Certificate #6613.01

FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland
Product:	Mobile Phone
Brand Name:	HMD
Model Name:	TA-1606
FCC ID:	2AJOTTA-1606
Date of tests:	May. 14, 2024 ~ Jun. 13, 2024

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

☒ **ANSI C63.10-2013**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Hanwen Xu	Approved by Peibo Sun
Engineer / Mobile Department	Manager / Mobile Department
Date: Jun. 13, 2024	Date: Jun. 13, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2405090215RF05	Original release	Jun. 13, 2024

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD	**TEST TYPE AND LIMIT**	**RESULT**	**TEST LAB***
15.207	AC Power Conducted Emission	Compliance	A
15.247(a)(1) (iii)	Number of Hopping Frequency Used	Compliance	A
15.247(a)(1) (iii)	Dwell Time on Each Channel	Compliance	A
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	Compliance	A
15.247(b)	Maximum Peak Output Power	Compliance	A
15.247(d)& 15.209	Transmitter Radiated Emissions	Compliance	A
15.247(d)	Out of band Measurement	Compliance	A
15.203	Antenna Requirement	Compliance	A

NOTE:

1. If the Frequency Hopping System operating in 2400-2483.5MHz band and the output power less than 125mW. The hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of hopping channel whichever is greater.
2. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

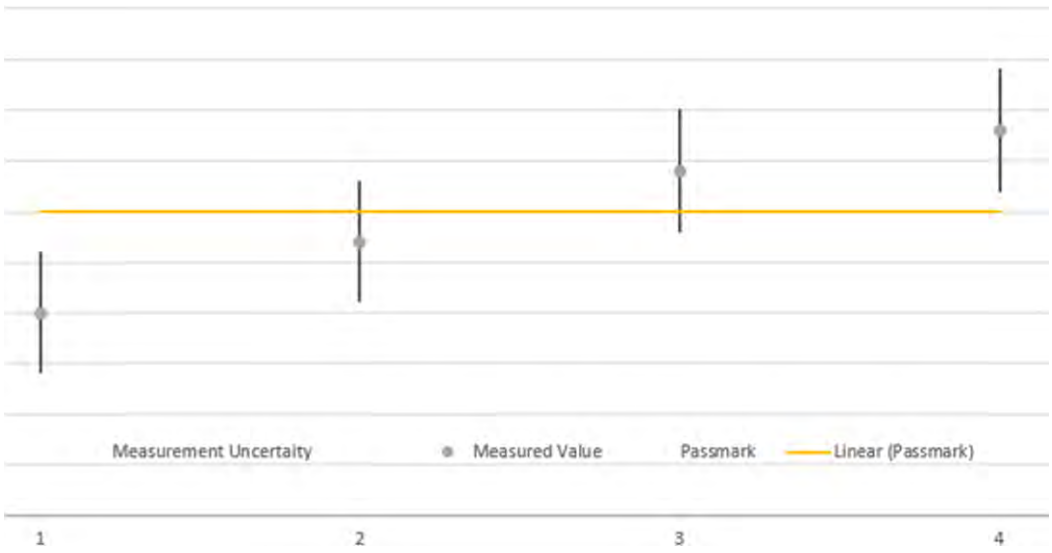
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Mobile Phone
BRAND NAME*	HMD
MODEL NAME*	TA-1606
NOMINAL VOLTAGE*	5.0 or 9.0 or 12.0 Vdc (adapter) 3.87Vdc (battery)
MODULATION TECHNOLOGY*	FHSS
MODULATION TYPE*	GFSK, 8DPSK, π/4 DQPSK
OPERATING FREQUENCY	2402MHz~2480MHz
NUMBER OF CHANNEL	79
MAX. OUTPUT POWER	4.99 mW (Max. Measured)
ANTENNA TYPE*	PIFA Antenna with 1.44dBi gain
HW VERSION*	V00
SW VERSION*	V0.019_A01
I/O PORTS*	Refer to user's manual
CABLE SUPPLIED*	USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable3: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable4: non-shielded cable, with w/o ferrite core, 1.0 meter

NOTE:

1. ***Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information , Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

4. For the product of TA-1606 (FCC ID: 2AJOTTA-1606), the following components are different between the first and second supply, other parameters are the same.

Key Component List

No.	Component	Description	First supply		Second supply	
			SUPPLIER	Spec	SUPPLIER	Spec
1	NMOS	PCBA	PRISEMI	PNM3FD20V2	JSCJ	CJBA3134K
2	E-compass		MEMSIC	MMC5603NJ	QST	QMC6308-TR
3	Memory-256GB		FORESEE	FEUDNN256G-C2G07	BIWIN	BWU2ASV46A256G
4	Memory-64GB		FORESEE	FLXC4008G-30	BIWIN	BWMZCX32H2A-64G-X
5	nano-SIM		LCN	CAF99-06033-0305	HRD	S186-1B01F13F
6	T-card		LCN	CAF11-08136-031901	HRD	S186-1B02F13F
7	iron covering		LCN	CAF00-21134-032307	HRD	S186-2B21F13F-1
8	Type C connector		LETCON	15-16815-110	LCN	UAF05-16323-3007
9	headphone socket		LETCON	11-058126A	HRD	PH157-0B12F36M
10	G sensor		slan	2*2 12bit	sensortek	2*2 12bit
11	Proximity light sensor		Liteon	LTR-569ALS-02	sensortek	STK3335-X
12	Backlight driver		AWINIC	dfn2*2-6L	broadchip	dfn2*2-6L
13	Flash driver		AWINIC	2A DCDC	OCS	2A DCDC
14	CKDID baschip		AWINIC	±5V	OCS	±5V
15	overvoltage protection chip		broadchip	6.8V FCQFN12	AWINIC	6.8V FCQFN12
16	CKD BDS/GPS/GAL LNA		SILICONWAVE	LNA 1.5*1.0 6pin	AWINIC	LNA 1.5*1.0 6pin
17	MIC		GETTOP	2.75*1.85*0.9mm	YUTAI	2.75*1.85*0.9mm
18	LCM	LCD	HUAXIAN	incell5.56HD+	DZX	incell5.56HD+
19	Macro cam	camera	CXT	2M CSP	lianhe	2M CSP
20	Finger print	module	SYX	side fingerprint	SHENAO	side fingerprint
21	Battery		GAOYUAN	Rated：4900mAh Typical：5000mAh	FENGHUA	Rated：4900mAh Typical：5000mAh
22	Receiver		SENNOR	'0809	TUNESS	'0809
23	Vibrator		JX	0830 3.35mm	JD	0830 3.35mm
24	Charger US		BJD	5V 2A	JUWEI	5V 2A
25	Data cable		JUWEI	A-C	FKY	A-C
			JUWEI	C-C	FKY	C-C

List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	HMD	Gaoyuan	HBA5020AA	Power Rating: 3.87 Vdc;18.963 Wh;4900 mAh
Battery 2	HMD	Fenghua	HBA5020AA	Power Rating: 3.87 Vdc;18.963 Wh;4900 mAh
AC Adapter 1	HMD	Shenzhen Baijunda Electronics Co.,Ltd	HAD-020U(US-PD 20W)	I/P: 100-240 V,50~60Hz,0.6A O/P: USB-C Output:5.0V 3.0A or 9.0V 2.22A or 12.0V 1.67A 20.0W Max
AC Adapter 2	HMD	Shenzhen Baijunda Electronics Co.,Ltd	HAD-010U(US)	I/P: 100-240 V,50~60Hz,0.35A O/P: 5V 2A,10W
AC Adapter 3	HMD	Huizhou Juwei Electronics Co., Ltd.	HAD-010U(US)	I/P: 100-240 V,50~60Hz,0.35A O/P: 5V 2A,10W
Earphone	HMD	N/A	JWEP1266-H24H	N/A
USB Cable 1	HMD	JUWEI	JWUB1684-M01H	A to C
USB Cable 2	HMD	JUWEI	JWUB1688-M01H	C to C
USB Cable 3	HMD	FUKANGYUAN	FKY-23-368	A to C
USB Cable 4	HMD	FUKANGYUAN	FKY-23-369	C to C

2.2 DESCRIPTION OF TEST MODES

79 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
-	0 to 78	39	FHSS	π/4 DQPSK	2DH5

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
-	0 to 78	0, 39, 78	FHSS	π/4 DQPSK	2DH5

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture) and packet type.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
-	0 to 78	39	FHSS	GFSK	DH5

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.

☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
0 to 78	0, 39, 78	FHSS	GFSK	DH1/DH3/DH5
0 to 78	0, 39, 78	FHSS	π/4 DQPSK	2DH1/2DH3/2DH5
0 to 78	0, 39, 78	FHSS	8DPSK	3DH1/3DH3/3DH5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu
RE≥1G	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu
PLC	25deg. C, 52%RH	DC 5V By Adapter	Hanwen Xu
APCM	25deg. C, 60%RH	DC 3.87V By Battery	Hanwen Xu

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. Section 15.247

ANSI C63.10-2013

NOTE: 1. All test items have been performed and recorded as per the above standards.

2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.2.2 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photograph of the test configuration for reference.

2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Laptop	Lenovo	ThinkPad E14	HRSW00024	N/A
2	Adapter	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	102749	Feb.25,24	Feb.24,26
ELEKTRA test software	Rohde&Schwarz	ELEKTRA	NA	N/A	N/A
LISN network	Rohde&Schwarz	ENV216	102640	Feb.17,24	Feb.16,26
CABLE	Rohde&Schwarz	W61.01	N/A	Apr.28,24	Apr.27,25
CABLE	Rohde&Schwarz	W601	N/A	Apr.28,24	Apr.27,25

NOTE: 1. The test was performed in CE shielded room.

2. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

3.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

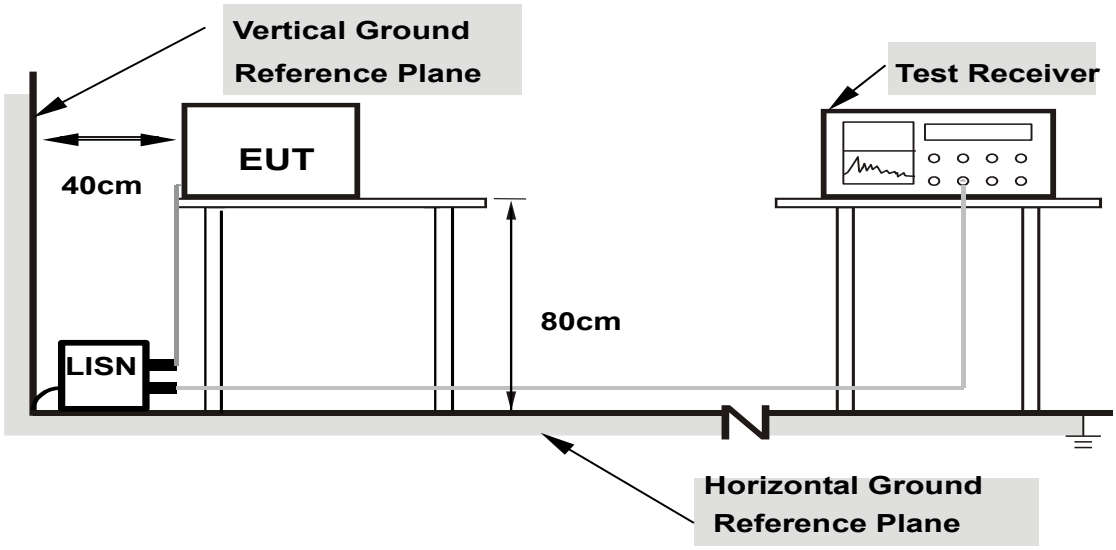
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

a. Turned on the power and connected of all equipment.

b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

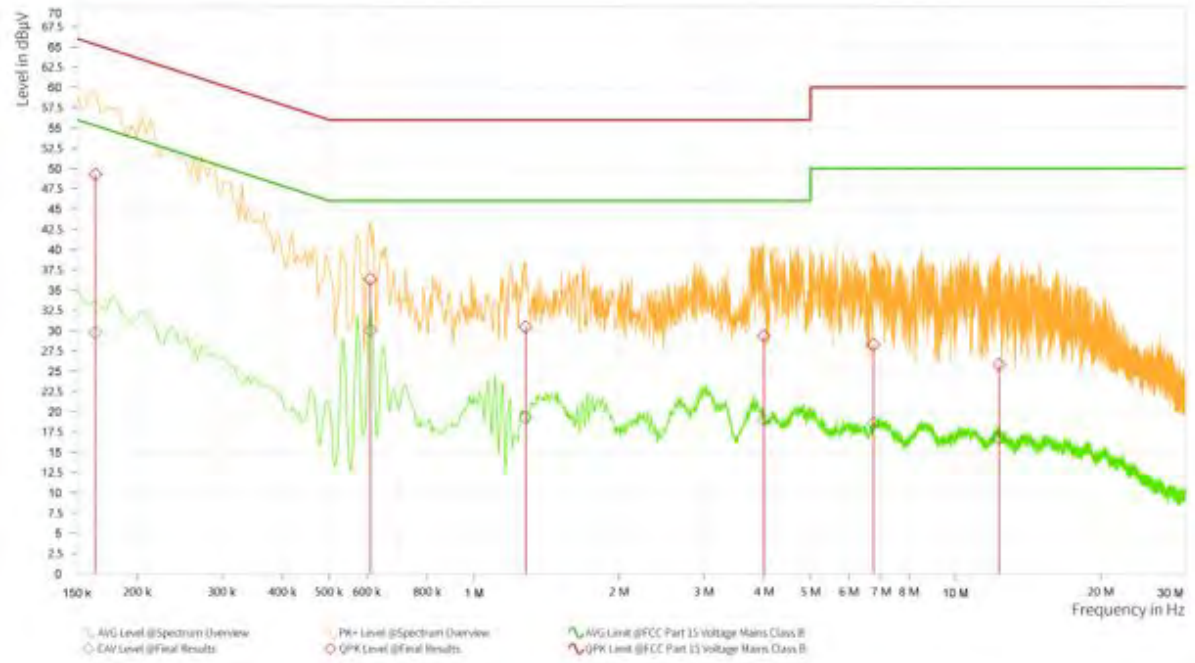
3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	26deg. C, 51%RH
Tested By	Hanwen Xu		

Rg	Frequency [MHz]	QPK Level [dBuV]	QPK Limit [dBuV]	QPK Margin [dB]	CAV Level [dBuV]	CAV: AVG Limit [dBuV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.164	49.27	65.28	16.01	29.74	55.28	25.54	12.41	L1	9.000
1	0.609	36.32	56.00	19.68	30.06	46.00	15.94	11.74	L1	9.000
1	1.280	30.46	56.00	25.54	19.30	46.00	26.70	11.75	L1	9.000
1	3.998	29.35	56.00	26.65	18.97	46.00	27.03	11.78	L1	9.000
1	6.752	28.24	60.00	31.76	18.52	50.00	31.48	11.80	L1	9.000
1	12.305	25.82	60.00	34.18	16.74	50.00	33.26	11.84	L1	9.000

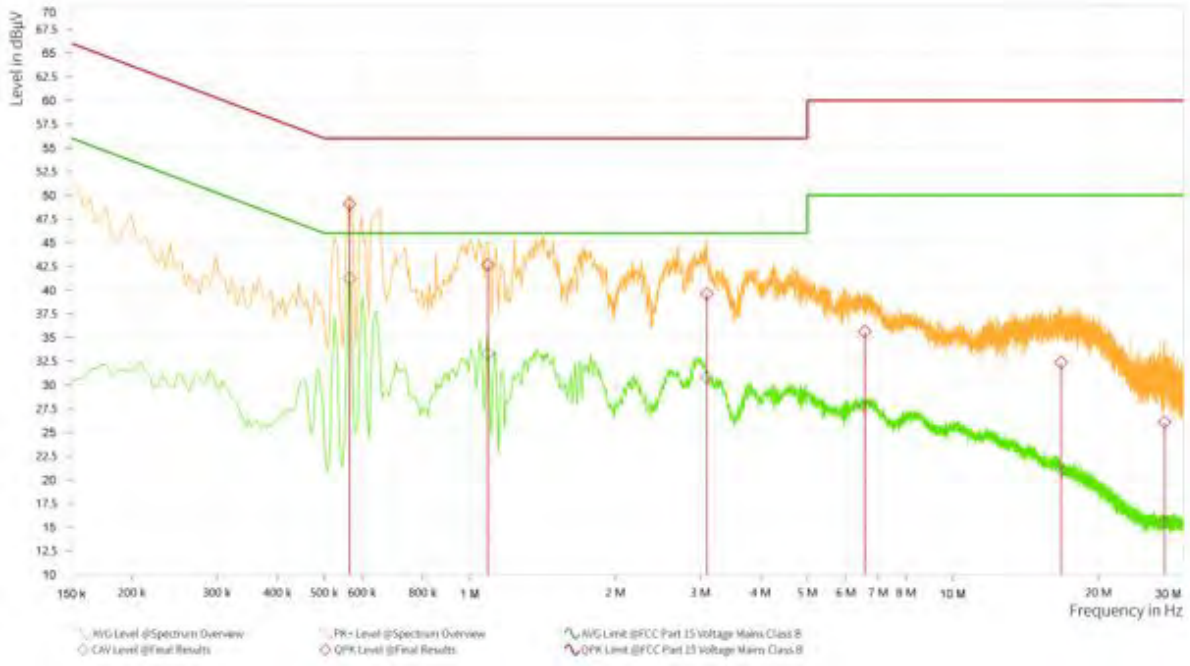
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value - Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



Frequency Range	150KHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	26deg. C, 51%RH
Tested By	Hanwen Xu		

Rg	Frequency [MHz]	QPK Level [dBuV]	QPK Limit [dBuV]	QPK Margin [dB]	CAV Level [dBuV]	CAV: AVG Limit [dBuV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.564	49.07	56.00	6.93	41.21	46.00	4.79	12.77	N	9.000
1	1.091	42.66	56.00	13.34	33.30	46.00	12.70	12.73	N	9.000
1	3.098	39.61	56.00	16.39	30.80	46.00	15.20	12.75	N	9.000
1	6.572	35.61	60.00	24.39	27.69	50.00	22.31	12.77	N	9.000
1	16.769	32.36	60.00	27.64	21.05	50.00	28.95	12.83	N	9.000
1	27.447	26.08	60.00	33.92	15.54	50.00	34.46	12.88	N	9.000

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value - Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,24	Feb.15,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,24	Feb.24,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,24	Feb.27,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,24	Feb.22,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,24	Feb.22,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,24	Apr.27,25
CABLE	R&S	W12.14	N/A	Apr.28,24	Apr.27,25

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Chamber.

3.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

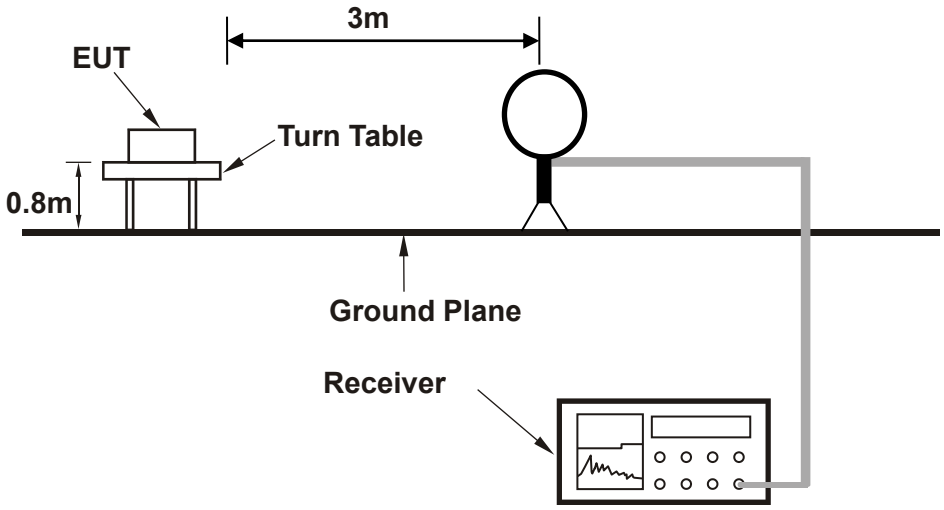
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit.
5. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

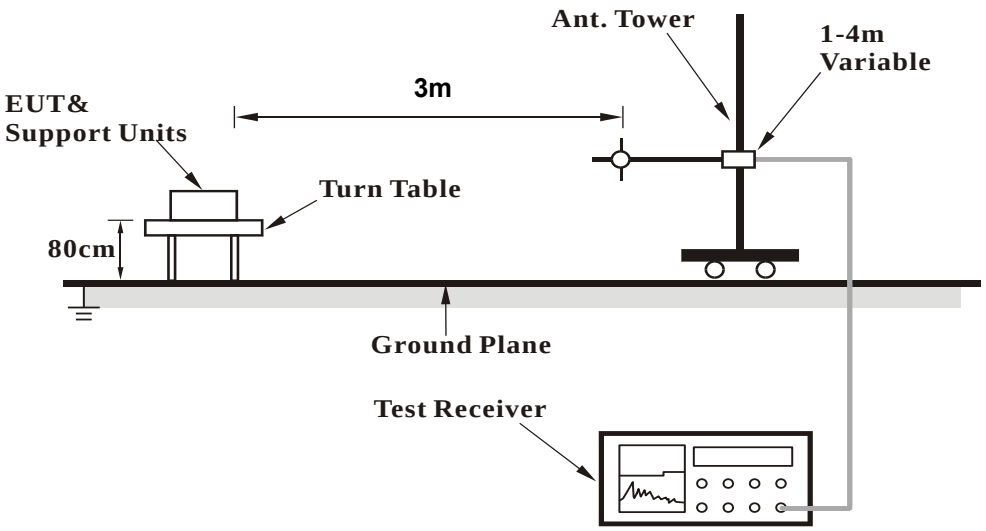
No deviation.

3.2.5 TEST SETUP

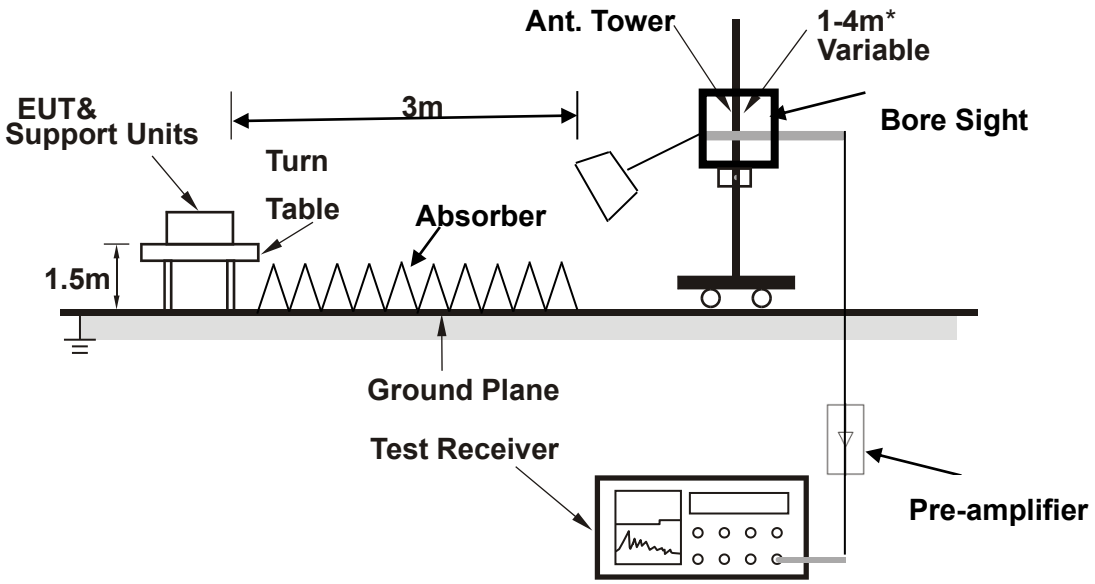
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.2.6 EUT OPERATING CONDITIONS

a. Set the EUT under full load condition and placed them on a testing table.

b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

c. The necessary accessories enable the EUT in full functions.

