FCC Part 15, Subpart C
Test Report

FCC ID:	2BBQK-MERTON
Applicant:	Marshall Group AB
Address:	Centralplan 15 111 20 Stockholm Sweden
Manufacturer:	Marshall Group AB
Address:	Centralplan 15 111 20 Stockholm Sweden
Product(s):	True Wireless Headphones
Brand(s):	Marshall, Marshall
Test Model(s):	MERTON
Series Model(s):	N/A
Test Date:	Jun. 22, 2026 ~ Jul. 16, 2026
Issued Date:	Jul. 17, 2026
Issued By:	Hwa-Hsing (Dongguan) Testing Co., Ltd.
Address:	No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China
Test Firm Registration No.:	915896
Designation No.:	CN1255
Standards:	FCC CFR 47 Part 2, Subpart J FCC CFR 47 Part 15, Subpart C

The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Nature Lee

Nature Lee

Reviewed by : Sye Yang

Sye Yang

Approved by : Scott He

Scott He

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Release Control Record

Issue No.	Description	Date Issued
26062606-RF-US-01	Original Release	Jul. 17, 2026

1 Summary of Test Results

FCC CFR 47 Part 15, Subpart C			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement
15.247(a)	Emission Bandwidth Measurement	Pass	Meet the requirement
15.247(d)	Conducted Spurious Emissions	Pass	Meet the requirement
15.205 15.209 15.247(d)	Radiated Spurious Emission	Pass	Meet the requirement
15.247(b)	Maximum Peak Output Power	Pass	Meet the requirement
15.247(a)	Number of Hopping Frequency Used	Pass	Meet the requirement
15.247(a)	Dwell Time on Each Channel	Pass	Meet the requirement
15.247(a)	Hopping Channel Separation	Pass	Meet the requirement
15.203	Antenna Requirement	Pass	Meet the requirement
NOTE1: The above test items were tested in accordance with the C63.10 2020 standard for all the requirements. NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

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:

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.

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.66 dB
Radiated Emissions up to 1 GHz	9KHz ~ 30MHz	2.16 dB
	30MHz ~ 1000MHz	3.56 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.71 dB
	6GHz~18GHz	4.84 dB
	18GHz ~ 40GHz	5.73 dB

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

1.2 Modification Record

There were no modifications required for compliance.

2 General Information

2.1 General Description of EUT

Product(s)	True Wireless Headphones
Test Model(s)	MERTON
Sample No.	HS26062606001, HS26062606002
Series Model(s)	N/A
Status of EUT	Engineering Prototype
Power Supply Rating	Charge case: DC 5V from USB or DC 3.8V from battery Each Earbud: DC 5V from Charge case or DC 3.85V from battery
Modulation Type	GFSK, π/4 DQPSK, 8DPSK for FHSS
Transfer Rate	1Mbps, 2Mbps, 3Mbps
Operating Frequency	2402 ~ 2480MHz
Number of Channel	79
Max. Output Power	4.45dBm-Peak
Antenna Type and Antenna Gain	FPC Antenna; Left: -0.34dBi Gain Right: -0.29dBi Gain
Antenna Connector	N/A
Accessory Device	N/A

Note:

1. Please refer to the EUT photo document (Reference No.: 26062606-01&02) for detailed product photo.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
3. Hwa-Hsing (Dongguan) Testing Co., Ltd. is not responsible for the accuracy of the information provided by the manufacturer.
4. This product has two Bluetooth Chips (distribute left earphone and right earphone), they are identical in RF circuitry and antenna except the layout of partial components; both of the earphones are tested on all items, and the report only shows the worst data-Right earphone (the right earphone power is greater). And only the worst case was shown in the test report.
5. The charge case battery and the earphone battery both come with two types of batteries as options.

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	–	–

2.3 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable test items	X-Axis	Y-Axis	Z-Axis	Voltage Supply
Conducted	AC Power Conducted Emission	N/A	N/A	N/A	DC 5V from USB via AC120V input
Radiated	Radiated Emissions	√	√	√	DC 3.85V from battery
Antenna Port Conducted Measurement	Number of Hopping Frequency Used	N/A	N/A	N/A	
	Dwell Time on Each Channel	N/A	N/A	N/A	
	Band Edge Measurement	N/A	N/A	N/A	
	Antenna Port Emission	N/A	N/A	N/A	
	Conducted power	N/A	N/A	N/A	
	Hopping Channel Separation	N/A	N/A	N/A	
	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	N/A	N/A	N/A	

1. *: The EUT had been pre-tested on the positioned of each 3 Axis. The worst case was found when positioned on **X-plane**.
2. "N/A" means Not Applicable.

Evaluation of difference data rate:

Applicable test items	Modulation Type			The Worst-case modes recording in report
	GFSK	π/4DQPSK	8DPSK	
Radiated Emissions	√	-	√	GFSK&8DPSK
Antenna Port Conducted Measurement	√	-	√	GFSK&8DPSK

Test Condition:

Applicable test items	Environmental Conditions	Test Date	Tested by
Radiated Emissions	24.0deg. C, 55%RH	Jul. 07, 2026	Carl
Antenna Port Conducted Measurement	25.5deg. C, 58%RH	Jul. 10, 2026	Yonah Wu

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

Radiated Emission Test (Above 1 GHz):

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
-	0 to 78	0, 39, 78	FHSS	GFSK	DH5
-	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5

Radiated Emission Test (Below 1 GHz):

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
-	0 to 78	0	FHSS	GFSK	DH5
-	0 to 78	0	FHSS	8DPSK	3DH5

Power Line Conducted Emission Test:

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
-	0 to 78	0	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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Packet Type
-	0 to 78	0, 39, 78	FHSS	GFSK	DH5
-	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5

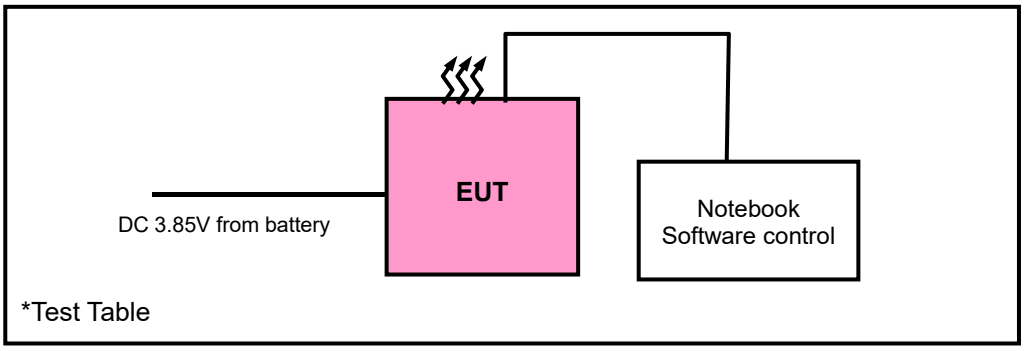
2.4 Description of Support Units

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	Notebook	DELL	Latitude E6420	00426-OEM-8992662-00006	N/A
2	Notebook	HUAWEI	NbD-WFH9	EUEPM21725002655	N/A

No.	Signal Cable Description of The Above Support Units
1	USB extension cord: Unshielded, Detachable 1.8m;

2.5 Configuration of System under Test



3 Test Types and Results

3.1 Radiated Emission and Band-edge Measurement

3.1.1 Limits of Radiated Emission and Band-edge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB 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. For frequencies above 1000 MHz, 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 20 dB under any condition of modulation.

3.1.2 Test Instruments

Radiated emission below 30MHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	100962	2026-07-23
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	HS-2018037	2029-03-21**
Test software	FARAD	FARAD	EZ_EMCV1.1.4.2	N/A
Loop Antenna	TESEQ	HLA 6121	56735	2028-05-22*
Antenna Tower	MF	MFA-440H	NA	NA
Turn Table	MF	MFT-201SS	NA	NA
Antenna Tower&Turn Table Controller	MF	MF-7802	NA	NA

Frequency Range below 1GHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver (9kHz~3GHz)	Rohde&Schwarz	ESPI 7	101978	2026-07-23
Broadband antenna (25MHz~2500MHz)	Schwarzbeck	VULB 9168	00937	2026-07-25
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	HS-2018037	2029-03-21**
Signal Amplifier (30MHz~1000MHz)	Com-power	PAM-103	18020051	2026-07-23
Attenuator	R&S	TS2GA-6dB	18101101	N/A
Test software	FARAD	EZ_EMC V1.1.4.2	N/A	N/A
Broadcast test system	R&S	SFU	100410	2026-07-23
Coaxial cable	N/A	N/A	HS-EMC-100	2026-07-23
Coaxial cable	N/A	N/A	HS-EMC-101/102	2026-07-23

Frequency Range above 1GHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESPI 7	101978	2026-07-23
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	HS-2018037	2029-03-21**
Test software	FARAD	EZ_EMCV1.1.4.2	N/A	N/A
Digital Multimeter	FLUKE	15B+	43512617WS	2026-07-28
Horn Antenna	Schwarzbeck	BBHA 9120 D	1959	2026-08-02
Horn Antenna	Schwarzbeck	BBHA 9170	975	2028-05-23*
Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101783	2026-07-23
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	00025	2026-07-23
Pre-Amplifier	EMCI	EMC 184045SE	9870709	2026-07-30
Spectrum	Keysight	N9020A	MY51240612	2026-07-23
Broadcast test system	R&S	SFU	100410	2026-07-23
Antenna Tower	MF	MFA-440H	NA	NA
Turn Table	MF	MFT-201SS	NA	NA
Antenna Tower&Turn Table Controller	MF	MF-7802	NA	NA
Coaxial cable	N/A	N/A	HS-EMC-103	2026-07-23
Coaxial cable	N/A	N/A	HS-EMC-104/105	2026-07-23

Note:
1. The calibration interval of the above test instruments is 12/24*/36** months.
2. The test was performed in 966.

3.1.3 Test Procedures

a. <u>Peak emission levels are measured by setting the instrument as follow:</u>

1) RBW&VBW setting as a function of frequency:

Frequency	RBW	VBW
9kHz~150kHz	200Hz	600Hz
0.15MHz~30MHz	9kHz	30kHz
30MHz~1000MHz	120kHz	300kHz
>1000MHz	1MHz	3MHz

2) Detector = peak.
3) Sweep time = auto.
4) Trace mode = max hold.
5) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be lengthened for low-duty-cycle applications.)

Note: If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

b. <u>Average emission levels are measured by setting the instrument as follow:</u>

- **Trace averaging with continuous EUT transmission at full power**

If the EUT can be configured or modified to transmit continuously (D ≥ 98%). then the average emission levels shall be measured using the following method (with EUT transmitting continuously):

1) RBW=1 MHz (unless otherwise specified).
2) VBW≥ 3 *RBW.
3) Detector =RMS
4) Sweep time = auto.
5) Perform a trace average of at least 100 traces.

- **Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction**

If continuous transmission of the EUT (D≥98%) cannot be achieved and the duty cycle is constant (duty cycle variations are less than ±2%). then the following procedure shall be used

1) The EUT shall be configured to operate at the maximum achievable duty cycle.
2) Measure the duty cycle D of the transmitter output signal as described in ANSI C63.10.
3) RBW=1 MHz (unless otherwise specified).
4) VBW≥ 3 *RBW.
5) Detector =RMS
6) Sweep time = auto.
7) Perform a trace average of at least 100 traces.

A correction factor shall be added to the measurement results prior to comparing with the emission limit to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

*If power averaging (rms) mode was used in step 5). then the applicable correction factor is [10 10g (1/ D)], where D is the duty cycle.

**If linear voltage averaging mode was used in step f). then the applicable correction factor is [20 10g (1/D)], where D is the duty cycle.

***If a specific emission is demonstrated to be continuous (D > 98%) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that.

- **Reduced VBW Averaging across ON and OFF times of the EUT transmissions with max hold**

If continuous transmission of the EUT (D > 98%) cannot be achieved and the duty cycle is not constant (duty cycle variations exceed ±2%), then the following procedure shall be used:

1) RBW = 1 MHz
2) VBW≥1/T.
3) Detector =peak
4) Sweep time = auto.
5) Trace mode = max hold.
6) Allow max hold to run for at least [50 x (1/ D)] traces

c. The EUT was placed on the top of a rotating table 0.8 meters (below 1GHz) / 1.5 meters (Above 1GHz) above the reference ground. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The EUT was set 3 meters away from the interference-receiving antenna (Below 1GHz) & (Above 1GHz), which was mounted on the top of a variable-height antenna tower.
e. The height of antenna 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.
f. 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.
g. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
h. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

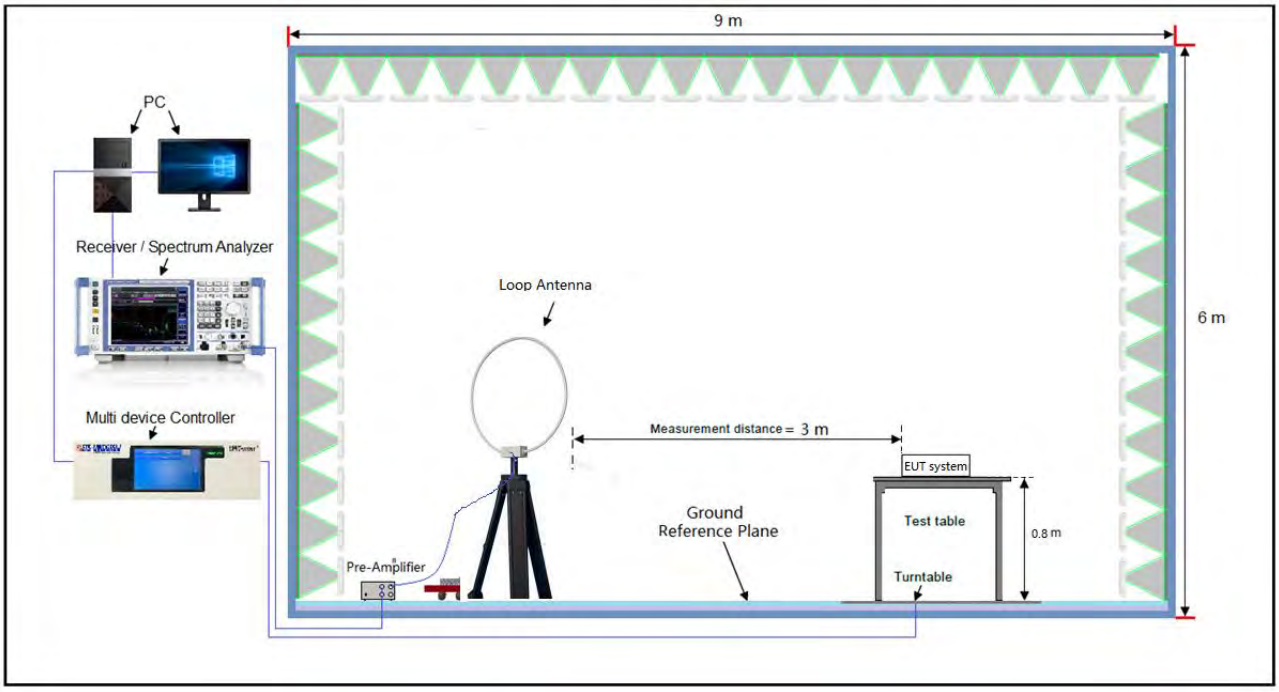
Note:
1. Test procedures for measuring FHSS device: The use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the unwanted emission limit is subject to an average field strength limit (e.g., within a Government Restricted band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (i.e., not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). It is also acceptable to apply the DCCF to a measurement performed with a peak detector instead of the specified RMS power averaging detector. Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period. ANSI C63.10 provides additional measurement guidance applicable to determination of the DCCF.
2. All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 Deviation from Test Standard

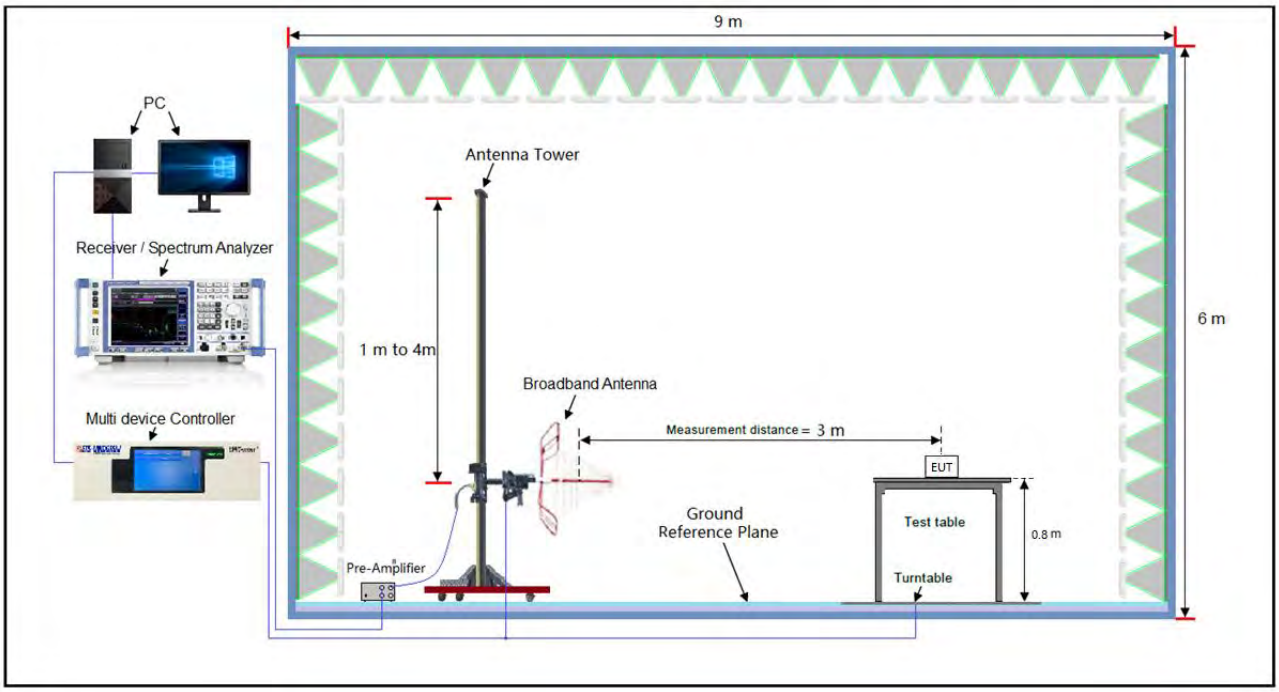
No deviation.

