RF Test Report

Applicant:	NETPRISMA INC.
Address:	1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES
Product:	5G Sub-6 GHz Smart Module with Wi-Fi 6E & Bluetooth
Model No.:	SUD500-LD
Brand Name:	Vrileg
FCC ID:	2BEY3SUD500LDA
Standards:	FCC CFR47 Part 15C
Report No.:	PD20250035-R3C
Issue Date:	2025/06/20
Test Result:	PASS *

* **Testing performed at Hefei Panwin Technology Co., Ltd. on the above equipment indicates the product meets the requirements of the relevant standards.**

Reviewed By: Jerry Zhang **Approved By:** Alec Yang

Hefei Panwin Technology Co., Ltd.

Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China

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Revision History

Report No.	Version	Description	Issue Date	Note
PD20250035-R3C	01	Initial Report	2025/06/20	Valid

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Summary of Test Results

No.	Test Case	FCC Rules	Verdict
1	Peak Output Power	15.247(b)(1)	PASS
2	20dB and 99% Bandwidth	15.247(a)(1)	Reporting only
3	Conducted Band Edges	15.247(d)	PASS
4	Dwell Time of Each Channel	15.247(a)(1)	PASS
5	Hopping Channel Separation	15.247(a)(1)	PASS
6	Number of Channels	15.247(a)(1)	PASS
7	Conducted Spurious Emission	15.247(d)	PASS
8	Radiated Band Edges and Radiated Spurious Emission	15.247(d)	PASS
9	AC Conducted Emission	15.207	NA
10	Antenna Requirement	15.203 & 15.247(b)	PASS

Date of Testing: 2025/03/14 to 2025/06/19
Date of Sample Received: 2025/03/10

- We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in applied standard(s) in **Section 2.3** of this report and shown compliance with the applicable technical standards.
- All indications of PASS/FAIL in this report are based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

1 General Information

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

1.2 Test Facility

A2LA (Certificate Number: 6849.01)

Hefei Panwin Technology Co., Ltd. has been accredited by American Association for Laboratory Accreditation to perform measurement.

FCC (Designation Number: CN1361, Test Firm Registration Number: 473156)

Hefei Panwin Technology Co., Ltd. has been accredited on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Laboratory

Company Name	Hefei Panwin Technology Co., Ltd.
Address	Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China
Telephone	+86-0551-63811775
Post Code	230031

2 General Description of Equipment under Test

2.1 Details of Application

Applicant	NETPRISMA INC.
Applicant Address	1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES
Manufacturer	NETPRISMA INC.
Manufacturer Address	1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES

2.2 General Information

Product	5G Sub-6 GHz Smart Module with Wi-Fi 6E & Bluetooth
Model	SUD500-LD
SN	Conducted: P1Y24GH23000046 Radiated: P1Y24AV340000022 & P1Y24AV340000102
Hardware Version	R1.0
Software Version	SUD500LDPA0301
Antenna Type	External Antenna
Max. Conducted Power	9.16dBm
Antenna Gain	0.20dBi
Operating voltage	Typical 4.0Vdc
Modulation Type	Frequency Hopping Spread Spectrum (FHSS):GFSK, π/4-DQPSK, 8-DPSK
Operating Frequency Range(s)	Bluetooth : 2402 ~2480 MHz
Number of channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Note: The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.	

2.3 Application Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

3 Test Condition

3.1 Test Configuration

Test mode

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). The worst cases were recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes (Z, X, Y axis), receiver antenna polarization (horizontal and vertical), the worst emission was found in Z position and the worst case was recorded.This report presents the data for the worst polarity.

3.2 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5MHz	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

3.3 Equipment List

Conducted

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
Spectrum Analyzer	KEYSIGHT	N9020B	PWC0048	1 Year	2025/09/11
RF Control Unit	Tonseced	JS0806-2	PWC0055	/	/
DC Power	Keysight	E3640A	PWC0046	1 Year	2025/09/12
Shielded Chamber	Maorui	MR543	PWC0041	3 Years	2026/08/26
Test Software	Tonseced	JS1120-3 V3.2.22	/	/	/

Radiated

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
EMI Test Receiver	R&S	ESR7	PWB0023	1 Year	2025/09/11
Spectrum Analyzer	R&S	FSV3044	PWB0024	1 Year	2025/09/11
Loop Antenna	R&S	HFH2-Z2E	PWB0026	1 Year	2025/09/13
TRILOG Broadband Antenna	Schwarzbeck	VULB9162	PWB0029	1 Year	2025/09/09
Double-Ridged Guide Antenna	ETS-Lindgren	3117	PWB0031	1 Year	2025/09/26
k Type Horn Antenna	Steatite Antennas	QMS-00880	PWB0035	1 Year	2025/09/08
Pre-Amplifier	R&S	SCU40F1	PWB0036	1 Year	2025/09/11
Pre-Amplifier	COM-MW	DLNA8	PWB0094	1 Year	2025/09/11
Pre-Amplifier	R&S	SCU18F	PWB0034	1 Year	2025/09/11
Pre-Amplifier	R&S	OSP220 (OSP-B155G)	PWB0042	1 Year	2025/09/11
Anechoic Chamber	ETS.LINDGREN	Fact 3-2m	PWB0003	3 Years	2026/06/05
Test Software	Tonscend	JS32 V5.0.0	/	/	/

3.4 Support Equipment List

Equipment	Manufacturer	Description	Model	Serial Number
EVB	NETPRISMA	/	Q1-C0129	D1Y24E94G000263 D1Y24E94G000241
RF cable	/	2.4G:0.5dB; 5G:1dB	/	/
Adapter	Dong Guan City GangQi Electronic Co.,Ltd	AC to DC power supply to EVB	GQ36-120300-AX	/
Antenna	NETPRISMA	Wi-Fi &BT Antenna	NPEBT038WFA	/

3.5 Test Uncertainty

No.	Parameter	Uncertainty
1	20dB Emission Bandwidth	1.9%
2	Occupied channel bandwidth	1.9%
3	Carrier Frequency Separation	1.9%
4	Maximum Power Spectral Density Level	0.98 dB
5	Number of Hopping Channel	1.9%
6	Time of Occupancy	0.11%
7	Max Peak Conducted Output Power	0.98 dB
8	Band-edge Spurious Emission	1.21dB
9	Conducted RF Spurious Emission	9kHz-7GHz:1.21dB 7GHz-40GHz: 3.31dB
10	Radiated Band Edges and Spurious Emission	Below 1GHz: 4.88 dB Above 1GHz: 5.06 dB
11	Temperature	3 °C
12	Humidity	1.3 %
13	Supply voltages	0.006 V

4 Test Items Description

Ambient condition

Shielded Chamber

Temperature [°C]	20.7 to 26.1
Humidity [%RH]	31 to 57
Pressure [kPa]	100.2 to 104.1

Anechoic Chamber

Temperature [°C]	20.3 to 25.6
Humidity [%RH]	38 to 55
Pressure [kPa]	99.6 to 101.5

4.1 Output Power Measurement

4.1.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band:1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. The power limit for 1Mbps, 2Mbps, 3Mbps and AFH modes are 0.125 watts.

4.1.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

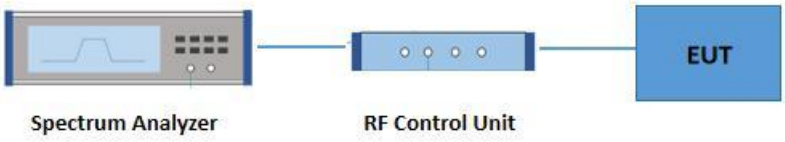
4.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement
   1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
   2) RBW > 20 dB bandwidth of the emission being measured.
   3) VBW ≥ RBW.
   4) Sweep: Auto.
   5) Detector function: Peak.
   6) Trace: Max hold.
   7) Allow trace to stabilize.
   8) Use the marker-to-peak function to set the marker to the peak of the emission.
4. The indicated level is the peak output power, after any corrections for external attenuators and

cables.

5. A plot of the test results and setup description shall be included in the test report.

4.1.4 Test Setup



4.1.5Test Results

See ANNEX A.1.

4.2 20dB and 99% Bandwidth Measurement

4.2.1 Limit of 20dB and 99% Bandwidth

Reporting only

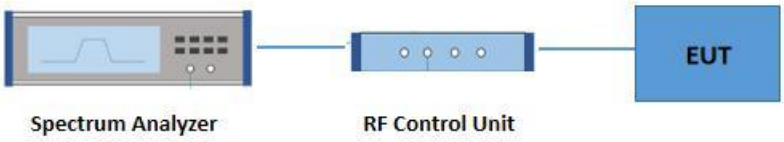
4.2.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.2.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;
   The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW;
   Sweep = auto; Detector function = peak;
   Trace = max hold.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement;
   Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
   The RBW is set to 1% to 5% of the 99% OBW,the VBW is set to 3 times the RBW;
   Sweep = auto; Detector function = peak;
   Trace = max hold.
6. Measure and record the results in the test report.

4.2.4 Test Setup



4.2.5Test Results

See ANNEX A.2.

4.3 Conducted Band Edges Measurement

4.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

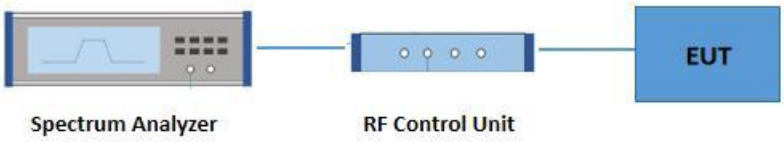
4.3.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.3.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.6.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz, VBW = 300kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHZ RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

4.3.4 Test Setup



4.3.5 Test Results

See ANNEX A.3.

4.4 Dwell Time Measurement

4.4.1 Limit of Dwell Time

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.

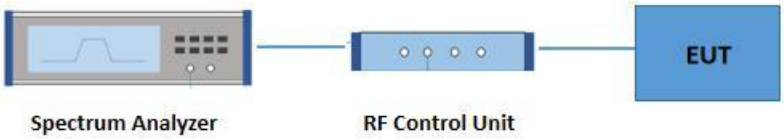
4.4.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report

4.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.4.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.The path loss was compensated to the results for each measurement
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

4.4.4 Test Setup



4.4.5 Test Results

See ANNEX A.4.

4.5 Hopping Channel Separation Measurement

4.5.1 Limit of Hopping Channel Separation

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

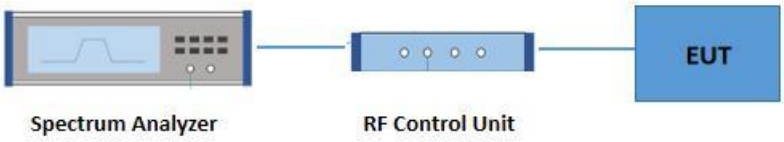
4.5.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.5.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.2.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels;
   RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
6. Measure and record the results in the test report.

4.5.4 Test Setup



4.5.5 Test Results

See ANNEX A.5.

4.6 Number of Channel Measurement

4.6.1 Limits of Number of Hopping Frequency

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

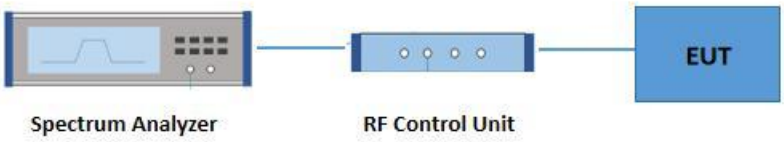
4.6.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.6.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.3.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = the frequency band of operation;RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. The number of hopping frequency used is defined as the number of total channel.
7. Record the measurement data derived from spectrum analyzer.

