FCC Radio Test Report

FCC ID: 2BCGWH500

Report No.	:	BTL-FCCP-4-2404G123
Equipment	:	Smart HomeBase
Model Name	:	Tapo H500
Brand Name	:	tp-link, tapo
Applicant	:	TP-LINK CORPORATION PTE. LTD.
Address	:	7 Temasek Boulevard #29-03 Suntec Tower One, Singapore 038987
Radio Function	:	SRD (908 - 922MHz)
FCC Rule Part(s)	:	FCC CFR Title 47, Part 15, Subpart C (15.247)
Measurement Procedure(s)	:	ANSI C63.10-2013
Date of Receipt	:	2024/5/31
Date of Test	:	2024/6/4 ~ 2024/6/26
Issued Date	:	2024/9/26

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

Prepared by : Poken Huang, Engineer

Approved by : Peter Chen, Manager

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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.

CONTENTS

REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-4-2404G123	R00	Original Report.	2024/9/14	Invalid
BTL-FCCP-4-2404G123	R01	Revised report to address comments.	2024/9/26	Valid

1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
15.209 15.249(a)	Radiated Emissions	APPENDIX B APPENDIX C	PASS	------
15.215(c)	Bandwidth	APPENDIX D	PASS	------
15.247(b)(3)	Maximum Output Power	APPENDIX E	PASS	------
15.247(d)	Conducted Spurious Emission	APPENDIX F	PASS	------
15.247(e)	Power Spectral Density	APPENDIX G	PASS	------
15.203	Antenna Requirement	------	Pass	**NOTE (3)**

Note:

(1) "N/A" denotes test is not applicable to this device.
(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 comply with the provisions of 15.203.

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:
No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)

☒ CB21 ☒ C06

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The eLab measurement uncertainty is less than the CISPR 16-4-2 U_{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)
CB21	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

C. Conducted test:

Test Item	U,(dB)
Occupied Bandwidth	0.53
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 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

Test Item	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	25°C, 45%	AC 120V	Ken Lu
Radiated Emissions	25°C, 65%	AC 120V	Ken Lu
Bandwidth	24°C, 60%	AC 120V	Cheng Tsai
Maximum Output Power	24°C, 60%	AC 120V	Cheng Tsai
Conducted Spurious Emission	24°C, 60%	AC 120V	Cheng Tsai
Power Spectral Density	24°C, 60%	AC 120V	Cheng Tsai

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Smart HomeBase
Brand Name	tp-link, tapo
Model Name	Tapo H500
Model Difference	N/A
Software Version	1.X
Hardware Version	1.0
Power Source	DC Voltage supplied from AC adapter. Model: T120200-2B4
Power Rating	I/P: 100-240V~ 50/60Hz 0.8A O/P:12.0V⎓2.0A
Operation Frequency	920.9 MHz ~ 922.3 MHz
Modulation Type	GFSK
Max. Output Power	15.21 dBm (0.0332W)

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.

2. Channel List:

Channel	Frequency (MHz)
00	920.9
01	921.7
02	922.3

3.Table for Filed Antenna:

Ant.	Brand Name	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	3101506737	Dipole	N/A	-6.10

Note:
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.

2.2 TEST MODES

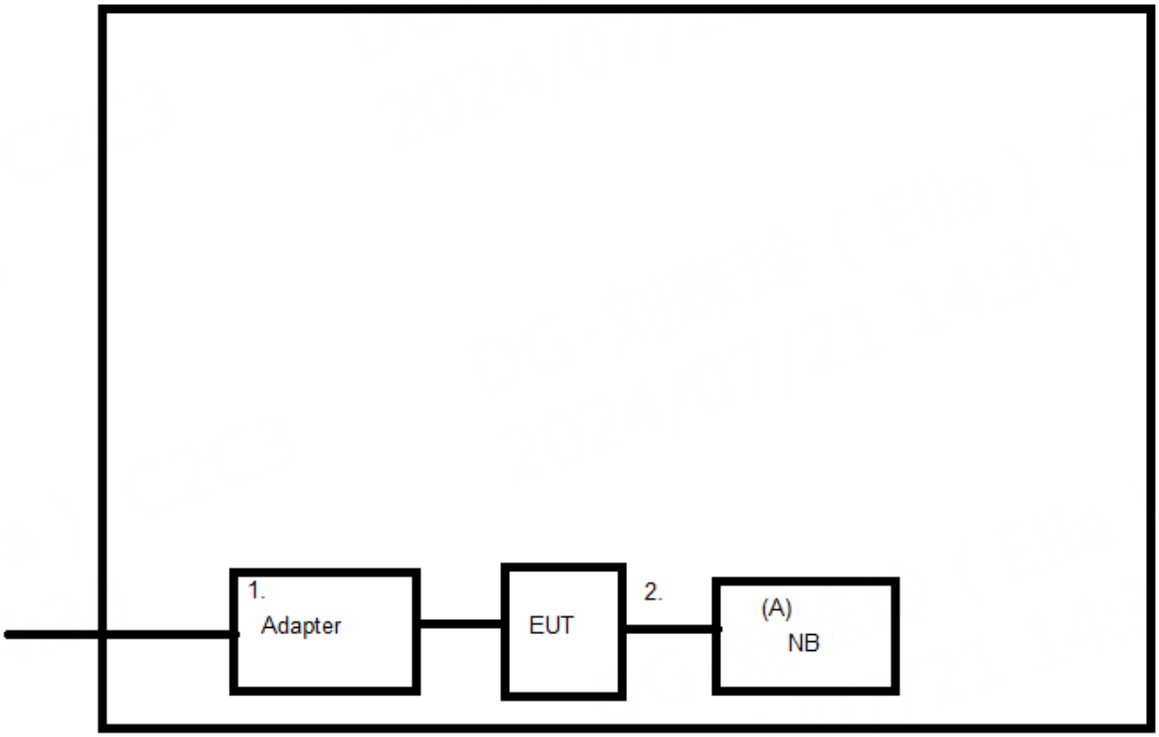
Test Items	Test mode	Channel
AC power line conducted emissions	Normal	-
Transmitter Radiated Emissions (below 1GHz)	TX mode	02
Transmitter Radiated Emissions (above 1GHz)	TX mode	00/01/02
Bandwidth	TX mode	00/01/02
Maximum Output Power	TX mode	00/01/02
Conducted Spurious Emission	TX mode	00/01/02
Power Spectral Density	TX mode	00/01/02

NOTE:
(1) 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.
(2) For radiated emissions below 1 GHz test, the channel 03 is found to be the worst case and recorded.
(3) The test sample with two adapters, only the cable is different. For radiated spurious emissions below 1 GHz test, two adapters had been pre-tested and in this report only recorded the worst case.

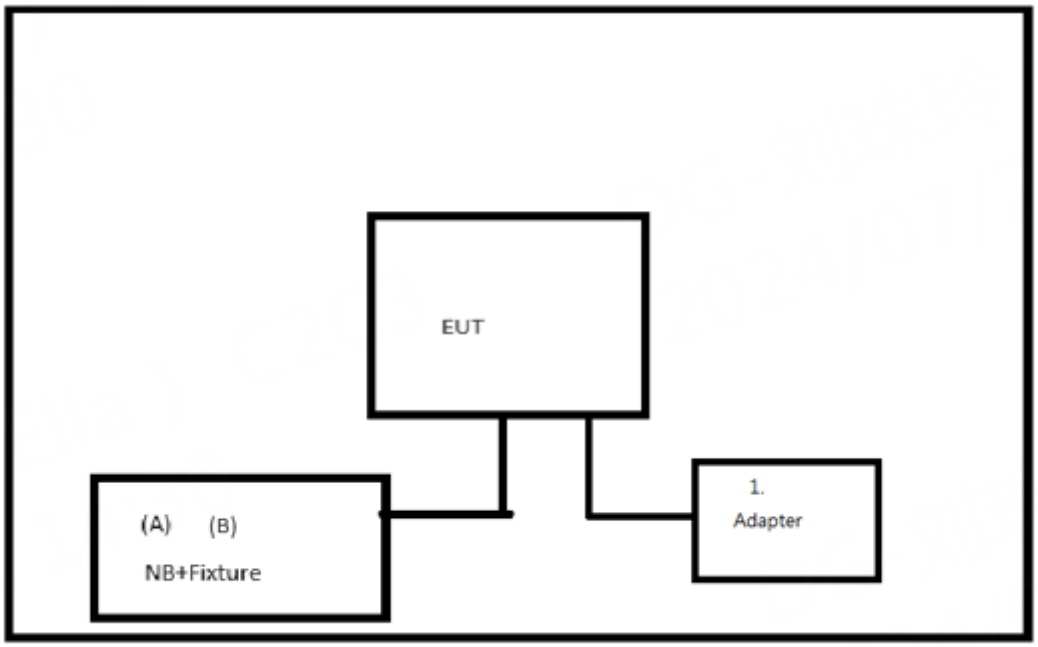
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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

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

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	DC cable	N	N	1m	Supplied by test requester.
2	RJ45 cable	Y	N	1m	Furnished by test lab.

Radiated Emissions

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	Fixture	N/A	N/A	N/A	Furnished by test lab.
B	Notebook	Lenovo	ThinkBook 14 G4 IAP	MP28KHAH	Furnished by test lab.

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

3 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency (MHz)	Limit (dBμV)	
	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	=	41.67

Measurement Value		Limit Value		Margin Level
41.67	-	60	=	-18.33

The following table is the setting of the receiver.