3.2.7 TEST RESULTS

NOTE ：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

1GHz – 25GHz: (Scan with GFSK, π/4-DQPSK, 8DPSK mode, the worst case is π/4-DQPSK Mode)

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

BT_π/4-DQPSK

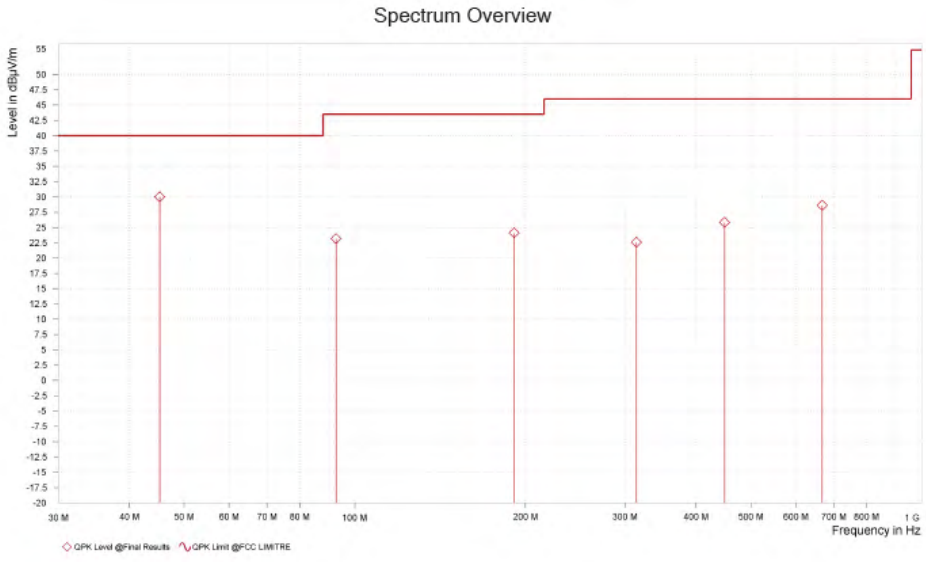
CHANNEL	Channel 39	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	45.278	29.98	40.00	10.02	-3.73	H	4.9	1.00	120.000
1	92.662	23.14	43.50	20.36	-7.42	H	166.6	1.00	120.000
1	191.020	24.11	43.50	19.39	-5.99	H	166.6	1.00	120.000
1	314.016	22.58	46.00	23.42	-1.32	H	166.6	1.00	120.000
1	449.719	25.81	46.00	20.19	2.96	H	355	2.00	120.000
1	668.648	28.59	46.00	17.41	3.30	H	1	2.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Read Level(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission level.



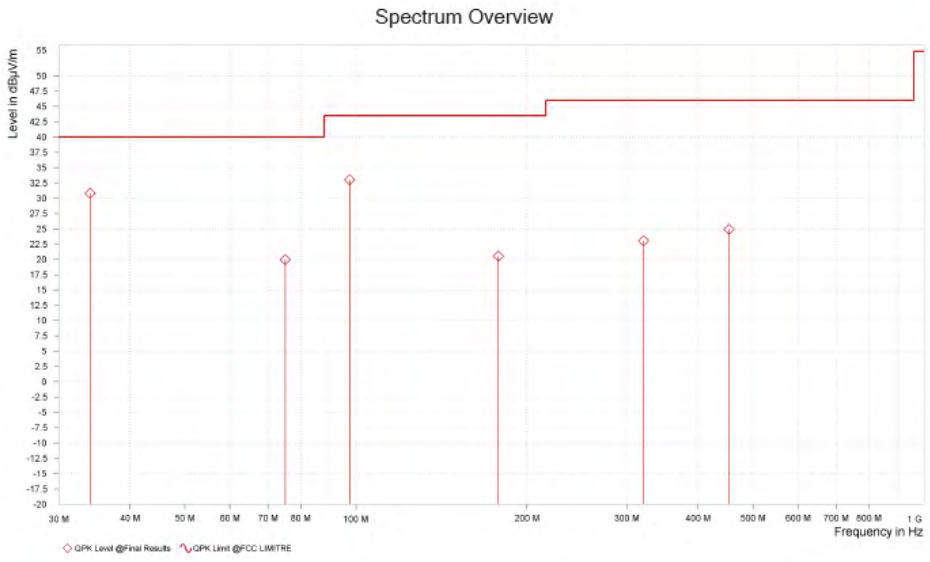
CHANNEL	Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	34.026	30.77	40.00	9.23	-8.40	V	169	1.00	120.000
1	75.105	19.95	40.00	20.05	-11.49	V	341.4	1.00	120.000
1	97.512	32.98	43.50	10.52	-6.52	V	359	1.00	120.000
1	178.119	20.50	43.50	23.00	-7.31	V	341.4	1.00	120.000
1	320.952	23.02	46.00	22.98	-0.89	V	341.4	1.00	120.000
1	453.599	24.92	46.00	21.08	2.69	V	169	1.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Read Level(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Limit value – Emission level.



ABOVE 1GHz WORST-CASE DATA:

Note: All other emissions that greater than 20dB below the limit were not recorded.

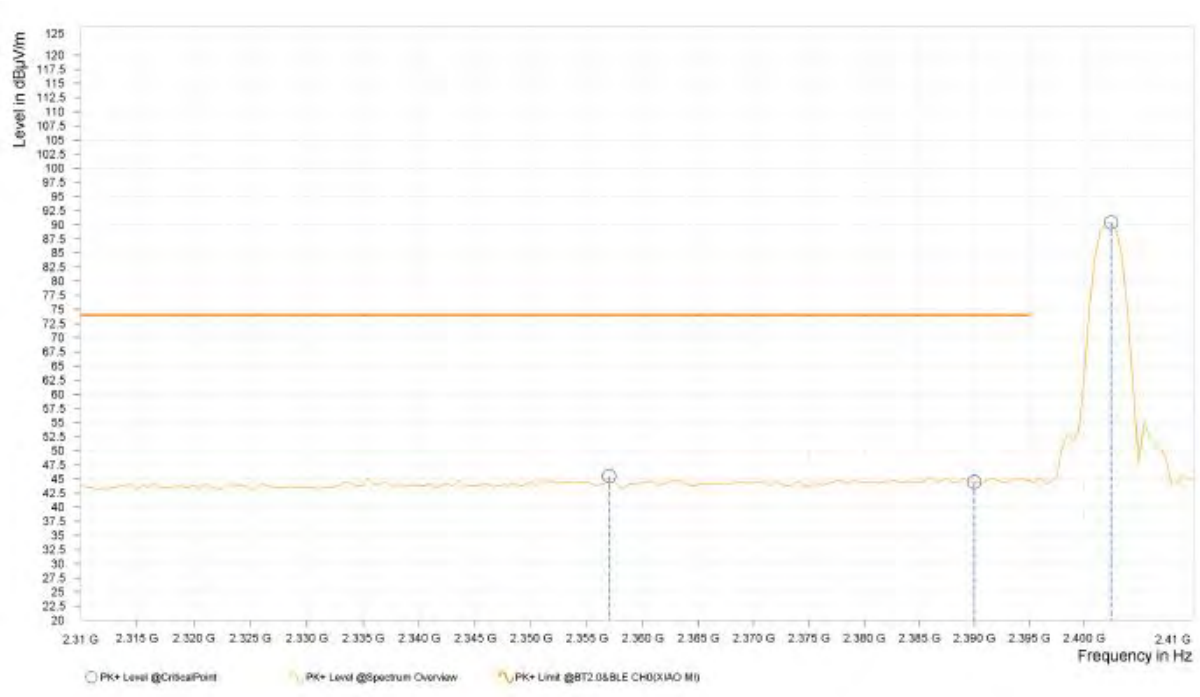
BT_π/4-DQPSK

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.000	31.21	54.00	22.79	5.71	H	359	2.00
5	2,390.000	31.15	54.00	22.85	5.77	H	77.4	2.00
5	2,402.500	90.26			5.86	H	137.9	1.00

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,389.500	45.51	74.00	28.49	5.77	H	348.1	1.00
5	2,390.000	44.85	74.00	29.15	5.77	H	359	1.00
5	2,402.500	96.71			5.86	H	139.2	1.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,380.500	31.18	54.00	22.82	5.70	V	67.4	1.00
5	2,390.000	31.14	54.00	22.86	5.77	V	359	2.00
5	2,402.500	83.87			5.86	V	139.1	1.00



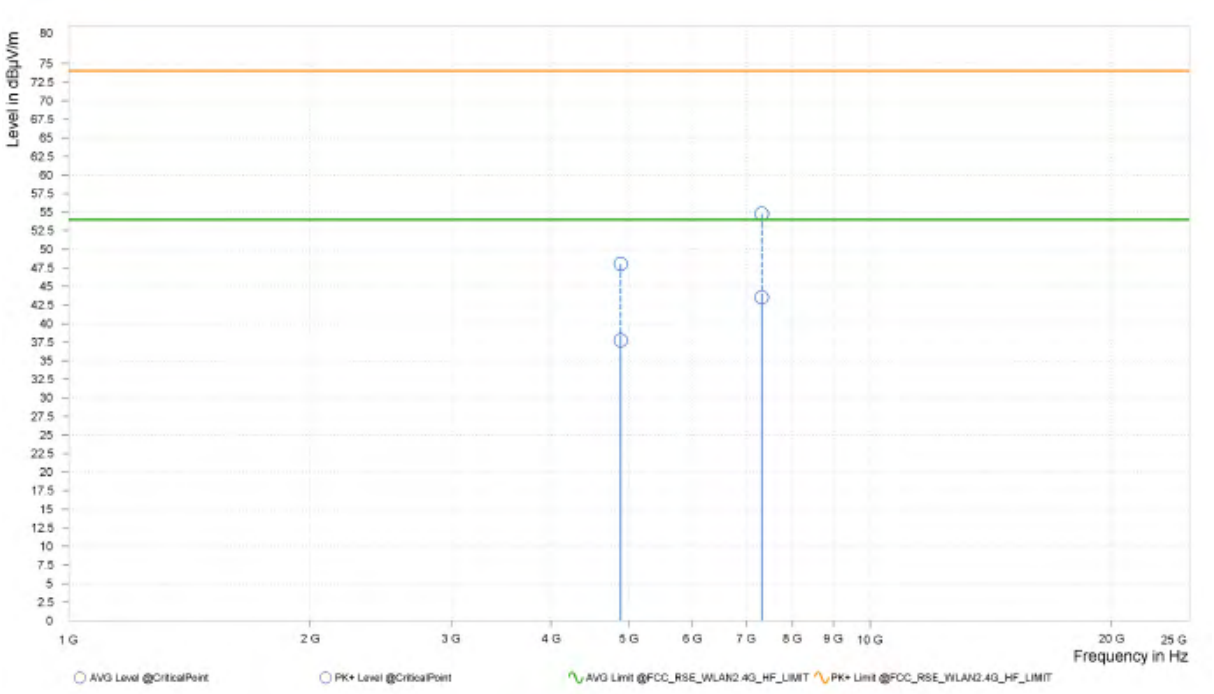
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,357.000	45.51	74.00	28.49	5.60	V	223.3	2.00
5	2,390.000	44.46	74.00	29.54	5.77	V	355.8	2.00
5	2,402.500	90.39			5.86	V	139.1	1.00

REMARKS:

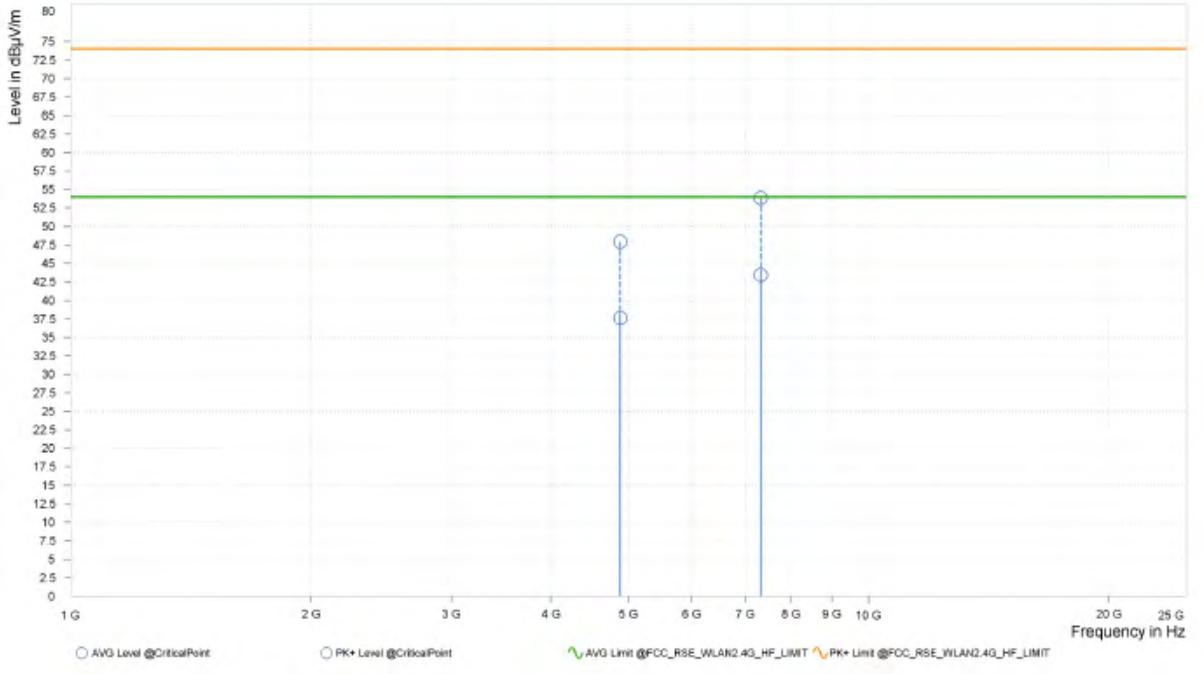
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value – Emission level.
2. 2402MHz: Fundamental frequency.

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4.882.000	48.01	74.00	25.99	37.76	54.00	16.24	13.54	H	359.1	1.00
2	7.323.000	54.76	74.00	19.24	43.52	54.00	10.48	18.91	H	8.2	2.00



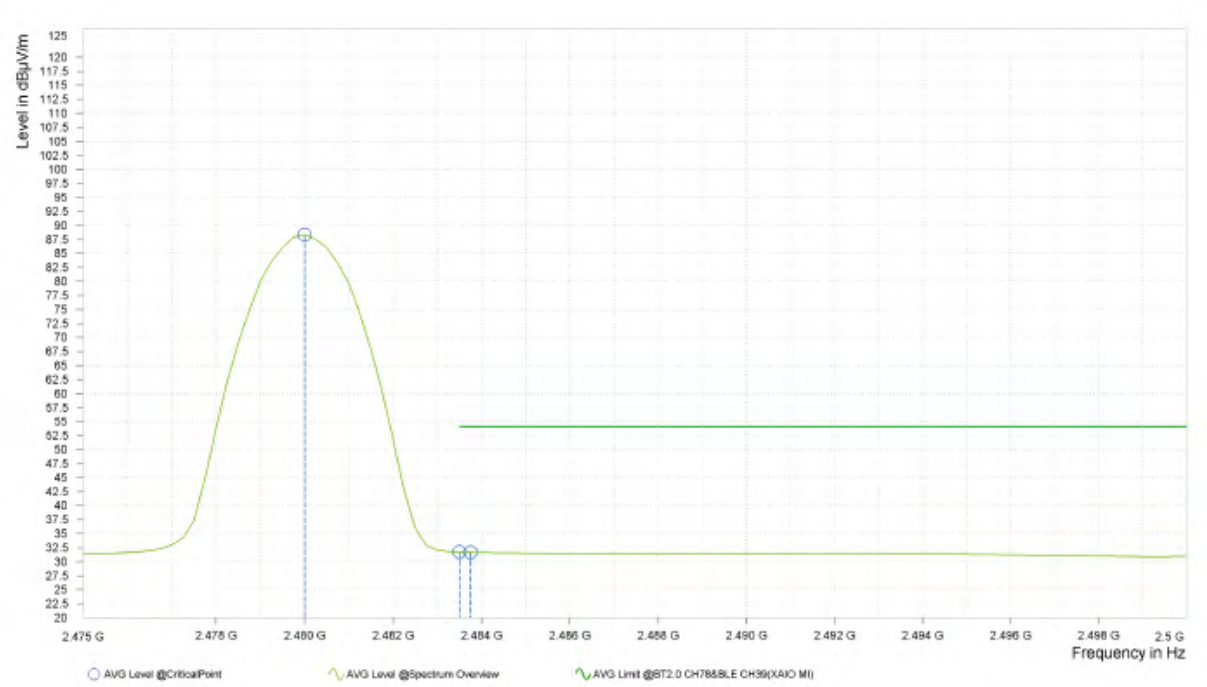
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,882.000	47.94	74.00	26.06	37.63	54.00	16.37	13.54	V	271	2.00
2	7,323.000	53.85	74.00	20.15	43.43	54.00	10.57	18.91	V	0.9	2.00



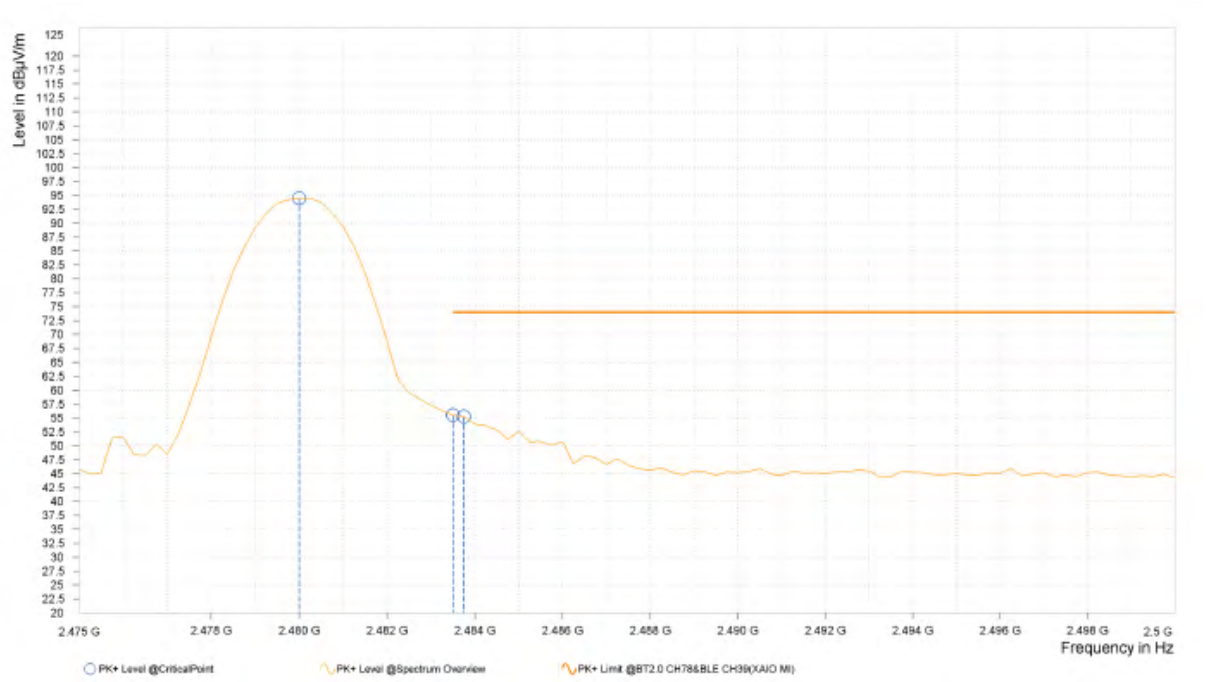
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value – Emission level.
2. 2441MHz: Fundamental frequency.

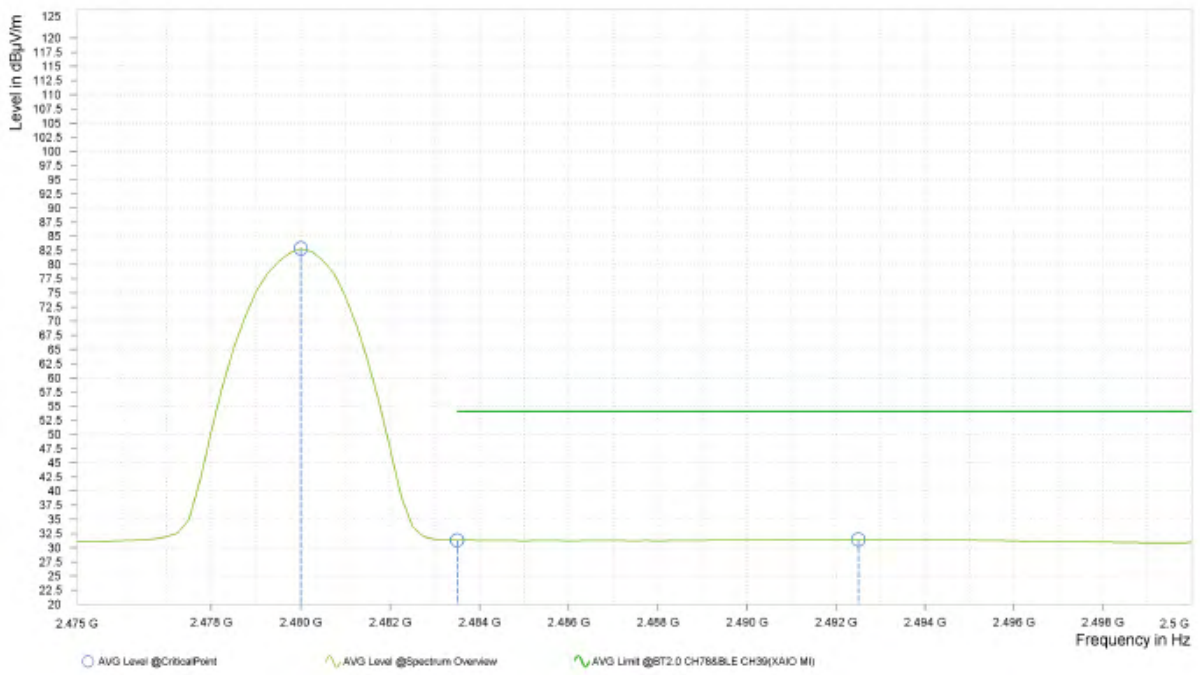
CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



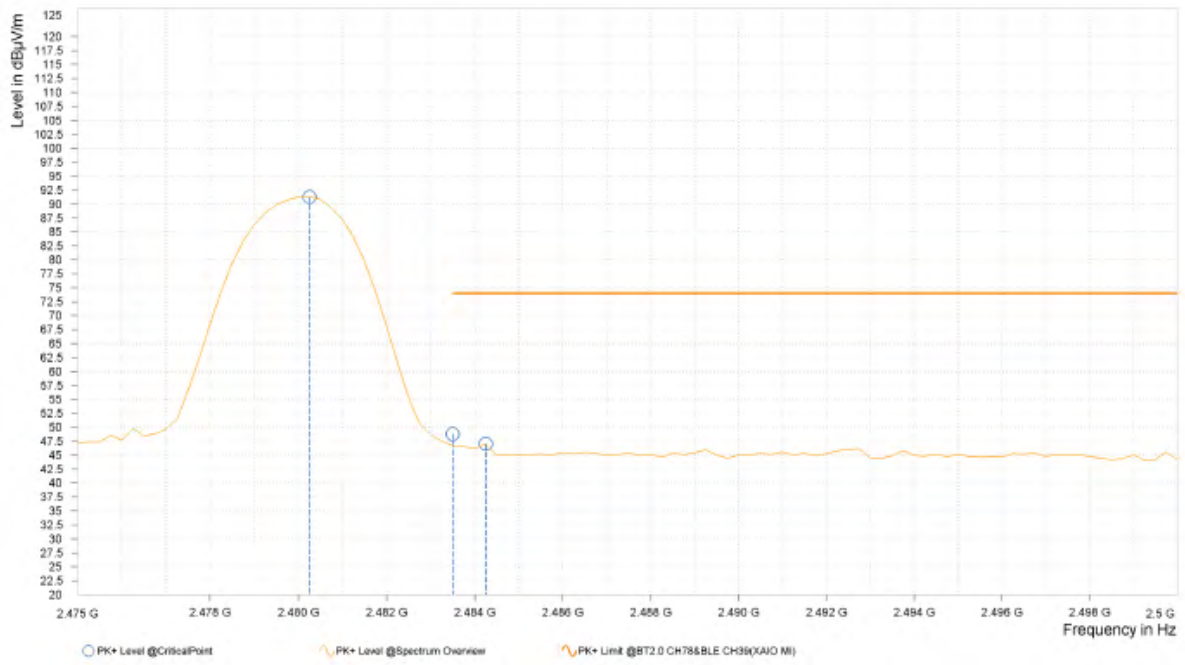
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	88.33			5.89	H	67.9	2.00
6	2,483.500	31.71	54.00	22.29	5.91	H	4.9	1.00
6	2,483.750	31.66	54.00	22.34	5.92	H	4.9	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	94.49			5.89	H	69	2.00
6	2,483.500	55.55	74.00	18.45	5.91	H	359.1	1.00
6	2,483.750	55.27	74.00	18.73	5.92	H	359.1	1.00



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	82.84			5.89	V	5	1.00
6	2,483.500	31.33	54.00	22.67	5.91	V	93.7	1.00
6	2,492.500	31.41	54.00	22.59	5.97	V	355.1	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.250	91.29			5.89	V	167	2.00
6	2,483.500	48.79	74.00	25.21	5.91	V	1	2.00
6	2,484.250	47.04	74.00	26.96	5.92	V	1	2.00

REMARKS:

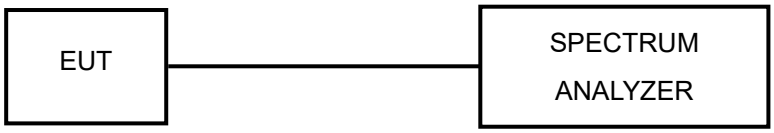
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value – Emission level.
2. 2480MHz: Fundamental frequency.

