



# **FCC Radio Test Report**

FCC ID: 2BDWL2417249

Report No. : BTL-FCCP-1-2407E003 Equipment : TELUS Indoor camera device

Model Name : ICF Brand Name : TELUS

**Applicant**: TELUS Communications Inc.

Address : 7th Floor,510 West Georgia Street, Vancouver, BC, V6B0M3 Canada

**Radio Function**: Bluetooth Low Energy (5.0)

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

Measurement : ANSI C63.10-2013

Procedure(s)

Date of Receipt : 2024/8/12

**Date of Test** : 2024/8/12 ~ 2024/8/24

**Issued Date** : 2024/9/9

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by

Poken Huang, Engineer

Poken Guon

Approved by

Peter Chen, Manager

TESTING Laborator 0659

BTL Inc.

No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan

Tel: +886-2-2657-3299 Fax: +886-2-2657-3331 Web: www.newbtl.com Service mail: btl\_qa@newbtl.com



### **Declaration**

**BTL** 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).

**BTL**'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. **BTL** assumes no responsibility for the data provided by the Customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by **BTL**.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

**BTL**'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.

BTL 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.

Project No.: 2407E003 Page 2 of 61 Report Version: R01





### **CONTENTS REVISION HISTORY** 5 SUMMARY OF TEST RESULTS 6 1.1 **TEST FACILITY** 7 MEASUREMENT UNCERTAINTY 7 1.2 1.3 TEST ENVIRONMENT CONDITIONS 7 1.4 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING 8 2 **GENERAL INFORMATION** 9 2.1 **DESCRIPTION OF EUT** 9 2.2 **TEST MODES** 11 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED 12 2.4 SUPPORT UNITS 13 3 AC POWER LINE CONDUCTED EMISSIONS TEST 14 3.1 LIMIT 14 TEST PROCEDURE 3.2 14 **DEVIATION FROM TEST STANDARD** 14 3.3 **TEST SETUP** 15 3.4 3.5 **TEST RESULT** 15 RADIATED EMISSIONS TEST 4 16 4.1 LIMIT 16 4.2 TEST PROCEDURE 17 4.3 **DEVIATION FROM TEST STANDARD** 17 **TEST SETUP** 4.4 18 4.5 **EUT OPERATING CONDITIONS** 19 TEST RESULT - BELOW 30 MHZ 4.6 19 4.7 TEST RESULT - 30 MHZ TO 1 GHZ 19 4.8 TEST RESULT - ABOVE 1 GHZ 19 **BANDWIDTH TEST** 5 20 5.1 APPLIED PROCEDURES / LIMIT 20 TEST PROCEDURE 20 5.2 5.3 **DEVIATION FROM STANDARD** 20 5.4 **TEST SETUP** 20 **EUT OPERATION CONDITIONS** 20 5.5 5.6 TEST RESULTS 20 MAXIMUM OUTPUT POWER TEST 6 21 APPLIED PROCEDURES / LIMIT 6.1 21 6.2 TEST PROCEDURE 21 6.3 **DEVIATION FROM STANDARD** 21 **TEST SETUP** 6.4 21 6.5 **EUT OPERATION CONDITIONS** 21 6.6 **TEST RESULTS** 21 7 POWER SPECTRAL DENSITY TEST 22 7.1 APPLIED PROCEDURES / LIMIT 22 7.2 22 TEST PROCEDURE 7.3 **DEVIATION FROM STANDARD** 22 7.4 **TEST SETUP** 22 7.5 **EUT OPERATION CONDITIONS** 22 7.6 **TEST RESULTS** 22



8	ANTENN	IA CONDUCTED SPURIOUS EMISSION	23
8.1	APPLI	IED PROCEDURES / LIMIT	23
8.2	TEST	PROCEDURE	23
8.3	DEVIA	ATION FROM STANDARD	23
8.4	TEST	SETUP	23
8.5	EUT C	PERATION CONDITIONS	23
8.6	TEST	RESULTS	23
9	LIST OF	MEASURING EQUIPMENTS	24
10	EUT TES	ST PHOTO	26
11	EUT PHO	OTOS	26
APPEND	ΙΧ Δ	AC POWER LINE CONDUCTED EMISSIONS	27
APPEND		RADIATED EMISSIONS - 30 MHZ TO 1 GHZ	30
APPEND		RADIATED EMISSIONS - ABOVE 1 GHZ	33
APPEND		BANDWIDTH	52
APPEND		MAXIMUM OUTPUT POWER	55
APPEND		POWER SPECTRAL DENSITY TEST	57
APPEND		ANTENNA CONDUCTED SPURIOUS EMISSION	59
	<del>-</del>	· · · · · · · · · · · · · · · · · · ·	

Project No.: 2407E003 Page 4 of 61 Report Version: R01





# **REVISION HISTORY**

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-1-2407E003	R00	Original Report.	2024/9/6	Invalid
BTL-FCCP-1-2407E003	R01	Only the Part number of the antenna was added.	2024/9/9	Valid

Project No.: 2407E003 Page 5 of 61 Report Version: R01



# **SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards.

Standard(s) Section	Description	Test Result	Judgement	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	Pass	
15.205 15.209 15.247(d)	Radiated Emissions	APPENDIX B APPENDIX C	Pass	
15.247(a)(2)	Bandwidth	APPENDIX D	Pass	
15.247(b)(3)	Maximum Output Power	APPENDIX E	Pass	
15.247(e)	Power Spectral Density	APPENDIX F	Pass	
15.247(d)	Antenna conducted Spurious Emission	APPENDIX G	Pass	
15.203	Antenna Requirement		Pass	NOTE (3)

# NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) The report format version is TP.1.1.1.
  (3) The device what use replaceable antennas with non-standard interfaces are considered sufficient to com ply with the provisions of 15.203.

Project No.: 2407E003 Page 6 of 61 Report Version: R01



### 1.1 TEST FACILITY

The test locations stated below are under the TAF Accreditation Number 0659.

