FCC Radio Test Report

FCC ID: 2BDWL2417321

Report No.	:	BTL-FCCP-8-2303E003
Equipment	:	TELUS SmartHome+ Hub
Brand Name	:	TELUS
Test Model	:	HUF
Series Model	:	N/A
Applicant	:	TELUS Communications Inc.
Address	:	7th Floor,510 West Georgia Street,Vancouver, BC,V6B0M3 Canada
Radio Function	:	Z-wave
FCC Rule Part(s)	:	FCC CFR Title 47, Part 15, Subpart C (15.249)
Measurement Procedure(s)	:	ANSI C63.10-2013
Date of Receipt	:	2024/3/5
Date of Test	:	2024/4/15 ~ 2024/11/07
Issued Date	:	2025/1/23

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

Approved by : Peter Chen, Supervisor

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.

CONTENTS

REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-8-2303E003	R00	Original Report.	2025/1/23	Valid

1 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 15.249(a)(d)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	Pass	------
15.215(c)	Bandwidth	APPENDIX E	Pass	------

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

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. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)

☒ CB20 ☒ C01

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 %**.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C01	CISPR	150 kHz ~ 30MHz	2.4498

B. Radiated emissions test :

Test Site	Measurement Frequency Range (GHz)	U (dB)
CB20 (3m)	0.03~0.2	4.01
	0.02~1	4.64
	1 ~ 6	5.91
	6 ~ 18	6.24
	18 ~ 26	3.93
	26 ~ 40	4.06

C. Conducted test :

Test Item	U (dB)
Bandwidth	0.5334

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	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	25 °C, 45 %	AC 120V	Benny Cao
Radiated emissions below 1 GHz	Refer to data	DC 5V	Benny Cao
Radiated emissions above 1 GHz	Refer to data	DC 5V	Benny Cao
Bandwidth	23 °C, 50 %	DC 5V	Cheng Tsai

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	TELUS SmartHome+ Hub
Brand Name	TELUS
Test Model	HUF
Series Model	N/A
Model Difference(s)	N/A
Software Version	v0.8.13
Hardware Version	DVT
Power Source	DC Voltage supplied from AC adapter. Model: DSA-12PF11-05 FUS 050200
Power Rating	I/P:100-240V ~ 50/60Hz 0.5A O/P:+5.0V⎓2.0A
Operation Frequency	908.40 MHz ~ 916 MHz
Modulation Type	GFSK
Max. Field Strength	93.40 dBuV/m
Max.Output Power	-1.86 dBm (0.0007W)

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)	Data rate(kbit/s)
00	916.00	100
01	908.40	40
02	908.42	9.6

(3) Table for Filed Antenna:

Antenna	Brand	Model name	Type	Connector	Gain (dBi)
1	FIT	N/A	PIFA	N/A	2.74

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.

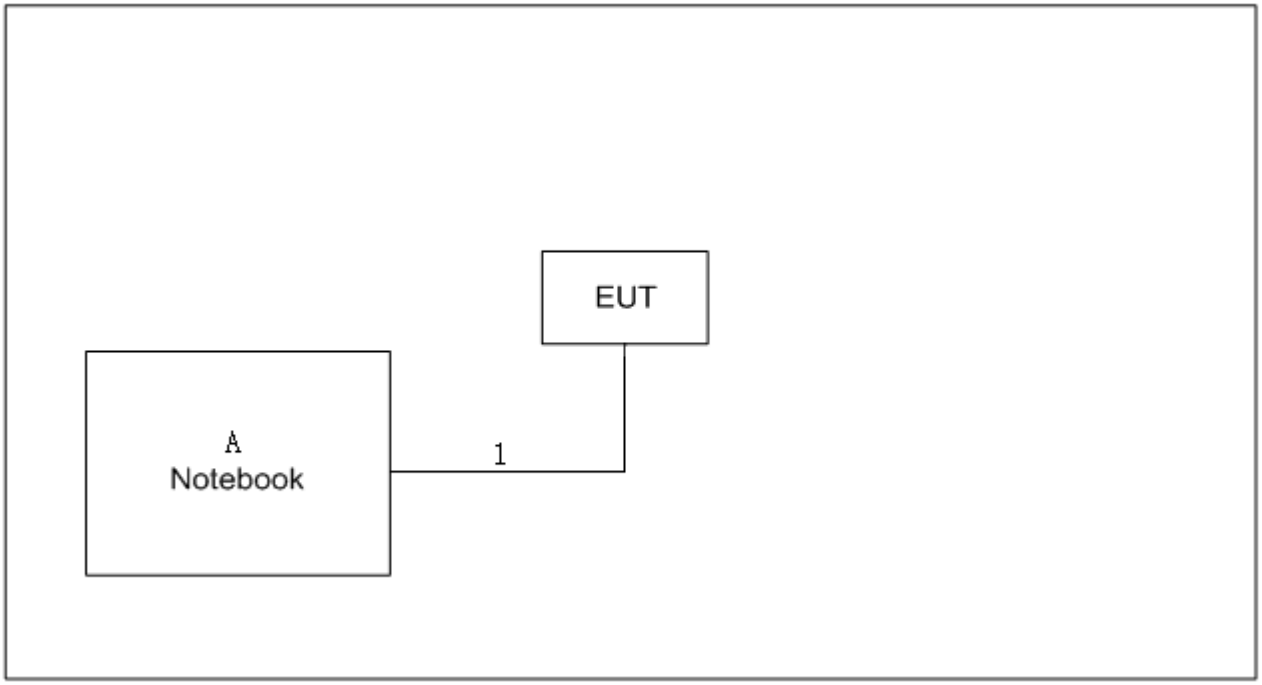
2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal	-	-
Transmitter Radiated Emissions (below 1GHz)	TX Mode	02	-
Transmitter Radiated Emissions (above 1GHz)	TX Mode	00/01/02	band edge
	TX Mode	00/01/02	Harmonic
Bandwidth	TX Mode	00/01/02	-

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 emissions below 1 GHz test, the channel 02 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.



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Remarks
A	Notebook	tinkpad	ThinkBook16+	Furnished by test lab.