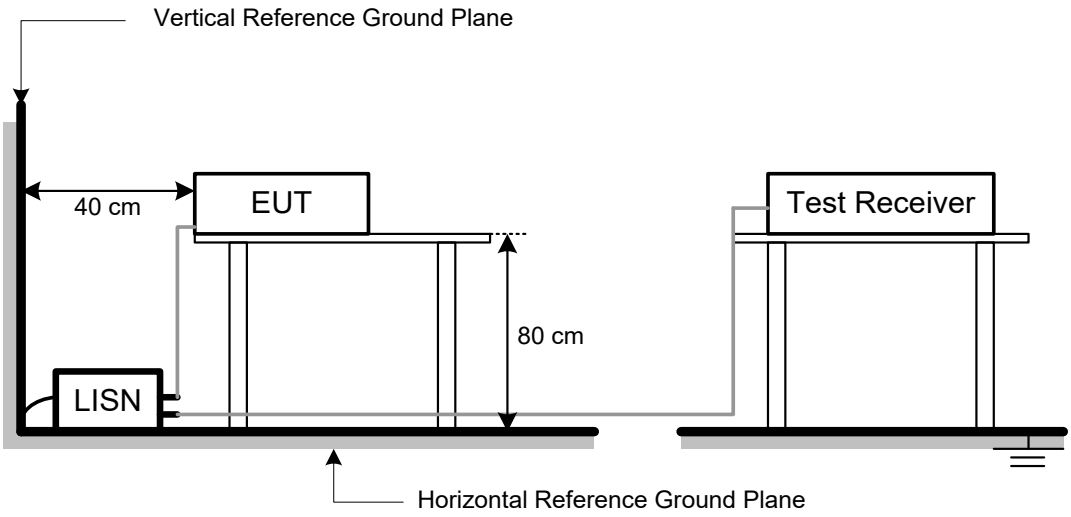
Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

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 TEST SETUP



3.4 TEST RESULT

Please refer to the **APPENDIX A**.

4 RADIATED EMISSIONS TEST

4.1 LIMIT

In case the emission falls 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)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
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 (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

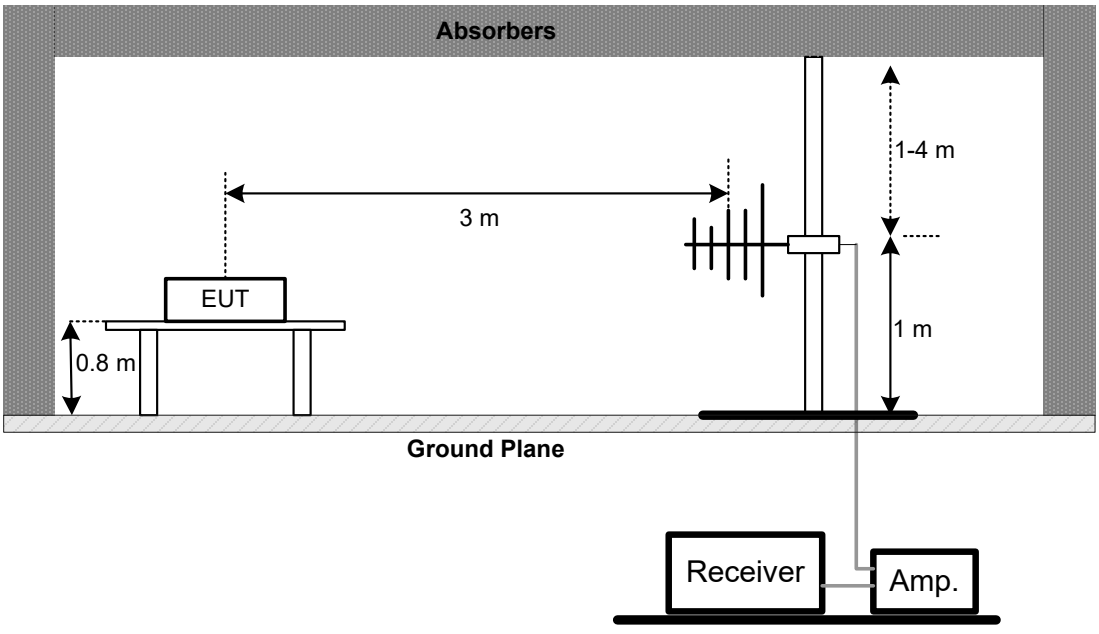
Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP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

4.2 TEST PROCEDURE

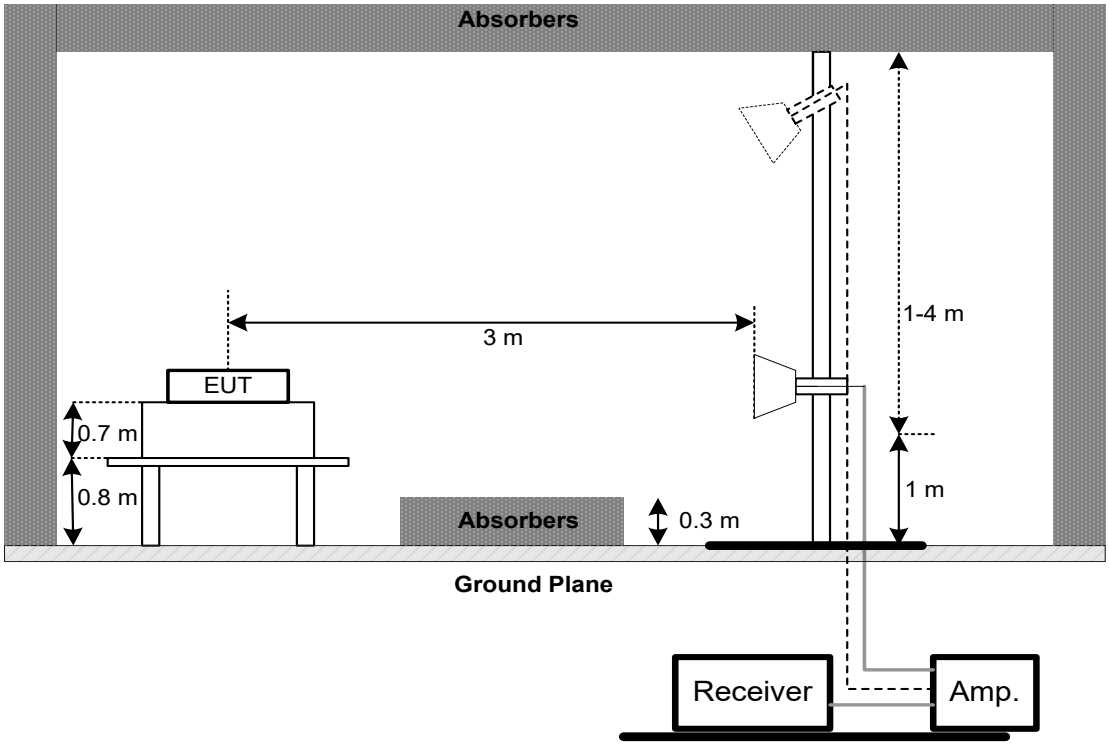
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance 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.

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 applicable.
For fundamental signal judgment was referred to Peak output test.

5 BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit
FCC 15.247(a)(2)	6 dB Bandwidth	>= 500 kHz
	99% Emission Bandwidth	-

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. The following table is the setting of the spectrum analyzer:

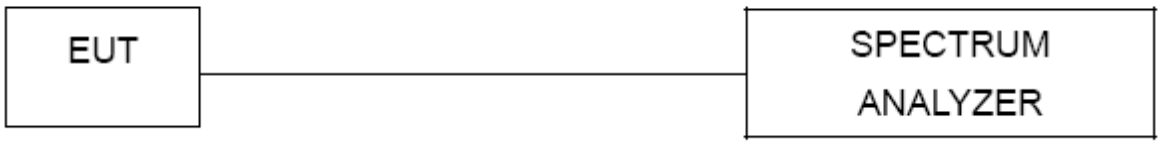
For 6 dB Bandwidth:

Spectrum Parameters	Setting
Span Frequency	2 MHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

For 99% Emission Bandwidth:

Spectrum Parameters	Setting
Span Frequency	2 MHz
RBW	30 kHz
VBW	100 kHz
Detector	Peak
Trace	Max Hold
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.

6 MAXIMUM OUTPUT POWER

6.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000 watt or 30.00 dBm

6.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

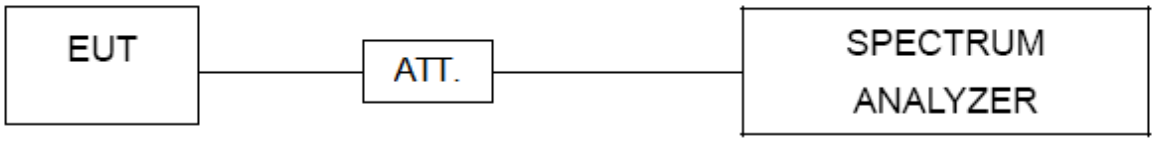
b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	≥ 3×RBW
RBW	3 MHz
VBW	3 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

Spectrum Parameters	Setting
Span Frequency	At least 1.5 times the OBW
RBW	1% to 5% of the OBW, not to exceed 1 MHz
VBW	≥ 3×RBW
Detector	RMS
Trace	Max Hold
Sweep Time	≤ (number of points in sweep) × T **(Note)**

Note: Where T is defined in 11.6 of ANSI C63.10-2013.

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.

7 CONDUCTED SPURIOUS EMISSION

7.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

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. The following table is the setting of the spectrum analyzer:

For Reference Level:

Spectrum Parameters	Setting
Span Frequency	≥ 1.5 times the bandwidth.
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

For Emission Level:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
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.