The test location(s) used to collect the test data in this report are:

(FCC DN: TW0659)

No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

□ CB21 □ C06

# 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 BTL measurement uncertainty is less than the CISPR 16-4-2  $\mathbf{U}_{\text{cispr}}$  requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C06	CISPR	150 kHz ~ 30MHz	2.4498

### B. Radiated emissions test:

Test Site	Measurement Frequency Range	U,(dB)
	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
CB21	1 GHz ~ 6 GHz	5.20
CB21	6 GHz ~ 18 GHz	5.50
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

# C. Conducted test:

Test Item	U,(dB)
Occupied Bandwidth	0.53
Maximum Output Power	0.37
Power Spectral Density	0.66
Conducted Spurious emissions	0.53
Conducted Band edges	0.53

### NOTE:

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

### 1.3 TEST ENVIRONMENT CONDITIONS

Test Item	<b>Environment Condition</b>	Test Voltage	Tested by
AC Power Line Conducted Emissions	25°C, 45%	AC 120 V	Ken Lu
Radiated emissions below 1 GHz	26°C, 61%	AC 120 V	Ken Lu
Radiated emissions above 1 GHz	25°C, 65%	AC 120 V	Ken Lu
Bandwidth	25°C, 79%	AC 120 V	Cheng Tsai
Maximum Output Power	25°C, 79%	AC 120 V	Cheng Tsai
Power Spectral Density	25°C, 79%	AC 120 V	Cheng Tsai
Antenna conducted Spurious Emission	25°C, 79%	AC 120 V	Cheng Tsai

Project No.: 2407E003 Page 7 of 61 Report Version: R01





# 1.4 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

Test Software		IPOP	_V4.0	
Modulation Mode	2402 MHz	2440 MHz	2480 MHz	Data Rate
1 Mbps	DEF	DEF	DEF	1 Mbps
2 Mbps	DEF	DEF	DEF	2 Mbps

Project No.: 2407E003 Page 8 of 61 Report Version: R01

# 2 GENERAL INFORMATION

# 2.1 DESCRIPTION OF EUT

Equipment	TELUS Indoor camera device
Brand Name	TELUS
Model Name	ICF
Model Difference(s)	N/A
Hardware Version	DVT
Software Version	v0.03.011
Power Source	DC voltage supplied from AC adapter. Model: DSA-20PDB FUS
Power Rating	I/P: 100-240V 50/60Hz 0.6A O/P:+5.0V===3.0A, +9.0V===2.22A, +12.0V===1.66A
Operation Band	2400 MHz ~ 2483.5 MHz
Operation Frequency	2402 MHz ~ 2480 MHz
Modulation Technology	GFSK
Transfer Rate	1Mbps, 2Mbps
Output Power Max.	2Mbps: 6.92 dBm (0.0049 W)

# NOTE:

(1) The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

Project No.: 2407E003 Page 9 of 61 Report Version: R01



(2) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

(3) Table for Filed Antenna:

Ant.	Manufacturer	P/N	Type	Connector	Gain (dBi)
Main	FIT Hon Teng Limited	ANTP2M1-CZZ30 -EH	PIFA	N/A	2.59

(4) The above Antenna information are 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.

Project No.: 2407E003 Page 10 of 61 Report Version: R01



# 2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal	-	-
Transmitter Radiated Emissions (below 1GHz)	2 Mbps	39	-
Transmitter Radiated Emissions	1/2 Mbps	00/39	Bandedge
(above 1GHz)	1/2 Mbps	00/19/39	Harmonic
Bandwidth	1/2 Mbps	00/19/39	-
Maximum Output Power	1/2 Mbps	00/19/39	-
Power Spectral Density	1/2 Mbps	00/19/39	-
Antenna conducted Spurious Emission	1/2 Mbps	00/19/39	-

# NOTE:

- (1) For radiated emission band edge test, both Vertical and Horizontal are evaluated, but only the worst case (Vertical) is recorded.
- (2) For radiated emission above 1 GHz test, the spurious points of 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.
- (3) For radiated emissions below 1 GHz test, the 2 Mbps channel 39 is found to be the worst case and recorded.

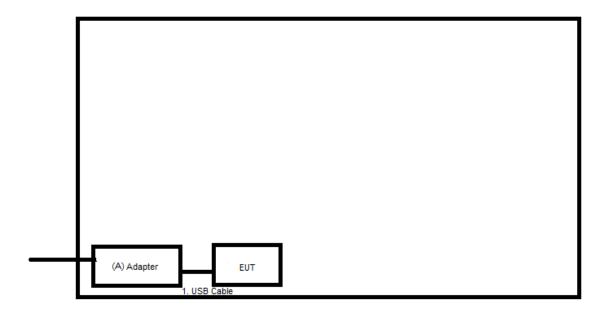
Project No.: 2407E003 Page 11 of 61 Report Version: R01



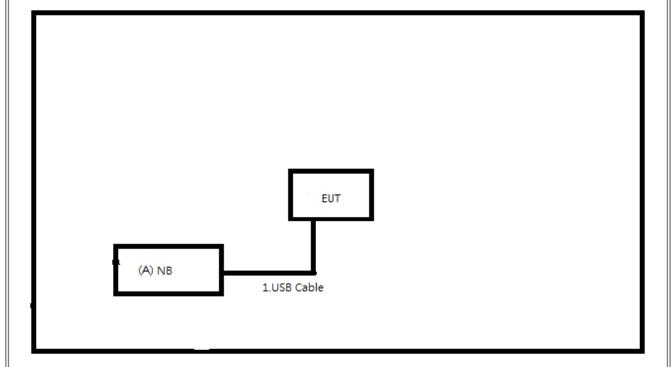
# 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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

AC power line conducted emissions

It	em	Equipment	Brand	Model No.	Series No.	Remarks
	Α	Adapter	N/A	DSA-20PDB	N/A	Supplied by test requester.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	Type-C	N	N	1.6m	Supplied by test requester.

# **Radiated Emissions**

Item	Equipment	Brand	Model No.	Series No.	Remarks
Α	Notebook	Lenovo	ThinkBook 14 G4 IAP	MP28KHAH	Furnished by test lab.

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

Project No.: 2407E003 Page 13 of 61 Report Version: R01



### 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
38.22	+	3.45	II	41.67

Measurement Value		Limit Value		Margin Level
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.

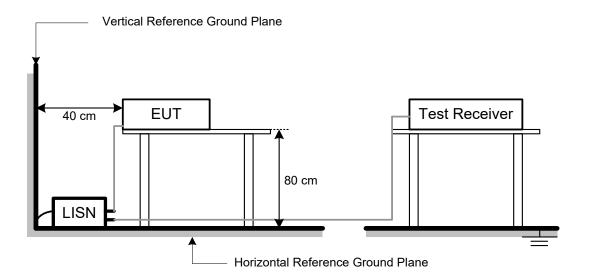
### 3.3 DEVIATION FROM TEST STANDARD

No deviation.

