
3DH5_Ant1_2441_30~1000



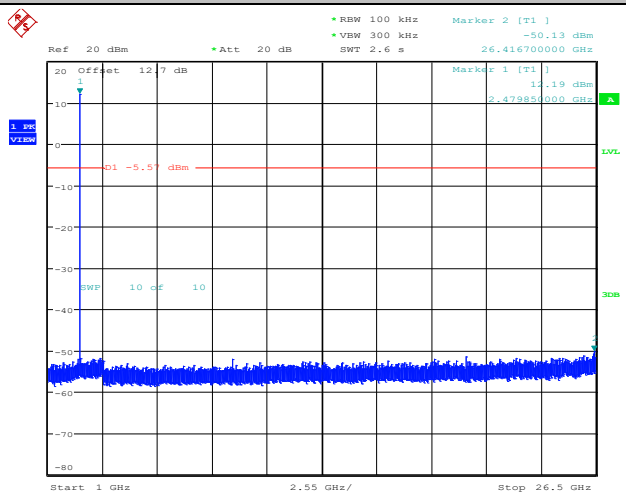
3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference


3DH5_Ant1_2480_30~1000


3DH5_Ant1_2480_1000~26500



6.10. Transmitter Spurious Emission-Radiated

Specifications:	FCC 47 Part 15.247(d),15.205(a),15.209(a)
DUT Serial Number:	S8 S11
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC 47 Part 15.247(d),15.205(a),15.209(a)	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

Limit in restricted band

Frequency of emission (MHz)	Field strength (mV/m)	Field strength (dBuV/m)
0.009~0.49	2400/F (kHz)	129-94
0.49~1.705	24000/F (kHz)	74-63
1.705~30	30	70
30~88	100	40
88~216	150	43.5
216~960	200	46
Above 960	500	54

Measurement Uncertainty:

Measurement Uncertainty	30MHz-150MHz：3.79 dB (k=2). 150MHz-1000MHz：3.51dB (k=2). 1000MHz-6000MHz：4.84 dB (k=2). 6000MHz-18000MHz: 4.52 dB (k=2).

Test procedures:

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a non-conducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.10-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height varied from 1m to 4m and the EUT azimuth were varied from 0° to 360° in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Test Settings – Below 1GHz (Quasi-Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 100 kHz.
3. Set the VBW = 300 kHz.
4. Detector = quasi-peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Trace was allowed to stabilize.

Test Settings – Above 1GHz (Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Detector = peak
5. Trace mode = max hold
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

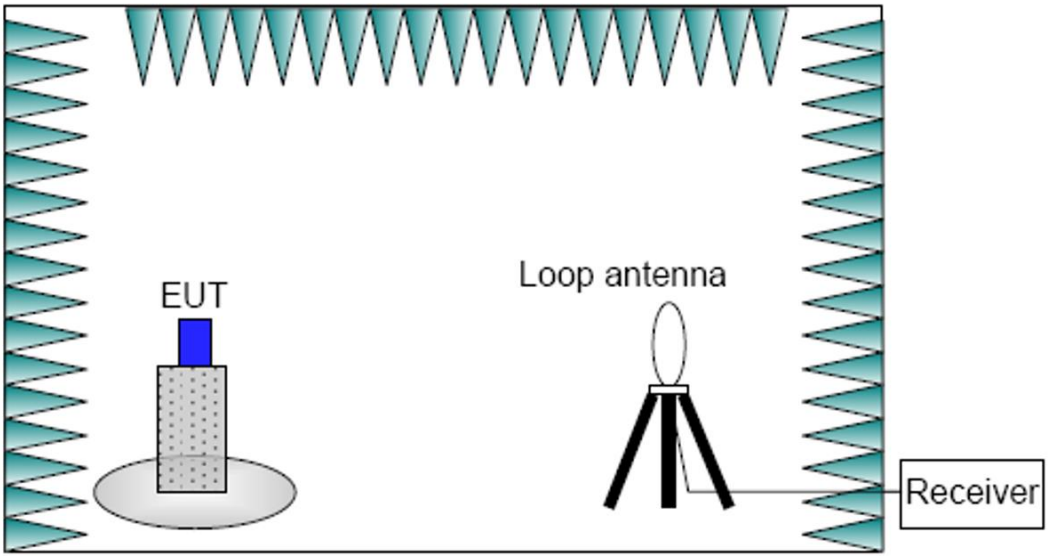
Test Settings – Above 1GHz (Average Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Detector = power average (RMS).
5. Number of measurement points = 1001 (Number of points must be ≥ 2 × span\\RBW)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

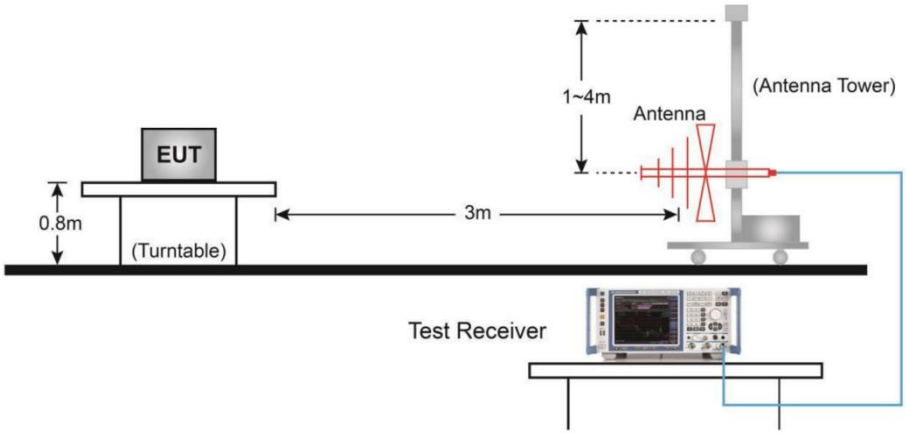
Frequency of emission	RBW/VBW	Sweep Time (s)
0.009~30	9KHz/30KHz	Auto
30~1000	100KHz/300KHz	5
1000~4000	1MHz/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

Test Setup:

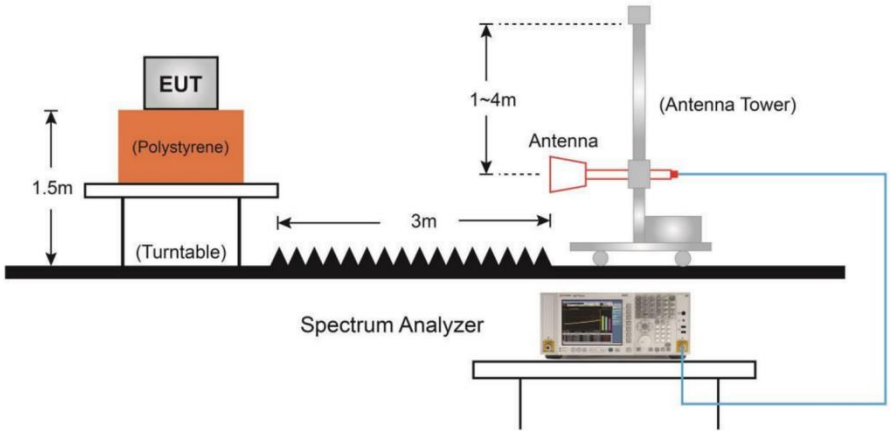
Below 30MHz Test Setup



Below 1GHz Test Setup



Above 1GHz Test Setup



Measurement Results:

A “reference path loss” is established and ARpi is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

