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Report Template Version: V05
Report Template Revision Date: 2021-11-03

TEST REPORT

Report No.:	CQASZ20240901962E-03
Applicant:	Innovative Eyewear, Inc
Address of Applicant:	11900 Biscayne Blvd #630, North Miami, FL 33181, United States
Equipment Under Test (EUT):	
Product:	Smart Eyewear
Model No.:	LCD008-10, LCD010-10, LCD010-11, LCD010-20, LCD010-21, LCD010-30, LCD010-31, LCD010-40, LCD010-41
Test Model No.:	LCD008-10
Brand Name:	Lucyd Reebok
Standards:	ETSI EN 300 328 V2.2.2 (2019-07)
Date of Receipt:	2024-09-10
Date of Test:	2024-09-10 to 2024-09-19
Date of Issue:	2024-10-12
Test Result:	**PASS***

***In the configuration tested, the EUT complied with the standards specified above**

Tested By: lewis zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Alex
(Alex Wang)

1 Version

Revision History of Report

Report No.	Version	Description	Issue Date
CQASZ20240901962E-03	Rev.01	Initial report	2024-10-12

2 Test Summary

Test Item	Test Requirement	Test Method	Limit	Result
RF output power	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.2	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.1.2.3	PASS
Duty Cycle, Tx-sequence, Tx-gap	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.3	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.1.3.3	N/A[1]
Accumulated Transmit Time	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.4	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.4	Refer clause 4.3.1.4.3	PASS
Frequency Occupation and Hopping Sequence	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.4	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.4	Refer clause 4.3.1.4.3	PASS
Hopping Frequency Separation	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.5	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.5	Refer clause 4.3.1.5.3	PASS
Medium Utilization (MU) factor	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.6	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.1.6.3	N/A[2]
Adaptivity (Adaptive Frequency Hopping)	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.7	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.6	Refer clause 4.3.1.7.2.2	N/A[3]
Occupied Channel Bandwidth	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.8	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.7	Refer clause 4.3.1.8.3	PASS
Transmitter unwanted emissions in the out-of-band domain	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.9	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.8	Refer clause 4.3.1.9.3	PASS
Transmitter unwanted emissions in the spurious domain	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.10	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.9	Refer clause 4.3.1.10.2	PASS
Receiver spurious emissions	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.11	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.10	Refer clause 4.3.1.11.3	PASS
Receiver Blocking	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.12	ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.4.11	Refer clause 4.3.1.12.4	PASS
Geo-location capability	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.13	ETSI EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.13	Refer Clause 4.3.1.13.3	N/A[4]

Remark:

N/A[1]: Because these requirements apply to non-adaptive frequency hopping equipment mode and RF output power of greater than or equal to 10 dBm.

N/A[2] Because these requirements apply to non-adaptive frequency hopping equipment mode and RF output power of greater than or equal to 10 dBm.

N/A[3] Because these requirements apply to adaptive equipment mode and RF output power of greater than or equal to 10 dBm.

N/A[4] Because these requirements apply to equipment with geo-location capability

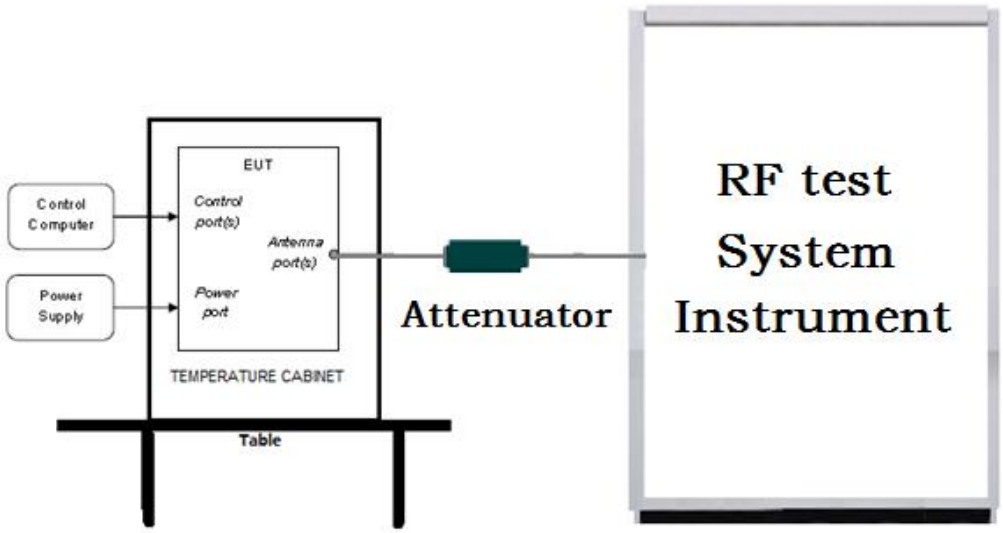
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.
Volt: In this whole report Volt means Voltage.
Temp: In this whole report Temp means Temperature.
Humid: In this whole report Humid means humidity.
Press: In this whole report Press means Pressure.
N/A: In this whole report not application.

3 Content

4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

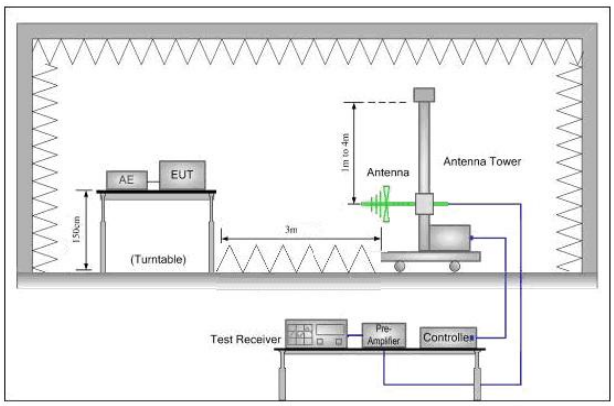


Figure 1. 30MHz to 1GHz

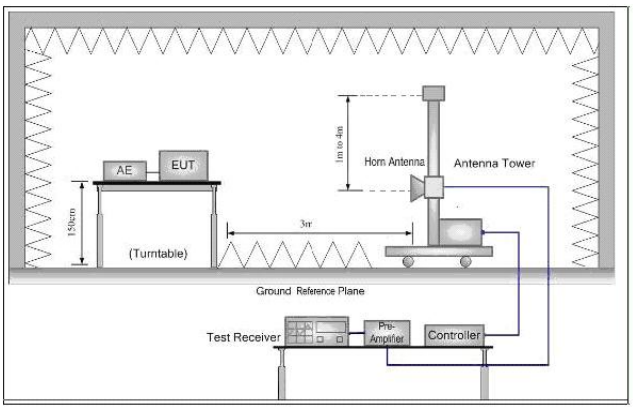


Figure 2. Above 1GHz

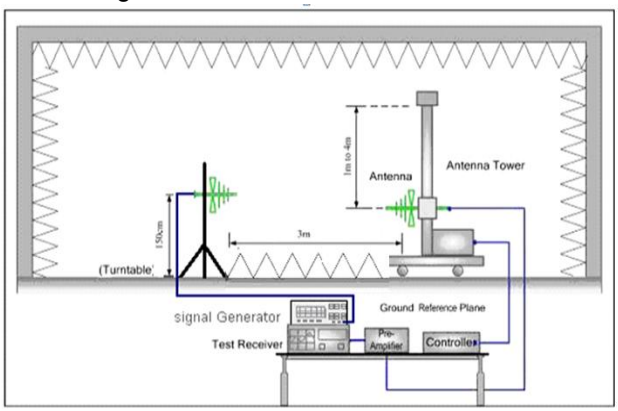


Figure 1. 30MHz to 1GHz

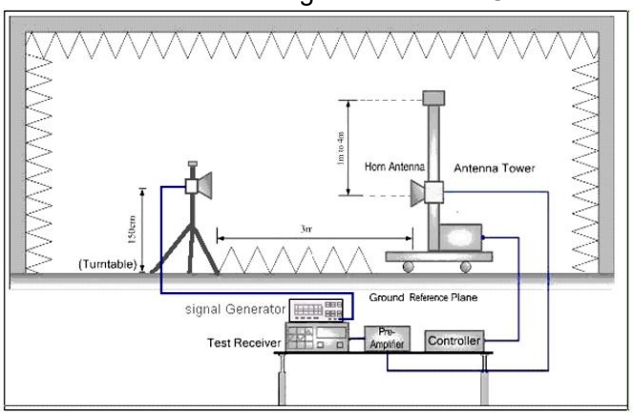


Figure 2. Above 1GHz

4.2 Test Environment

Environment Parameter	Selected Values During Tests		
Test condition	Ambient		
	Temperature(℃)	Voltage(V)	Relative Humidity
TN/VN	25.2	3.7	50%
TL/VN	-10	3.7	50%
TH/VN	55	3.7	50%

Note:

1) The EUT just work in such extreme temperature of -10℃~+55℃, so here the EUT is tested in the temperature of -10℃~+55℃

2) VN: Normal Voltage TN: Normal Temperature
TL: Low Extreme Test Temperature TH: High Extreme Test Temperature

4.3 Test Condition

Test channel

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GFSK/π/4DQPSK/8DPSK	2402MHz ~2480 MHz	Channel 1	Channel 40	Channel79
		2402MHz	2441MHz	2480MHz

5 General Information

5.1 Client Information

Applicant:	Innovative Eyewear, Inc
Address of Applicant:	11900 Biscayne Blvd #630, North Miami, FL 33181, United States
Manufacturer:	Shenzhen Gonbes Technology Co. Ltd
Address of Manufacturer:	RM501, Bldg 3, Mengliyuan Industrial Park, 124 Yousong Rd, Longhua Str, Longhua Dist, Shenzhen, Guangdong Province, 518000, CHINA
Factory:	Shenzhen Gonbes Technology Co. Ltd
Address of Factory:	RM501, Bldg 3, Mengliyuan Industrial Park, 124 Yousong Rd, Longhua Str, Longhua Dist, Shenzhen, Guangdong Province, 518000, CHINA

General Description of EUT

Product Name:	Smart Eyewear
Model No.:	LCD008-10, LCD010-10, LCD010-11, LCD010-20, LCD010-21, LCD010-30, LCD010-31, LCD010-40, LCD010-41
Test Model No.:	LCD008-10
Trade Mark:	Lucyd Reebok
EUT Supports Radios application:	Bluetooth: 2402-2480MHz
Software Version:	GBS_ATS3025_GK28_V2.2_20240806.fw
Hardware Version:	GK28(ATS3025)-V1.1
EUT Power Supply:	Li-ion battery: DC 3.7V 180mAh, Charge by DC 5V for adapter

5.2 Product Specification subjective to this standard

Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V5.3
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channels:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	☐ Mobile ☒ Portable
Test Software of EUT:	FCC
Antenna Type:	Chip antenna
Antenna Gain:	1.15dBi

5.3 Other Information

RED Directive:	2014/53/EU						
Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

1）support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

5.5 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

No tests were sub-contracted.

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Other Information Requested by the Customer

None.

5.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10^{-8}
5	Duty cycle	0.6 %
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8℃
11	Humidity test	2.0%
12	Supply voltages	0.5 %
13	Frequency Error	5.5 Hz

6 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Bilog Antenna	R&S	HL562	CQA-011	2023/9/7	2026/9/6
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2024/9/2	2025/9/1
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	CQA-022	2024/9/2	2025/9/1
high-low temperature chamber	Auchno	OJN-9606	CQA-S003	2024/9/2	2025/9/1
Signal generator	R&S	SME06	CQA-024	2024/9/2	2025/9/1
Vector signal generator	R&S	SMBV100A	CQA-039	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1
RF Control Unit	Tonsced	JS0806-2	CQA-057	2024/9/2	2025/9/1
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
RF Cable (9KHz~40GHz)	CQA	N/A	C005	2024/9/2	2025/9/1

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	ETSI EN 300 328 V2.2.2 (2019-07)	Wideband transmission systems;Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

Test Results List:

ETSI EN 300 328 V2.2.2		Test Descriptions & Test Conditions	Verdict	Note
Test Requirement	Test Method			
Clause 4.3.1.2	Clause 5.4.2	RF output power		Appendix B)
		TN/VN	PASS	
		TL/VN	PASS	
		TH/VN	PASS	
Clause 4.3.1.3	Clause 5.4.2	Duty Cycle, Tx-sequence, Tx-gap		N/A
		TN/VN	N/A	
Clause 4.3.1.4	Clause 5.4.4	Accumulated Transmit Time, Minimum Frequency Occupation and Hopping Sequence		Appendix B)
		TN/VN	PASS	
Clause 4.3.1.5	Clause 5.4.5	Hopping Frequency Separation		Appendix B)
		TN/VN	PASS	
Clause 4.3.1.6	Clause 5.4.2	Medium Utilisation		N/A
		TN/VN	N/A	
Clause 4.3.1.7	Clause 5.4.6	Adaptivity (Adaptive Frequency Hopping)		N/A
		TN/VN	N/A	
Clause 4.3.1.8	Clause 5.4.7	Occupied Channel Bandwidth		Appendix B)
		TN/VN	PASS	
Clause 4.3.1.9	Clause 5.4.8	Transmitter unwanted emissions in the out-of-band domain		Appendix B)
		TN/VN	PASS	
Clause 4.3.1.12	Clause 5.4.11	Receiver Blocking		Appendix B)
		TN/VN	PASS	
Clause 4.3.1.10	Clause 5.4.9	Transmitter unwanted emissions in the spurious domain		Appendix A)
		TN/VN	PASS	
Clause 4.3.1.11	Clause 5.4.10	Receiver spurious emissions		Appendix A)
		TN/VN	PASS	

Appendix A: Spurious emissions

Test Procedure:

1. Scan from 30MHz to 12.75GHz; find the maximum radiation frequency to measure.
2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

1) The EUT was powered ON and placed on a 1.5m hight table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
2) The EUT was set 3 meters (above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
7) The output power into the substitution antenna was then measured.
8) Steps 6) and 7)were repeated with both antennas polarized.
9) Calculate power in dBm by the following formula:

   ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

   EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

   EIRP=ERP+2.15dB

   where:

   Pg is the generator output power into the substitution antenna.
10) Test the EUT in the lowest channel , the Highest channel
11) Repeat above procedures until all frequencies measured was complete.

