



# **FCC** Radio Test Report

FCC ID: GSSVS20085

Report No. : eLAB-FCC-1-2403X002

Equipment : PJ-WPD-800 Model Name : VS20085 Brand Name : ViewSonic

**Applicant**: ViewSonic Corporation

Address : 10 Pointe Dr. Suite 200. Brea, CA 92821 United States

Radio Function : Bluetooth EDR

FCC Rule Part(s) : FCC CFR Title 47, Part 15, Subpart C (15.247)

Measurement : ANSI C63.10-2013

Procedure(s)

**Date of Receipt** : 2024/3/14

**Date of Test** : 2024/3/28~2024/4/18

**Issued Date** : 2024/5/16

The above equipment has been tested and found in compliance with the requirement of the above standards by eTest certification Laboratory Inc. hereinafter referred to as "eLAB".

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#### **Declaration**

**eLAB** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**eLAB**'s reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **eLAB** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **eLAB** issued reports.

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**eLAB**'s laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

eLAB is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

#### Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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# **REVISION HISTORY**

Report No.	Version	Description	Issued Date	Note
eLAB-FCC-1-2403X002	R00	Original Report.	2024/5/16	Valid

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# 1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

Standard(s) Section	Description	Result	Remark
15.207	AC Power Line Conducted Emissions	Pass	
15.205 15.209 15.247(d)	Radiated Emissions	Pass	
15.247 (a)(1)(iii)	Number of Hopping Frequency	Pass	
15.247 (a)(1)(iii)	Average Time of Occupancy	Pass	
15.247 (a)(1)	Hopping Channel Separation	Pass	
15.247 (a)(1)	Bandwidth	Pass	
15.247 (b)(1)	Output Power	Pass	
15.247(d)	Antenna conducted Spurious Emission	Pass	
15.203	Antenna Requirement	Pass	

# NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

(2) The report format version is FR15CBT\_V1.0

#### 1.1 TEST FACILITY

The test locations stated below are under the TAF Accreditation and FCC designation number is 4045. The satellite facilities under the test firm used to collect the test data in this report are:

No. 91, Ln. 298, Wengong 1st Rd., Guishan Dist., Taoyuan City 333001, Taiwan

■ CB03 ■ C01

#### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $\mathbf{y} \pm \mathbf{U}$ , where expanded uncertainty  $\mathbf{U}$  is based on a standard uncertainty multiplied by a coverage factor of  $\mathbf{k} = \mathbf{2}$ , providing a level of confidence of approximately  $\mathbf{95}$  %. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The eLab measurement uncertainty is less than the CISPR 16-4-2  $\mathbf{U}_{cispr}$  requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C01	CISPR	150 kHz ~ 30 MHz	3.4

#### B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
		0.009 kHz ~ 30 MHz	-	2.9
		30 MHz ~ 1000 MHz	Н	3.2
	03 CISPR	30 WH2 ~ 1000 WH2	V	4.0
CB03		1 GHz ~ 6 GHz	Н	4.8
CBUS		I GHZ ~ 0 GHZ	V	4.9
		0.011- 40.011-	Н	4.8
		6 GHz ~ 18 GHz	V	4.7
		18 GHz	-	4.1

#### C. Conducted test:

Test Item	U, (dB)
Occupied Bandwidth	1.0502
Output power	1.0406
Conducted Spurious emissions	1.1484
Conducted Band edges	1.0518
Dwell time	1.0518
Channel separation	1.0552
Channel numbers	1.0552

#### NOTE:

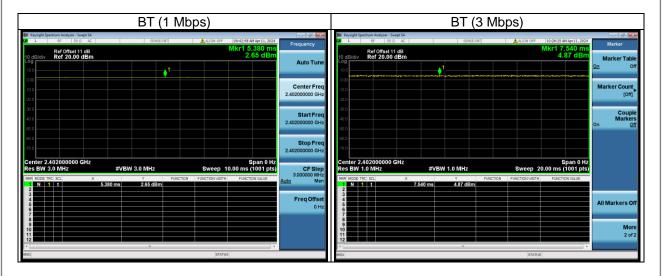
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

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# 1.3 DUTY CYCLE

If duty cycle is  $\geq$  98 %, duty factor is not required. If duty cycle is < 98 %, duty factor shall be considered.

Remark	Delta 1			Delta 2	On Time/Period	10 log(1/Duty Cycle)
Mode	ON	Numbers	On Time (B)	Period (ON+OFF)	Duty Cycle	Duty Factor
iviode	(ms)	(ON)	(ms)	(ms)	(%)	(dB)
BT (1 Mbps)	5.380	1	5.380	5.380	100.00%	0.00
BT (3 Mbps)	7.540	1	7.540	7.540	100.00%	0.00