3.1.5 Test Setup

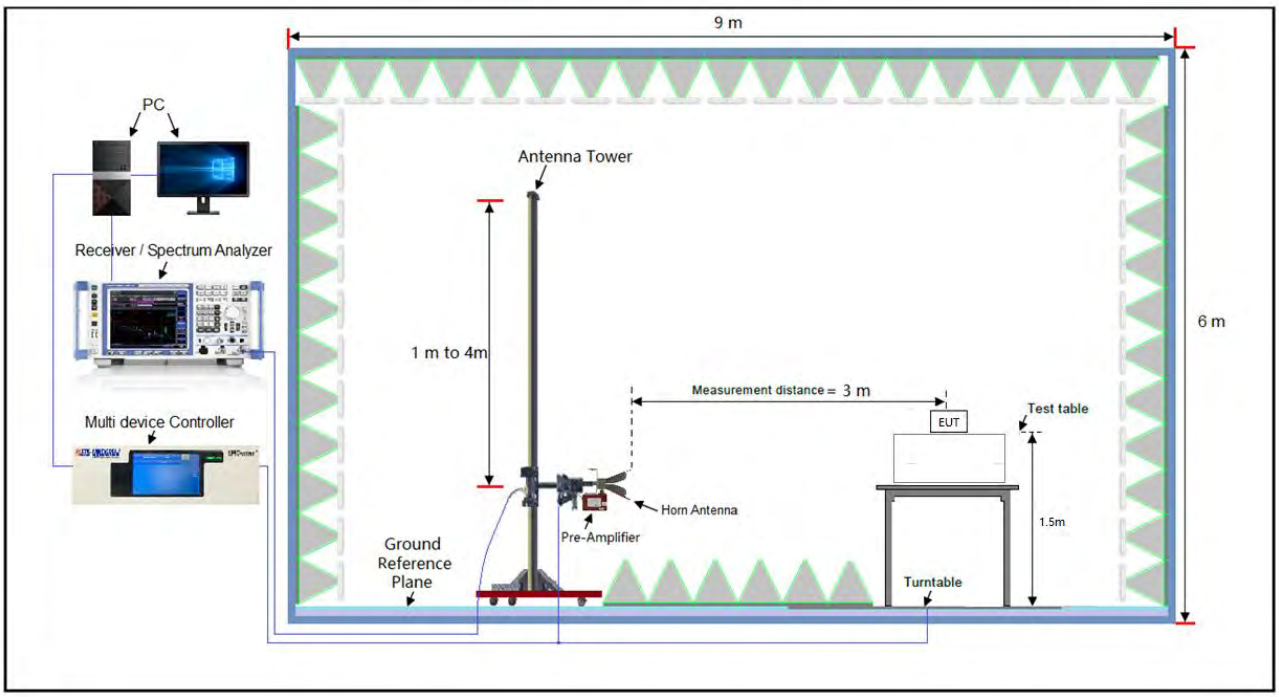
Radiated emission below 30MHz:



Frequency Range below 1GHz:



Frequency Range above 1GHz:



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

3.1.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

3.1.7 Test Results

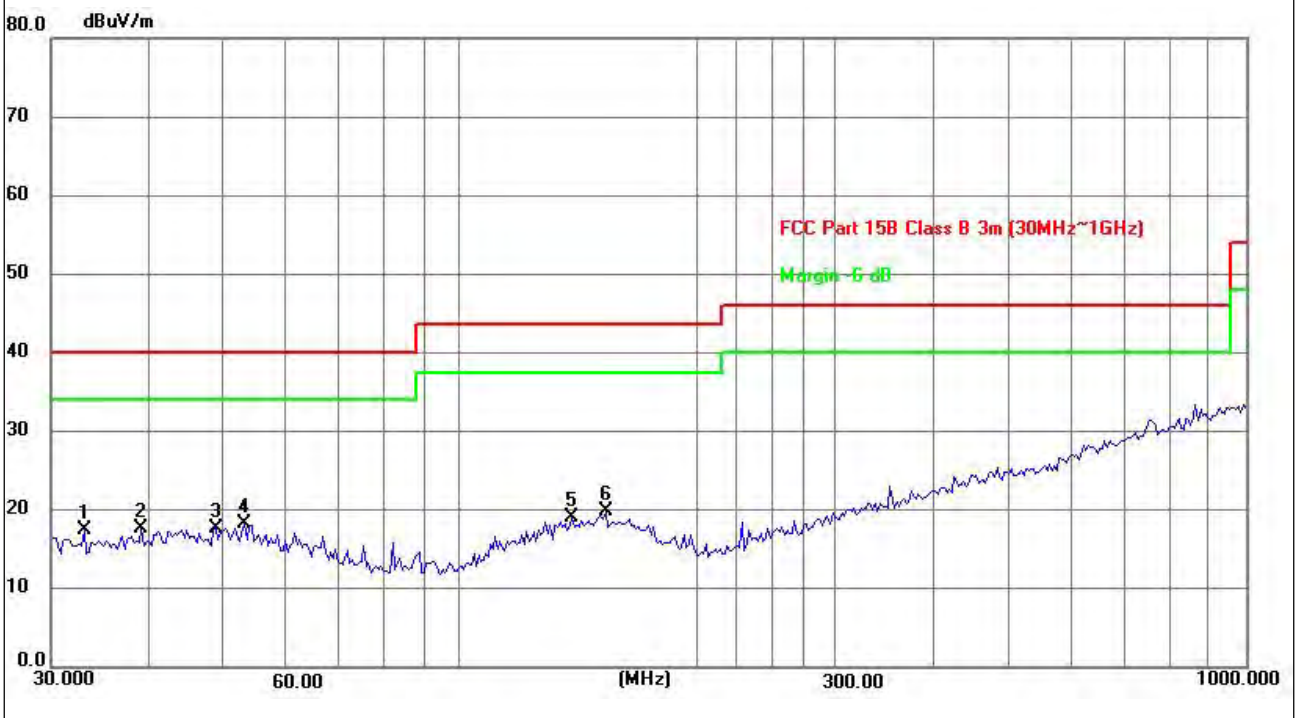
9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1GHz Worst-Case Data:

Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Horizontal at 3 m



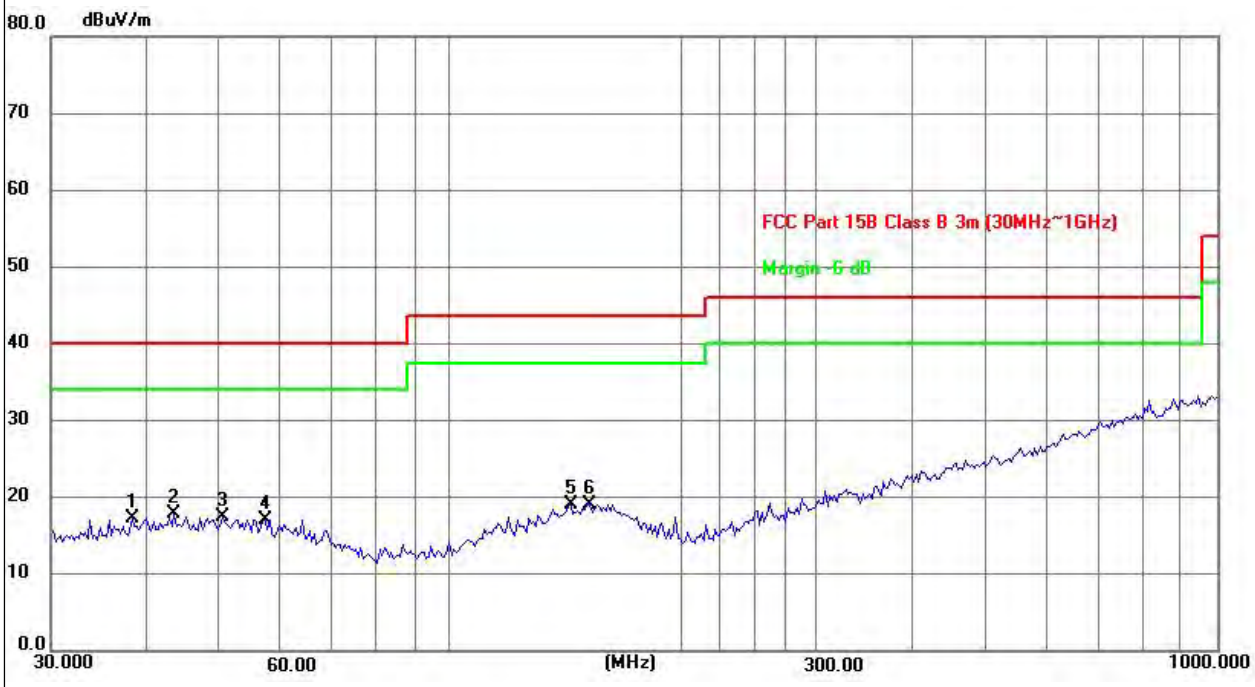
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	33.0950	33.99	-16.55	17.44	40.00	-22.56	peak	100	0
2	39.1616	33.33	-15.62	17.71	40.00	-22.29	peak	100	0
3	48.6720	32.87	-15.22	17.65	40.00	-22.35	peak	100	0
4	52.9453	33.38	-15.14	18.24	40.00	-21.76	peak	100	0
5	138.3873	32.98	-14.00	18.98	43.50	-24.52	peak	100	0
6	152.6641	33.13	-13.36	19.77	43.50	-23.73	peak	100	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value

Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Vertical at 3 m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	38.3462	33.04	-15.72	17.32	40.00	-22.68	peak	100	0
2	43.5057	32.96	-15.12	17.84	40.00	-22.16	peak	100	0
3	50.4090	32.57	-15.09	17.48	40.00	-22.52	peak	100	0
4	57.1914	33.25	-16.10	17.15	40.00	-22.85	peak	100	0
5	143.3260	32.82	-13.82	19.00	43.50	-24.50	peak	100	0
6	151.5972	32.50	-13.36	19.14	43.50	-24.36	peak	100	0

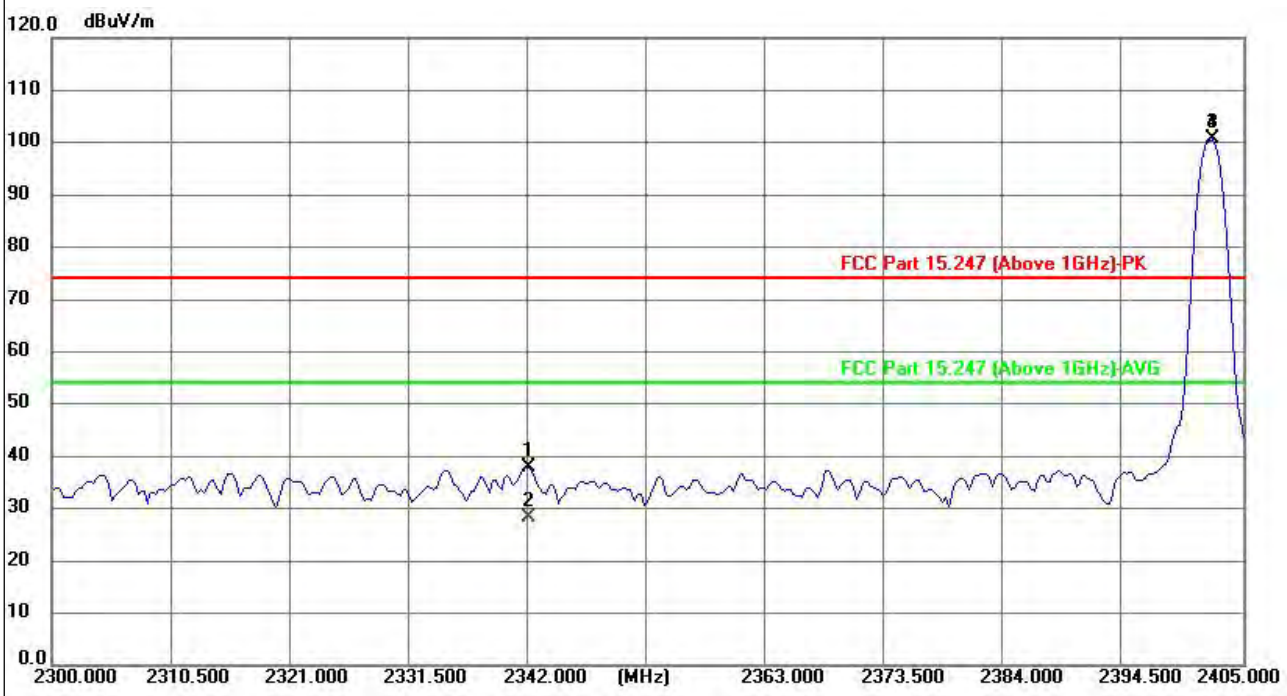
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value

Above 1GHz, all modes have been tested, and only the worst mode is shown below: GFSK

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Horizontal at 3 m



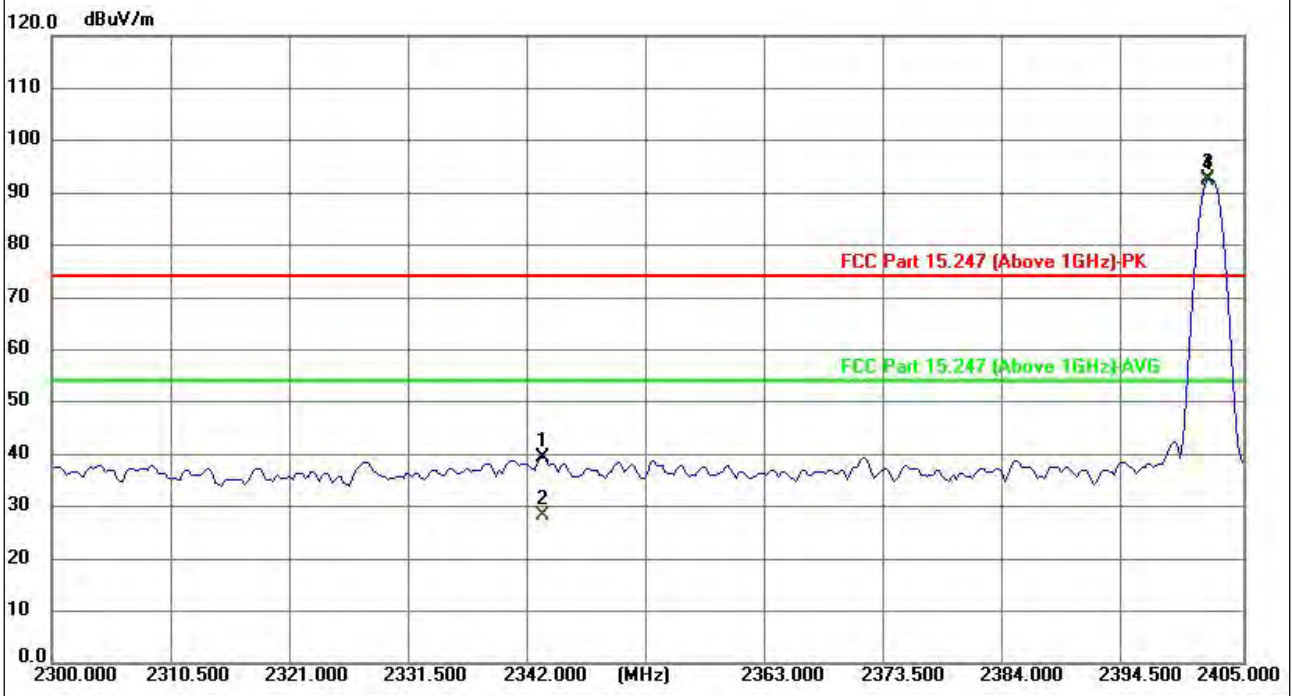
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	2342.000	39.39	-1.60	37.79	74.00	-36.21	peak	365	154
2	2342.000	29.88	-1.60	28.28	54.00	-25.72	AVG	365	154
3#	2402.375	101.78	-1.22	100.56			peak	365	154
4#	2402.375	101.78	-1.22	100.56			peak	365	154

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Vertical at 3 m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	2343.313	41.02	-1.60	39.42	74.00	-34.58	peak	119	81
2	2343.313	29.75	-1.60	28.15	54.00	-25.85	AVG	119	81
3#	2401.850	93.90	-1.22	92.68			peak	119	81
4#	2401.850	93.67	-1.22	92.45			AVG	119	81

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Horizontal at 3 m

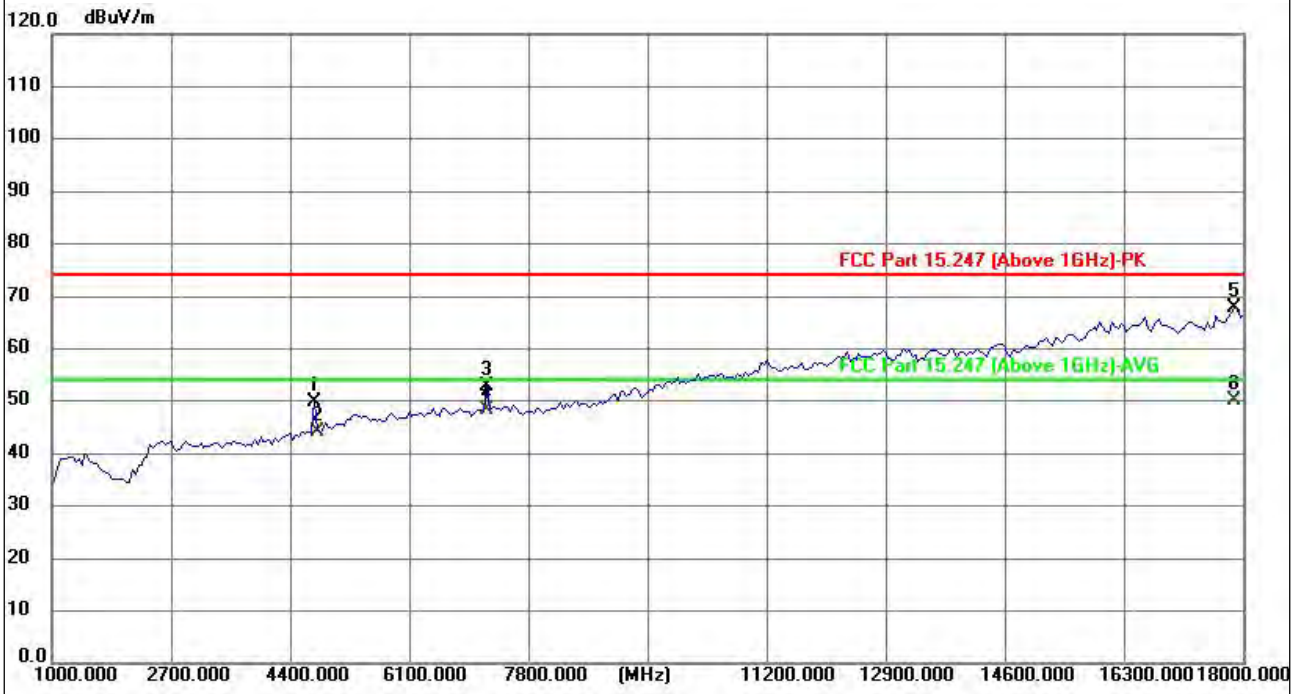
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4804.000	45.90	2.45	48.35	74.00	-25.65	peak	214	147
2	4804.000	38.90	2.45	41.35	54.00	-12.65	AVG	214	147
3	7206.000	38.30	9.90	48.20	74.00	-25.80	peak	140	107
4	7206.000	28.25	9.90	38.15	54.00	-15.85	AVG	140	107
5	17915.000	39.65	27.65	67.30	74.00	-6.70	peak	100	0
6	17915.000	22.41	27.65	50.06	54.00	-3.94	AVG	100	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Vertical at 3 m



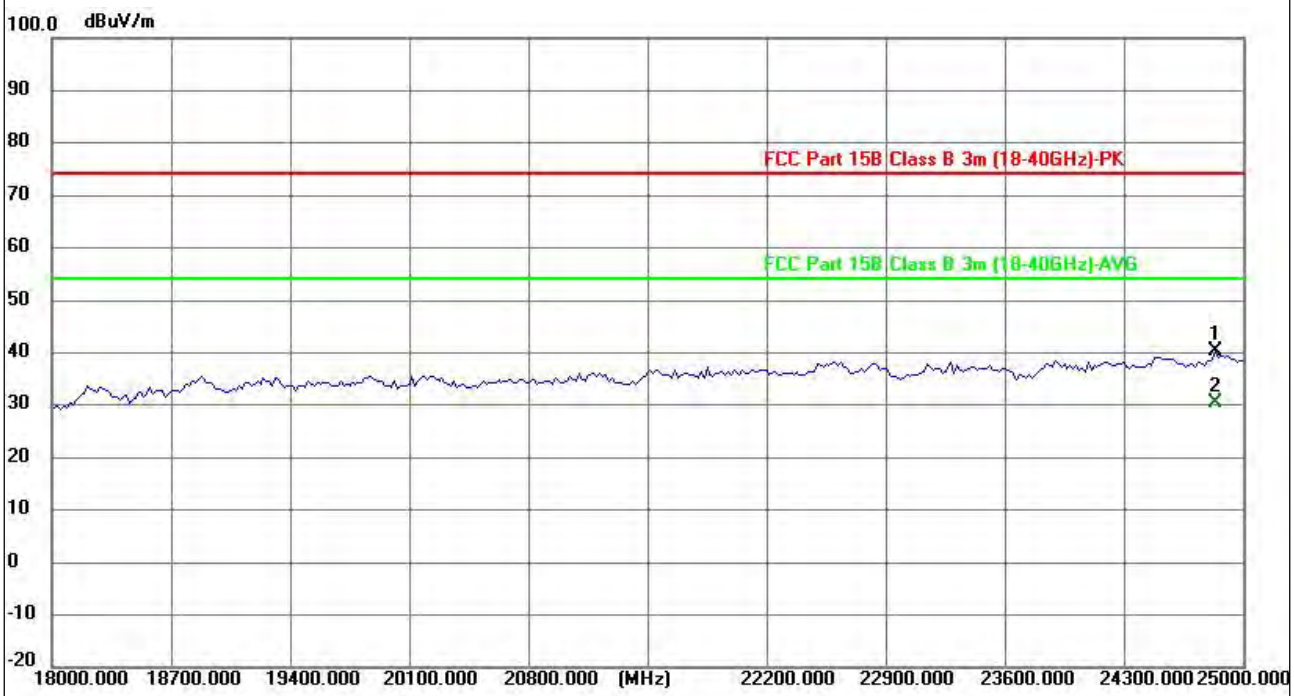
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4804.000	44.05	2.45	46.50	74.00	-27.50	peak	100	61
2	4804.000	33.64	2.45	36.09	54.00	-17.91	AVG	100	61
3	7206.000	40.67	9.90	50.57	74.00	-23.43	peak	100	124
4	7206.000	28.08	9.90	37.98	54.00	-16.02	AVG	100	124
5	17872.500	40.39	27.53	67.92	74.00	-6.08	peak	150	0
6	17872.500	22.58	27.53	50.11	54.00	-3.89	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Horizontal at 3 m