Limit:

Transmitter limits for spurious emissions

Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12.75 GHz	-30dBm	1MHz

Spurious emission limits for receivers

Frequency range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	bandwidth
30MHz to 1GHz	-57dBm	100kHz
1GHz to 12.75GHz	-47dBm	1MHz

Radiated Spurious Emissions test Data:

1) Transmitter unwanted emissions in the spurious domain

Transmitting with modulation Mode at 2402MHz(DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804	158	353	-44.87	-30	-14.87	Pass	H
4804	145	349	-43.27	-30	-13.27	Pass	V
7206	123	261	-42.50	-30	-12.50	Pass	H
7206	159	310	-44.74	-30	-14.74	Pass	V
9608	138	150	-44.73	-30	-14.73	Pass	H
9608	120	49	-42.28	-30	-12.28	Pass	V

Transmitting with modulation Mode at 2480MHz(DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4960	199	125	-43.52	-30	-13.52	Pass	H
4960	177	192	-42.61	-30	-12.61	Pass	V
7440	137	264	-43.07	-30	-13.07	Pass	H
7440	116	125	-42.86	-30	-12.86	Pass	V
9920	121	357	-43.97	-30	-13.97	Pass	H
9920	133	166	-42.29	-30	-12.29	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Transmitting with modulation Mode at 2402MHz(2DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804	113	306	-44.46	-30	-14.46	Pass	H
4804	134	231	-43.22	-30	-13.22	Pass	V
7206	187	22	-43.62	-30	-13.62	Pass	H
7206	185	85	-42.88	-30	-12.88	Pass	V
9608	154	211	-43.86	-30	-13.86	Pass	H
9608	168	150	-44.62	-30	-14.62	Pass	V

Transmitting with modulation Mode at 2480MHz(2DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4960	180	42	-43.29	-30	-13.29	Pass	H
4960	155	227	-43.24	-30	-13.24	Pass	V
7440	158	75	-42.69	-30	-12.69	Pass	H
7440	146	33	-43.01	-30	-13.01	Pass	V
9920	179	177	-44.56	-30	-14.56	Pass	H
9920	123	36	-44.38	-30	-14.38	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Transmitting with modulation Mode at 2402MHz(3DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804	103	34	-44.89	-30	-14.89	Pass	H
4804	182	243	-43.96	-30	-13.96	Pass	V
7206	110	12	-43.83	-30	-13.83	Pass	H
7206	125	270	-42.48	-30	-12.48	Pass	V
9608	192	254	-43.14	-30	-13.14	Pass	H
9608	126	241	-44.98	-30	-14.98	Pass	V

Transmitting with modulation Mode at 2480MHz(3DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4960	176	130	-43.10	-30	-13.10	Pass	H
4960	153	138	-42.59	-30	-12.59	Pass	V
7440	198	46	-43.96	-30	-13.96	Pass	H
7440	158	199	-42.18	-30	-12.18	Pass	V
9920	105	34	-42.33	-30	-12.33	Pass	H
9920	191	12	-44.21	-30	-14.21	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

2) Receiver spurious emissions test data

Receiving mode at 2402MHz(DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804.62	100	227	-55.03	-47	-8.03	Pass	H
4804.7	113	48	-56.25	-47	-9.25	Pass	V
7207.33	154	185	-56.51	-47	-9.51	Pass	H
7208.33	119	173	-56.03	-47	-9.03	Pass	V
9604.48	180	297	-55.40	-47	-8.40	Pass	H
9614.13	107	35	-55.68	-47	-8.68	Pass	V

Receiving mode at 2480MHz(DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4965.3	168	231	-55.10	-47	-8.10	Pass	H
4961.81	190	293	-56.53	-47	-9.53	Pass	V
7449.99	131	127	-55.64	-47	-8.64	Pass	H
7441.38	158	116	-56.24	-47	-9.24	Pass	V
9923.1	189	294	-56.98	-47	-9.98	Pass	H
9928.65	173	40	-56.35	-47	-9.35	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Receiving mode at 2402MHz(2DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804.47	119	356	-55.78	-47	-8.78	Pass	H
4800.62	134	62	-55.34	-47	-8.34	Pass	V
7203.99	172	196	-55.63	-47	-8.63	Pass	H
7205.1	162	211	-56.11	-47	-9.11	Pass	V
9617.14	110	233	-55.91	-47	-8.91	Pass	H
9612.16	147	198	-55.24	-47	-8.24	Pass	V

Receiving mode at 2480MHz(2DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4961.41	155	342	-55.99	-47	-8.99	Pass	H
4958.06	137	116	-55.43	-47	-8.43	Pass	V
7448.02	184	231	-55.11	-47	-8.11	Pass	H
7446.28	187	191	-57.00	-47	-10.00	Pass	V
9924.37	177	229	-55.43	-47	-8.43	Pass	H
9918.94	109	311	-55.66	-47	-8.66	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Receiving mode at 2402MHz(3DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4803.92	157	187	-55.41	-47	-8.41	Pass	H
4801.46	113	330	-56.09	-47	-9.09	Pass	V
7207.34	180	22	-56.03	-47	-9.03	Pass	H
7203.05	198	349	-55.30	-47	-8.30	Pass	V
9600.4	177	242	-55.40	-47	-8.40	Pass	H
9603.33	139	113	-56.89	-47	-9.89	Pass	V

Receiving mode at 2480MHz(3DH5)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4966.23	150	191	-55.16	-47	-8.16	Pass	H
4956.8	170	166	-55.16	-47	-8.16	Pass	V
7437.36	155	305	-55.87	-47	-8.87	Pass	H
7432.4	116	14	-55.36	-47	-8.36	Pass	V
9927.82	163	16	-55.77	-47	-8.77	Pass	H
9901.94	174	208	-55.24	-47	-8.24	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Appendix B: Test Data

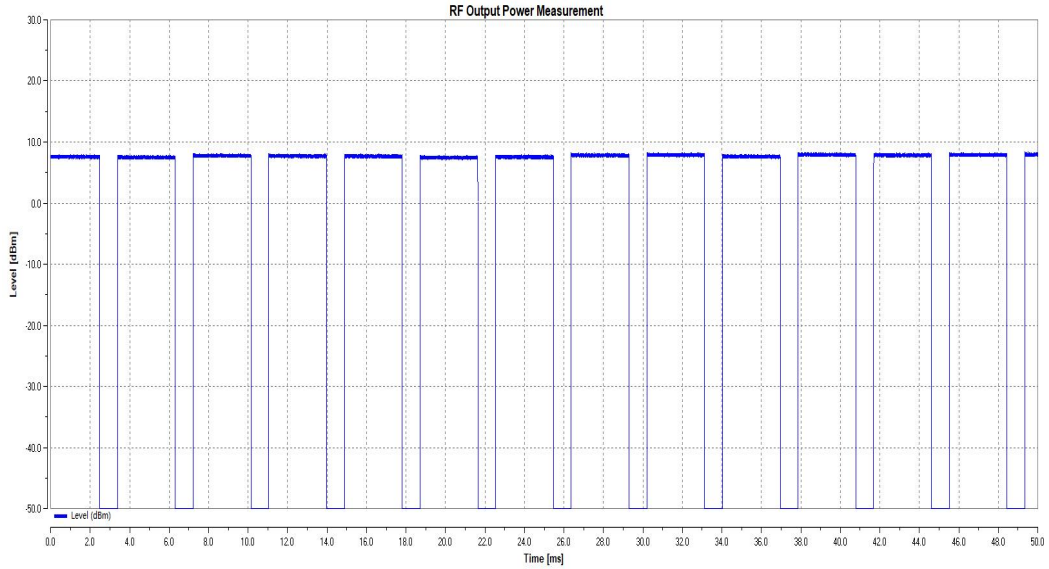
7.1 Appendix A: RF Output Power

7.1.1 Test Result

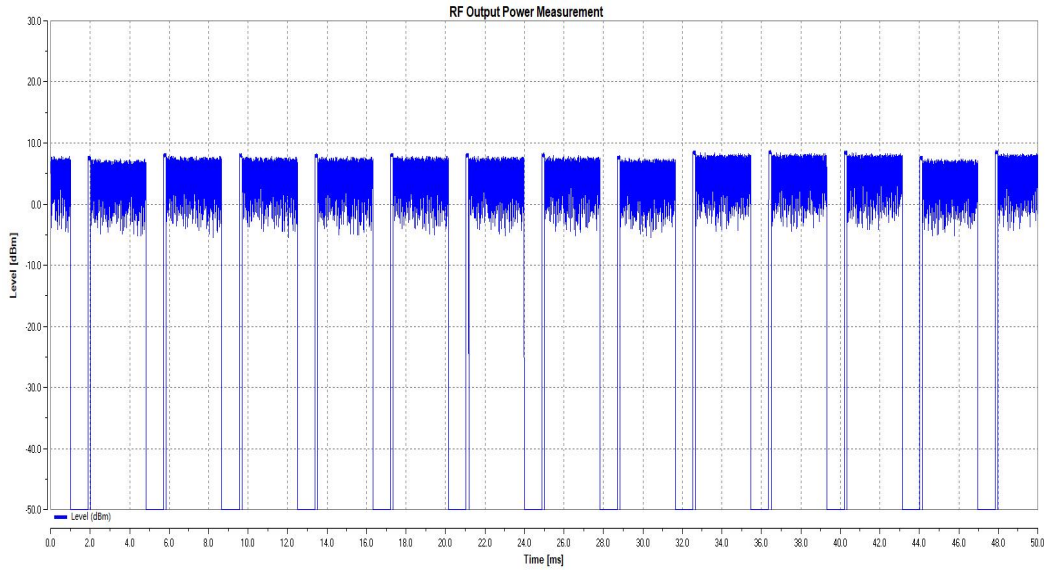
Test Condition	Test Mode	Antenna	Freq(MHz)	EIRP[dBm]	Limit[dBm]	Verdict
NTNV	DH5	Ant1	Hop	9.16	20	PASS
	2DH5	Ant1	Hop	6.85	20	PASS
	3DH5	Ant1	Hop	6.88	20	PASS
LTNV	DH5	Ant1	Hop	9.71	20	PASS
	2DH5	Ant1	Hop	6.23	20	PASS
	3DH5	Ant1	Hop	6.28	20	PASS
HTNV	DH5	Ant1	Hop	9.71	20	PASS
	2DH5	Ant1	Hop	6.26	20	PASS
	3DH5	Ant1	Hop	6.40	20	PASS