# **2 GENERAL INFORMATION**

# 2.1 DESCRIPTION OF EUT

Model NameVS20085Brand NameViewSonicSerial NumberN/ATest Software Versionteraterm-4.107Operation Band2400 MHz ~ 2483.5 MHzOperation Frequency2402 MHz ~ 2480 MHzModulation TypeGFSK, π/4-DQPSK, 8DPSKModulation TechnologyFHSSTransfer Rate1 Mbps, 3MbpsOutput Power (Max)1 Mbps: 11.62 dBm (0.0145W)		DI WIDD 666
Brand Name  Serial Number  N/A  Test Software Version  Operation Band  Operation Frequency  Modulation Type  GFSK, π/4-DQPSK, 8DPSK  Modulation Technology  Transfer Rate  1 Mbps, 3Mbps  1 Mbps: 11.62 dBm (0.0145W)	Equipment	PJ-WPD-800
Serial NumberN/ATest Software Versionteraterm-4.107Operation Band2400 MHz ~ 2483.5 MHzOperation Frequency2402 MHz ~ 2480 MHzModulation TypeGFSK, π/4-DQPSK, 8DPSKModulation TechnologyFHSSTransfer Rate1 Mbps, 3MbpsOutput Power (Max)1 Mbps: 11.62 dBm (0.0145W)	Model Name	VS20085
Test Software Version teraterm-4.107  Operation Band 2400 MHz ~ 2483.5 MHz  Operation Frequency 2402 MHz ~ 2480 MHz  Modulation Type GFSK, π/4-DQPSK, 8DPSK  Modulation Technology FHSS  Transfer Rate 1 Mbps, 3Mbps  Output Power (Max) 1 Mbps: 11.62 dBm (0.0145W)	Brand Name	ViewSonic
Operation Band2400 MHz ~ 2483.5 MHzOperation Frequency2402 MHz ~ 2480 MHzModulation TypeGFSK, π/4-DQPSK, 8DPSKModulation TechnologyFHSSTransfer Rate1 Mbps, 3MbpsOutput Power (Max)1 Mbps: 11.62 dBm (0.0145W)	Serial Number	N/A
Operation Frequency       2402 MHz ~ 2480 MHz         Modulation Type       GFSK, π/4-DQPSK, 8DPSK         Modulation Technology       FHSS         Transfer Rate       1 Mbps, 3Mbps         Output Power (Max)       1 Mbps: 11.62 dBm (0.0145W)	Test Software Version	teraterm-4.107
Modulation Type GFSK, π/4-DQPSK, 8DPSK  Modulation Technology FHSS  Transfer Rate 1 Mbps, 3Mbps  Output Power (Max) 1 Mbps: 11.62 dBm (0.0145W)	Operation Band	2400 MHz ~ 2483.5 MHz
Modulation Technology FHSS Transfer Rate 1 Mbps, 3Mbps  Output Power (Max) 1 Mbps: 11.62 dBm (0.0145W)	Operation Frequency	2402 MHz ~ 2480 MHz
Transfer Rate 1 Mbps, 3Mbps  Output Power (Max) 1 Mbps: 11.62 dBm (0.0145W)	Modulation Type	GFSK, π/4-DQPSK, 8DPSK
Output Power (Max) 1 Mbps: 11.62 dBm (0.0145W)	Modulation Technology	FHSS
	Transfer Rate	1 Mbps, 3Mbps
Output Fower (Max)   3 Mbps: 11.23 dBm (0.0133W)	Output Power (Max)	
	Cutput Fower (Max)	3 Mbps: 11.23 dBm (0.0133W)

# NOTE:

(1)	he above EUT information is declared by manufacturer and for more detailed features descripti	on,
	lease refers to the manufacturer's specifications or user's manual.	

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# (2) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	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) Table for Filed Antenna:

Brand Name	Model Name	Type	Frequency (MHz)	Gain (dBi)
ViewSonic	HP47D	PCB	2400~ 2483.5	4.83

(4) The above Antenna information is derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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# 2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal	-	-
Transmitter Radiated Emissions (below 1GHz)	3 Mbps	00	-
Transmitter Radiated Emissions	1/3 Mbps	00/78	Bandedge
(above 1GHz)	1/3 Mbps	00/39/78	Harmonic
Number of Hopping Frequency	1/3 Mbps	00~78	-
Average Time of Occupancy	1/3 Mbps	00/39/78	-
Hopping Channel Separation	1/3 Mbps	00/39/78	-
Bandwidth	1/3 Mbps	00/39/78	-
Peak Output Power	1/2/3 Mbps	00/39/78	-
Antenna conducted Spurious Emission	1/3 Mbps	00/39/78	-

# NOTE:

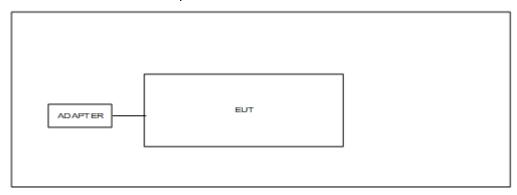
(1)	For radiated emission band edge test, both	Vertical and Horizontal	are evaluated, but only	y the worst case
	(Horizontal) is recorded.			

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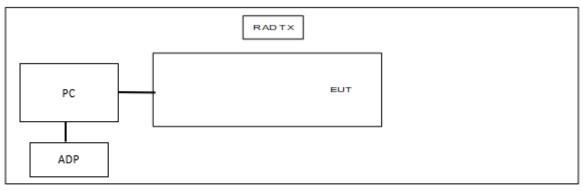
# 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

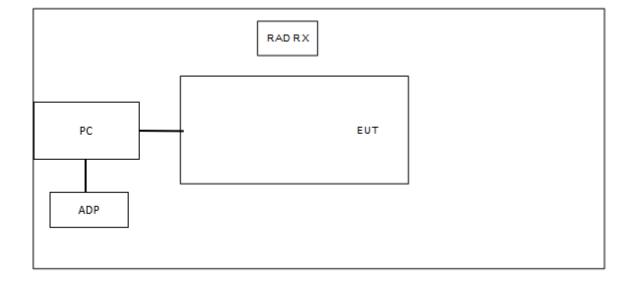
Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.

### AC power line conducted emissions



#### **Radiated Emissions**







# 2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Remarks
Α	NB	Dynabook	TECRA A40-J	41029336H
В	ADP	Dynabook	PAS352E-1AC3	N/A
С	Fixture	ViewSonic	5800-2CUART	Supplied by test requester.
D	Remote Controller	OHSUNG	G10	Supplied by test requester

Item	Cable Type	Ferrite Core	Length	Shielded	Remarks
1	Micro USB	N/A	1.6m	YES	Supplied by test requester.

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#### 3 AC POWER LINE CONDUCTED EMISSIONS TEST

#### 3.1 LIMIT

Frequency	Limit (dBµV)		
(MHz)	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 tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)

Margin Level = Measurement Value - Limit Value

Calculation example:

Reading Level		Correct Factor		Measurement Value
(dBµV)		(dB)		(dBµV)
38.22	+	3.45	=	41.67

Measurement Value		Limit Value		Margin Level
(dBµV)		(dBµV)		(dB)
41.67	-	60	=	-18.33

The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

#### 3.2 TEST PROCEDURE

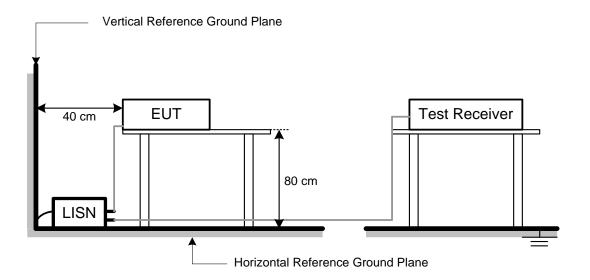
- a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
  - All other support equipment were powered from an additional LISN(s).
  - The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
- c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
  - The end of the cable will be terminated, using the correct terminating impedance.
  - The overall length shall not exceed 1 m.
- d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
- e. For the actual test configuration, please refer to the related Item EUT TEST PHOTO.