Project No.: 2407E003 Page 14 of 61 Report Version: R01



# 3.4 TEST SETUP



# 3.5 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 (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
960~1000	500	3

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

Frequency (MHz)		Emissions V/m)	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
41.91	+	-8.36	=	33.55

Measurement Value		Limit Value		Margin Level
33.55	-	43.50	=	-9.95

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	

Project No.: 2407E003 Page 16 of 61 Report Version: R01



### 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)

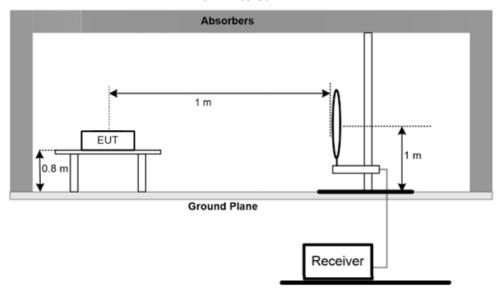
meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.  (above 1GHz)
i. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.
4.3 DEVIATION FROM TEST STANDARD
No deviation.

Project No.: 2407E003 Page 17 of 61 Report Version: R01

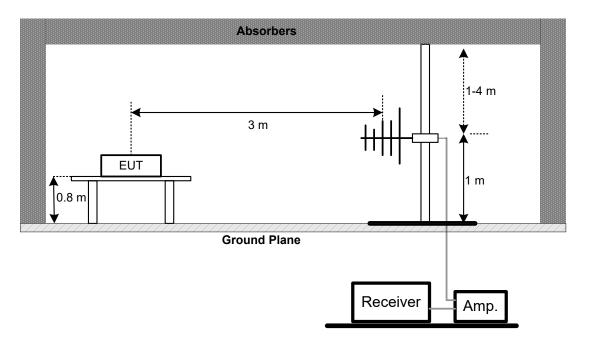


# 4.4 TEST SETUP

# 9 kHz to 30 MHz

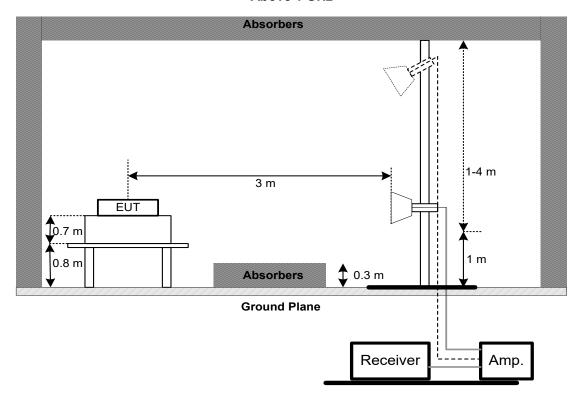


# 30 MHz to 1 GHz





# **Above 1 GHz**



# 4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 4.6 TEST RESULT - BELOW 30 MHZ

There were no emissions found below 30 MHz within 20 dB of the limit.

# 4.7 TEST RESULT - 30 MHZ TO 1 GHZ

Please refer to the APPENDIX B.

# 4.8 TEST RESULT - ABOVE 1 GHZ

Please refer to the APPENDIX C.

# NOTE:

(1) No limit: This is fundamental signal, the judgment is not applicable. For fundamental signal judgment was referred to Peak output test.

Project No.: 2407E003 Page 19 of 61 Report Version: R01

# **5 BANDWIDTH TEST**

# 5.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit
15.247(a)(2)	6 dB Bandwidth	500 kHz

### 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=300KHz, Sweep time = 2.5 ms.

# 5.3 DEVIATION FROM STANDARD

No deviation.

# 5.4 TEST SETUP



# 5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 5.6 TEST RESULTS

Please refer to the APPENDIX D.

Project No.: 2407E003 Page 20 of 61 Report Version: R01



# 6 MAXIMUM OUTPUT POWER TEST

# 6.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	
15.247(b)(3)	Maximum Output Power	1 Watt or 30dBm	

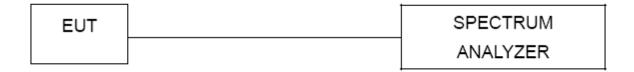
# **6.2 TEST PROCEDURE**

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- b. The maximum peak conducted output power was performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance.

# 6.3 DEVIATION FROM STANDARD

No deviation.

# 6.4 TEST SETUP



# 6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 6.6 TEST RESULTS

Please refer to the APPENDIX E.

Project No.: 2407E003 Page 21 of 61 Report Version: R01

# 7 POWER SPECTRAL DENSITY TEST

# 7.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit
15.247(e)	Power Spectral Density	8 dBm
` '		(in any 3 kHz)

# 7.2 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=3KHz, VBW=10 KHz, Sweep time = auto.

# 7.3 DEVIATION FROM STANDARD

No deviation.

# 7.4 TEST SETUP



# 7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 7.6 TEST RESULTS

Please refer to the APPENDIX F.

Project No.: 2407E003 Page 22 of 61 Report Version: R01

# 8 ANTENNA CONDUCTED SPURIOUS EMISSION

### 8.1 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.

### 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= 100KHz, VBW=300KHz, Sweep time = 10 ms.

# 8.3 DEVIATION FROM STANDARD

No deviation.

# 8.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

### 8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 8.6 TEST RESULTS

Please refer to the APPENDIX G.