4.6.4 Test Setup



4.6.5 Test Results

See ANNEX A.6.

4.7 Conducted Spurious Emission Measurement

4.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition,radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

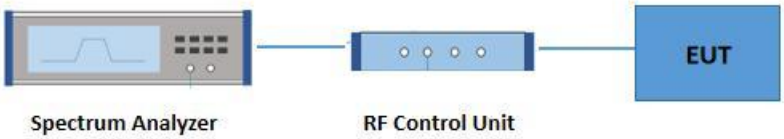
4.7.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report

4.7.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.8.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW= 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

4.7.4 Test Setup



4.7.5 Test Results

See ANNEX A.7.

4.8 Radiated Band Edges and Spurious Emission Measurement

4.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency of emission (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
Above960	500	3

4.8.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.8.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured.
   (2) Set RBW=100 kHz for f< 1 GH, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto;Detector function = peak;Trace = max hold for peak.
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds

On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*L_{n-1}+N_n*L_n$

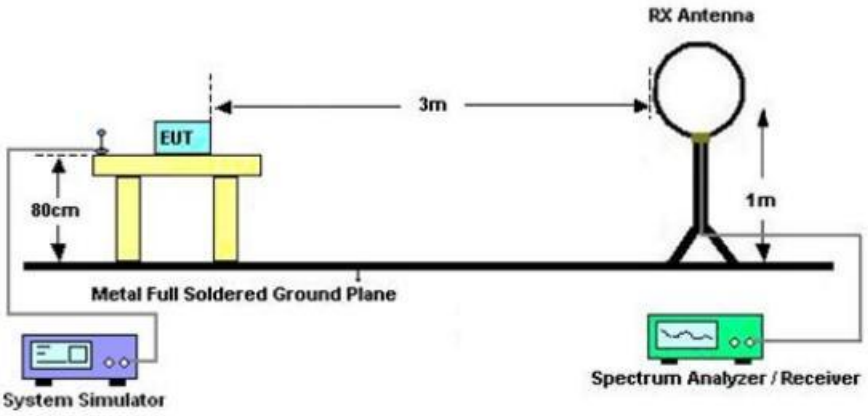
Where N_1 is number of type 1 pulses, L, is length of type 1 pulses, etc.

Average Emission Level = Peak Emission Level + 20*log(Duty cycle).

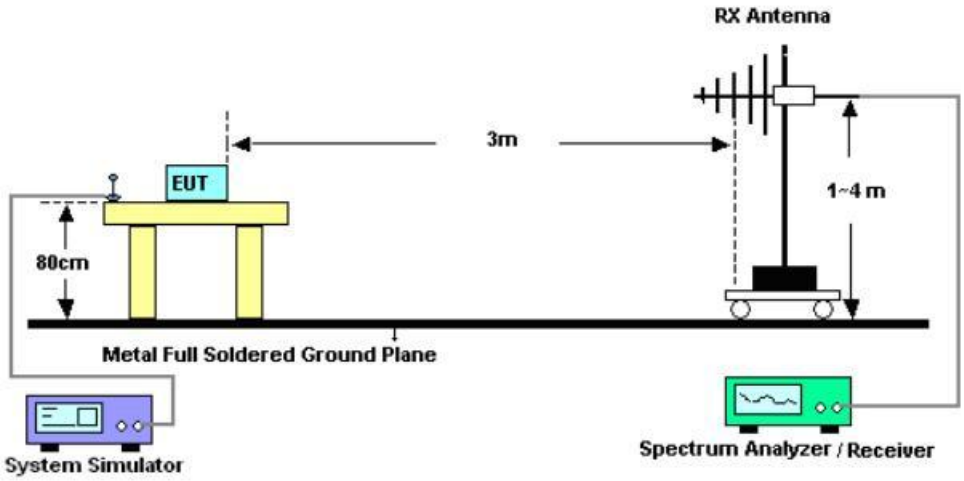
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Pre-amp Factor = Level
7. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

4.8.4 Test Setup

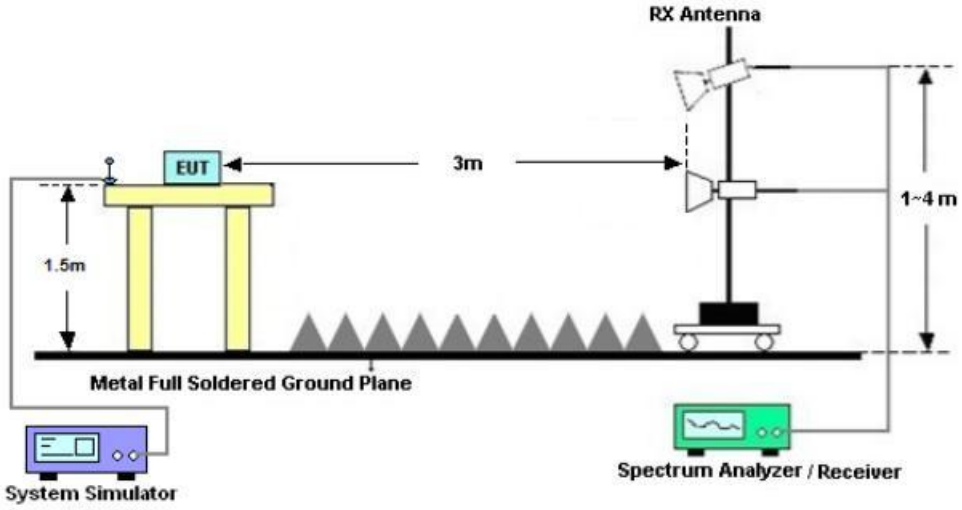
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



4.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was20dB lower than the limit line was not reported.There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

4.8.6Test Result of Radiated Spurious at Band Edges

See ANNEX B.1.

4.8.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or40GHz, whichever is lower)

See ANNEX B.1.

4.8.8 Duty cycle correction factor for average measurement

See ANNEX A.8.

4.9 AC Conducted Emission Measurement

4.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

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

Decreases with the logarithm of the frequency.

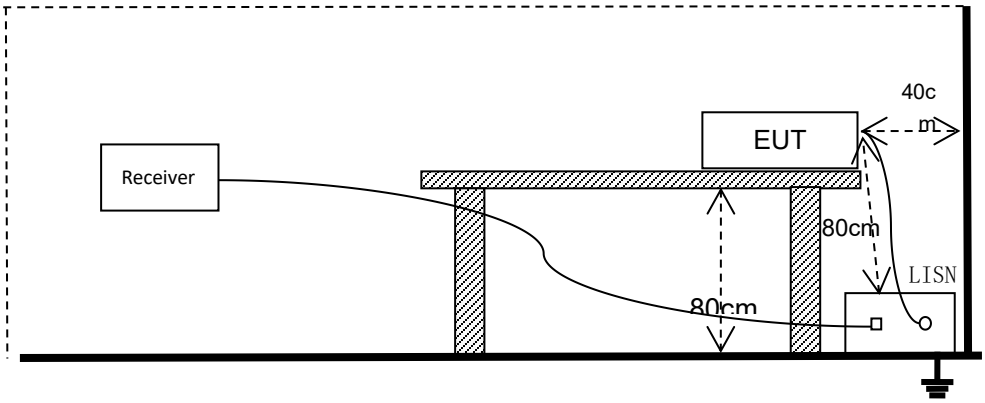
4.9.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

4.9.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth =9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

4.9.4 Test Setup



4.9.5 Uncertainty Measurement

Where relevant,the following measurement uncertainty levels have been estimated for tests performed on the EUT. The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

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

CASE	Uncertainty
Continuous Emission (AC port)	2.92 dB

4.9.6 Test Result

Remark: The product is DC powered, this test item is not applicable.

4.10 Antenna Requirements

4.10.1 Standard Applicable

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.10.2 Antenna Anti-Replacement Construction

The antenna is External on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.20dBi.

-------- THE END --------

ANNEX A: Test Results of Conducted Test

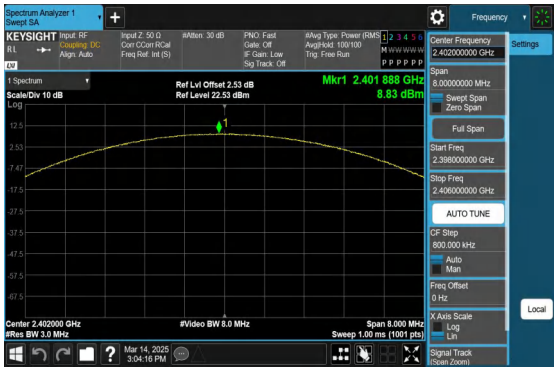
A.1 Output Power Measurement

Test Result Peak

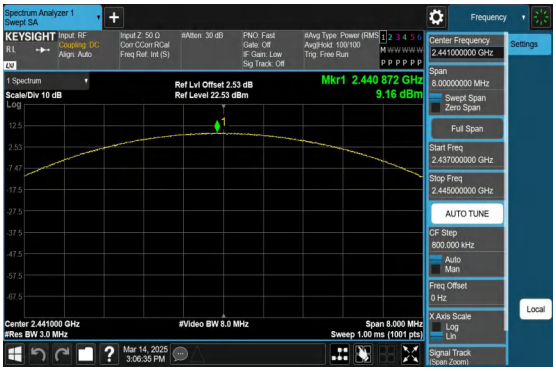
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit[dBm]	Verdict
DH5	Ant1	2402	8.83	≤30	9.03	≤36	PASS
DH5	Ant1	2441	9.16	≤30	9.36	≤36	PASS
DH5	Ant1	2480	7.78	≤30	7.98	≤36	PASS
2DH5	Ant1	2402	4.93	≤20.97	5.13	≤36	PASS
2DH5	Ant1	2441	5.30	≤20.97	5.50	≤36	PASS
2DH5	Ant1	2480	3.92	≤20.97	4.12	≤36	PASS
3DH5	Ant1	2402	5.32	≤20.97	5.52	≤36	PASS
3DH5	Ant1	2441	5.67	≤20.97	5.87	≤36	PASS
3DH5	Ant1	2480	4.32	≤20.97	4.52	≤36	PASS