8 POWER SPECTRAL DENSITY

8.1 LIMIT

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

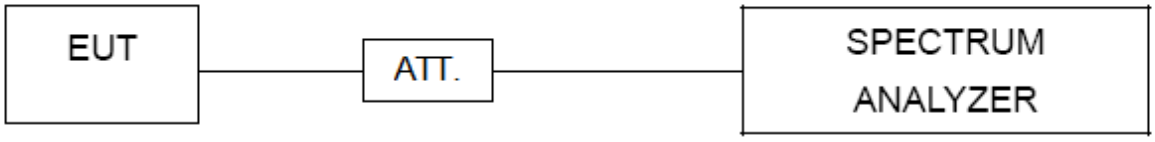
8.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	900 kHz
RBW	3 kHz
VBW	10 kHz
Detector	Peak
Trace	Max Hold
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 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	EMCRG58-BM-BM-9000	210501	2023/12/11	2024/12/10
3	EXA Spectrum Analyzer	keysight	N9038A	MY54130009	2023/6/26	2024/6/25
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	Preamplifier	EMCI	EMC330N	980850	2023/9/6	2024/9/5
2	Preamplifier	EMCI	EMC118A45SE	980819	2024/3/6	2025/3/5
3	Pre-Amplifier	EMCI	EMC184045SE	980907	2023/9/21	2024/9/20
4	Preamplifier	EMCI	EMC001340	980579	2023/9/6	2024/9/5
5	Test Cable	EMCI	EMC104-SM-1000	180809	2024/3/8	2025/3/7
6	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2024/3/8	2025/3/7
7	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2024/3/8	2025/3/7
8	EXA Signal Analyzer	keysight	N9020B	MY57120120	2024/2/23	2025/2/22
9	Loop Ant	Electro-Metrics	EMCI-LPA600	291	2023/9/12	2024/9/11
10	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2024/5/9	2025/5/8
11	Horn Ant	Schwarzbeck	BBHA 9170	1136	2023/6/28	2024/6/27
12	TRILOG Broadband Antenna	Schwarzbeck	VULB9168	1371	2023/8/8	2024/8/7
13	6dB Attenuator	EMCI	EMCI-N-6-06	AT-N0625	2023/8/8	2024/8/7
14	Test Cable	EMCI	EMC101G-KM-KM-3000	220329	2024/3/13	2025/3/12
15	Test Cable	EMCI	EMC102-KM-KM-1000	220327	2024/3/13	2025/3/12
16	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2024/5/9	2025/5/8
17	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Bandwidth & Maximum Output Power & Power Spectral Density & Conducted Spurious Emission						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 30	100854	2023/6/26	2024/6/25
2	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.

10 EUT TEST PHOTO

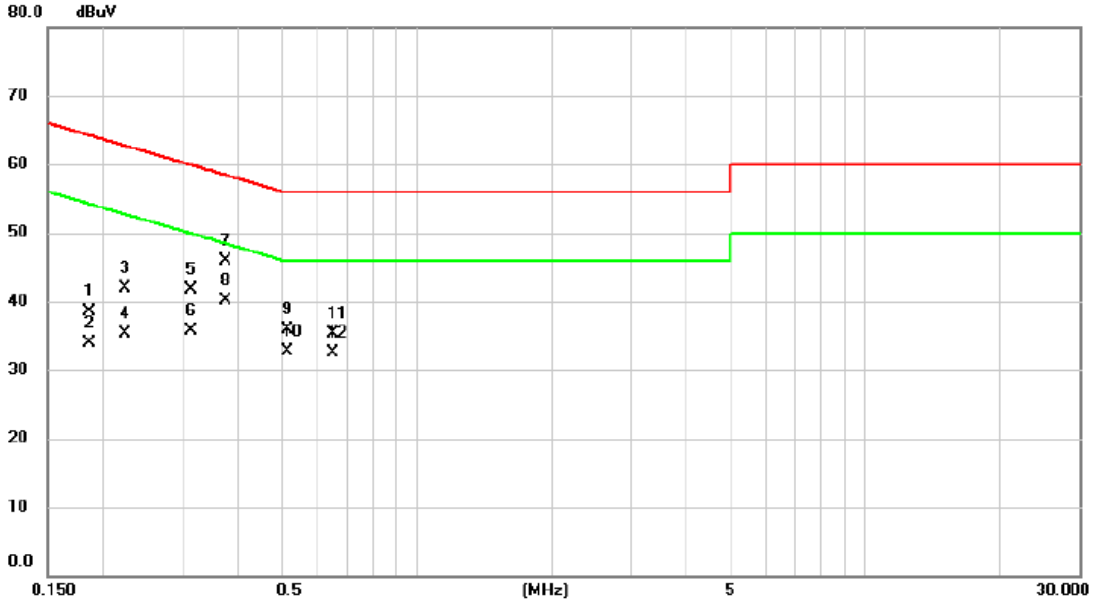
Please refer to APPENDIX-TEST PHOTOS.

11 EUT PHOTOS

Please refer to APPENDIX-EUT PHOTOS.

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

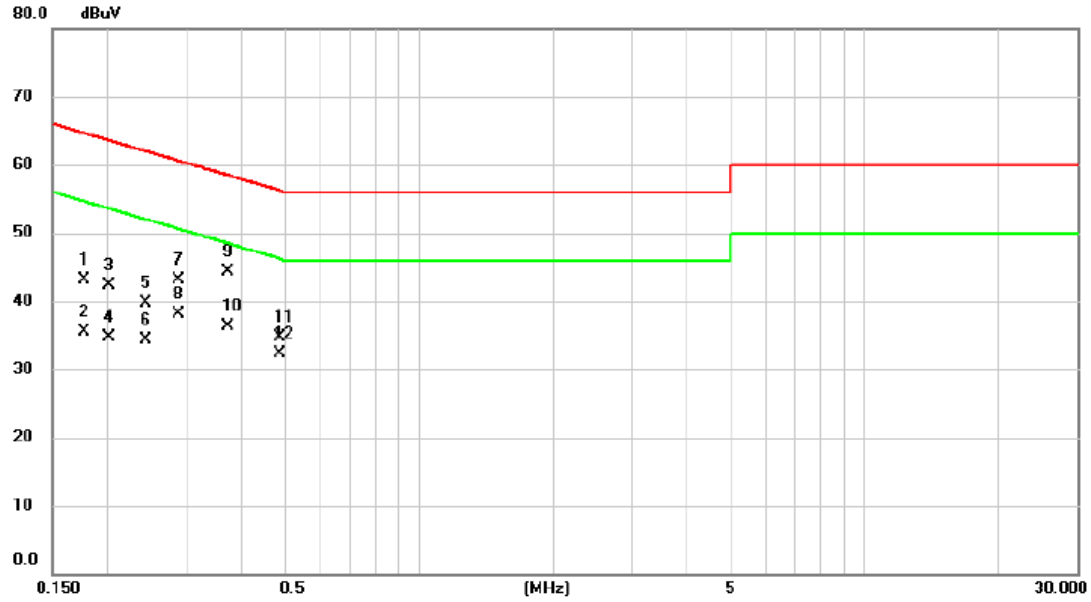
Test Mode	Normal	Tested Date	2024/6/3
Test Frequency	-	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1867	28.96	9.64	38.60	64.18	-25.58	QP	
2		0.1867	24.19	9.64	33.83	54.18	-20.35	AVG	
3		0.2228	32.18	9.64	41.82	62.71	-20.89	QP	
4		0.2228	25.74	9.64	35.38	52.71	-17.33	AVG	
5		0.3144	32.02	9.65	41.67	59.85	-18.18	QP	
6		0.3144	26.03	9.65	35.68	49.85	-14.17	AVG	
7		0.3733	36.17	9.65	45.82	58.43	-12.61	QP	
8	*	0.3733	30.37	9.65	40.02	48.43	-8.41	AVG	
9		0.5135	26.17	9.66	35.83	56.00	-20.17	QP	
10		0.5135	23.10	9.66	32.76	46.00	-13.24	AVG	
11		0.6485	25.68	9.67	35.35	56.00	-20.65	QP	
12		0.6485	22.90	9.67	32.57	46.00	-13.43	AVG	

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

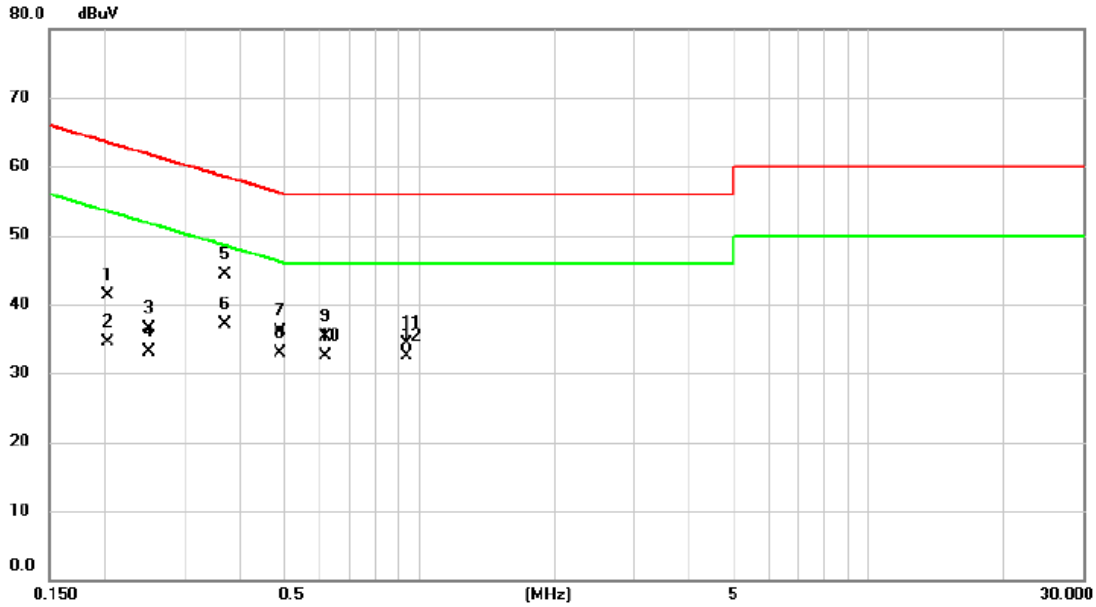
Test Mode	Normal	Tested Date	2024/6/3
Test Frequency	-	Phase	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1768	33.43	9.63	43.06	64.63	-21.57	QP	
2		0.1768	25.87	9.63	35.50	54.63	-19.13	AVG	
3		0.2014	32.60	9.63	42.23	63.55	-21.32	QP	
4		0.2014	25.12	9.63	34.75	53.55	-18.80	AVG	
5		0.2441	30.09	9.63	39.72	61.96	-22.24	QP	
6		0.2441	24.66	9.63	34.29	51.96	-17.67	AVG	
7		0.2878	33.45	9.64	43.09	60.59	-17.50	QP	
8		0.2878	28.41	9.64	38.05	50.59	-12.54	AVG	
9		0.3712	34.66	9.63	44.29	58.47	-14.18	QP	
10	*	0.3712	26.68	9.63	36.31	48.47	-12.16	AVG	
11		0.4864	25.05	9.64	34.69	56.23	-21.54	QP	
12		0.4864	22.69	9.64	32.33	46.23	-13.90	AVG	