Project No.: 2407E003 Page 23 of 61 Report Version: R01



# 9 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	2024/6/26	2025/6/25			
2	Test Cable	EMCI	EMCRG58-BM-B M-9000	210501	2023/12/11	2024/12/10			
3	EMC Receiver	Keysight	N9038A	MY54130009	2024/6/27	2025/6/26			
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	Pre-Amplifier	EMCI	EMC118A45SE	980819	2024/3/6	2025/3/5	
2	Test Cable	EMCI	EMC104-SM-100 0	180809	2024/3/8	2025/3/8	
3	Test Cable	EMCI	EMC104-SM-SM- 3000	220322	2024/3/8	2025/3/8	
4	Test Cable	EMCI	EMC104-SM-SM- 7000	220324	2024/3/8	2025/3/8	
5	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2024/5/17	2025/5/17	
6	Pre-Amplifier	EMCI	EMC184045SE	980907	2023/9/21	2024/9/20	
7	Test Cable	EMCI	EMC101G-KM-K M-3000	220329	2024/3/13	2025/3/13	
8	Test Cable	EMCI	EMC102-KM-KM- 1000	220327	2024/3/13	2025/3/13	
9	EXA Spectrum Analyzer	keysight	N9020B	MY57120120	2024/2/23	2025/2/22	
10	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2024/6/14	2025/6/13	
11	EXA Spectrum Analyzer	keysight	N9020B	MY57120120	2024/2/23	2025/2/22	
12	Pre-Amplifier	EMCI	EMC330N	980850	2023/9/6	2024/9/5	
13	Test Cable	EMCI	EMC104-SM-100 0	180809	2024/3/8	2025/3/8	
14	Test Cable	EMCI	EMC104-SM-SM- 3000	220322	2024/3/8	2025/3/8	
15	Test Cable	EMCI	EMC104-SM-SM- 7000	220324	2024/3/8	2025/3/8	
16	Measurement Software	Farad	EZ_EMC (Ver. NB-03A1-01)	N/A	N/A	N/A	

	Bandwidth							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until		
1	Spectrum Analyzer	R&S	FSP 30	100854	2024/6/27	2025/6/26		
2	10dbAttenuator	INMET	AHC-10dB	1	N/A	N/A		
3	BTL-Conducted Test	N/A	1247788684	N/A	N/A	N/A		



	Maximum Output Power							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until		
1	Spectrum Analyzer	R&S	FSP 30	100854	2024/6/27	2025/6/26		
2	10dbAttenuator	INMET	AHC-10dB	1	N/A	N/A		
3	BTL-Conducted Test	N/A	1247788684	N/A	N/A	N/A		

	Power Spectral Density							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until		
1	Spectrum Analyzer	R&S	FSP 30	100854	2024/6/27	2025/6/26		
2	10dbAttenuator	INMET	AHC-10dB	1	N/A	N/A		
3	BTL-Conducted Test	N/A	1247788684	N/A	N/A	N/A		

	Antenna conducted Spurious Emission								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until			
1	Spectrum Analyzer	R&S	FSP 30	100854	2024/6/27	2025/6/26			
2	10dbAttenuator	INMET	AHC-10dB	1	N/A	N/A			
3	BTL-Conducted Test	N/A	1247788684	N/A	N/A	N/A			

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

Project No.: 2407E003 Page 25 of 61 Report Version: R01





40. FUT TEST BUOTO
10 EUT TEST PHOTO
Please refer to document Appendix No.: TP-2407E003-FCCP-1 (APPENDIX-TEST PHOTOS).
11 EUT PHOTOS
Please refer to document Appendix No.: EP-2407E003-1 (APPENDIX-EUT PHOTOS).

Project No.: 2407E003 Page 26 of 61 Report Version: R01



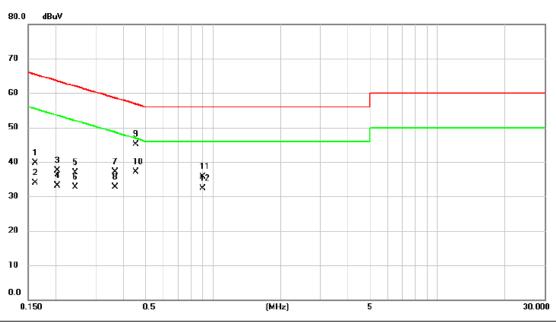


APPENDIX A	AC POWER LINE CONDUCTED EMISSIONS

Project No.: 2407E003 Page 27 of 61 Report Version: R01



Ш				
	Test Mode	Normal	Tested Date	2024/8/14
	Test Frequency	-	Phase	Line



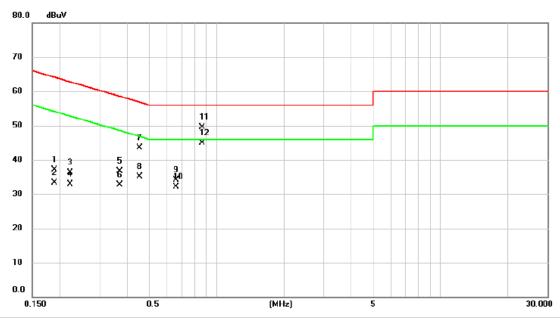
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1615	30.08	9.65	39.73	65.39	-25.66	QP	
2		0.1615	24.31	9.65	33.96	55.39	-21.43	AVG	
3		0.2031	27.86	9.64	37.50	63.48	-25.98	QP	
4		0.2031	23.46	9.64	33.10	53.48	-20.38	AVG	
5		0.2438	27.19	9.64	36.83	61.97	-25.14	QP	
6		0.2438	23.12	9.64	32.76	51.97	-19.21	AVG	
7		0.3667	27.46	9.65	37.11	58.58	-21.47	QP	
8		0.3667	23.03	9.65	32.68	48.58	-15.90	AVG	
9		0.4521	35.35	9.66	45.01	56.84	-11.83	QP	
10	*	0.4521	27.43	9.66	37.09	46.84	-9.75	AVG	
11		0.9005	26.09	9.69	35.78	56.00	-20.22	QP	
12		0.9005	22.55	9.69	32.24	46.00	-13.76	AVG	

# REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 28 of 61 Report Version: R01

Test Mode	Normal	Tested Date	2024/8/14
Test Frequency	-	Phase	Neutral



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1884	27.47	9.63	37.10	64.11	-27.01	QP	
2	0.1884	23.74	9.63	33.37	54.11	-20.74	AVG	
3	0.2221	26.60	9.63	36.23	62.74	-26.51	QP	
4	0.2221	23.27	9.63	32.90	52.74	-19.84	AVG	
5	0.3688	27.07	9.63	36.70	58.53	-21.83	QP	
6	0.3688	23.09	9.63	32.72	48.53	-15.81	AVG	
7	0.4531	33.82	9.64	43.46	56.82	-13.36	QP	
8	0.4531	25.46	9.64	35.10	46.82	-11.72	AVG	
9	0.6575	24.41	9.65	34.06	56.00	-21.94	QP	
10	0.6575	22.38	9.65	32.03	46.00	-13.97	AVG	
11	0.8600	39.74	9.68	49.42	56.00	-6.58	QP	
12 *	0.8600	35.22	9.68	44.90	46.00	-1.10	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