Test Graphs

DH5-Ant1-2402-PASS

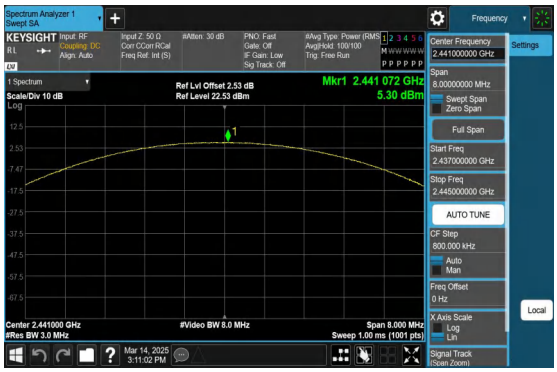
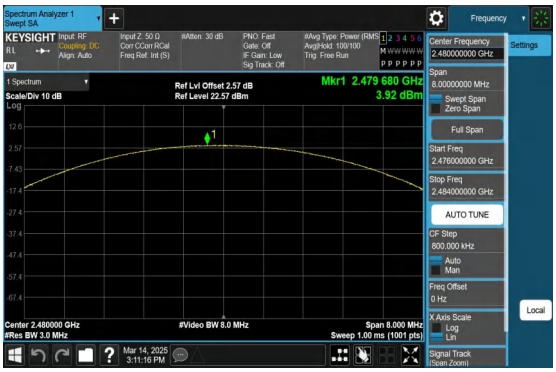
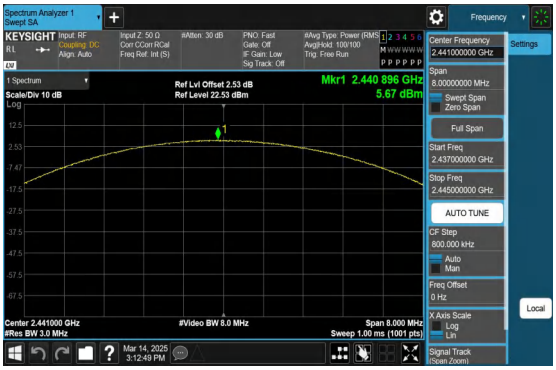


DH5-Ant1-2441-PASS



DH5-Ant1-2480-PASS

2DH5-Ant1-2402-PASS

2DH5-Ant1-2441-PASS	2DH5-Ant1-2480-PASS
	
3DH5-Ant1-2402-PASS	**3DH5-Ant1-2441-PASS**
	
3DH5-Ant1-2480-PASS	**/**
	/

A.2 20dB and 99% Bandwidth Measurement

Test Result

20dB Bandwidth

Test Mode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.927	2401.553	2402.480	---	---
DH5	Ant1	2441	0.936	2440.544	2441.480	---	---
DH5	Ant1	2480	0.930	2479.547	2480.477	---	---
2DH5	Ant1	2402	1.311	2401.340	2402.651	---	---
2DH5	Ant1	2441	1.323	2440.334	2441.657	---	---
2DH5	Ant1	2480	1.329	2479.331	2480.660	---	---
3DH5	Ant1	2402	1.290	2401.349	2402.639	---	---
3DH5	Ant1	2441	1.296	2440.355	2441.651	---	---
3DH5	Ant1	2480	1.308	2479.343	2480.651	---	---

99% Bandwidth

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.84266	2401.5733	2402.4160	---	---
DH5	Ant1	2441	0.82392	2440.5853	2441.4092	---	---
DH5	Ant1	2480	0.83715	2479.5704	2480.4075	---	---
2DH5	Ant1	2402	1.1997	2401.4020	2402.6017	---	---
2DH5	Ant1	2441	1.1913	2440.4051	2441.5964	---	---
2DH5	Ant1	2480	1.1934	2479.3981	2480.5915	---	---
3DH5	Ant1	2402	1.1979	2401.3945	2402.5924	---	---
3DH5	Ant1	2441	1.1950	2440.3998	2441.5948	---	---
3DH5	Ant1	2480	1.2088	2479.3826	2480.5914	---	---

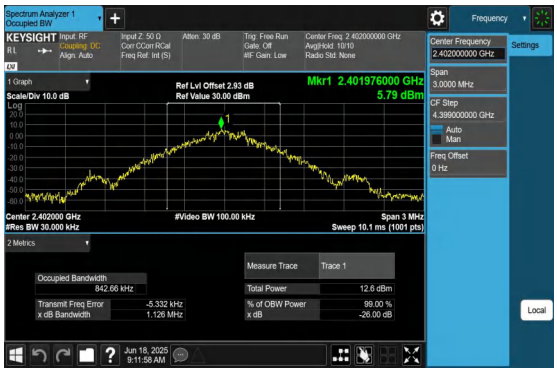
Test Graphs

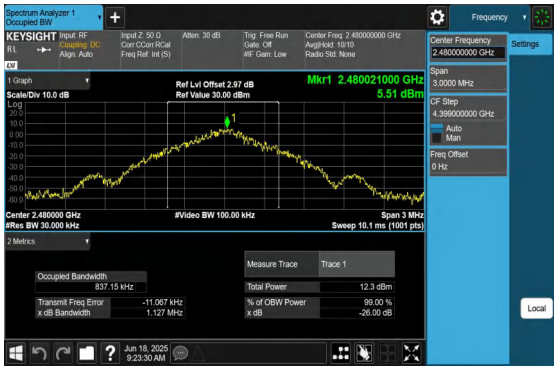
20dB Bandwidth

DH5-Ant1-2402	DH5-Ant1-2441
DH5-Ant1-2480	**2DH5-Ant1-2402**
2DH5-Ant1-2441	**2DH5-Ant1-2480**
3DH5-Ant1-2402	**3DH5-Ant1-2441**

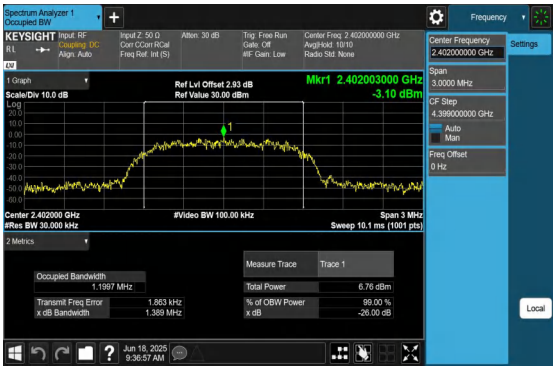
3DH5-Ant1-2480	/
	/

99% Bandwidth

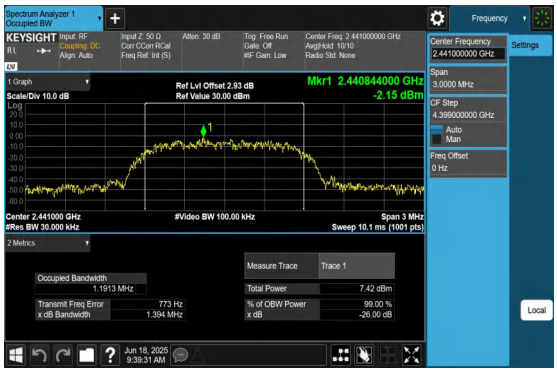
DH5-Ant1-2402	DH5-Ant1-2441
	
DH5-Ant1-2480	2DH5-Ant1-2402



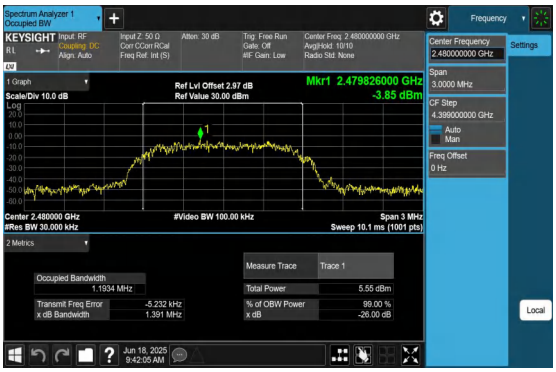
2DH5-Ant1-2441



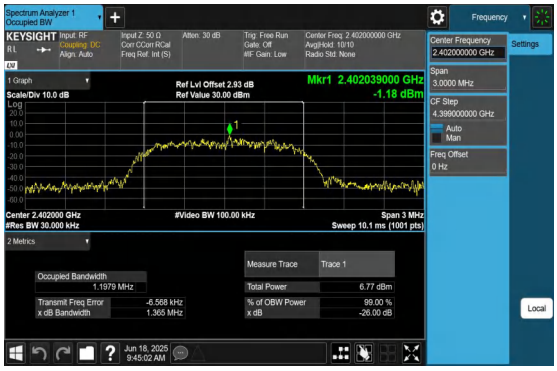
2DH5-Ant1-2480



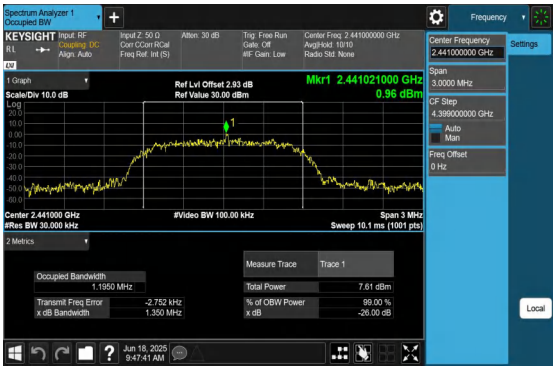
3DH5-Ant1-2402



3DH5-Ant1-2441



3DH5-Ant1-2480



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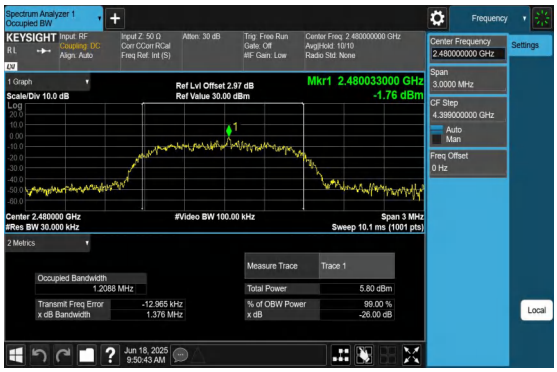


/

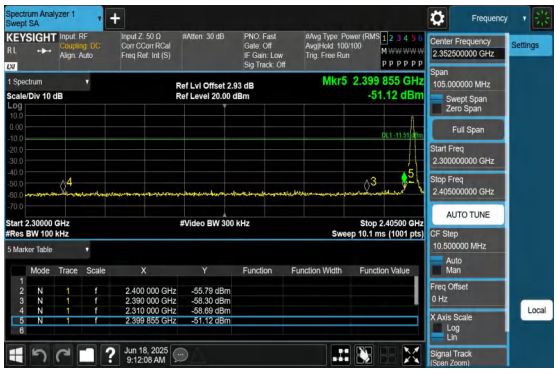
A.3 Conducted Band Edges Measurement

Test Result

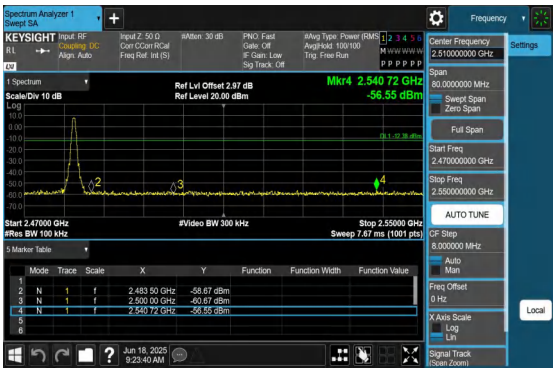
Test Mode	Antenna	Ch Name	Frequency[MHz]	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Low	2402	8.49	-51.12	≤-11.51	PASS
DH5	Ant1	High	2480	7.62	-56.55	≤-12.38	PASS
DH5	Ant1	Low	Hop_2402	8.27	-55.49	≤-11.73	PASS
DH5	Ant1	High	Hop_2480	8.13	-55.82	≤-11.87	PASS
2DH5	Ant1	Low	2402	2.52	-56.01	≤-17.48	PASS
2DH5	Ant1	High	2480	0.01	-56.01	≤-19.99	PASS
2DH5	Ant1	Low	Hop_2402	-1.53	-56.23	≤-21.53	PASS
2DH5	Ant1	High	Hop_2480	-0.90	-56.28	≤-20.9	PASS
3DH5	Ant1	Low	2402	2.64	-56.31	≤-17.36	PASS
3DH5	Ant1	High	2480	2.16	-56.24	≤-17.84	PASS
3DH5	Ant1	Low	Hop_2402	-1.28	-56.95	≤-21.28	PASS
3DH5	Ant1	High	Hop_2480	1.43	-55.83	≤-18.57	PASS