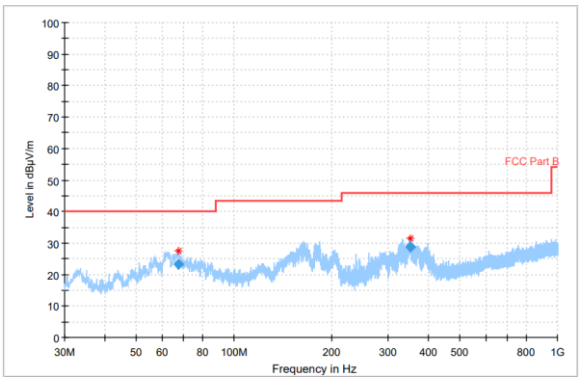
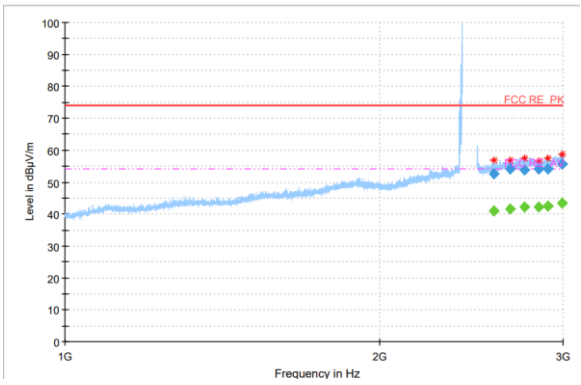
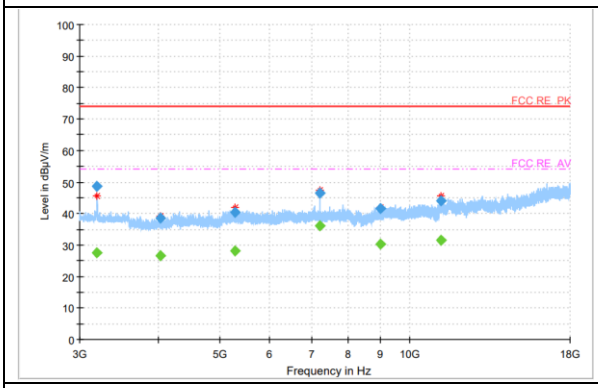
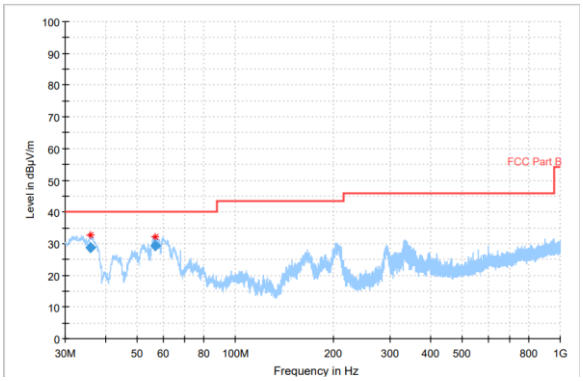
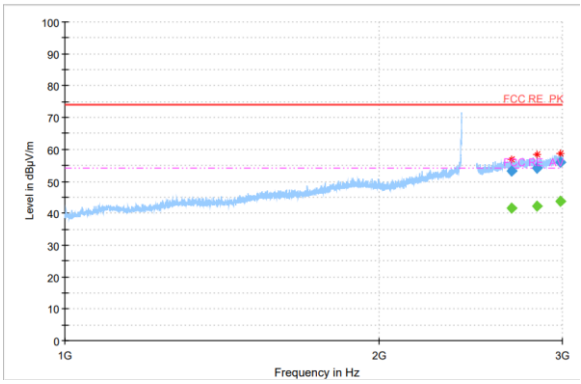
The measurement results are obtained as described below:

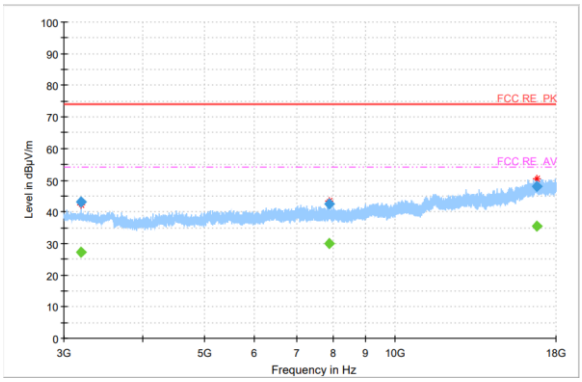
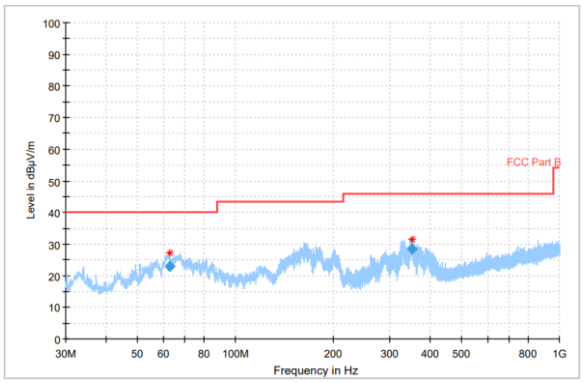
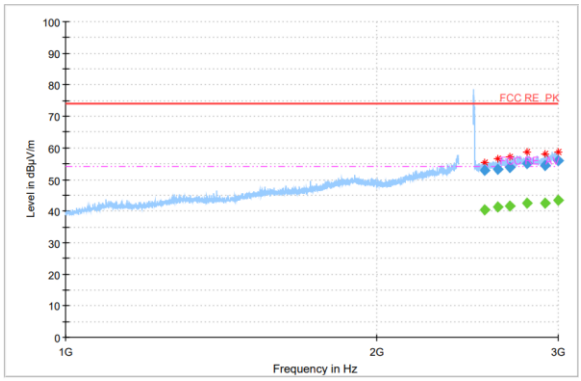
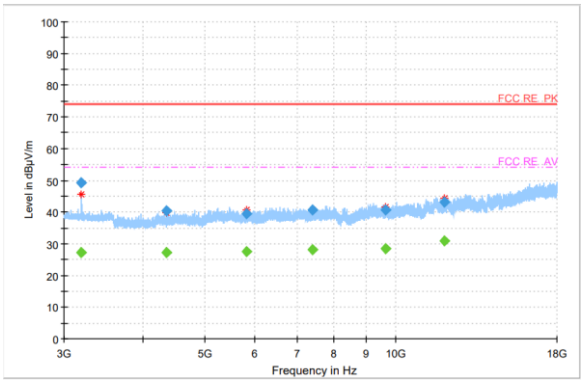
ARpi = Cable loss + Antenna Factor-Preamplifier gain