Item	Cable Type	Ferrite Core	Length	Shielded	Remarks
1	USB Cable	NO	1m	NO	Furnished by test lab.

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

Measurement Value (dBμV)		Limit Value (dBμV)		Margin Level (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

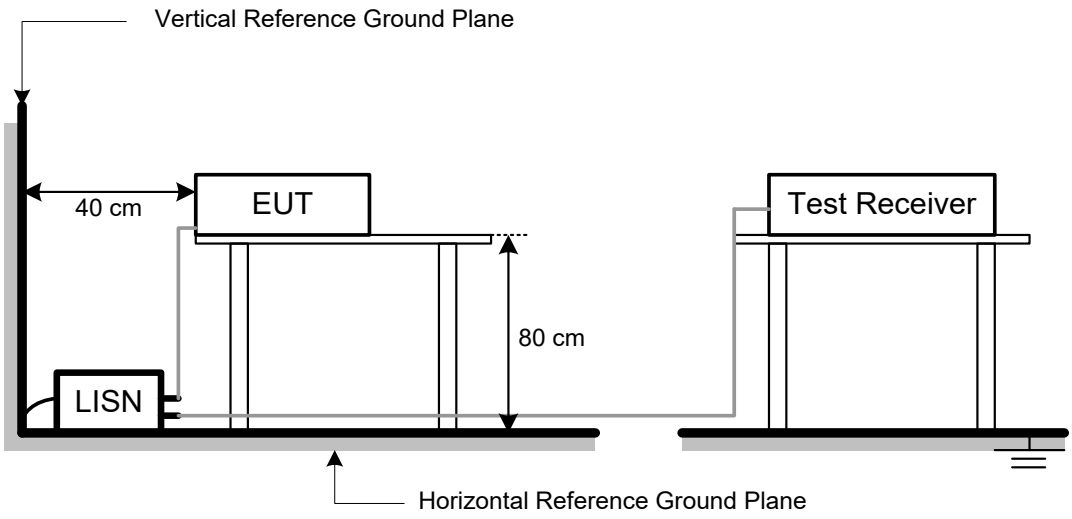
a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
All other support equipment were powered from an additional LISN(s).
The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
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.

3.3 DEVIATION FROM TEST STANDARD

No deviation.

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)	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 (dBµV)		Correct Factor (dB/m)		Measurement Value (dBµV/m)
41.91	+	-8.36	=	33.55

Measurement Value (dBµV/m)		Limit Value (dBµV/m)		Margin Level (dB)
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

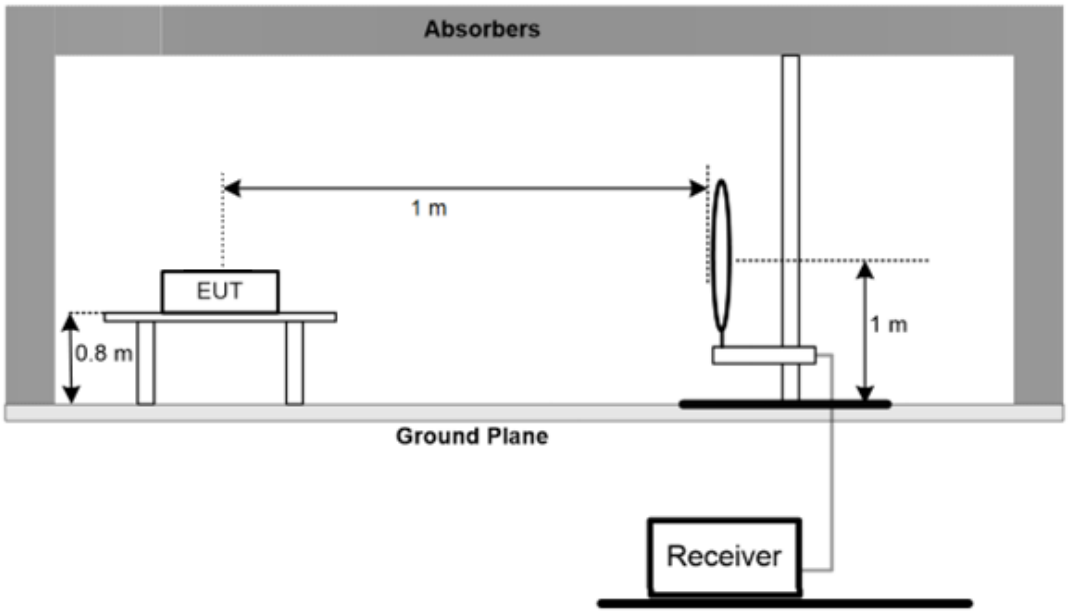
a. The measuring distance of 1 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 30MHz)
b. The measuring distance 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)
c. 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)
d. 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.
e. 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).
f. 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.
g. 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.
h. 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)
i. 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)
j. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

4.3 DEVIATION FROM TEST STANDARD

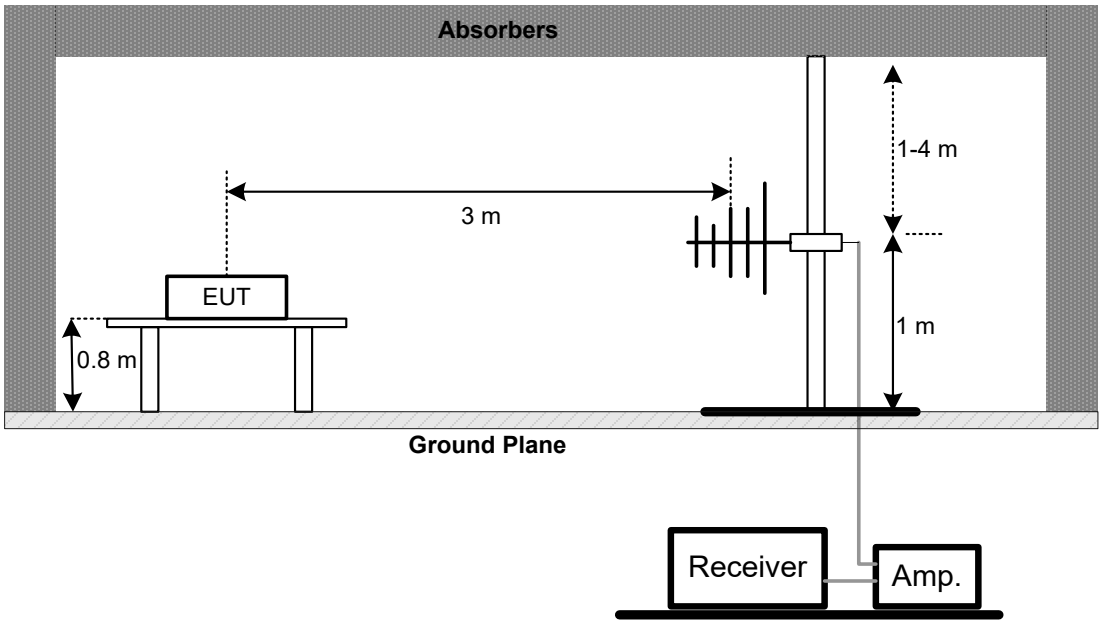
No deviation.