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

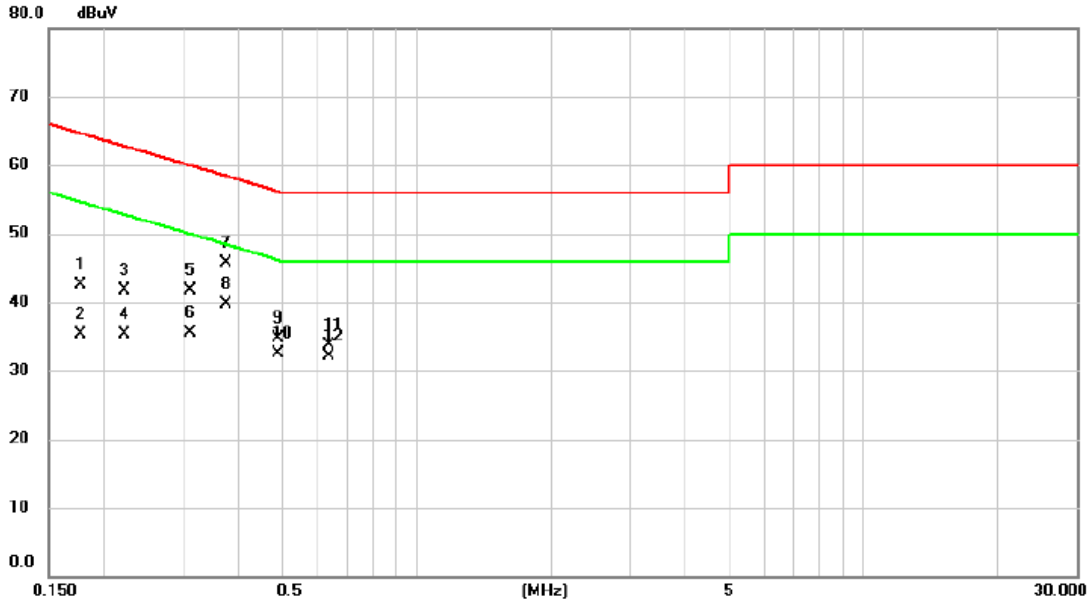
Test Mode	Idle	Tested Date	2024/6/3
Test Frequency	-	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2021	31.63	9.64	41.27	63.52	-22.25	QP	
2		0.2021	24.83	9.64	34.47	53.52	-19.05	AVG	
3		0.2508	26.84	9.64	36.48	61.73	-25.25	QP	
4		0.2508	23.45	9.64	33.09	51.73	-18.64	AVG	
5		0.3704	34.70	9.65	44.35	58.49	-14.14	QP	
6	*	0.3704	27.50	9.65	37.15	48.49	-11.34	AVG	
7		0.4885	26.45	9.66	36.11	56.19	-20.08	QP	
8		0.4885	23.34	9.66	33.00	46.19	-13.19	AVG	
9		0.6170	25.72	9.67	35.39	56.00	-20.61	QP	
10		0.6170	22.88	9.67	32.55	46.00	-13.45	AVG	
11		0.9410	24.64	9.70	34.34	56.00	-21.66	QP	
12		0.9410	22.71	9.70	32.41	46.00	-13.59	AVG	

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

Test Mode	Idle	Tested Date	2024/6/3
Test Frequency	-	Phase	Neutral

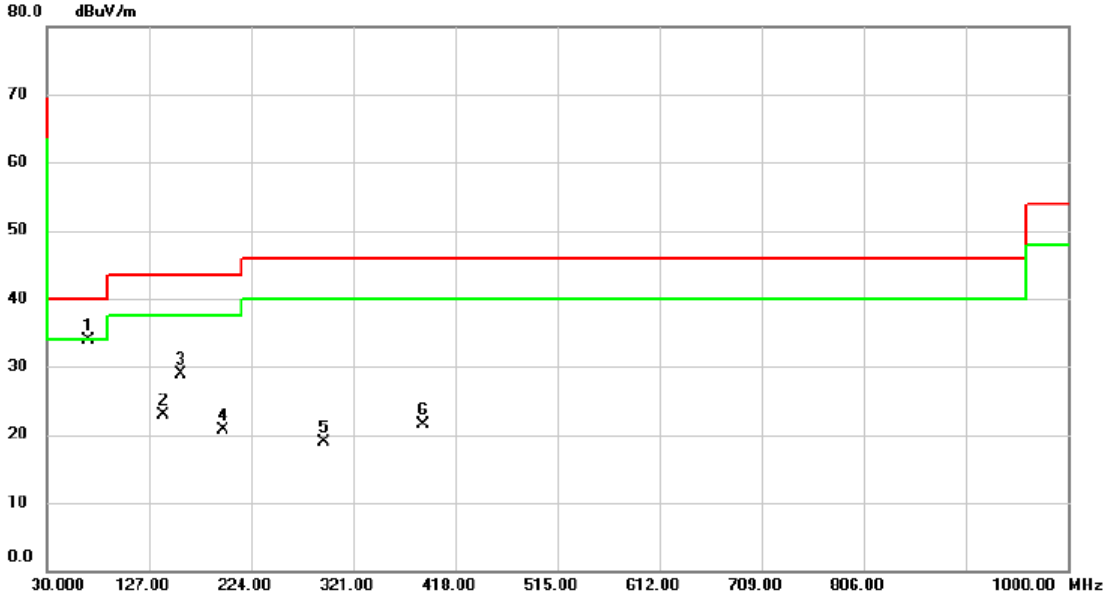


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1776	32.91	9.63	42.54	64.60	-22.06	QP	
2		0.1776	25.68	9.63	35.31	54.60	-19.29	AVG	
3		0.2221	32.14	9.63	41.77	62.74	-20.97	QP	
4		0.2221	25.70	9.63	35.33	52.74	-17.41	AVG	
5		0.3127	32.11	9.63	41.74	59.90	-18.16	QP	
6		0.3127	25.83	9.63	35.46	49.90	-14.44	AVG	
7		0.3747	36.11	9.63	45.74	58.40	-12.66	QP	
8	*	0.3747	30.02	9.63	39.65	48.40	-8.75	AVG	
9		0.4902	25.06	9.64	34.70	56.16	-21.46	QP	
10		0.4902	22.82	9.64	32.46	46.16	-13.70	AVG	
11		0.6350	24.00	9.65	33.65	56.00	-22.35	QP	
12		0.6350	22.51	9.65	32.16	46.00	-13.84	AVG	

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

APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

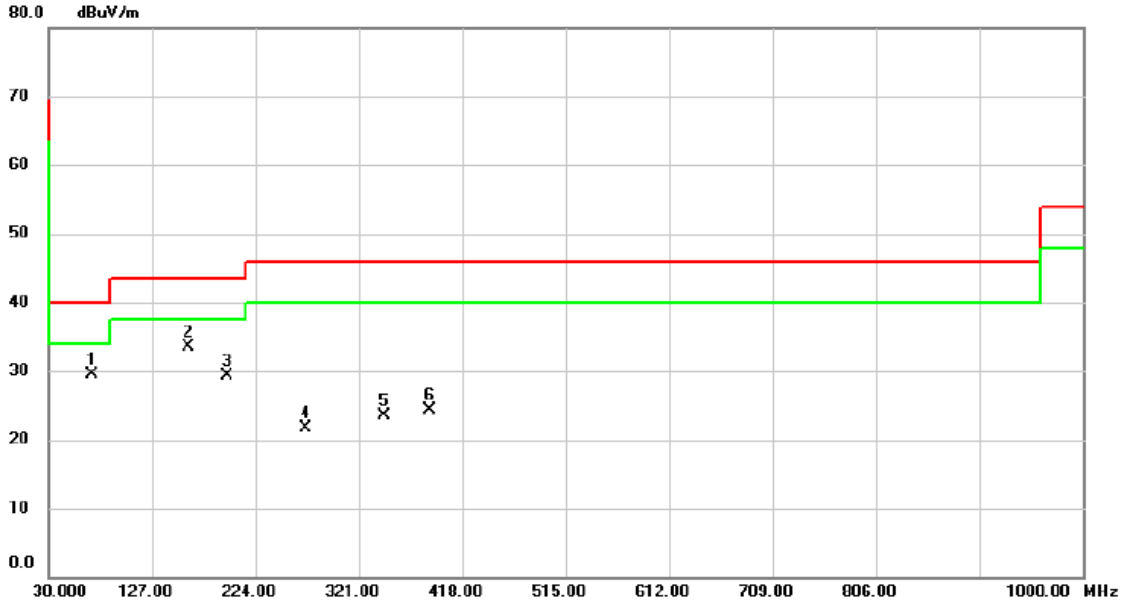
Test Mode	TX Mode Channel 02	Test Date	2024/6/20
Test Frequency	922.3MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	69.7700	47.44	-13.60	33.84	40.00	-6.16	peak	100	261	
2		140.5800	34.81	-11.92	22.89	43.50	-20.61	peak	200	240	
3		157.0700	40.02	-11.08	28.94	43.50	-14.56	peak	100	329	
4		197.8100	34.76	-14.12	20.64	43.50	-22.86	peak	100	5	
5		293.8400	29.23	-10.30	18.93	46.00	-27.07	peak	100	78	
6		386.9600	29.30	-7.85	21.45	46.00	-24.55	peak	164	360	