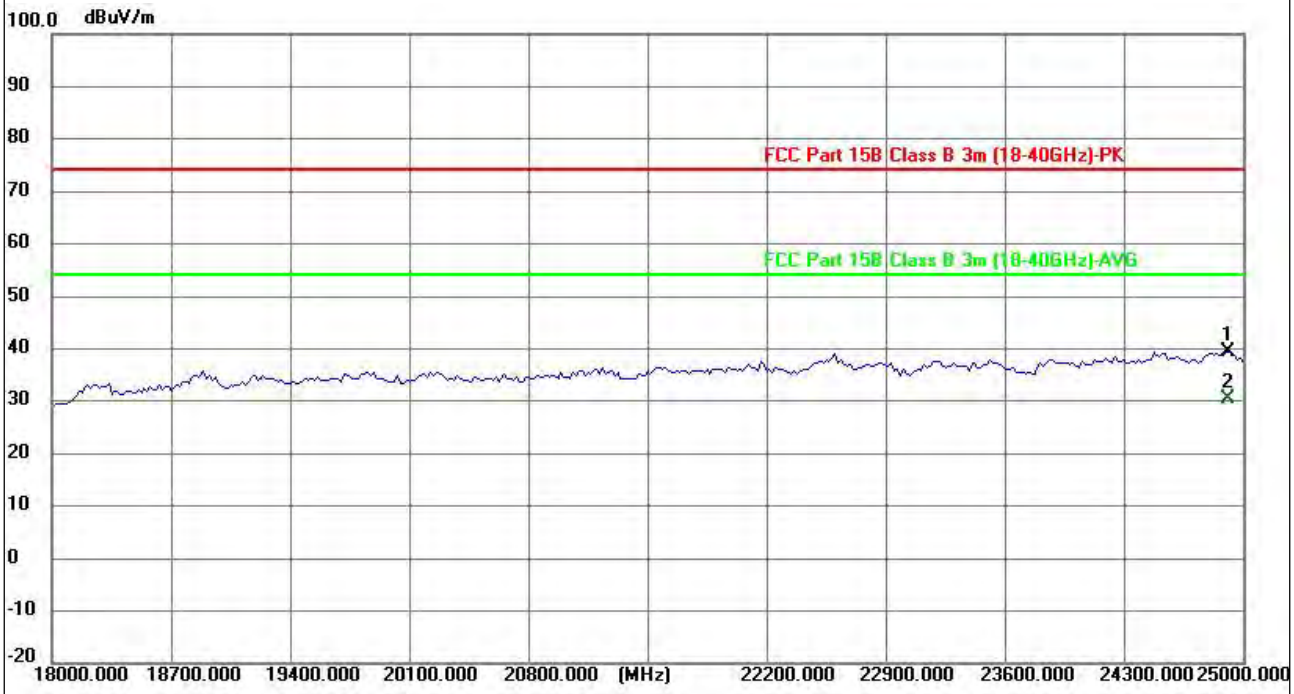
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	24842.500	41.10	-0.73	40.37	74.00	-33.63	peak	150	0
2	24842.500	31.10	-0.73	30.37	54.00	-23.63	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 0

Antenna Polarity & Test Distance: Vertical at 3 m



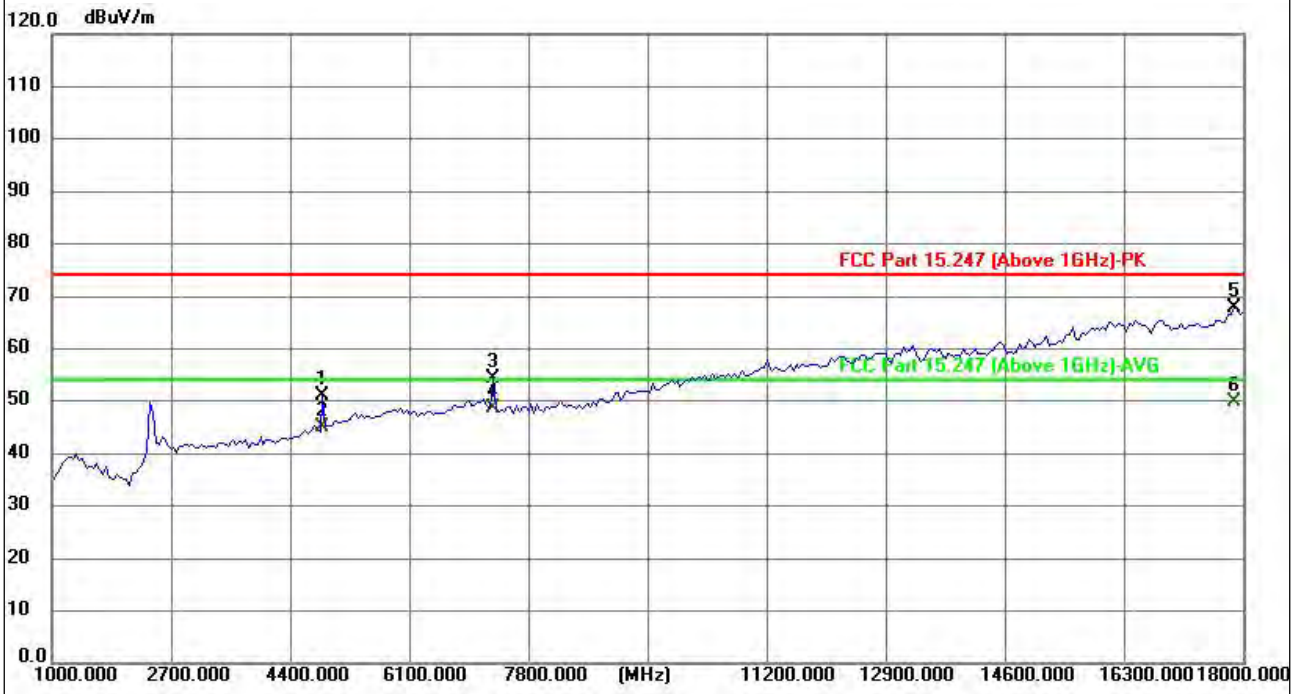
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	24912.500	40.12	-0.73	39.39	74.00	-34.61	peak	150	0
2	24912.500	31.12	-0.73	30.39	54.00	-23.61	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 39

Antenna Polarity & Test Distance: Horizontal at 3 m



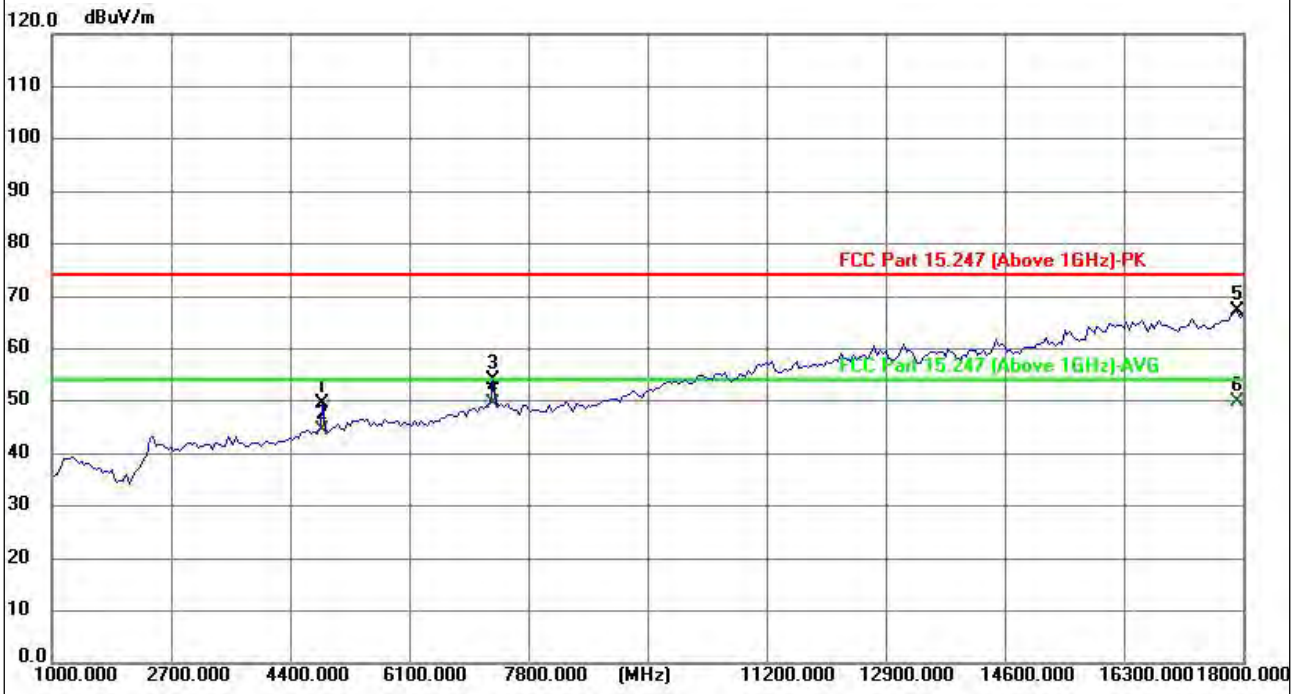
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4882.000	46.13	2.64	48.77	74.00	-25.23	peak	360	145
2	4882.000	39.43	2.64	42.07	54.00	-11.93	AVG	360	145
3	7323.000	38.77	10.21	48.98	74.00	-25.02	peak	100	111
4	7323.000	27.89	10.21	38.10	54.00	-15.90	AVG	100	111
5	17872.500	40.21	27.53	67.74	74.00	-6.26	peak	100	360
6	17872.500	22.34	27.53	49.87	54.00	-4.13	AVG	100	360

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 39

Antenna Polarity & Test Distance: Vertical at 3 m



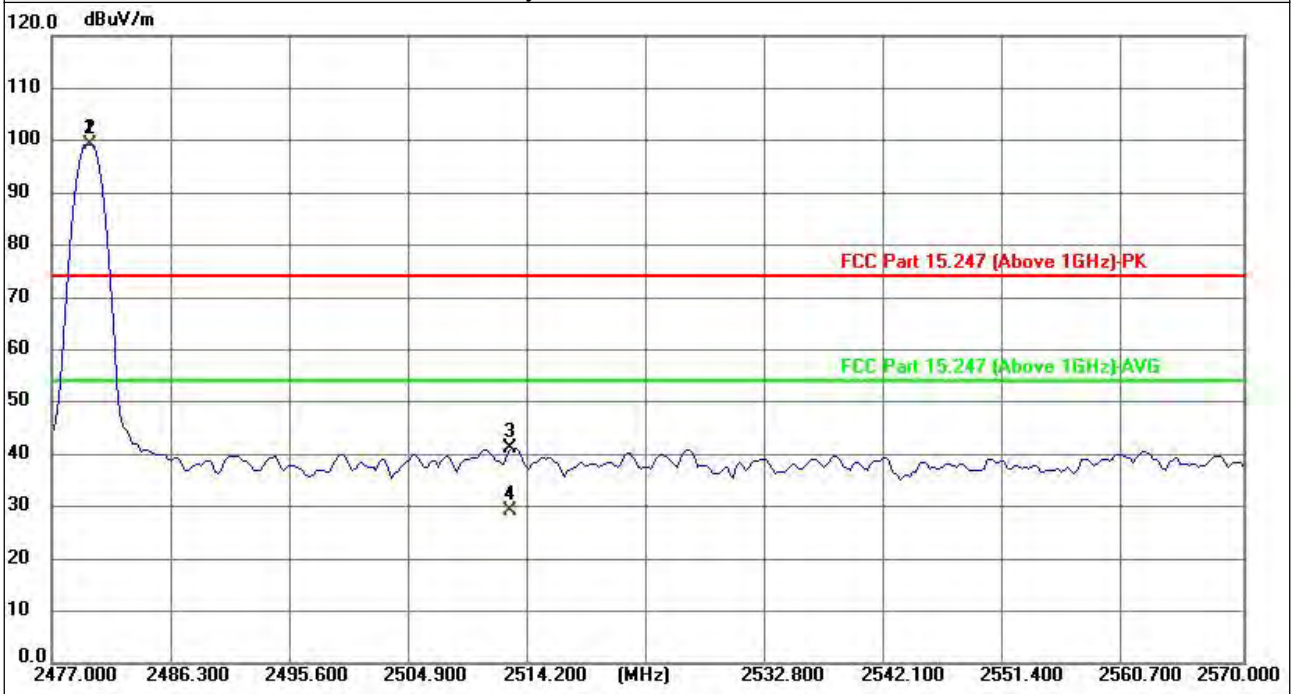
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4882.000	44.61	2.64	47.25	74.00	-26.75	peak	341	168
2	4882.000	33.50	2.64	36.14	54.00	-17.86	AVG	341	168
3	7323.000	38.04	10.21	48.25	74.00	-25.75	peak	122	152
4	7323.000	28.43	10.21	38.64	54.00	-15.36	AVG	122	152
5	17915.000	39.43	27.65	67.08	74.00	-6.92	peak	150	0
6	17915.000	22.23	27.65	49.88	54.00	-4.12	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 78

Antenna Polarity & Test Distance: Horizontal at 3 m



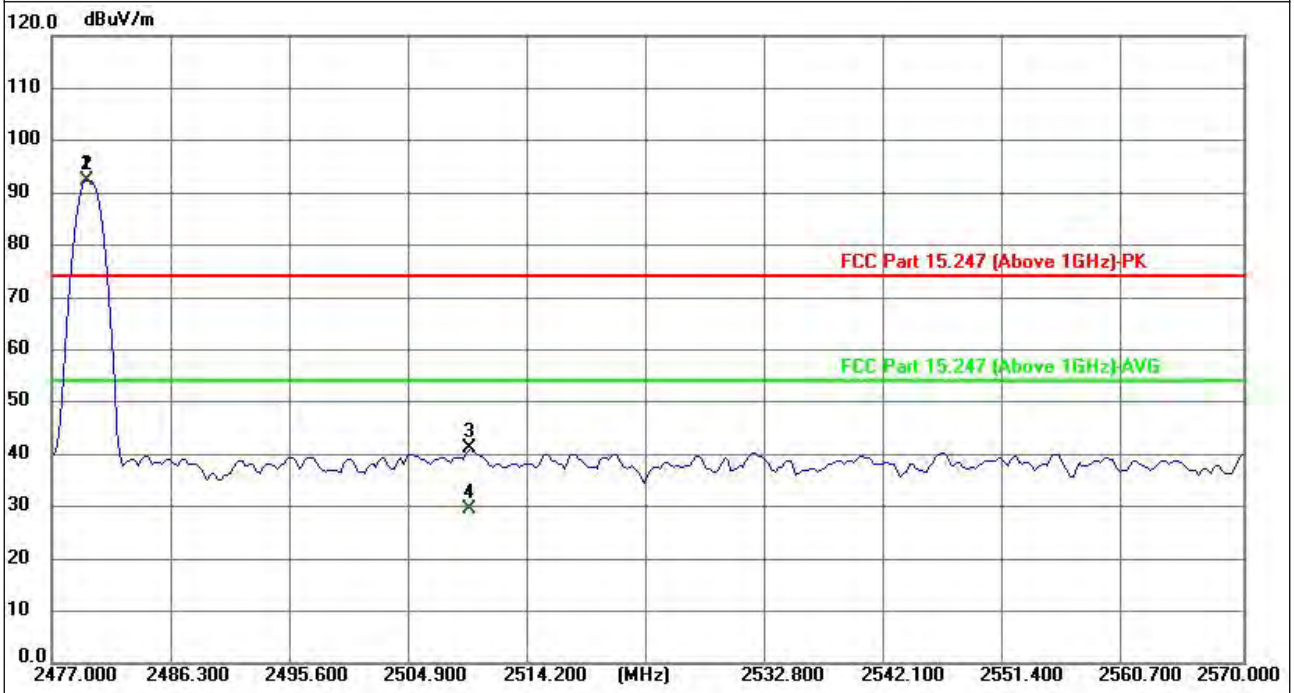
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1#	2480.023	100.04	-0.72	99.32			peak	382	159
2#	2480.023	99.81	-0.72	99.09			AVG	382	159
3	2513.037	41.85	-0.56	41.29	74.00	-32.71	peak	382	159
4	2513.037	29.76	-0.56	29.20	54.00	-24.80	AVG	382	159

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 78

Antenna Polarity & Test Distance: Vertical at 3 m



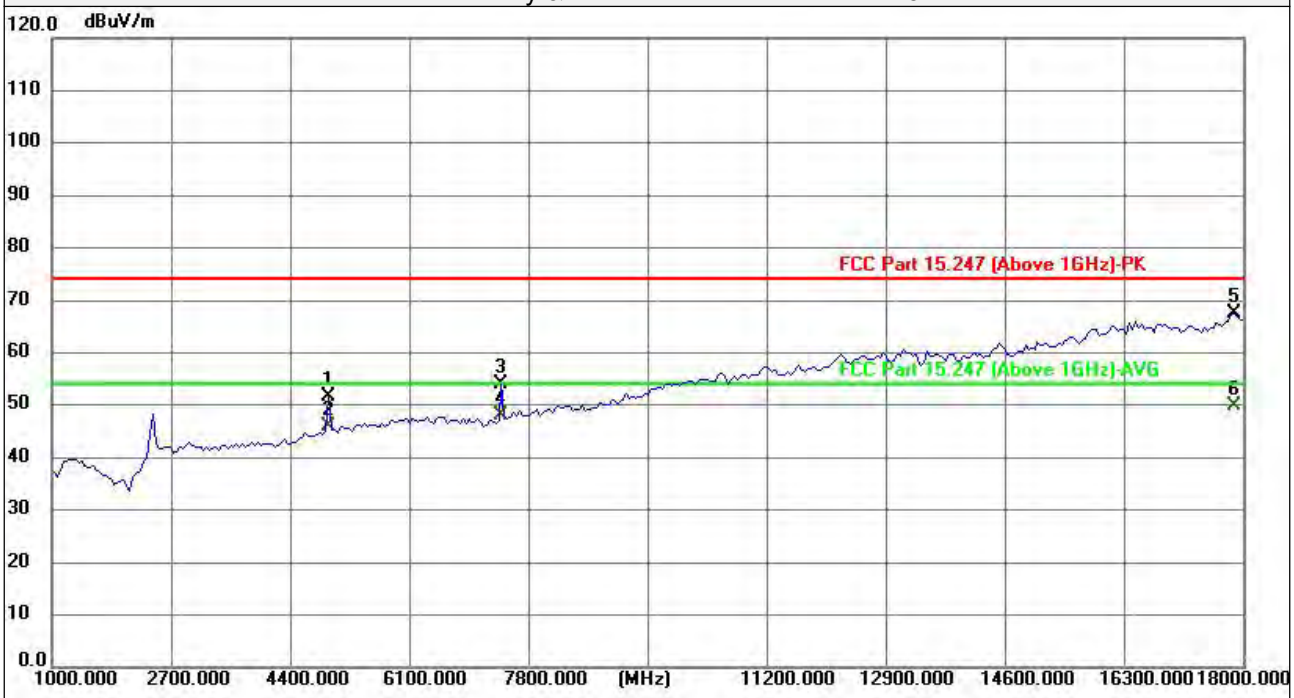
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1#	2479.790	93.13	-0.72	92.41			peak	104	38
2#	2479.790	92.92	-0.72	92.20			AVG	104	38
3	2509.782	41.57	-0.57	41.00	74.00	-33.00	peak	104	38
4	2509.782	29.95	-0.57	29.38	54.00	-24.62	AVG	104	38

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 78

Antenna Polarity & Test Distance: Horizontal at 3 m



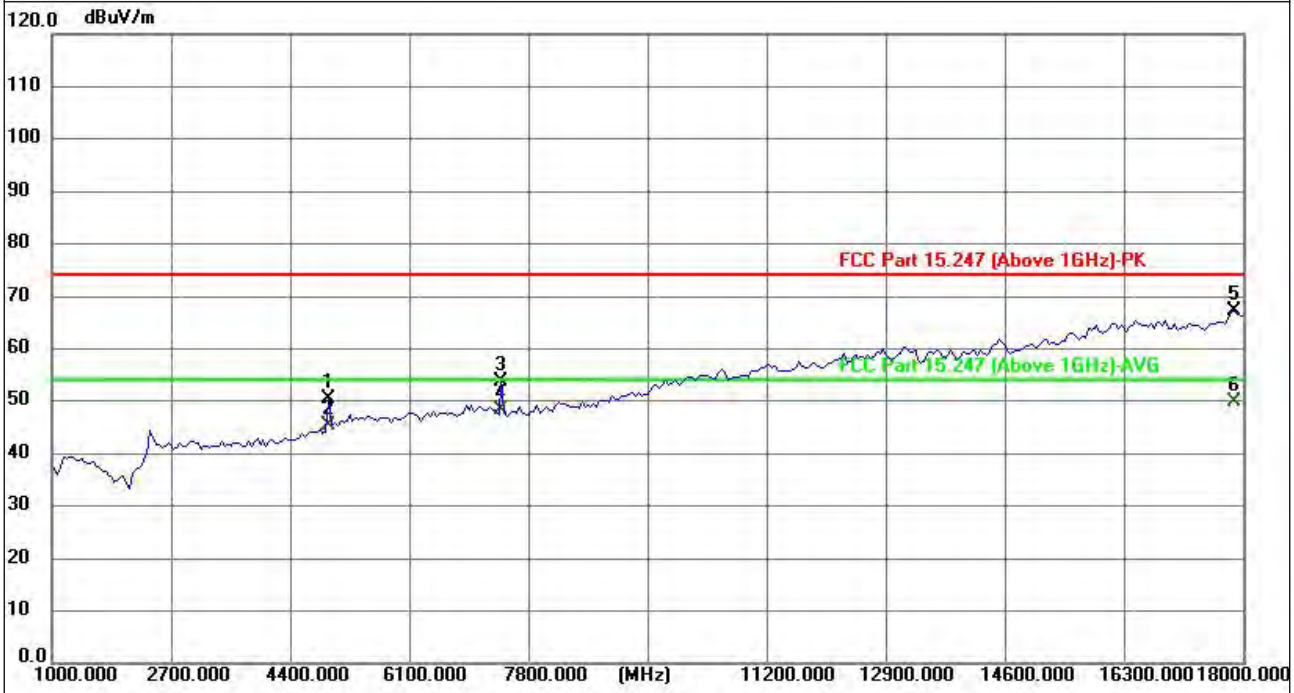
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4960.000	46.18	2.82	49.00	74.00	-25.00	peak	120	219
2	4960.000	37.28	2.82	40.10	54.00	-13.90	AVG	120	219
3	7440.000	39.74	10.51	50.25	74.00	-23.75	peak	100	215
4	7440.000	27.64	10.51	38.15	54.00	-15.85	AVG	100	215
5	17872.500	39.96	27.53	67.49	74.00	-6.51	peak	150	0
6	17872.500	22.30	27.53	49.83	54.00	-4.17	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Mode	GFSK	Test Channel	Channel 78

Antenna Polarity & Test Distance: Vertical at 3 m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Antenna Height (cm)	Table Angle (Degree)
1	4960.000	45.48	2.82	48.30	74.00	-25.70	peak	155	307
2	4960.000	36.08	2.82	38.90	54.00	-15.10	AVG	155	307
3	7440.000	38.87	10.51	49.38	74.00	-24.62	peak	100	184
4	7440.000	27.59	10.51	38.10	54.00	-15.90	AVG	100	184
5	17872.500	39.61	27.53	67.14	74.00	-6.86	peak	150	0
6	17872.500	22.44	27.53	49.97	54.00	-4.03	AVG	150	0

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. #: Fundamental frequency
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report
5. The harmonic values recorded in the table are from the test results of the low SPAN spectrum.