#### NOTE:

- (1) In the results, each reading is marked as Peak, QP or AVG per the detector used. BW=9 kHz (6 dB Bandwidth)
- (2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

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# 3.3 TEST SETUP



# 3.4 TEST RESULT

Please refer to the APPENDIX A.

#### 4 RADIATED EMISSIONS TEST

#### 4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205, then the 15.209 limit in the table below has to be followed.

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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
960~1000	500	3

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

Frequency (MHz)		Radiated (dBu	Measurement Distance	
	(IVITZ)	Peak	Average	(meters)
	Above 1000	74	54	3

#### NOTE:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

Calculation example:

Reading Level		Correct Factor		Measurement Value
(dBµV)		(dB/m)		(dBμV/m
35.45	+	-11.37	=	24.08

Measurement Value		Limit Value		Margin Level
(dBµV/m)		(dBµV/m)		(dB)
24.08	-	40	=	-15.92

Spectrum Parameter	Setting	
Attenuation	Auto	
Start Frequency	1000 MHz	
Stop Frequency	10th carrier harmonic	
RBW / VBW	1MHz / 3MHz for Peak,	
(Emission in restricted band)	1MHz / 1/T for Average	

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

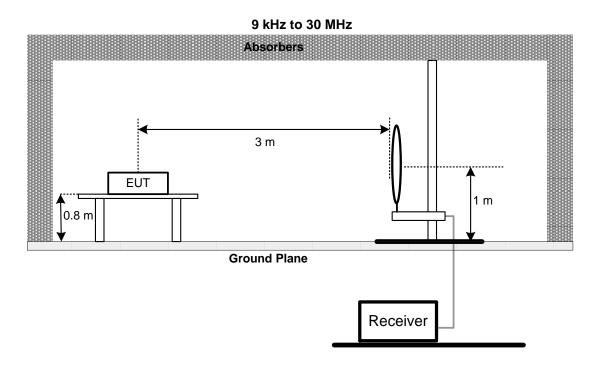
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#### 4.2 TEST PROCEDURE

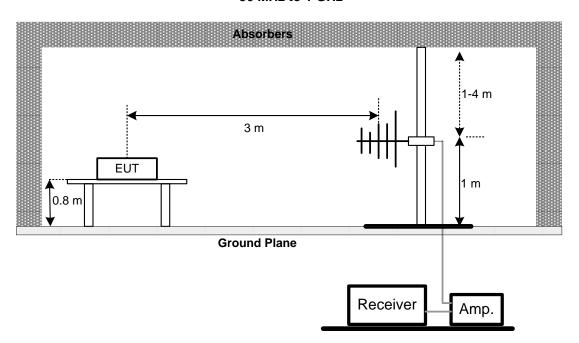
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. (below 1GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- i. For the actual test configuration, please refer to the related Item EUT TEST PHOTO.

#### 4.3 TEST SETUP

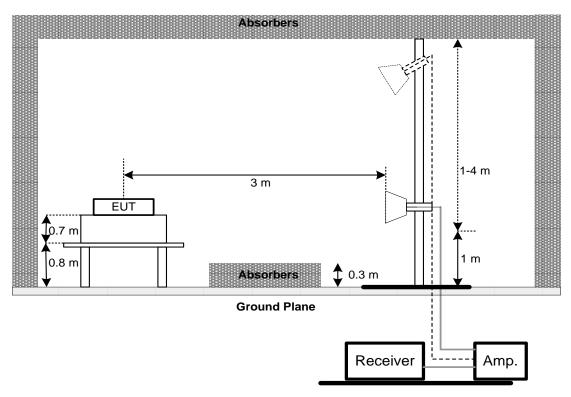




30 MHz to 1 GHz



**Above 1 GHz** 



# 4.4 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.



егав	Report No.: eLAB-FCC-1-2403X002
4.5 TEST RESULT – BELOW 30 MHZ	
There were no emissions found below 30 MHz within 20 dB of the limit.	
4.6 TEST RESULT – 30 MHZ TO 1 GHZ	
Please refer to the APPENDIX B.	
4.7 TEST RESULT – ABOVE 1 GHZ	
Please refer to the APPENDIX C.	
NOTE:  (1) No limit: This is fundamental signal, the judgment is not applic  For fundamental signal judgment was referred to Peak output	cable. test.

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# 5 NUMBER OF HOPPING CHANNEL

### 5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Frequency Range (MHz)	Result	
15.247(a)(1)(iii)	Number of Hopping Channel	2400-2483.5	PASS	

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RBW	100 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW=100KHz, VBW=100KHz, Sweep time = Auto.

### 5.3 TEST SETUP



#### 5.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 5.5 TEST RESULTS

Please refer to the APPENDIX D.

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#### AVERAGE TIME OF OCCUPANCY

#### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247), Subpart C					
Section Test Item Limit Frequency Range (MHz) Result					
15.247(a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS	

#### 6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. Measure the maximum time duration of one single pulse.

A Period Time = (channel number) \* 0.4

For Non-AFH Mode (79 Channel):

DH1 Time Slot: Reading \* (1600/2)/79 \* (0.4 \* 79)

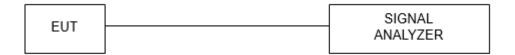
DH3 Time Slot: Reading \* (1600/4)/79 \* (0.4 \* 79)

DH5 Time Slot: Reading \* (1600/6)/79 \* (0.4 \* 79)

For AFH Mode (20 Channel):

DH1 Time Slot: Reading \* (800/2)/20 \* (0.4 \* 20) DH3 Time Slot: Reading \* (800/4)/20 \* (0.4 \* 20) DH5 Time Slot: Reading \* (800/6)/20 \* (0.4 \* 20)

### 6.3 TEST SETUP



#### 6.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 6.5 TEST RESULTS

Please refer to the APPENDIX E.