Test Graphs

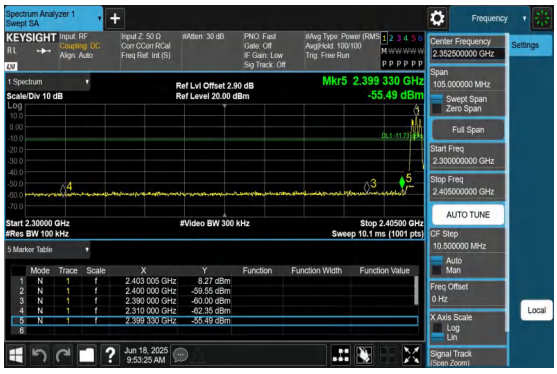
DH5-Ant1-2402-PASS



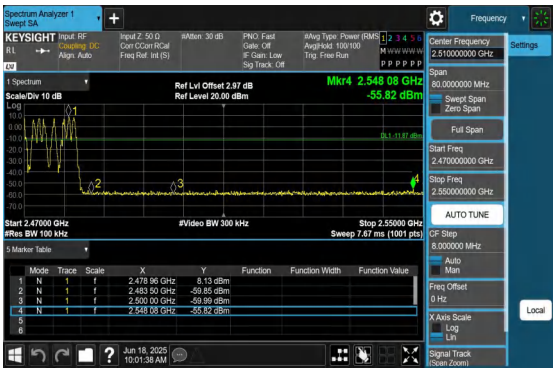
DH5-Ant1-2480-PASS



DH5-Ant1-Hop_2402-PASS

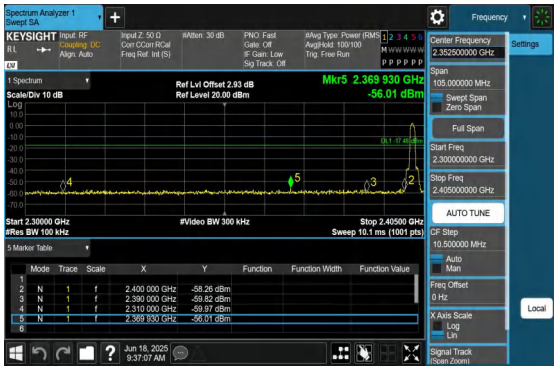


DH5-Ant1-Hop_2480-PASS



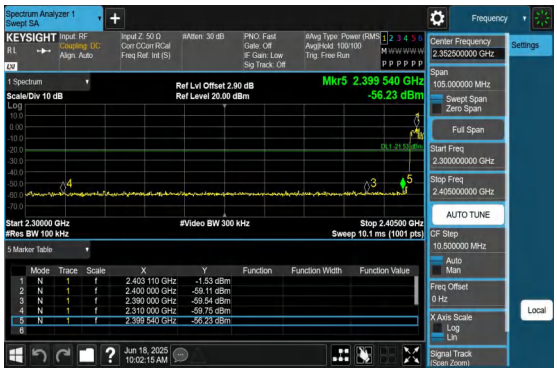
2DH5-Ant1-2402-PASS

2DH5-Ant1-2480-PASS



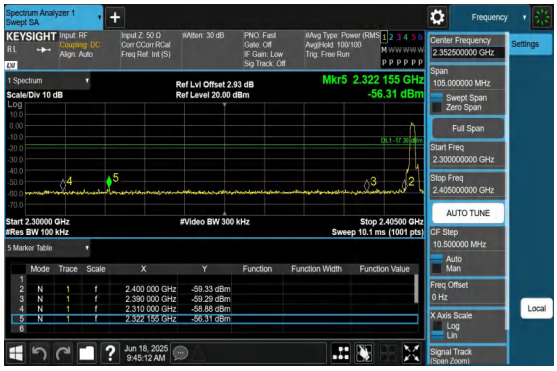
2DH5-Ant1-Hop_2402-PASS

2DH5-Ant1-Hop_2480-PASS

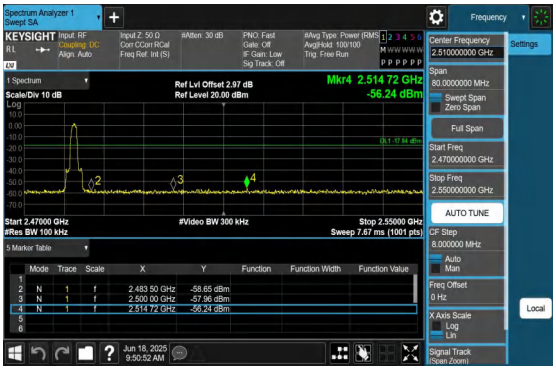


3DH5-Ant1-2402-PASS

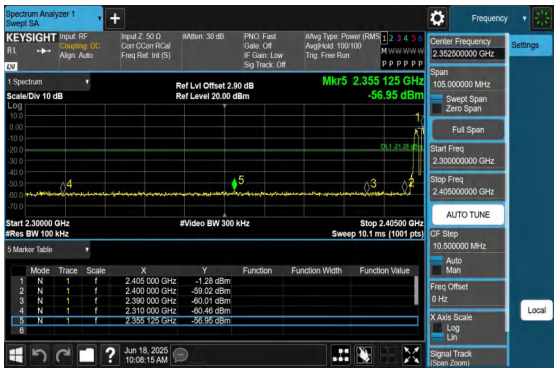
3DH5-Ant1-2480-PASS



3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS



A.4 Dwell Time Measurement

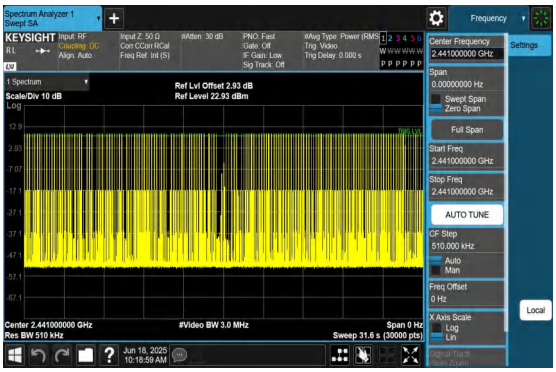
Test Result

Test Mode	Antenna	Frequency[MHz]	Burst Width[ms]	Total Hops[Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.360	282	0.102	≤0.4	PASS
DH3	Ant1	Hop	1.610	160	0.258	≤0.4	PASS
DH5	Ant1	Hop	2.870	112	0.321	≤0.4	PASS
2DH1	Ant1	Hop	0.360	305	0.11	≤0.4	PASS
2DH3	Ant1	Hop	1.620	156	0.253	≤0.4	PASS
2DH5	Ant1	Hop	2.870	94	0.27	≤0.4	PASS
3DH1	Ant1	Hop	0.370	294	0.109	≤0.4	PASS
3DH3	Ant1	Hop	1.620	141	0.228	≤0.4	PASS
3DH5	Ant1	Hop	2.870	101	0.29	≤0.4	PASS