3.3 NUMBER OF HOPPING FREQUENCY USED

3.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 channels frequencies, and should be equally spaced.

3.3.2 TEST SETUP



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Feb.25,24	Feb.24,26
Open Switch and Control Unit	R&S	OSP-B157W 8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,24	Feb.15,26
Signal Generator	R&S	SMB100A03	182185	Feb.16,24	Feb.15,26
Wideband Radio Communication	R&S	CMW500	169399	Jun.26,22	Jun.25,24
Hygrothermograph	DELI	20210528	SZ015	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,24	Apr.27,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,24	Apr.27,25
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26

NOTE:

1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

3.3.4 TEST PROCEDURES

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.

d. Set the SA on View mode and then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were completed.

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 TEST RESULTS

There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

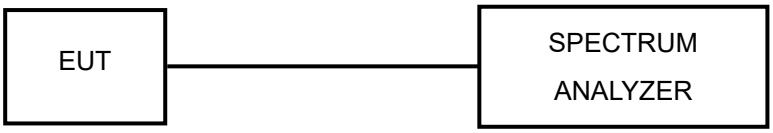
Please Refer to Appendix Of this test report.

3.4 DWELL TIME ON EACH CHANNEL

3.4.1 LIMIT OF DWELL TIME USED

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

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.4.4 TEST PROCEDURES

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.

d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.

e. Repeat above procedures until all different time-slot modes have been completed.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 TEST RESULTS

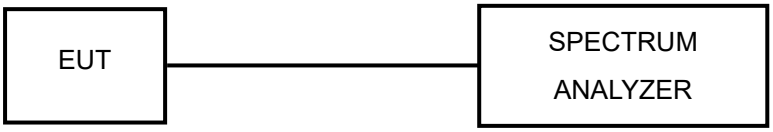
Please Refer to Appendix Of this test report.

3.5 CHANNEL BANDWIDTH

3.5.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dBbandwidth of hopping channel shell be a minimum limit for the hopping channel separation.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.4 TEST PROCEDURE

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.5.7 TEST RESULTS

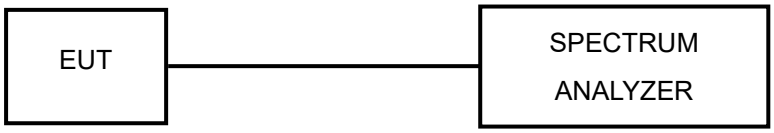
Please Refer to Appendix Of this test report.

3.6 HOPPING CHANNEL SEPARATION

3.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25kHz or two-third of 20dB hopping channel bandwidth (whichever is greater).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.6.4 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 TEST RESULTS

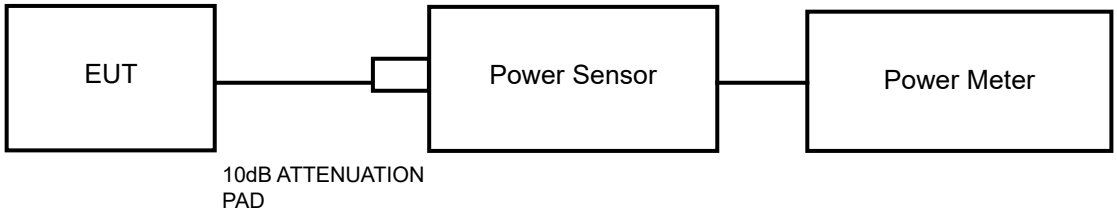
Please Refer to Appendix Of this test report.

3.7 MAXIMUM OUTPUT POWER

3.7.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 125mW.

3.7.2 TEST SETUP



3.7.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.7.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

3.7.5 DEVIATION FROM TEST STANDARD

No deviation.

3.7.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.7.7 TEST RESULTS

3.7.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.

3.7.7.2 Average Output Power (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

Please Refer to Appendix Of this test report.

3.8 OUT OF BAND MEASUREMENT

3.8.1 LIMITS OF OUT OF BAND MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz RBW).

3.8.2 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Spectrum Analyzer was set RBW to 100 kHz and VBW to 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. Detector = PEAK and Trace mode = Max Hold. The band edges was measured and recorded.

3.8.4 DEVIATION FROM TEST STANDARD

No deviation.

3.8.5 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.8.6 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix Of this test report.

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

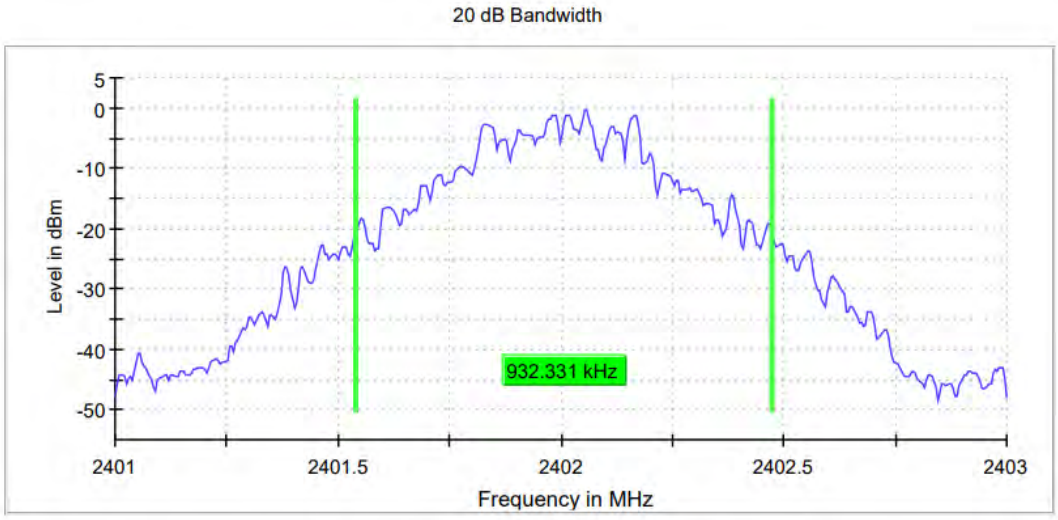
6 APPENDIX

20DB EMISSION BANDWIDTH

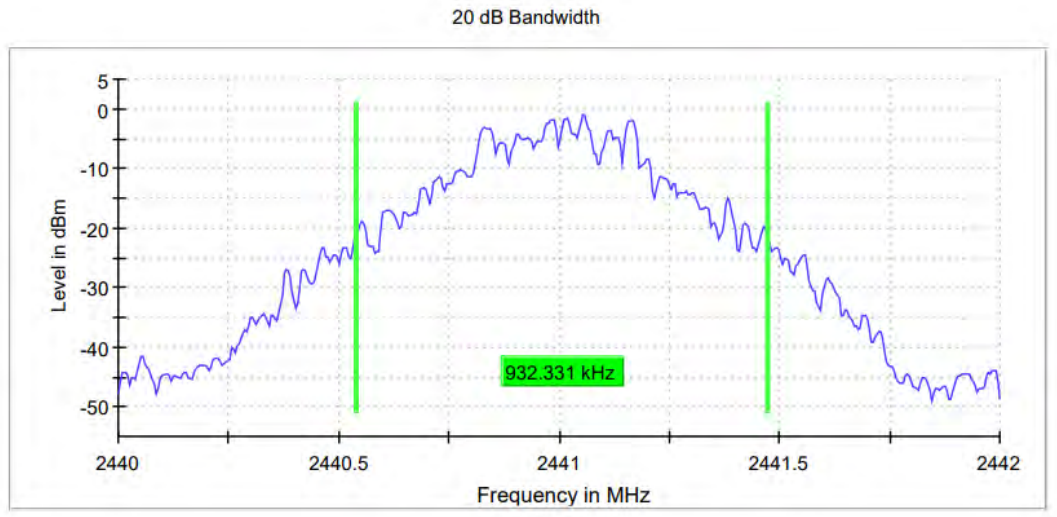
TEST RESULT

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.932	2401.541	2402.473	---	PASS
		2441	0.932	2440.541	2441.473	---	PASS
		2480	0.932	2479.541	2480.473	---	PASS
2DH5	Ant1	2402	1.298	2401.361	2402.659	---	PASS
		2441	1.298	2440.361	2441.659	---	PASS
		2480	1.293	2479.361	2480.654	---	PASS
3DH5	Ant1	2402	1.273	2401.351	2402.624	---	PASS
		2441	1.273	2440.351	2441.624	---	PASS
		2480	1.273	2479.351	2480.624	---	PASS

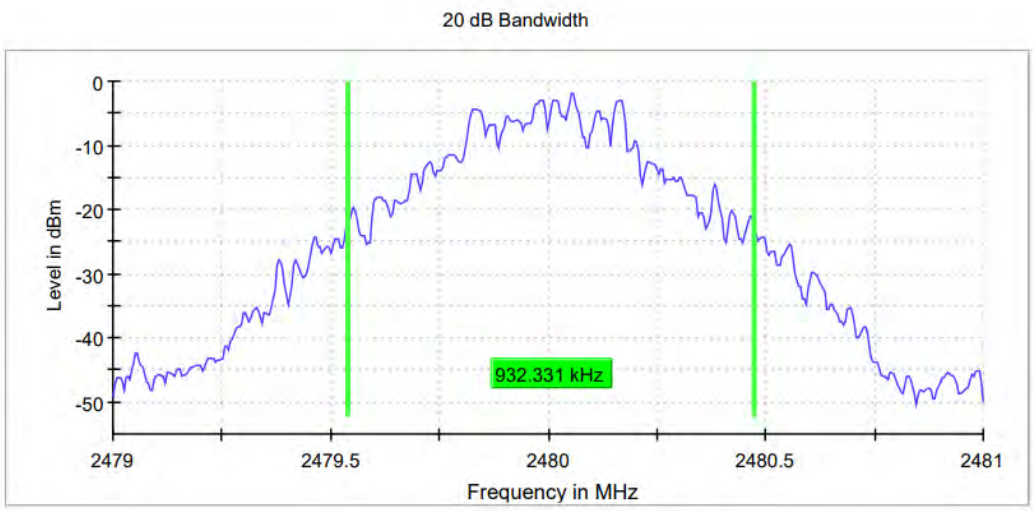
TEST GRAPHS



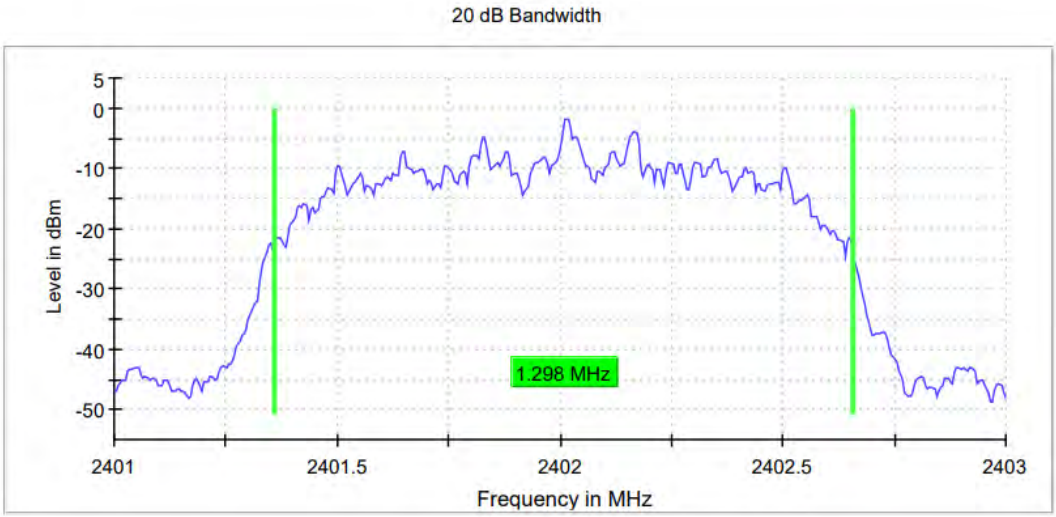
DH5_Ant1_2402



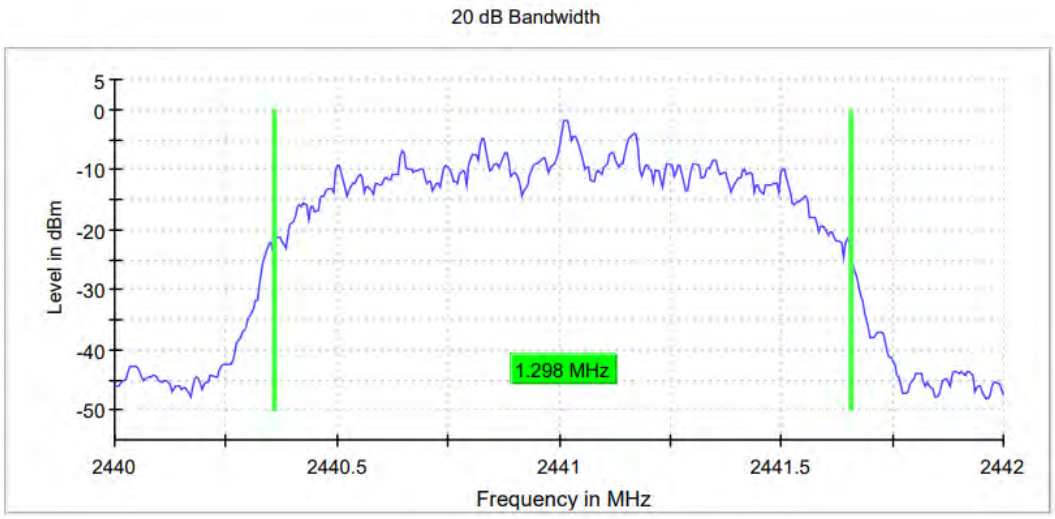
DH5_Ant1_2441



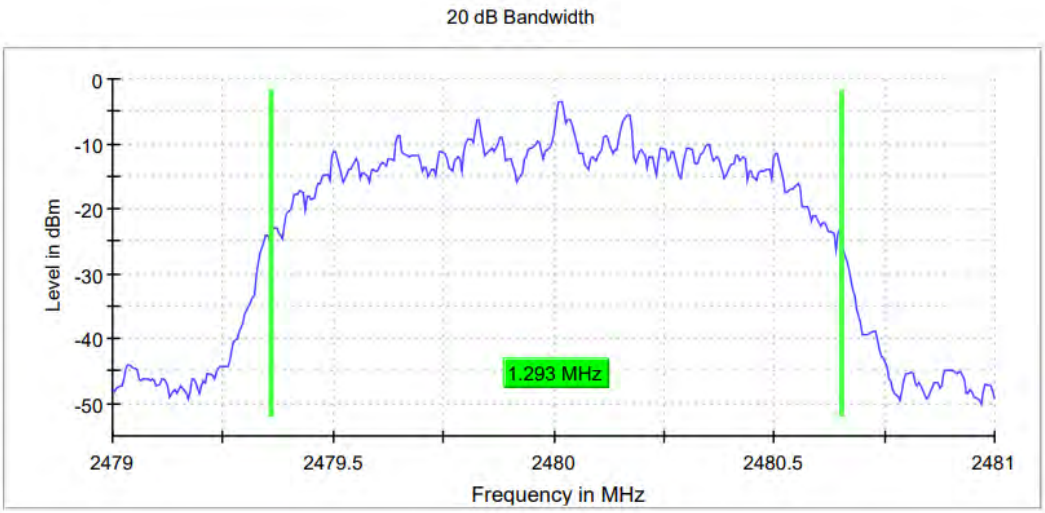
DH5_Ant1_2480



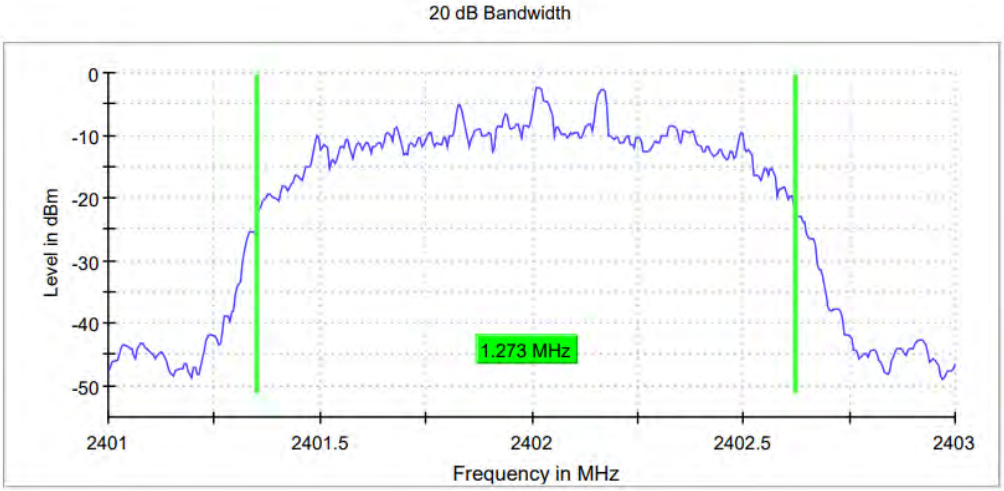
2DH5_Ant1_2402



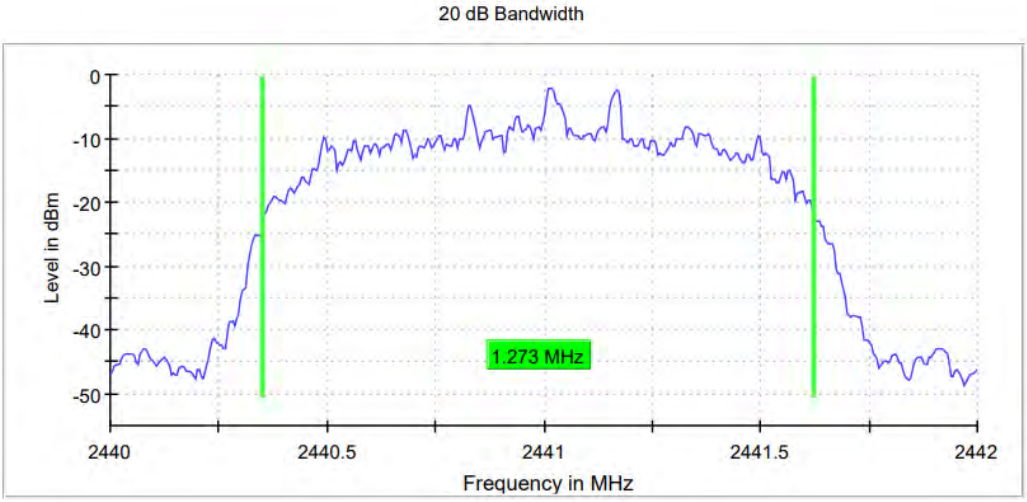
2DH5_Ant1_2441



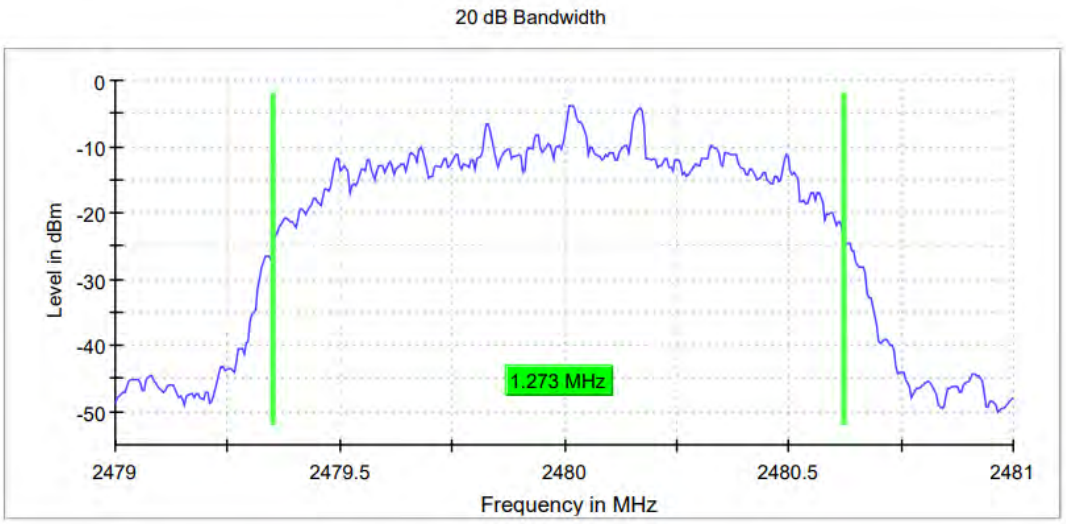
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