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#### 7 HOPPING CHANNEL SEPARATION MEASUREMENT

### 7.1 APPLIED PROCEDURES / LIMIT

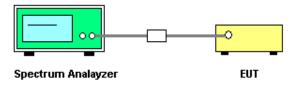
Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 7.2 TEST PROCEDURE

- a. The EUT must have its hopping function enabled
- b. Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span Video (or Average) Bandwidth (VBW) ≥ RBW Sweep = Auto Detector function = Peak Trace = Max Hold

#### 7.3 TEST SETUP



#### 7.4 TEST RESULTS

Please refer to the APPENDIX F.

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# **8 BANDWIDTH TEST**

### 8.1 APPLIED PROCEDURES

	FCC Part15 (15.247), Subpart C	
Section	Test Item	Frequency Range (MHz)
15.247(a)(1)	Bandwidth	2400-2483.5

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VBW	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep Time = Auto.

### 8.3 TEST SETUP



#### 8.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 8.5 TEST RESULTS

Please refer to the APPENDIX G.



# 9 OUTPUT POWER TEST

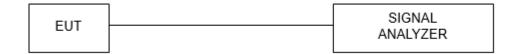
### 9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247), Subpart C				
Section Test Item Limit Frequency Range (MHz) Result				
15.247(b)(1)	Peak Output Power	0.125Watt or 21dBm	2400-2483.5	PASS

### 9.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 3MHz, VBW= 3MHz, Sweep time = Auto.

#### 9.3 TEST SETUP



### 9.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 9.5 TEST RESULTS

Please refer to the APPENDIX H.

#### 10 ANTENNA CONDUCTED SPURIOUS EMISSION

#### 10.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits.

#### **10.2 TEST PROCEDURE**

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.
- c. Offset=antenna gain+ cable loss

#### 10.3 TEST SETUP



#### **10.4 EUT OPERATION CONDITIONS**

The EUT was programmed to be in continuously transmitting mode.

#### **10.5 TEST RESULTS**

Please refer to the APPENDIX I.

# 11 LIST OF MEASURING EQUIPMENTS

	AC Power Line Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until		
1	TWO-LINE V-NETWORK	R&S	ENV216	101051	2023/7/21	2024/7/20		
2	Test Cable	EMCI	EMCRG142S-SM -SM-5000	230609	2023/7/19	2024/7/18		
3	EMI Test Receiver	R&S	ESR3	103133	2023/6/29	2024/6/28		
4	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A		

	Radiated Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until	
1	Log-Bicon Antenna	Schwarzbeck	VULB 9168	01577	2023/7/6	2024/7/5	
2	Attenuator	EMCI	EMCI-N-6-05	AT-N0575	2023/7/6	2024/7/5	
3	Pre-Amplifier	EMCI	EMC001330	980908	2023/7/12	2024/7/11	
4	Test Cable	EMCI	EMC104-SM-SM- 6000	230539	2023/7/14	2024/7/13	
5	Test Cable	EMCI	EMC104-SM-SM- 2500	230542	2023/7/14	2024/7/13	
6	Test Cable	EMCI	EMC104-SM-SN- 1000	230543	2023/7/14	2024/7/13	
7	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10	
8	Loop Ant.	EMCI	LPA600	296	2023/10/31	2024/10/30	
9	Pre-Amplifier	EMCI	EMC001340	980969	2023/7/18	2024/7/17	
10	Test Cable	EMCI	EMC104-SM-SM- 6000	230539	2023/7/14	2024/7/13	
11	Test Cable	EMCI	EMC104-SM-SM- 2500	230542	2023/7/14	2024/7/13	
12	Test Cable	EMCI	EMC104-SM-SN- 1000	230543	2023/7/14	2024/7/13	
13	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10	
14	Horn Antenna	RFSPIN	DRH18-E	KV2D01A18ES	2023/6/30	2024/6/29	
15	Pre-Amplifier	EMCI	EMC118A45SE	980960	2023/7/18	2024/7/17	
16	Test Cable	EMCI	EMC104-SM-SM- 6000	230539	2023/7/14	2024/7/13	
17	Test Cable	EMCI	EMC104-SM-SM- 2500	230542	2023/7/14	2024/7/13	
18	Test Cable	EMCI	EMC104-SM-SN- 1000	230543	2023/7/14	2024/7/13	
19	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10	
20	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A	

	Number of Hopping Frequency						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until	
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10	

Average Time of Occupancy									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until			
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10			

	Hopping Channel Separation									
Iten	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until				
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10				

Bandwidth							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until	
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10	

	Output Power									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until				
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10				

Antenna conducted Spurious Emission									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until			
1	EXA Signal Analyzer	Keysight	N9010A	MY52220990	2023/8/11	2024/8/10			

Remark: "N/A" denotes no model name, no serial no. or no calibration specified. All calibration period of equipment list is one year.