3.2 Conducted Emission Measurement

3.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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.

3.2.2 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMI Test Receiver (10kHz~7GHz)	Rohde&Schwarz	ESR7	101962	2026-07-23
2 Line V-Network LISN	Rohde&Schwarz	ENV216	3560.6550.15	2026-07-23
Test software	FARAD	EZ_EMC V1.1.4.2	N/A	N/A
Broadcast test system	R&S	SFU	100410	2026-07-23

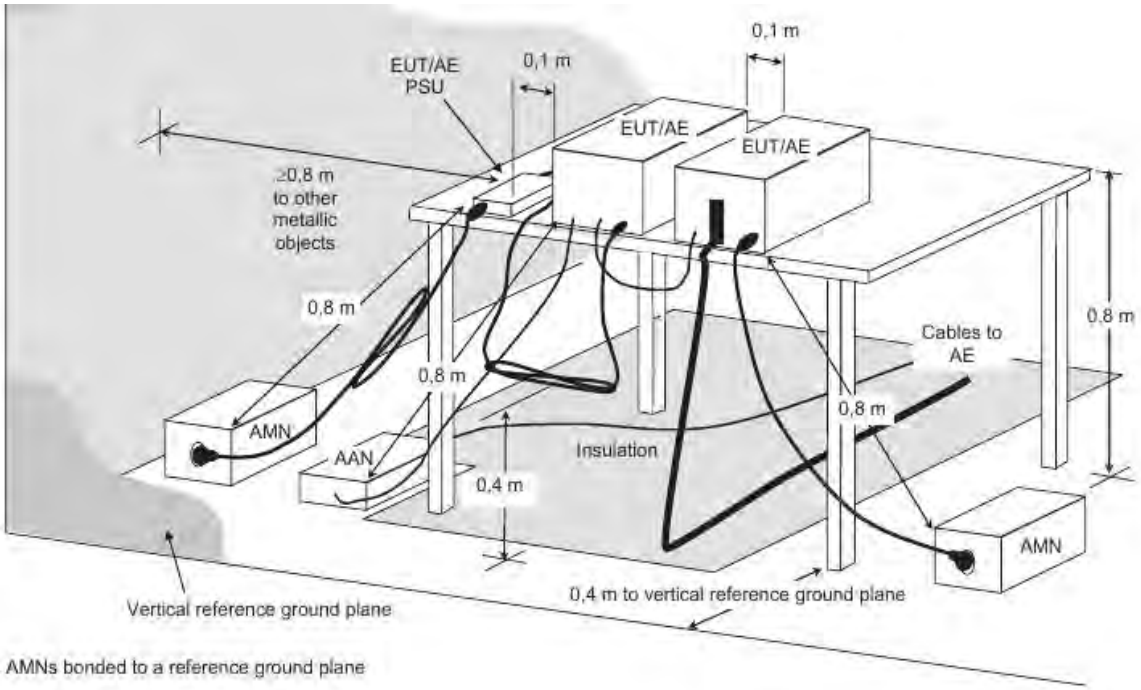
Note:
1. The calibration interval of the above test instruments is 12 months and calibrated by LISAI/CHINA.
2. The test was performed in Shielded Room 743.

3.2.3 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.

3.2.4 Test Setup



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

3.2.5 EUT Operating Condition

Set the EUT under transmission condition continuously at specific channel frequency.

3.2.6 Deviation from Test Standard

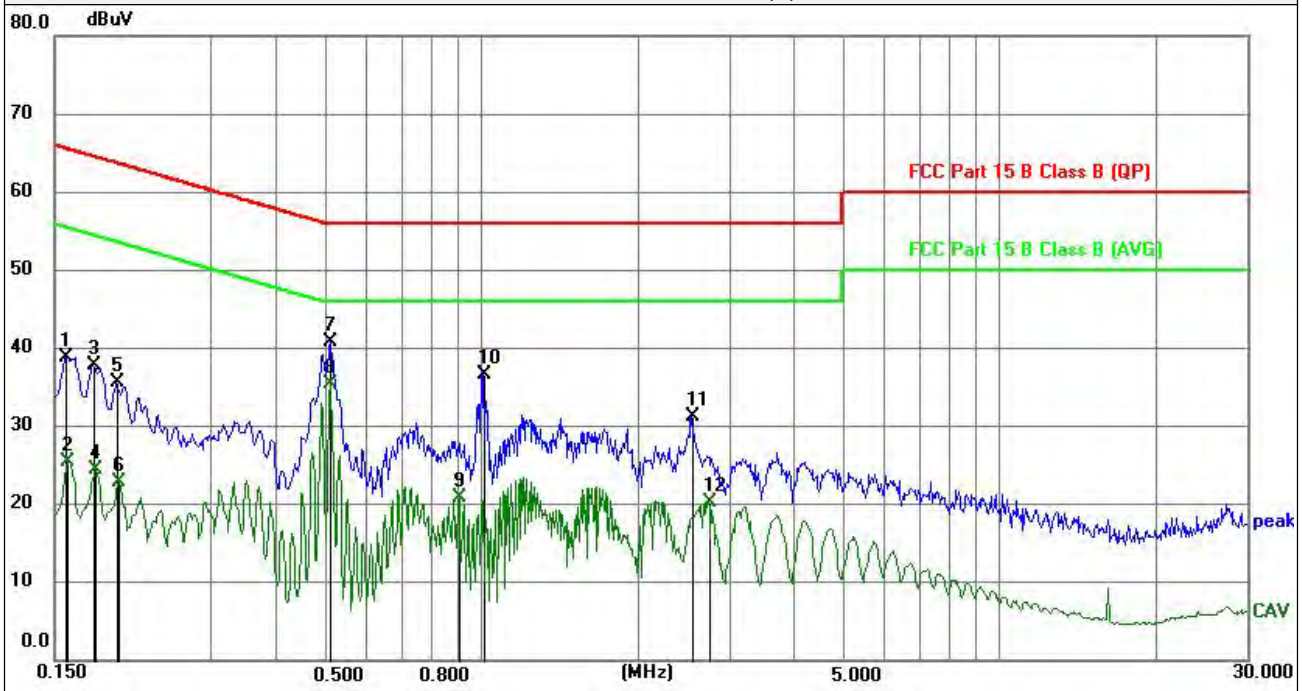
No deviation.

3.2.7 Test Results

150kHz ~ 30MHz Worst-Case Data: GFSK

Frequency Range	150kHz ~ 30MHz	Detector Function	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	GFSK	Test Channel	Channel 0

Phase of Power: Line (L)



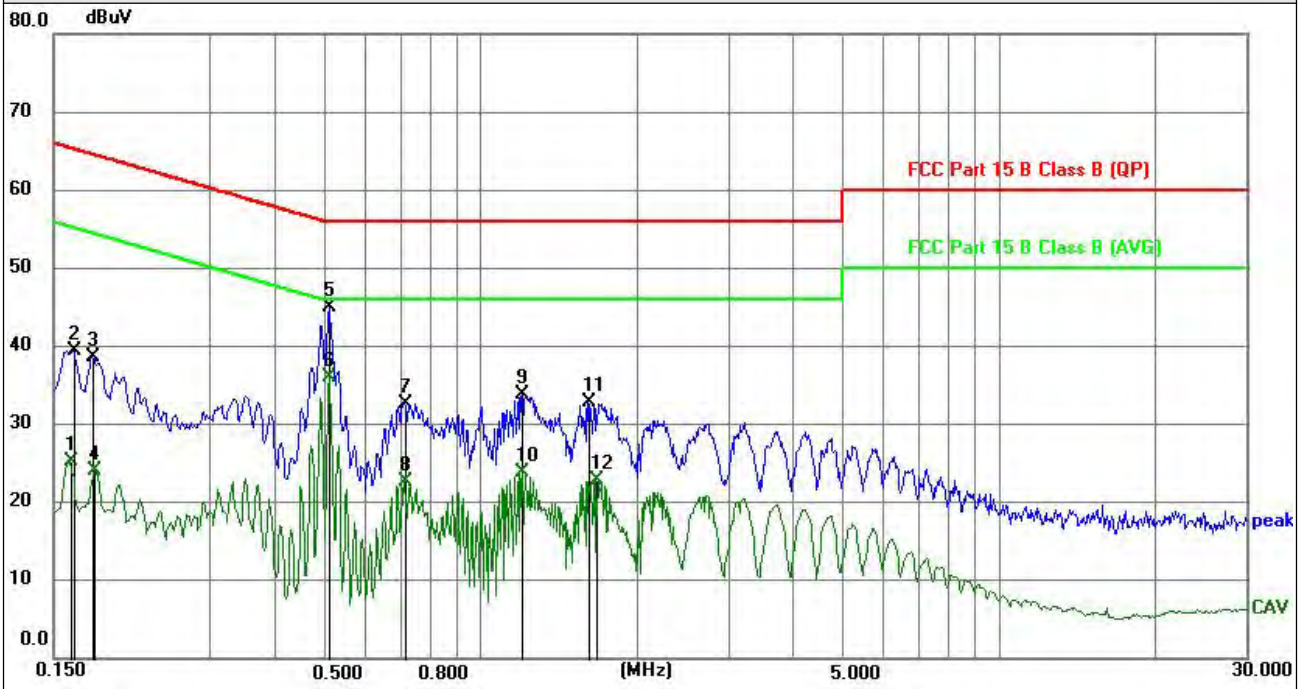
No.	Frequency	Reading	Correct Factor	Emission Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Det.
1	0.1568	28.78	10.09	38.87	65.63	-26.76	peak
2	0.1590	15.32	10.09	25.41	55.52	-30.11	AVG
3	0.1770	27.69	10.06	37.75	64.63	-26.88	peak
4	0.1793	14.46	10.05	24.51	54.52	-30.01	AVG
5	0.1973	25.65	10.02	35.67	63.72	-28.05	peak
6	0.1995	12.77	10.02	22.79	53.63	-30.84	AVG
7	0.5122	30.80	10.00	40.80	56.00	-15.20	peak
8	0.5122	25.44	10.00	35.44	46.00	-10.56	AVG
9	0.9060	10.86	9.93	20.79	46.00	-25.21	AVG
10	1.0050	26.71	9.92	36.63	56.00	-19.37	peak
11	2.5418	21.32	9.85	31.17	56.00	-24.83	peak
12	2.7420	10.32	9.85	20.17	46.00	-25.83	AVG

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Frequency Range	150kHz ~ 30MHz	Detector Function	Quasi-Peak (QP) / Average (AV), 9kHz
Test Mode	GFSK	Test Channel	Channel 0

Phase of Power: Neutral (N)



No.	Frequency	Reading	Correct Factor	Emission Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Det.
1	0.1613	15.22	10.08	25.30	55.40	-30.10	AVG
2	0.1635	29.39	10.08	39.47	65.28	-25.81	peak
3	0.1770	28.46	10.06	38.52	64.63	-26.11	peak
4	0.1793	14.03	10.06	24.09	54.52	-30.43	AVG
5	0.5122	34.92	9.99	44.91	56.00	-11.09	peak
6	0.5122	26.02	9.99	36.01	46.00	-9.99	AVG
7	0.7125	22.70	9.98	32.68	56.00	-23.32	peak
8	0.7125	12.66	9.98	22.64	46.00	-23.36	AVG
9	1.2052	23.85	9.92	33.77	56.00	-22.23	peak
10	1.2052	13.89	9.92	23.81	46.00	-22.19	AVG
11	1.6170	22.88	9.89	32.77	56.00	-23.23	peak
12	1.6778	12.91	9.88	22.79	46.00	-23.21	AVG

Remarks:

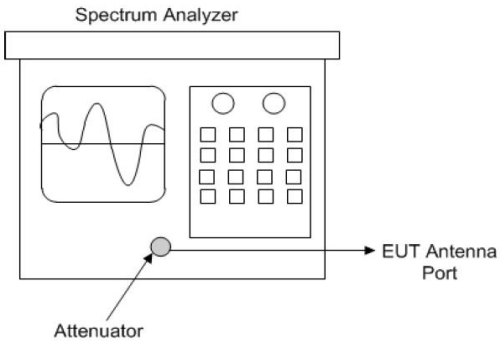
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

3.3 Number of Hopping Frequency Used

3.3.1 Limits of Hopping Frequency Used Measurement

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

3.3.2 Test Setup



Spectrum analyzer test configuration

3.3.3 Test Instruments

Refer to section 5 to get information of above instrument.

3.3.4 Test Procedure

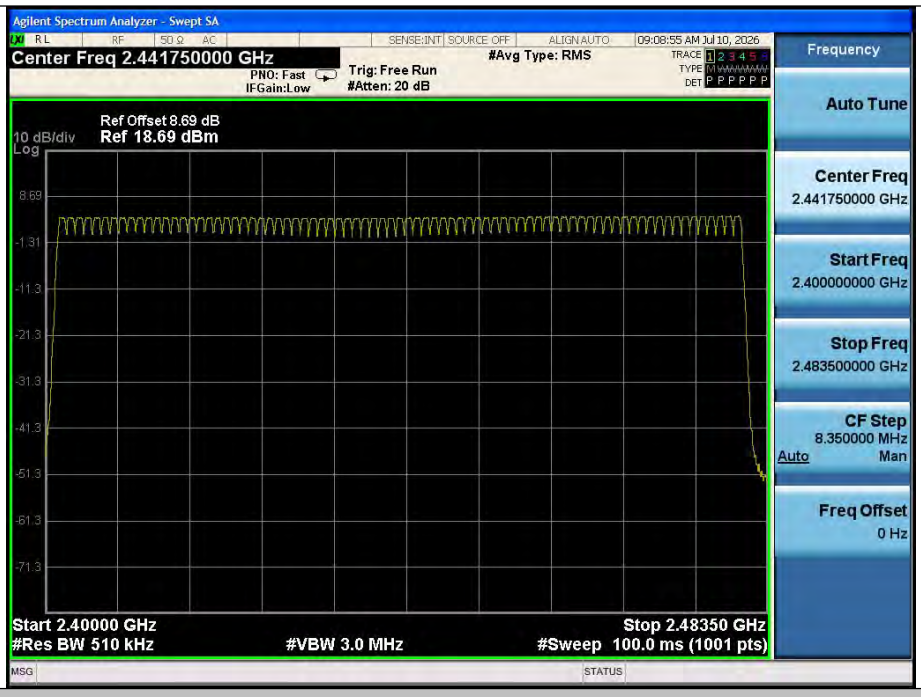
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and 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 complete.

3.3.5 Deviation from Test Standard

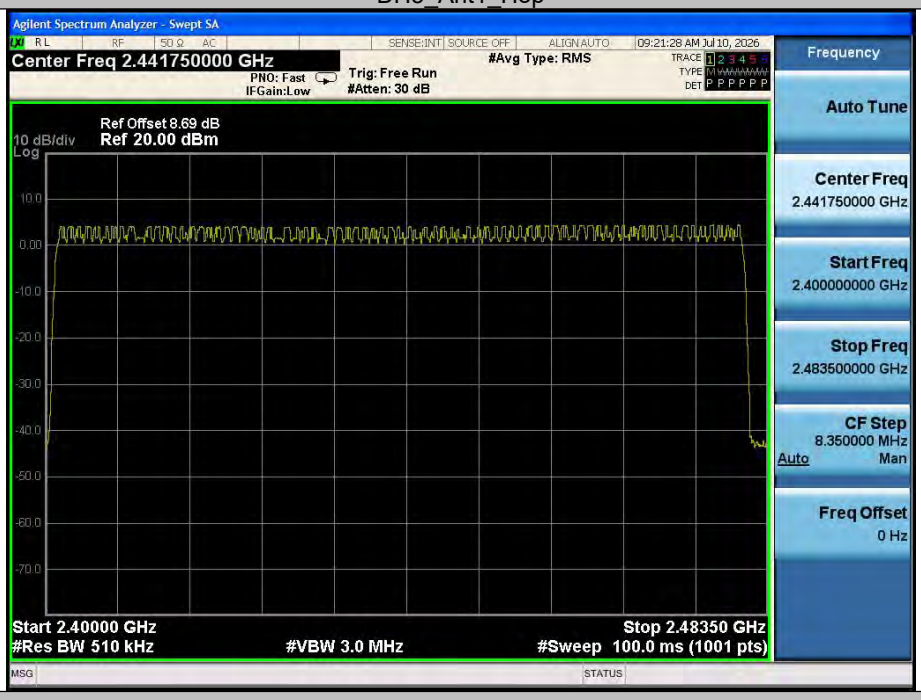
No deviation.

3.3.6 Test Results

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



DH5_Ant1_Hop



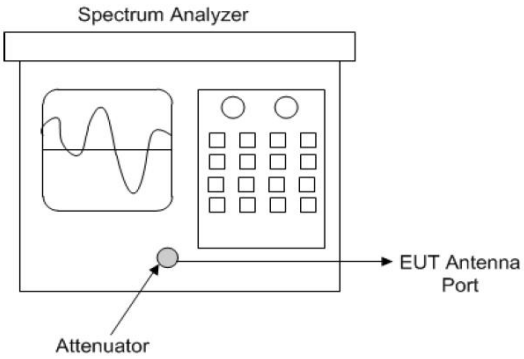
3DH5_Ant1_Hop

3.4 Dwell Time on Each Channel

3.4.1 Limits of Dwell Time on Each Channel Measurement

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



Spectrum analyzer test configuration

3.4.3 Test Instruments

Refer to section 5 to get information of above instrument.