4.4 TEST SETUP

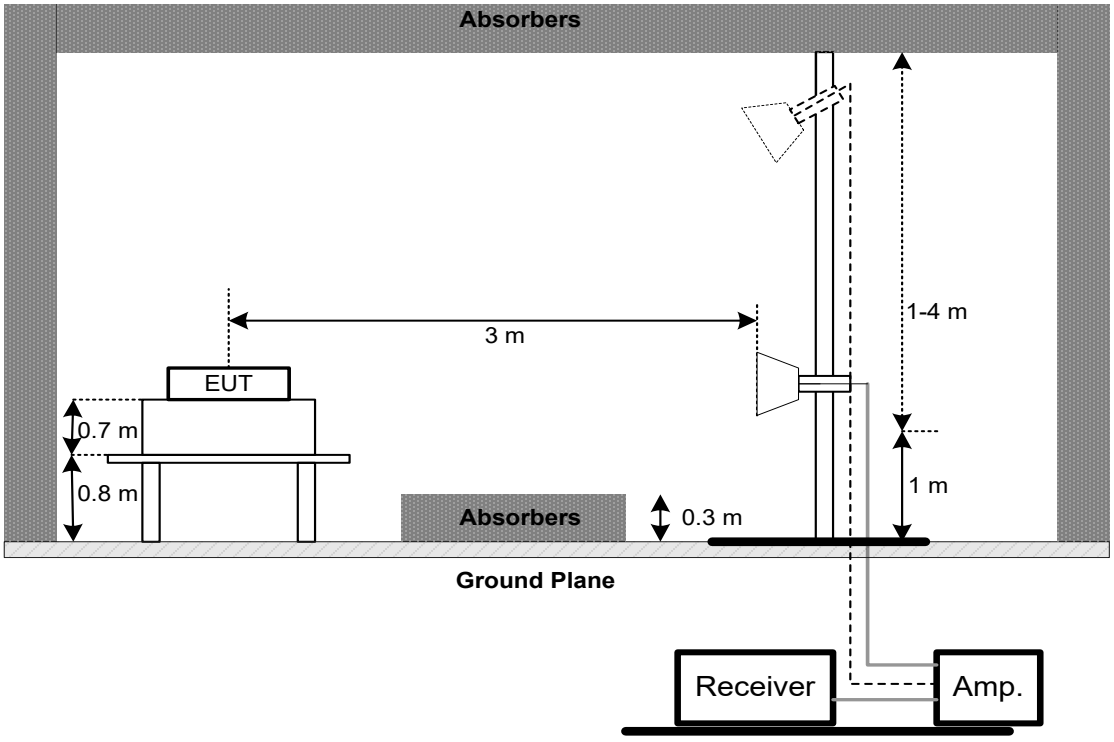
9 kHz to 30 MHz



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 – 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B.

4.7 TEST RESULT – 30 MHZ TO 1 GHZ

Please refer to the APPENDIX C.

4.8 TEST RESULT – ABOVE 1 GHZ

Please refer to the APPENDIX D.

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

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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 tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Please refer to the APPENDIX E.

6 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-BM-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	Loop Ant.	Electro-Metrics	EMCI-LPA600	274	2024/7/5	2025/7/4
2	EMC Receiver	Keysight	N9038A	MY54130009	2024/6/27	2025/6/26
3	Pre-Amplifler	EMCI	EMC001340	980555	2023/12/1	2024/11/30
4	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	01207	2023/12/18	2024/12/17
5	EMC Receiver	Keysight	N9038A	MY54130009	2024/6/27	2025/6/26
6	Pre-Amplifier	EMCI	EMC001330-20201222	980807	2023/12/11	2024/12/10
7	Test Cable	EMCI	EMC-8D-NM-NM-5000	150106	2023/12/11	2024/12/10
8	Test Cable	EMCI	EMC-CFD-400-NM-NM-8000	200348	2023/12/11	2024/12/10
9	Test Cable	EMCI	EMC-CFD-400-NM-NM-3300	200343	2023/12/11	2024/12/10
10	Broad-Band Horn Antenna	RFSPIN	DRH18-E	210109A18E	2024/1/10	2025/1/9
11	Pre-Amplifier	EMCI	EMC051845SE	980779	2023/12/11	2024/12/10
12	Test Cable	EMCI	EMC105-SM-SM-1000	210119	2023/12/11	2024/12/10
13	Test Cable	EMCI	EMC105-SM-SM-3000	210118	2023/12/11	2024/12/10
14	Test Cable	EMCI	EMC105-SM-SM-7000	210117	2023/12/11	2024/12/10
15	EXA Spectrum Analyzer	keysight	N9020B	MY59050137	2023/11/24	2024/11/23
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-ConducredTest	BTL	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.