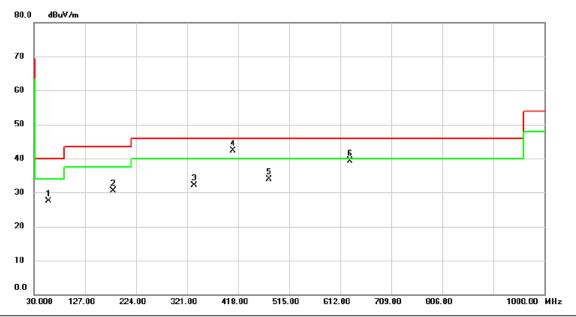
Project No.: 2407E003 Page 29 of 61 Report Version: R01



# APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

Project No.: 2407E003 Page 30 of 61 Report Version: R01

Test Mode	BLE 5.0 (2Mbps)	Test Date	2024/8/23
Test Frequency	CH39: 2480 MHz	Polarization	Vertical



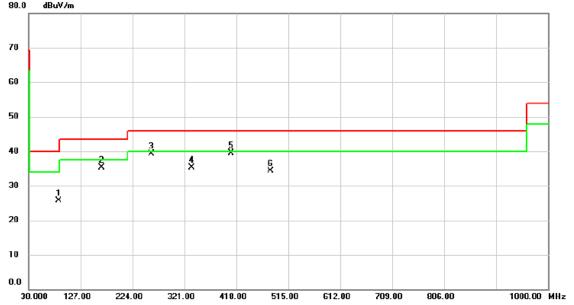
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		57.4833	39.60	-12.13	27.47	40.00	-12.53	peak	
2		180.9643	44.20	-13.65	30.55	43.50	-12.95	peak	
3		334.1273	42.92	-10.76	32.16	46.00	-13.84	peak	
4	*	408.3970	50.93	-8.71	42.22	46.00	-3.78	peak	
5		476.6203	40.96	-7.00	33.96	46.00	-12.04	peak	
6		631.1413	43.13	-3.86	39.27	46.00	-6.73	peak	

# REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value - Limit Value.

Project No.: 2407E003 Page 31 of 61 Report Version: R01

Test Mode	BLE 5.0 (2Mbps)	Test Date	2024/8/23
Test Frequency	CH39: 2480 MHz	Polarization	Horizontal
00.0 40.44			



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		85.7426	43.38	-17.63	25.75	40.00	-14.25	peak	
2		166.9640	47.63	-12.38	35.25	43.50	-8.25	peak	
3		259.8900	52.31	-13.04	39.27	46.00	-6.73	peak	
4		334.1273	46.05	-10.76	35.29	46.00	-10.71	peak	
5	*	408.3970	48.15	-8.71	39.44	46.00	-6.56	peak	
6		482.6343	41.30	-6.92	34.38	46.00	-11.62	peak	

# REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

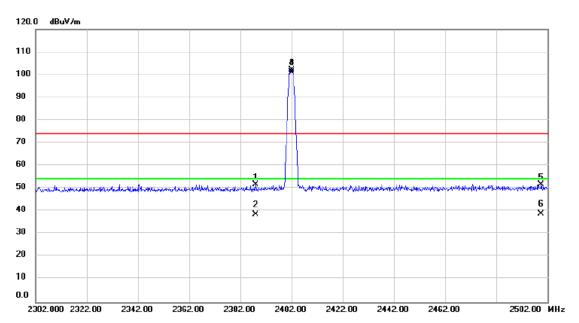
Project No.: 2407E003 Page 32 of 61 Report Version: R01



APPENDIX C	RADIATED EMISSIONS - ABOVE 1 GHZ

Project No.: 2407E003 Page 33 of 61 Report Version: R01

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2402MHz	Polarization	Vertical



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2388.000	56.69	-5.01	51.68	74.00	-22.32	peak	
2		2388.000	43.49	-5.01	38.48	54.00	-15.52	AVG	
3	Χ	2402.000	107.30	-5.00	102.30	74.00	28.30	peak	No Limit
4	*	2402.000	106.07	-5.00	101.07	54.00	47.07	AVG	No Limit
5		2499.600	56.69	-4.86	51.83	74.00	-22.17	peak	
6		2499.600	43.68	-4.86	38.82	54.00	-15.18	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

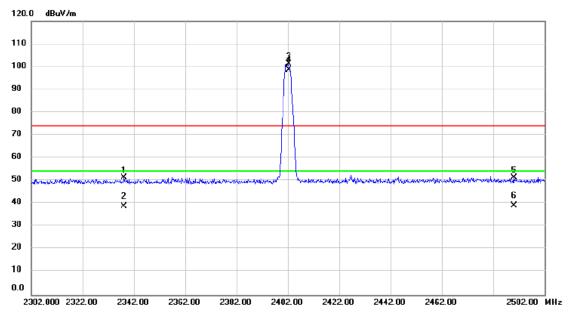
Project No.: 2407E003 Page 34 of 61 Report Version: R01

Test Mode			BLE 5.0 (1 Mbps)			Test Date			2024/8/19	
Test Frequency		у	2480MHz			Polarization			Vertical	
120.0	) dBuV/m									
110										
100					Š					
90										
80										
70										
60										
50	Marine Control		orker budge and see		5	A market by mark	Ada and a short	www.tartartarty.tat-ta.com/arcarteladast	Moderate or not religible to the co-	
40	2 X	AND THE PROPERTY OF THE PROPER	AN THE BOTH OF THE PERSON OF T	And when the section is a short of	6 X	A TOTAL OF THE PARTY OF THE PAR	W COMPLEX	AMALIA A LIMIT BALLANCE A LICENSE DA		
30	×				^					
20										
10										
0.0										
23	80.000 2400.00	2420.00	2440.00	2460.00	2480.00	2500.0	0 2520.	00 2540.00	2580.00 MHz	
o. Mi	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over				
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment		
1	2382.400	55.90	-5.01	50.89	74.00	-23.11	peak			
2	2382.400	43.24	-5.01	38.23	54.00	-15.77	AVG			
3 X	2479.800	109.66	-4.89	104.77	74.00	30.77	peak	No Limit		
	2479.800	108.18	-4.89	103.29	54.00	49.29	AVG	No Limit		
4 *										
4 * 5	2484.400 2484.400	57.57	-4.88 -4.88	52.69 39.84	74.00 54.00	-21.31 -14.16	peak AVG			

# REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2402MHz	Polarization	Vertical



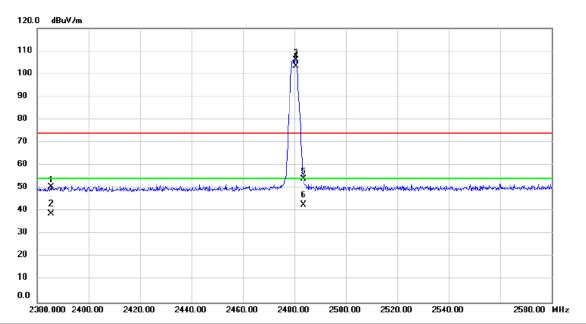
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2338.200	56.48	-5.07	51.41	74.00	-22.59	peak	
2		2338.200	43.85	-5.07	38.78	54.00	-15.22	AVG	
3	Χ	2402.400	106.32	-5.00	101.32	74.00	27.32	peak	No Limit
4	*	2402.400	103.58	-5.00	98.58	54.00	44.58	AVG	No Limit
5		2490.000	56.27	-4.86	51.41	74.00	-22.59	peak	
6		2490.000	44.10	-4.86	39.24	54.00	-14.76	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 36 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2480MHz	Polarization	Vertical



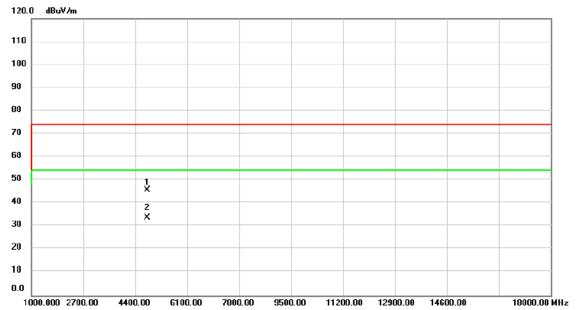
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2385.600	55.52	-5.01	50.51	74.00	-23.49	peak	
2		2385.600	43.83	-5.01	38.82	54.00	-15.18	AVG	
3	X	2480.600	110.85	-4.89	105.96	74.00	31.96	peak	No Limit
4	*	2480.600	108.16	-4.89	103.27	54.00	49.27	AVG	No Limit
5		2483.500	58.90	-4.87	54.03	74.00	-19.97	peak	
6		2483.500	47.61	-4.87	42.74	54.00	-11.26	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.



Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2402MHz	Polarization	Vertical

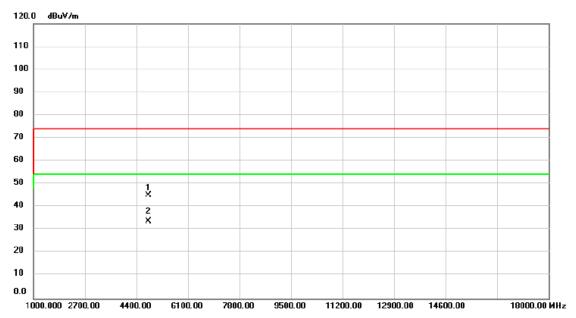


No.	M	k. Freq.		Correct Factor	Measure- ment		Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	44.93	0.88	45.81	74.00	-28.19	peak	
2	*	4804.000	32.79	0.88	33.67	54.00	-20.33	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2402MHz	Polarization	Horizontal



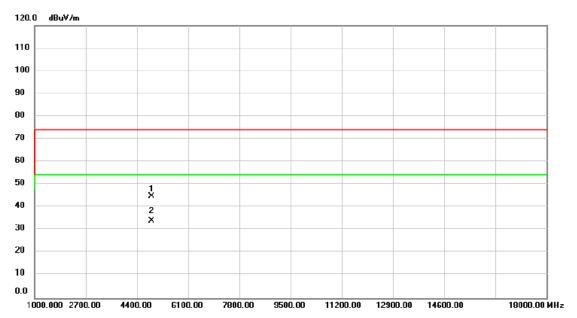
No.	Mk	c. Freq.			Measure- ment		Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	44.41	0.88	45.29	74.00	-28.71	peak	
2	*	4804.000	32.85	0.88	33.73	54.00	-20.27	AVG	

### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 39 of 61 Report Version: R01

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2440MHz	Polarization	Vertical



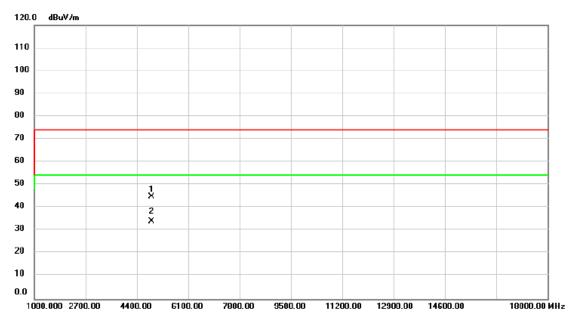
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	43.96	1.03	44.99	74.00	-29.01	peak	
2	*	4880.000	32.88	1.03	33.91	54.00	-20.09	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 40 of 61 Report Version: R01

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2440MHz	Polarization	Horizontal



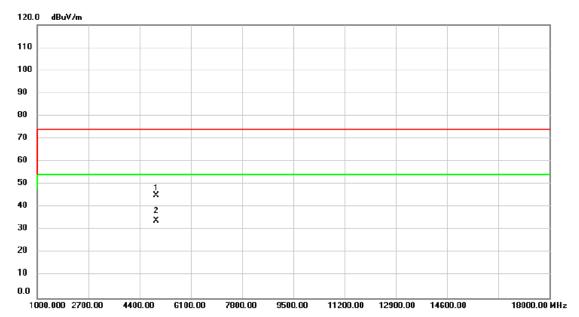
No.	Mk	. Freq.			Measure- ment		Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	43.94	1.03	44.97	74.00	-29.03	peak	
2	*	4880.000	33.04	1.03	34.07	54.00	-19.93	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 41 of 61 Report Version: R01

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19
Test Frequency	2480MHz	Polarization	Vertical