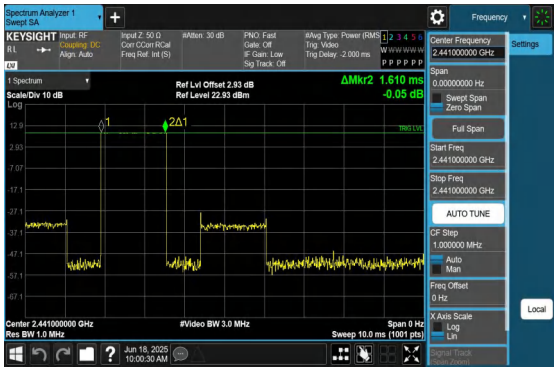
Test Graphs

DH1-Ant1-Hop-PASS

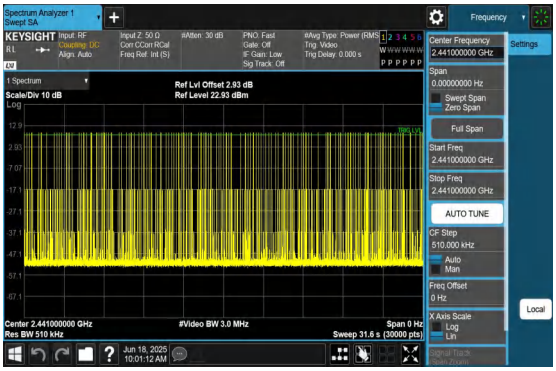
DH1-Ant1-Hop-PASS



DH3-Ant1-Hop-PASS

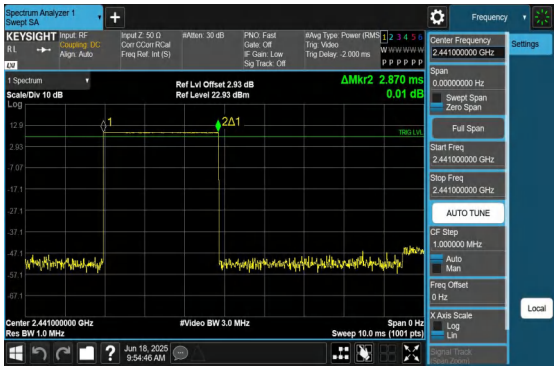


DH3-Ant1-Hop-PASS

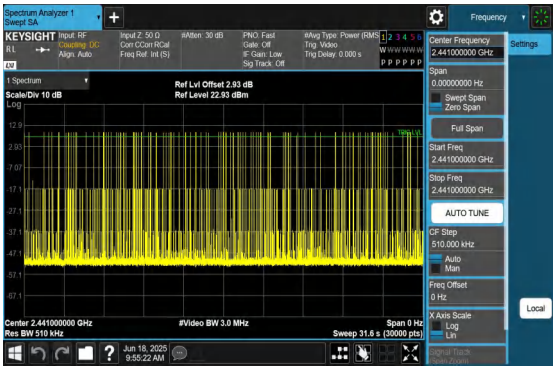


DH5-Ant1-Hop-PASS

DH5-Ant1-Hop-PASS

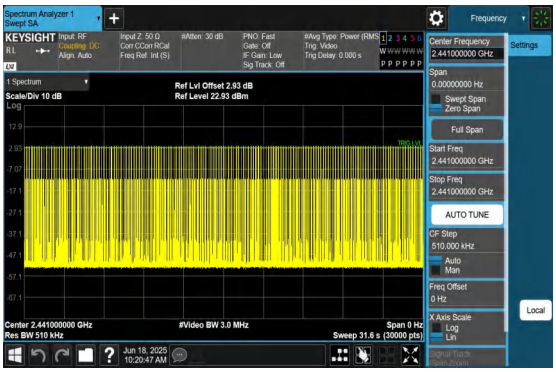


2DH1-Ant1-Hop-PASS

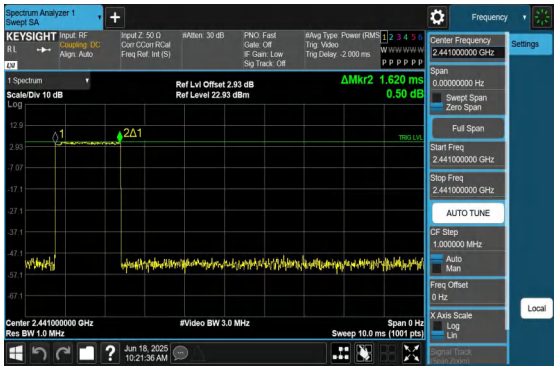


2DH1-Ant1-Hop-PASS

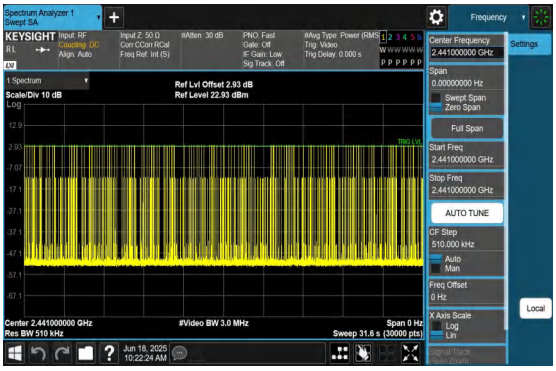
2DH3-Ant1-Hop-PASS



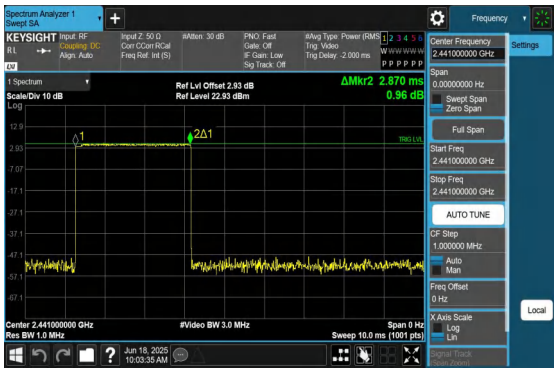
2DH3-Ant1-Hop-PASS

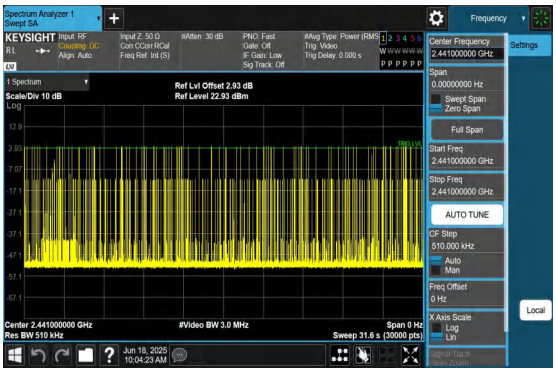


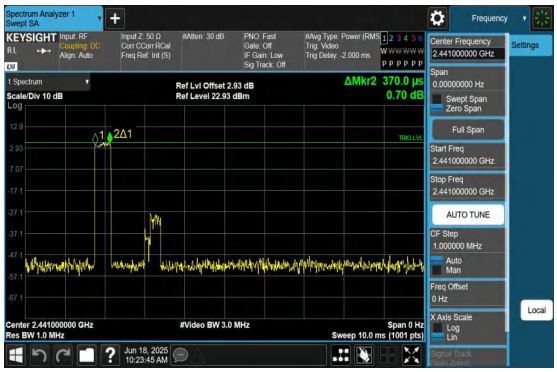
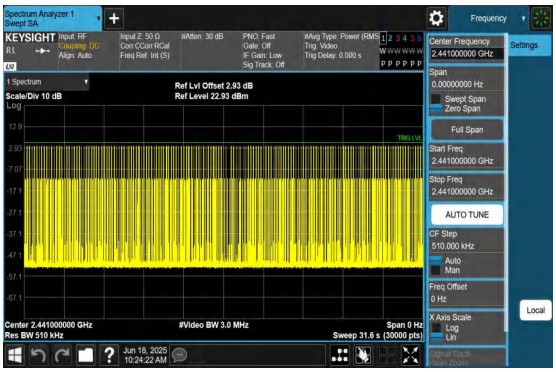
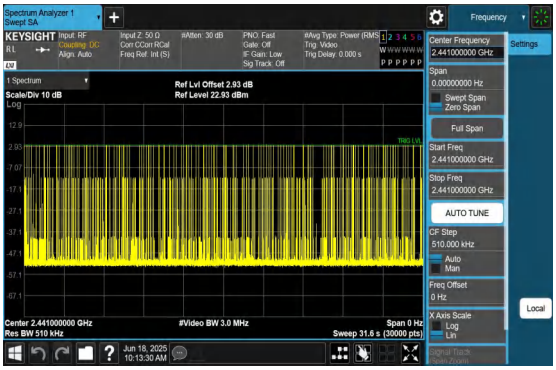
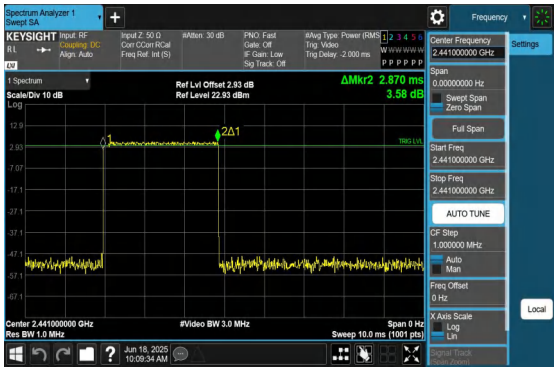
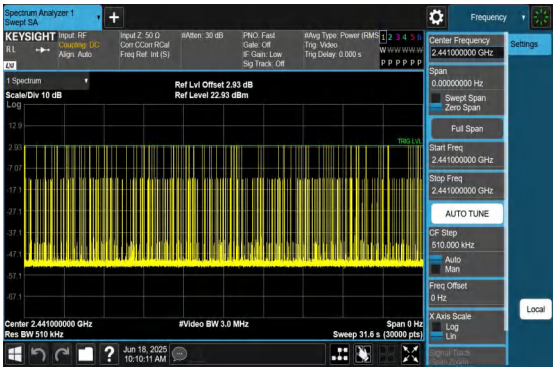
2DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS





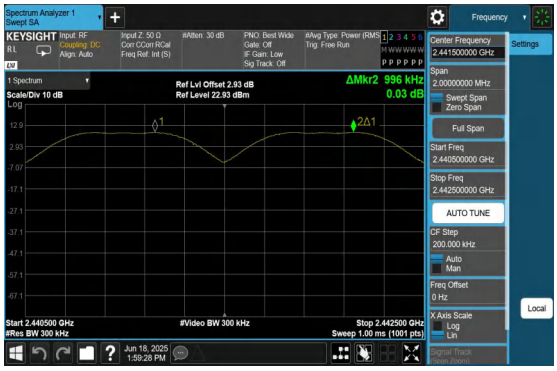
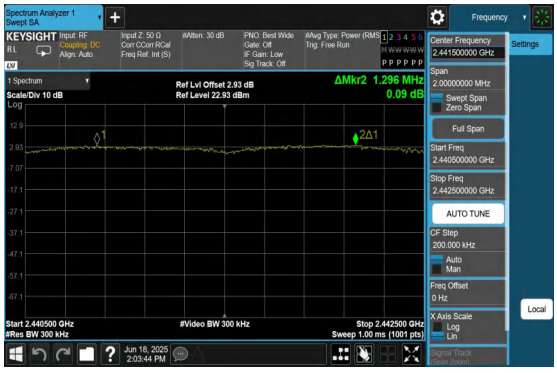
3DH1-Ant1-Hop-PASS	3DH1-Ant1-Hop-PASS
	
3DH3-Ant1-Hop-PASS	3DH3-Ant1-Hop-PASS
	
3DH5-Ant1-Hop-PASS	3DH5-Ant1-Hop-PASS
	

A.5 Hopping Channel Separation

Test Result

Test Mode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.996	≥0.936	PASS
2DH5	Ant1	Hop	0.968	≥0.886	PASS
3DH5	Ant1	Hop	1.296	≥0.872	PASS

Test Graphs

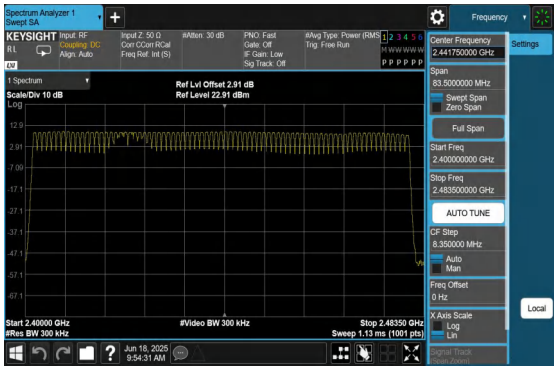
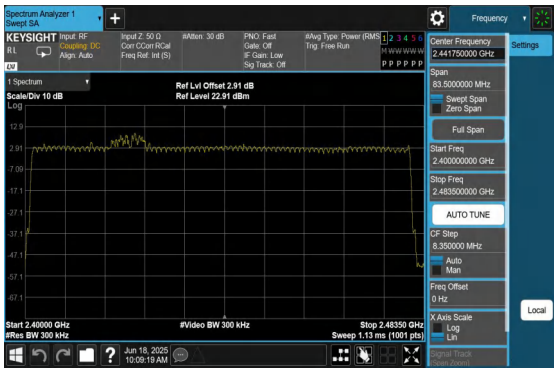
DH5-Ant1-Hop-PASS	2DH5-Ant1-Hop-PASS
	
3DH5-Ant1-Hop-PASS	/
	/

A.6 Number of Channel Measurement

Test Result

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

Test Graphs

DH5-Ant1-Hop-PASS	2DH5-Ant1-Hop-PASS
	
3DH5-Ant1-Hop-PASS	**/**
	/

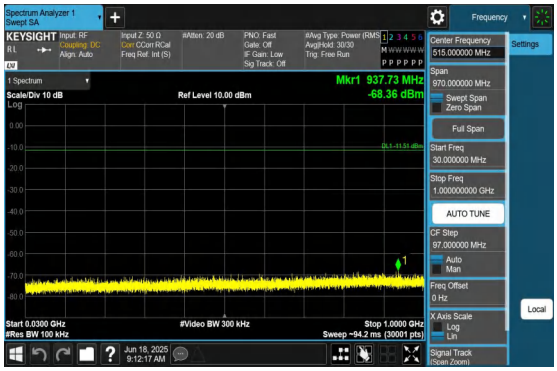
A.7 Conducted Spurious Emission Measurement