7 EUT TEST PHOTO

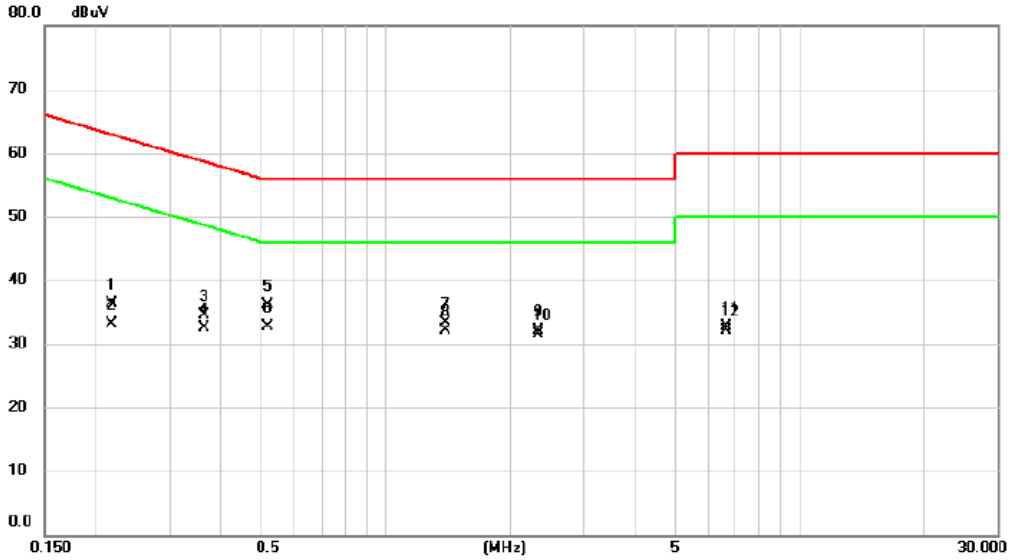
Please refer to document Appendix No.: TP-2303E003-1 (APPENDIX-EUT PHOTOS).

8 EUT PHOTOS

Please refer to document Appendix No.: EP-2303E003-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

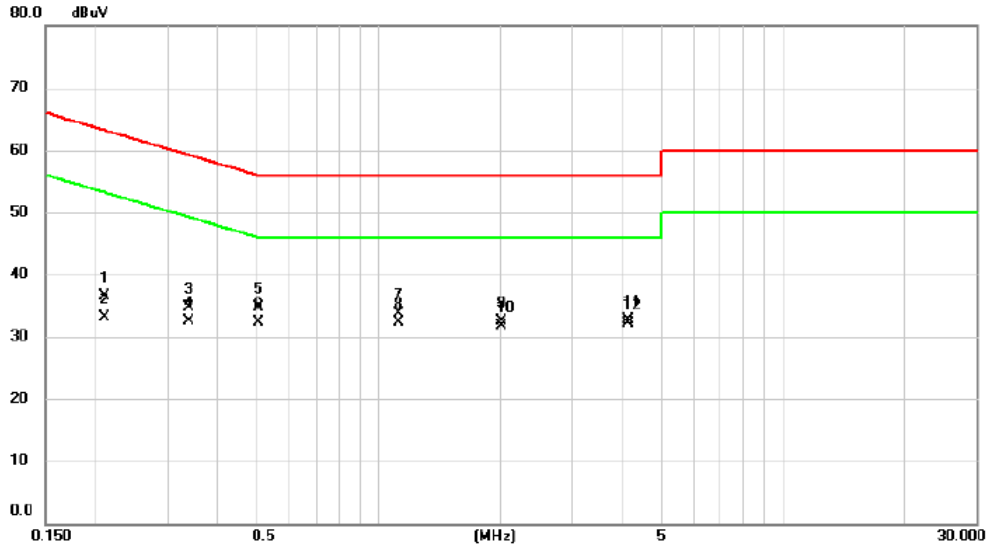
Test Mode	Normal	Tested Date	2024/11/7
Test Frequency	-	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2172	26.74	9.64	36.38	62.93	-26.55	QP	
2		0.2172	23.49	9.64	33.13	52.93	-19.80	AVG	
3		0.3650	24.78	9.65	34.43	58.61	-24.18	QP	
4		0.3650	22.84	9.65	32.49	48.61	-16.12	AVG	
5		0.5180	26.36	9.66	36.02	56.00	-19.98	QP	
6	*	0.5180	23.01	9.66	32.67	46.00	-13.33	AVG	
7		1.3955	23.58	9.73	33.31	56.00	-22.69	QP	
8		1.3955	22.47	9.73	32.20	46.00	-13.80	AVG	
9		2.3405	22.35	9.80	32.15	56.00	-23.85	QP	
10		2.3405	21.68	9.80	31.48	46.00	-14.52	AVG	
11		6.6250	22.67	9.94	32.61	60.00	-27.39	QP	
12		6.6250	22.07	9.94	32.01	50.00	-17.99	AVG	