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

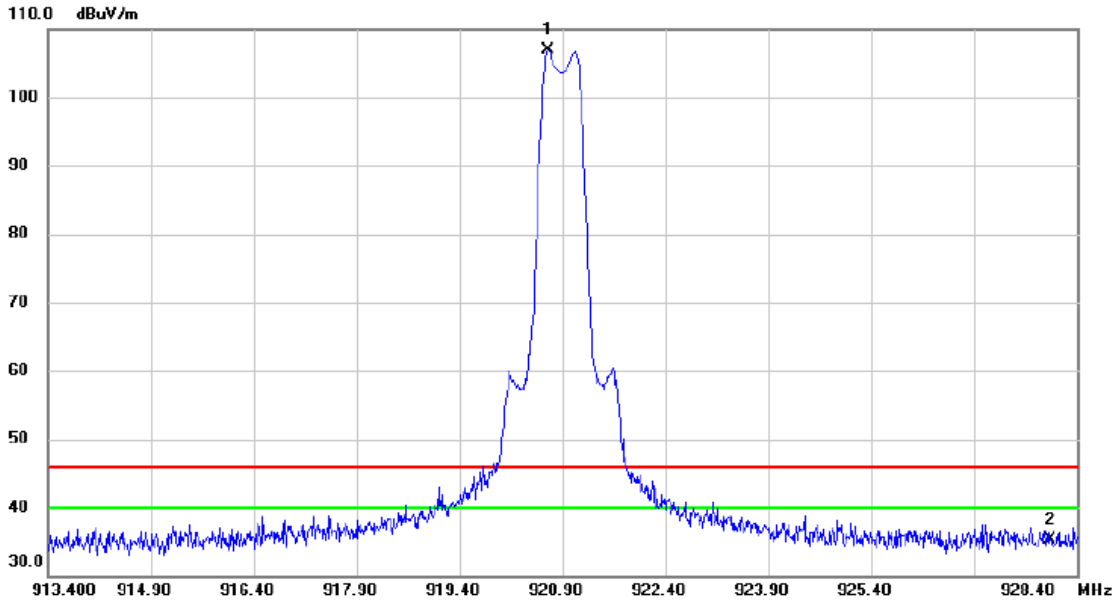
Test Mode	TX Mode Channel 02	Test Date	2024/6/20
Test Frequency	922.3MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		70.7400	43.26	-13.83	29.43	40.00	-10.57	peak	200	182	
2	*	160.9500	44.56	-11.12	33.44	43.50	-10.06	peak	100	221	
3		197.8100	43.47	-14.12	29.35	43.50	-14.15	peak	100	168	
4		271.5300	32.82	-11.20	21.62	46.00	-24.38	peak	100	360	
5		345.2500	32.61	-9.04	23.57	46.00	-22.43	peak	100	293	
6		386.9600	32.11	-7.85	24.26	46.00	-21.74	peak	100	21	

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

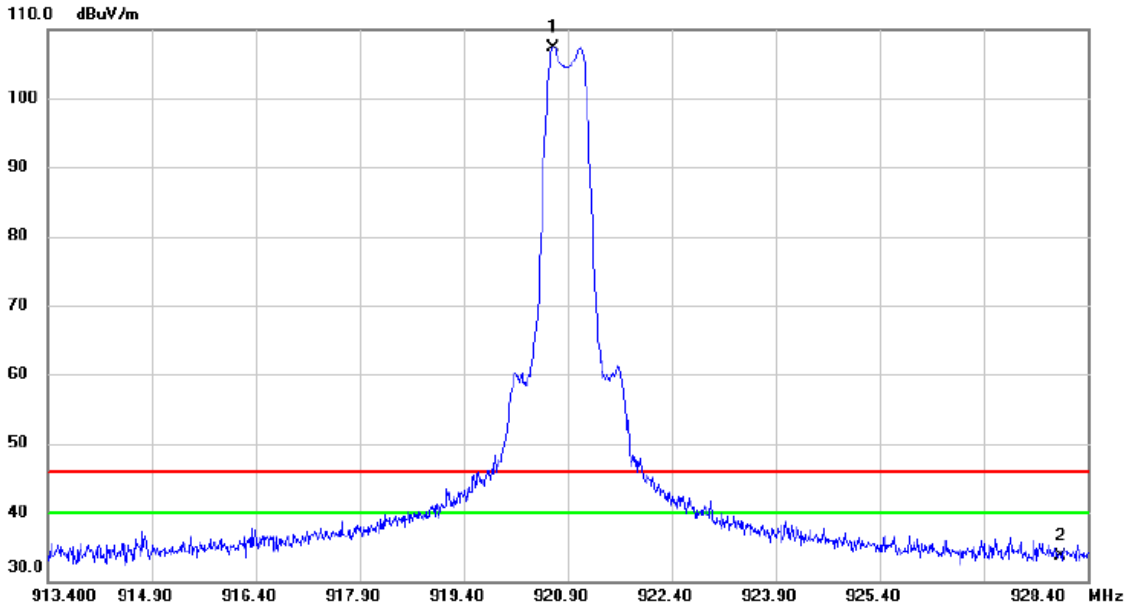
Test Mode	TX Mode Channel 00	Test Date	2024/6/20
Test Frequency	920.9MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	920.6900	104.87	1.96	106.83	46.00	60.83	QP			No Limit
2		928.0000	33.25	2.03	35.28	46.00	-10.72	QP			

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

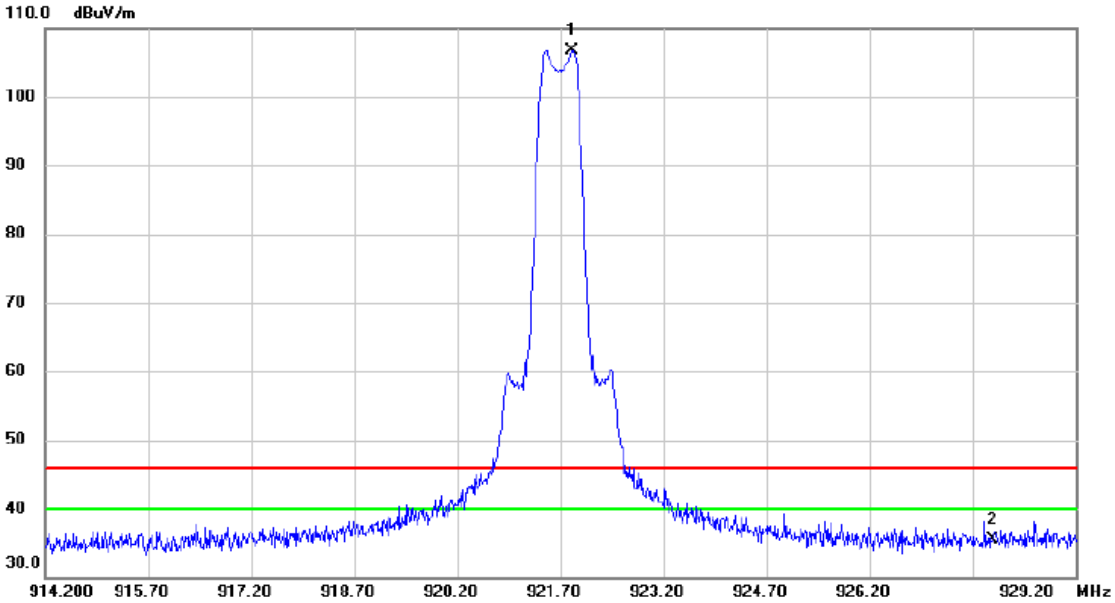
Test Mode	TX Mode Channel 00	Test Date	2024/6/20
Test Frequency	920.9MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	920.6900	105.44	1.96	107.40	46.00	61.40	QP	200	109	No Limit
2		928.0000	31.60	2.03	33.63	46.00	-12.37	QP	200	225	

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

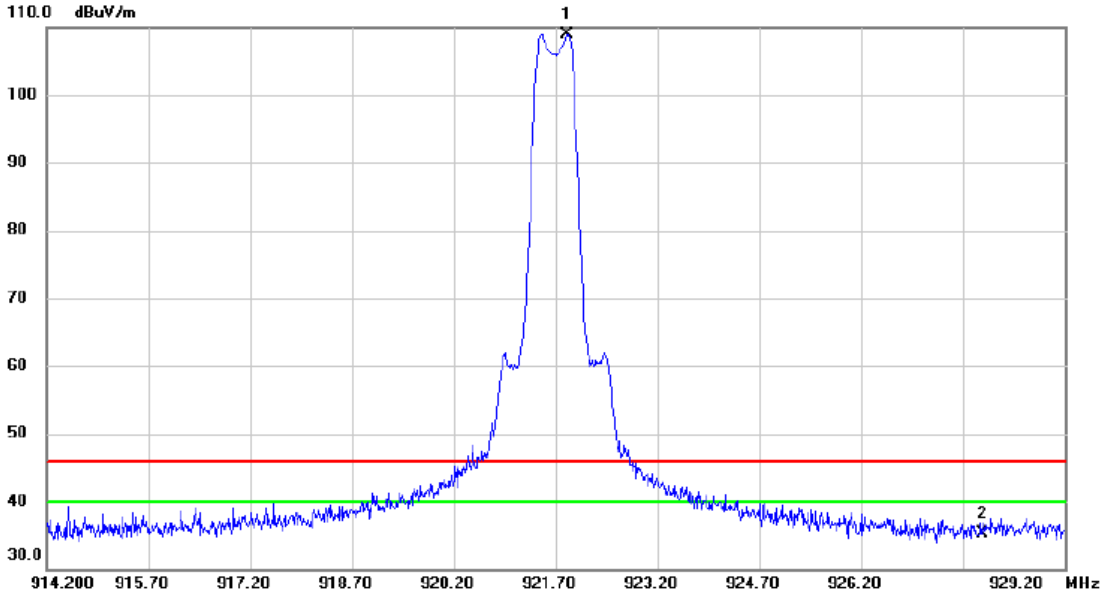
Test Mode	TX Mode Channel 01	Test Date	2024/6/20
Test Frequency	921.7MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	921.8800	104.81	1.97	106.78	46.00	60.78	QP			No Limit
2		928.0000	33.48	2.03	35.51	46.00	-10.49	QP			