Test Result

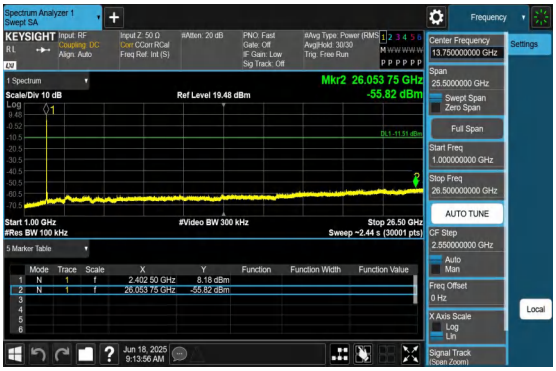
Test Mode	Antenna	Frequency [MHz]	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	30~1000	8.49	-68.36	≤-11.51	PASS
DH5	Ant1	2402	1000~26500	8.49	-55.82	≤-11.51	PASS
DH5	Ant1	2441	30~1000	9.09	-68.72	≤-10.91	PASS
DH5	Ant1	2441	1000~26500	9.09	-54.45	≤-10.91	PASS
DH5	Ant1	2480	30~1000	7.62	-68.3	≤-12.38	PASS
DH5	Ant1	2480	1000~26500	7.62	-54.55	≤-12.38	PASS
2DH5	Ant1	2402	30~1000	2.52	-48.76	≤-17.48	PASS
2DH5	Ant1	2402	1000~26500	2.52	-44.75	≤-17.48	PASS
2DH5	Ant1	2441	30~1000	3.49	-53.89	≤-16.51	PASS
2DH5	Ant1	2441	1000~26500	3.49	-54.47	≤-16.51	PASS
2DH5	Ant1	2480	30~1000	0.01	-67.11	≤-19.99	PASS
2DH5	Ant1	2480	1000~26500	0.01	-36.47	≤-19.99	PASS
3DH5	Ant1	2402	30~1000	2.64	-68.57	≤-17.36	PASS
3DH5	Ant1	2402	1000~26500	2.64	-40.66	≤-17.36	PASS
3DH5	Ant1	2441	30~1000	3.24	-68.22	≤-16.76	PASS
3DH5	Ant1	2441	1000~26500	3.24	-39.67	≤-16.76	PASS
3DH5	Ant1	2480	30~1000	2.16	-58.93	≤-17.84	PASS
3DH5	Ant1	2480	1000~26500	2.16	-34.44	≤-17.84	PASS

Test Graphs

DH5-Ant1-2402-30~1000-PASS

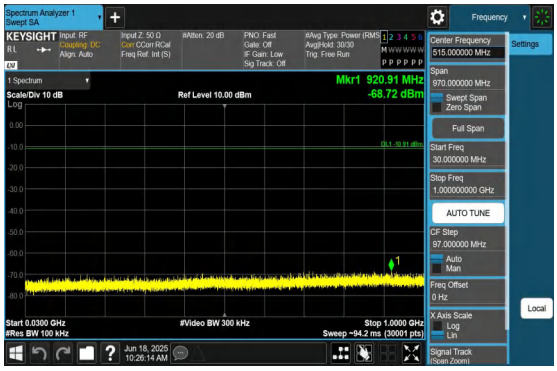


DH5-Ant1-2402-1000~26500-PASS



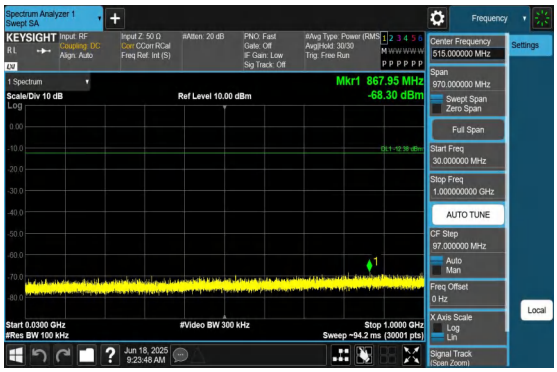
DH5-Ant1-2441-30~1000-PASS

DH5-Ant1-2441-1000~26500-PASS

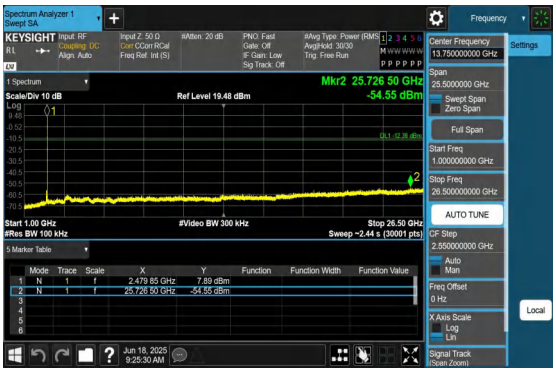


DH5-Ant1-2480-30~1000-PASS

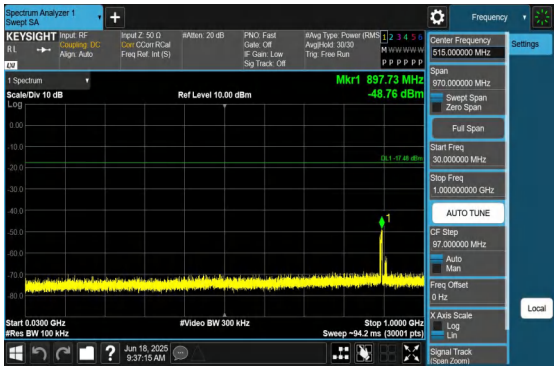
DH5-Ant1-2480-1000~26500-PASS



2DH5-Ant1-2402-30~1000-PASS

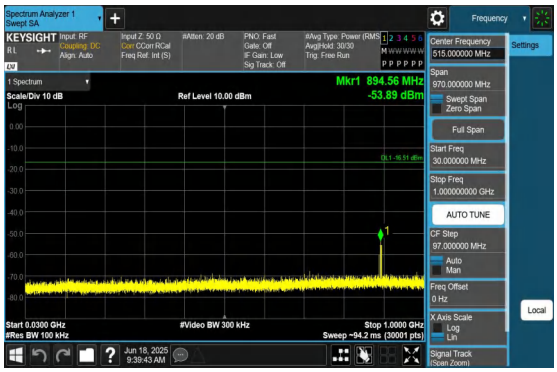


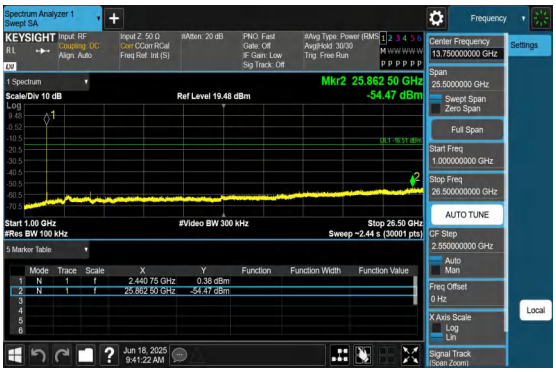
2DH5-Ant1-2402-1000~26500-PASS

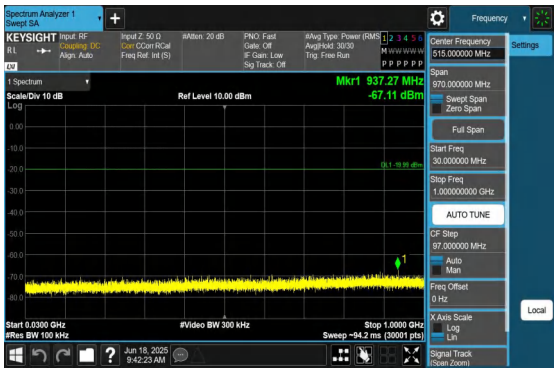
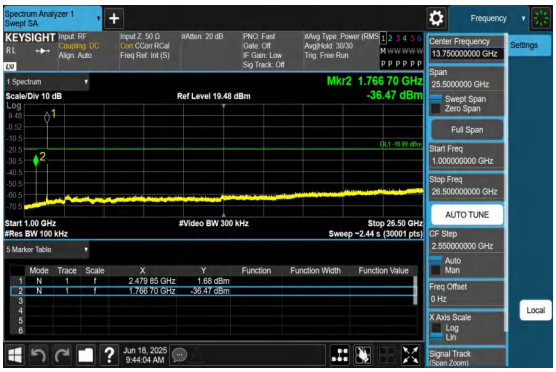
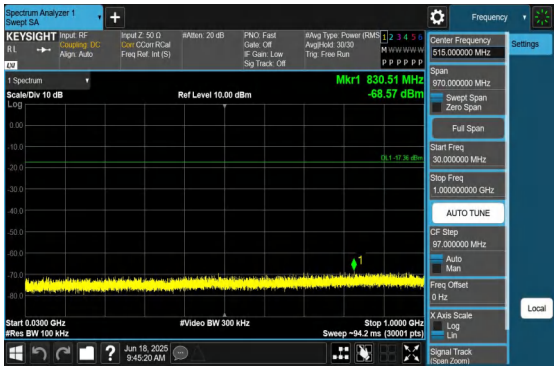
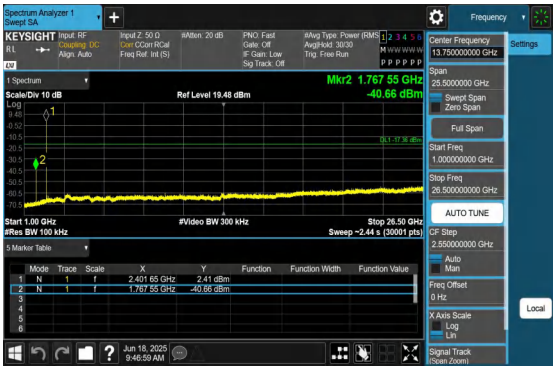
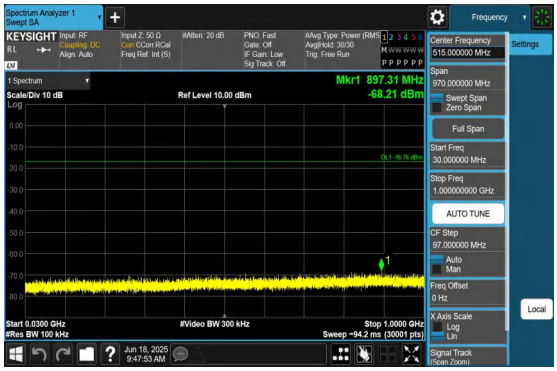
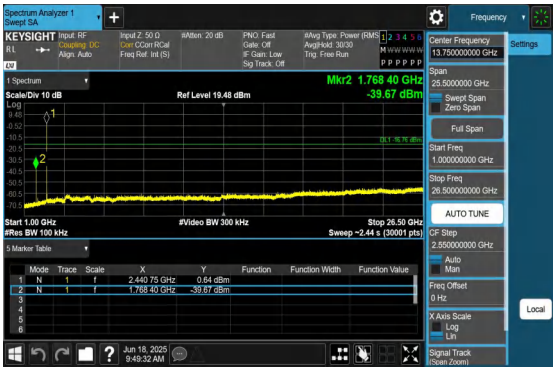


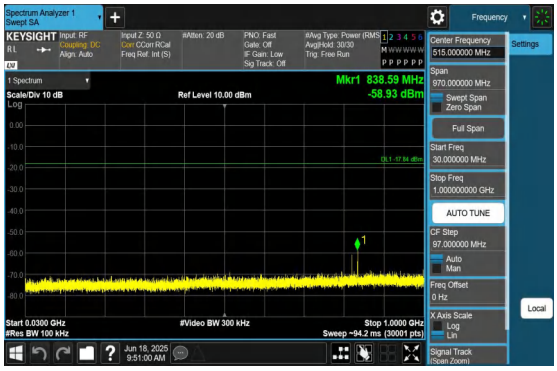
2DH5-Ant1-2441-30~1000-PASS

2DH5-Ant1-2441-1000~26500-PASS





2DH5-Ant1-2480-30~1000-PASS	2DH5-Ant1-2480-1000~26500-PASS
	
3DH5-Ant1-2402-30~1000-PASS	3DH5-Ant1-2402-1000~26500-PASS
	
3DH5-Ant1-2441-30~1000-PASS	3DH5-Ant1-2441-1000~26500-PASS
	
3DH5-Ant1-2480-30~1000-PASS	3DH5-Ant1-2480-1000~26500-PASS


Spectrum Analyzer 1
Swept SA
KEYSIGHT
Center Frequency
515.000000 MHz
Span
970.000000 MHz
Swept Span
Zero Span
Full Span
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
AUTO TUNE
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Settings
Local
Signal Track
(Span Zoom)
1 Spectrum
Scale/Div 10 dB
Ref Level 10.00 dBm
Mkr1 838.59 MHz
-58.93 dBm
Start 0.0300 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Stop 1.0000 GHz
Sweep ~94.2 ms (30001 pts)
Jun 18, 2025
9:51:00 AM