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

Test Mode	Normal	Tested Date	2024/11/7
Test Frequency	-	Phase	Neutral

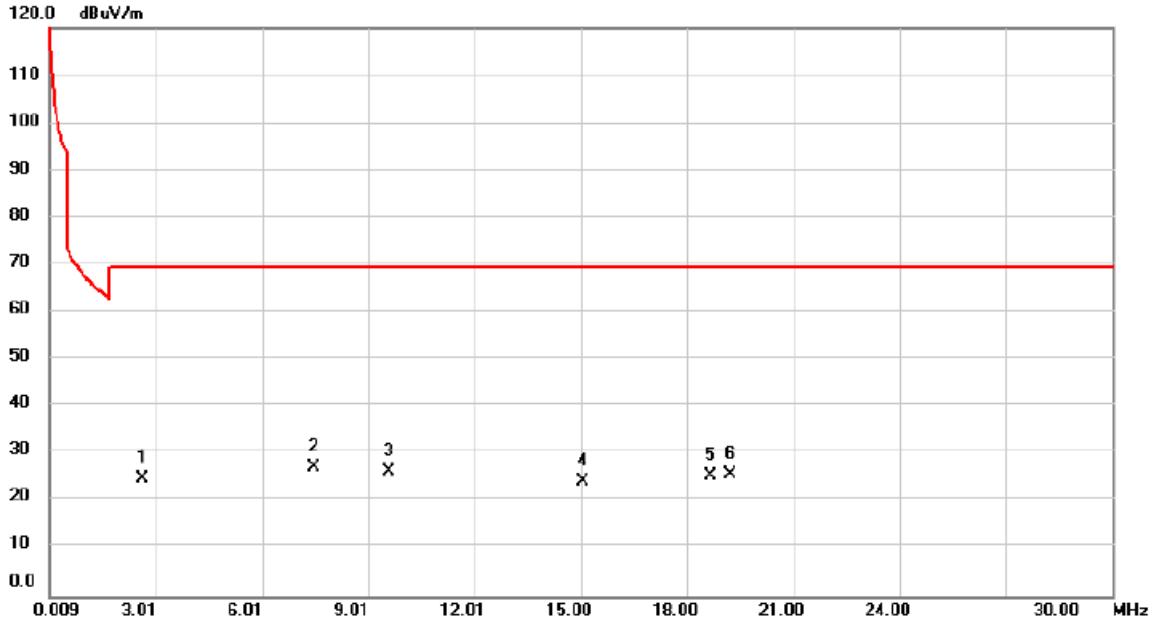


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2095	26.94	9.63	36.57	63.23	-26.66	QP	
2		0.2095	23.57	9.63	33.20	53.23	-20.03	AVG	
3		0.3380	25.00	9.63	34.63	59.25	-24.62	QP	
4		0.3380	22.87	9.63	32.50	49.25	-16.75	AVG	
5		0.5045	25.04	9.64	34.68	56.00	-21.32	QP	
6	*	0.5045	22.72	9.64	32.36	46.00	-13.64	AVG	
7		1.1165	24.04	9.70	33.74	56.00	-22.26	QP	
8		1.1165	22.65	9.70	32.35	46.00	-13.65	AVG	
9		2.0120	22.66	9.78	32.44	56.00	-23.56	QP	
10		2.0120	21.97	9.78	31.75	46.00	-14.25	AVG	
11		4.1225	22.79	9.86	32.65	56.00	-23.35	QP	
12		4.1225	22.15	9.86	32.01	46.00	-13.99	AVG	

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

APPENDIX B RADIATED EMISSIONS - 9 KHZ TO 30 MHZ

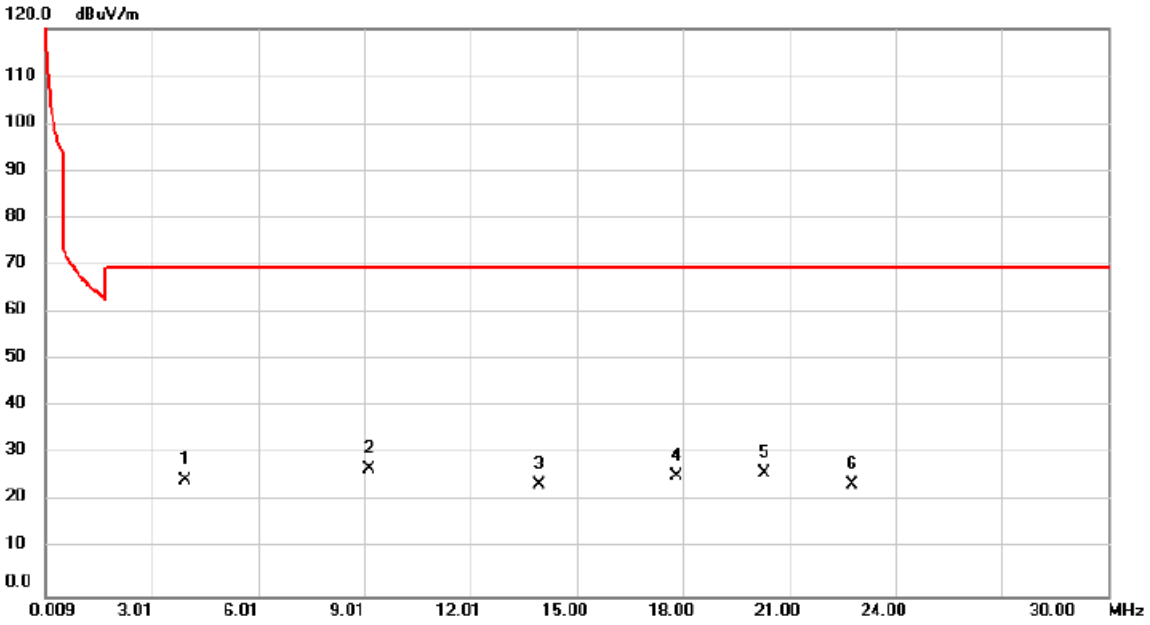
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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		2.6182	28.95	-4.25	24.70	69.54	-44.84	QP			
2	*	7.4767	31.11	-4.04	27.07	69.54	-42.47	QP			
3		9.5761	30.03	-3.86	26.17	69.54	-43.37	QP			
4		15.0644	28.73	-4.66	24.07	69.54	-45.47	QP			
5		18.6634	29.95	-4.65	25.30	69.54	-44.24	QP			
6		19.2332	30.51	-4.76	25.75	69.54	-43.79	QP			

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

Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Horizontal
Temp	25°C	Hum.	65%