3.4.4 Test Procedures

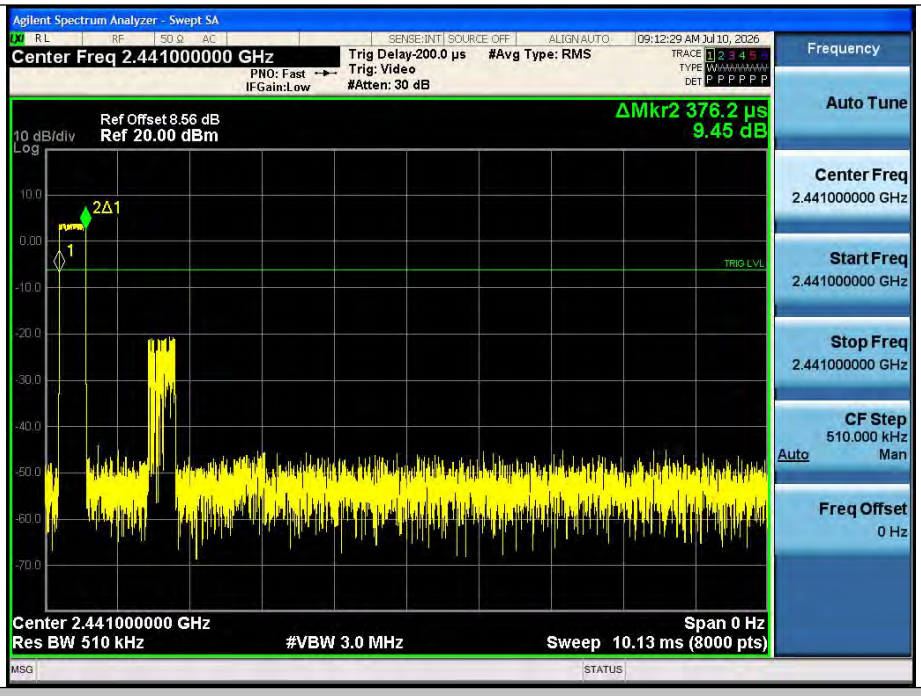
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and 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

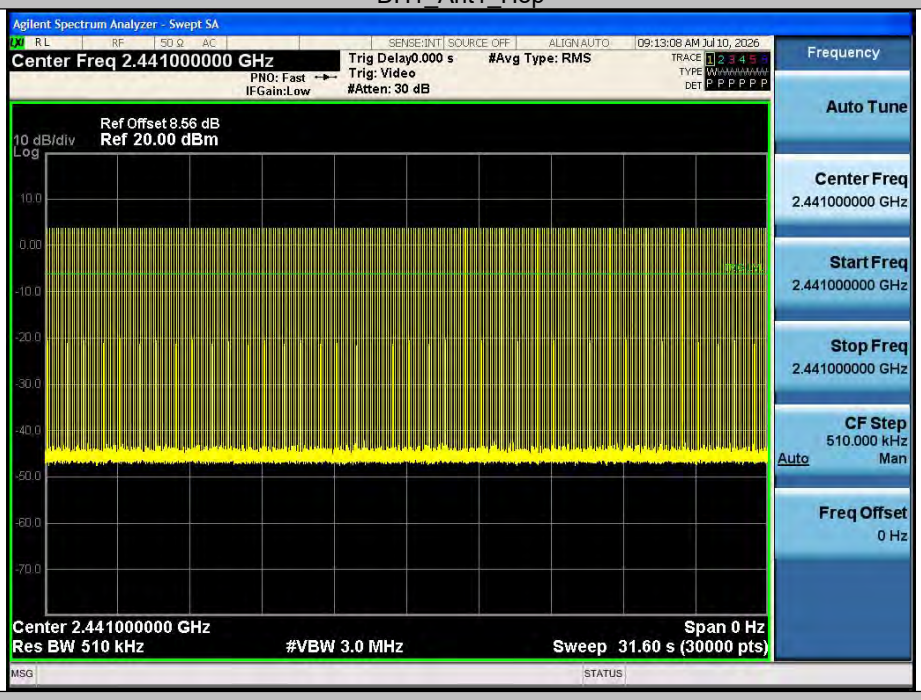
No deviation.

3.4.6 Test Results

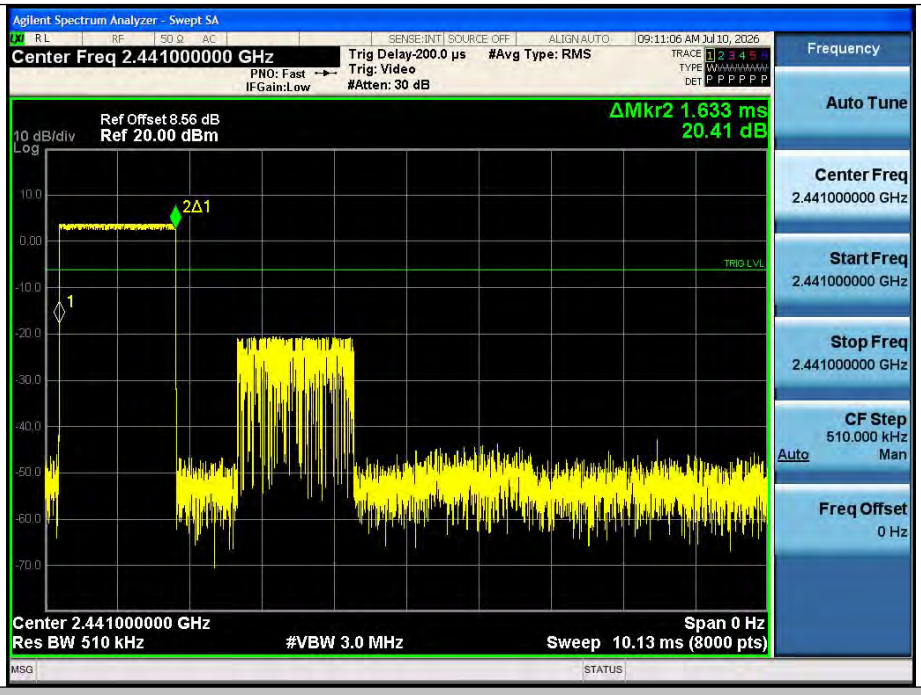
Test Mode	Antenna	Channel	Burst Width [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.38	319	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.63	159	0.26	≤0.4	PASS
DH5	Ant1	Hop	2.88	107	0.308	≤0.4	PASS
3DH1	Ant1	Hop	0.38	319	0.122	≤0.4	PASS
3DH3	Ant1	Hop	1.63	159	0.259	≤0.4	PASS
3DH5	Ant1	Hop	2.88	107	0.308	≤0.4	PASS