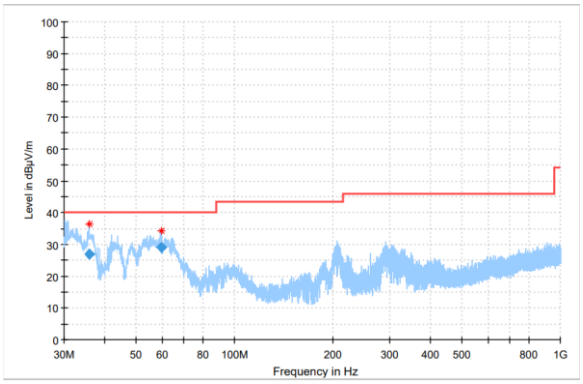
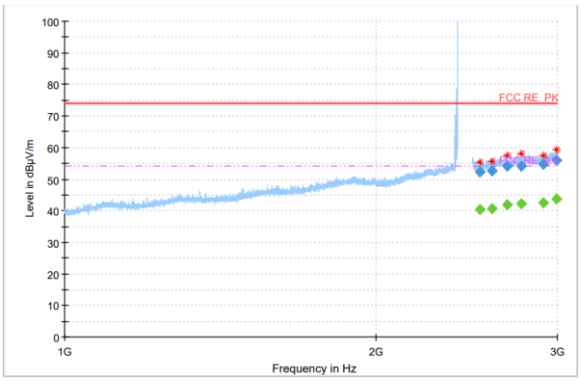
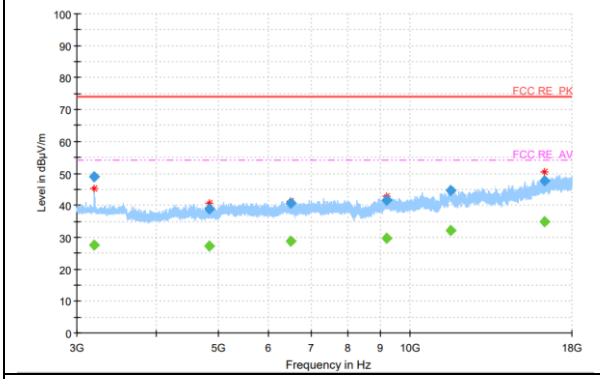
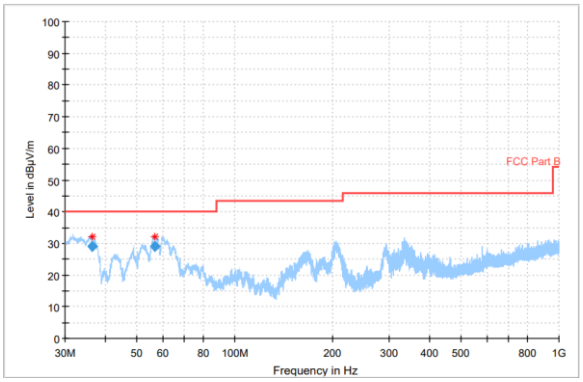
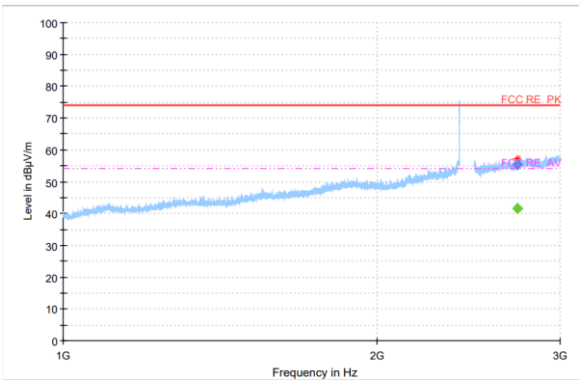
Result=PMea + ARpi

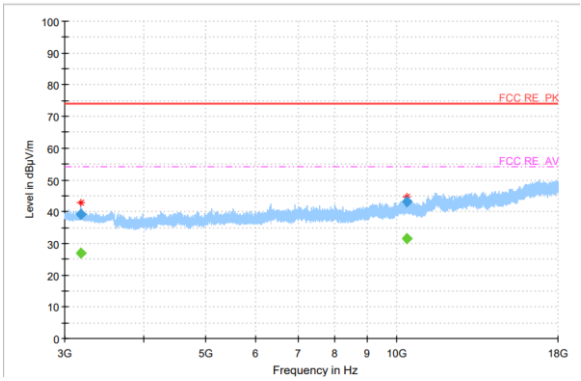
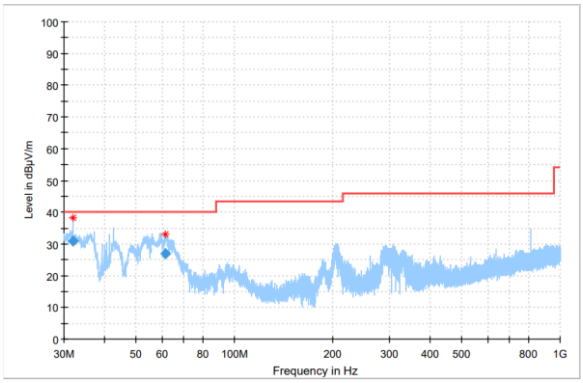
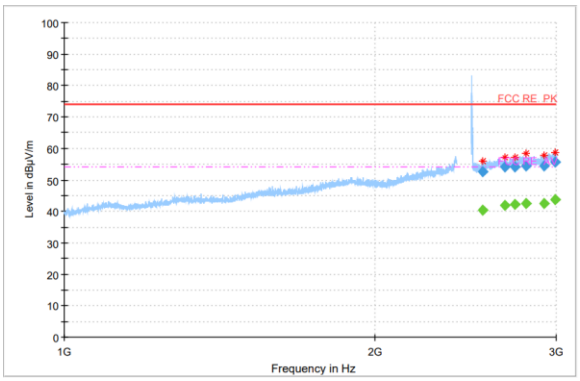
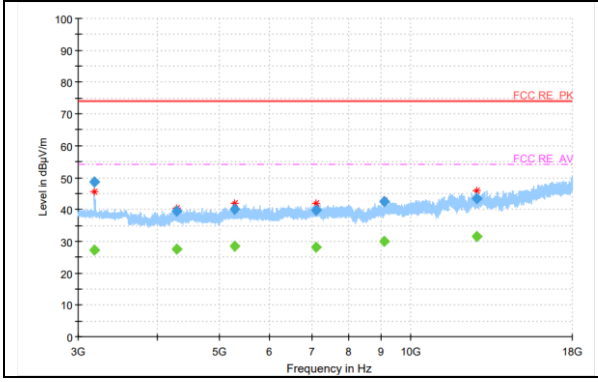
.