7.1.2 Test Graphs

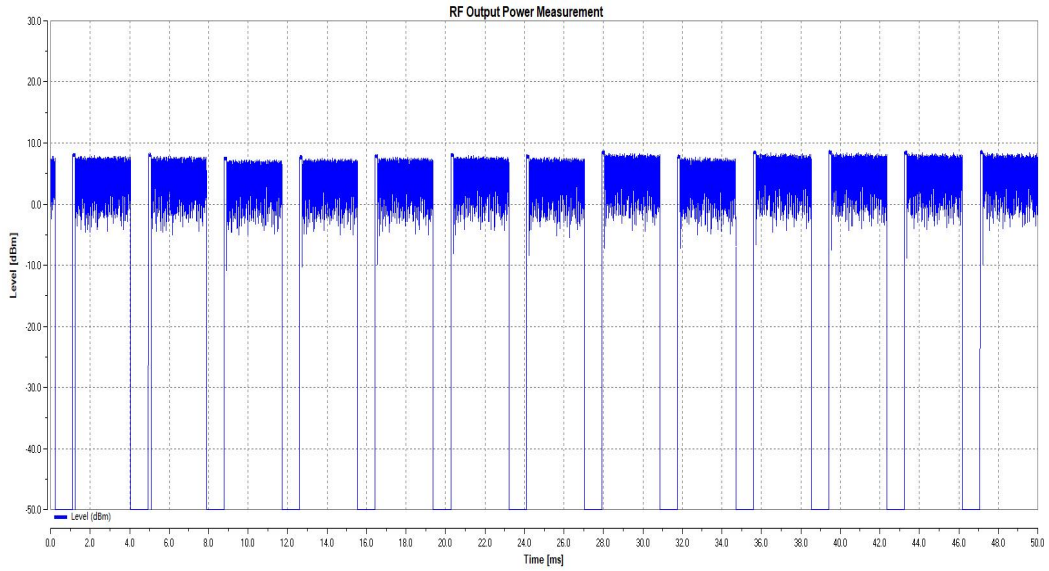
NTNV_DH5_Ant1_Hop



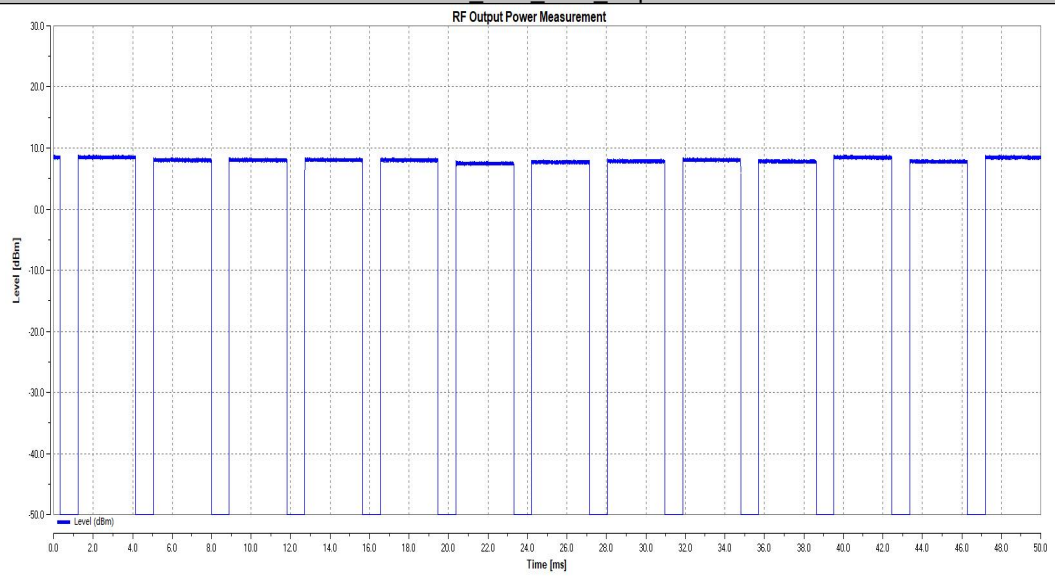
NTNV_2DH5_Ant1_Hop



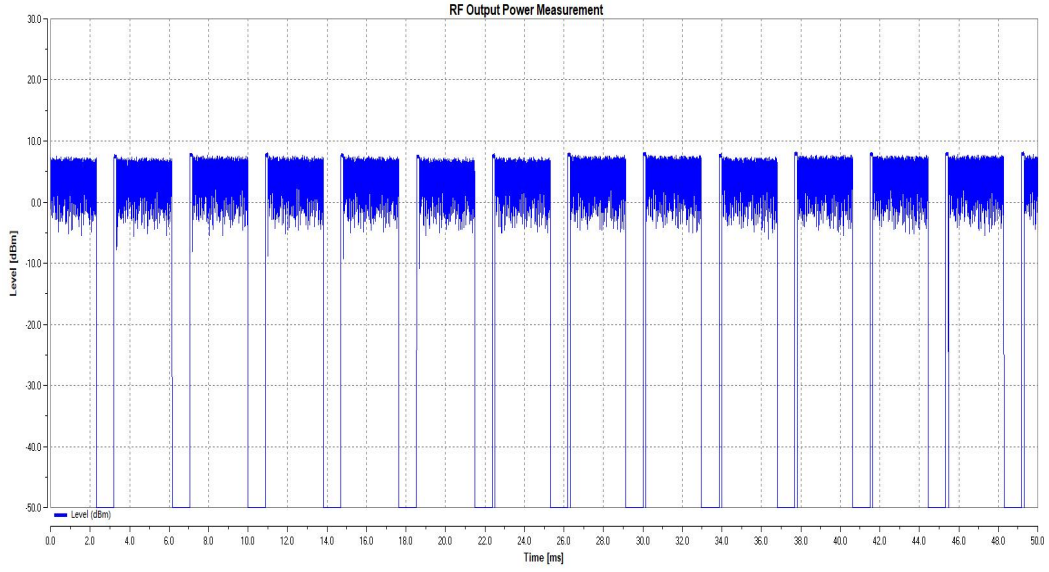
NTNV_3DH5_Ant1_Hop



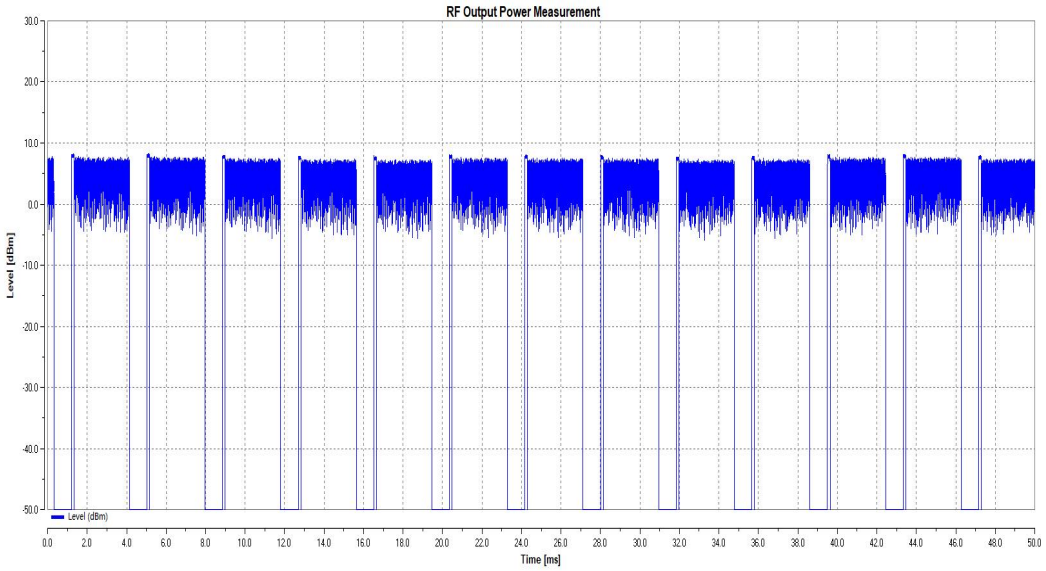
LTNV_DH5_Ant1_Hop



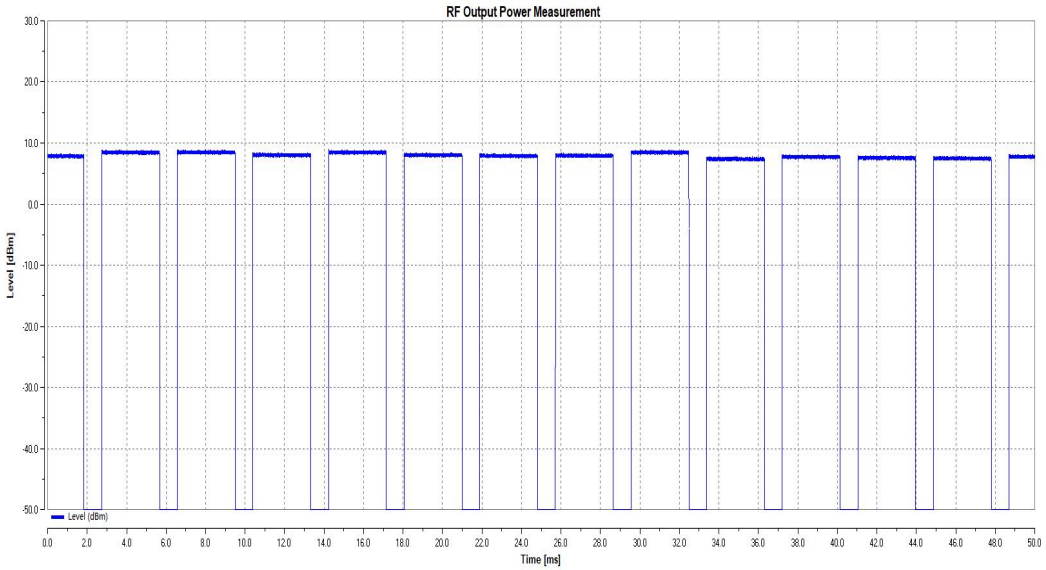
LTNV_2DH5_Ant1_Hop



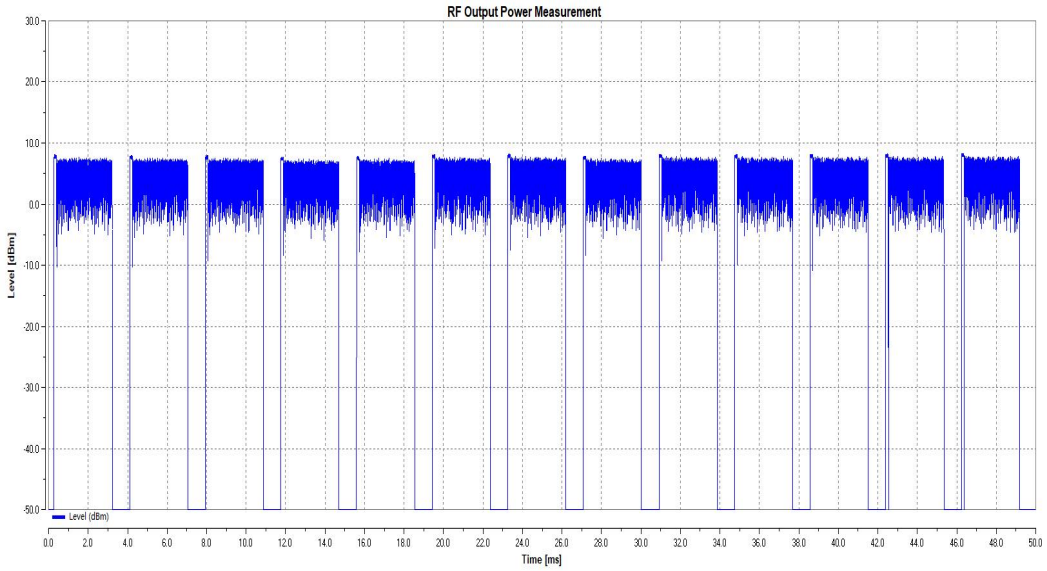
LTNV_3DH5_Ant1_Hop



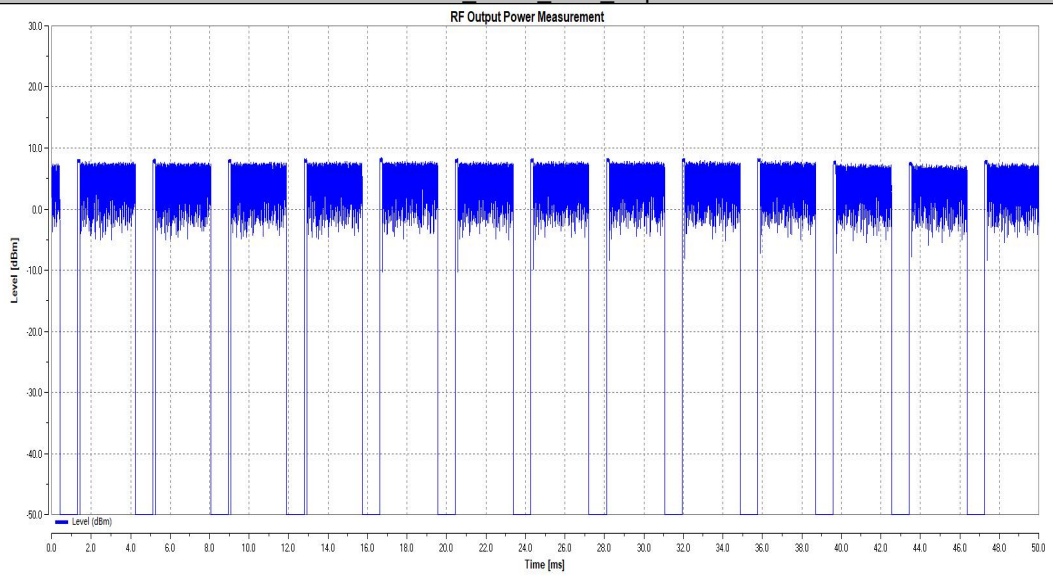
HTNV_DH5_Ant1_Hop



HTNV_2DH5_Ant1_Hop



HTNV_3DH5_Ant1_Hop



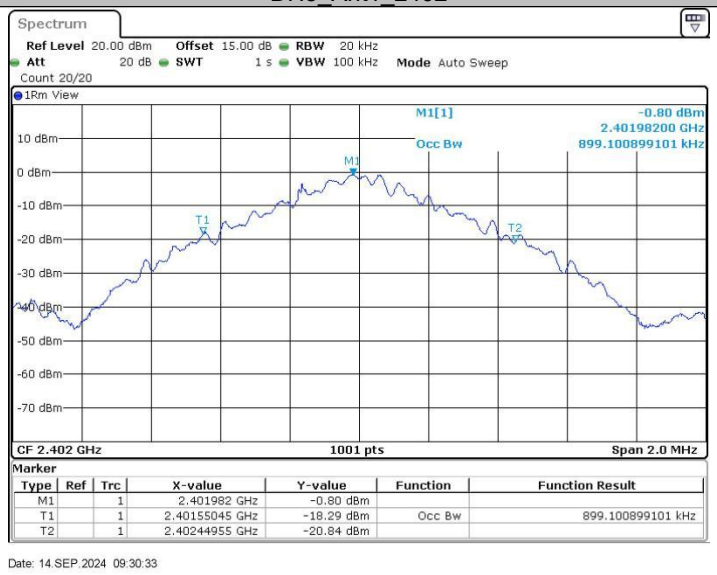
7.2 Appendix B: Occupied Channel Bandwidth

7.2.1 Test Result

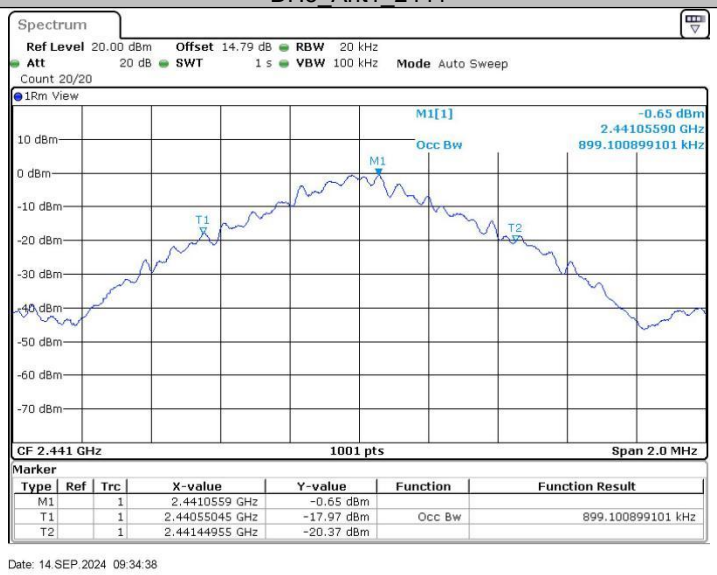
TestMode	Antenna	Freq(MHz)	OCB[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.899	2401.5504	2402.4496	2400 to 2483.5	PASS
		2441	0.899	2440.5504	2441.4496	2400 to 2483.5	PASS
		2480	0.905	2479.5485	2480.4535	2400 to 2483.5	PASS
2DH5	Ant1	2402	1.175	2401.4066	2402.5814	2400 to 2483.5	PASS
		2441	1.175	2440.4066	2441.5814	2400 to 2483.5	PASS
		2480	1.175	2479.4066	2480.5814	2400 to 2483.5	PASS
3DH5	Ant1	2402	1.185	2401.4046	2402.5894	2400 to 2483.5	PASS
		2441	1.185	2440.4046	2441.5894	2400 to 2483.5	PASS
		2480	1.185	2479.4046	2480.5894	2400 to 2483.5	PASS