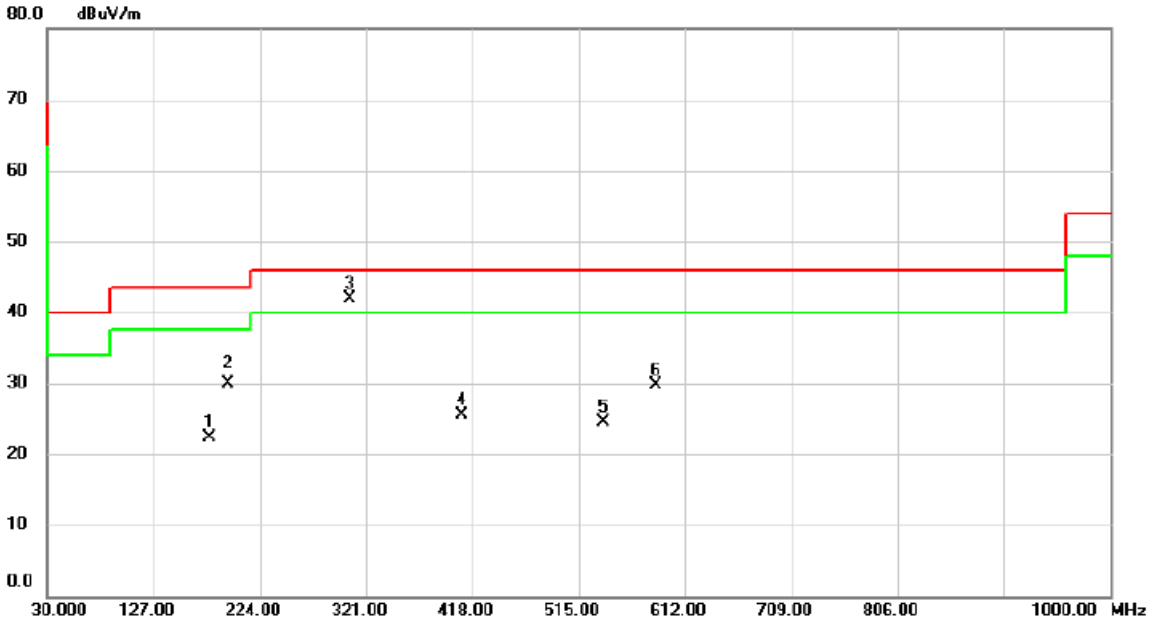


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		3.9678	29.63	-5.07	24.56	69.54	-44.98	QP			
2	*	9.1562	30.79	-3.90	26.89	69.54	-42.65	QP			
3		13.9548	28.12	-4.68	23.44	69.54	-46.10	QP			
4		17.8236	29.74	-4.50	25.24	69.54	-44.30	QP			
5		20.2830	31.06	-5.01	26.05	69.54	-43.49	QP			
6		22.7721	29.66	-6.14	23.52	69.54	-46.02	QP			

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

APPENDIX C RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

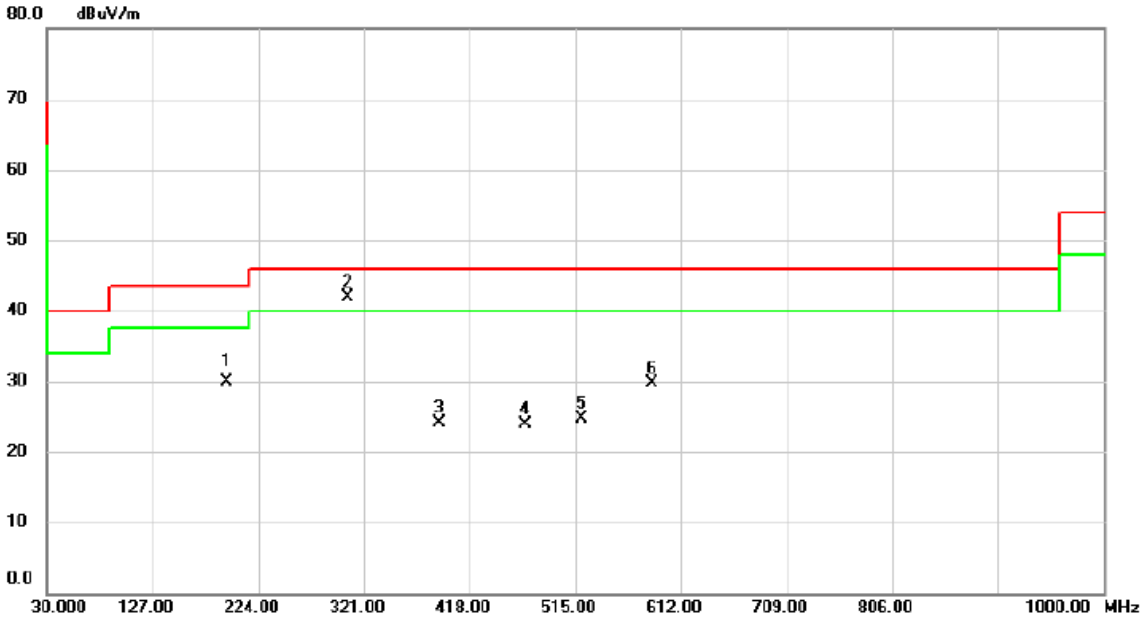
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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		177.4400	34.63	-12.42	22.21	43.50	-21.29	peak			
2		194.9000	43.85	-13.99	29.86	43.50	-13.64	QP			
3	*	306.4500	52.04	-10.07	41.97	46.00	-4.03	peak			
4		408.3000	32.64	-7.23	25.41	46.00	-20.59	peak			
5		537.3100	29.06	-4.48	24.58	46.00	-21.42	peak			
6		584.8400	32.76	-3.08	29.68	46.00	-16.32	peak			

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

Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Horizontal
Temp	25°C	Hum.	65%