Spectrum Analyzer 1
Swept SA
KEYSIGHT
Center Frequency
13.750000000 GHz
Span
25.5000000 GHz
Swept Span
Zero Span
Full Span
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
AUTO TUNE
CF Step
2.550000000 GHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Settings
Local
Signal Track
(Span Zoom)
1 Spectrum
Scale/Div 10 dB
Ref Level 19.48 dBm
Mkr2 1.765 85 GHz
-34.44 dBm
Start 1.00 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Stop 26.50 GHz
Sweep ~2.44 s (30001 pts)
5 Marker Table
Mode Trace Scale X Y Function Function Width Function Value
1 N 1 f 2.479 85 GHz -0.28 dBm
2 N 1 f 1.765 85 GHz -34.44 dBm
Jun 18, 2025
9:52:40 AM

A.8 Duty Cycle

Test Result

Test Mode	Antenna	Frequency[MHz]	ON Time[ms]	Period[ms]	Duty Cycle[%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.89	3.75	77.07	1.13
DH5	Ant1	2441	2.88	3.75	76.80	1.15
DH5	Ant1	2480	2.88	3.75	76.80	1.15
2DH5	Ant1	2402	2.89	3.75	77.07	1.13
2DH5	Ant1	2441	2.89	3.75	77.07	1.13
2DH5	Ant1	2480	2.88	3.75	76.80	1.15
3DH5	Ant1	2402	2.89	3.75	77.07	1.13
3DH5	Ant1	2441	2.89	3.75	77.07	1.13
3DH5	Ant1	2480	2.89	3.75	77.07	1.13

Note:

Duty cycle=on time/100ms=2*2.89/100=5.78%

Duty cycle Correction factor= 20*log(Duty cycle)= -24.76dB

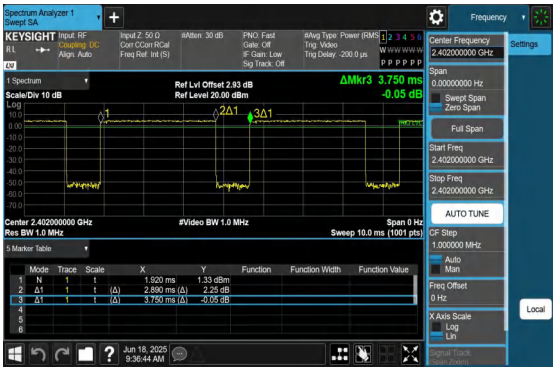
Test Graphs

NTNV-DH5-Ant1-2402

NTNV-DH5-Ant1-2441

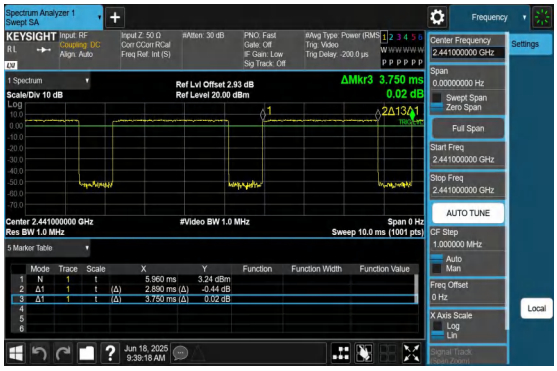
NTNV-DH5-Ant1-2480

NTNV-2DH5-Ant1-2402



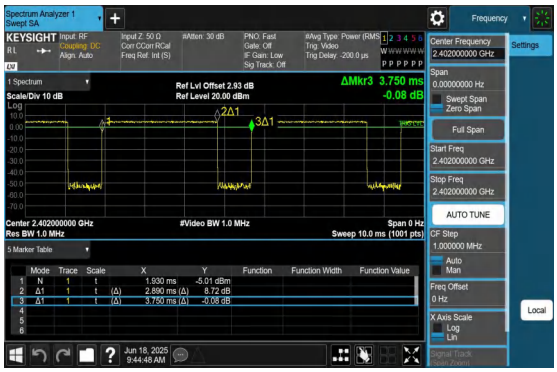
NTNV-2DH5-Ant1-2441

NTNV-2DH5-Ant1-2480



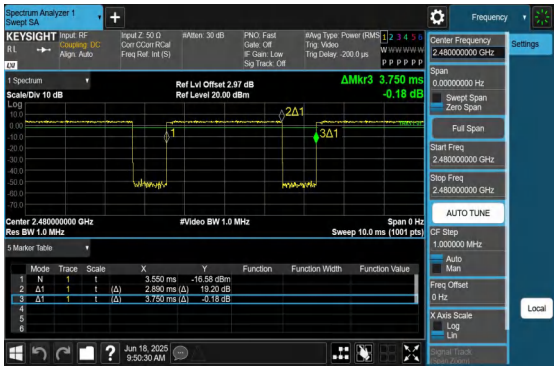
NTNV-3DH5-Ant1-2402

NTNV-3DH5-Ant1-2441



NTNV-3DH5-Ant1-2480

/



/

ANNEX B: Test Results of Radiated Test

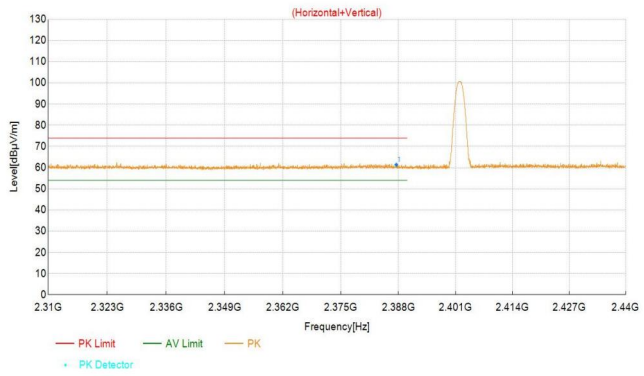
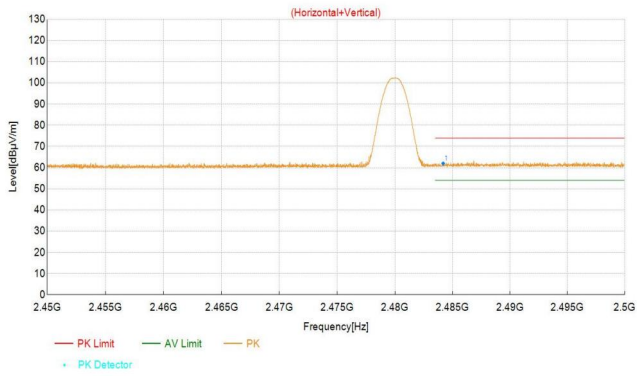
B.1 Radiated Band Edges and Spurious Emission

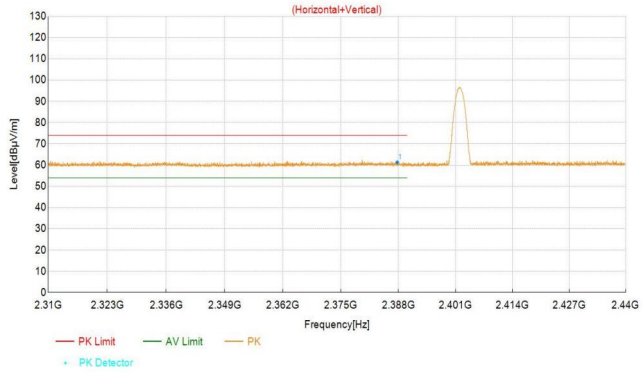
Test Result_Band Edges

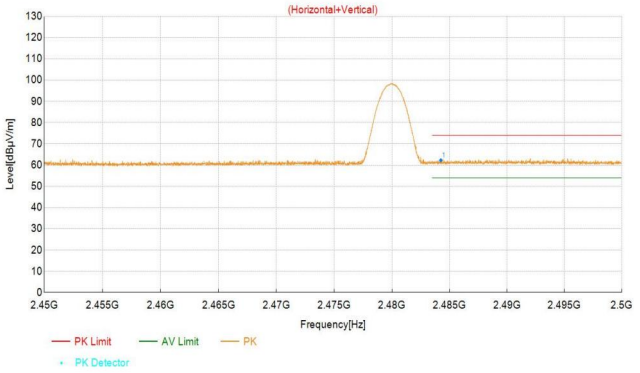
Note:Both vertical and horizontal polarities have been evaluated, and the test data only shows the worst-case. Level=Reading+Factor; Margin=Limit-Level; V=Vertical , H=Horizontal.

Data List								
Test Mode	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Pol.	Det
BT_DH5_2402	2387.545	49.27	61.37	12.10	74.00	12.63	V	PK
	2387.545	-	36.58	-	54.00	17.42	V	AV
BT_DH5_2480	2484.1875	49.27	61.99	12.72	74.00	12.01	V	PK
	2484.1875	-	37.20	-	54.00	16.80	V	AV
BT_3DH5_2402	2387.7725	49.23	61.32	12.09	74.00	12.68	H	PK
	2387.7725	-	36.53	-	54.00	17.47	H	AV
BT_3DH5_2480	2484.25	49.55	62.27	12.72	74.00	11.73	V	PK
	2484.25	-	37.48	-	54.00	16.52	V	AV

Test Graphs_Band Edges

BT_DH5_2402	BT_DH5_2480
	
BT_3DH5_2402	BT_3DH5_2480


(Horizontal+Vertical)
Level[dBμV/m]
130
120
110
100
90
80
70
60
50
40
30
20
10
0
2.31G
2.323G
2.336G
2.349G
2.362G
2.375G
2.388G
2.401G
2.414G
2.427G
2.44G
Frequency[Hz]
PK Limit
AV Limit
PK
PK Detector


(Horizontal+Vertical)
Level[dBμV/m]
130
120
110
100
90
80
70
60
50
40
30
20
10
0
2.45G
2.455G
2.46G
2.465G
2.47G
2.475G
2.48G
2.485G
2.49G
2.495G
2.5G
Frequency[Hz]
PK Limit
AV Limit
PK
PK Detector

Test Result_Spurious Emission

Note1: Test result Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier the Emissions in the frequency band 9kHz-30MHz and 18GHz-26.5GHz are more than 20dB below the limit are not reported.

Note2: Both vertical and horizontal polarities have been evaluated, and the test data only shows the worst-case. Level=Reading+Factor; Margin=Limit-Level; V=Vertical , H=Horizontal.