7.2.2 Test Graphs

DH5_Ant1_2402



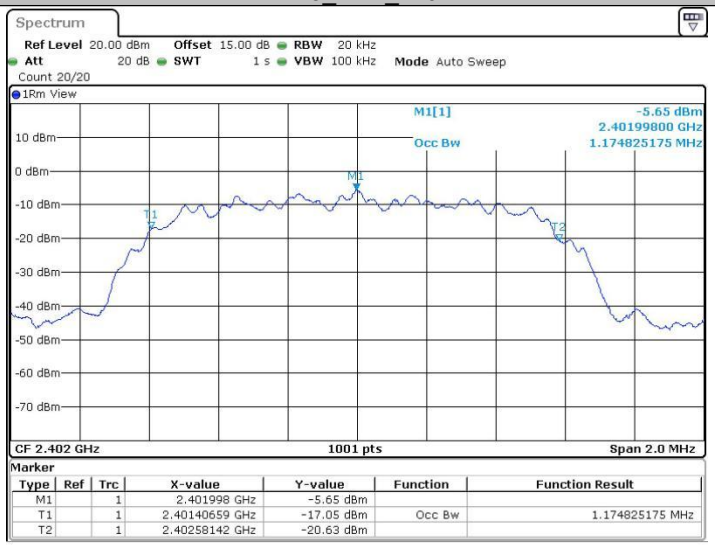
DH5_Ant1_2441



DH5_Ant1_2480

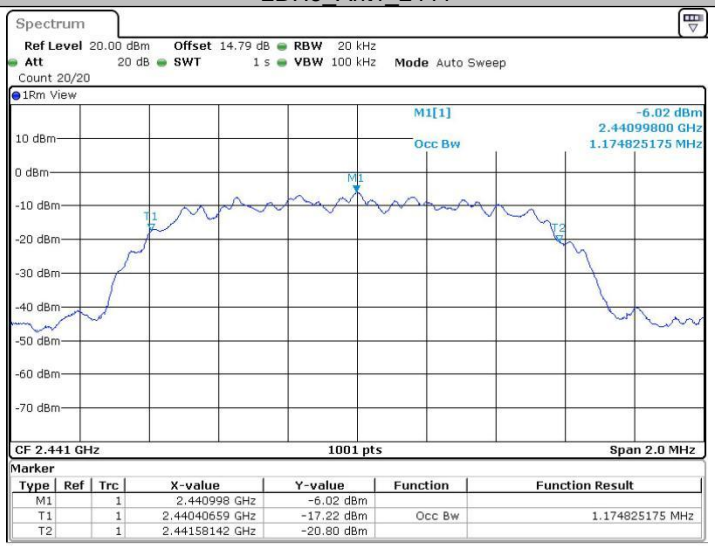
Date: 14.SEP.2024 09:35:26

2DH5_Ant1_2402



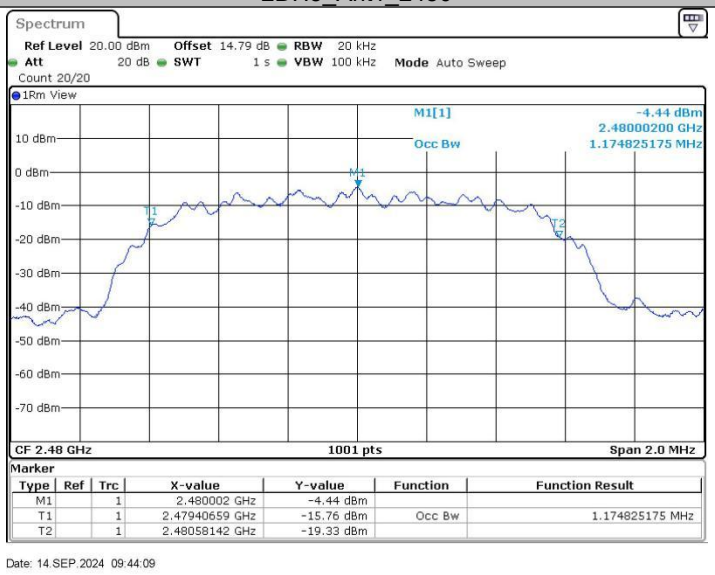
Date: 14.SEP.2024 09:39:38

2DH5_Ant1_2441



Date: 14.SEP.2024 09:43:31

2DH5_Ant1_2480

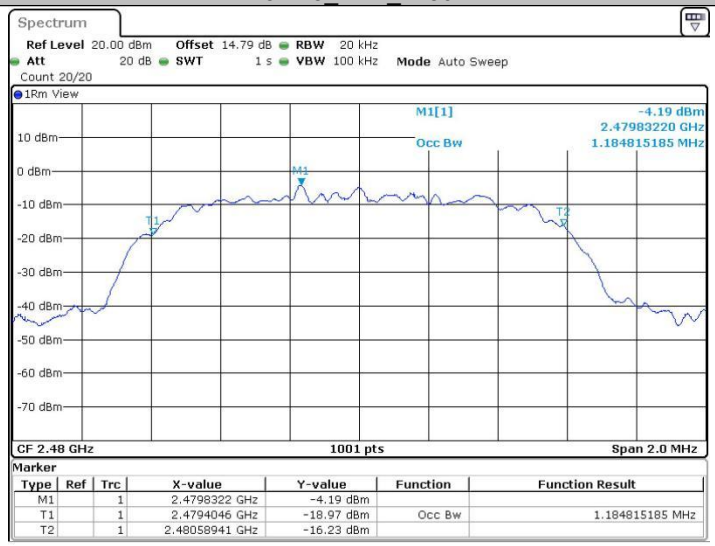


3DH5_Ant1_2402

3DH5_Ant1_2441

Date: 14.SEP.2024 09:50:24

3DH5_Ant1_2480



Date: 14.SEP.2024 09:51:09

7.3 Appendix C: Accumulated Transmit Time, Frequency Occupation and Hopping Sequence

7.3.1 Test Result

Accumulated Transmit Time

TestMode	Antenna	Freq(MHz)	Result [ms]	Limit[ms]	Verdict
DH5	Ant1	Hop_2402	299.137	400	PASS
		Hop_2480	305.457	400	PASS
2DH5	Ant1	Hop_2402	301.244	400	PASS
		Hop_2480	302.297	400	PASS
3DH5	Ant1	Hop_2402	310.724	400	PASS
		Hop_2480	301.244	400	PASS

Frequency Occupation

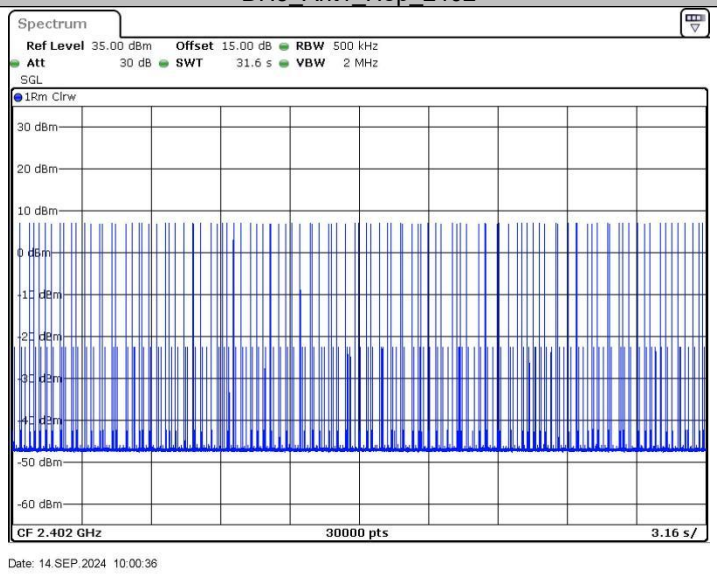
TestMode	Antenna	Freq(MHz)	Result [Num.]	Limit [Num.]	Verdict
DH5	Ant1	Hop_2402	4	1	PASS
		Hop_2480	3	1	PASS
2DH5	Ant1	Hop_2402	3	1	PASS
		Hop_2480	4	1	PASS
3DH5	Ant1	Hop_2402	3	1	PASS
		Hop_2480	3	1	PASS

Hopping Sequence

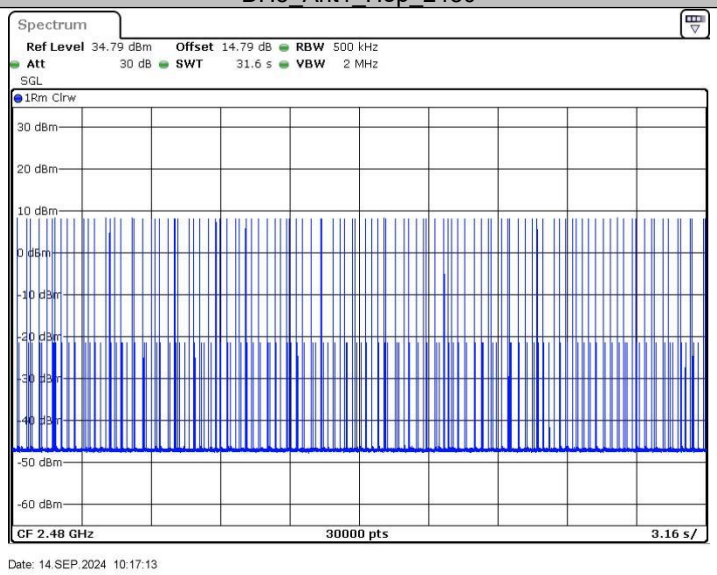
TestMode	Antenna	Freq(MHz)	Hop. [Num.]	Limit[Num.]	Band Use [%]	Limit [%]	Verdict
DH5	Ant1	Hop_2402	79	15	95.46	70	PASS
2DH5	Ant1	Hop_2402	79	15	95.89	70	PASS
3DH5	Ant1	Hop_2402	79	15	95.88	70	PASS

7.3.2 Test Graphs

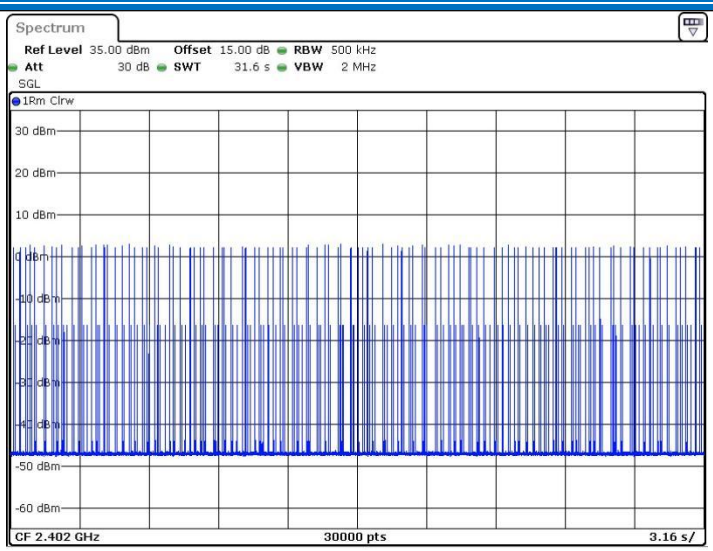
DH5_Ant1_Hop_2402



DH5_Ant1_Hop_2480

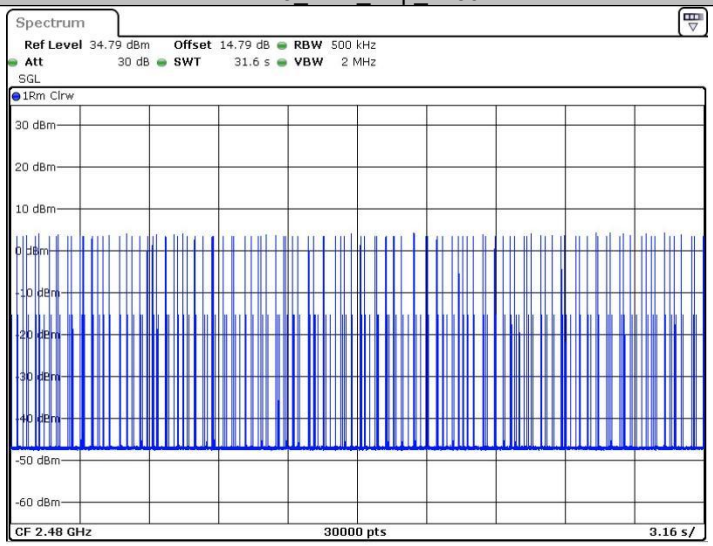


2DH5_Ant1_Hop_2402



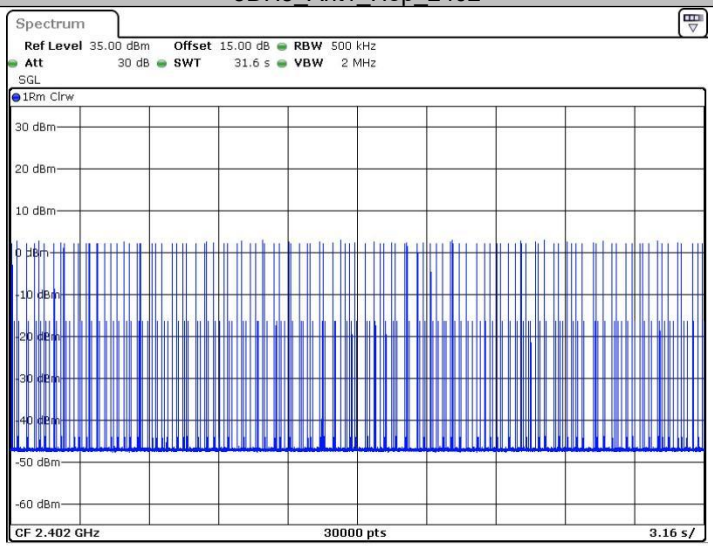
Date: 14.SEP.2024 10:21:54

2DH5_Ant1_Hop_2480



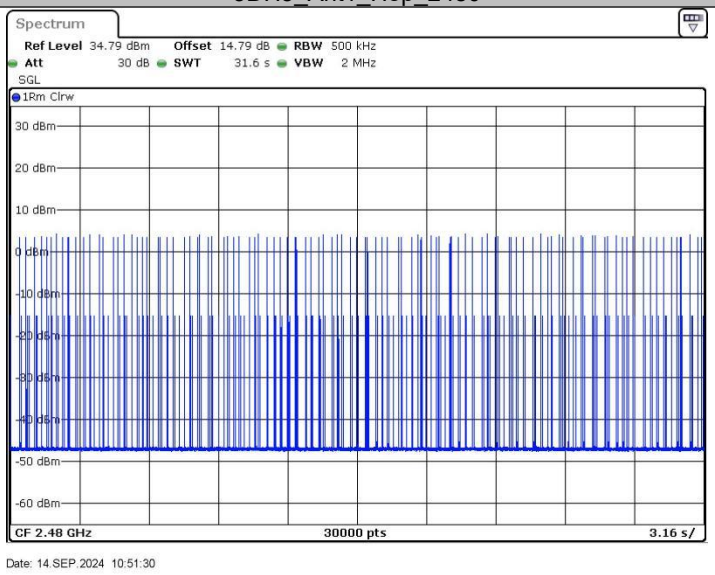
Date: 14.SEP.2024 10:38:33

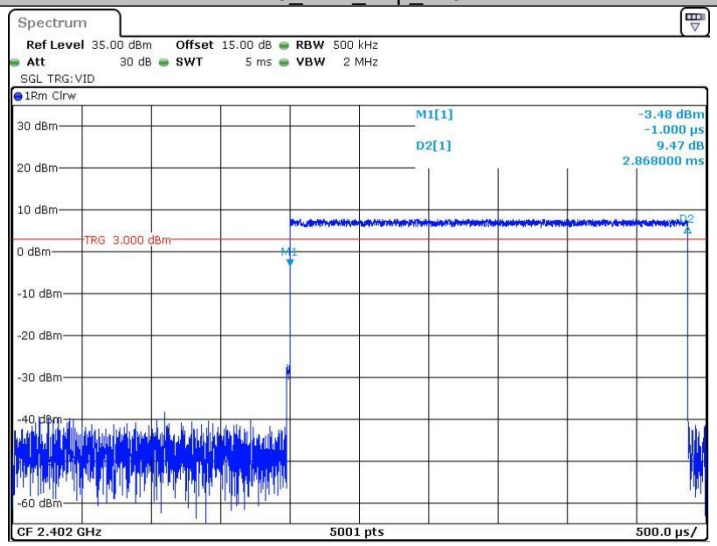
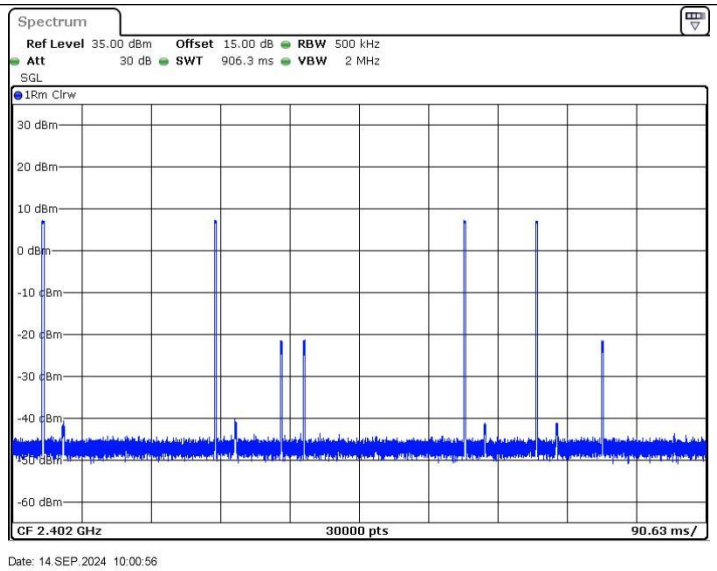
3DH5_Ant1_Hop_2402