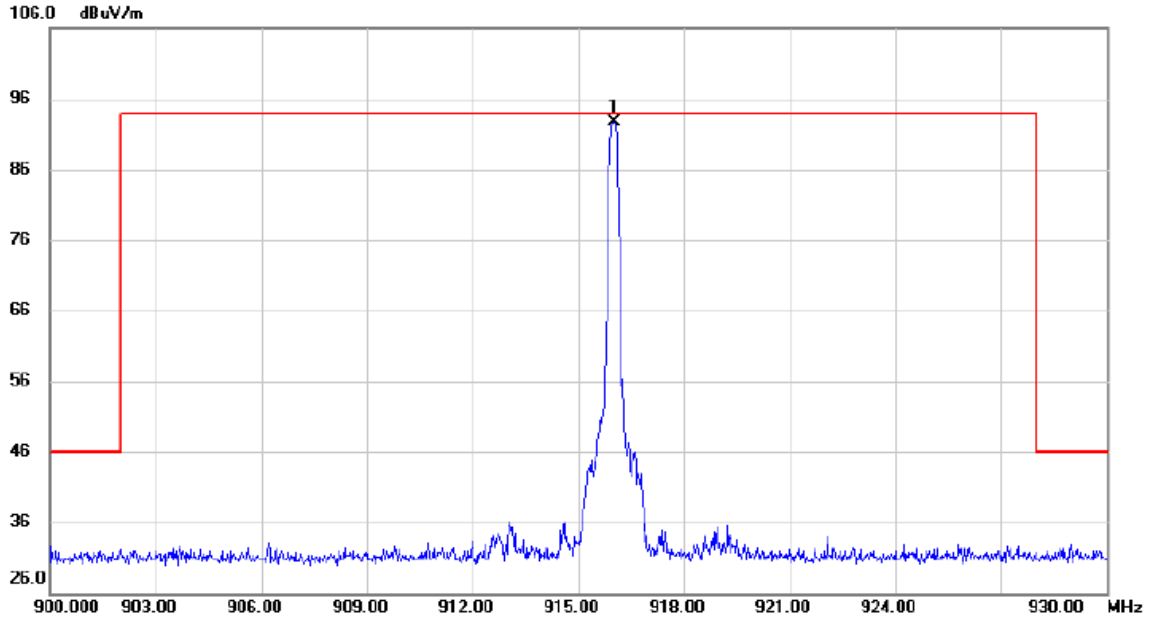


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		194.9000	43.96	-13.99	29.97	43.50	-13.53	QP			
2	*	306.4500	52.00	-10.07	41.93	46.00	-4.07	peak			
3		389.8700	31.80	-7.77	24.03	46.00	-21.97	peak			
4		469.4100	29.58	-5.70	23.88	46.00	-22.12	peak			
5		520.8200	29.48	-4.82	24.66	46.00	-21.34	peak			
6		584.8400	32.85	-3.08	29.77	46.00	-16.23	peak			

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

APPENDIX D RADIATED EMISSIONS - ABOVE 1 GHZ

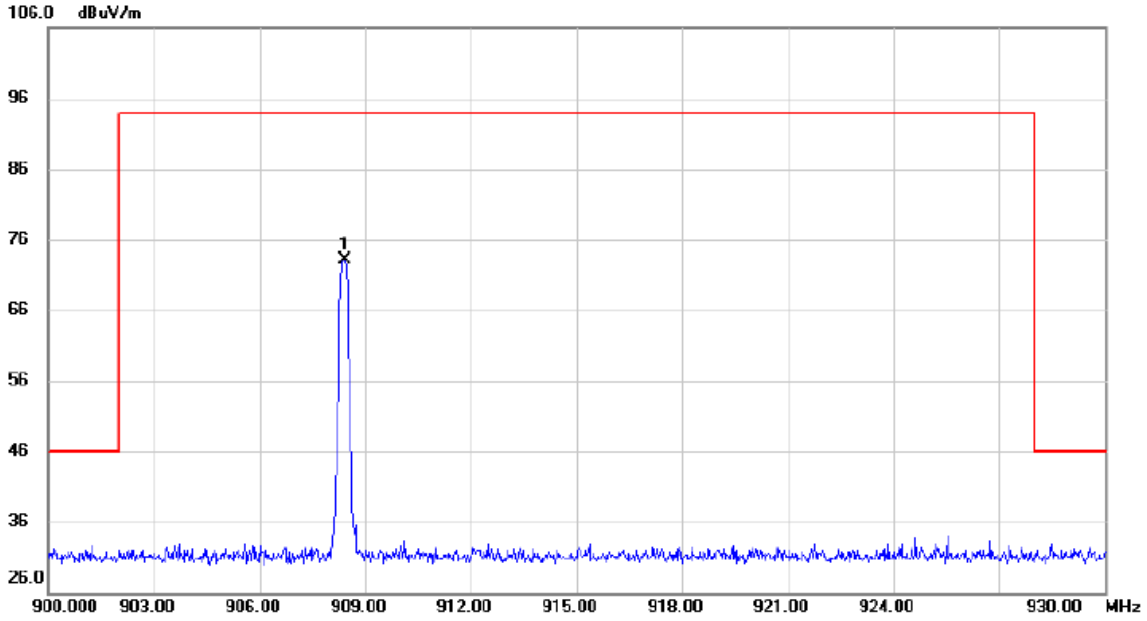
Test Mode	TX Mode	Test Date	2024/11/5
Test Frequency	916.00MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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	*	916.0200	90.87	1.91	92.78	94.00	-1.22	peak			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

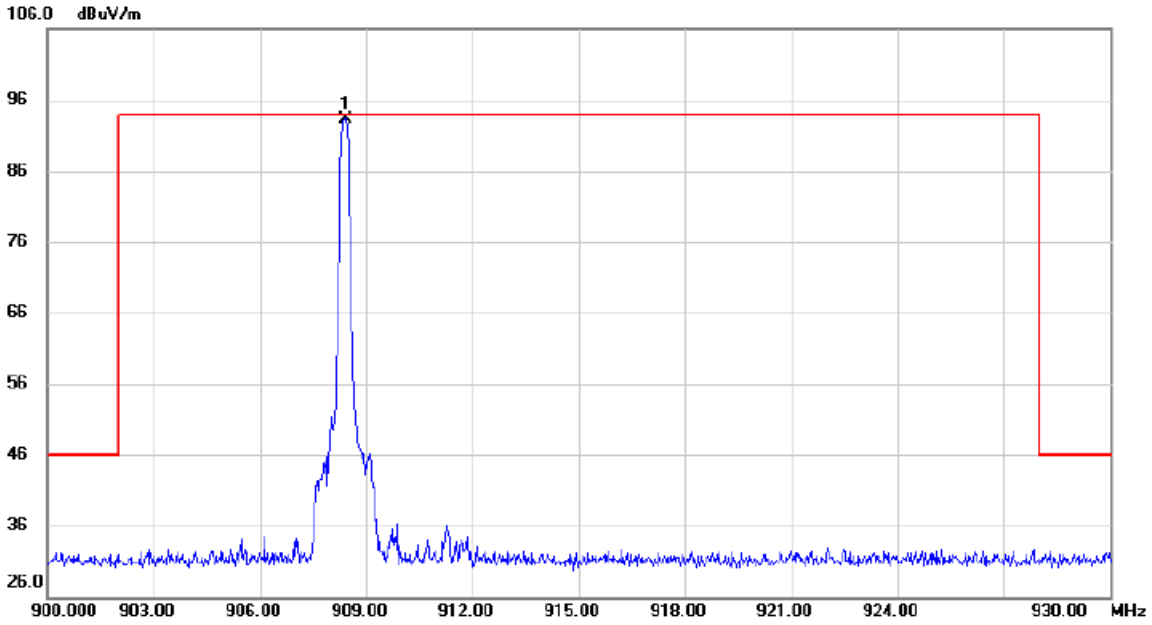
Test Mode	TX Mode	Test Date	2024/11/5
Test Frequency	908.40MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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	*	908.4300	71.33	1.84	73.17	94.00	-20.83	peak			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