RBW 10.000 kHz

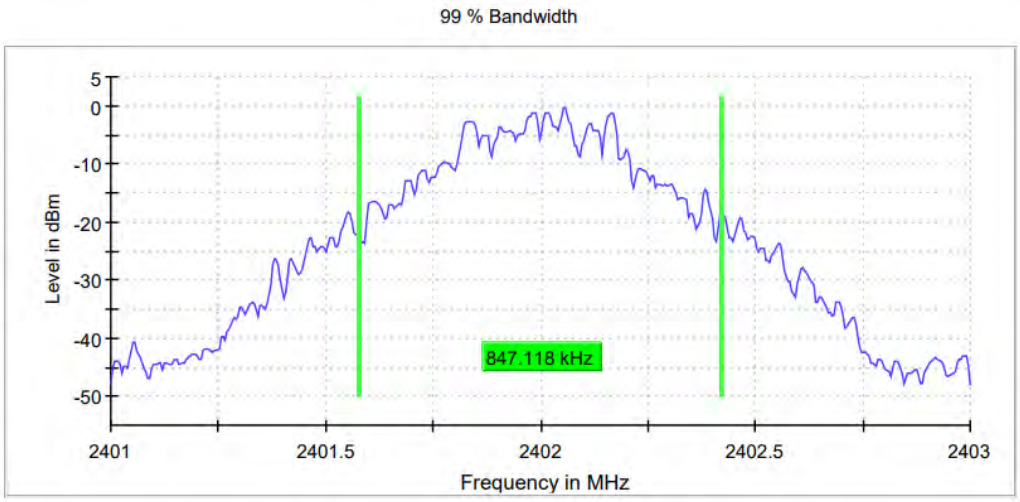
VBW 30.000 kHz

OCCUPIED CHANNEL BANDWIDTH

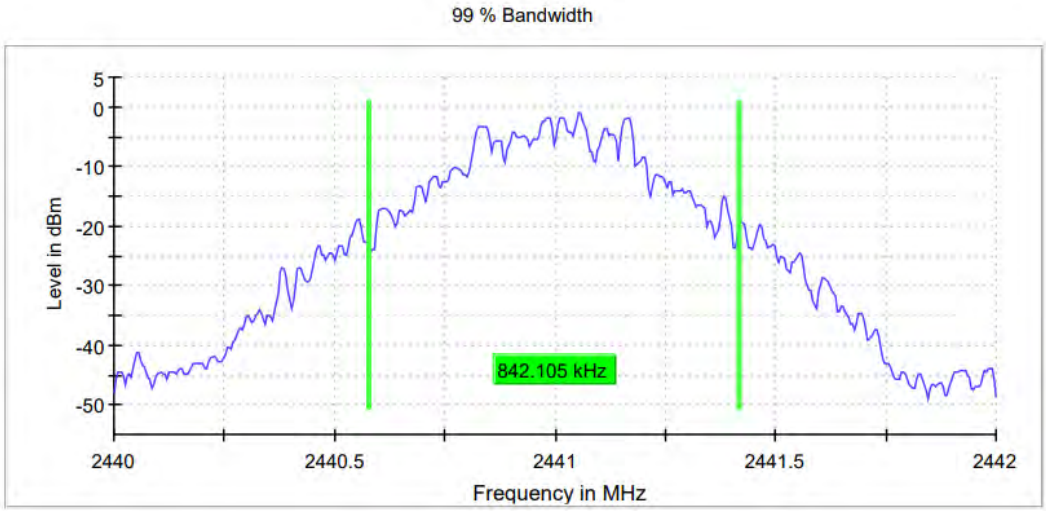
TEST RESULT

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.847	2401.576	2402.423	---	PASS
		2441	0.842	2440.576	2441.418	---	PASS
		2480	0.847	2479.571	2480.418	---	PASS
2DH5	Ant1	2402	1.178	2401.411	2402.589	---	PASS
		2441	1.173	2440.411	2441.584	---	PASS
		2480	1.173	2479.411	2480.584	---	PASS
3DH5	Ant1	2402	1.178	2401.406	2402.584	---	PASS
		2441	1.178	2440.406	2441.584	---	PASS
		2480	1.178	2479.406	2480.584	---	PASS

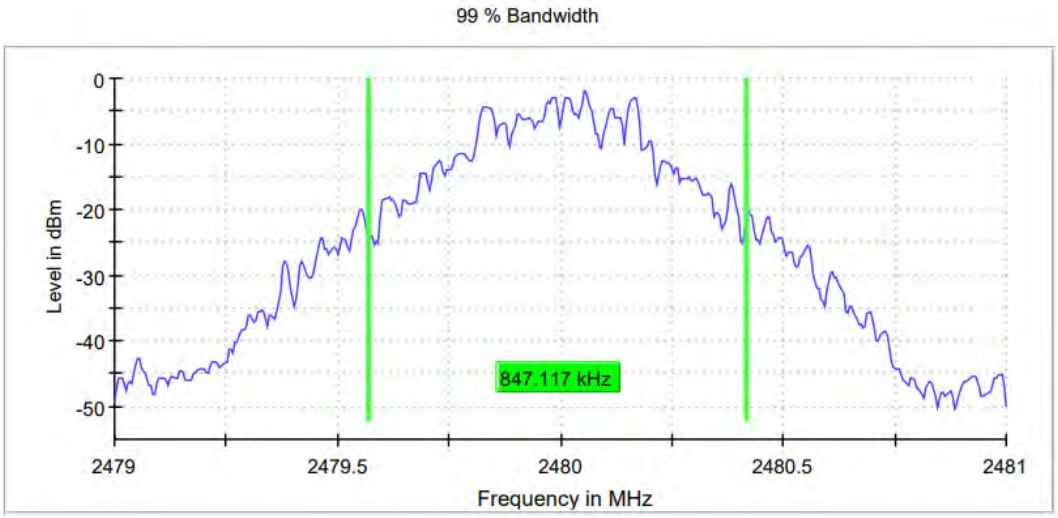
TEST GRAPHS



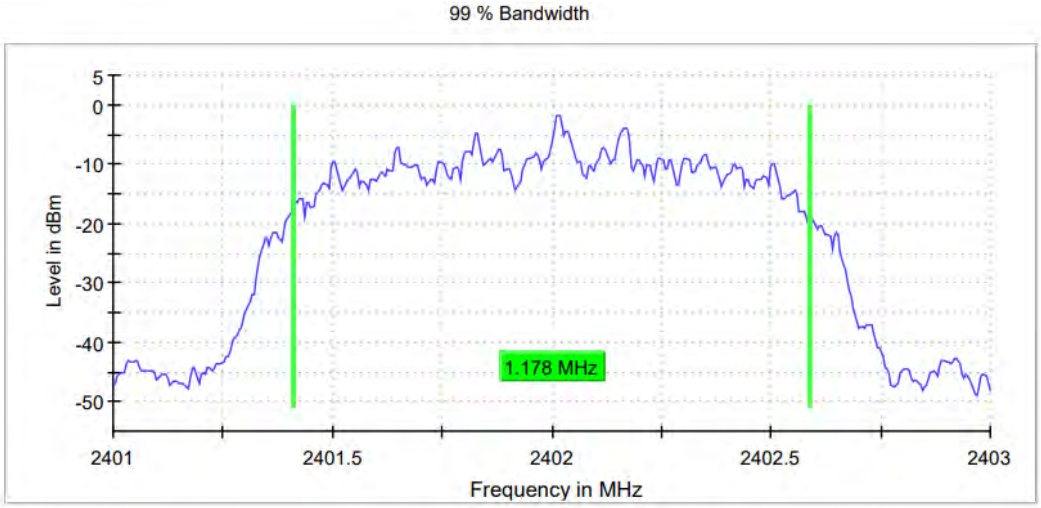
DH5_Ant1_2402



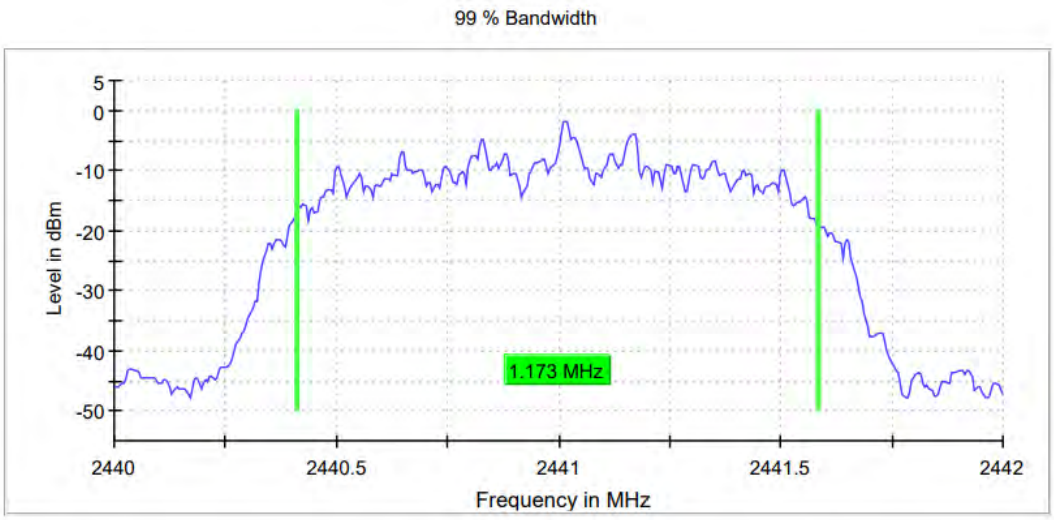
DH5_Ant1_2441



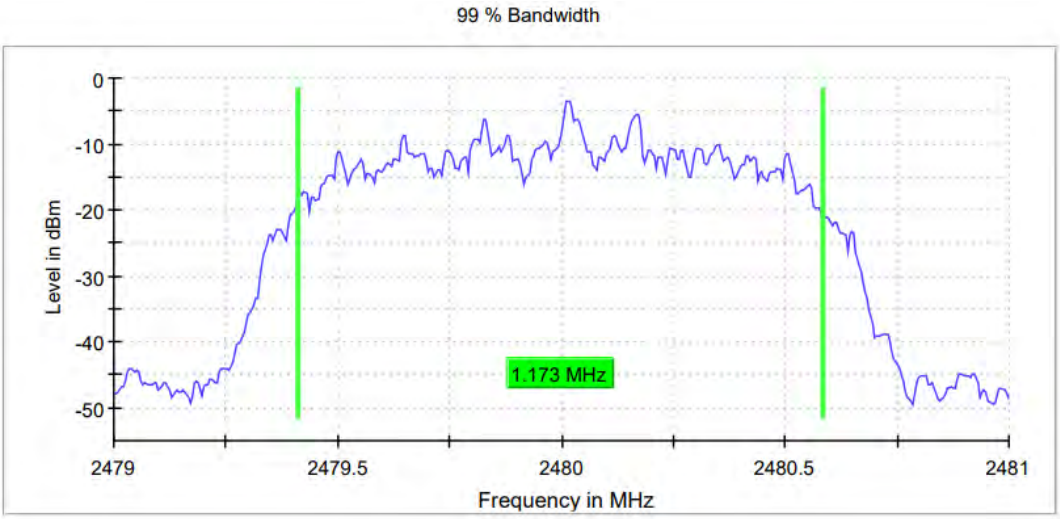
DH5_Ant1_2480



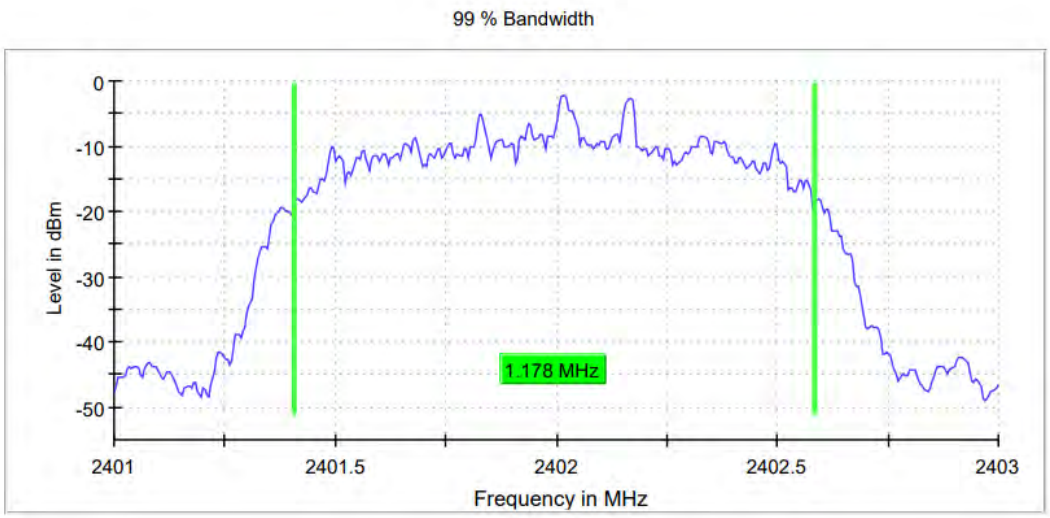
2DH5_Ant1_2402



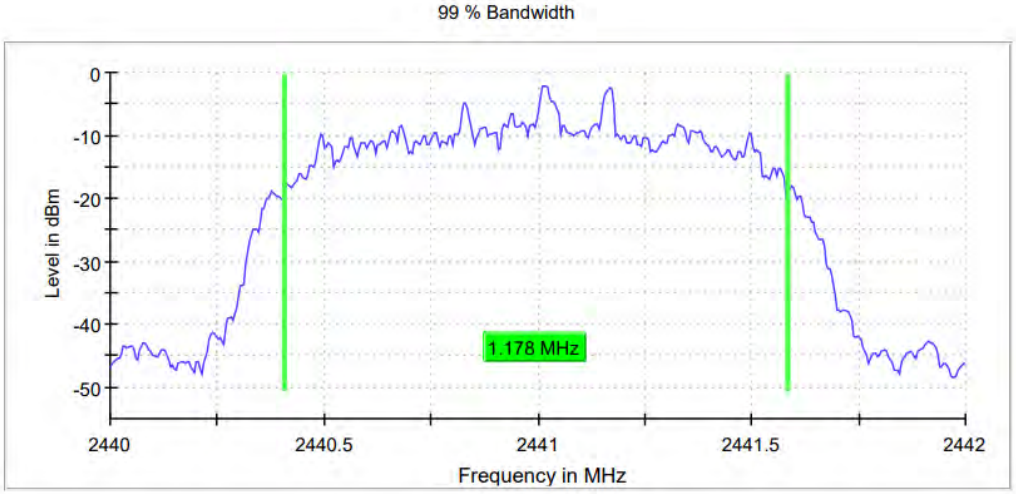
2DH5_Ant1_2441



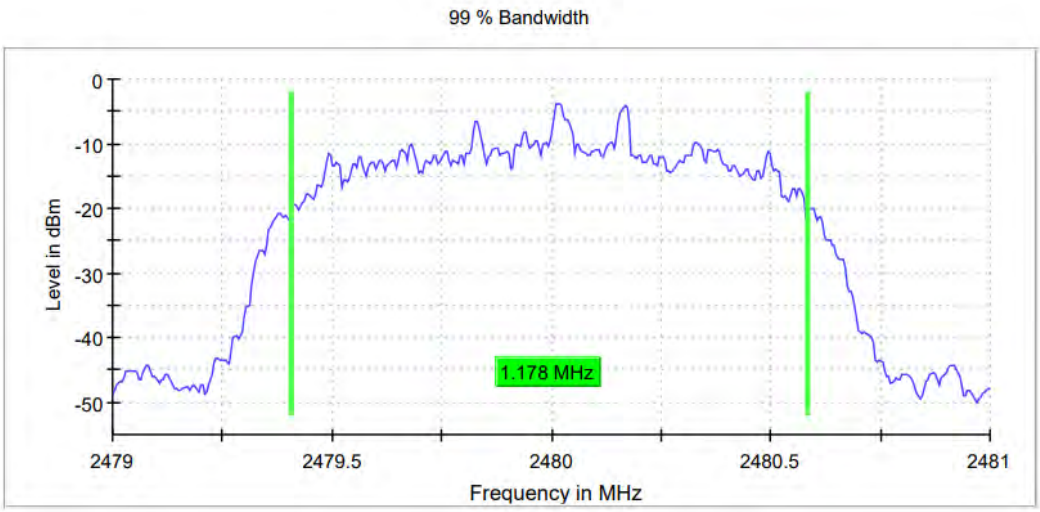
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

RBW 10.000 kHz

VBW 30.000 kHz

MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT

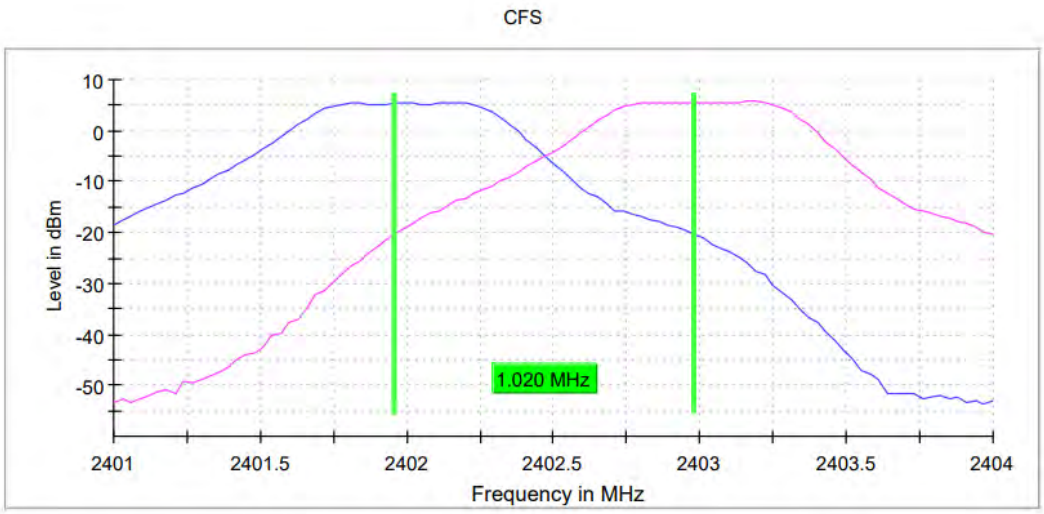
TestMode	Antenna	Frequency [MHz]	Average power [dBm]	Peak Power [dBm]	Peak Powert [mw]	Conducted Limit [dBm]	Verdict
DH5	Ant1	2402	5.11	5.99	3.97	≤20.97	PASS
		2441	4.49	5.42	3.48	≤20.97	PASS
		2480	3.21	4.16	2.61	≤20.97	PASS
2DH5	Ant1	2402	2.88	6.11	4.08	≤20.97	PASS
		2441	2.84	6.08	4.06	≤20.97	PASS
		2480	1.66	4.84	3.05	≤20.97	PASS
3DH5	Ant1	2402	3.50	6.98	4.99	≤20.97	PASS
		2441	3.23	6.77	4.75	≤20.97	PASS
		2480	1.59	5.09	3.22	≤20.97	PASS

CARRIER FREQUENCY SEPARATION

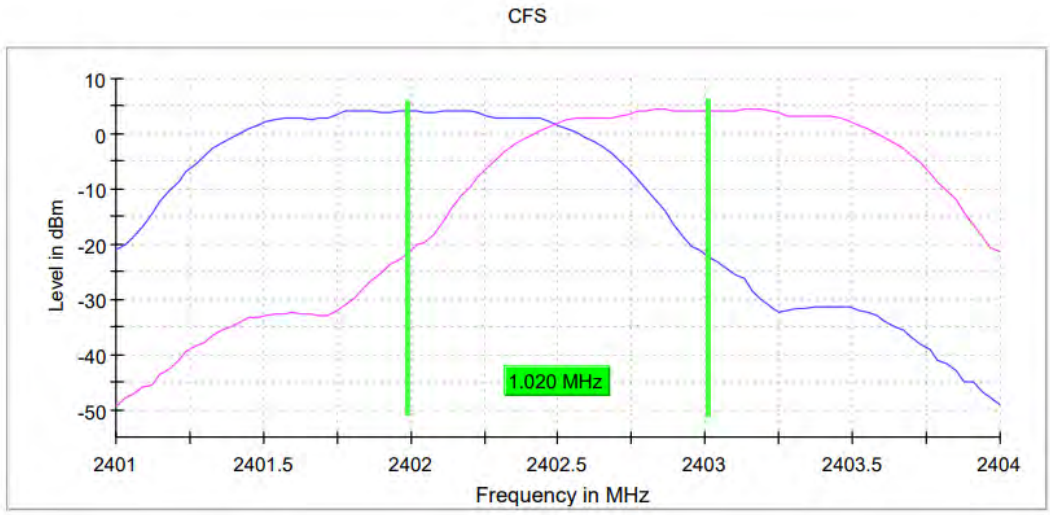
TEST RESULT

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Hop	1.020	≥0.6321	PASS
2DH5	Ant1	Hop	1.020	≥0.8743	PASS
3DH5	Ant1	Hop	1.020	≥0.8636	PASS

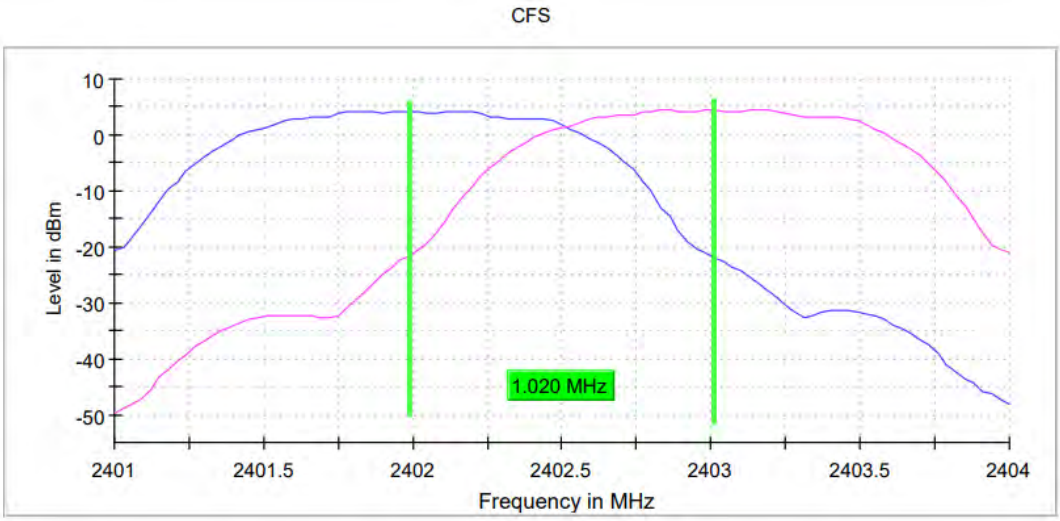
TEST GRAPHS



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

RBW 300.000 kHz

VBW 300.000 kHz

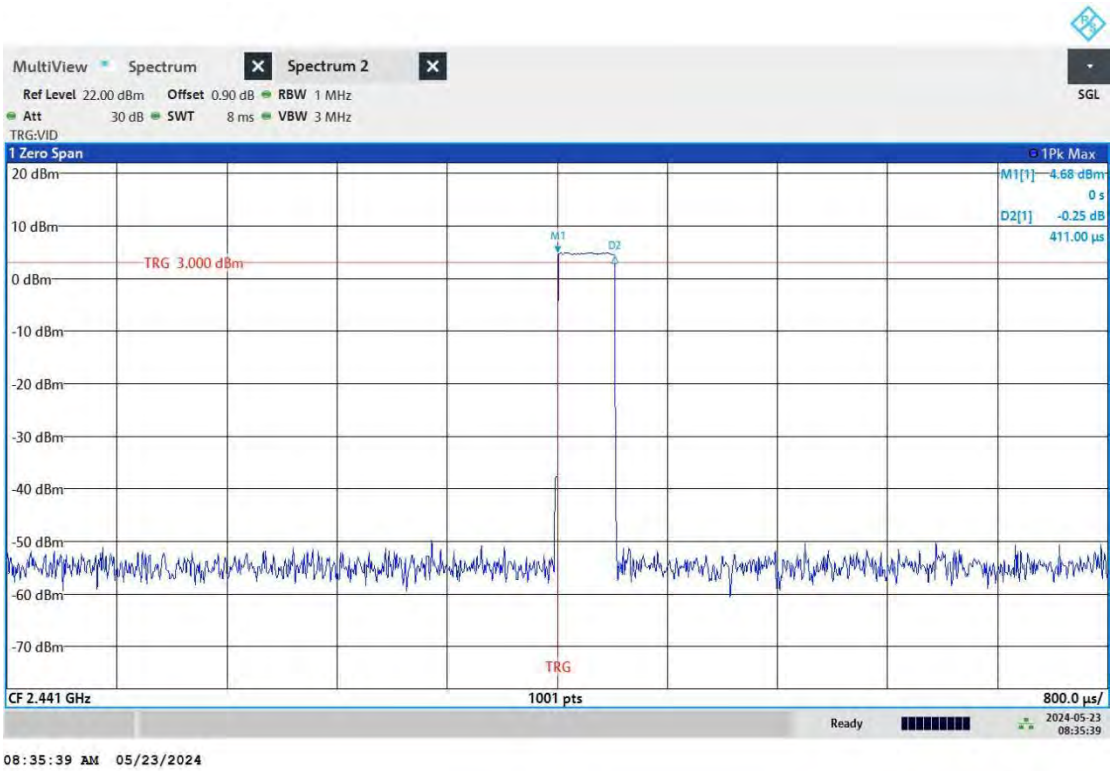
TIME OF OCCUPANCY

TEST RESULT

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.411	254	104.394	≤0.4	PASS
DH3	Ant1	Hop	1.667	158	263.386	≤0.4	PASS
DH5	Ant1	Hop	2.915	120	349.800	≤0.4	PASS
2DH1	Ant1	Hop	0.395	257	101.515	≤0.4	PASS
2DH3	Ant1	Hop	1.659	160	265.440	≤0.4	PASS
2DH5	Ant1	Hop	2.907	103	299.421	≤0.4	PASS
3DH1	Ant1	Hop	0.395	265	104.675	≤0.4	PASS
3DH3	Ant1	Hop	1.651	172	283.972	≤0.4	PASS
3DH5	Ant1	Hop	2.907	108	313.956	≤0.4	PASS