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

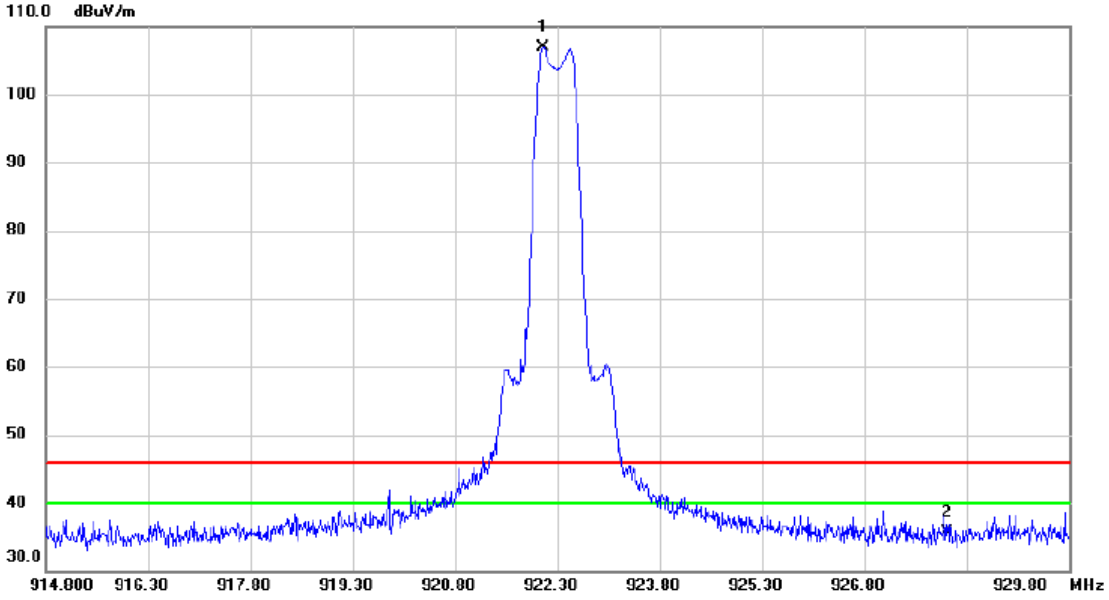
Test Mode	TX Mode Channel 01	Test Date	2024/6/20
Test Frequency	921.7MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	921.8800	107.02	1.97	108.99	46.00	62.99	QP			No Limit
2		928.0000	33.21	2.03	35.24	46.00	-10.76	QP			

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

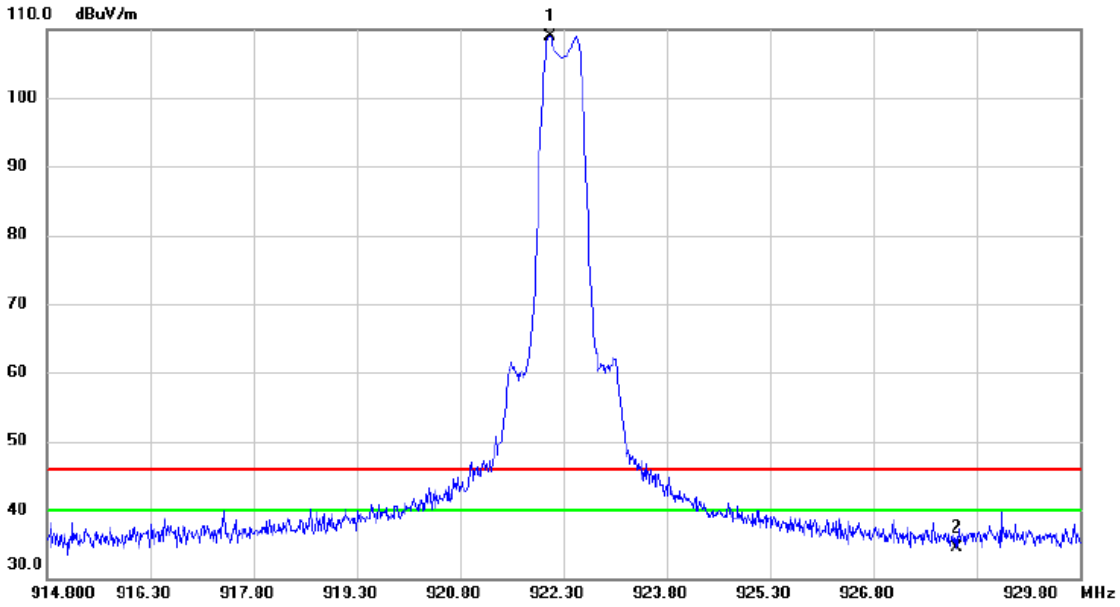
Test Mode	TX Mode Channel 02	Test Date	2024/6/20
Test Frequency	922.3MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	922.0900	104.86	1.97	106.83	46.00	60.83	QP			No Limit
2		928.0000	33.67	2.03	35.70	46.00	-10.30	QP			

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

Test Mode	TX Mode Channel 02	Test Date	2024/6/20
Test Frequency	922.3MHz	Polarization	Horizontal

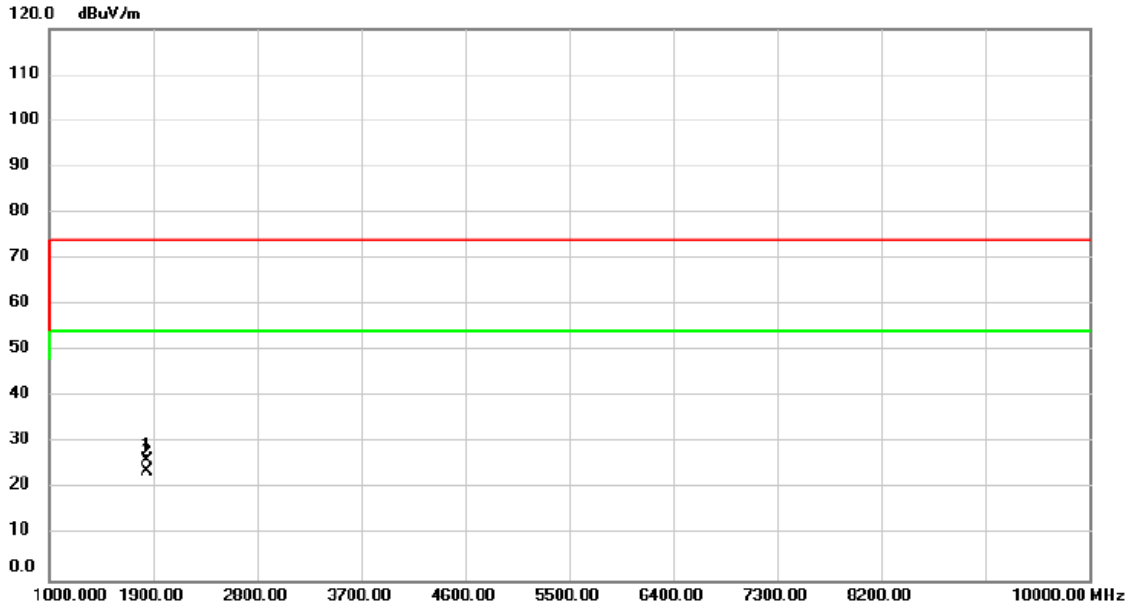


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	922.1050	106.97	1.97	108.94	46.00	62.94	QP			No Limit
2		928.0000	32.39	2.03	34.42	46.00	-11.58	QP			

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

APPENDIX C RADIATED EMISSIONS - ABOVE 1 GHZ

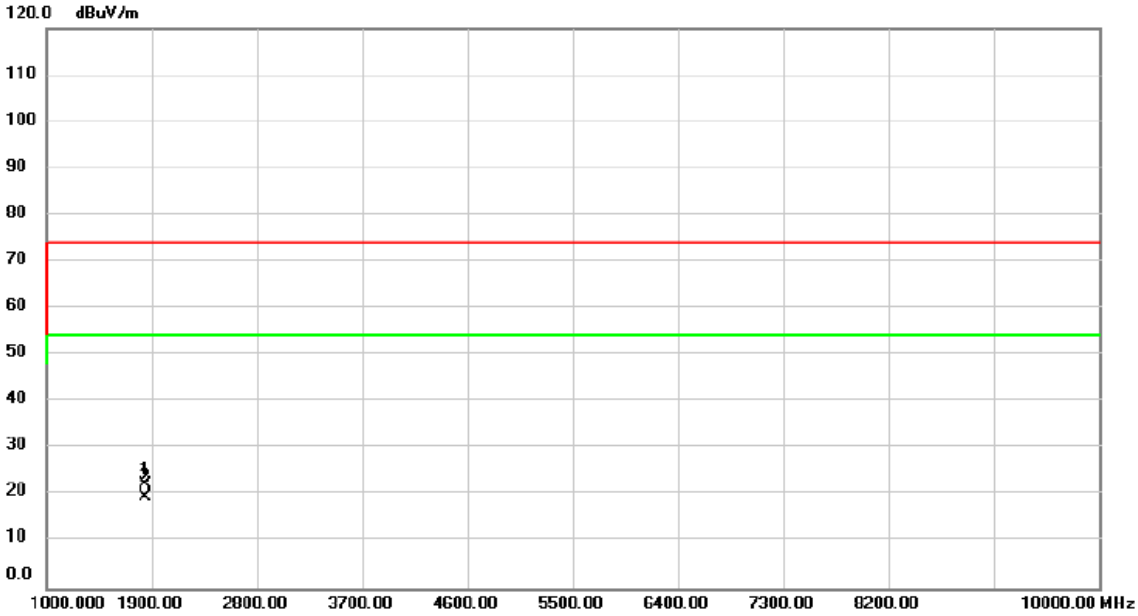
Test Mode	TX Mode Channel 00	Test Date	2024/6/21
Test Frequency	920.9MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1841.800	43.73	-17.49	26.24	74.00	-47.76	peak			
2	*	1841.800	41.36	-17.49	23.87	54.00	-30.13	AVG			