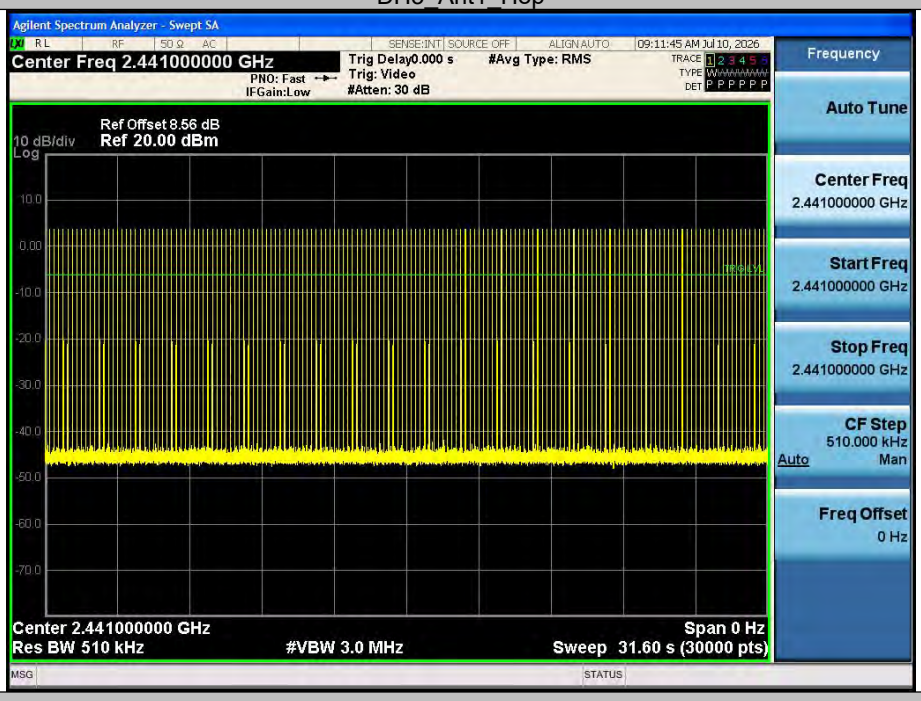
DH1_Ant1_Hop



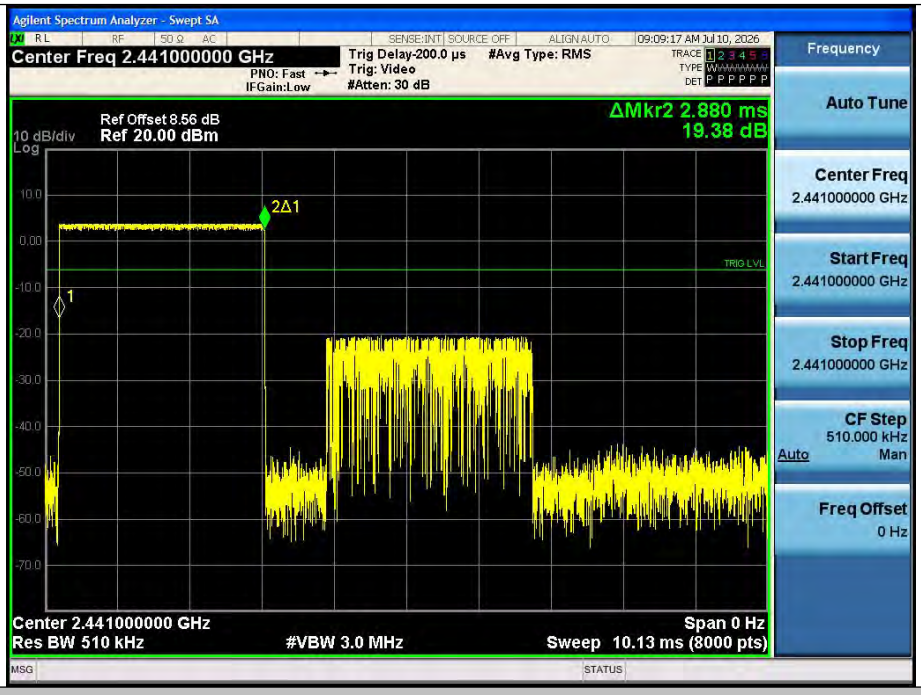
DH1_Ant1_Hop



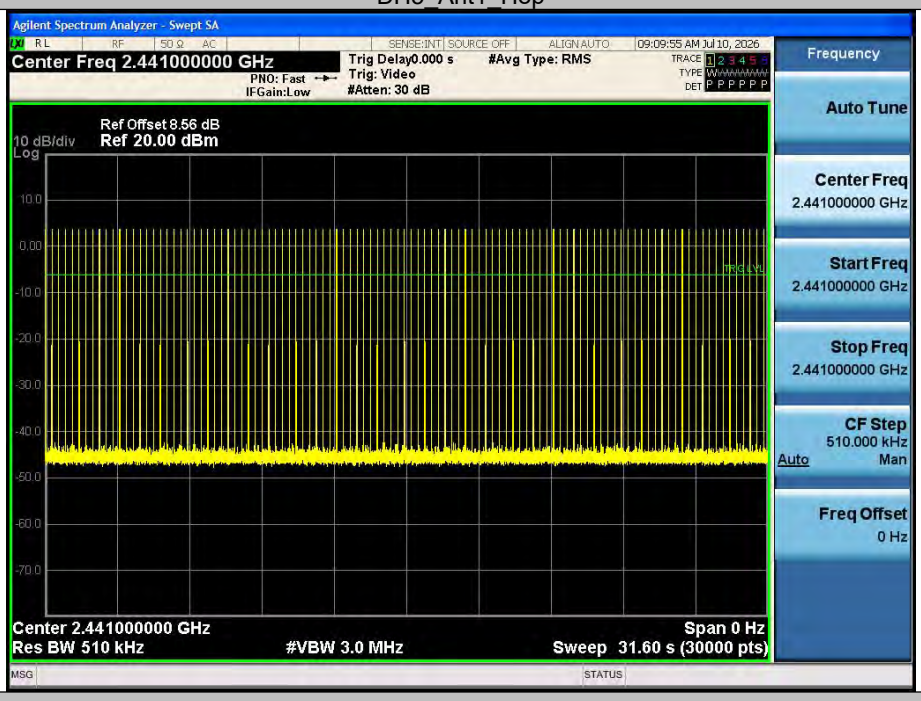
DH3_Ant1_Hop



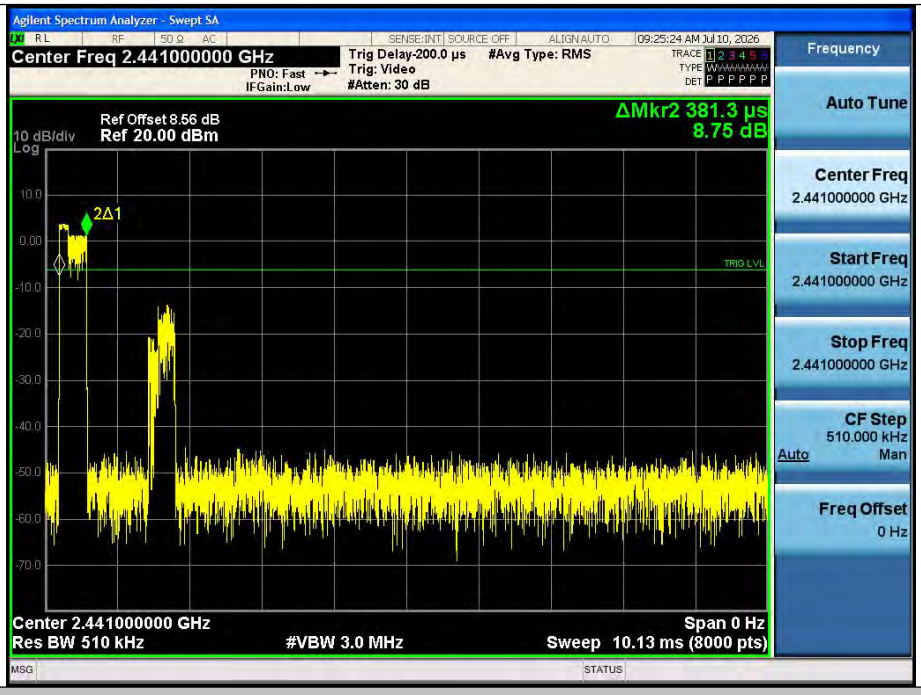
DH3_Ant1_Hop



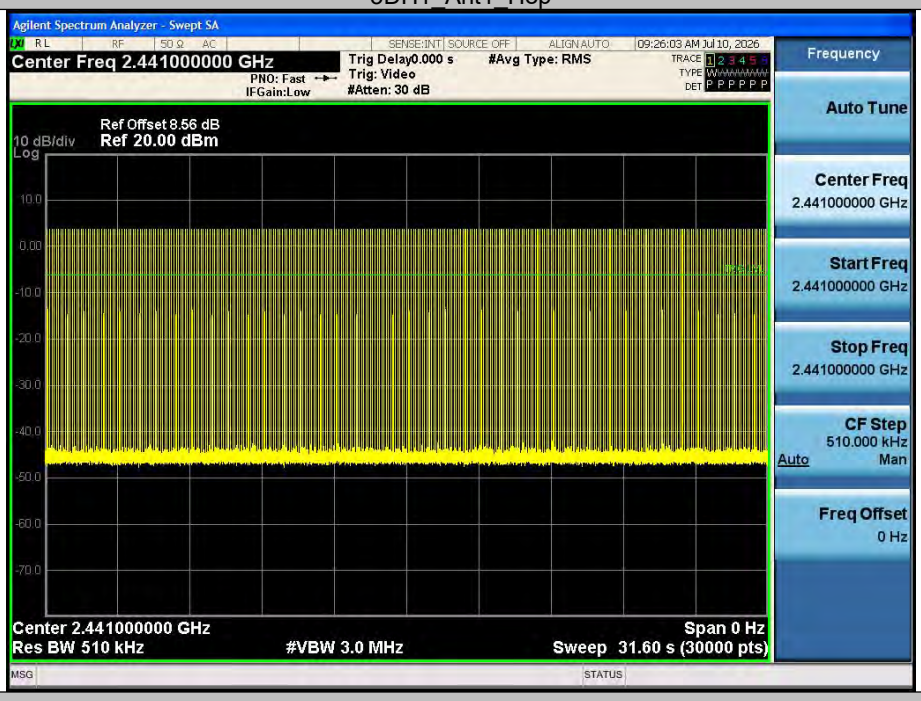
DH5_Ant1_Hop



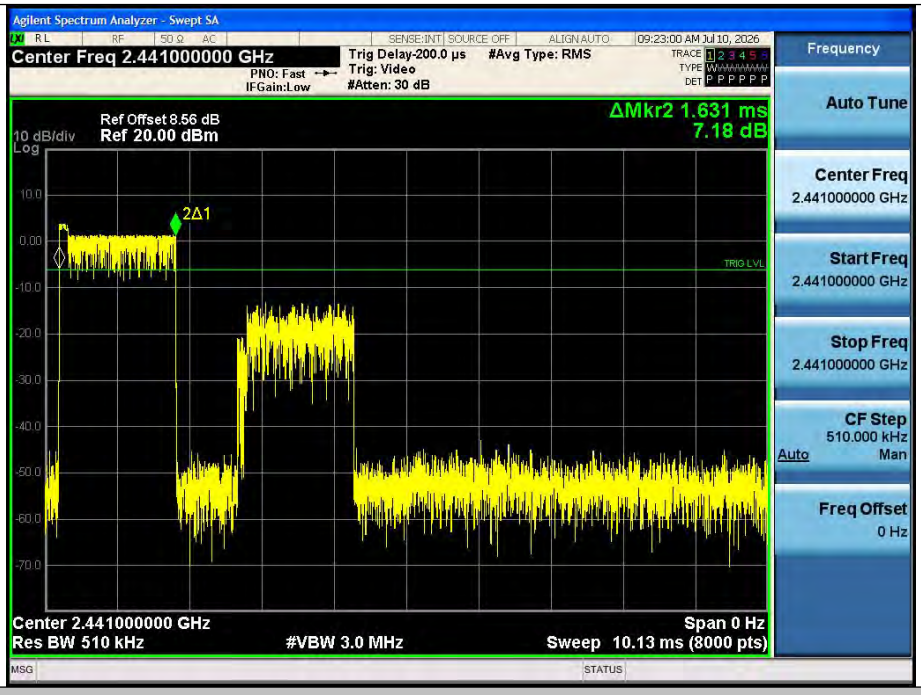
DH5_Ant1_Hop



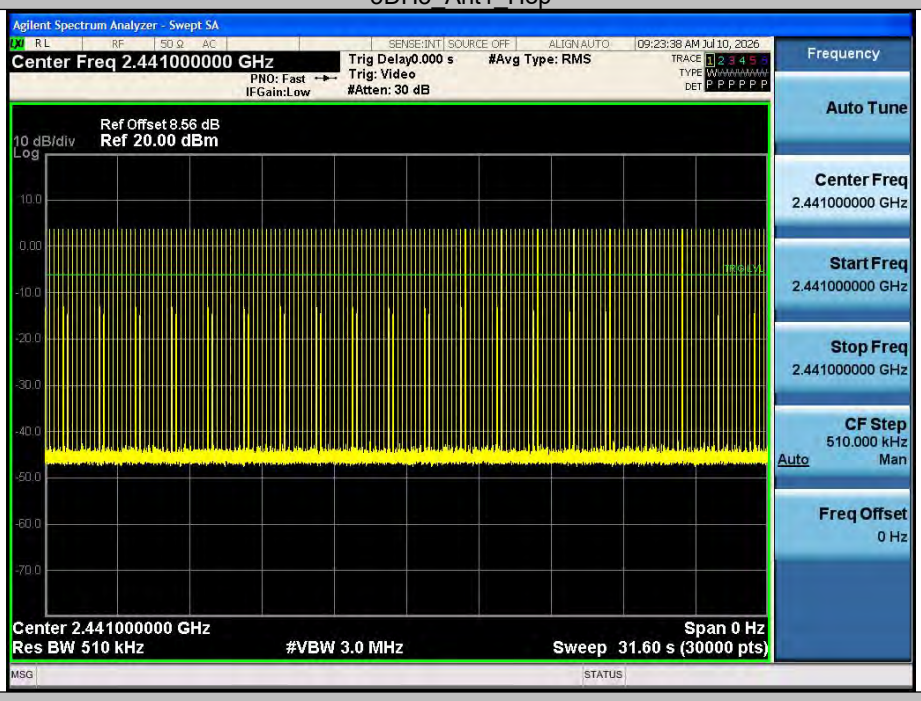
3DH1_Ant1_Hop



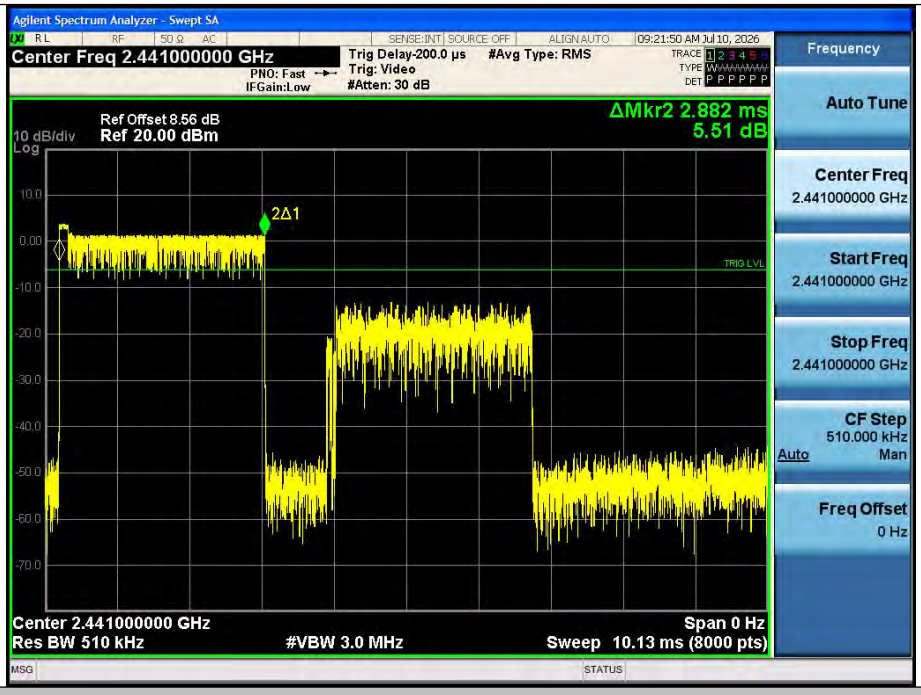
3DH1_Ant1_Hop



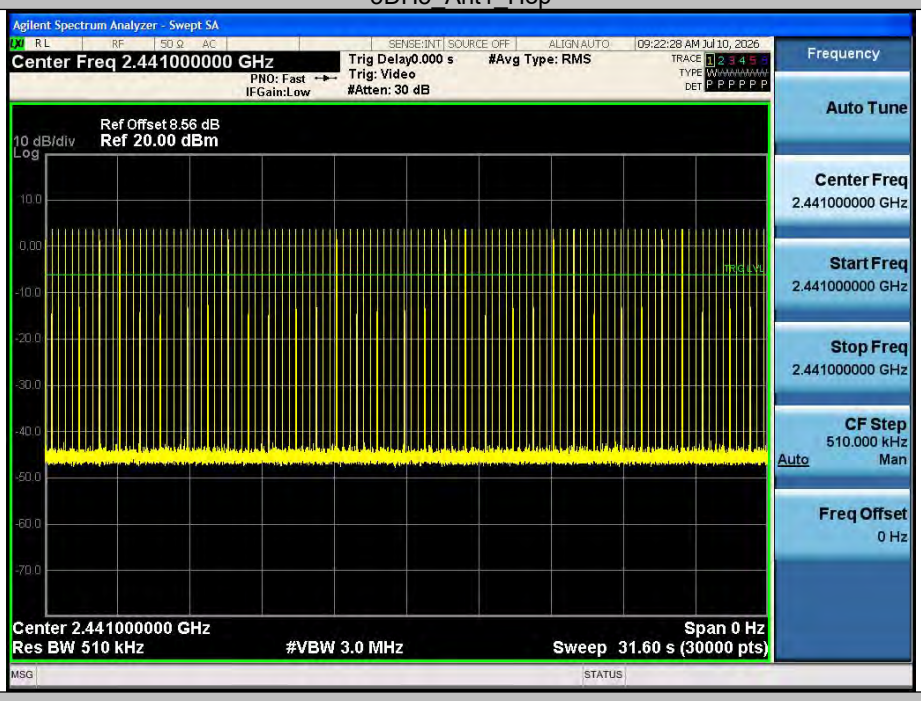
3DH3_Ant1_Hop



3DH3_Ant1_Hop



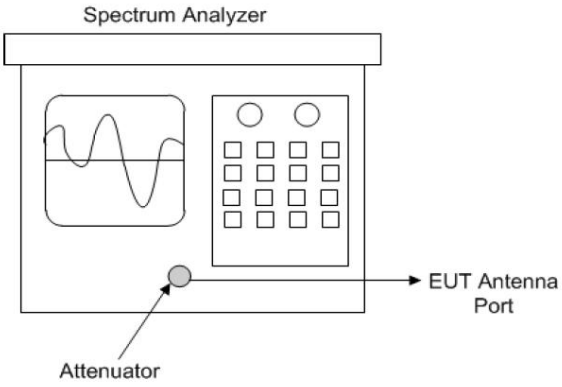
3DH5_Ant1_Hop



3DH5_Ant1_Hop

3.5 Channel Bandwidth

3.5.1 Test Setup



Spectrum analyzer test configuration

3.5.2 Test Instruments

Refer to section 5 to get information of above instrument.

3.5.3 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 instrument equal to the highest peak value.
c. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
d. Repeat above procedures until all frequencies measured were complete.

3.5.4 Deviation from Test Standard

No deviation.

3.5.5 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

3.5.6 Test Results

Test Mode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]
DH5	Ant1	2402	0.969	2401.520	2402.489
		2441	0.969	2440.520	2441.489
		2480	0.966	2479.523	2480.489
3DH5	Ant1	2402	1.266	2401.349	2402.615
		2441	1.290	2440.343	2441.633
		2480	1.290	2479.343	2480.633

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

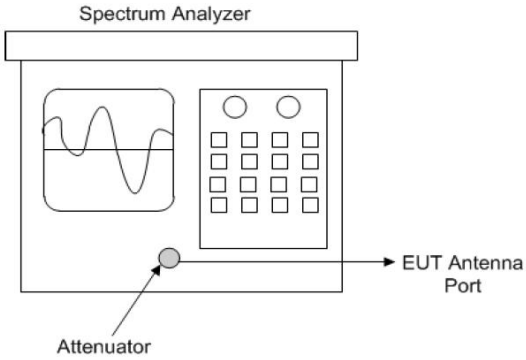
3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

3.6 Occupied Bandwidth Measurement

3.6.1 Test Setup



Spectrum analyzer test configuration

3.6.2 Test Instruments

Refer to section 5 to get information of above instrument.

3.6.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5%of the total mean power of a given emission.

3.6.4 Deviation from Test Standard

No deviation.

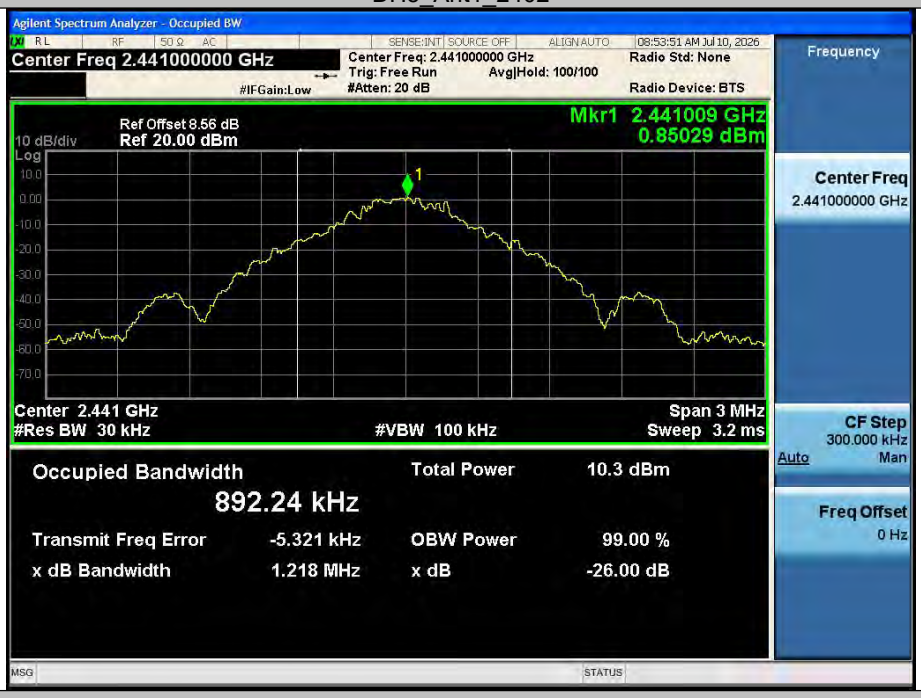
3.6.5 EUT Operating Conditions

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

3.6.6 Test Results

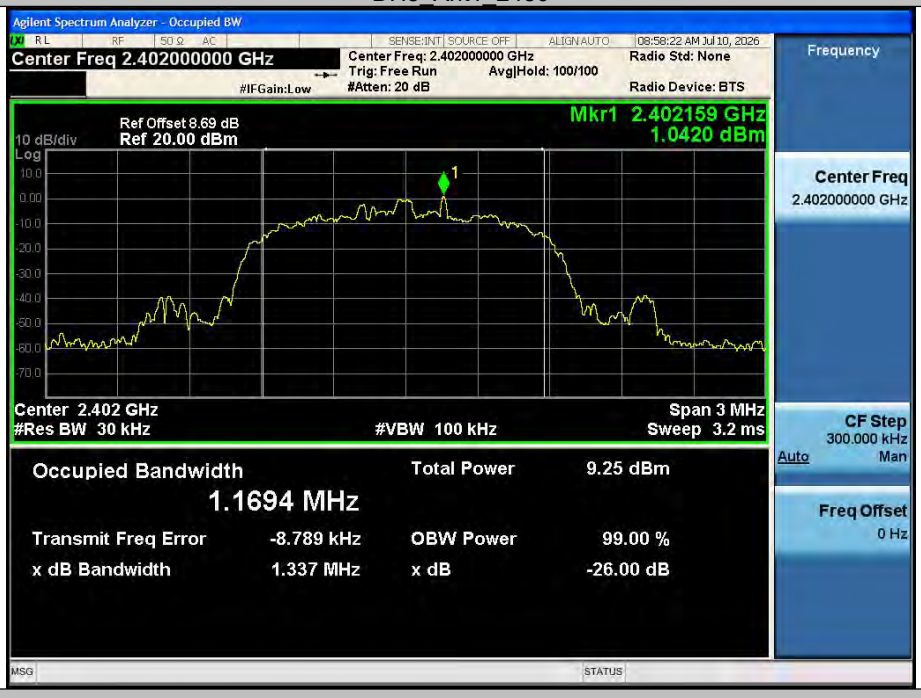
Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Ant1	2402	0.88115	2401.554	2402.435
		2441	0.89224	2440.549	2441.441
		2480	0.88808	2479.549	2480.437
3DH5	Ant1	2402	1.1694	2401.407	2402.576
		2441	1.1685	2440.409	2441.578
		2480	1.1616	2479.413	2480.575

DH5_Ant1_2402



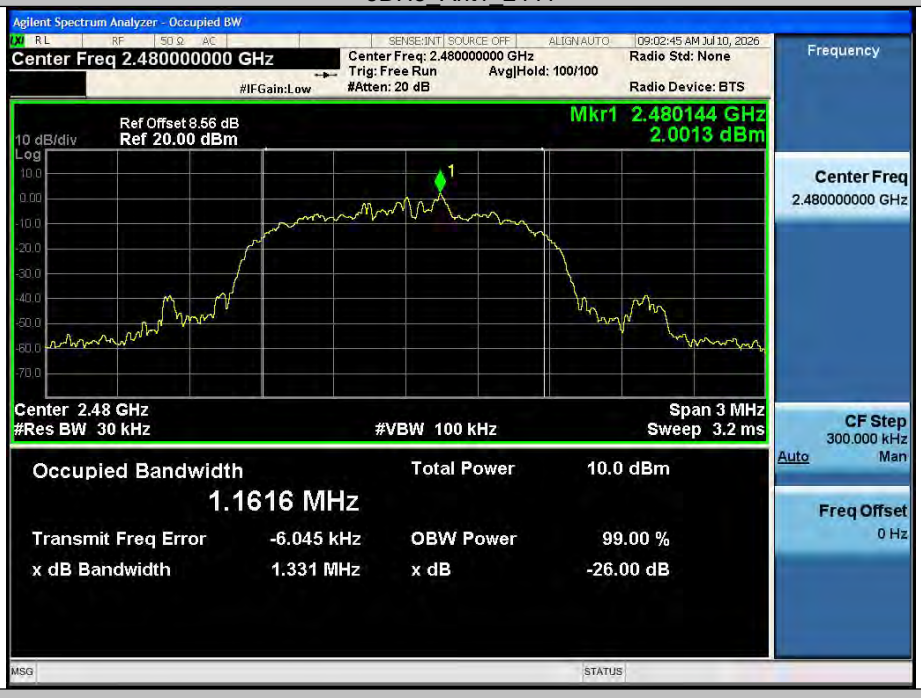
DH5_Ant1_2441

DH5_Ant1_2480



3DH5_Ant1_2402

3DH5_Ant1_2441



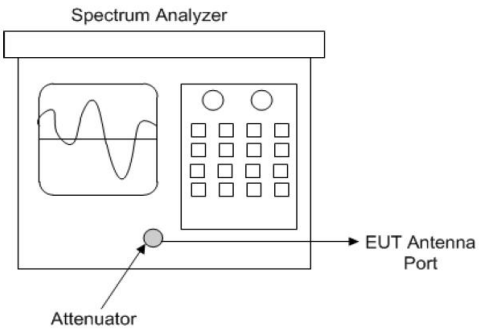
3DH5_Ant1_2480

3.7 Hopping Channel Separation

3.7.1 Limits of Hopping Channel Separation Measurement

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.

3.7.2 Test Setup



3.7.3 Test Instruments

Refer to section 5 to get information of above instrument.

3.7.4 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.
c. By using the MaxHold function record the separation of two adjacent channels.
d. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

3.7.5 Deviation from Test Standard

No deviation.

3.7.6 Test Results

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Hop	0.996	≥0.646	PASS
3DH5	Ant1	Hop	1.006	≥0.860	PASS

Note: The minimum limit is two-third 20 dB bandwidth.

DH5_Ant1_Hop

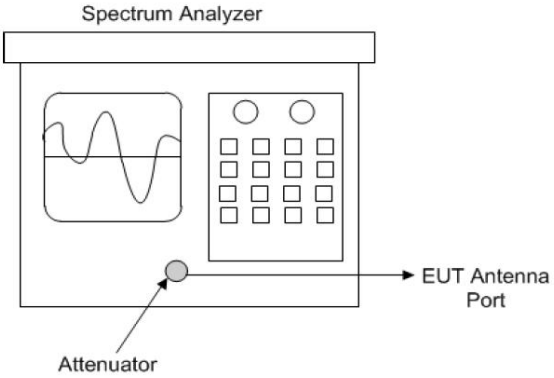
3DH5_Ant1_Hop

3.8 Maximum Output Power

3.8.1 Limits of Maximum Output Power Measurement

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-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(20.97dBm).

3.8.2 Test Setup



Spectrum analyzer test configuration

3.8.3 Test Instruments

Refer to section 5 to get information of above instrument.

3.8.4 Test Procedure

Measurement using a spectrum analyzer (SA)，Selection of test method：

The proper test method is selected based on the following criteria:

a) **Method AVGSA-1 or method AVGSA-1A (alternative)** shall be applied if either of the following conditions can be satisfied:
   1) The EUT transmits continuously (or with a D> 98%).
   2) Sweep triggering can be implemented in such a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the instrument configured as in method AVGSA-1) is equal to or shorter than the duration T of each transmission from the EUT, and if those transmissions exhibit full power throughout their durations.

b) **Method AVGSA-2 or method AVGSA-2A (alternative)** shall be applied if the conditions of the preceding item a) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than +2%.

c) **Method AVGSA-3 or method AVGSA-3A** (alternative) shall be applied if the conditions of the preceding item a) and item b) cannot be achieved.

☒ Measurement using a spectrum analyzer (SA)，Selection of test method：

☒ Maximum peak conducted output power

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW > DTS bandwidth.

b) Set VBW> [3 x RBW]

c) Set span > [3 x RBW]

d) Sweep time = auto couple.

e) Detector = peak

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

☒ Maximum conducted (average) output power(Method AVGSA-2):

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) SA Setting:
   1)* Set span to at least 1.5 times the OBW
   2)* Set sweep trigger to "free run."
   3)* Set RBW= 1% to 5% of the OBW. not to exceed 1MHz.
   4)* Set VBW ≥ 3 x RBW
   5)* Number of points in sweep≥ 2 x span /RBW. (This gives bin-to-bin spacing ≤ RBW / 2. so that narrowband signals are not lost between frequency bins).
   6)* Sweep time ≤ (number of points in sweep) x T. where T is defined in 11.6. If this gives a sweep time less than the auto sweep time of the instrument. then method AVGSA-3 shall not be used (use AVGSA-3A). The purpose of this step is so that the averaging time in each bin is less than or equal to the minimum time of a transmission.
   7)* Detector =RMS (power averaging).
   8)* Trace mode =Max hold.
   9)* Allow max hold to run for at least 60 s or longer as needed to allow the trace to stabilize.
   10)* Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function. then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW.
d. Measure the captured power within the band and recording the plot.
e. Repeat above procedures until all frequencies required were complete.

3.8.5 Deviation from Test Standard

No deviation.

3.8.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

3.8.7 Test Results

Right headphone:

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4.24	≤20.97	PASS
		2441	3.97	≤20.97	PASS
		2480	4.32	≤20.97	PASS
3DH5	Ant1	2402	4.36	≤20.97	PASS
		2441	4.08	≤20.97	PASS
		2480	4.45	≤20.97	PASS

Left headphone:

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4.06	≤20.97	PASS
		2441	3.85	≤20.97	PASS
		2480	4.32	≤20.97	PASS
3DH5	Ant1	2402	4.18	≤20.97	PASS
		2441	3.97	≤20.97	PASS
		2480	4.43	≤20.97	PASS

Right headphone:

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

Left headphone:

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

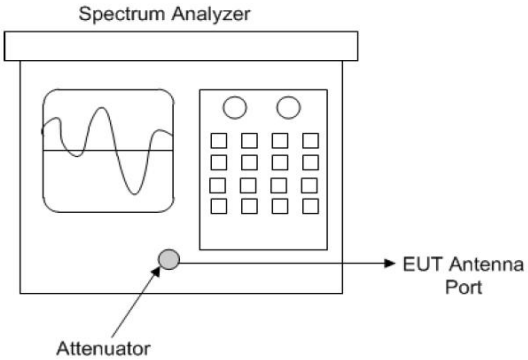
3DH5_Ant1_2480

3.9 Conducted Out of Band Emission Measurement

3.9.1 Limits of Conducted Out of Band Emission Measurement

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

3.9.2 Test Setup



Spectrum analyzer test configuration

3.9.3 Test Instruments

Refer to section 5 to get information of above instrument.

3.9.4 Test Procedure

a. Establish a reference level by using the following procedure:

1) Set instrument center frequency to DTS channel center frequency.
2) Set the span to 21.5 times the DTS bandwidth)
3) Set the RBW= 100 kHz)
4) Set the VBW ≥3 x RBW
5) Detector = peak
6) Sweep time = auto coupling
7) Trace mode =max hold
8) Allow trace to fully stabilize
9) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

b. Establish an emission level by using the following procedure:

1) Set the center frequency and span to encompass frequency range to be measured.
2) Set the RBW = 100 kHz
3) Set the VBW ≥ 300 kHz.
4) Detector = peak.
5) Sweep time = auto couple.
6) Trace mode = max hold.
7) Allow trace to fully stabilize.
8) Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

3.9.5 Deviation from Test Standard

No deviation.