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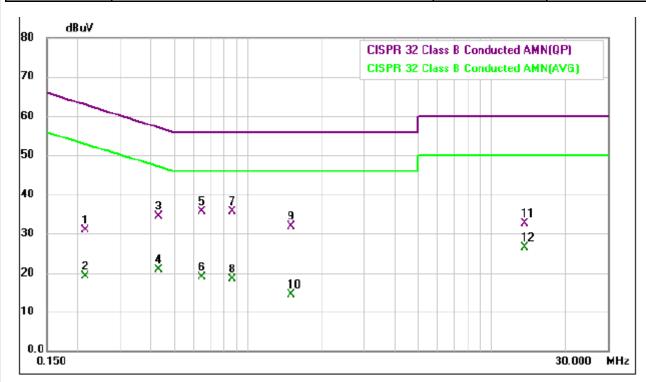


Report No.: eLAB-FCC-1-2403X002 **12 EUT TEST PHOTO** Please refer to APPENDIX-TP-2403X002-1 **13 EUT PHOTOS** Please refer to APPENDIX-EP-2403X002-1/ EP-2403X002-2

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# APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

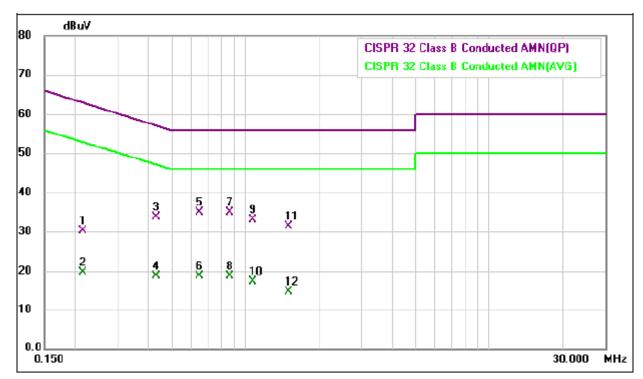
Test Mode	Normal	Tested Date	2024/4/18
Test Frequency	-	Phase	Line



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Comment
NO.	IVIK	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Detector	Comment
1		0.215250	21.40	9.65	31.05	63.00	-31.95	QP	
2		0.215250	9.50	9.65	19.15	53.00	-33.85	AVG	
3		0.431250	24.80	9.64	34.44	57.23	-22.79	QP	
4		0.431250	11.20	9.64	20.84	47.23	-26.39	AVG	
5	*	0.647250	26.00	9.65	35.65	56.00	-20.35	QP	
6		0.647250	9.40	9.65	19.05	46.00	-26.95	AVG	
7		0.861000	25.90	9.66	35.56	56.00	-20.44	QP	
8		0.861000	8.90	9.66	18.56	46.00	-27.44	AVG	
9		1.509000	22.30	9.69	31.99	56.00	-24.01	QP	
10		1.509000	4.80	9.69	14.49	46.00	-31.51	AVG	
11		13.643250	22.60	9.88	32.48	60.00	-27.52	QP	
12		13.643250	16.60	9.88	26.48	50.00	-23.52	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	Normal	Tested Date	2024/4/18	
Test Frequency	-	Phase	Neutral	

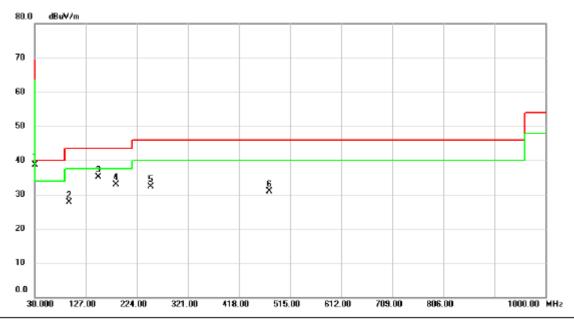


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Comment
IVO.	IVIK	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Detector	Comment
1		0.215250	20.70	9.64	30.34	63.00	-32.66	QP	
2		0.215250	10.00	9.64	19.64	53.00	-33.36	AVG	
3		0.431250	24.10	9.64	33.74	57.23	-23.49	QP	
4		0.431250	9.00	9.64	18.64	47.23	-28.59	AVG	
5	*	0.647250	25.40	9.65	35.05	56.00	-20.95	QP	
6		0.647250	9.00	9.65	18.65	46.00	-27.35	AVG	
7		0.861000	25.40	9.65	35.05	56.00	-20.95	QP	
8		0.861000	9.00	9.65	18.65	46.00	-27.35	AVG	
9		1.077000	23.30	9.66	32.96	56.00	-23.04	QP	
10		1.077000	7.60	9.66	17.26	46.00	-28.74	AVG	
11		1.506750	21.80	9.68	31.48	56.00	-24.52	QP	
12		1.506750	5.00	9.68	14.68	46.00	-31.32	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
   (2) Margin Level = Measurement Value Limit Value.
   (3) \*: Maximum data x: Over limit !: Over margin

# APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	-	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	30.0000	52.85	-14.06	38.79	40.00	-1.21	peak	
2		94.9900	45.13	-17.40	27.73	43.50	-15.77	peak	
3		151.2500	47.08	-12.00	35.08	43.50	-8.42	peak	
4		184.2300	47.04	-14.12	32.92	43.50	-10.58	peak	
5		250.1900	45.66	-13.31	32.35	46.00	-13.65	peak	
6		475.2300	38.21	-7.22	30.99	46.00	-15.01	peak	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(1Mbps)	Test Date	2024/4/12	
Test Frequency	-	Polarization	Horizontal	
Temp	23°C	Hum.	64%	

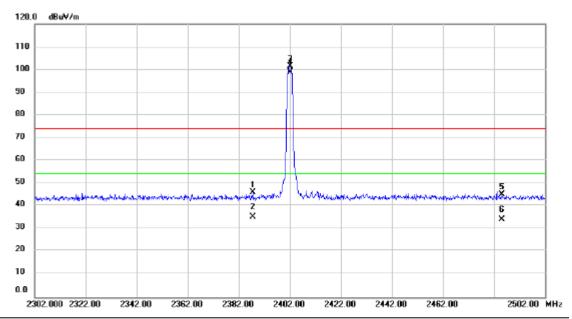


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	96.9300	52.54	-17.16	35.38	43.50	-8.12	peak	
2		149.3100	44.93	-12.07	32.86	43.50	-10.64	peak	
3		212.3600	49.10	-15.53	33.57	43.50	-9.93	peak	
4		250.1900	50.53	-13.31	37.22	46.00	-8.78	peak	
5		279.2900	44.64	-12.09	32.55	46.00	-13.45	peak	
6		493.6600	39.38	-6.95	32.43	46.00	-13.57	peak	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

# APPENDIX C RADIATED EMISSIONS - ABOVE 1 GHZ

Test Mode	BT(1Mbps)	Test Date	2024/4/12	
Test Frequency	2402MHz	Polarization	Horizontal	
Temp	23°C	Hum.	64%	