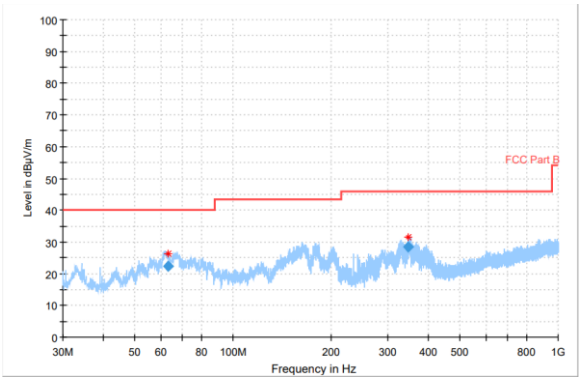
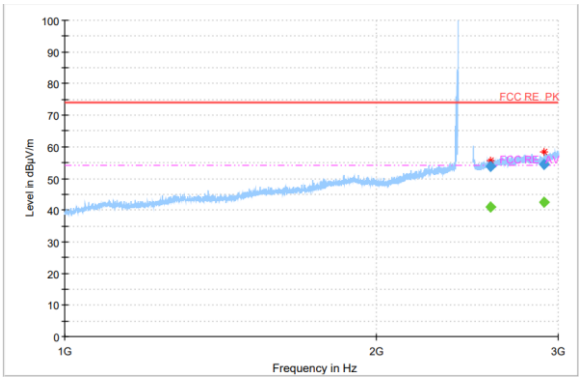
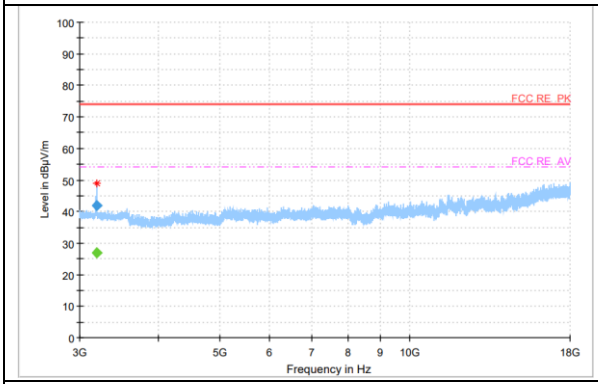
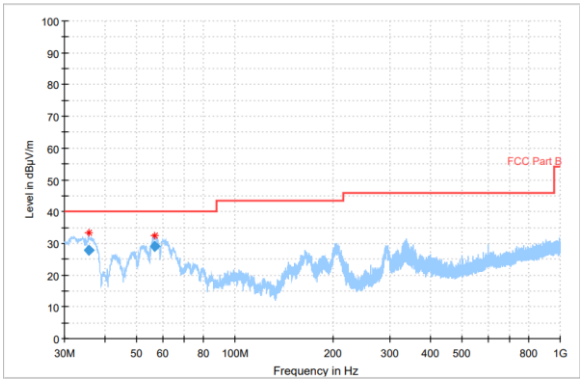
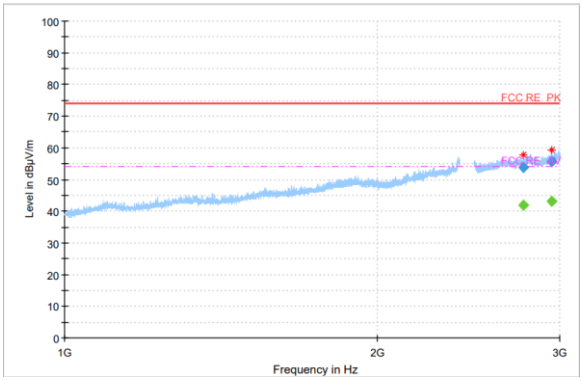
Mainly Supply (S8 L15A1)

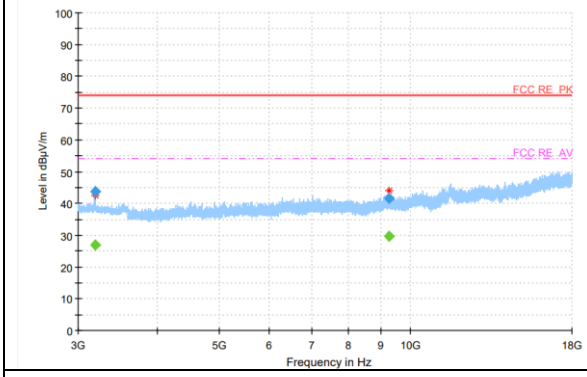
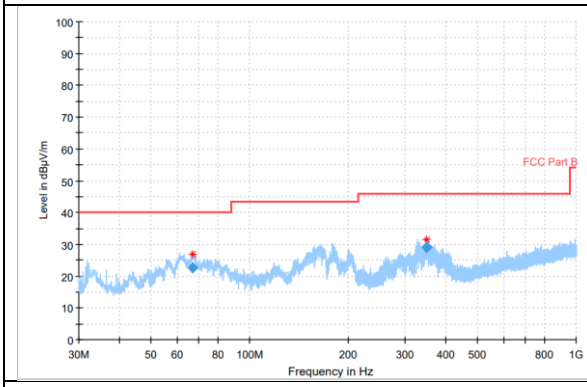
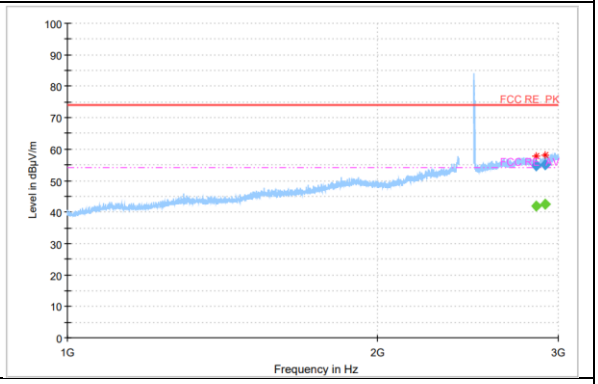
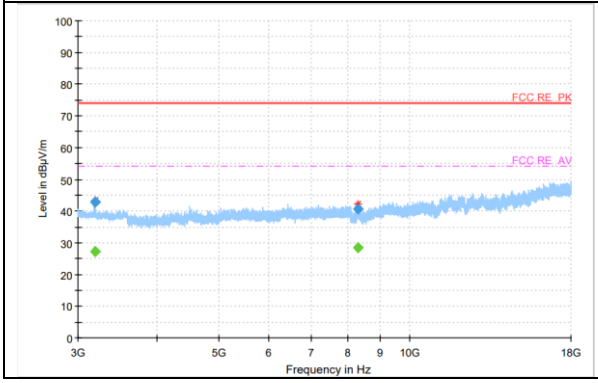
Radiated emission: GFSK, Ch0, 30MHz~1GHz	Radiated emission: GFSK, Ch0, 1GHz~3GHz
	
Radiated emission: GFSK, Ch0, 3GHz~18GHz	**/**
	/
Radiated emission: GFSK, Ch39, 30MHz~1GHz	**Radiated emission: GFSK, Ch39, 1GHz~3GHz**
	