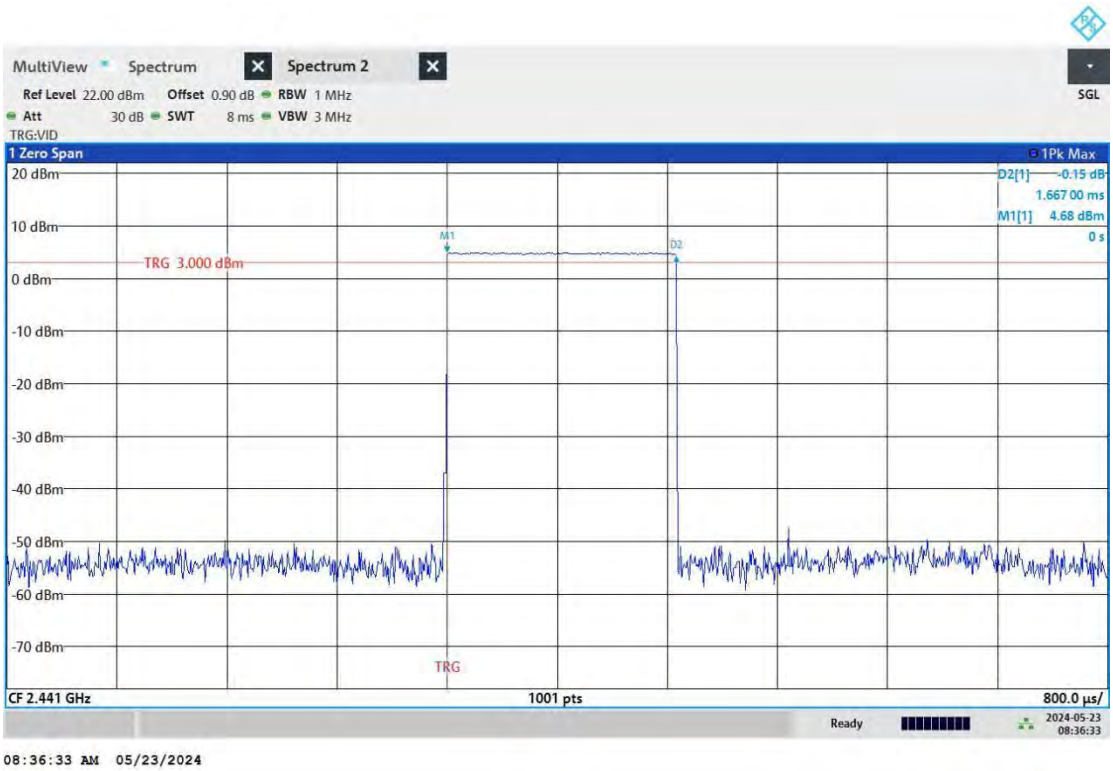
TEST GRAPHS

DH1_Ant1_Hop

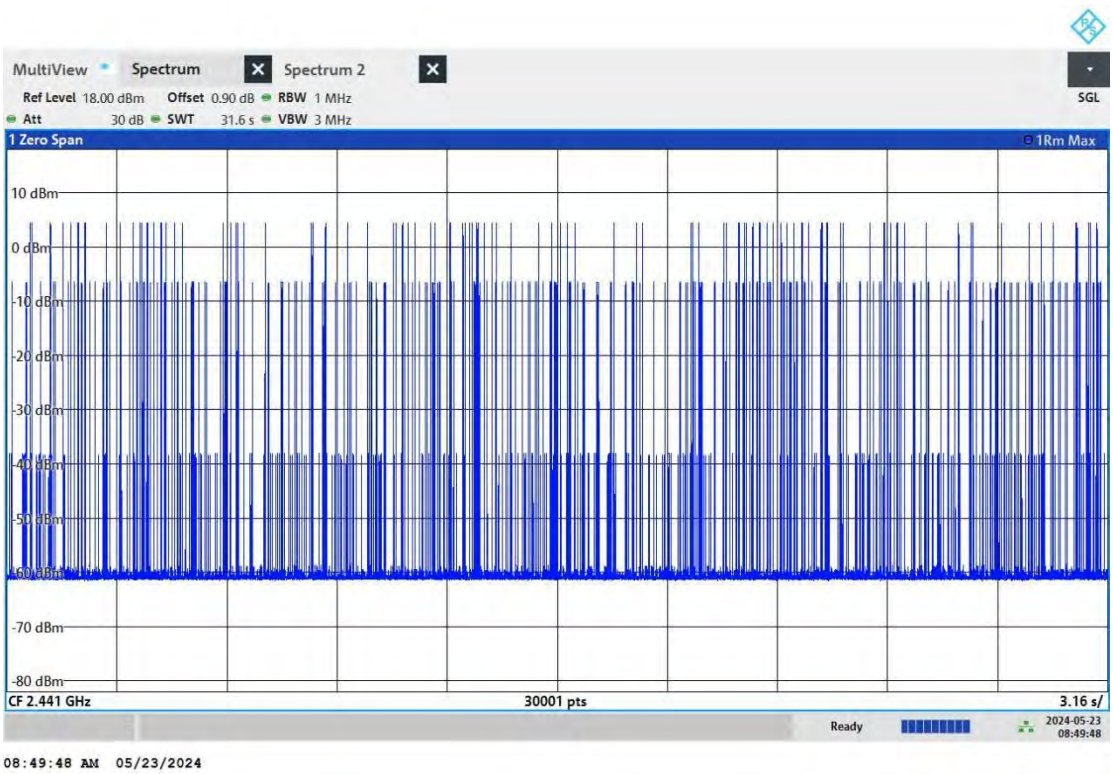


DH1_Ant1_Hop

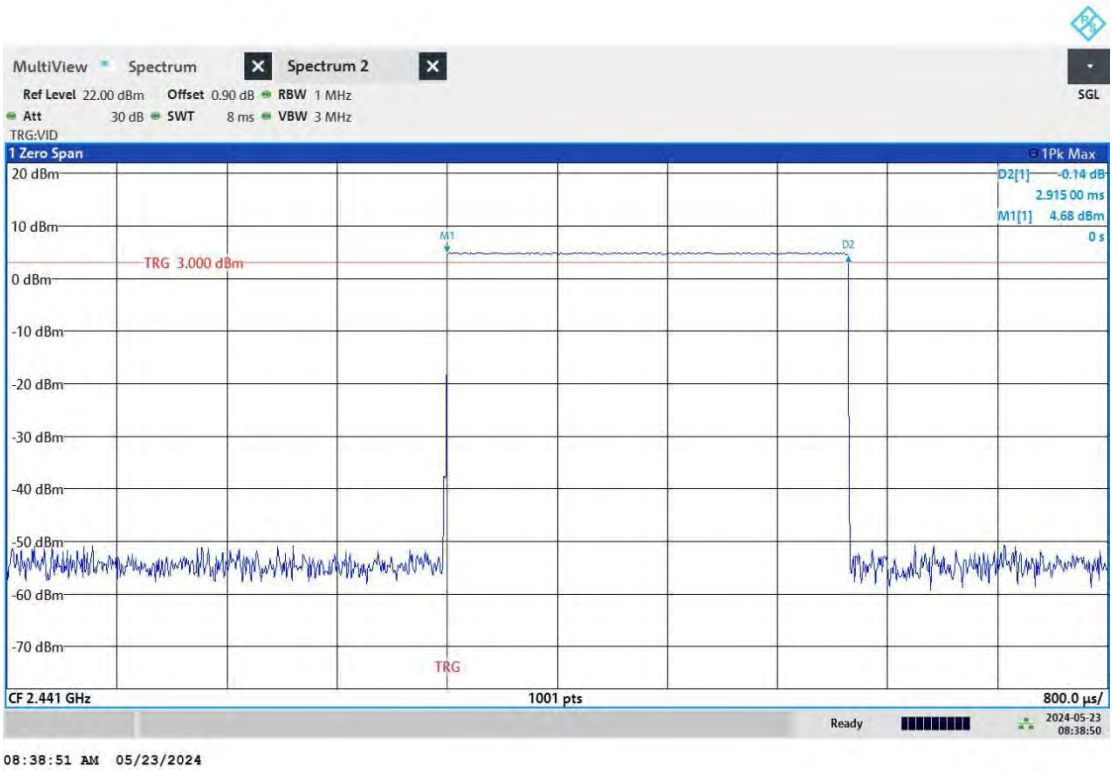
DH3_Ant1_Hop



DH3_Ant1_Hop

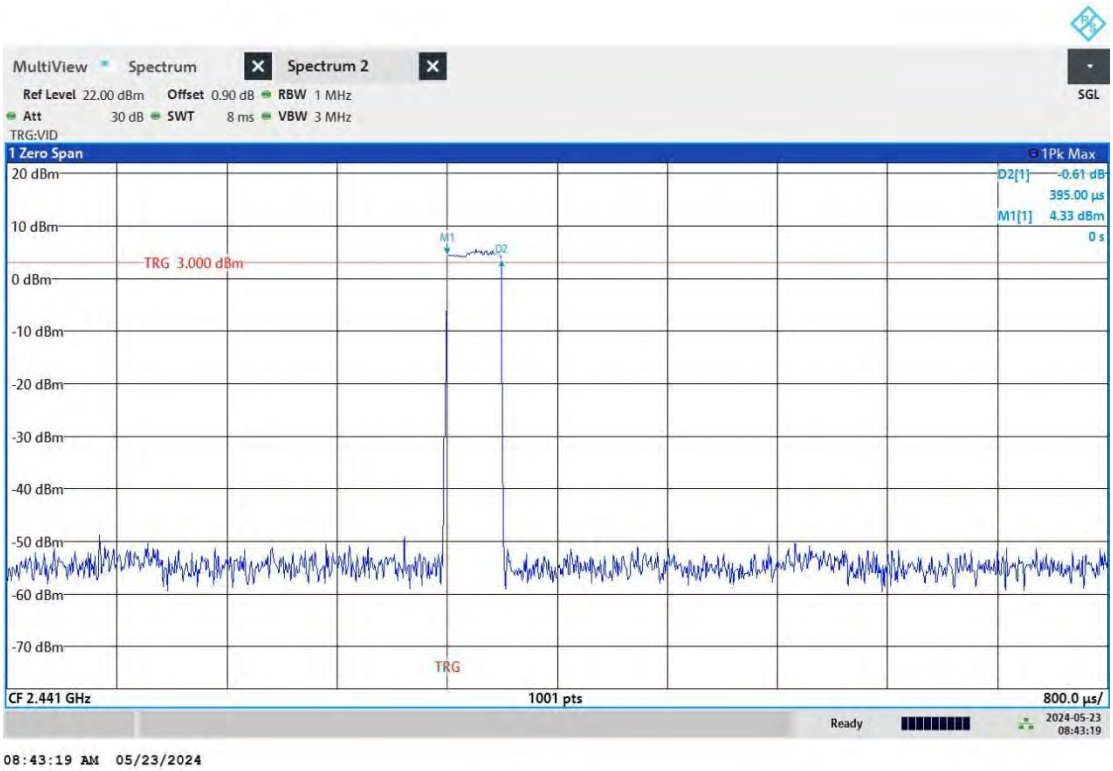


DH5_Ant1_Hop



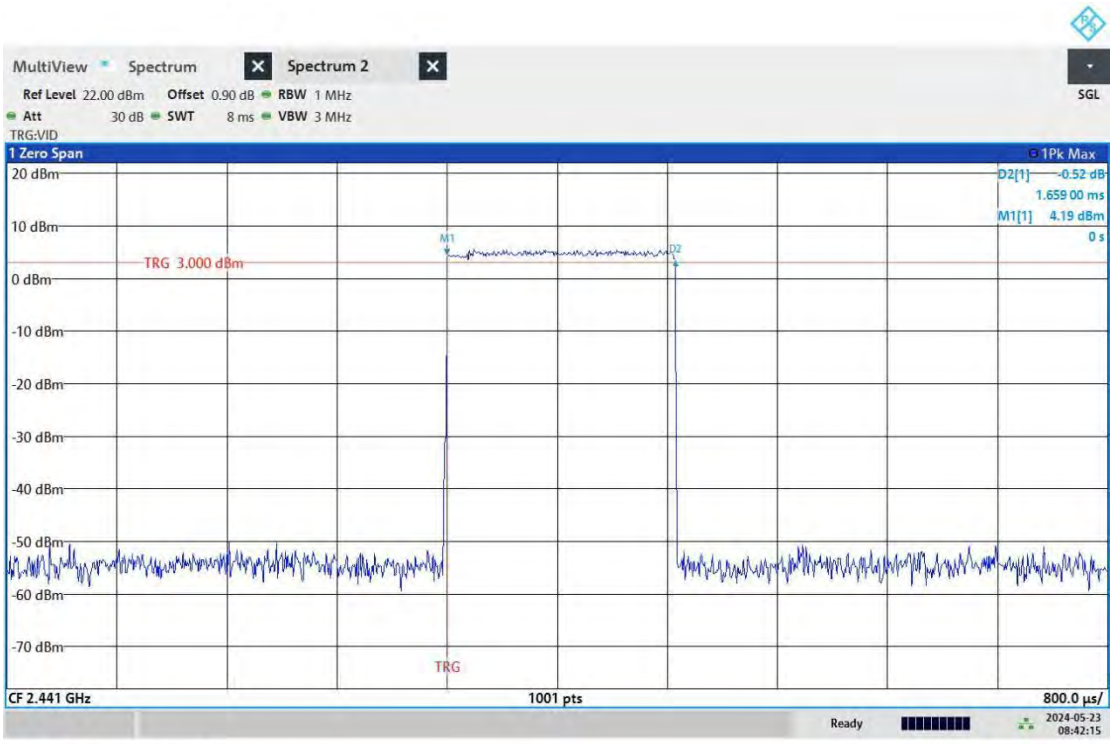
DH5_Ant1_Hop

2DH1_Ant1_Hop



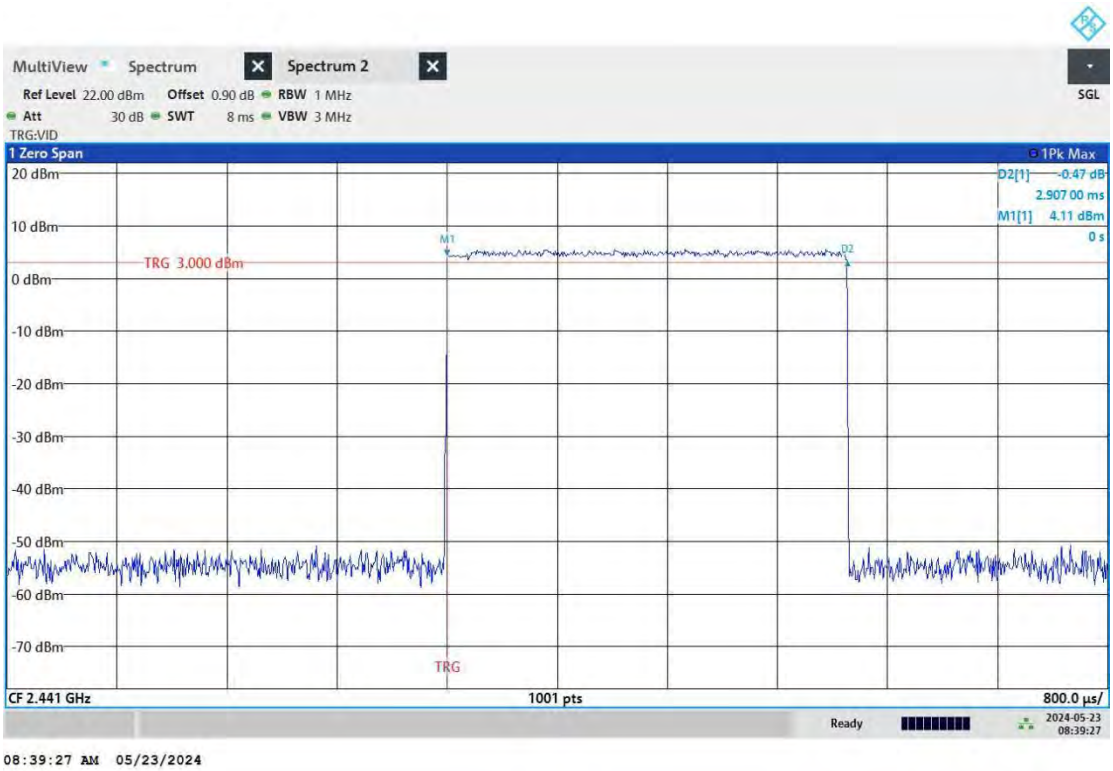
2DH1_Ant1_Hop

2DH3_Ant1_Hop

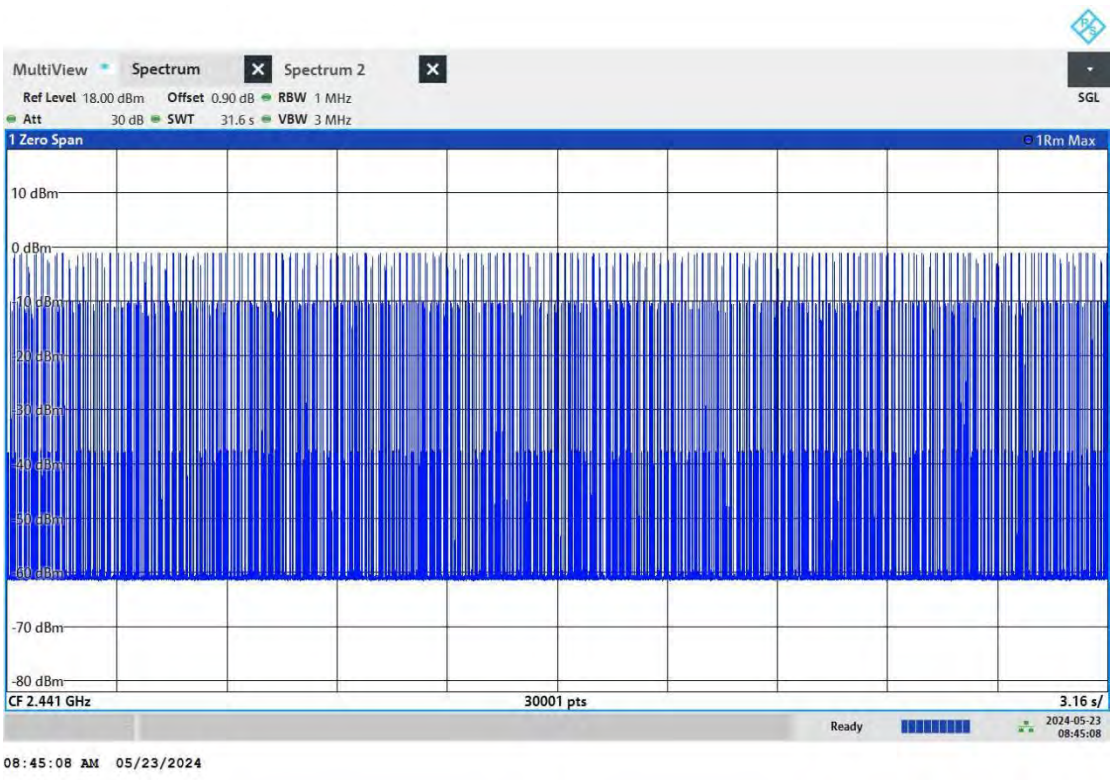


2DH3_Ant1_Hop

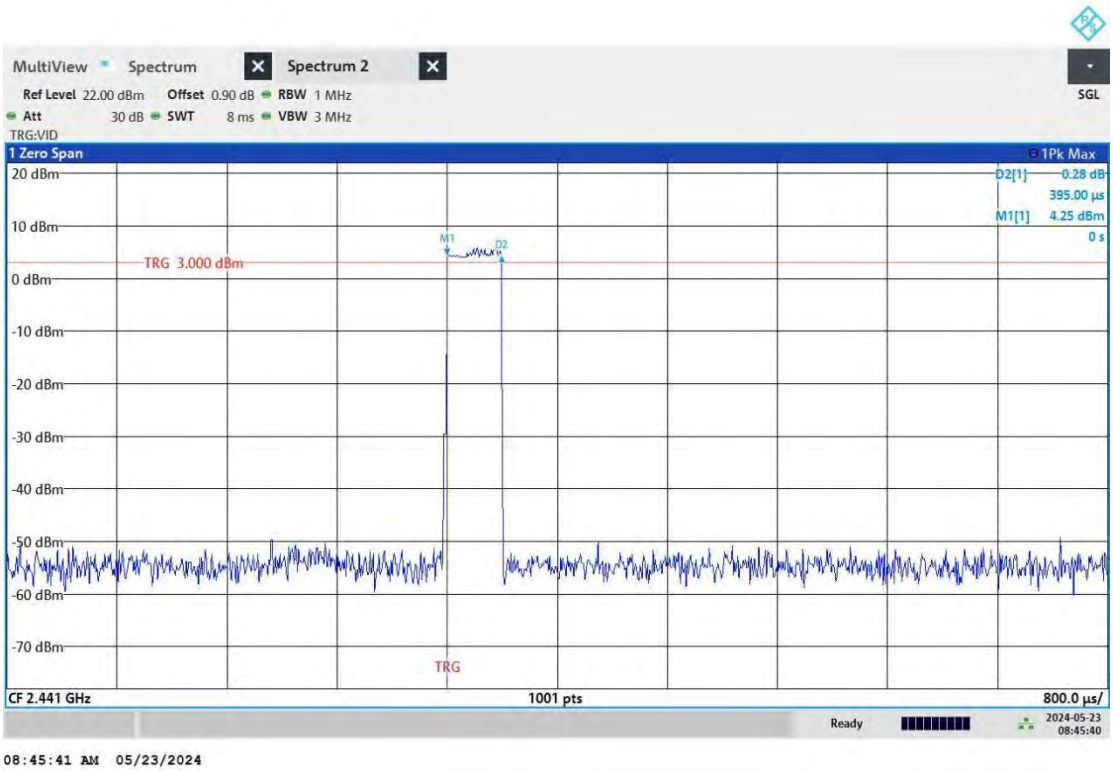
2DH5_Ant1_Hop



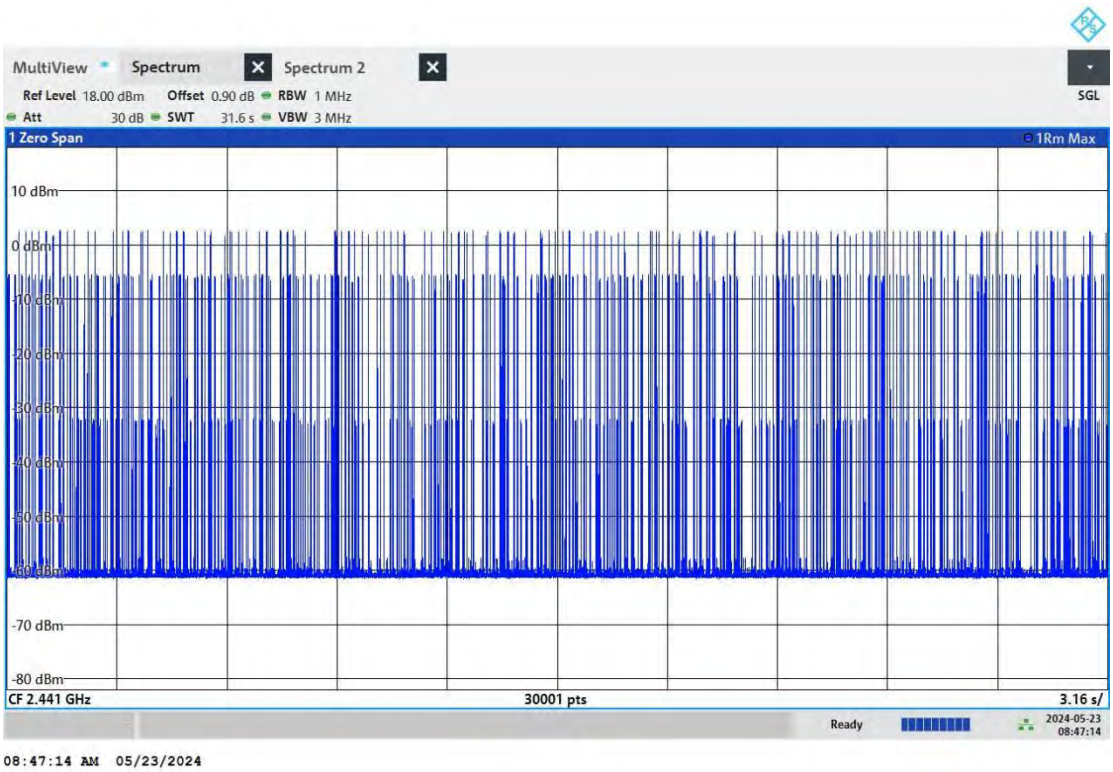
2DH5_Ant1_Hop



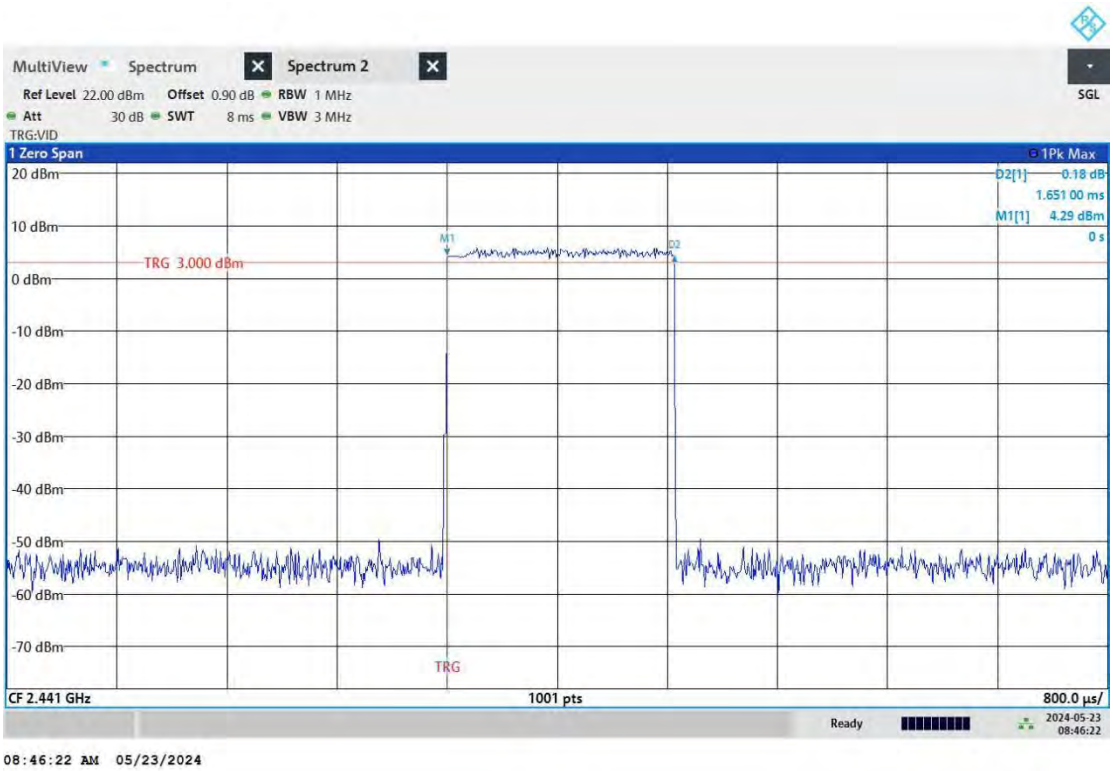
3DH1_Ant1_Hop



3DH1_Ant1_Hop

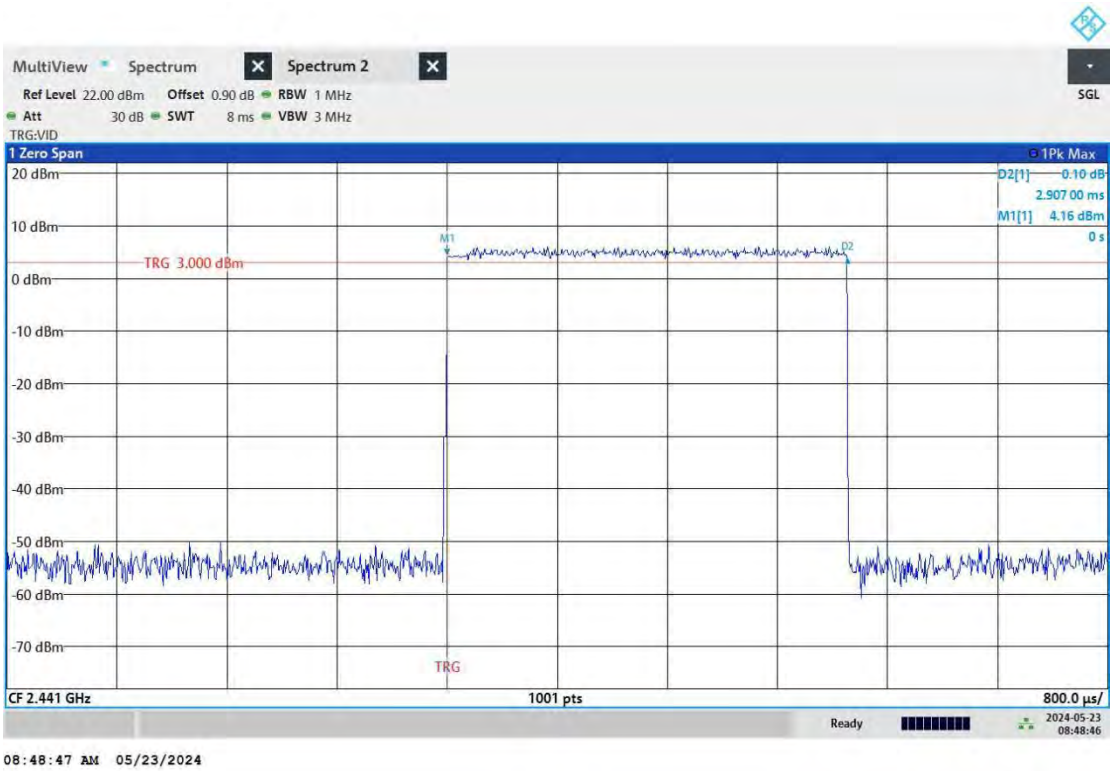


3DH3_Ant1_Hop



3DH3_Ant1_Hop

3DH5_Ant1_Hop



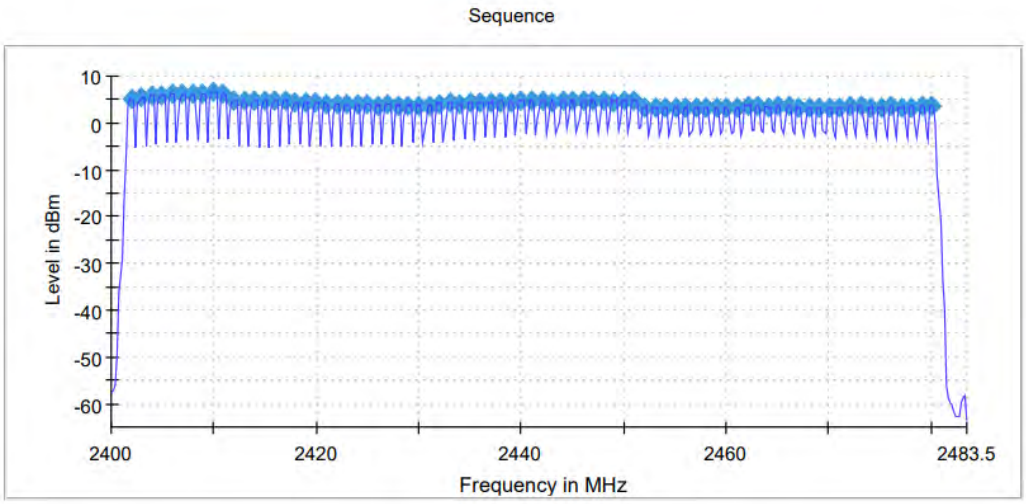
3DH5_Ant1_Hop

NUMBER OF HOPPING CHANNELS

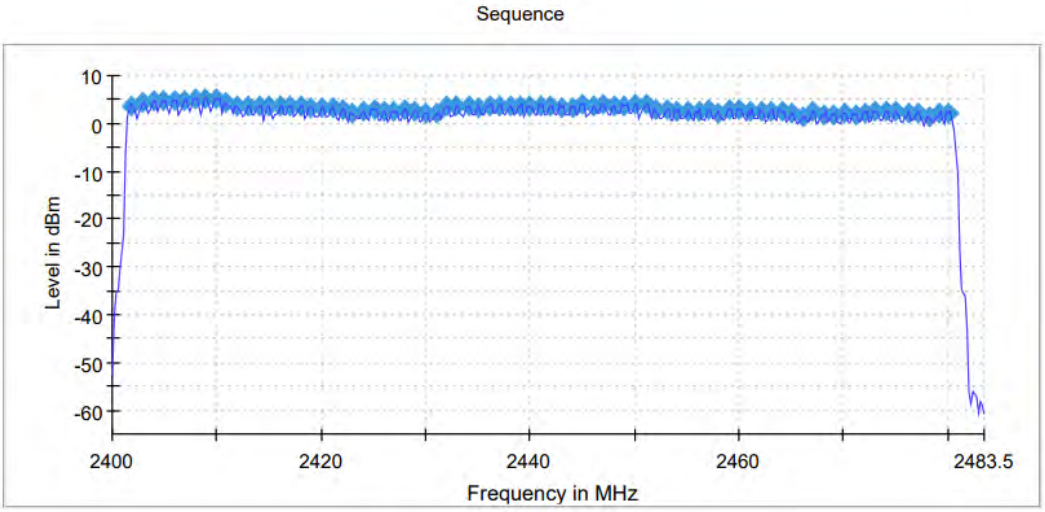
TEST RESULT

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