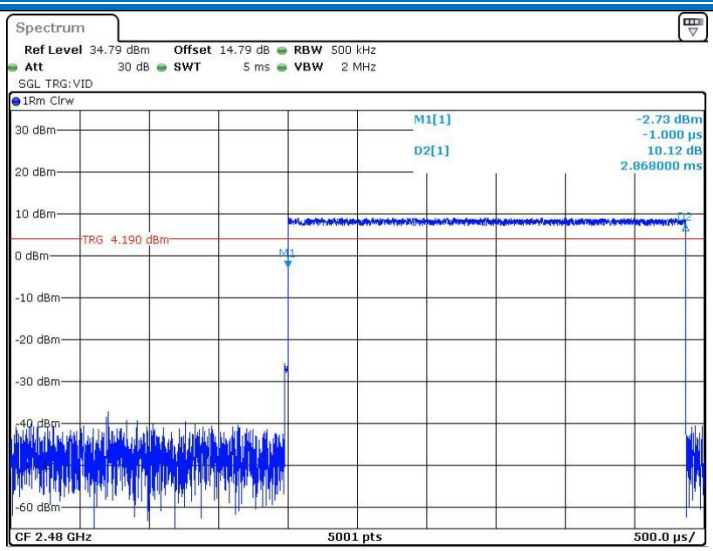


Date: 14.SEP.2024 10:43:41

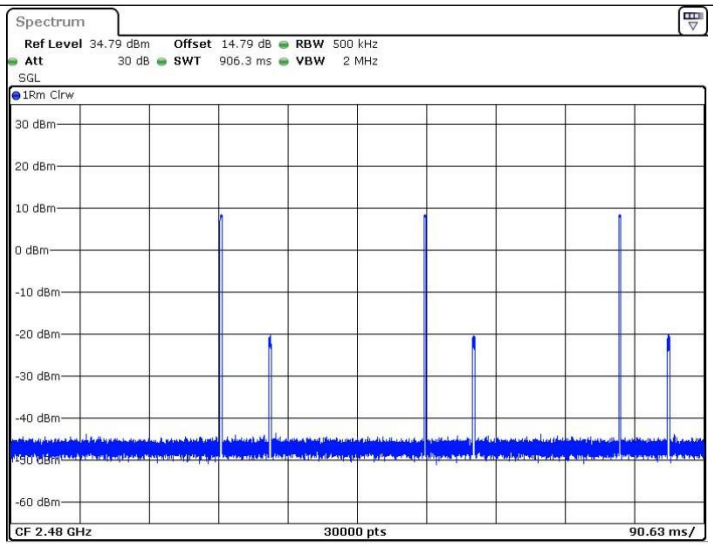
3DH5_Ant1_Hop_2480



DH5_Ant1_Hop_2402


DH5_Ant1_Hop_2480

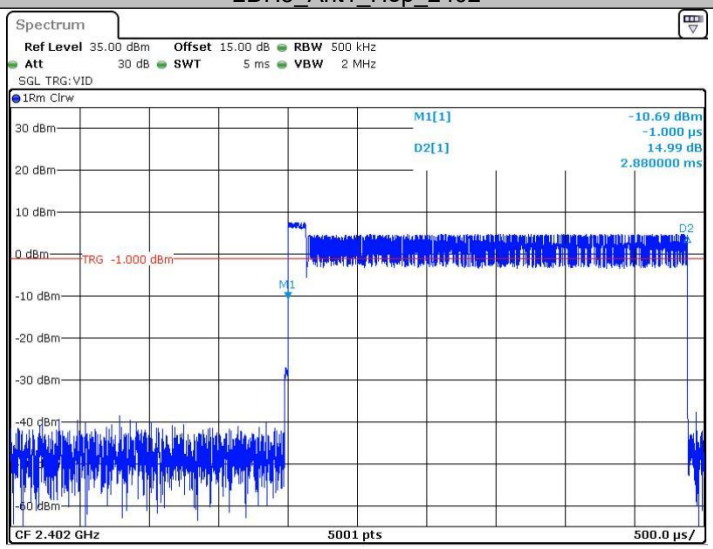


Date: 14.SEP.2024 10:17:29

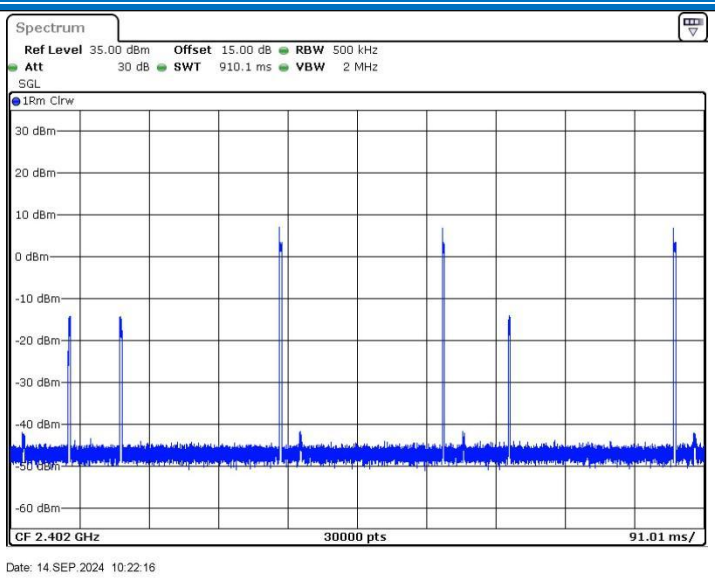


Date: 14.SEP.2024 10:17:33

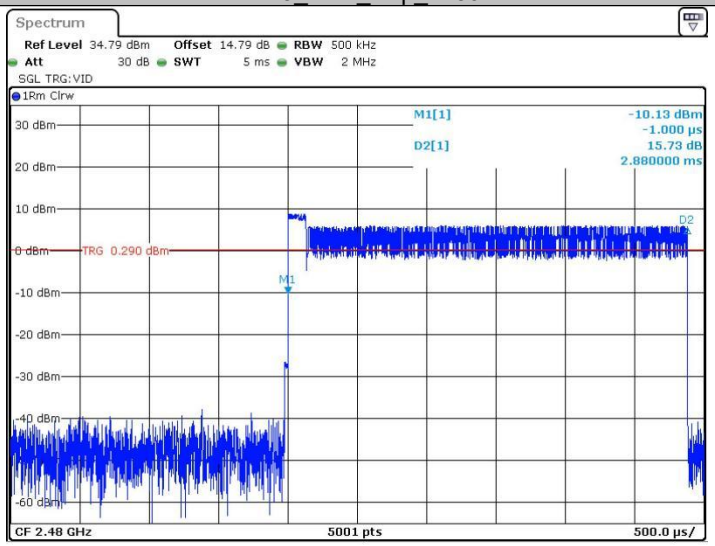
2DH5_Ant1_Hop_2402

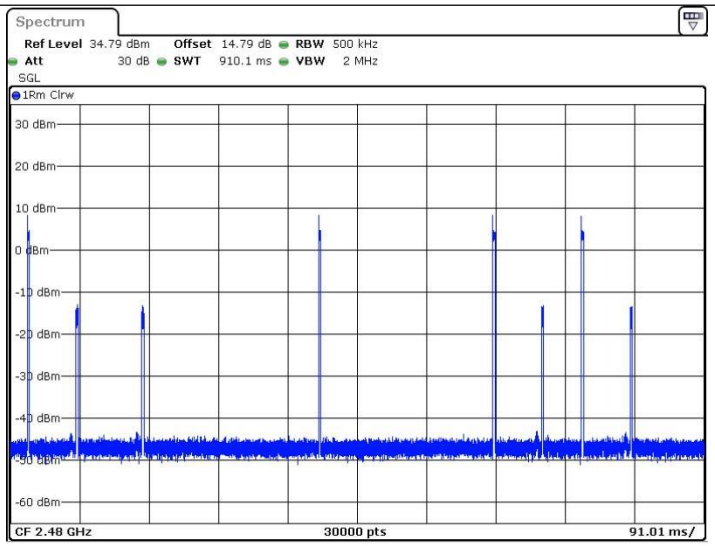


Date: 14.SEP.2024 10:22:13

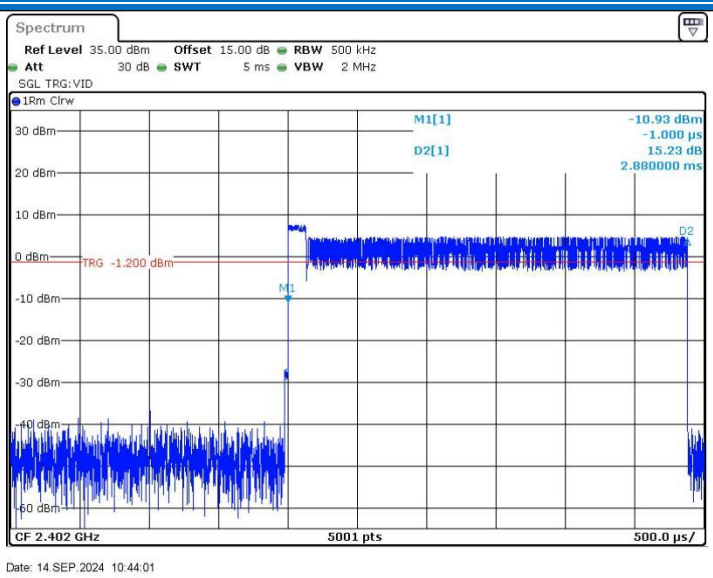


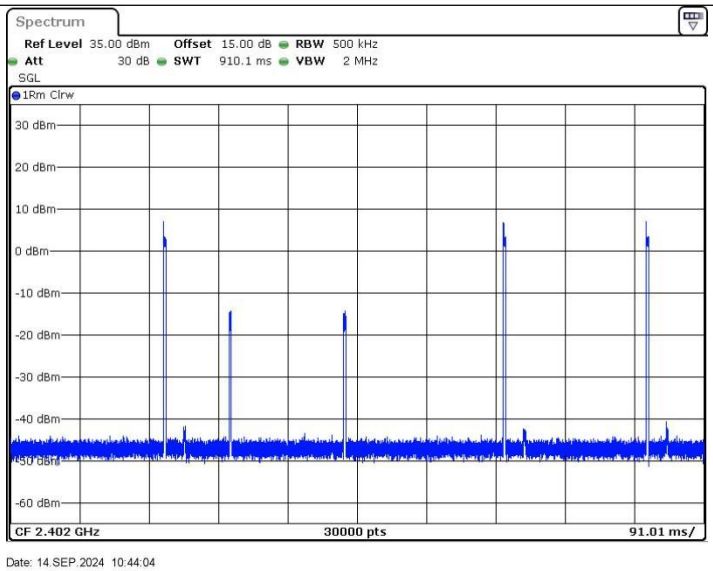
2DH5_Ant1_Hop_2480



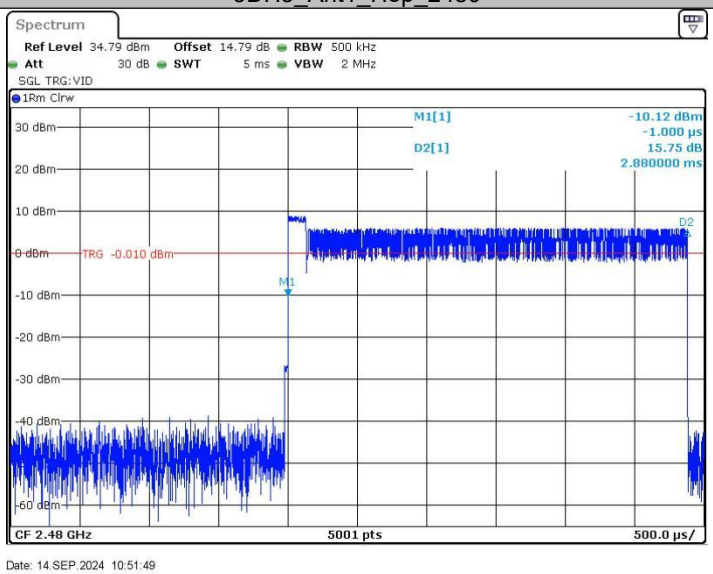


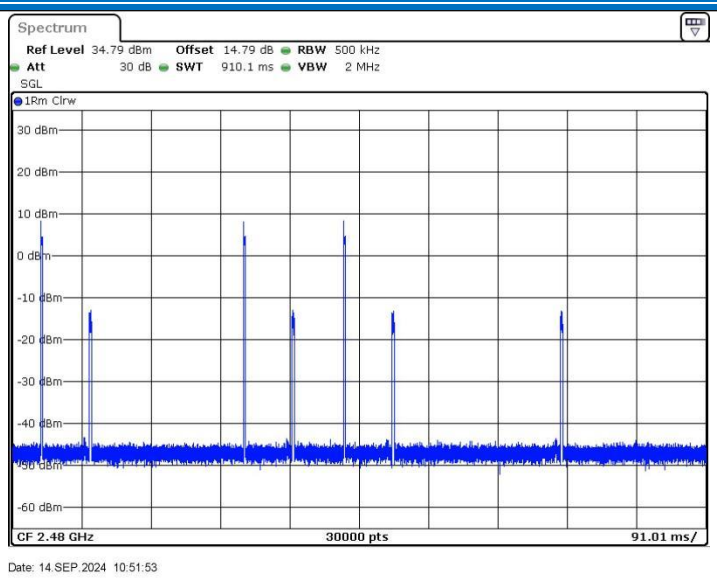
3DH5_Ant1_Hop_2402



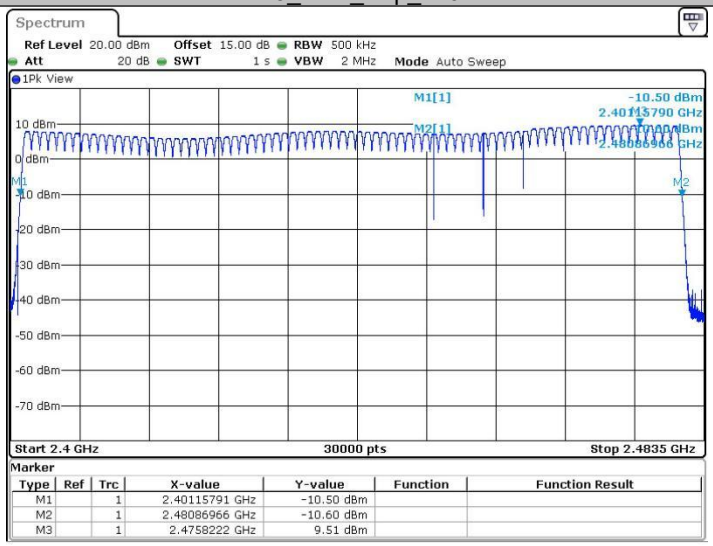


3DH5_Ant1_Hop_2480



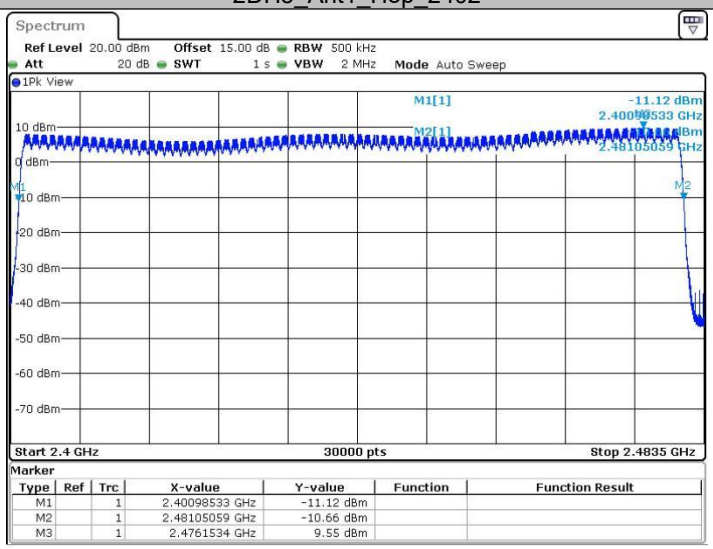

Spectrum
Ref Level 34.79 dBm Offset 14.79 dB RBW 500 kHz
Att 30 dB SWT 910.1 ms VBW 2 MHz
SGL
1Rm Clrw
30 dBm
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.48 GHz
30000 pts
91.01 ms/
Date: 14.SEP.2024 10:51:53