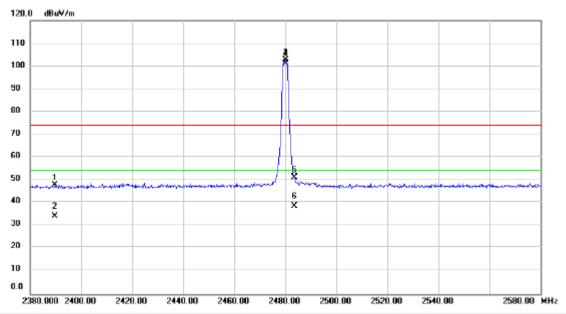
No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2387.400	42.59	3.57	46.16	74.00	-27.84	peak	
2		2387.400	31.80	3.57	35.37	54.00	-18.63	AVG	
3	Х	2402.000	97.97	3.60	101.57	74.00	27.57	peak	
4	*	2402.000	95.14	3.60	98.74	54.00	44.74	AVG	
5		2485.200	41.38	3.77	45.15	74.00	-28.85	peak	
6		2485.200	30.38	3.77	34.15	54.00	-19.85	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) X and \* represent fundamental frequency and with no limit.

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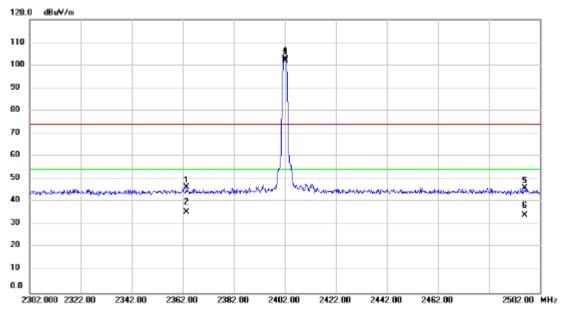
Test Mode	BT(1Mbps)	Test Date	2024/4/12		
Test Frequency	2480MHz	Polarization	Horizontal		
Temp	23°C	Hum.	64%		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.800	44.17	3.58	47.75	74.00	-26.25	peak	
2		2389.800	30.33	3.58	33.91	54.00	-20.09	AVG	
3	Χ	2480.200	98.93	3.75	102.68	74.00	28.68	peak	
4	*	2480.200	97.36	3.75	101.11	54.00	47.11	AVG	
5		2483.600	47.31	3.76	51.07	74.00	-22.93	peak	
6		2483.600	34.80	3.76	38.56	54.00	-15.44	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
   (2) Margin Level = Measurement Value Limit Value.
   (3) X and \* represent fundamental frequency and with no limit.

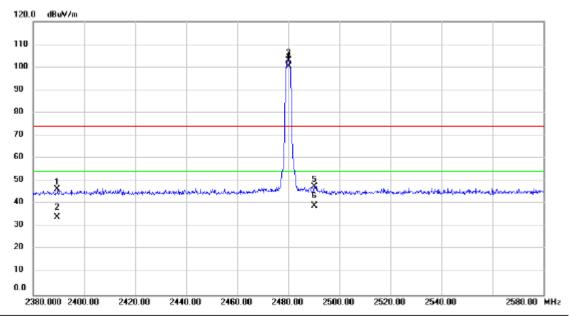
Test Mode	BT(3Mbps)	Test Date	2024/4/12		
Test Frequency	2402MHz	Polarization	Horizontal		
Temp	23°C	Hum.	64%		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2363.600	42.80	3.53	46.33	74.00	-27.67	peak	
2		2363.600	32.15	3.53	35.68	54.00	-18.32	AVG	
3	Χ	2402.200	99.16	3.60	102.76	74.00	28.76	peak	
4	*	2402.200	98.38	3.60	101.98	54.00	47.98	AVG	
5		2496.000	42.23	3.78	46.01	74.00	-27.99	peak	
6		2496.000	30.35	3.78	34.13	54.00	-19.87	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) X and \* represent fundamental frequency and with no limit.

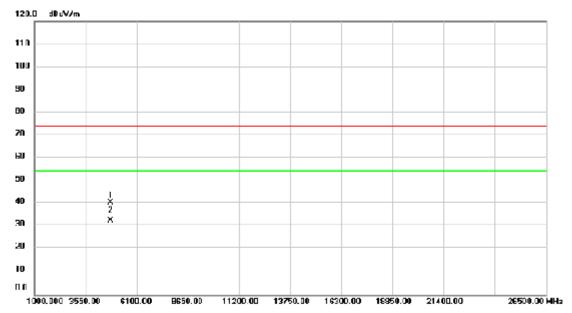
Test Mode	BT(3Mbps)	Test Date	2024/4/12		
Test Frequency	2480MHz	Polarization	Horizontal		
Temp	23°C	Hum.	64%		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.600	42.68	3.58	46.26	74.00	-27.74	peak	
2		2389.600	30.57	3.58	34.15	54.00	-19.85	AVG	
3	Χ	2480.000	99.42	3.75	103.17	74.00	29.17	peak	
4	ż	2480.000	96.46	3.75	100.21	54.00	46.21	AVG	
5		2490.200	43.73	3.76	47.49	74.00	-26.51	peak	
6		2490.200	35.50	3.76	39.26	54.00	-14.74	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.
- (3) X and \* represent fundamental frequency and with no limit.