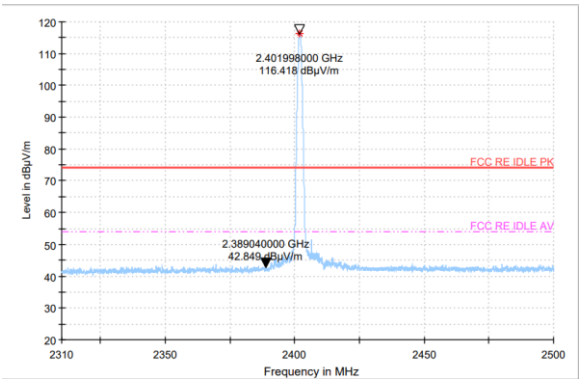
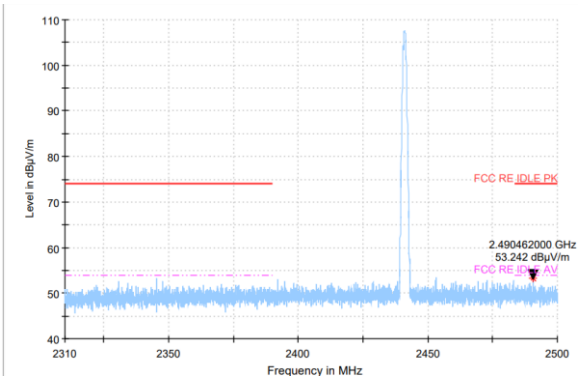
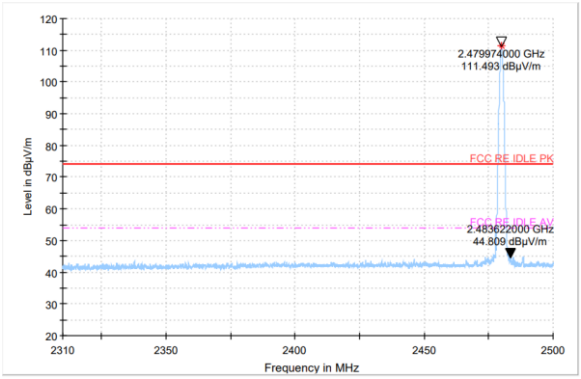
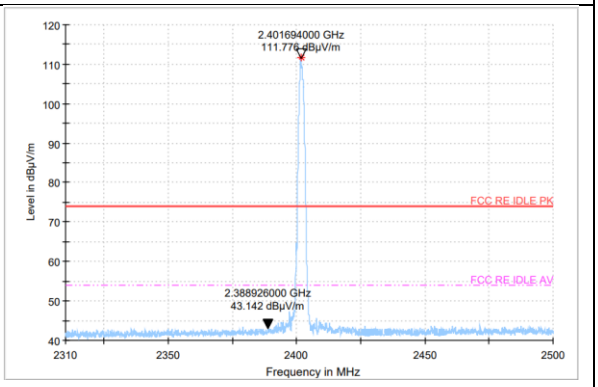
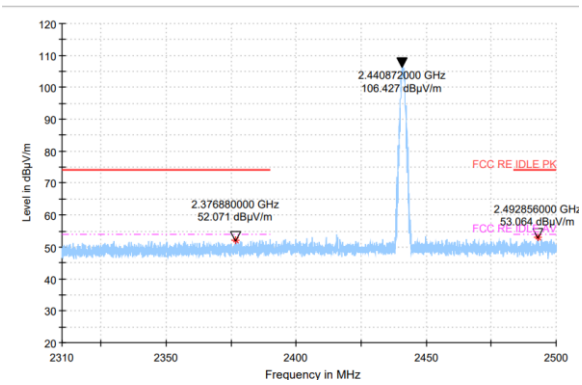
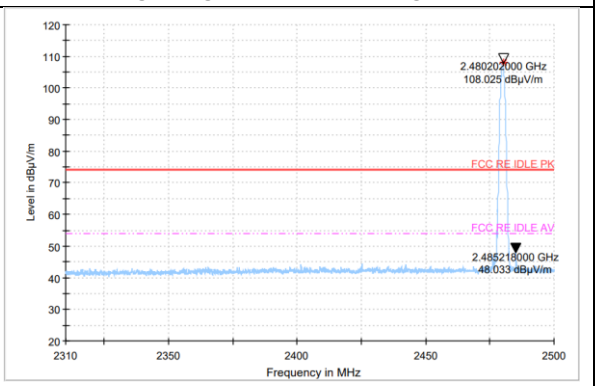
Radiated emission: GFSK, Ch39, 3GHz~18GHz	/
	/
Radiated emission: GFSK, Ch78, 30MHz~1GHz	Radiated emission: GFSK, Ch78, 1GHz~3GHz
	
Radiated emission: GFSK, Ch78, 3GHz~18GHz	/
	/

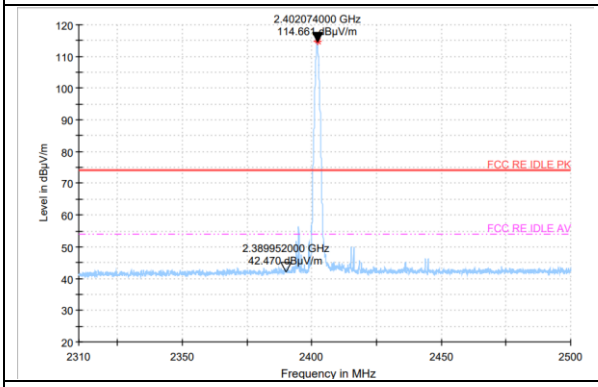
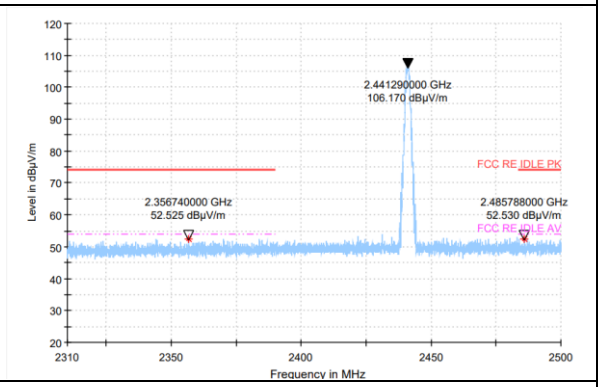
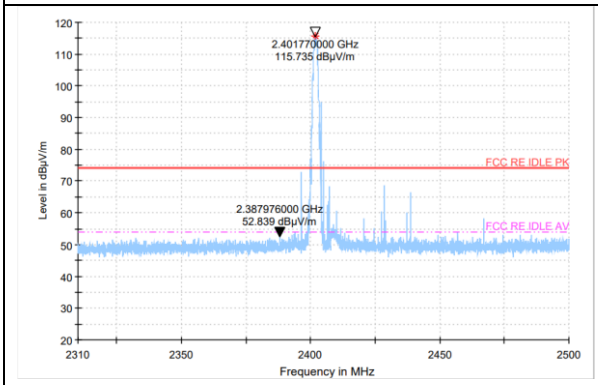
Radiated emission: π/4 DQPSK, Ch0, 30MHz~1GHz	Radiated emission: π/4 DQPSK, Ch0, 1GHz~3GHz
	
Radiated emission: π/4 DQPSK, Ch0, 3GHz~18GHz	/
	/
Radiated emission: π/4 DQPSK, Ch39, 30MHz~1GHz	Radiated emission: π/4 DQPSK, Ch39, 1GHz~3GHz
	

Radiated emission: π/4 DQPSK, Ch39, 3GHz~18GHz	/
	/
Radiated emission: π/4 DQPSK, Ch78, 30MHz~1GHz	Radiated emission: π/4 DQPSK, Ch78, 1GHz~3GHz
	
Radiated emission: π/4 DQPSK, Ch78, 3GHz~18GHz	/
	/

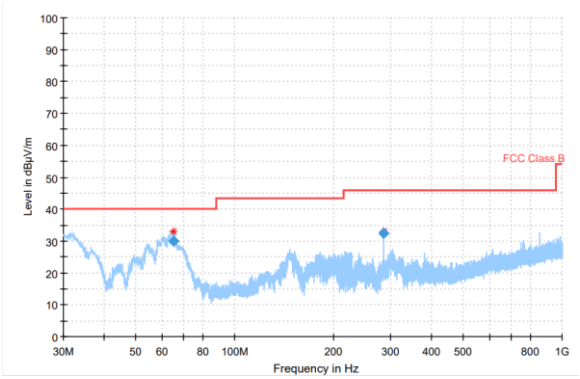
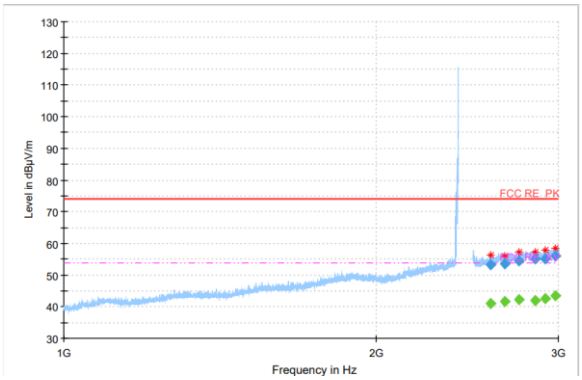
Radiated emission: 8DPSK, Ch0, 30MHz~1GHz	Radiated emission: 8DPSK, Ch0, 1GHz~3GHz
	
Radiated emission: 8DPSK, Ch0, 3GHz~18GHz	/
	/
Radiated emission: 8DPSK, Ch39, 30MHz~1GHz	Radiated emission: 8DPSK, Ch39, 1GHz~3GHz
	