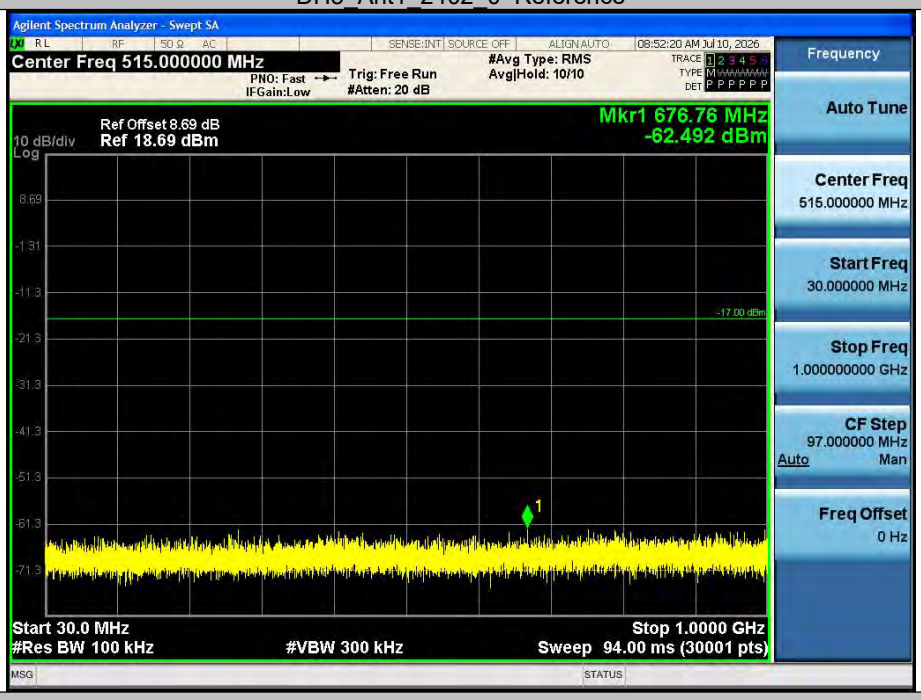
3.9.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

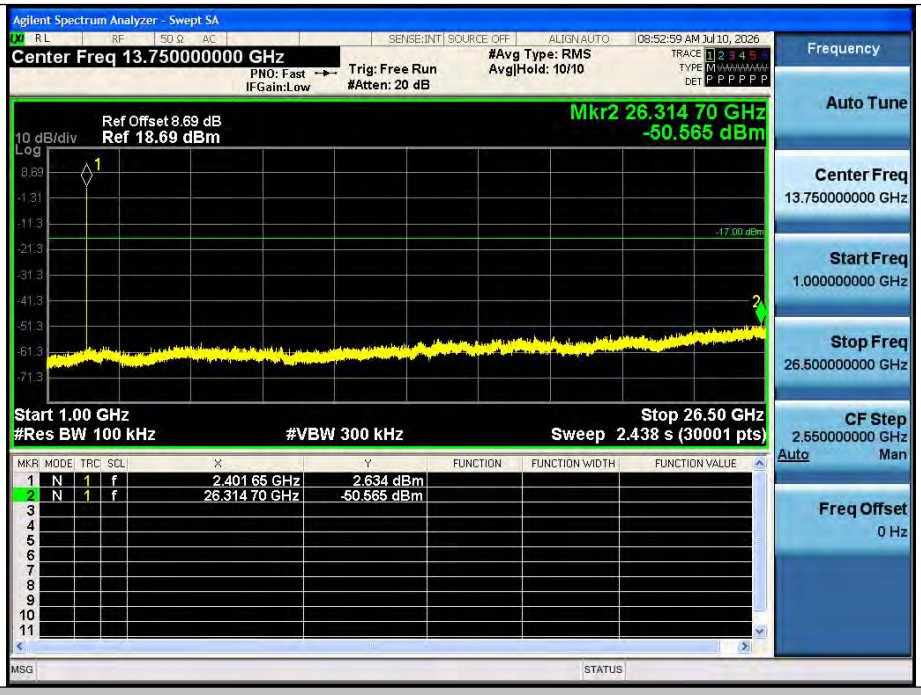
3.9.7 Test Results

The spectrum plots are attached on the following images. Mkr1 of 0~Reference indicates the highest level, Mkr1 of 30~1000 and 1000~26500 indicates the 20dB offset below highest level. It shows compliance with the requirement.