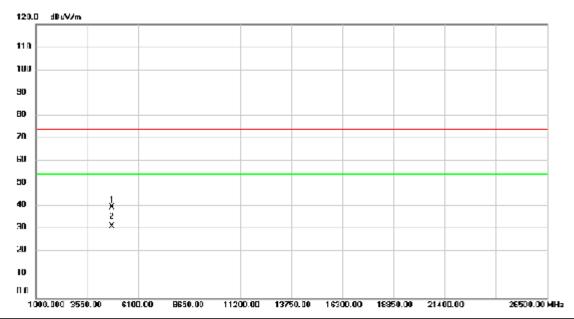
Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2402MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	M	c. Freq	Reading . Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	40.42	-0.20	40.22	74.00	-33.78	peak	
2	*	4804.000	32.68	-0.20	32.48	54.00	-21.52	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

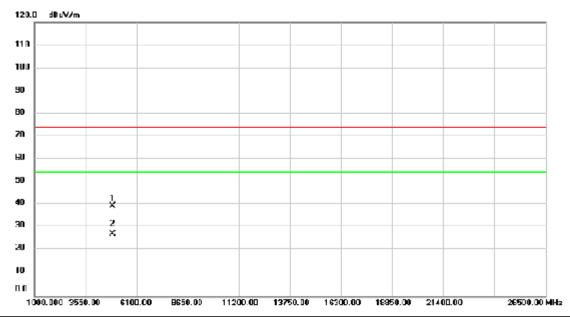
Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2402MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	39.89	-0.20	39.69	74.00	-34.31	peak	
2	*	4804.000	31.50	-0.20	31.30	54.00	-22.70	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

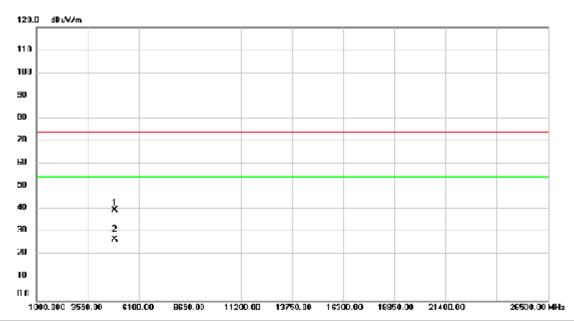
Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2441MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	Mk	c. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	39.38	-0.03	39.35	74.00	-34.65	peak	
2	*	4880.000	27.10	-0.03	27.07	54.00	-26.93	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value. (3) \*: Maximum data x: Over limit !: Over margin

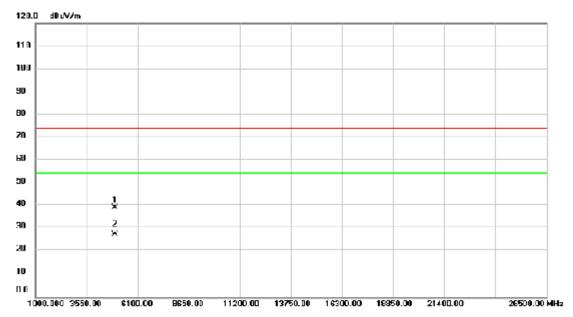
Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2441MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	39.77	-0.03	39.74	74.00	-34.26	peak	
2	*	4880.000	26.98	-0.03	26.95	54.00	-27.05	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
  (2) Margin Level = Measurement Value Limit Value.
  (3) \*: Maximum data x: Over limit !: Over margin

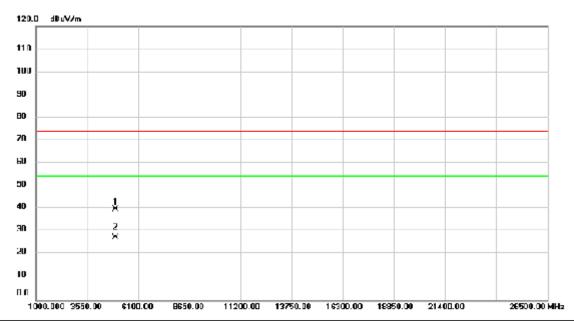
Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2480MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	Mk	. Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	39.07	0.14	39.21	74.00	-34.79	peak	
2	*	4960.000	27.17	0.14	27.31	54.00	-26.69	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(1Mbps)	Test Date	2024/4/12
Test Frequency	2480MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	39.75	0.14	39.89	74.00	-34.11	peak	
2	*	4960.000	27.34	0.14	27.48	54.00	-26.52	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2402MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



	No.	Mk	. Freq.			Measure- ment		Margin		
Ī			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
Ī	1		4804.000	40.35	-0.20	40.15	74.00	-33.85	peak	
	2	*	4804.000	28.50	-0.20	28.30	54.00	-25.70	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2402MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	40.11	-0.20	39.91	74.00	-34.09	peak	
2	*	4804.000	30.45	-0.20	30.25	54.00	-23.75	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2441MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	39.32	-0.03	39.29	74.00	-34.71	peak	
2	*	4880.000	27.22	-0.03	27.19	54.00	-26.81	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2441MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.		Correct Factor	Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	39.35	-0.03	39.32	74.00	-34.68	peak	
2	*	4880.000	27.22	-0.03	27.19	54.00	-26.81	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2480MHz	Polarization	Vertical
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	39.87	0.14	40.01	74.00	-33.99	peak	
2	*	4960.000	27.30	0.14	27.44	54.00	-26.56	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin

Test Mode	BT(3Mbps)	Test Date	2024/4/12
Test Frequency	2480MHz	Polarization	Horizontal
Temp	23°C	Hum.	64%



No.	Mk	. Freq.			Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	39.92	0.14	40.06	74.00	-33.94	peak	
2	*	4960.000	27.30	0.14	27.44	54.00	-26.56	AVG	

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.
- (3) \*: Maximum data x: Over limit !: Over margin



## APPENDIX D NUMBER OF HOPPING CHANNEL

Test Mode	1/3Mbps
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Test Mode	Number of Hopping Channel	≥ Limit	Test Result
1 Mbps	79	15	Pass
3 Mbps	79	15	Pass

1 Mbps

8 Keynight Spectrum Analyzer - Swept SA

9 As | 59 0 Ac | Sense SMT | Autor OFF | 19220 AM Apr 11, 2224

10 dBildly | Ref 20,000 dBm | Sense SMT | Autor OFF | 19220 AM Apr 12, 2244

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2244

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2244

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Ref 20,000 dBm | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

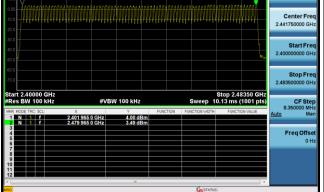
10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

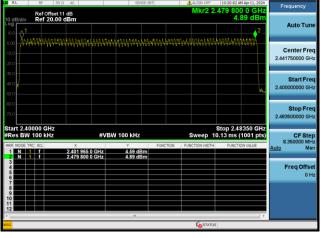
10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