Data List

Test Mode	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Pol.	Det
BT_DH5_2402	4804	44.25	51.59	7.34	74.00	22.41	V	PK
	7206	42.66	56.34	13.68	74.00	17.66	V	PK
	9608	33.70	48.41	14.71	74.00	25.59	V	PK
	12010	33.17	49.00	15.83	74.00	25.00	V	PK
	14412	32.24	50.59	18.35	74.00	23.41	V	PK
	16814	31.50	54.74	23.24	74.00	19.26	H	PK
	4804	-	26.80	-	54.00	27.20	V	AV
	7206	-	31.55	-	54.00	22.45	V	AV
	9608	-	23.62	-	54.00	30.38	V	AV
	12010	-	24.21	-	54.00	29.79	V	AV
	14412	-	25.80	-	54.00	28.20	V	AV
	16814	-	29.95	-	54.00	24.05	H	AV
BT_DH5_2441	4882	44.57	51.93	7.36	74.00	22.07	V	PK
	7323	43.47	57.40	13.93	74.00	16.60	H	PK
	9764	34.62	49.66	15.04	74.00	24.34	H	PK
	12205	33.13	48.68	15.55	74.00	25.32	V	PK
	14646	31.71	50.17	18.46	74.00	23.83	V	PK
	17087	30.12	54.61	24.49	74.00	19.39	V	PK
	4882	-	27.14	-	54.00	26.86	V	AV
	7323	-	32.61	-	54.00	21.39	H	AV
	9764	-	24.87	-	54.00	29.13	H	AV
	12205	-	23.89	-	54.00	30.11	V	AV

	14646	-	25.38	-	54.00	28.62	V	AV
	17087	-	29.82	-	54.00	24.18	V	AV
BT_DH5_2480	4960	43.67	51.06	7.39	74.00	22.94	V	PK
	7440	42.93	57.40	14.47	74.00	16.60	H	PK
	9920	33.46	48.50	15.04	74.00	25.50	H	PK
	12400	32.76	49.23	16.47	74.00	24.77	H	PK
	14880	33.18	51.70	18.52	74.00	22.30	H	PK
	17360	30.21	55.03	24.82	74.00	18.97	H	PK
	4960	-	26.27	-	54.00	27.73	V	AV
	7440	-	32.61	-	54.00	21.39	H	AV
	9920	-	23.71	-	54.00	30.29	H	AV
	12400	-	24.44	-	54.00	29.56	H	AV
	14880	-	26.91	-	54.00	27.09	H	AV
	17360	-	30.24	-	54.00	23.76	H	AV
BT_3DH5_2402	4804	44.85	52.19	7.34	74.00	21.81	H	PK
	7206	42.94	56.62	13.68	74.00	17.38	H	PK
	9608	33.93	48.64	14.71	74.00	25.36	H	PK
	12010	33.54	49.37	15.83	74.00	24.63	H	PK
	14412	33.17	51.52	18.35	74.00	22.48	H	PK
	16814	31.98	55.22	23.24	74.00	18.78	H	PK
	4804	-	27.40	-	54.00	26.60	H	AV
	7206	-	31.83	-	54.00	22.17	H	AV
	9608	-	23.85	-	54.00	30.15	H	AV
	12010	-	24.58	-	54.00	29.42	H	AV
	14412	-	26.73	-	54.00	27.27	H	AV
	16814	-	30.43	-	54.00	23.57	H	AV
BT_3DH5_2441	4882	45.61	52.97	7.36	74.00	21.03	V	PK
	7323	42.89	56.82	13.93	74.00	17.18	V	PK
	9764	33.58	48.62	15.04	74.00	25.38	H	PK

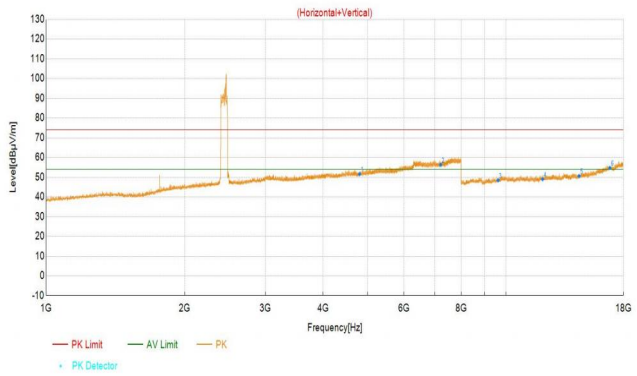
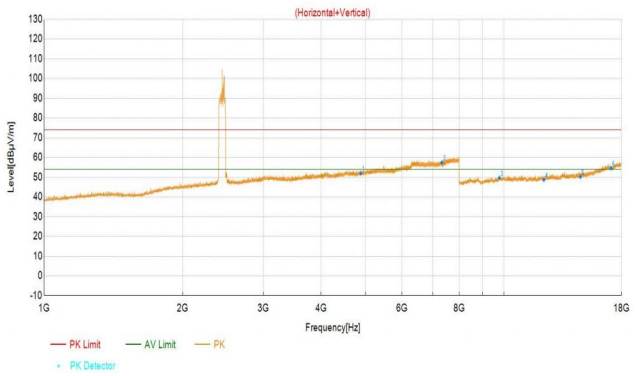
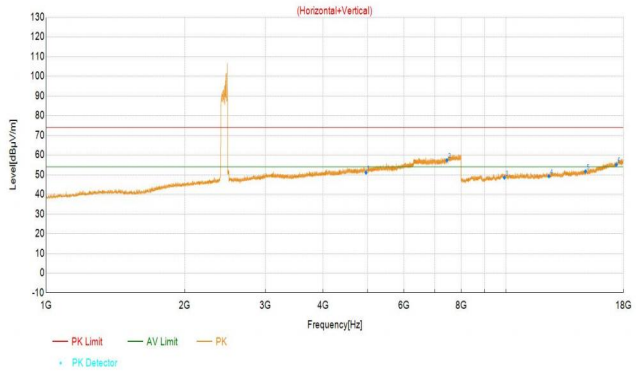
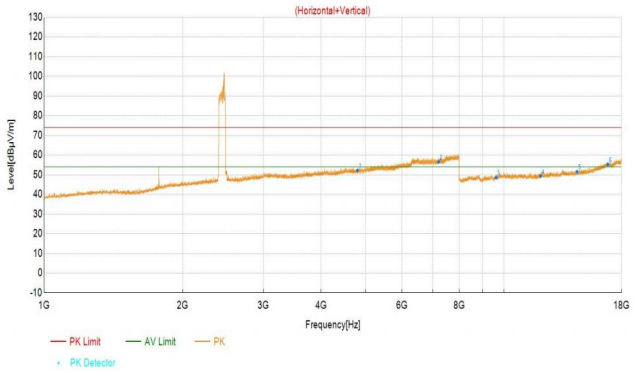
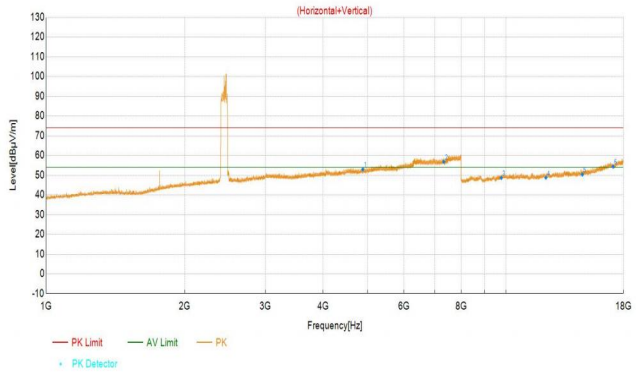
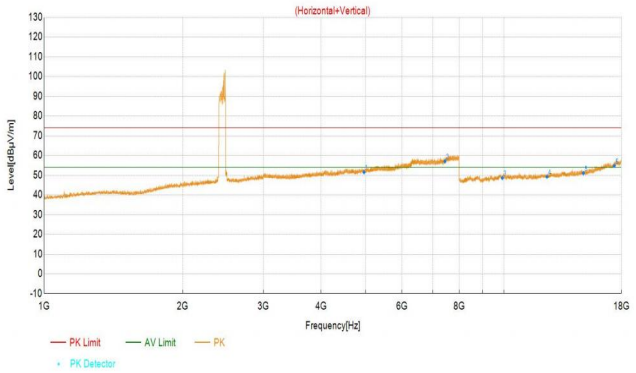
	12205	33.17	48.72	15.55	74.00	25.28	H	PK
	14646	31.85	50.31	18.46	74.00	23.69	H	PK
	17087	29.87	54.36	24.49	74.00	19.64	V	PK
	4882	-	28.18	-	54.00	25.82	V	AV
	7323	-	32.03	-	54.00	21.97	V	AV
	9764	-	23.83	-	54.00	30.17	H	AV
	12205	-	23.93	-	54.00	30.07	H	AV
	14646	-	25.52	-	54.00	28.48	H	AV
	17087	-	29.57	-	54.00	24.43	V	AV
BT_3DH5_2480	4960	44.13	51.52	7.39	74.00	22.48	V	PK
	7440	42.60	57.07	14.47	74.00	16.93	H	PK
	9920	33.55	48.59	15.04	74.00	25.41	V	PK
	12400	32.75	49.22	16.47	74.00	24.78	V	PK
	14880	32.54	51.06	18.52	74.00	22.94	H	PK
	17360	29.88	54.70	24.82	74.00	19.30	H	PK
	4960	-	26.73	-	54.00	27.27	V	AV
	7440	-	32.28	-	54.00	21.72	H	AV
	9920	-	23.80	-	54.00	30.20	V	AV
	12400	-	24.43	-	54.00	29.57	V	AV
	14880	-	26.27	-	54.00	27.73	H	AV
	17360	-	29.91	-	54.00	24.09	H	AV

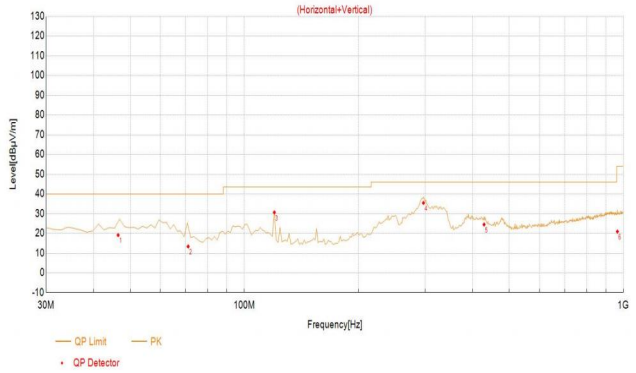
Data List

Test Mode	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Pol.	Det
BT_DH5_2441	46.475965	34.32	19.14	-15.18	40.00	20.86	V	QP
	71.105616	32.97	13.38	-19.59	40.00	26.62	V	QP
	120.018515	49.82	30.65	-19.17	43.50	12.85	V	QP
	296.793949	49.04	35.45	-13.59	46.00	10.55	H	QP

	428.938877	35.13	24.51	-10.62	46.00	21.49	H	QP
	963.881775	23.55	20.95	-2.60	54.00	33.05	V	QP

Test Graphs_Spurious Emission

BT_DH5_2402	BT_DH5_2441
	
BT_DH5_2480	**BT_3DH5_2402**
	
BT_3DH5_2441	**BT_3DH5_2480**
	
BT_DH5_2441	**/**

 (Horizontal+Vertical) Level[dBμV/m] 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 30M 100M 1G Frequency[Hz] QP Limit PK QP Detector	/

ANNEX C: The EUT Appearance

The EUT Appearance (internal and external photographs) are submitted separately.

ANNEX D: Test Setup Photograph

The Test Setup Photographs are submitted separately.