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

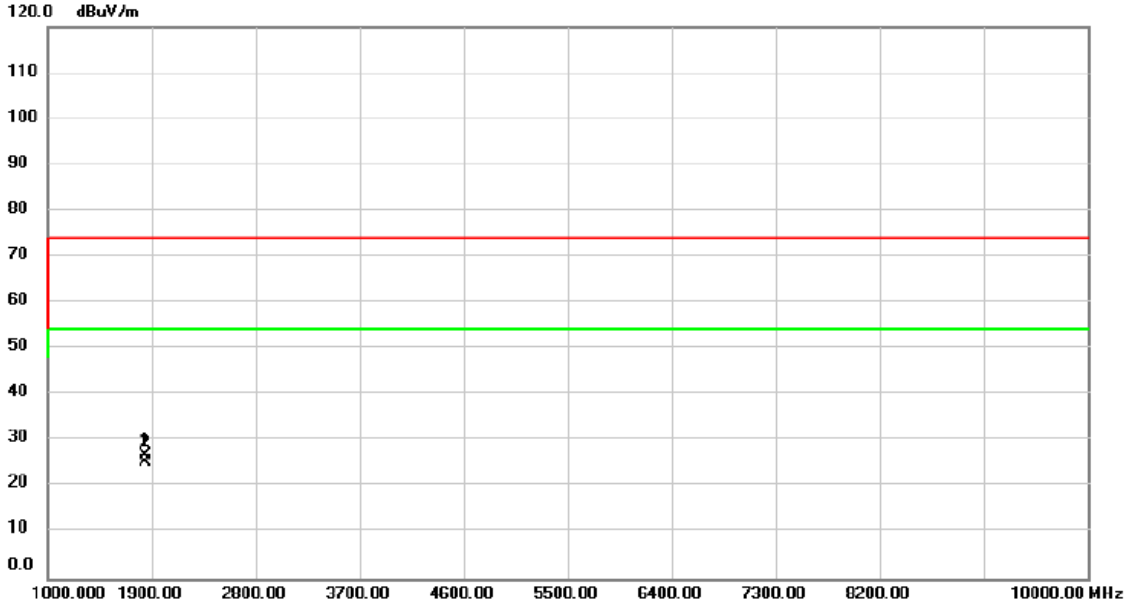
Test Mode	TX Mode Channel 00	Test Date	2024/6/21
Test Frequency	920.9MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1841.800	39.83	-17.49	22.34	74.00	-51.66	peak			
2	*	1841.800	37.15	-17.49	19.66	54.00	-34.34	AVG			

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

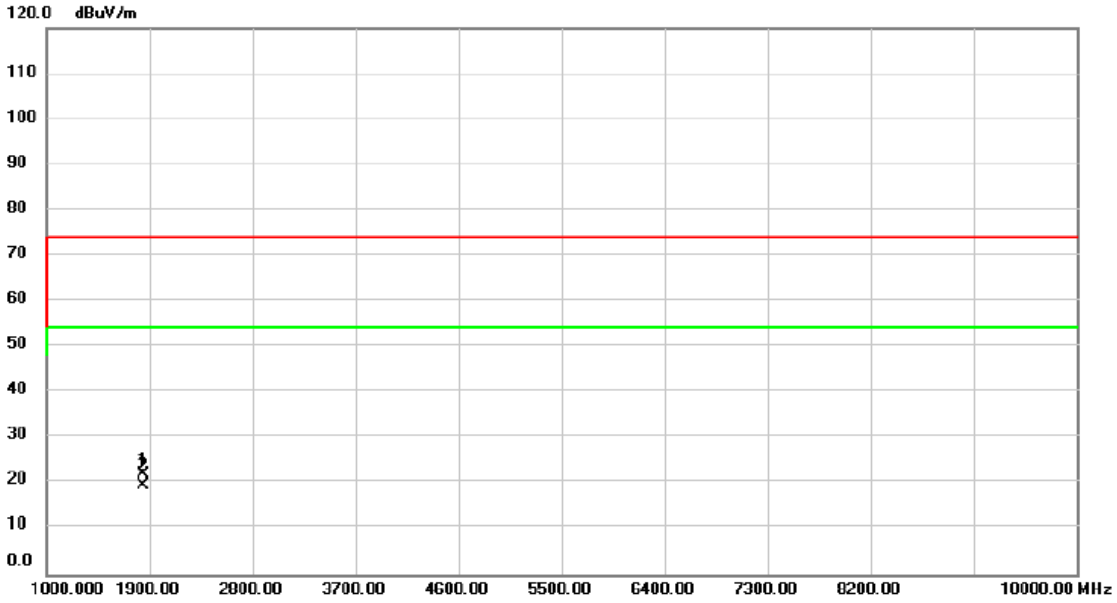
Test Mode	TX Mode Channel 01	Test Date	2024/6/21
Test Frequency	921.7MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1843.400	44.28	-17.49	26.79	74.00	-47.21	peak			
2	*	1843.400	42.72	-17.49	25.23	54.00	-28.77	AVG			

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

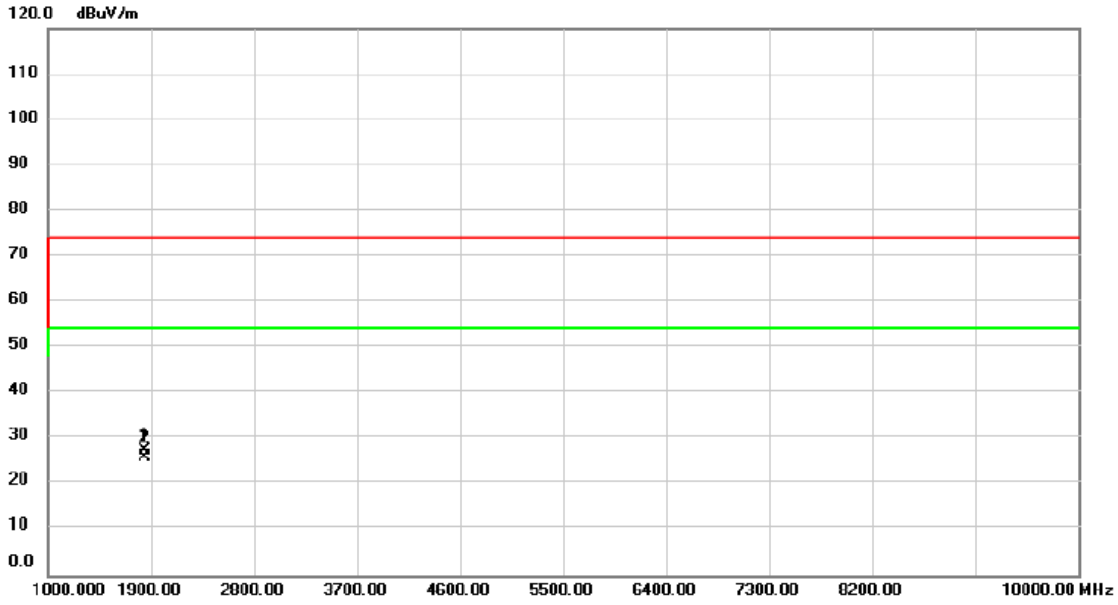
Test Mode	TX Mode Channel 01	Test Date	2024/6/21
Test Frequency	921.7MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1843.400	39.56	-17.49	22.07	74.00	-51.93	peak			
2	*	1843.400	37.06	-17.49	19.57	54.00	-34.43	AVG			

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

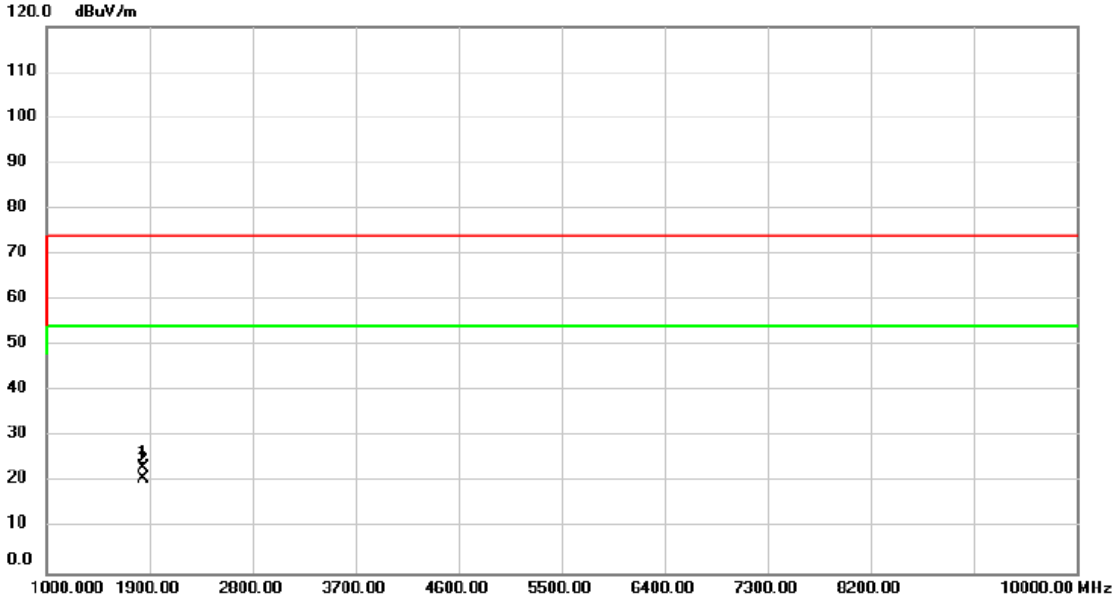
Test Mode	TX Mode Channel 02	Test Date	2024/6/21
Test Frequency	922.3MHz	Polarization	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1844.600	44.86	-17.48	27.38	74.00	-46.62	peak			
2	*	1844.600	43.48	-17.48	26.00	54.00	-28.00	AVG			

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

Test Mode	TX Mode Channel 02	Test Date	2024/6/21
Test Frequency	922.3MHz	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1844.600	40.60	-17.48	23.12	74.00	-50.88	peak			
2	*	1844.600	38.36	-17.48	20.88	54.00	-33.12	AVG			