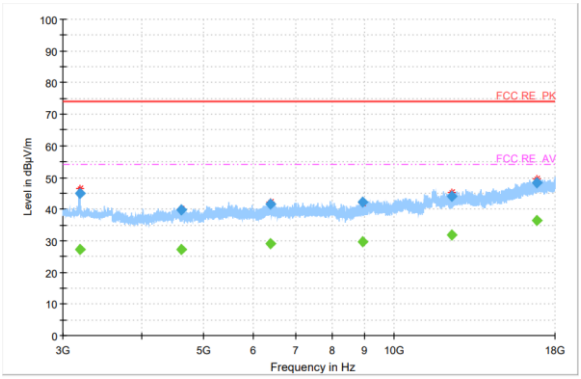
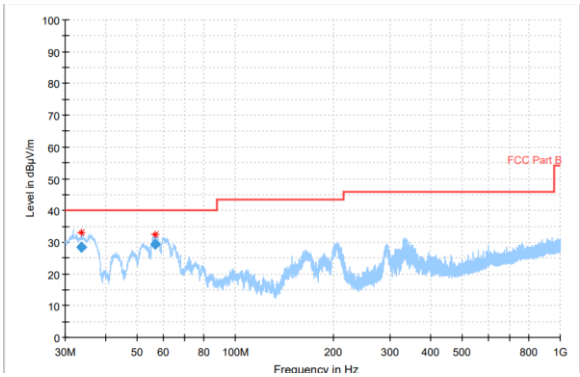
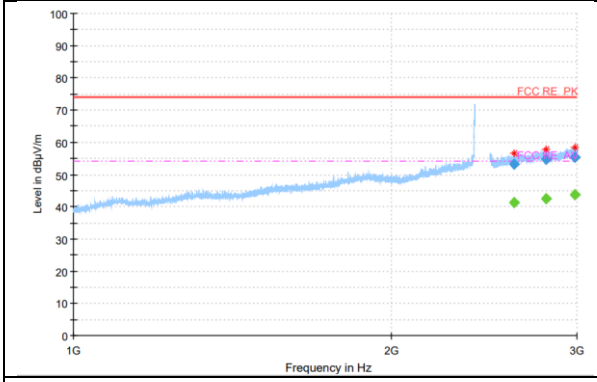
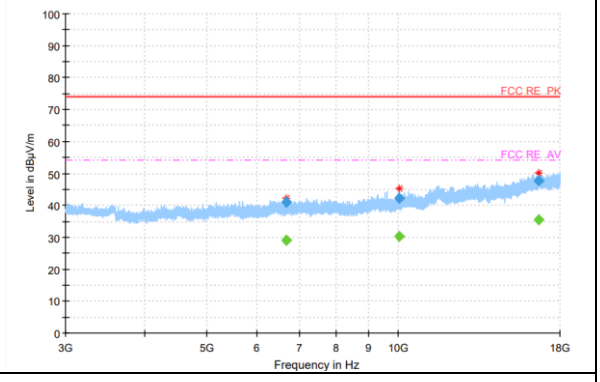
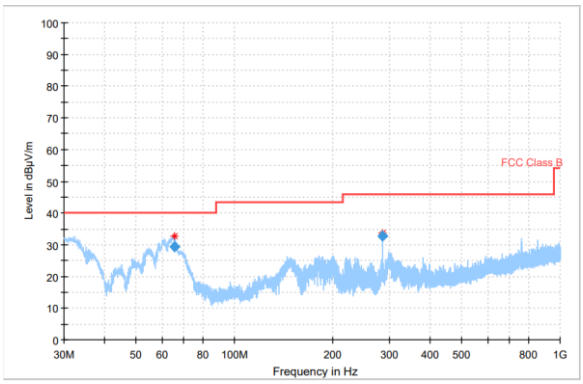
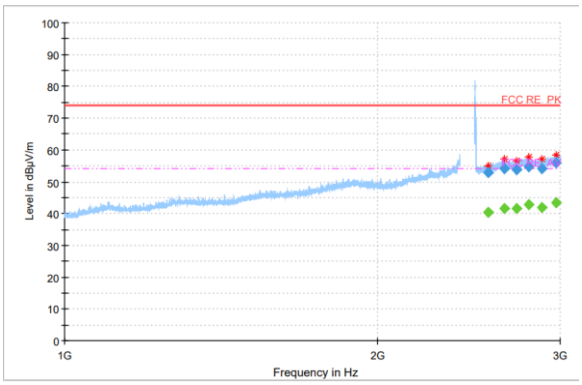
Radiated emission: 8DPSK, Ch39, 3GHz~18GHz	/
	/
Radiated emission: 8DPSK, Ch78, 30MHz~1GHz	Radiated emission: 8DPSK, Ch78, 1GHz~3GHz
	
Radiated emission: 8DPSK, Ch78, 3GHz~18GHz	/
	/

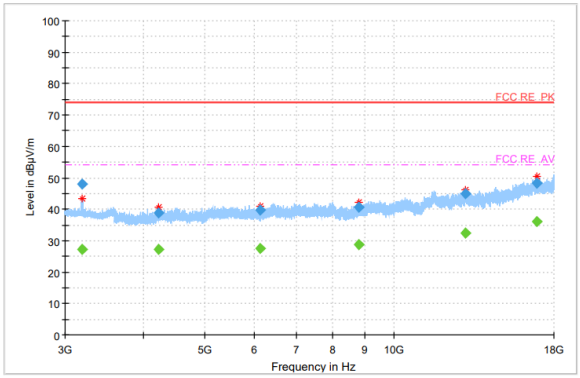
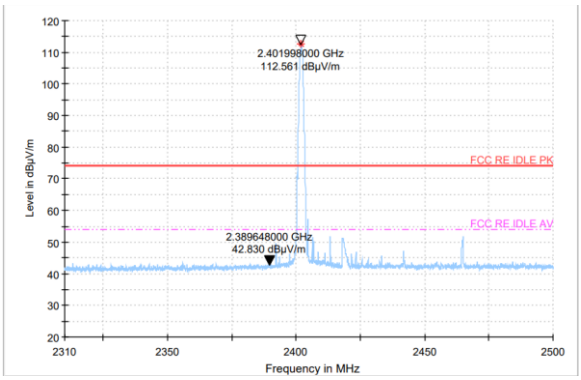
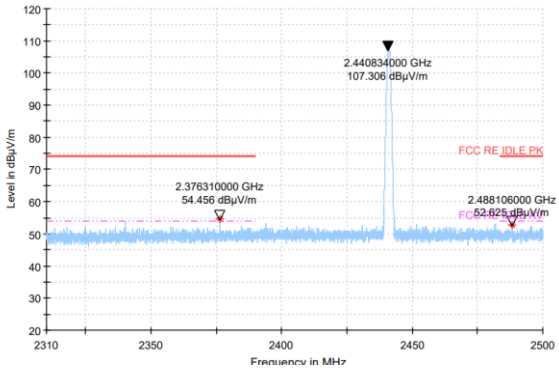
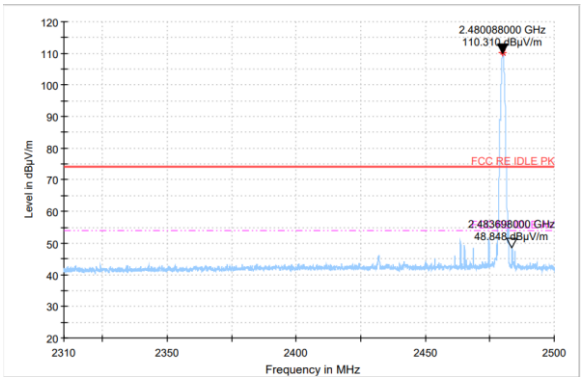
Bandedge (Low): GFSK, low channel	Bandedge (middle): GFSK, middle channel
	