DH5_Ant1_Hop_2402



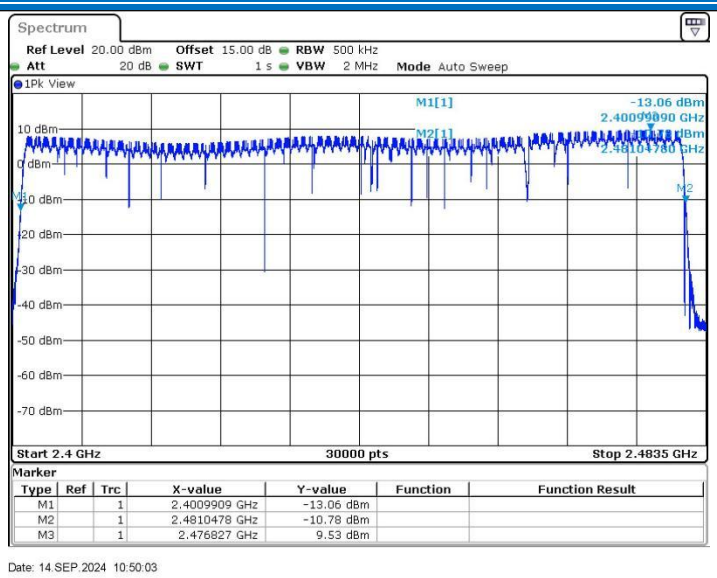
Date: 14.SEP.2024 10:16:08

2DH5_Ant1_Hop_2402



Date: 14.SEP.2024 10:37:16

3DH5_Ant1_Hop_2402


Spectrum
Ref Level 20.00 dBm Offset 15.00 dB RBW 500 kHz
Att 20 dB SWT 1 s VBW 2 MHz Mode Auto Sweep
1Pk View
M1[1] -13.06 dBm
2.4009909 GHz
M2[1] -10.78 dBm
2.4810478 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz
30000 pts
Stop 2.4835 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4009909 GHz -13.06 dBm
M2 1 2.4810478 GHz -10.78 dBm
M3 1 2.476827 GHz 9.53 dBm
Date: 14.SEP.2024 10:50:03

7.4 Appendix D: Hopping Frequency Separation

7.4.1 Test Result

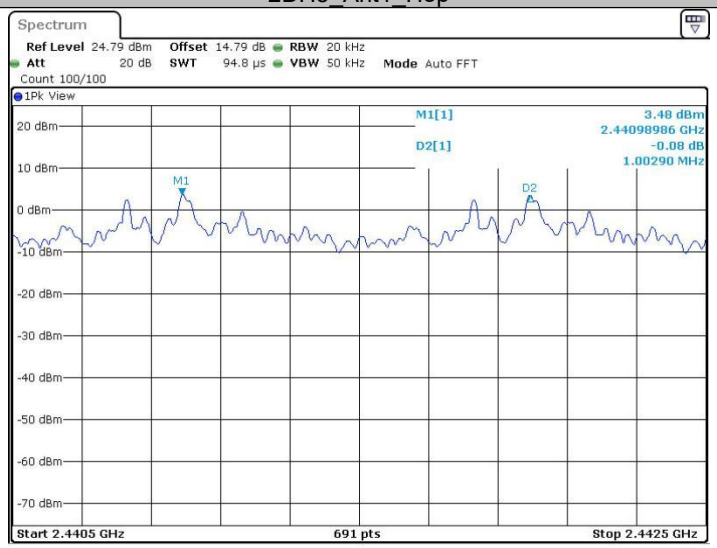
TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.003	0.100	PASS
2DH5	Ant1	Hop	1.003	0.100	PASS
3DH5	Ant1	Hop	1.003	0.100	PASS

7.4.2 Test Graphs

DH5_Ant1_Hop

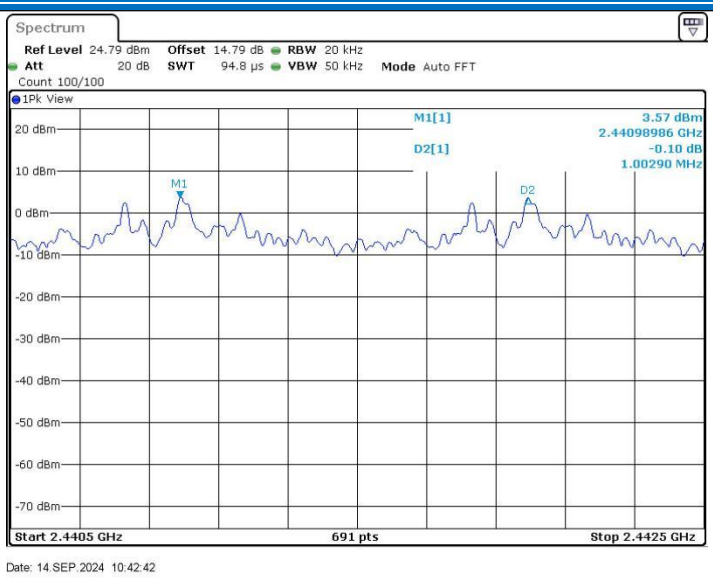
Date: 14.SEP.2024 09:58:20

2DH5_Ant1_Hop



Date: 14.SEP.2024 10:21:00

3DH5_Ant1_Hop


Spectrum
Ref Level 24.79 dBm Offset 14.79 dB RBW 20 kHz
Att 20 dB SWT 94.8 µs VBW 50 kHz Mode Auto FFT
Count 100/100
1Pk View
M1[1] 3.57 dBm
2.44098986 GHz
D2[1] -0.10 dB
1.00290 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D2
Start 2.4405 GHz
691 pts
Stop 2.4425 GHz
Date: 14.SEP.2024 10:42:42

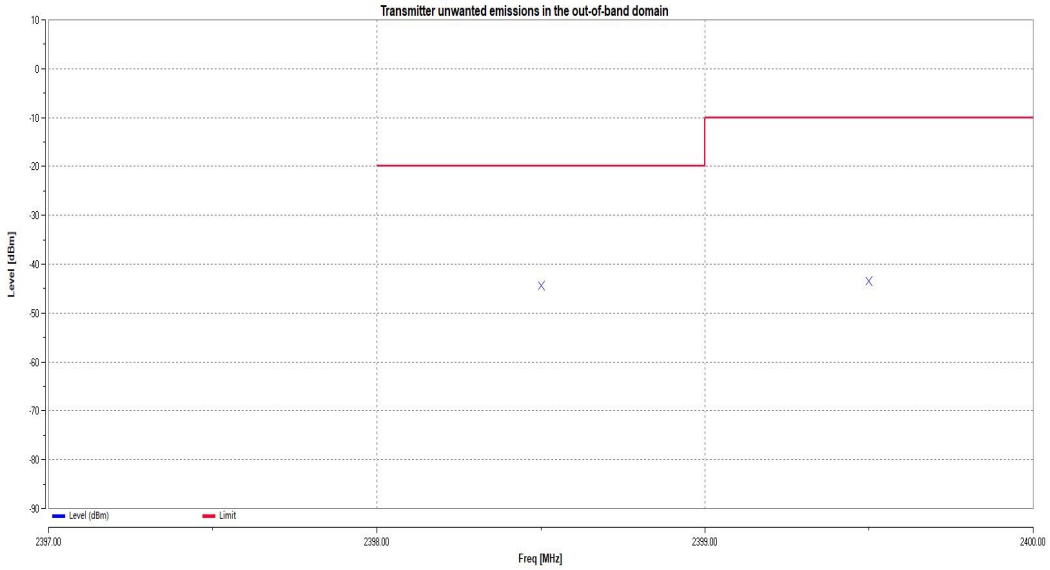
7.5 Appendix E: Transmitter Unwanted Emissions In The Out-Of-BandDomain

7.5.1 Test Result

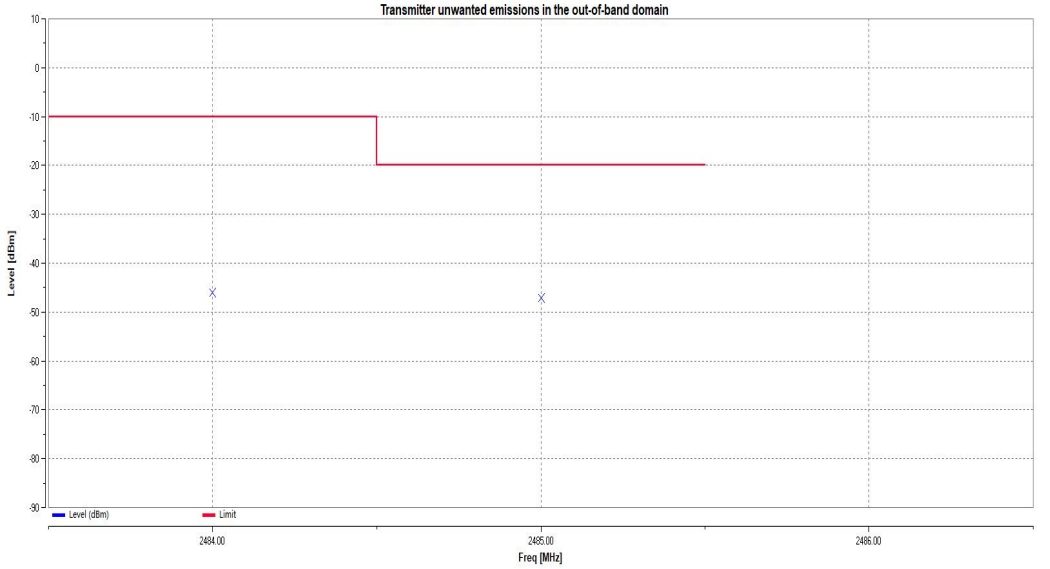
TestMode	Antenna	Freq(MHz)	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Hop	2398.5	-44.3	-20.00	PASS
			2399.5	-43.53	-10.00	PASS
			2484	-46.1	-10.00	PASS
			2485	-47.19	-20.00	PASS
2DH5	Ant1	Hop	2398.15	-45.64	-20.00	PASS
			2399.5	-43.12	-10.00	PASS
			2484	-47	-10.00	PASS
			2485.35	-47.21	-20.00	PASS
3DH5	Ant1	Hop	2398.13	-46.45	-20.00	PASS
			2399.5	-43.63	-10.00	PASS
			2484.19	-46.8	-10.00	PASS
			2485.37	-47.07	-20.00	PASS