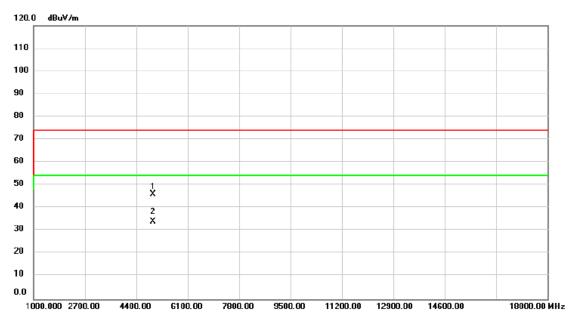
No.	MI	k.	Freq.	Reading Level		Measure- ment	Limit	Over		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		496	0.000	44.04	1.21	45.25	74.00	-28.75	peak	
2	*	496	0.000	32.80	1.21	34.01	54.00	-19.99	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 42 of 61 Report Version: R01

Test Mode	BLE 5.0 (1 Mbps)	Test Date	2024/8/19		
Test Frequency	2480MHz	Polarization	Horizontal		



No.	MI	k. l	Freq.			Measure- ment		Over		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960	0.000	44.93	1.21	46.14	74.00	-27.86	peak	
2	*	4960	0.000	32.85	1.21	34.06	54.00	-19.94	AVG	

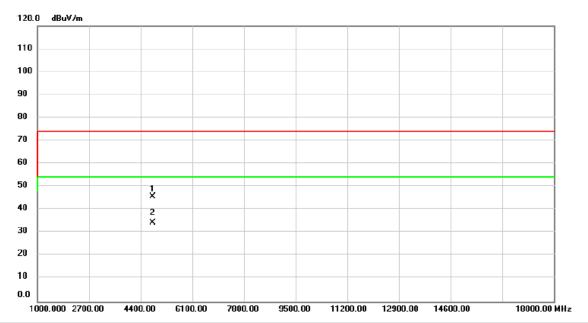
# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 43 of 61 Report Version: R01



Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19	
Test Frequency	2402MHz	Polarization	Vertical	

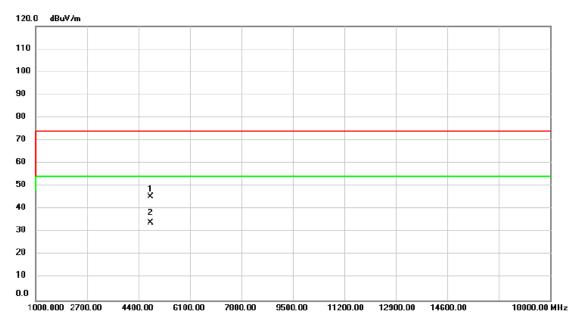


No.	MI	k. Freq.		Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	44.81	0.88	45.69	74.00	-28.31	peak	
2	*	4804.000	33.39	0.88	34.27	54.00	-19.73	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19		
Test Frequency	2402MHz	Polarization	Horizontal		

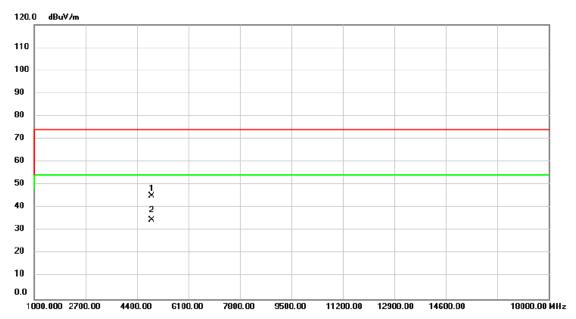


No.	Mk	. Freq.			Measure- ment		Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	44.69	0.88	45.57	74.00	-28.43	peak	
2	*	4804.000	33.28	0.88	34.16	54.00	-19.84	AVG	

#### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19	
Test Frequency	2440MHz	Polarization	Vertical	



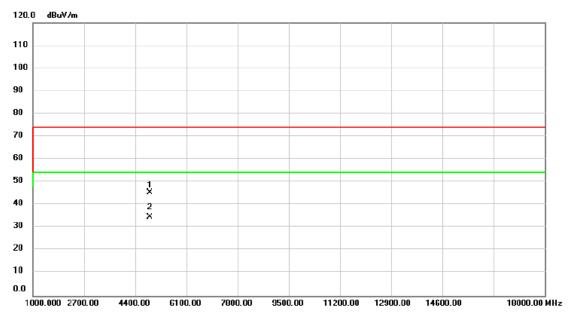
No	. Mk	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	44.27	1.03	45.30	74.00	-28.70	peak	
2	*	4880.000	33.54	1.03	34.57	54.00	-19.43	AVG	

### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 46 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2440MHz	Polarization	Horizontal



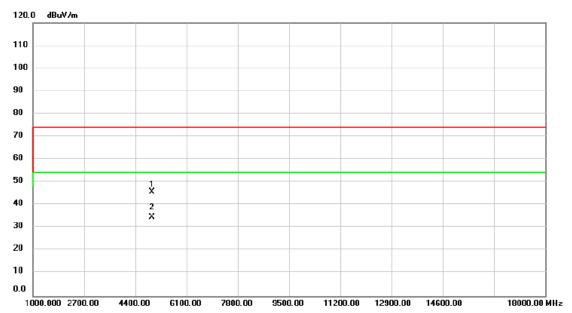
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.000	44.31	1.03	45.34	74.00	-28.66	peak	
2	*	4880.000	33.70	1.03	34.73	54.00	-19.27	AVG	

#### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 47 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19		
Test Frequency	2480MHz	Polarization	Vertical		



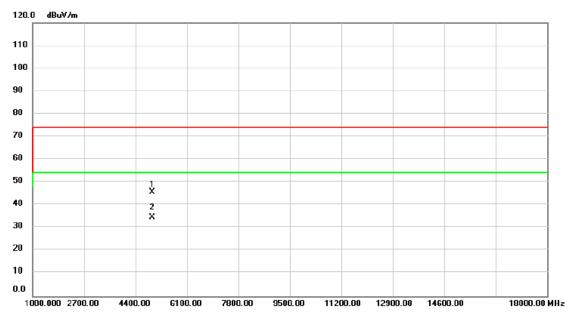
No	. Mi	k. Fr	eq.	Reading Level		Measure- ment		Over		
		М	Hz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.0	000	44.63	1.21	45.84	74.00	-28.16	peak	
2	*	4960.0	000	33.44	1.21	34.65	54.00	-19.35	AVG	

### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 48 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2480MHz	Polarization	Uorizontal
lest Frequency	240UIVI⊓Z	Polarization	Honzontai