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

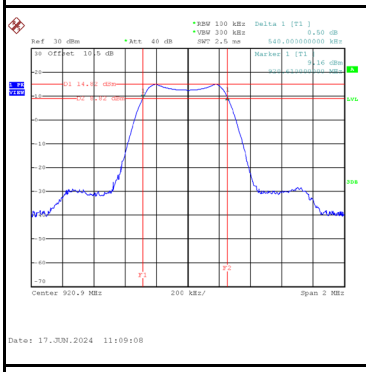
APPENDIX D BANDWIDTH

Test Mode:	Channel 00, Channel 01, Channel 02

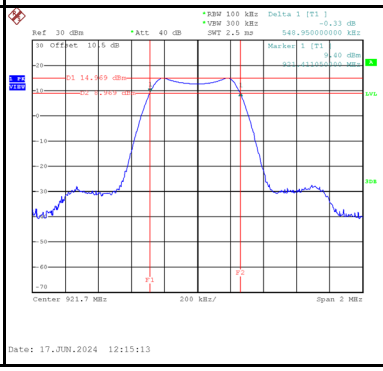
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
920.9	0.540	0.512	500	Pass
921.7	0.549	0.512	500	Pass
922.3	0.550	0.512	500	Pass

20dB Bandwidth

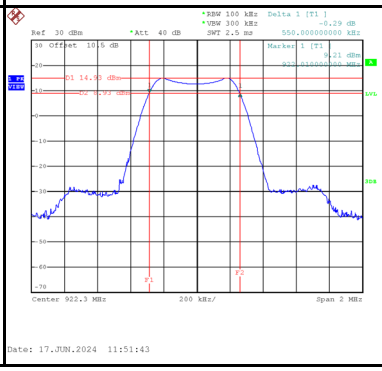
920.9 MHz



921.7 MHz

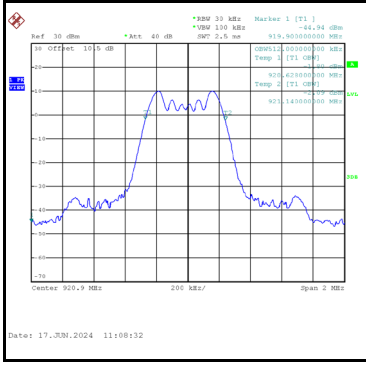


922.3 MHz

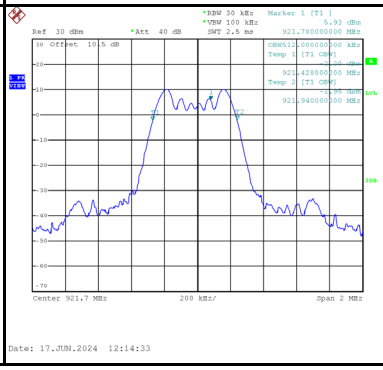


99% Occupied BW

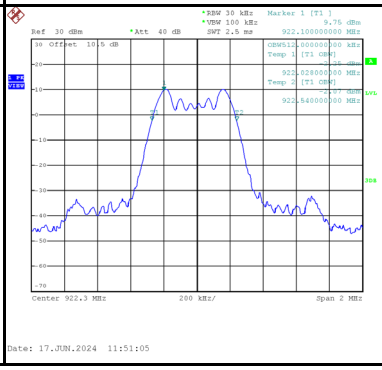
920.9 MHz



921.7 MHz



922.3 MHz



APPENDIX E MAXIMUM OUTPUT POWER

Test Mode	TX Mode

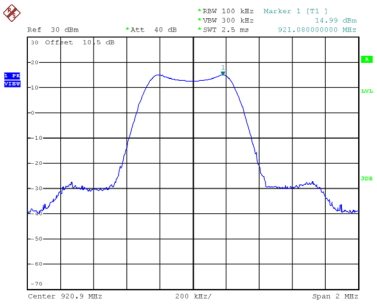
Frequency (MHz)	Output Power (dBm)	Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
920.9	15.05	0.0320	30.00	1.0000	Pass
921.7	15.19	0.0330	30.00	1.0000	Pass
922.3	15.21	0.0332	30.00	1.0000	Pass

APPENDIX F CONDUCTED SPURIOUS EMISSION

Test Mode	TX Mode

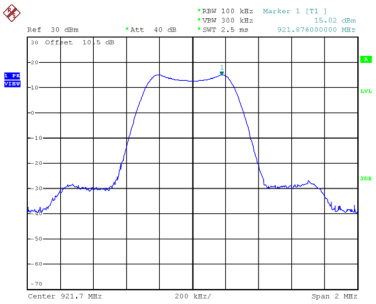
Reference Level

CH00



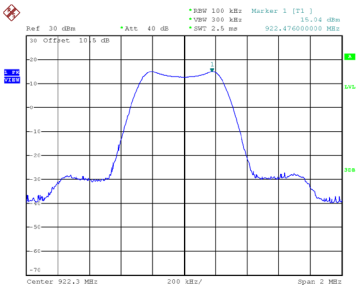
Date: 17.JUN.2024 12:46:26

CH01



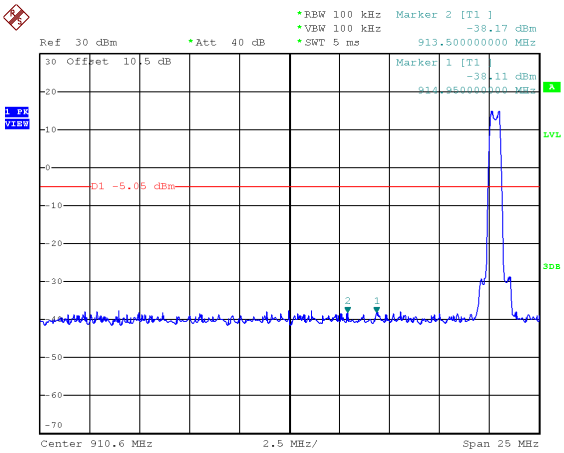
Date: 17.JUN.2024 12:48:53

CH02



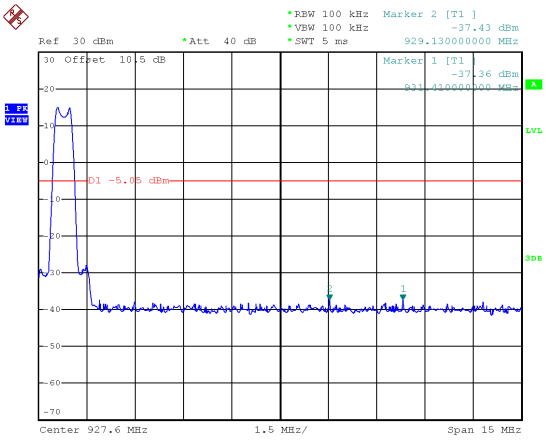
Date: 17.JUN.2024 12:50:25

Bandedge CH00 (Lower)



Date: 17.JUN.2024 12:28:31

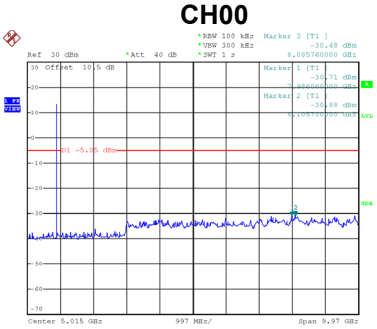
Bandedge CH02 (Upper)



Date: 17.JUN.2024 12:34:12

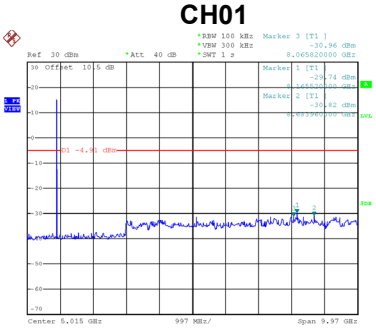
CH00 – 10th Harmonic of the fundamental frequency

CH00



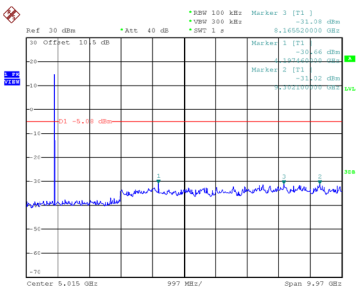
Date: 17.JUN.2024 12:44:48

CH01



Date: 17.JUN.2024 12:59:06

CH02



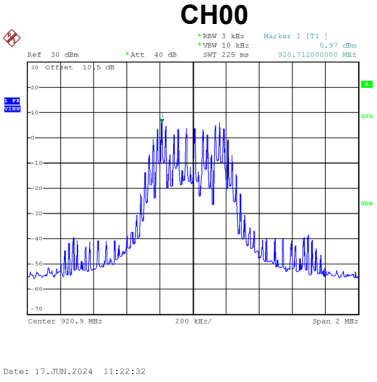
Date: 17.JUN.2024 13:09:44

APPENDIX G POWER SPECTRAL DENSITY

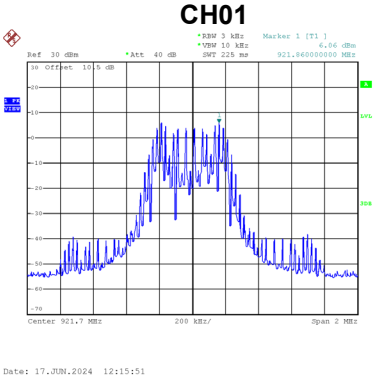
Test Mode	TX Mode _1Mbps

Channel	Frequency (MHz)	Power Spectral Density (dBm/3 kHz)	Max. Limit (dBm/3 kHz)	Test Result
00	920.9	5.97	8.00	Pass
01	921.7	6.06	8.00	Pass
02	922.3	6.06	8.00	Pass

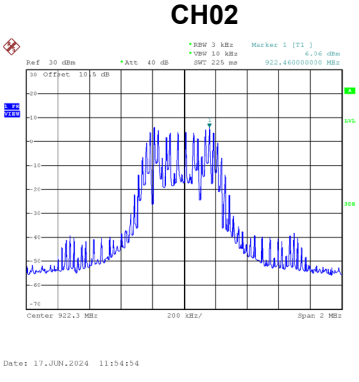
CH00



CH01



CH02



End of Test Report