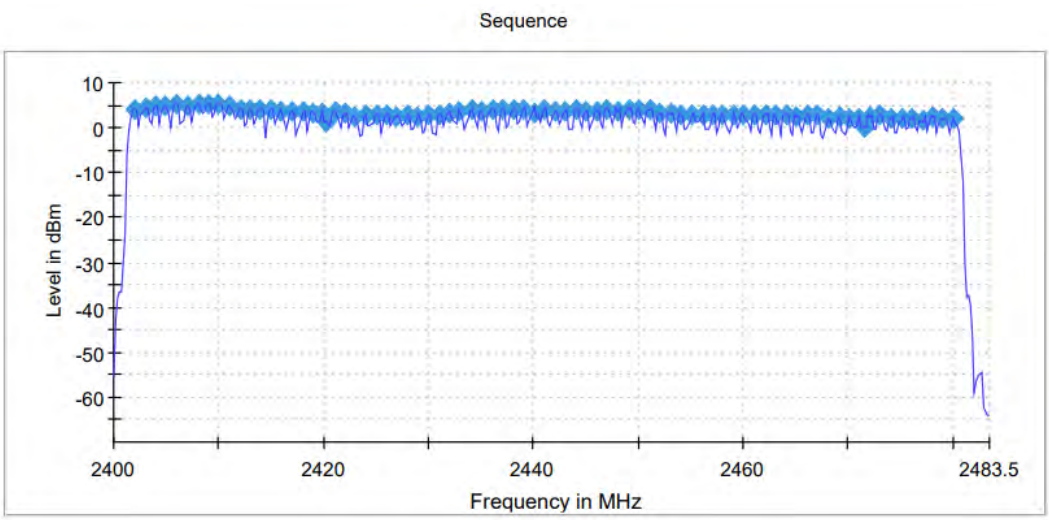
TEST GRAPHS



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

RBW 200.000 kHz

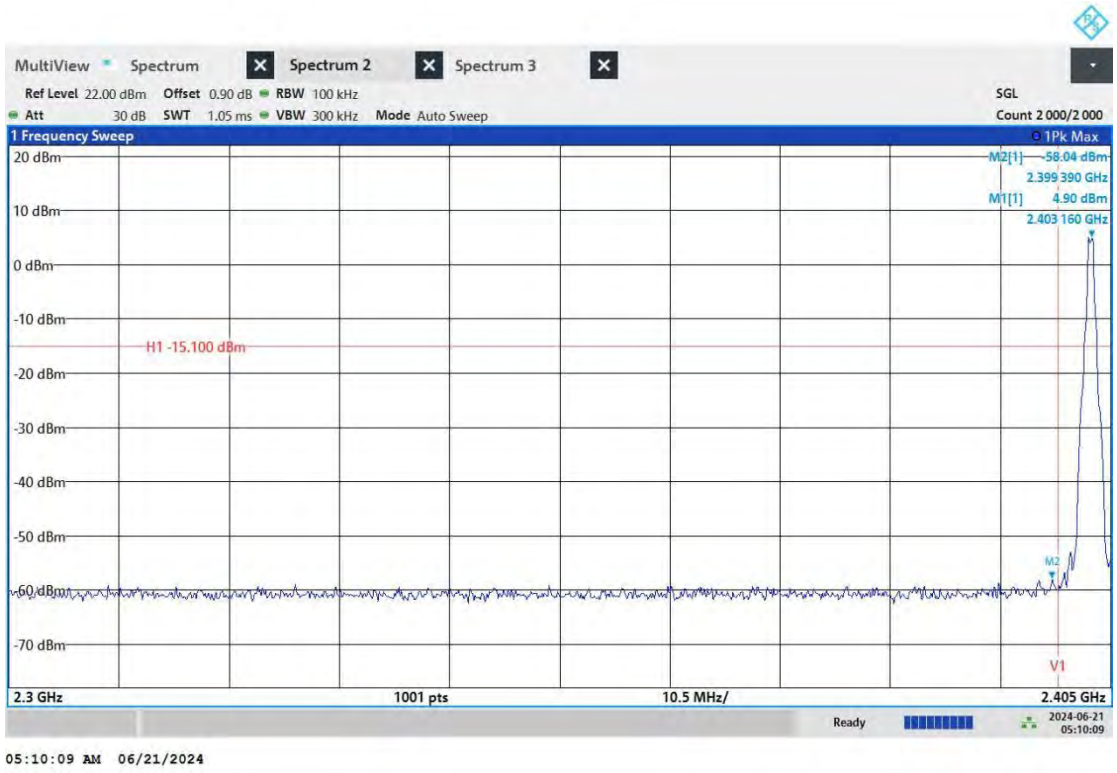
VBW 200.000 kHz

BAND EDGE MEASUREMENTS

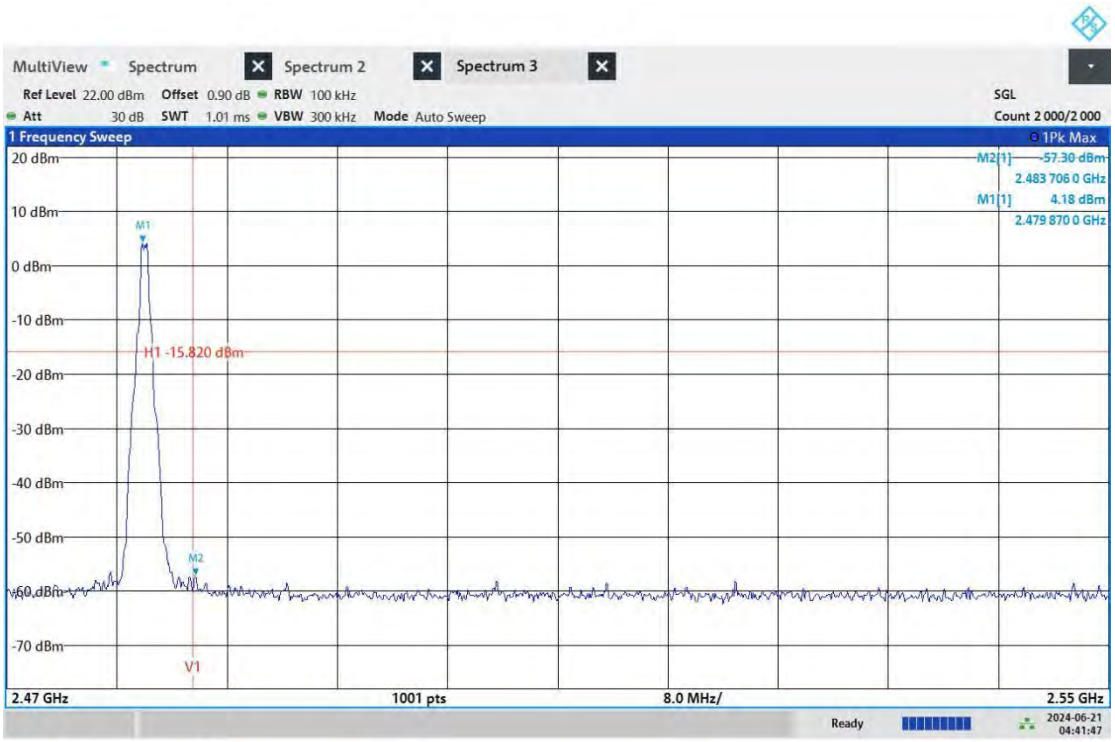
TEST RESULT

TestMode	Antenna	ChName	Channel	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	See test graph	See test graph	PASS
		High	2480	See test graph	See test graph	PASS
		Low	Hop_2402	See test graph	See test graph	PASS
		High	Hop_2480	See test graph	See test graph	PASS
2DH5	Ant1	Low	2402	See test graph	See test graph	PASS
		High	2480	See test graph	See test graph	PASS
		Low	Hop_2402	See test graph	See test graph	PASS
		High	Hop_2480	See test graph	See test graph	PASS
3DH5	Ant1	Low	2402	See test graph	See test graph	PASS
		High	2480	See test graph	See test graph	PASS
		Low	Hop_2402	See test graph	See test graph	PASS
		High	Hop_2480	See test graph	See test graph	PASS