Bandedge (High): GFSK, high channel	**Bandedge (Low): π/4 DQPSK, low channel**
	
Bandedge (middle): π/4 DQPSK, middle channel	**Bandedge (High): π/4 DQPSK, high channel**
	

Bandedge (Low): 8DPSK, low channel	Bandedge (middle): 8DPSK, middle channel
	
Bandedge (High): 8DPSK, high channel	
	

Secondary supply (S11 L15B1)

Radiated emission: GFSK, Ch0, 30MHz~1GHz	Radiated emission: GFSK, Ch0, 1GHz~3GHz
	

Radiated emission: GFSK, Ch0, 3GHz~18GHz	Radiated emission: GFSK, Ch39, 30MHz~1GHz
	
Radiated emission: GFSK, Ch39, 1GHz~3GHz	**Radiated emission: GFSK, Ch39, 3GHz~18GHz**
	
Radiated emission: GFSK, Ch78, 30MHz~1GHz	**Radiated emission: GFSK, Ch78, 1GHz~3GHz**
	

Radiated emission: GFSK, Ch78, 3GHz~18GHz	/
	/
Bandedge (Low): GFSK, low channel	Bandedge (middle): GFSK, middle channel
	
Bandedge (High): GFSK, high channel	/
	/

Note:

1. The out-of- limit signal in the picture is the main frequency signal.
2. Only data in worst mode is provided.
3. Sweep the whole frequency band through the range from 30MHz to the 10th harmonic of the carrier, the Emissions in the frequency band 18GHz-26.5GHz is more than 20dB below the limit are not report.
4. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.
5. Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data

diagram.

Mainly Supply(S8 L15A1)

RSE-DH5-30M-1G-CH0(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
67.6	23.17	-14	37.17	H
351.9	28.65	-8	36.65	H

RSE-DH5-1G-3G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2574.5	52.57	16	36.57	V
2668.8	54.12	17	37.12	V
2755.5	53.78	18	35.78	H
2841.7	54.03	18	36.03	H
2903.1	53.98	18	35.98	V
2994.0	55.62	19	36.62	H

RSE-DH5-1G-3G-CH0 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2668.8	41.66	17	24.66	V
2841.7	42.24	18	24.24	H
2994.0	43.53	19	24.53	H

RSE-DH5-3G-18G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3191.5	48.73	-6	54.73	V
4033.9	38.68	-6	44.68	H
5292.1	40.47	-3	43.47	V
7205.5	46.44	-2	48.44	H

8993.5	41.72	-1	42.72	H
11247.9	44.13	2	42.13	H

RSE-DH5-CH39-30M-1G(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
35.8	28.8	-15	43.8	V
56.7	29.24	-12	41.24	V

RSE-DH5-3G-18G-CH39(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3192.0	43.2	-6	49.2	V
7882.7	42.56	-2	44.56	V
16794.6	48.04	10	38.04	V

RSE-DH5-CH39-1G-3G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2681.8	53.21	17	36.21	H
2839.1	54.15	18	36.15	H
2987.7	55.93	19	36.93	V

RSE-DH5-CH39-1G-3G (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2839.1	42.23	18	24.23	H
2987.7	43.69	19	24.69	V

RSE-DH5-30M-1G-CH78(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
62.7	22.85	-13	35.85	H
351.8	28.33	-8	36.33	H

RSE-DH5-1G-3G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2544.1	53.03	16	37.03	H
2620.4	53.31	17	36.31	V
2692.9	53.88	17	36.88	H
2801.0	54.9	18	36.9	H
2913.8	54.31	18	36.31	H
2997.2	55.91	20	35.91	V

RSE-DH5-1G-3G-CH78(Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2801.0	42.63	18	24.63	H
2913.8	42.55	18	24.55	H
2997.2	43.54	20	23.54	V

RSE-DH5-3G-18G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3198.2	49.36	-7	56.36	V
4355.5	40.44	-5	45.44	H
5829.9	39.31	-3	42.31	H
7406.9	40.8	-2	42.8	V
9661.8	40.65	-1	41.65	V
11961.5	43.13	3	40.13	H

RSE-2DH5-30M-1G-CH0(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
35.9	26.8	-15	41.8	V

59.5	29.2	-12	41.2	V

RSE-2DH5-1G-3G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2521.4	52.17	15	37.17	V
2589.6	52.73	16	36.73	H
2678.4	54.14	17	37.14	H
2769.0	54.09	18	36.09	H
2904.6	54.69	18	36.69	V
2993.1	55.83	19	36.83	H

RSE-2DH5-1G-3G-CH0 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2678.4	41.81	17	24.81	H
2769.0	42.1	18	24.1	H
2904.6	42.54	18	24.54	V
2993.1	43.59	19	24.59	H

RSE-2DH5-3G-18G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3193.5	49	-6	55	V
4841.0	38.98	-3	41.98	H
6503.6	40.53	-2	42.53	H
9211.1	41.6	0	41.6	V
11598.1	44.5	3	41.5	H
16300.6	47.74	9	38.74	H

RSE-2DH5-CH39-30M-1G(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity

36.3	29.17	-15	44.17	V
56.9	29.16	-12	41.16	V

RSE-2DH5-1G-3G-CH39(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2728.8	55.22	18	37.22	H

RSE-2DH5-1G-3G-CH39 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2728.8	41.73	18	23.73	H

RSE-2DH5-3G-18G-CH39(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3186.1	39.28	-6	45.28	H
10377.8	43.1	1	42.1	H

RSE-2DH5-30M-1G-CH78(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.0	30.86	-16	46.86	V
61.6	26.76	-13	39.76	V

RSE-2DH5-1G-3G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2547.9	52.64	16	36.64	H
2675.0	54.09	17	37.09	V
2737.0	54.1	18	36.1	V
2802.1	54.56	18	36.56	H
2920.7	54.33	18	36.33	H
2991.3	55.79	19	36.79	V

RSE-2DH5-1G-3G-CH78 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2675.0	41.79	17	24.79	V
2737.0	42.14	18	24.14	V
2802.1	42.6	18	24.6	H
2920.7	42.5	18	24.5	H
2991.3	43.6	19	24.6	V

RSE-2DH5-3G-18G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3186.1	48.62	-6	54.62	V
4286.4	39.4	-5	44.4	V
5290.4	39.97	-3	42.97	V
7118.3	39.88	-2	41.88	H
9111.3	42.5	-1	43.5	V
12704.8	43.53	3	40.53	H

RSE-3DH5-30M-1G-CH0(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
63.4	22.43	-13	35.43	H
346.6	28.44	-8	36.44	H

RSE-3DH5-CH0-1G-3G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2580.0	53.89	16	37.89	H
2908.4	54.5	18	36.5	V

RSE-3DH5-CH0-1G-3G(Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2908.4	42.47	18	24.47	V

RSE-3DH5-CH0-3G-18G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3194.4	41.96	-6	47.96	H

RSE-3DH5-CH39-30M-1G(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
35.5	27.8	-15	42.8	V
56.8	29.19	-12	41.19	V

RSE-3DH5-CH39-1G-3G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2764.8	53.9	18	35.9	H
2943.6	55.65	19	36.65	H

RSE-3DH5-CH39-1G-3G (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2943.6	43.15	19	24.15	H

RSE-3DH5-CH39-3G-18G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3197.5	43.73	-7	50.73	V
9267.0	41.73	0	41.73	H