7.5.2 Test Graphs

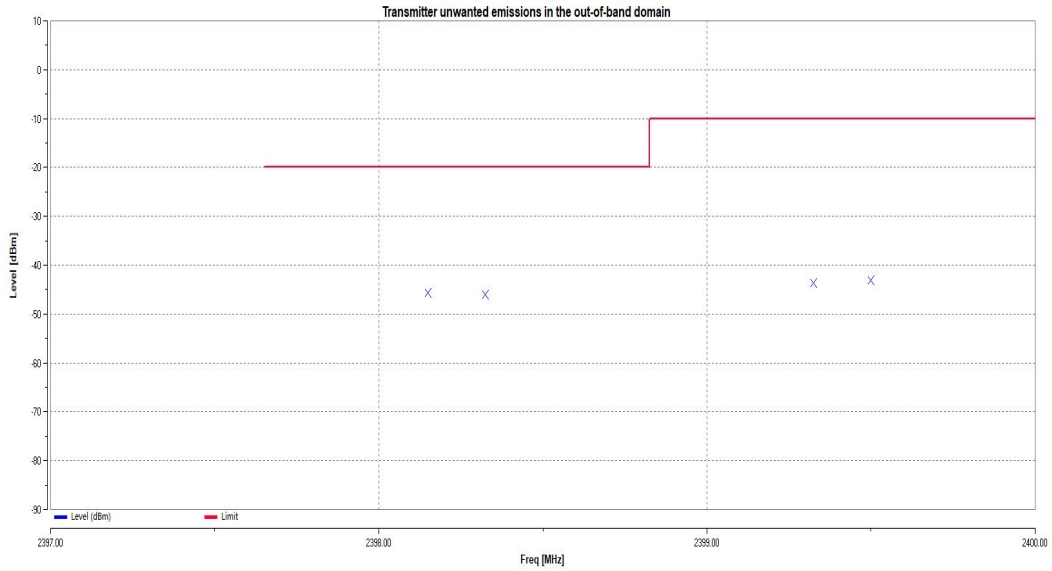
DH5_Ant1_Hop_2400MHz-2BW to 2400MHz



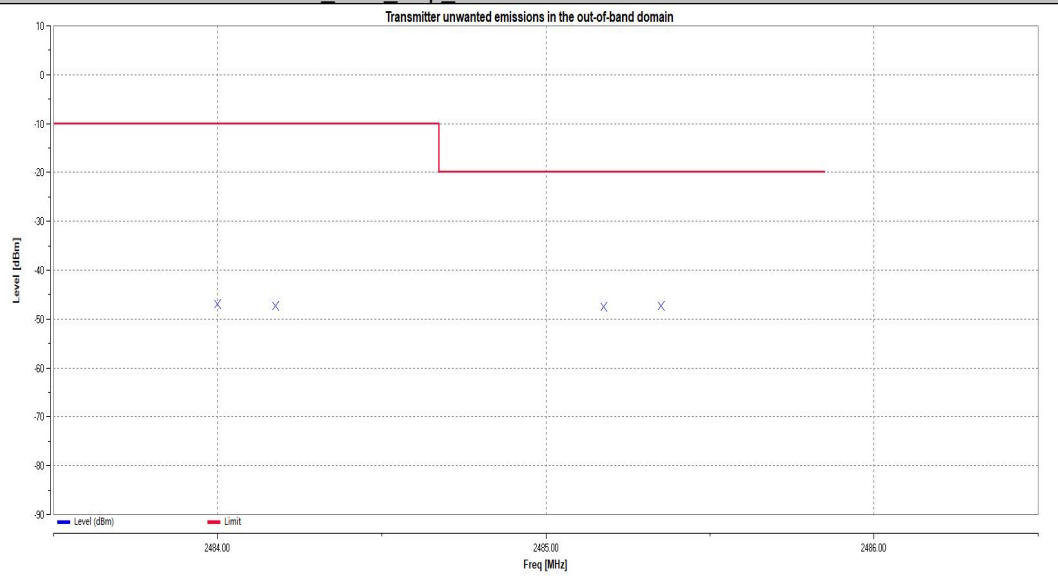
DH5_Ant1_Hop_2483.5MHz to 2483.5MHz+2BW



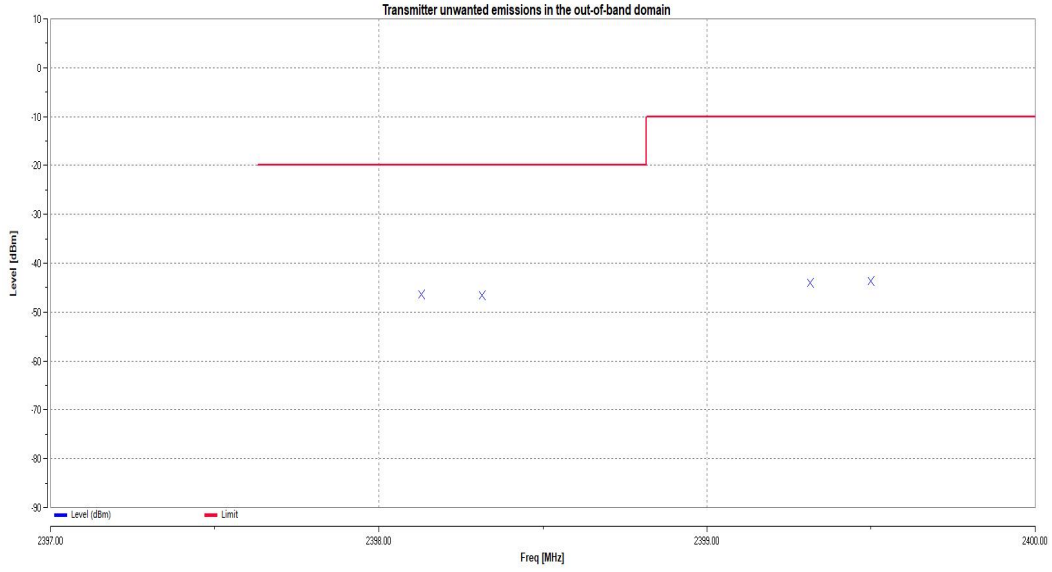
2DH5_Ant1_Hop_2400MHz-2BW to 2400MHz



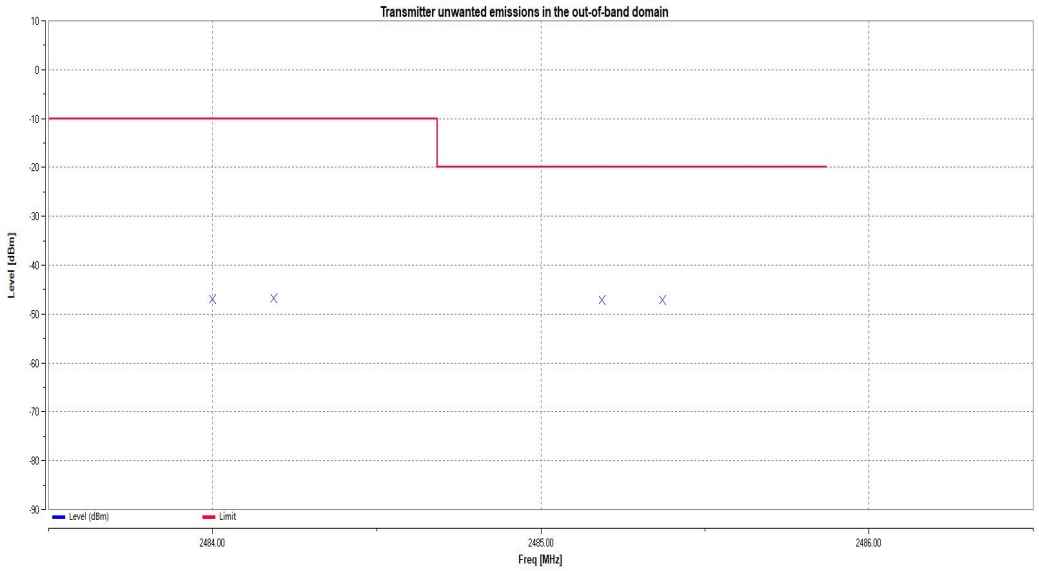
2DH5_Ant1_Hop_2483.5MHz to 2483.5MHz+2BW



3DH5_Ant1_Hop_2400MHz-2BW to 2400MHz



3DH5_Ant1_Hop_2483.5MHz to 2483.5MHz+2BW



7.6 Appendix F: Transmitter unwanted emissions in the spurious domain

7.6.1 Test Result-Pre-scan

TestMode	Antenna	Freq(MHz)	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	888.16	-61.56	-36	PASS
			4804.26	-35.08	-30	See table below
			6981.48	-36.2	-30	PASS
		2480	973.62	-62.32	-36	PASS
			4960.13	-36.54	-30	PASS
			6967.79	-36.64	-30	PASS
2DH5	Ant1	2402	989.46	-61.37	-36	PASS
			4803.59	-35.2	-30	See table below
			6879.44	-35.91	-30	See table below
			6912.51	-35.69	-30	See table below
		2480	861.54	-61.81	-36	PASS
			4960.13	-36.31	-30	PASS
			6616.19	-36.57	-30	PASS
3DH5	Ant1	2402	802.15	-61.64	-36	PASS
			2395.78	-32.42	-30	See table below
			4804.39	-35.73	-30	See table below
			6990.78	-36.16	-30	PASS
		2480	852.26	-61.68	-36	PASS
			4960.13	-37.18	-30	PASS
			6585.96	-36.46	-30	PASS

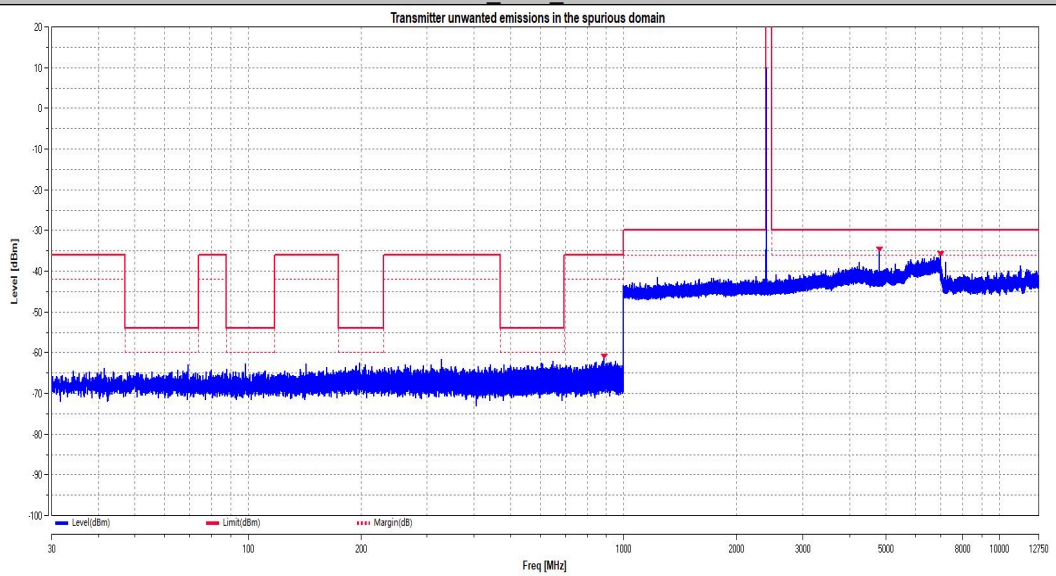
7.6.2 Test Result- Emissions identified during the pre-scan

TestMode	Antenna	Freq(MHz)	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4804.26	-42.25	-30	PASS

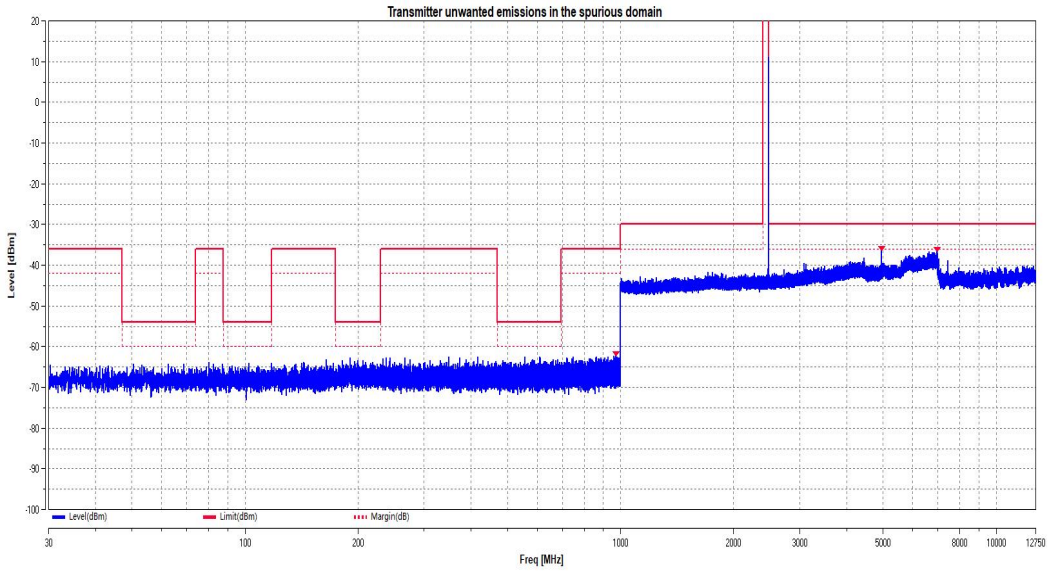
2DH5	Ant1	2402	4803.59	-45.08	-30	PASS
			6879.44	-62.13	-30	PASS
			6912.51	-61.94	-30	PASS
3DH5	Ant1	2402	2395.78	-61.45	-30	PASS
			4804.39	-45.72	-30	PASS