10 dBildly | Autor OFF | 19220 AM Apr 12, 2245

10 dBild



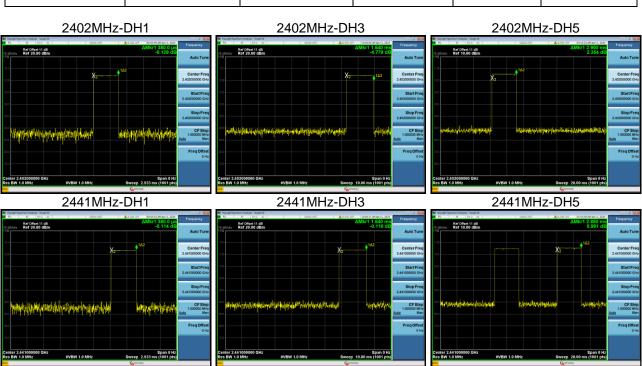


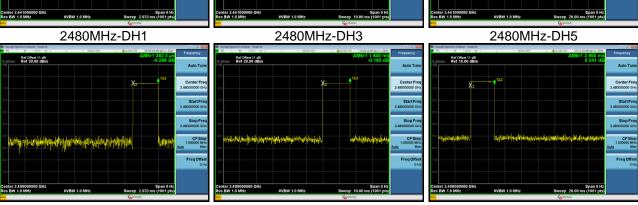


## APPENDIX E AVERAGE TIME OF OCCUPANCY

Test Mode	1Mbps

Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9000	0.3093	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3800	0.1216	0.4000	Pass
DH5	2441	2.8800	0.3072	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3800	0.1216	0.4000	Pass
DH5	2480	2.9000	0.3093	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3825	0.1224	0.4000	Pass





Test Mode	3Mbps

Data Packet	Frequency (MHz)	Pulse Duration(ms)	Dwell Time(s)	Limits(s)	Test Result
3DH5	2402	2.9000	0.3093	0.4000	Pass
3DH3	2402	1.6400	0.2624	0.4000	Pass
3DH1	2402	0.3901	0.1248	0.4000	Pass
3DH5	2441	2.9000	0.3093	0.4000	Pass
3DH3	2441	1.6400	0.2624	0.4000	Pass
3DH1	2441	0.3927	0.1257	0.4000	Pass
3DH5	2480	2.8800	0.3072	0.4000	Pass
3DH3	2480	1.6400	0.2624	0.4000	Pass
3DH1	2480	0.3927	0.1257	0.4000	Pass

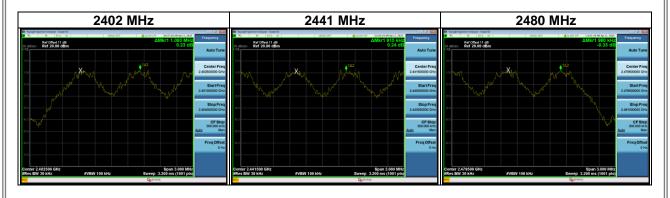




# APPENDIX F HOPPING CHANNEL SEPARATION MEASUREMENT

Test Mode	Hopping on _1Mbps
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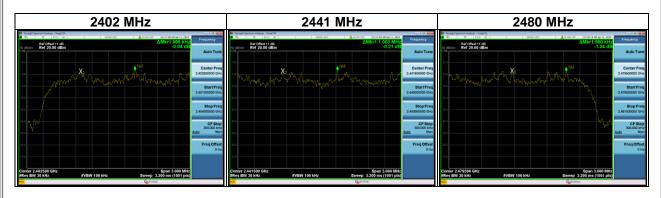
Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.093	0.676	Pass
2441	0.915	0.679	Pass
2480	0.960	0.674	Pass





Test Mode	Hopping on	3Mbps
1001111000	ıoppg o	_0

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	0.998	0.909	Pass
2441	1.003	0.902	Pass
2480	0.990	0.902	Pass

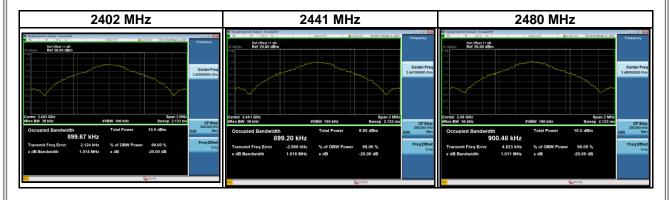




## APPENDIX G BANDWIDTH

Test Mode	1Mbps
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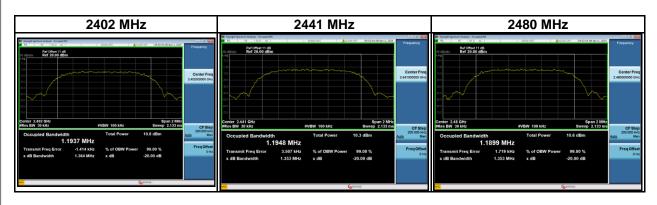
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.014	0.900	Pass
2441	1.018	0.899	Pass
2480	1.011	0.900	Pass





Test Mode	3Mbps

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.364	1.194	Pass
2441	1.353	1.195	Pass
2480	1.353	1.190	Pass



2480

11.06

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# APPENDIX H OUTPUT POWER

Test Mode	1Mbps			Tested Date	2024/4/11
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	11.62	0.0145	21.00	0.1250	Pass
2441	10.34	0.0108	21.00	0.1250	Pass
2480	11.01	0.0126	21.00	0.1250	Pass

Test Mode	3Mbps			Tested Date	2024/4/11
_	Conducted	Conducted			
Frequency (MHz)	Power (dBm)	Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	11.23	0.0133	21.00	0.1250	Pass
2441	10.63	0.0116	21.00	0.1250	Pass
1	1				

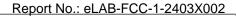
21.00

0.1250

Pass

0.0128

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# APPENDIX I ANTENNA CONDUCTED SPURIOUS EMISSION

2480 MHz\_ Upper

2480 M













**End of Test Report**