RSE-3DH5-30M-1G-CH78(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
67.0	22.57	-14	36.57	H

349.5	28.97	-8	36.97	H

RSE-3DH5-CH78-1G-3G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2854.4	54.6	18	36.6	V
2913.0	54.92	18	36.92	V

RSE-3DH5-CH78-1G-3G (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2854.4	41.91	18	23.91	V
2913.0	42.49	18	24.49	V

RSE-3DH5-CH78-3G-18G(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3194.0	42.67	-6	48.67	V
8305.5	40.78	-2	42.78	V

Secondary Supply (S11 L15B1)

RSE-DH5-30M-1G-CH0(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
65.0	30.01	-14	44.01	V
284.9	32.31	-11	43.31	H

RSE-DH5-1G-3G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2580.2	53.13	16	37.13	V
2664.5	53.47	17	36.47	H
2751.1	54.35	18	36.35	H
2852.0	54.93	18	36.93	V

2915.4	55.05	18	37.05	H
2982.7	56.11	19	37.11	V

RSE-DH5-1G-3G-CH0 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2751.1	42.32	18	24.32	H
2852.0	41.98	18	23.98	V
2915.4	42.49	18	24.49	H
2982.7	43.59	19	24.59	V

RSE-DH5-3G-18G-CH0(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3194.3	45	-6	51	V
4617.9	39.71	-4	43.71	H
6399.3	41.59	-2	43.59	H
8931.3	42.06	-1	43.06	H
12372.6	44.14	3	41.14	H
16846.9	48.24	10	38.24	H

RSE-DH5-CH39-30M-1G(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
33.7	28.58	-15	43.58	V
56.8	29.32	-12	41.32	V

RSE-DH5-1G-3G-CH39(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2615.4	53.12	17	36.12	V
2803.9	54.71	18	36.71	V
2983.5	55.32	19	36.32	H

RSE-DH5-1G-3G-CH39 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2803.9	42.57	18	24.57	V
2983.5	43.67	19	24.67	H

RSE-DH5-3G-18G-CH39(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
6670.6	41.12	-2	43.12	V
10039.8	42.18	0	42.18	H
16687.4	47.77	10	37.77	H

RSE-DH5-30M-1G-CH78(QP)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
65.4	29.36	-14	43.36	V
284.8	32.75	-11	43.75	H

RSE-DH5-1G-3G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2556.6	52.81	16	36.81	V
2653.0	54.1	17	37.1	H
2723.7	53.92	17	36.92	V
2798.6	54.83	18	36.83	V
2880.2	54.13	18	36.13	H
2976.4	56.05	19	37.05	H

RSE-DH5-1G-3G-CH78 (Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity

2653.0	41.65	17	24.65	H
2798.6	42.73	18	24.73	V
2880.2	41.84	18	23.84	H
2976.4	43.34	19	24.34	H

RSE-DH5-3G-18G-CH78(PEAK)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3199.4	47.97	-7	54.97	V
4234.1	38.88	-5	43.88	V
6131.1	39.88	-3	42.88	H
8803.1	40.75	-2	42.75	V
13017.7	44.84	4	40.84	V
16932.3	48.2	10	38.2	H

6.11. AC Powerline Conducted Emission

Specifications:	FCC 47 Part 15.207
DUT Serial Number:	S8
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Method of Measurement: ANSI C63.10-2013-clause 6.2

1.The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.

2.If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.

3.The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.

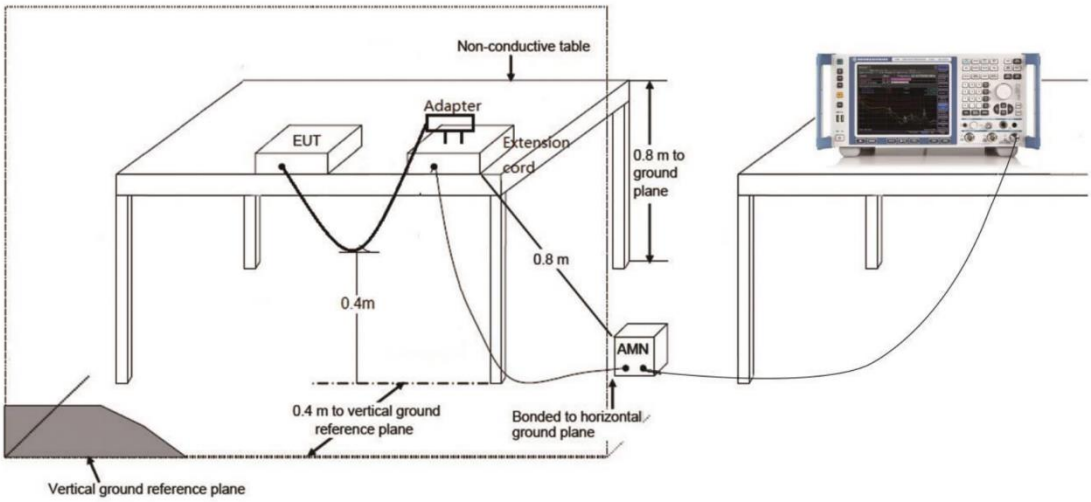
4.If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Measurement Uncertainty:

Measurement Uncertainty	1.97db（k=2）

Test Setup



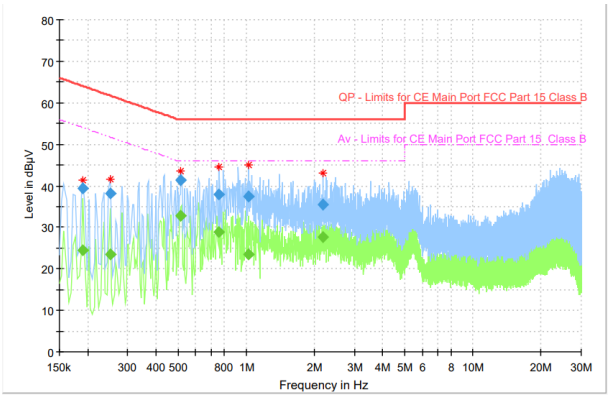
Test Condition

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

(Quasi-peak-average Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	66 to 56	56 to 46	P
0.5 to 5	56	46	
5 to 30	60	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

CB04 BT DH5 CH2441	/
	/

Frequency (MHz)	QuasiPeak (dBµV)	Average (dµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.157463	---	32.54	55.60	23.06	15000.0	9.000	L1	ON	9.6
0.157463	51.25	---	65.60	14.34	15000.0	9.000	L1	ON	9.6
0.183581	---	28.97	54.32	25.35	15000.0	9.000	L1	ON	9.6
0.183581	47.95	---	64.32	16.37	15000.0	9.000	L1	ON	9.6
0.198506	---	29.15	53.67	24.53	15000.0	9.000	L1	ON	9.6
0.198506	45.72	---	63.67	17.96	15000.0	9.000	L1	ON	9.6
0.709688	---	24.67	46.00	21.33	15000.0	9.000	N	ON	9.6
0.709688	31.71	---	56.00	24.29	15000.0	9.000	N	ON	9.6
3.082763	---	22.49	46.00	23.51	15000.0	9.000	N	ON	9.6
3.082763	31.96	---	56.00	24.04	15000.0	9.000	N	ON	9.6
14.727994	---	21.63	50.00	28.37	15000.0	9.000	N	ON	9.9
14.727994	29.04	---	60.00	30.96	15000.0	9.000	N	ON	9.9

Note:

1. All modes have been tested and only the worst mode is recorded in the report.

Annex A EUT Photos

See the document" I23W00036-External Photos".
See the document" I23W00036-Internal Photos".

Annex B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

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