7.6.3 Test Graphs-Pre-scan

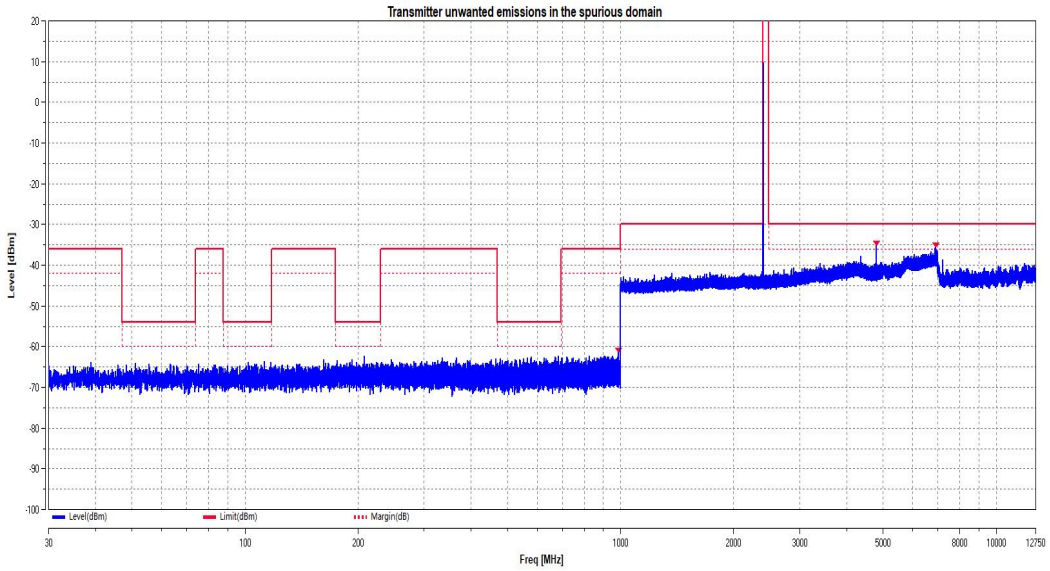
DH5_Ant1_2402



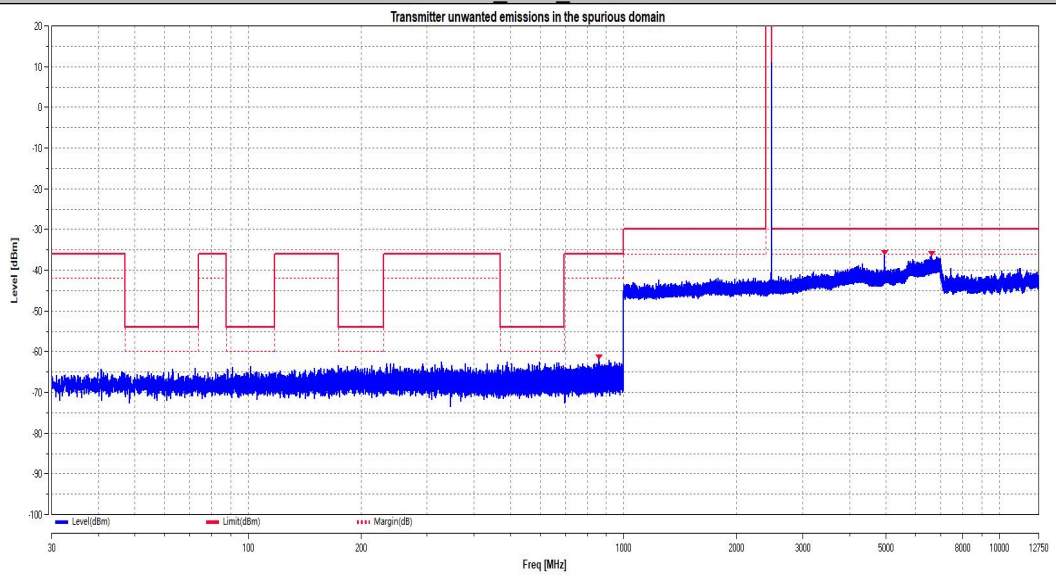
DH5_Ant1_2480



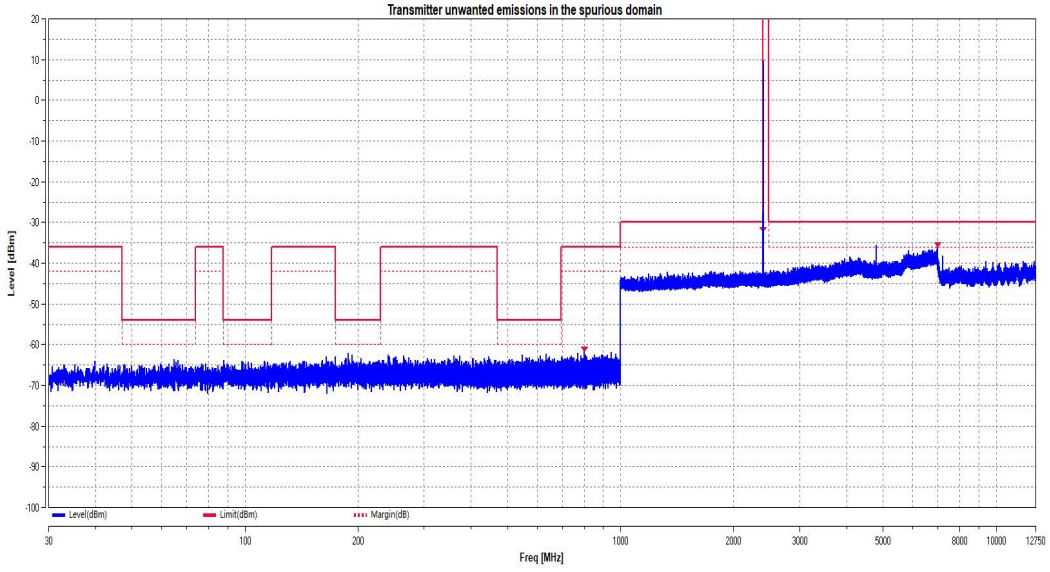
2DH5_Ant1_2402



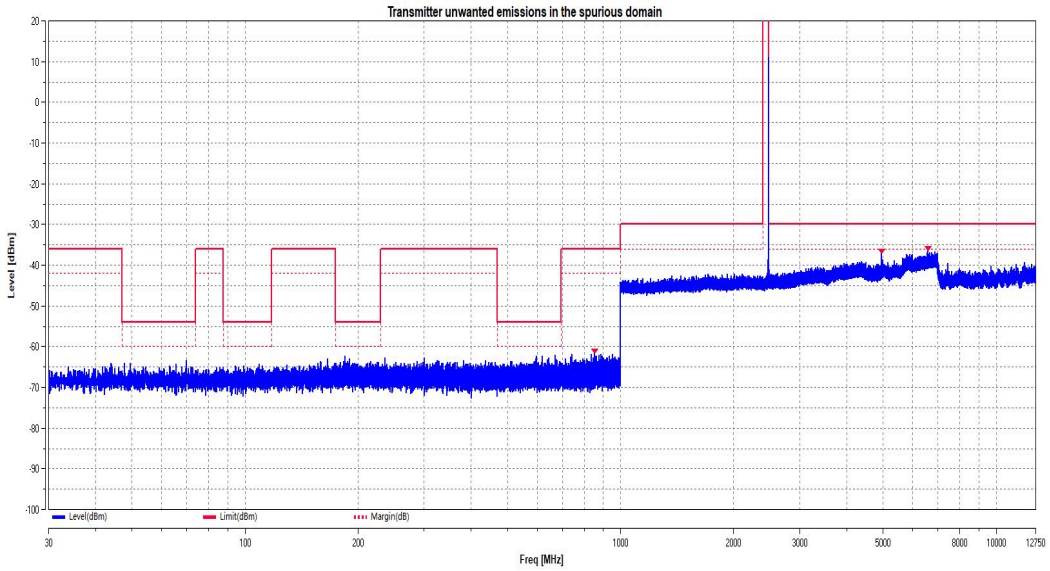
2DH5_Ant1_2480



3DH5_Ant1_2402

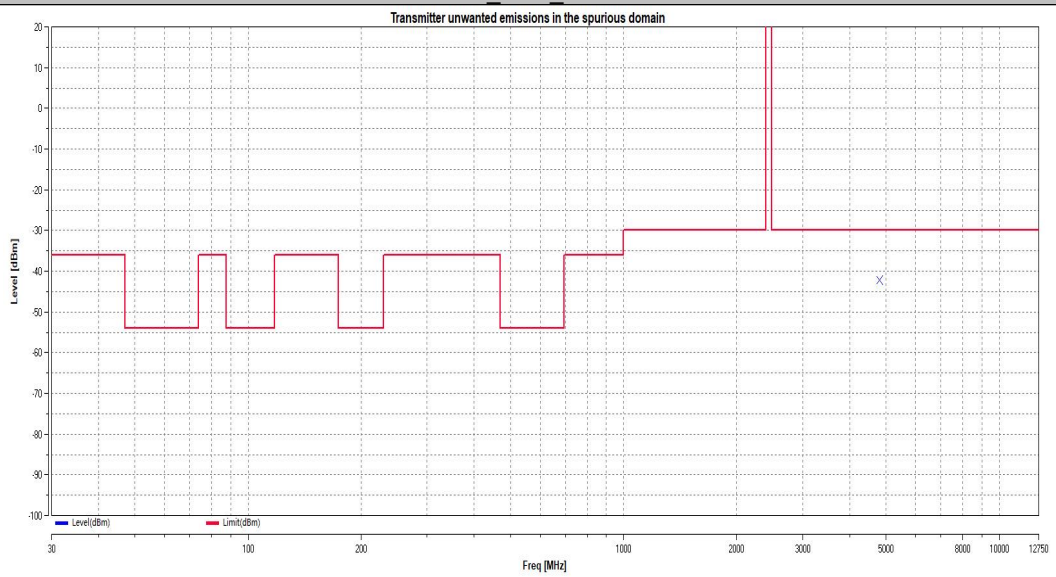


3DH5_Ant1_2480

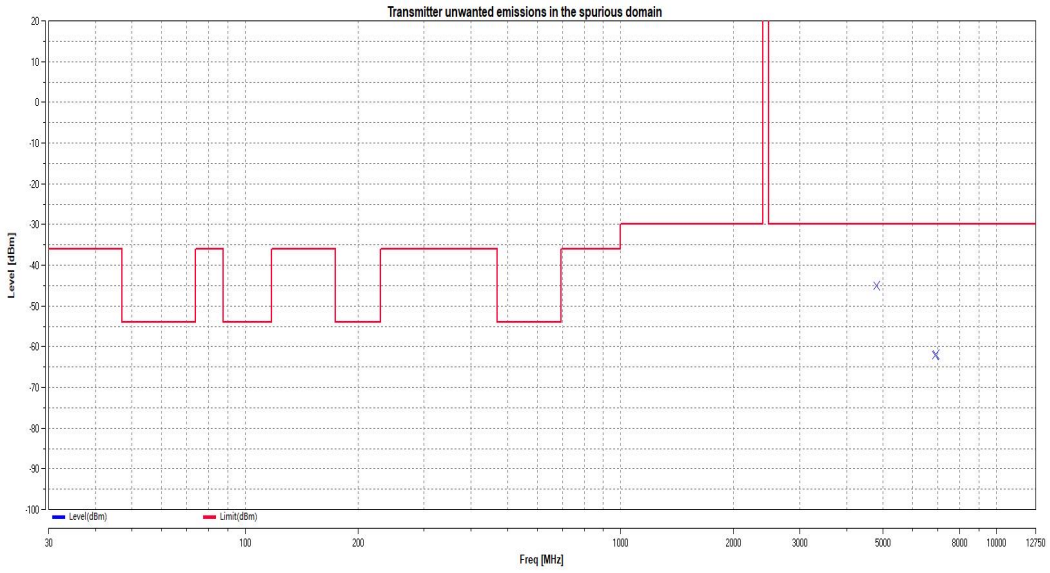


7.6.4 Test Graphs- Emissions identified during the pre-scan

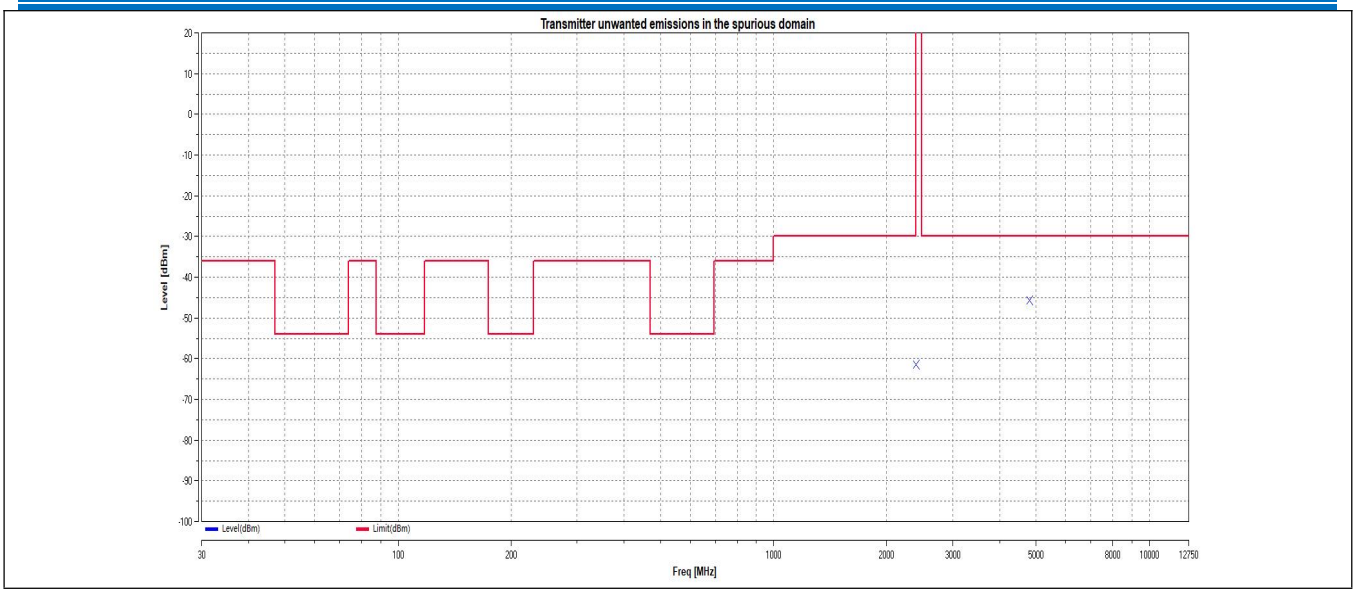
DH5_Ant1_2402



2DH5_Ant1_2402



3DH5_Ant1_2402

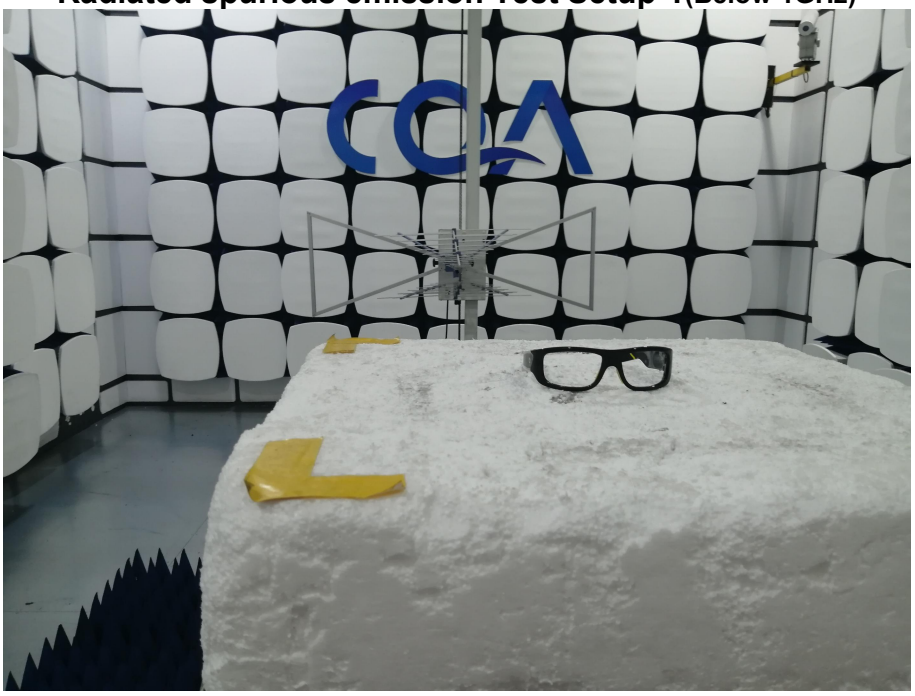

Transmitter unwanted emissions in the spurious domain
Level [dBm]
Freq [MHz]
Level(dBm)
Limit(dBm)

7.Receiver Blocking

Test Condition	Test Mode	Test Channel	Ant	Wanted signal Level[dBm]	Freq [MHz]	CW Level [dBm]	PER	Limit[%]	Verdict
TNVN	DH5	2402	Ant1	-69.60	2380	-34	1.17%	<=10	PASS
TNVN	DH5	2402	Ant1	-69.60	2504	-34	0.28%	<=10	PASS
TNVN	DH5	2402	Ant1	-69.60	2300	-34	0.62%	<=10	PASS
TNVN	DH5	2402	Ant1	-69.60	2584	-34	0.62%	<=10	PASS
TNVN	DH5	2480	Ant1	-69.59	2380	-34	1.16%	<=10	PASS
TNVN	DH5	2480	Ant1	-69.59	2504	-34	0.80%	<=10	PASS
TNVN	DH5	2480	Ant1	-69.59	2300	-34	0.85%	<=10	PASS
TNVN	DH5	2480	Ant1	-69.59	2584	-34	0.89%	<=10	PASS
TNVN	2DH5	2402	Ant1	-68.26	2380	-34	0.21%	<=10	PASS
TNVN	2DH5	2402	Ant1	-68.26	2504	-34	1.13%	<=10	PASS
TNVN	2DH5	2402	Ant1	-68.26	2300	-34	1.03%	<=10	PASS
TNVN	2DH5	2402	Ant1	-68.26	2584	-34	0.67%	<=10	PASS
TNVN	2DH5	2480	Ant1	-68.27	2380	-34	0.31%	<=10	PASS
TNVN	2DH5	2480	Ant1	-68.27	2504	-34	0.36%	<=10	PASS
TNVN	2DH5	2480	Ant1	-68.27	2300	-34	0.59%	<=10	PASS
TNVN	2DH5	2480	Ant1	-68.27	2584	-34	0.74%	<=10	PASS
TNVN	3DH5	2402	Ant1	-68.23	2380	-34	0.30%	<=10	PASS
TNVN	3DH5	2402	Ant1	-68.23	2504	-34	0.23%	<=10	PASS
TNVN	3DH5	2402	Ant1	-68.23	2300	-34	0.74%	<=10	PASS
TNVN	3DH5	2402	Ant1	-68.23	2584	-34	0.42%	<=10	PASS
TNVN	3DH5	2480	Ant1	-68.23	2380	-34	1.00%	<=10	PASS
TNVN	3DH5	2480	Ant1	-68.23	2504	-34	1.06%	<=10	PASS
TNVN	3DH5	2480	Ant1	-68.23	2300	-34	0.71%	<=10	PASS
TNVN	3DH5	2480	Ant1	-68.23	2584	-34	0.94%	<=10	PASS

PHOTOGRAPHS OF TEST SETUP

Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)

PHOTOGRAPHS OF EUT Constructional Details

Refer to APPENDIX 2 PHOTOGRAPHS OF EUT for CQASZ20240901962E-01.

*** END OF REPORT ***