DH5_Ant1_2402_0~Reference

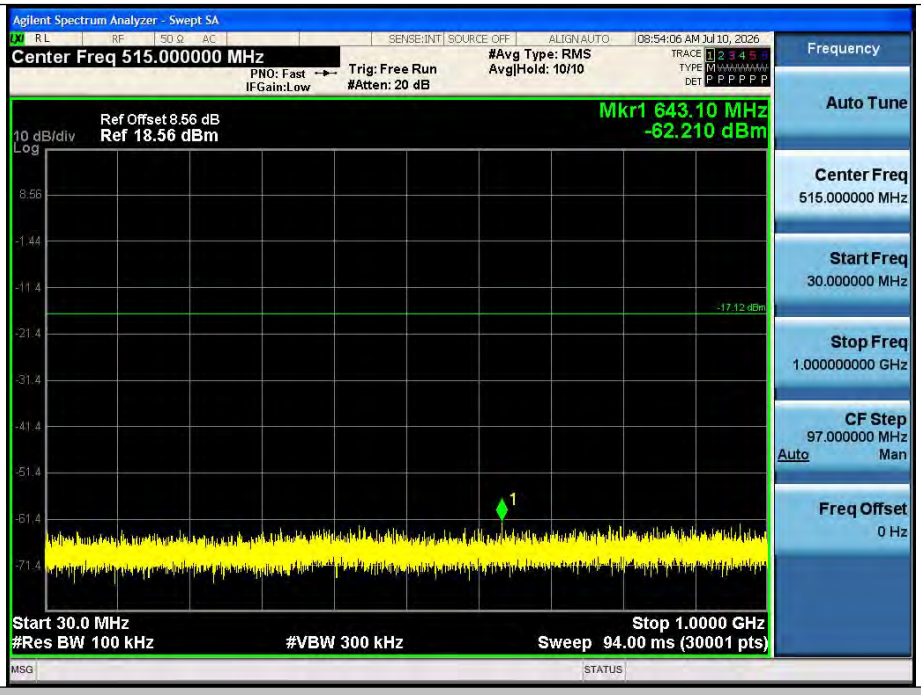


DH5_Ant1_2402_30~1000

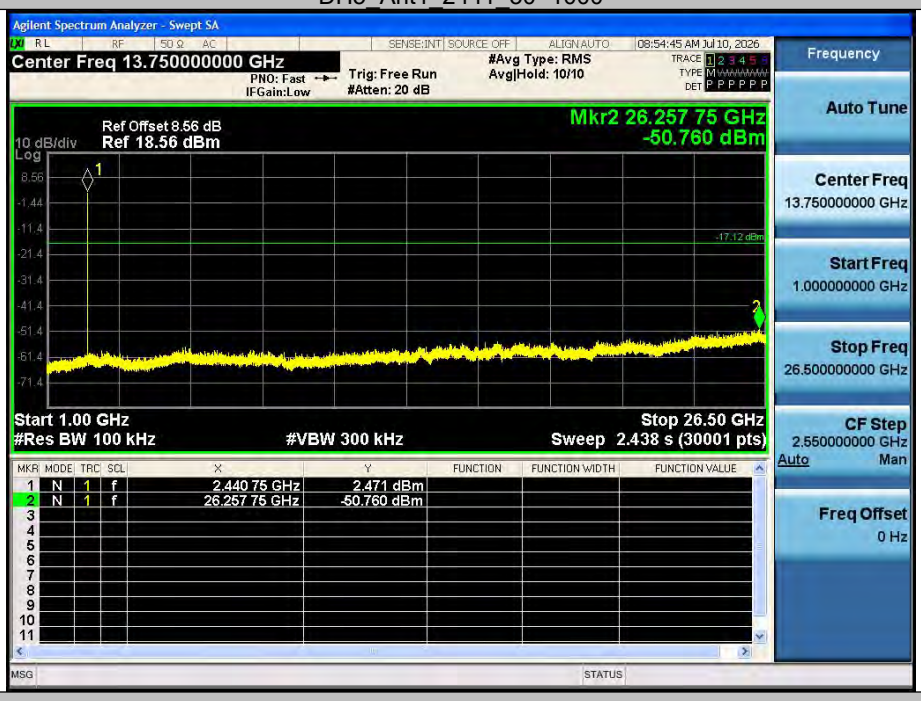


DH5_Ant1_2402_1000~26500

DH5_Ant1_2441_0~Reference

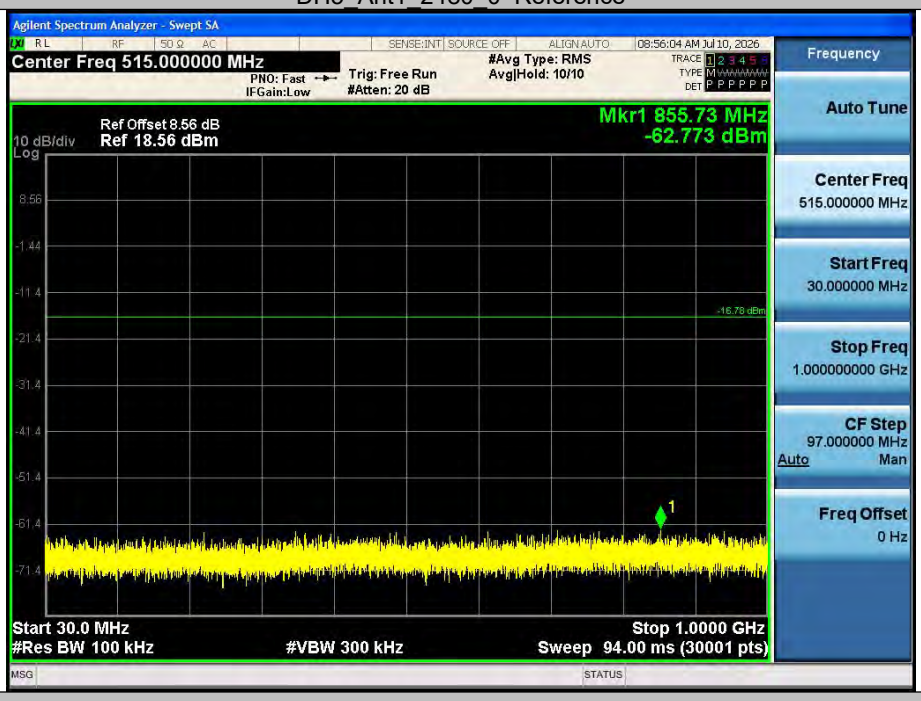


DH5_Ant1_2441_30~1000

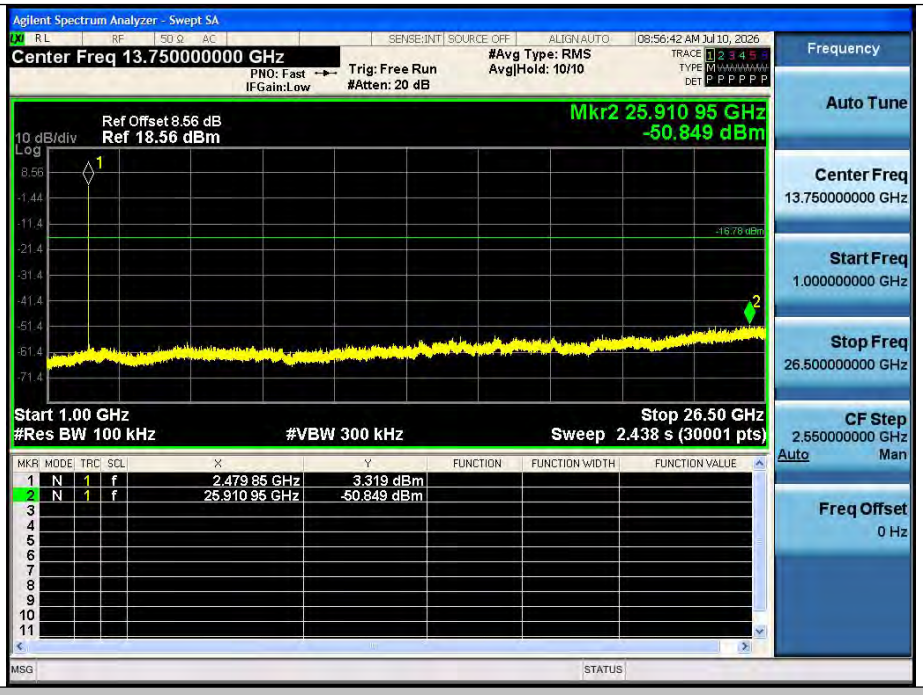


DH5_Ant1_2441_1000~26500

DH5_Ant1_2480_0~Reference

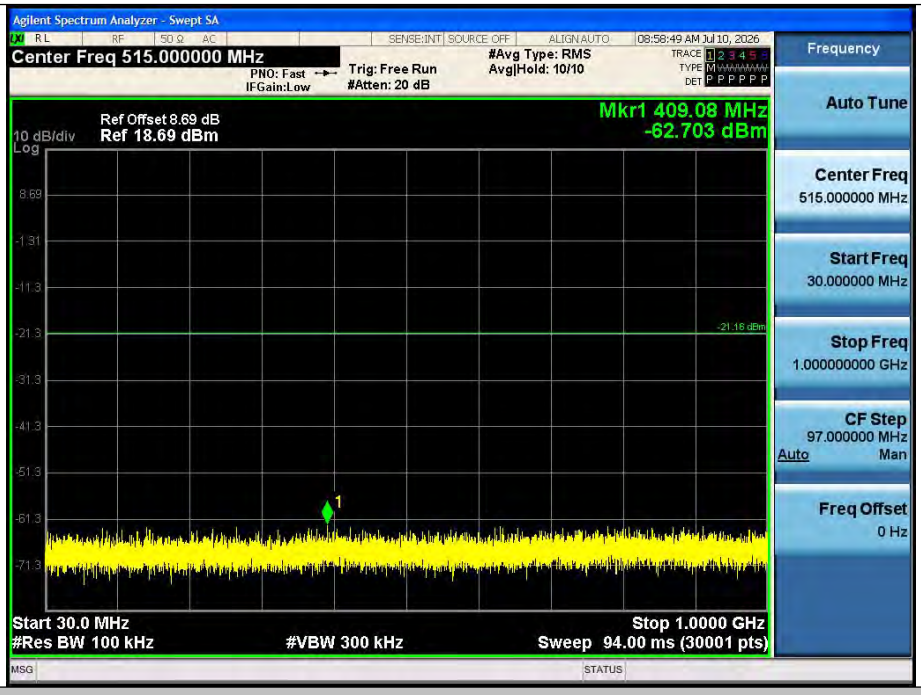


DH5_Ant1_2480_30~1000

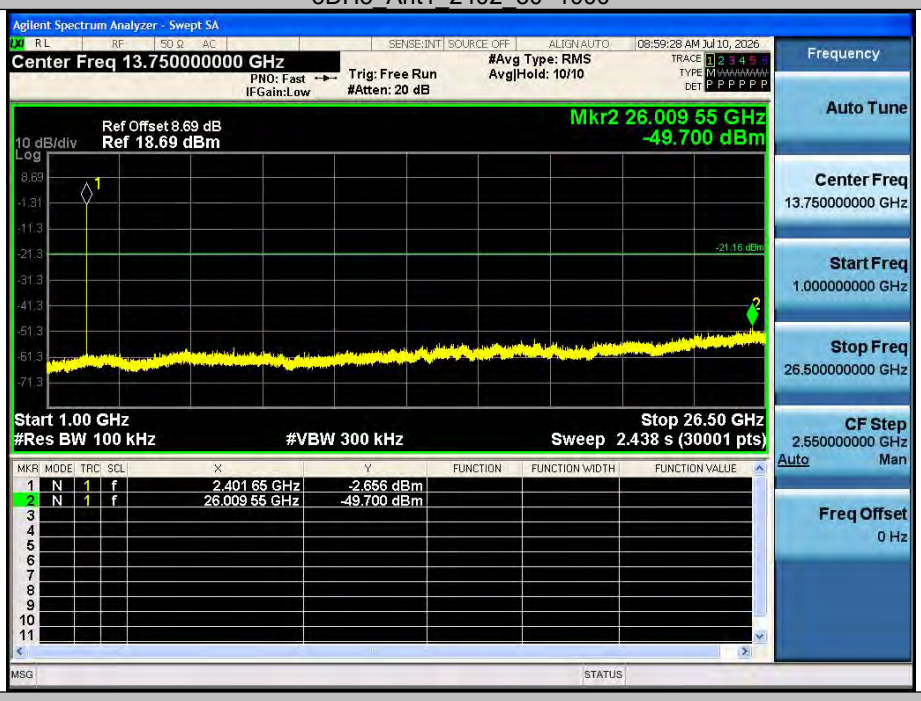


DH5_Ant1_2480_1000~26500

3DH5_Ant1_2402_0~Reference

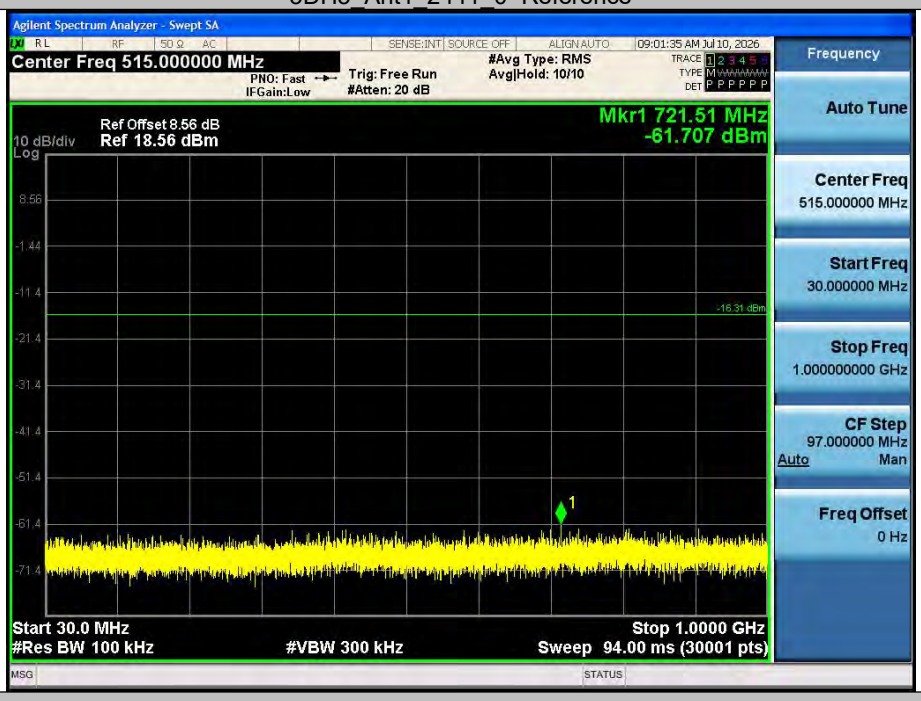


3DH5_Ant1_2402_30~1000

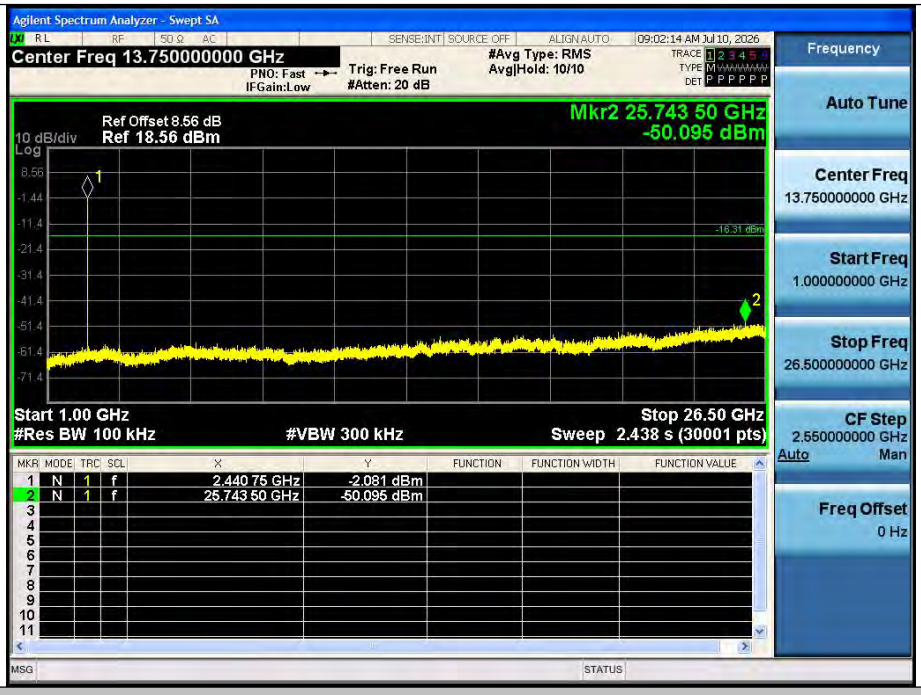


3DH5_Ant1_2402_1000~26500

3DH5_Ant1_2441_0~Reference

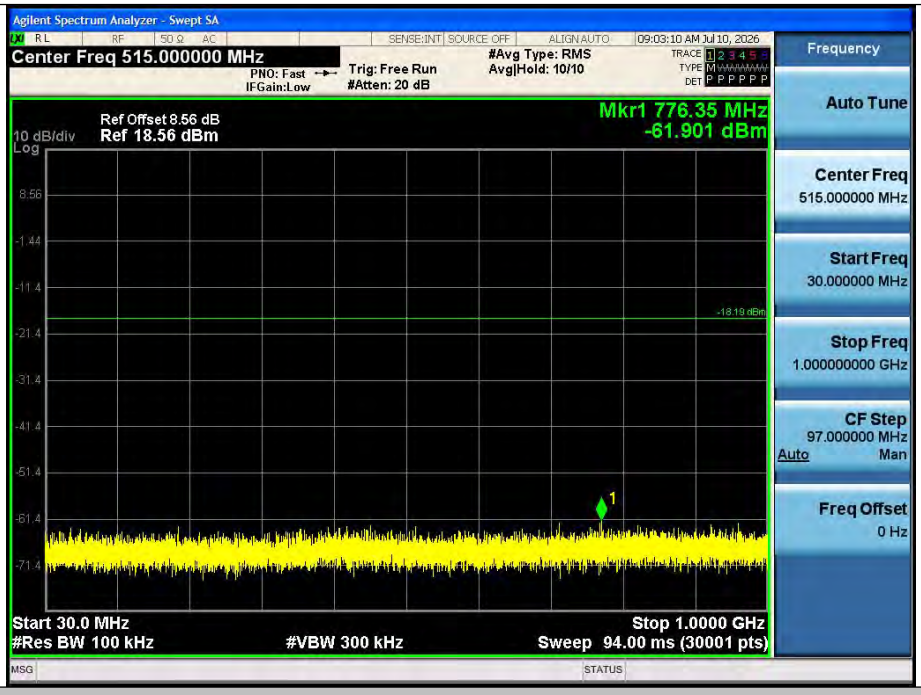


3DH5_Ant1_2441_30~1000

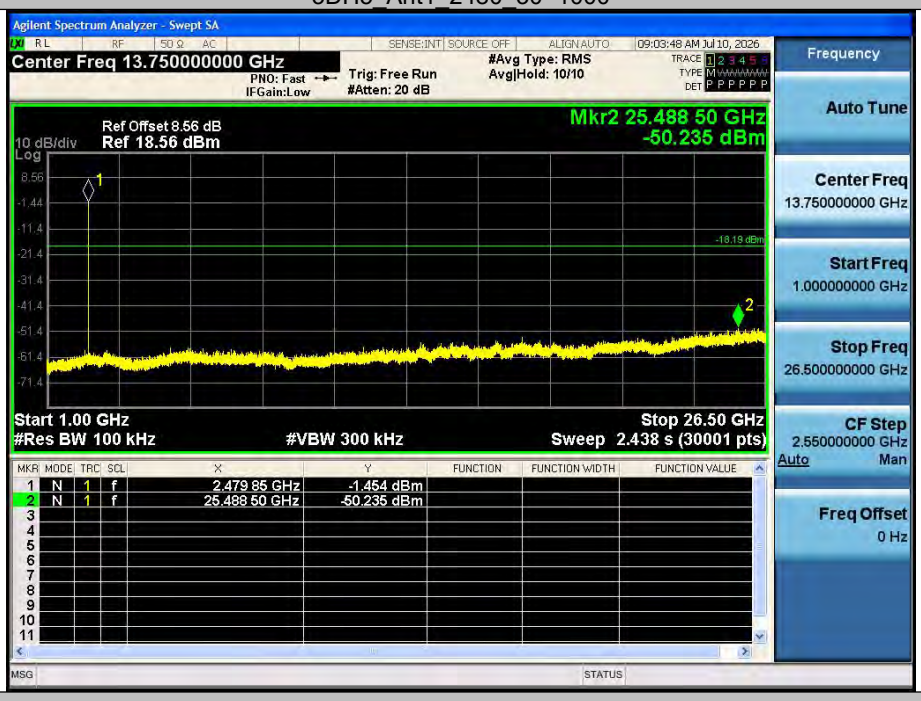


3DH5_Ant1_2441_1000~26500

3DH5_Ant1_2480_0~Reference

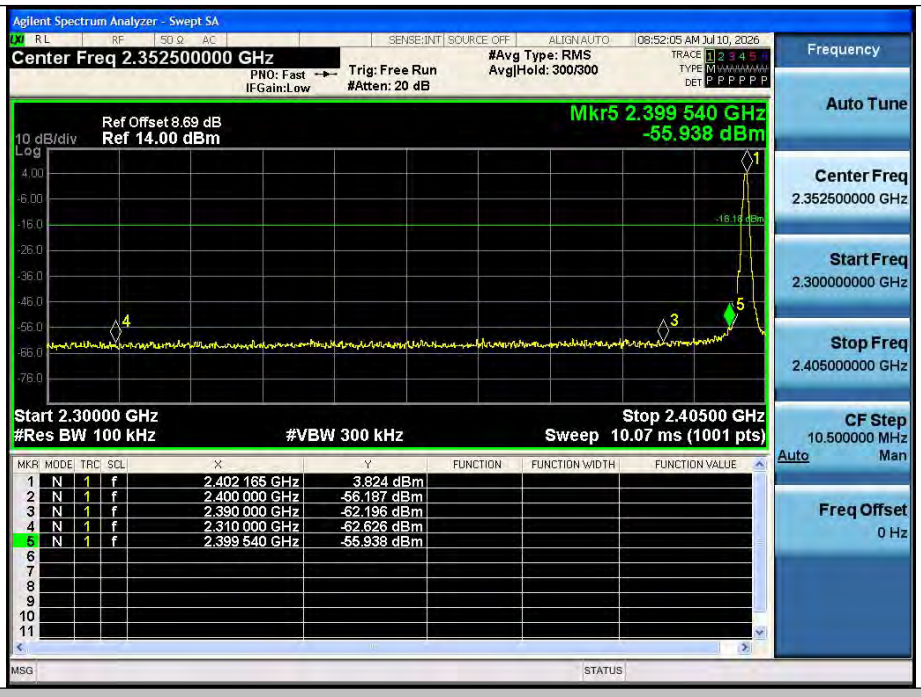


3DH5_Ant1_2480_30~1000

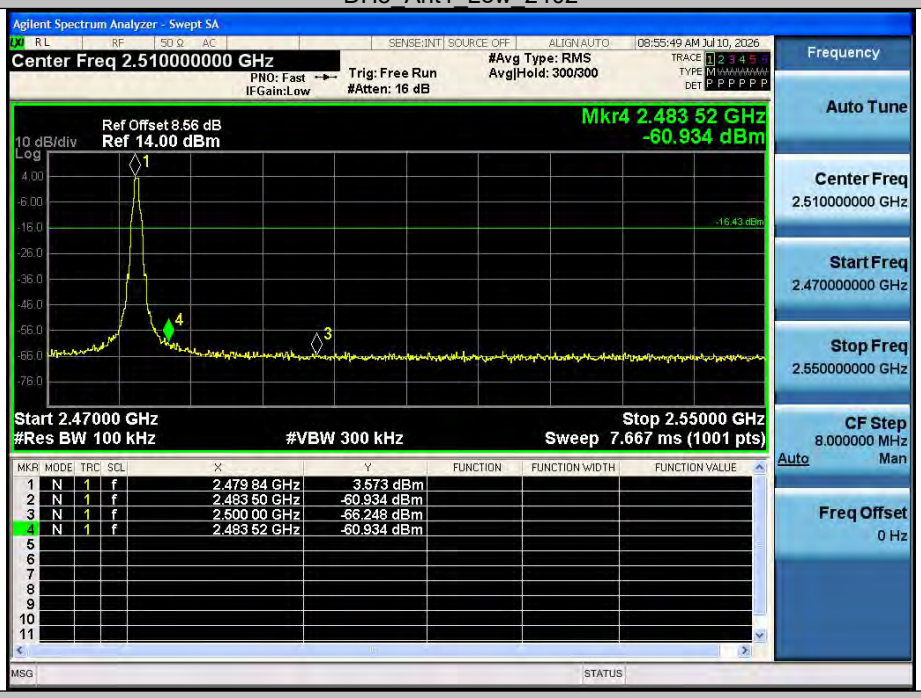


3DH5_Ant1_2480_1000~26500

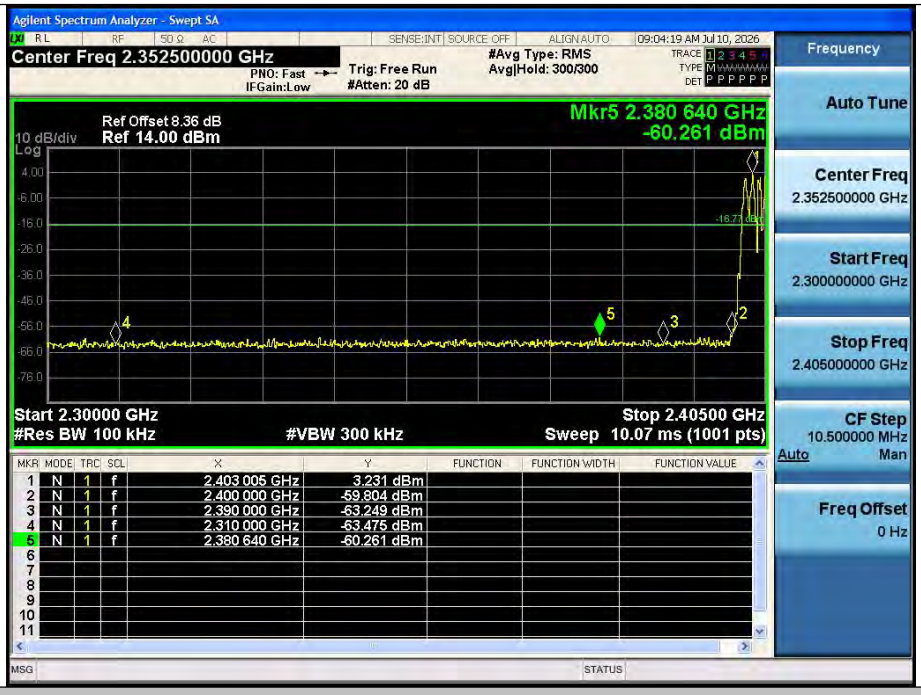
Mkr1 indicates the highest level, other indicates the 20dB offset below highest level. It shows compliance with the requirement.



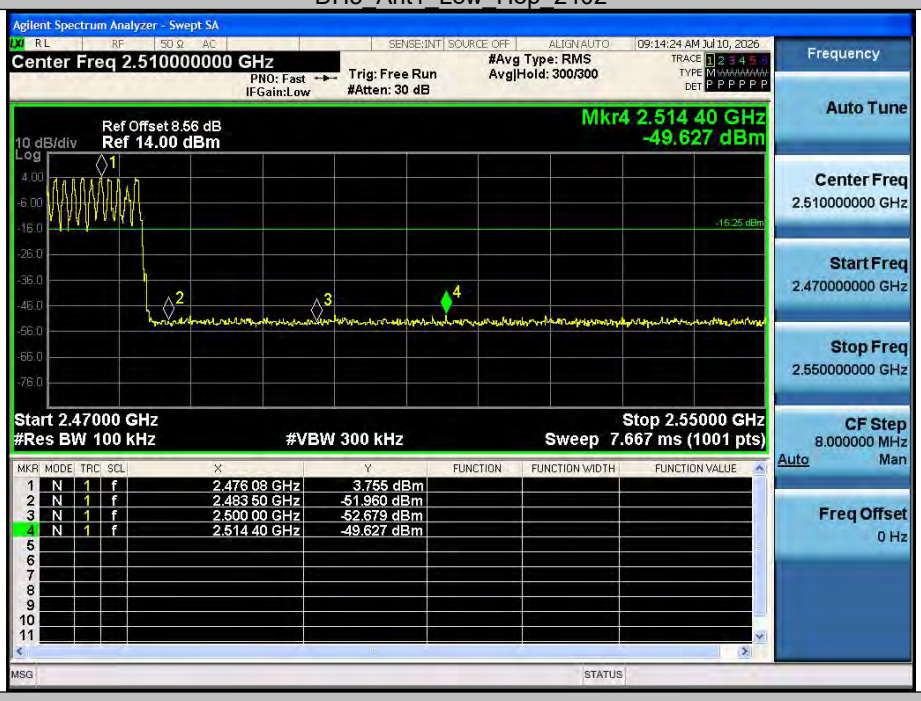
DH5_Ant1_Low_2402



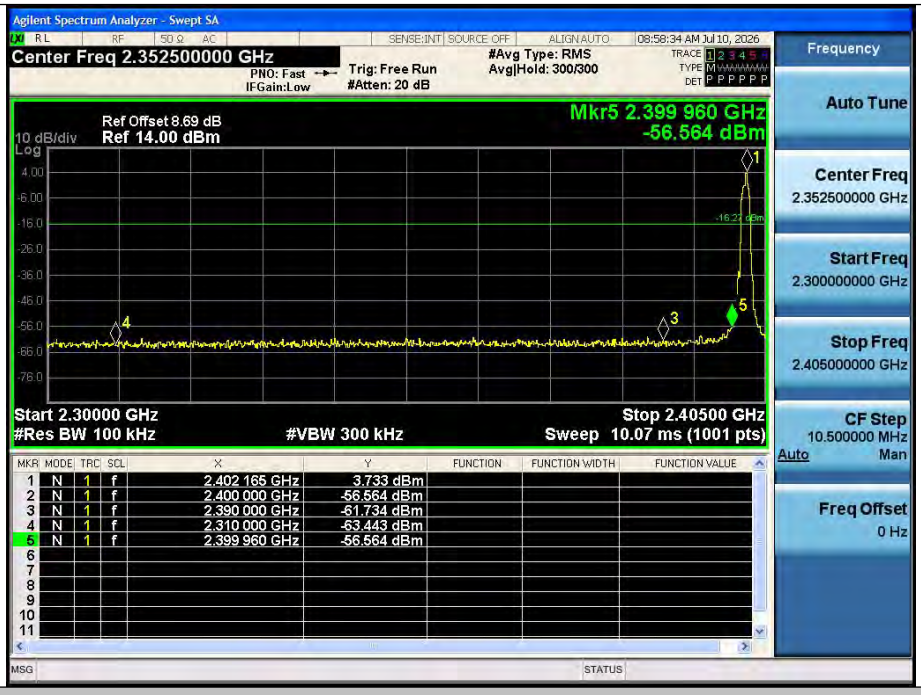
DH5_Ant1_High_2480



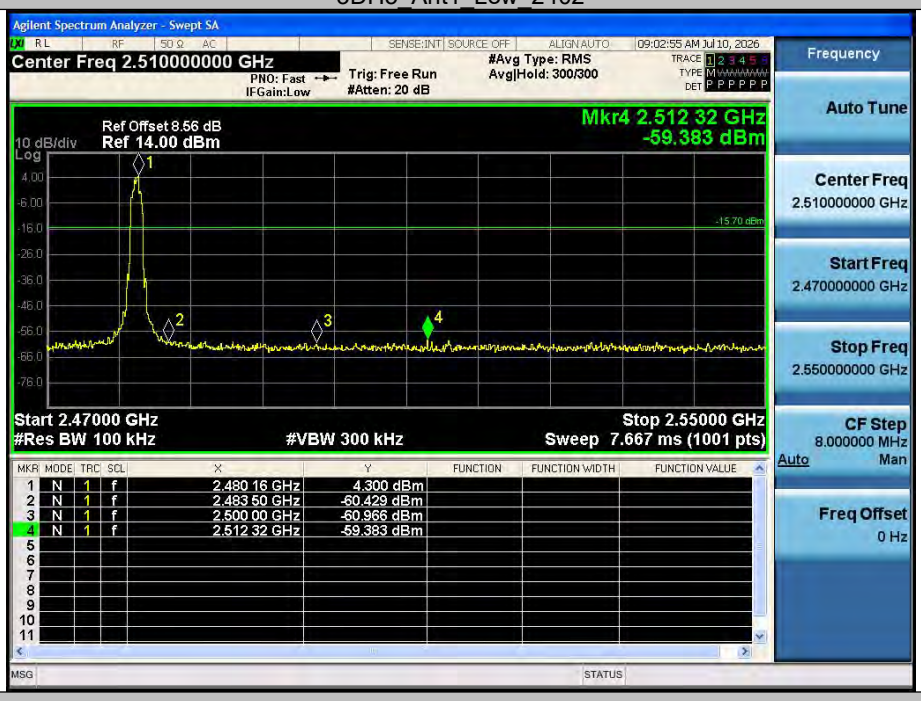
DH5_Ant1_Low_Hop_2402



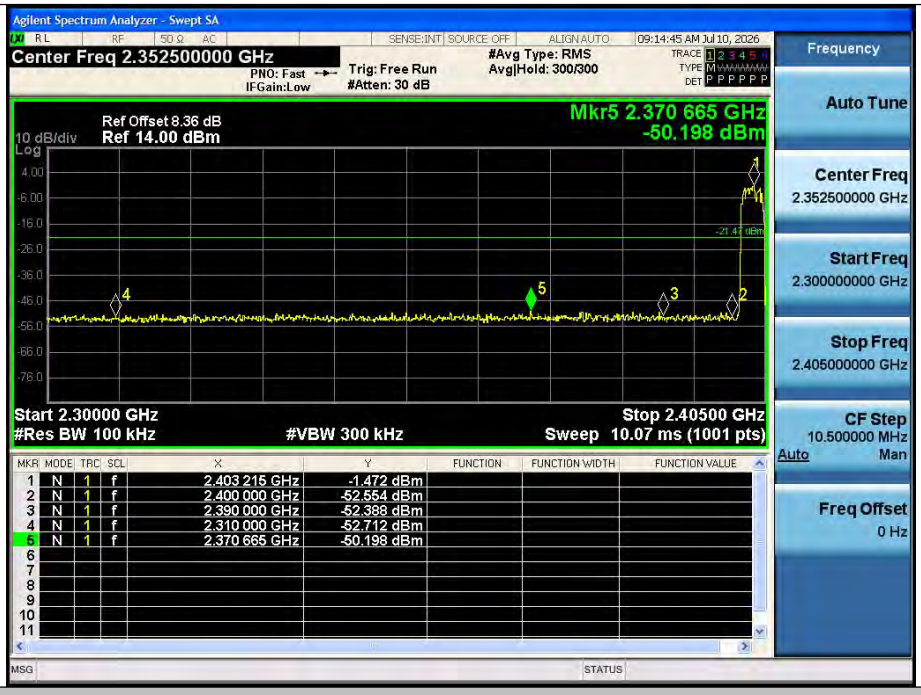
DH5_Ant1_High_Hop_2480



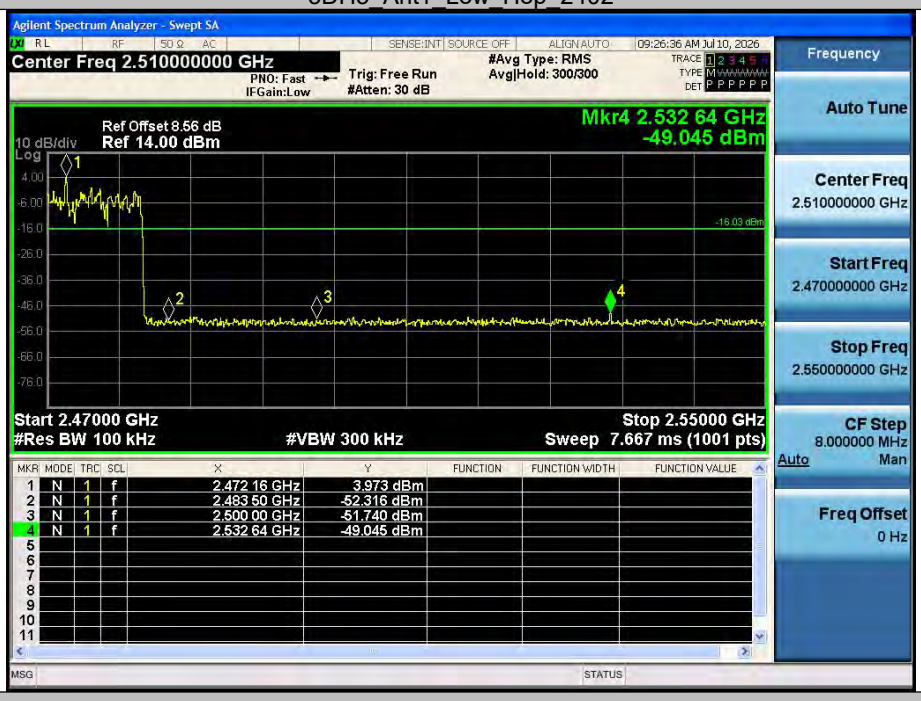
3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480

3.10 Antenna Application

3.10.1 Antenna Requirement

Standard	Requirement
FCC CFR Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

3.10.2 Test Results

☑	Antenna use a permanently attached antenna which is not replaceable.
☐	Not using a standard antenna jack or electrical connector for antenna replacement
☐	The antenna has to be professionally installed (please provide method of installation)

Please refer to the attached document Internal Photos to show the antenna.

4 Pictures of Test Arrangements

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

5 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum	Keysight	N9020A	MY51240612	2026-07-23
Power Meter 10Hz~18GHz	Tonscend	JS0806-2	188060126	2026-07-23
Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101783	2026-07-23
Signal generator	Agilent	E4421B	GB40051020	2027-05-22
Universal Switch Control Unit	Rohde&Schwarz	CMW500	12010002k50	2026-07-23
Humidity tester	Jingchuang	GSP-8A	CMA22B000592	2026-07-28
Test Software	Tonscend	JS0806-2	188060126	2026-07-23

Note:
1. The calibration interval of the above test instruments is 12 months.
2. The test was performed in RF Chamber.

Appendix – Information on the Testing Laboratories

We, Hwa-Hsing (Dongguan) Testing Co., Ltd.,A global provider of TESTING and CERTIFICATION services for consumer products, electronic products and wireless information technology products. Adhering to the core values “HONEST and TRUSTWORTHY, OBJECTIVE and IMPARTIALITY, RIGOROUS and AFFICIENT”, commitment to provide professional, perfect and efficient comprehensive ONE-STOP solution of TESTING and CERTIFICATION services for Manufacturers, Buyers, Traders, Brands, Retailers. Assist client to better manage risk, protect their brands, reduce costs and cut time to over 150 markets in global. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Contact Tel: 0769-85598986
Email: service-hs@lyns-tci.com
Web Site: www.lyns-tci.com

The address and road map of all our labs can be found in our web site also.

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