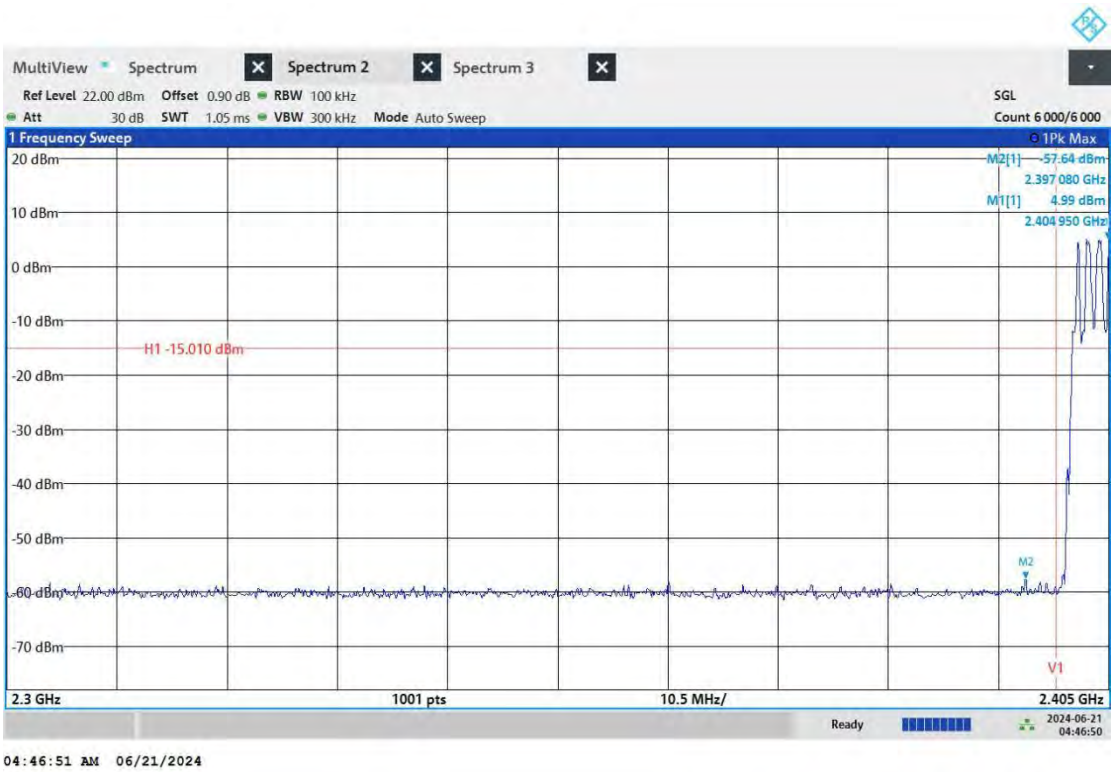
TEST GRAPHS



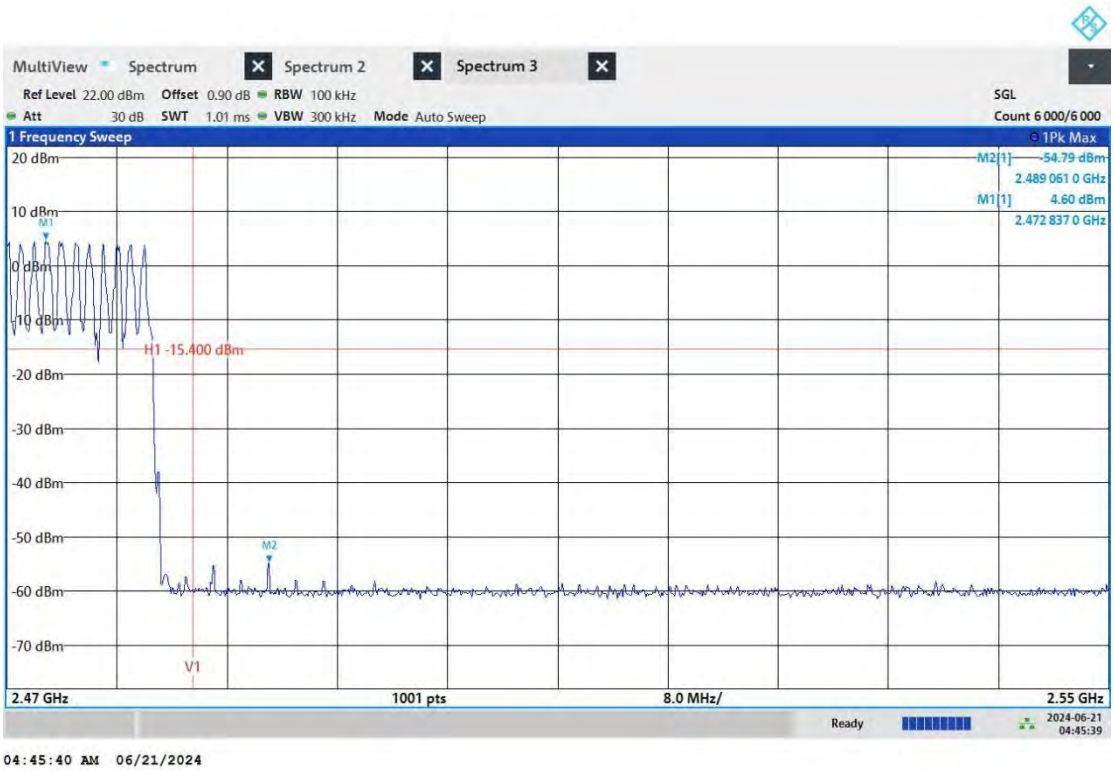
DH5_Ant1_Low_2402



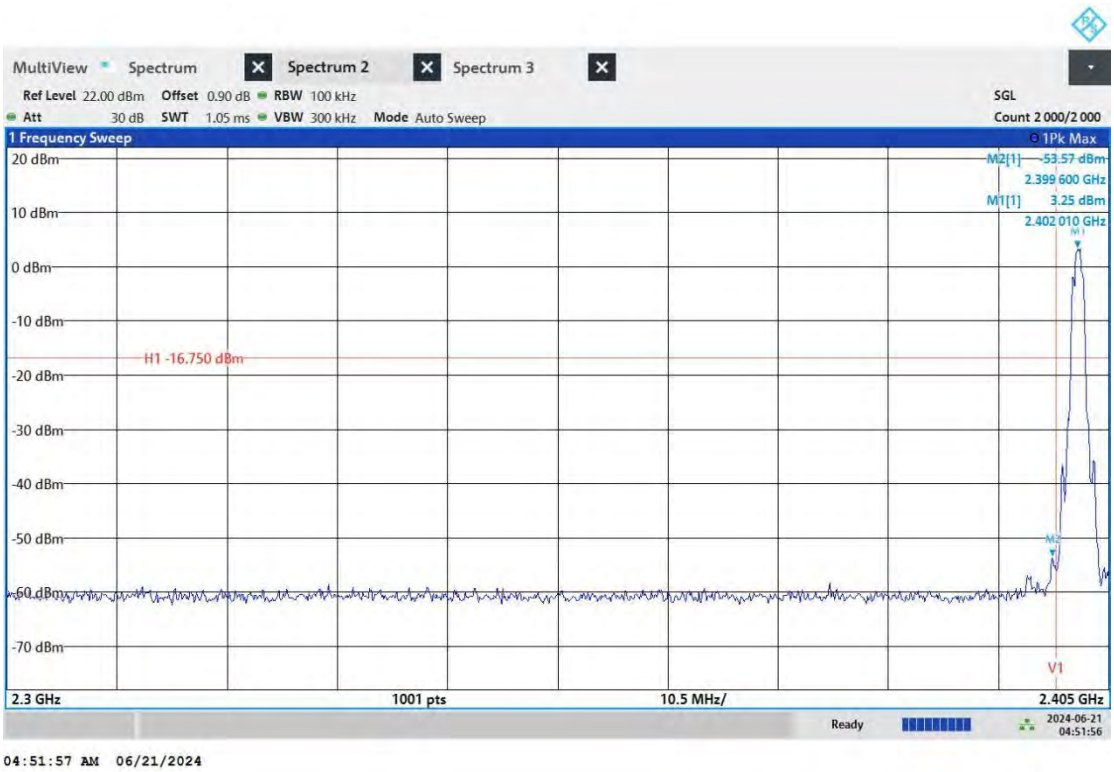
DH5_Ant1_High_2480



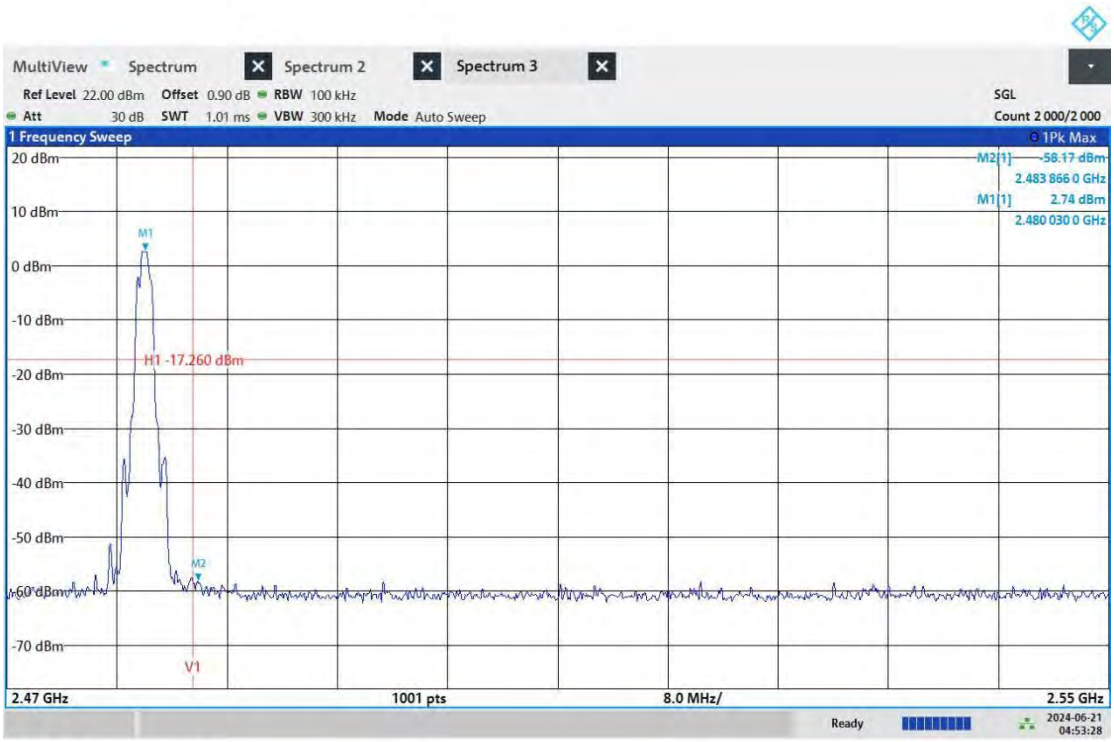
DH5_Ant1_Low_Hop_2402



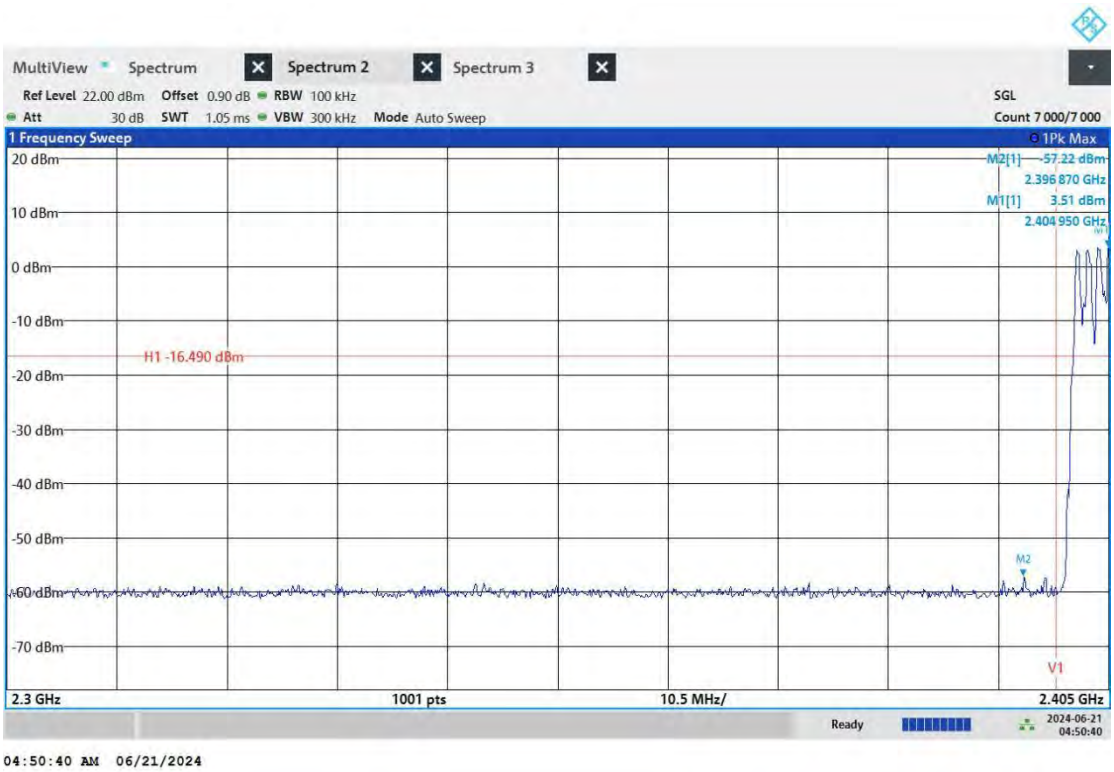
DH5_Ant1_High_Hop_2480



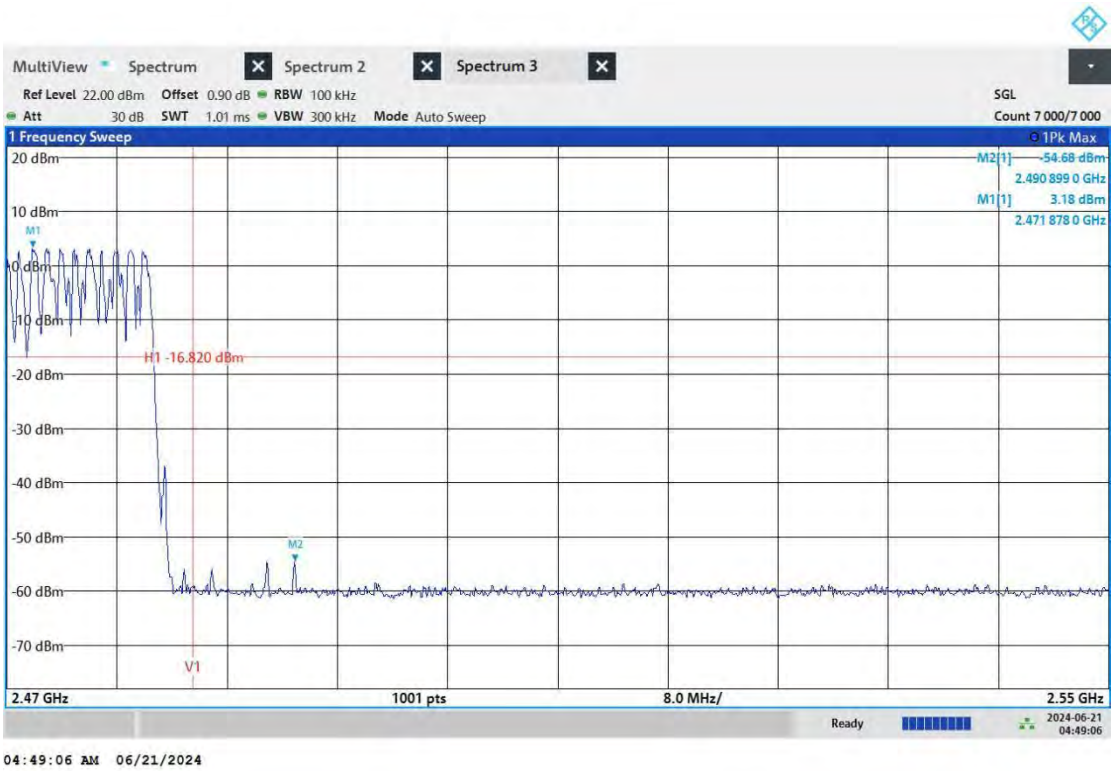
2DH5_Ant1_Low_2402



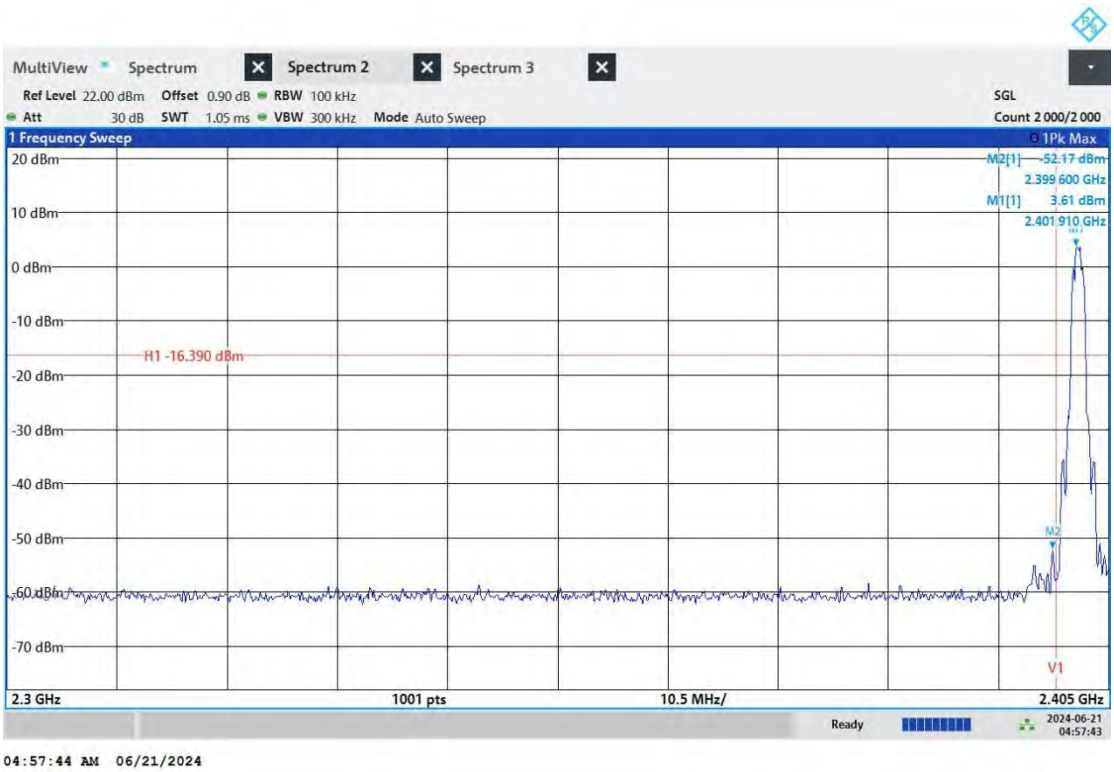
2DH5_Ant1_High_2480



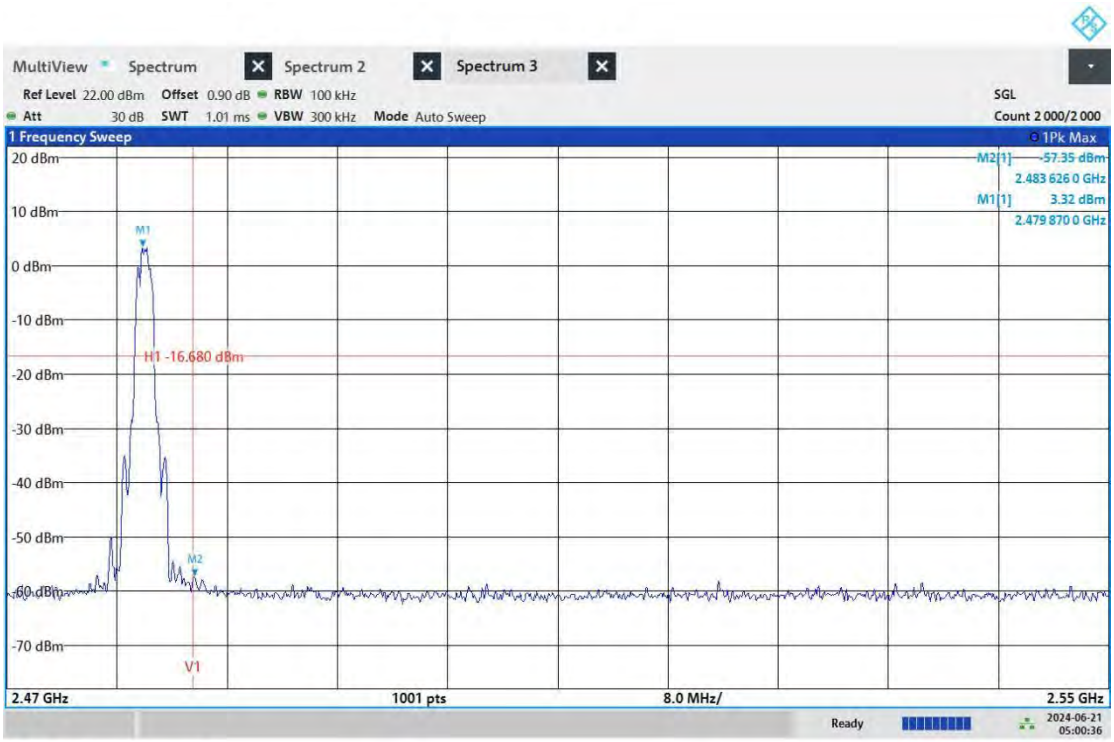
2DH5_Ant1_Low_Hop_2402



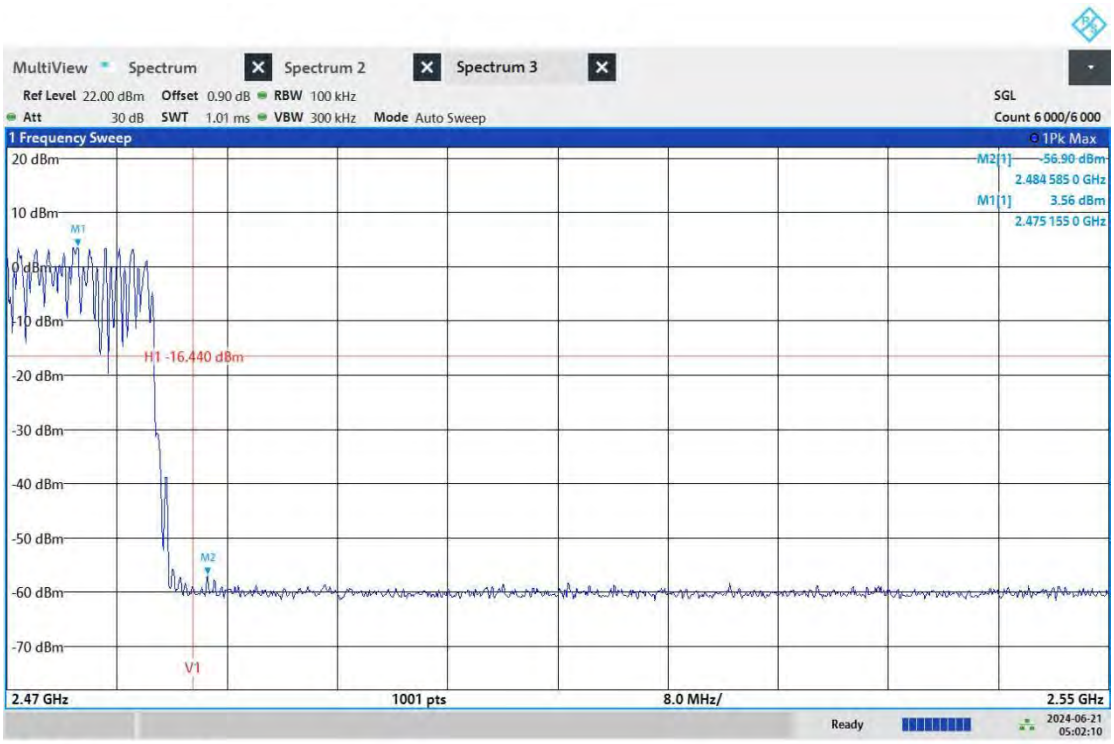
2DH5_Ant1_High_Hop_2480



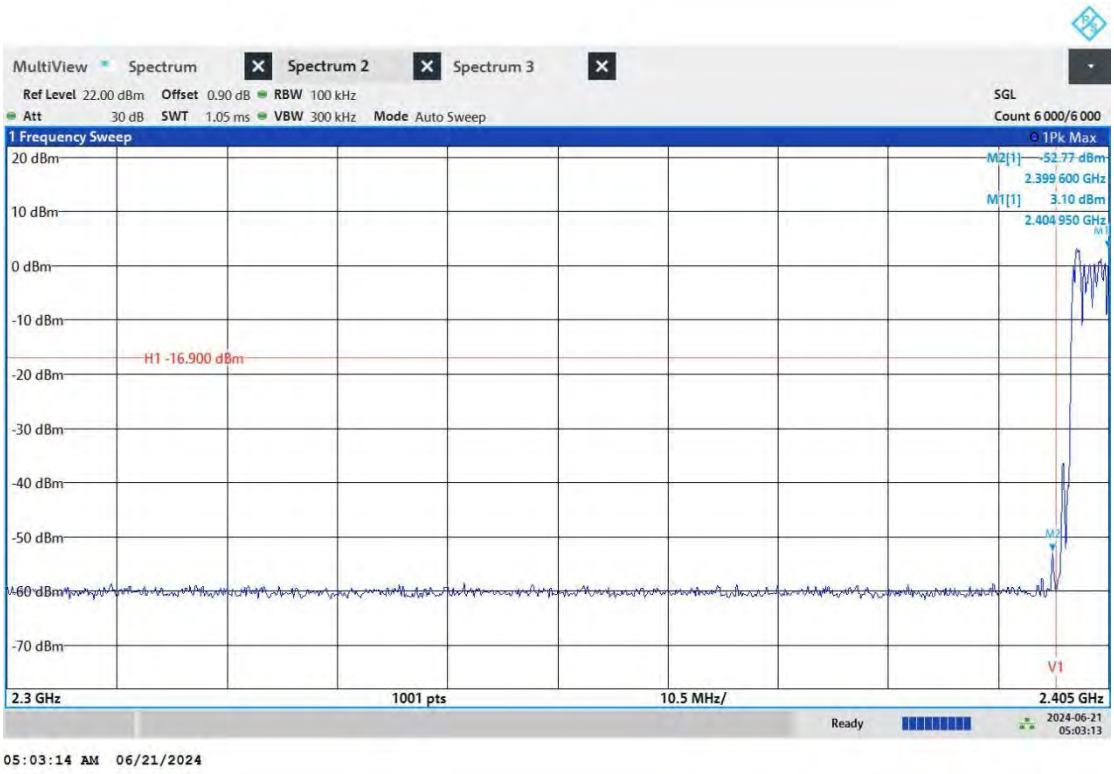
3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480