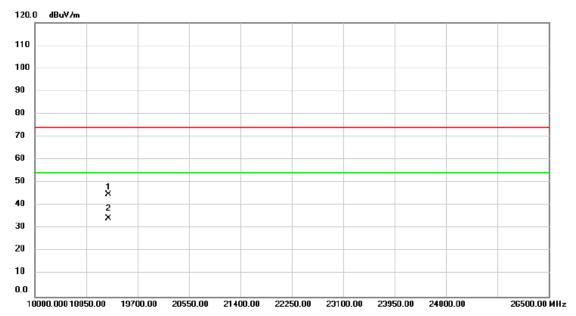
No	). M	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	I	49	60.000	44.66	1.21	45.87	74.00	-28.13	peak	
2	*	49	60.000	33.41	1.21	34.62	54.00	-19.38	AVG	

### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 49 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2480MHz	Polarization	Vertical



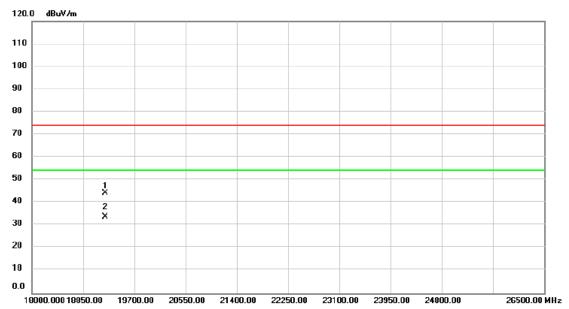
No.	Mk	. Freq.			Measure- ment		Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		19216.00		-6.45	44.85	74.00	-29.15	peak	
2	*	19216.00	40.66	-6.45	34.21	54.00	-19.79	AVG	

### **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 50 of 61 Report Version: R01

Test Mode	BLE 5.0 (2 Mbps)	Test Date	2024/8/19
Test Frequency	2480MHz	Polarization	Horizontal



No. M	k. Freq.			Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	19216.00	50.67	-6.45	44.22	74.00	-29.78	peak	
2 *	19216.00	40.21	-6.45	33.76	54.00	-20.24	AVG	

# **REMARKS**:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

Project No.: 2407E003 Page 51 of 61 Report Version: R01





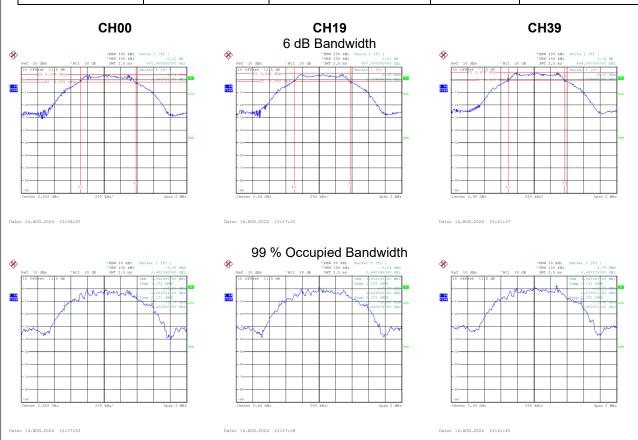
APPENDIX D	BANDWIDTH

Project No.: 2407E003 Page 52 of 61 Report Version: R01



Test Mode: 1Mbps

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2402	0.676	1.056	500	Pass
2440	0.688	1.056	500	Pass
2480	0.684	1.060	500	Pass

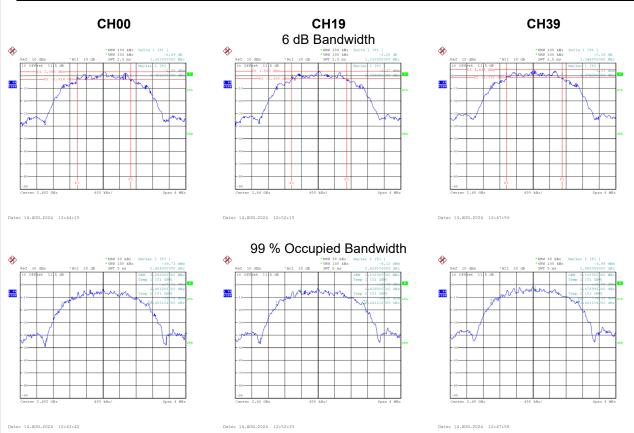






Test Mode: 2Mbps

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2402	1.302	2.096	500	Pass
2440	1.330	2.112	500	Pass
2480	1.346	2.112	500	Pass







APPENDIX E	MAXIMUM OUTPUT POWER	

Project No.: 2407E003 Page 55 of 61 Report Version: R01



Test Mode: 1Mbps	Tested Date	2024/8/14
------------------	-------------	-----------

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.19	0.0033	30.00	1.0000	Pass
2440	5.74	0.0037	30.00	1.0000	Pass
2480	6.66	0.0046	30.00	1.0000	Pass

Test Mode : 2Mbps Tested Date 202	2024/8/14
-----------------------------------	-----------

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.28	0.0034	30.00	1.0000	Pass
2440	5.70	0.0037	30.00	1.0000	Pass
2480	6.92	0.0049	30.00	1.0000	Pass

Project No.: 2407E003 Page 56 of 61 Report Version: R01





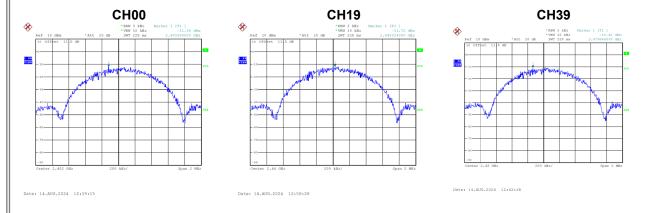
APPENDIX F	POWER SPECTRAL DENSITY TEST

Project No.: 2407E003 Page 57 of 61 Report Version: R01



Test Mode : 1Mbps

Frequency (MHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Test Result
2402	-11.98	8	Pass
2440	-11.72	8	Pass
2480	-10.42	8	Pass



Test Mode :	2Mbps

Frequency (MHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Test Result
2402	-15.52	8	Pass
2440	-15.13	8	Pass
2480	-14.07	8	Pass





APPENDIX G	ANTENNA CONDUCTED SPURIOUS EMISSION

Project No.: 2407E003 Page 59 of 61 Report Version: R01