RBW 100.000 kHz

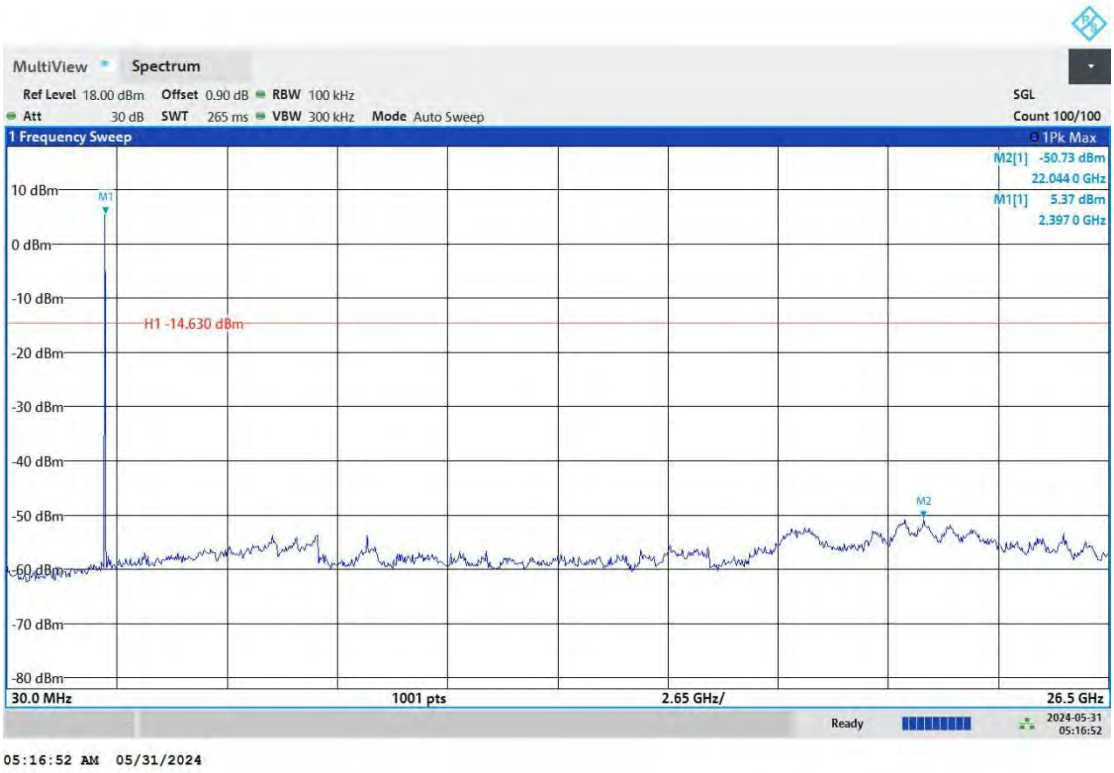
VBW 300.000 kHz

CONDUCTED SPURIOUS EMISSION

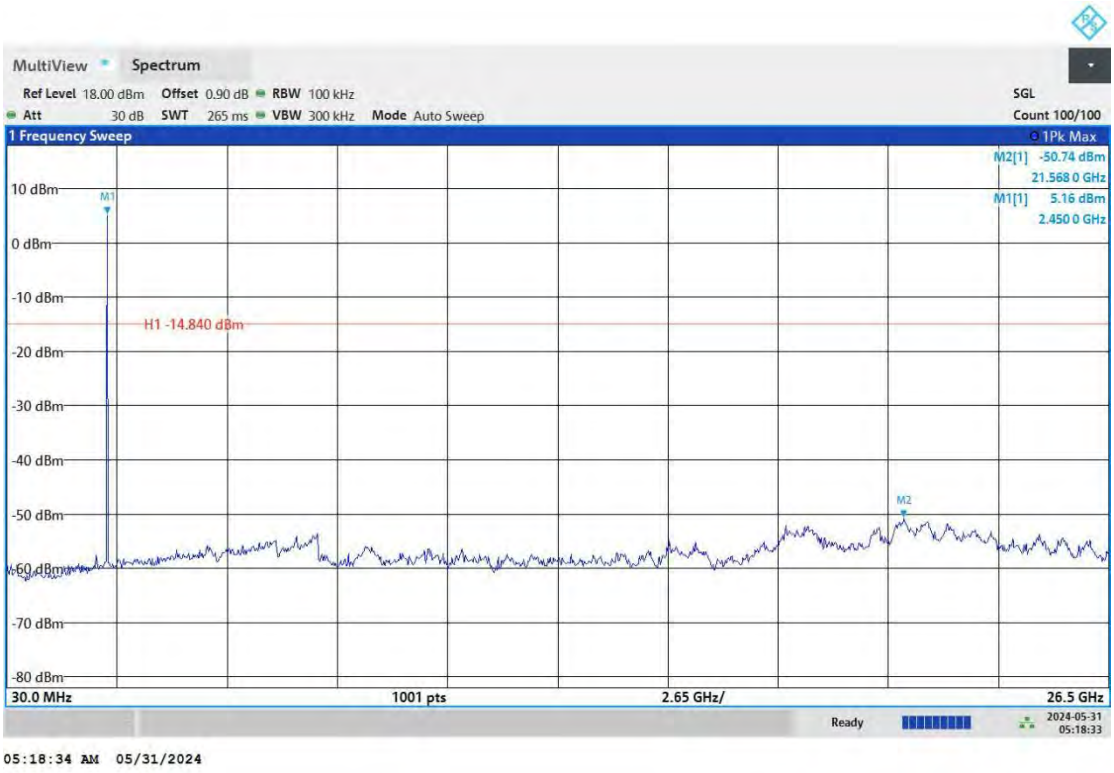
TEST RESULT

TestMode	Antenna	Channel	FreqRange [MHz]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	30~26500	See test graph	See test graph	PASS
		2441	30~26500	See test graph	See test graph	PASS
		2480	30~26500	See test graph	See test graph	PASS
2DH5	Ant1	2402	30~26500	See test graph	See test graph	PASS
		2441	30~26500	See test graph	See test graph	PASS
		2480	30~26500	See test graph	See test graph	PASS
3DH5	Ant1	2402	30~26500	See test graph	See test graph	PASS
		2441	30~26500	See test graph	See test graph	PASS
		2480	30~26500	See test graph	See test graph	PASS

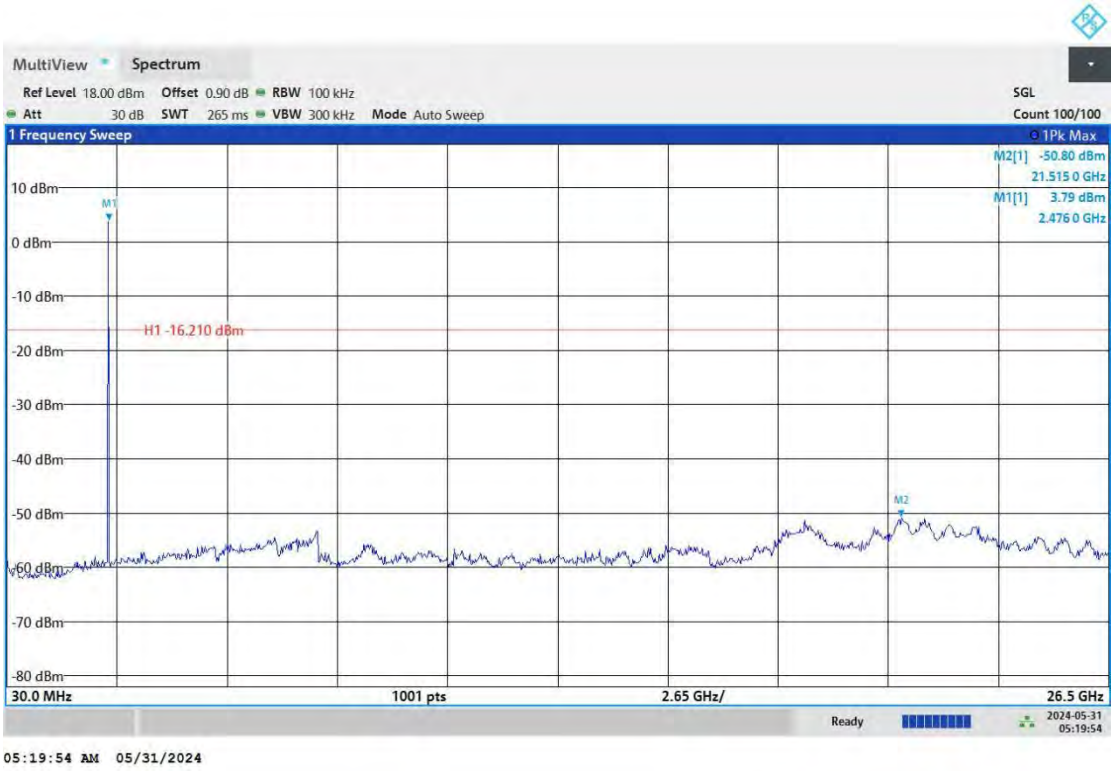
TEST GRAPHS



DH5_Ant1_2402_30~26500



DH5_Ant1_2441_30~26500

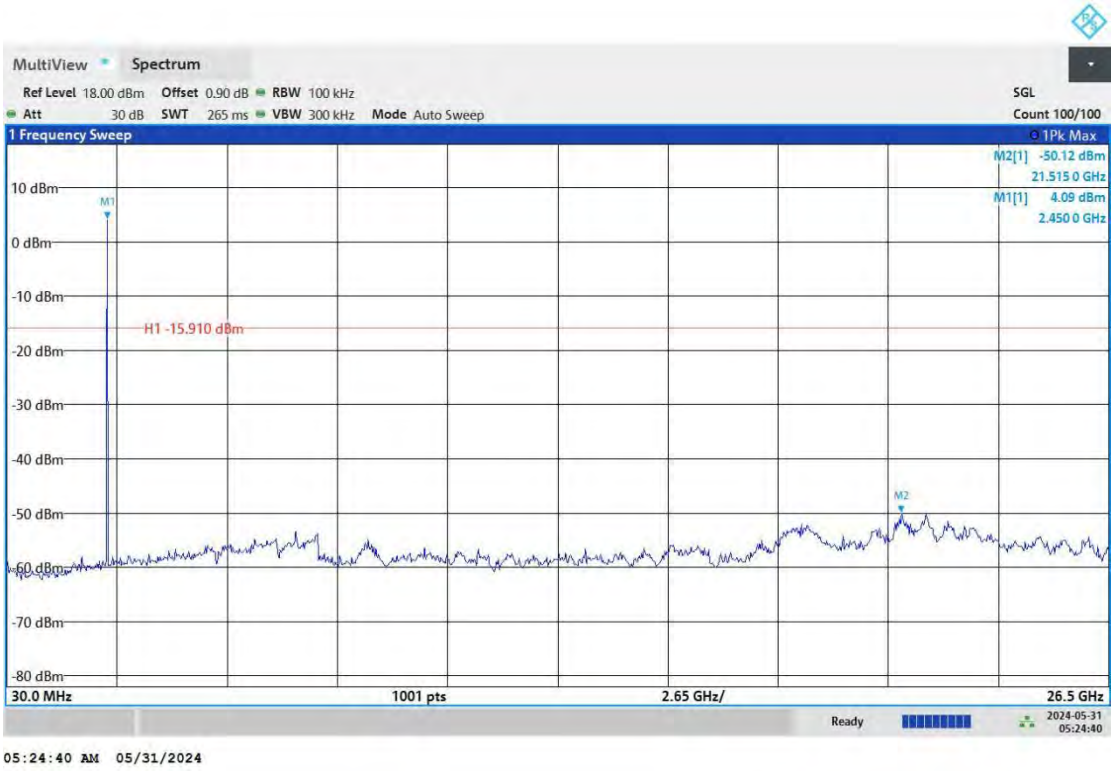


05:19:54 AM 05/31/2024

DH5_Ant1_2480_30~26500

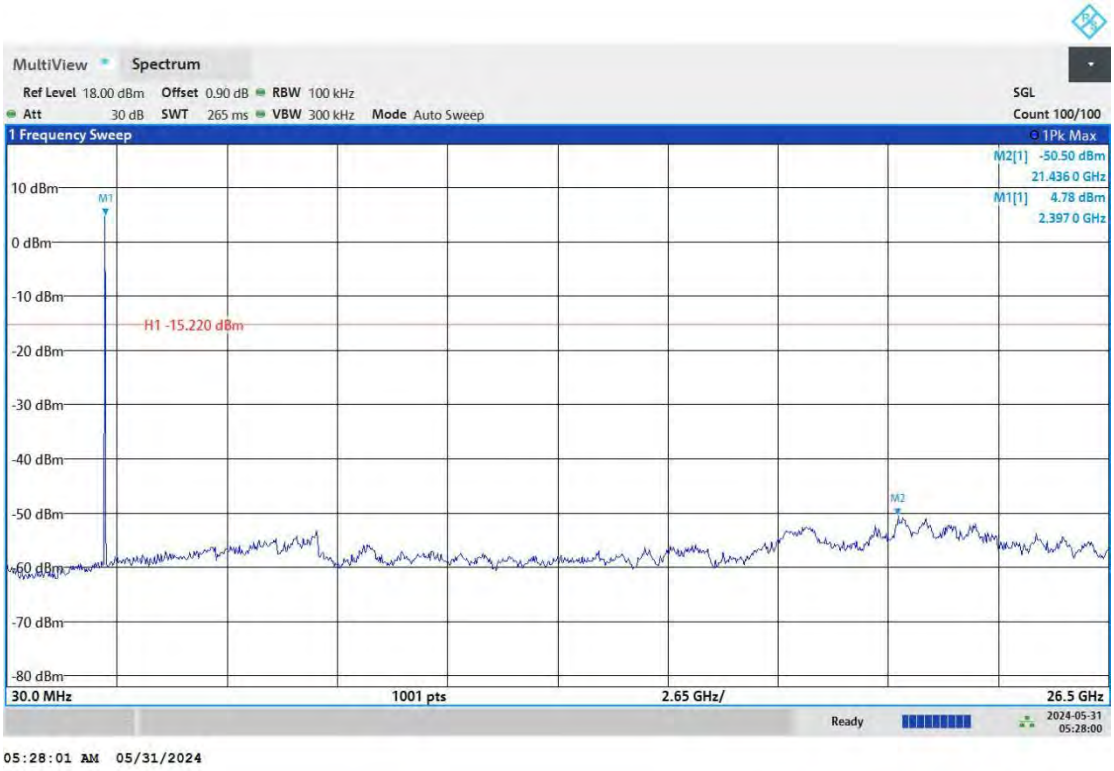
05:26:33 AM 05/31/2024

2DH5_Ant1_2402_30~26500



2DH5_Ant1_2441_30~26500

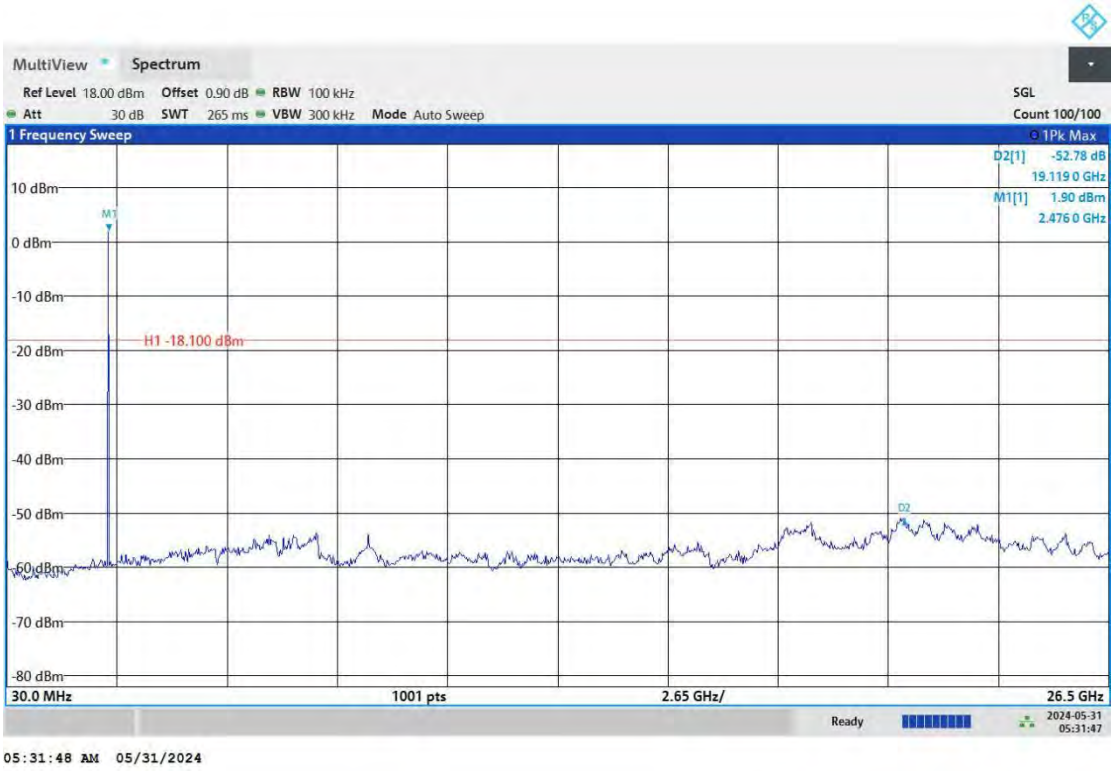
2DH5_Ant1_2480_30~26500



05:28:01 AM 05/31/2024

3DH5_Ant1_2402_30~26500

05:29:43 AM 05/31/2024

3DH5_Ant1_2441_30~26500

3DH5_Ant1_2480_30~26500
RBW 100.000 kHz **VBW 300.000 kHz**

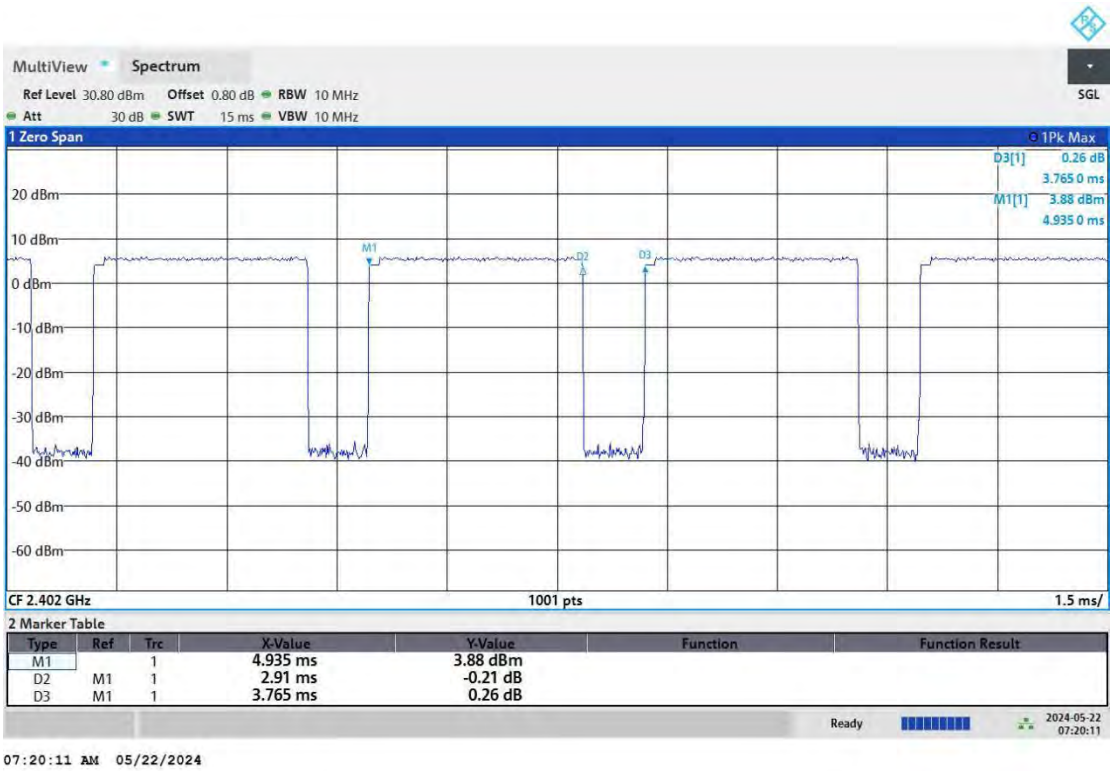
DUTY CYCLE

TEST RESULT

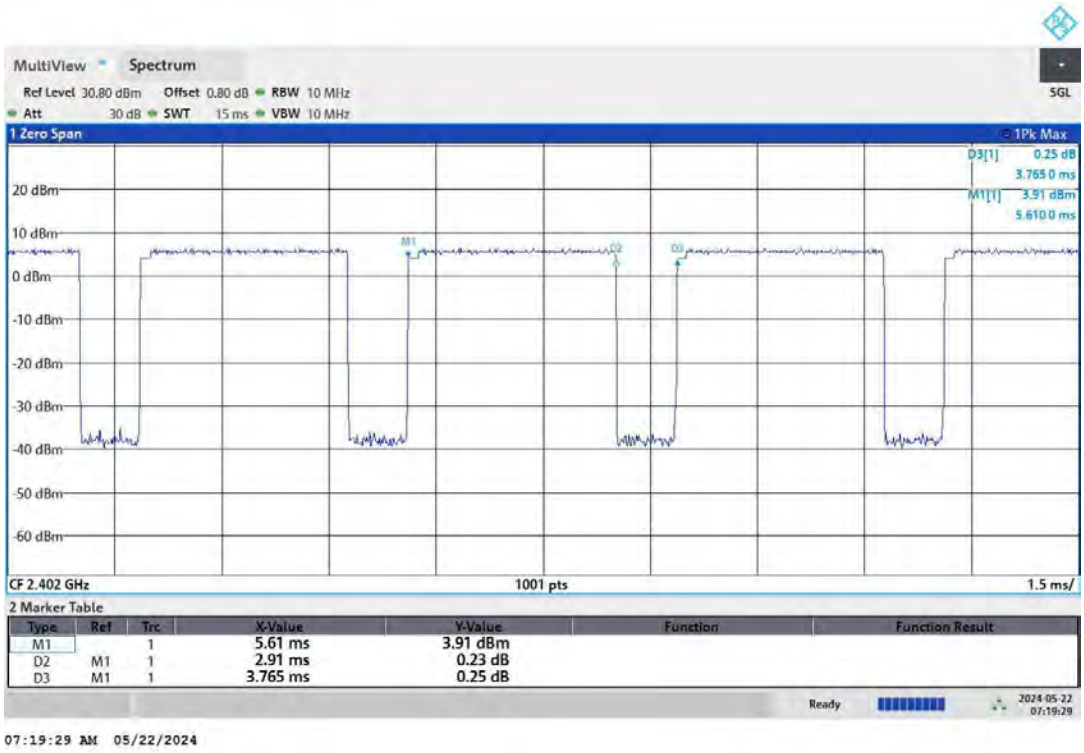
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2441	2.8960	3.7600	0.7702	77.02%	1.13	---	PASS
2DH5	Ant1	2441	2.9100	3.7650	0.7729	77.29%	1.12	---	PASS
3DH5	Ant1	2441	2.9100	3.7650	0.7729	77.29%	1.12	---	PASS

TEST GRAPHS

DH5_Ant1_2402



2DH5_Ant1_2402



3DH5_Ant1_2402

--END--