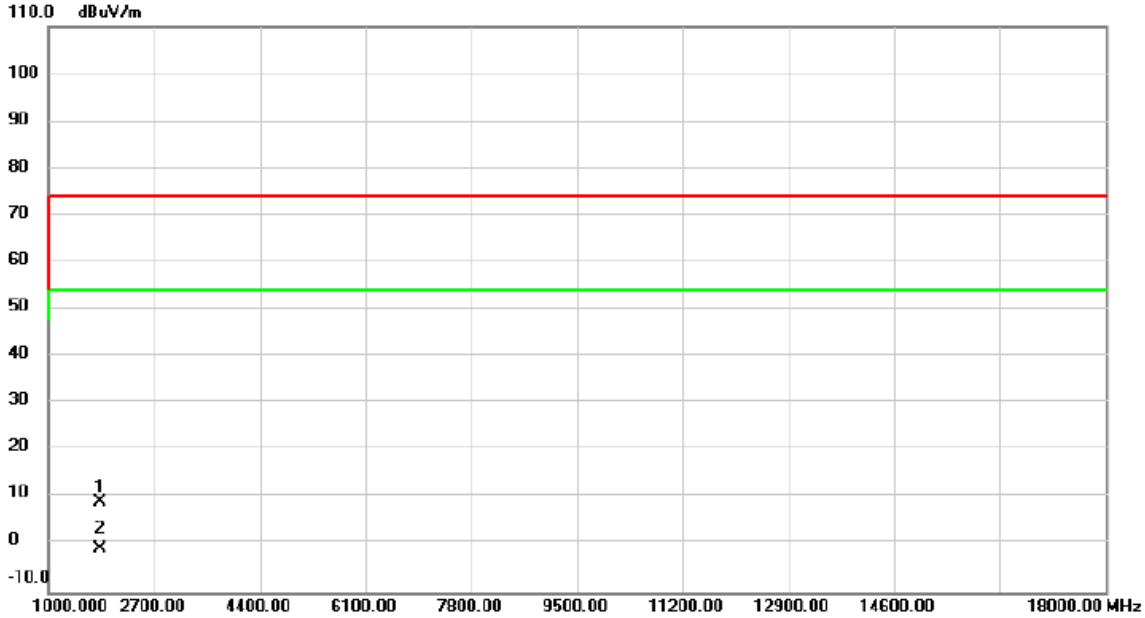
Test Mode	TX Mode	Test Date	2024/11/5
Test Frequency	908.42MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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	*	908.4300	91.56	1.84	93.40	94.00	-0.60	peak			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

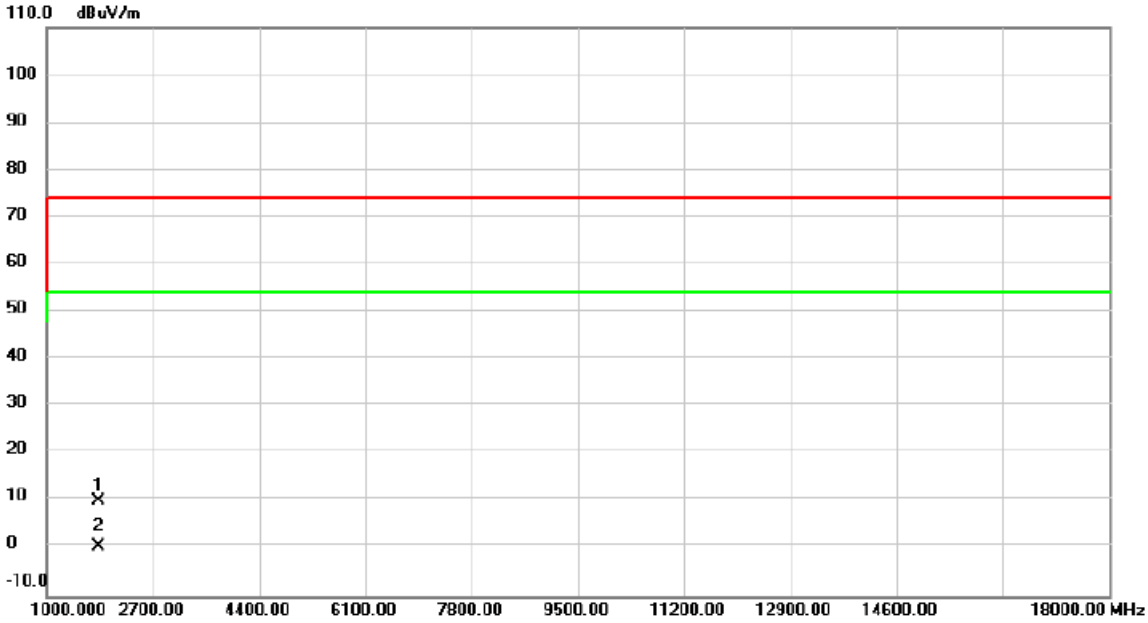
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	916.00MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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		1832.000	26.56	-17.52	9.04	74.00	-64.96	peak			
2	*	1832.000	16.78	-17.52	-0.74	54.00	-54.74	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

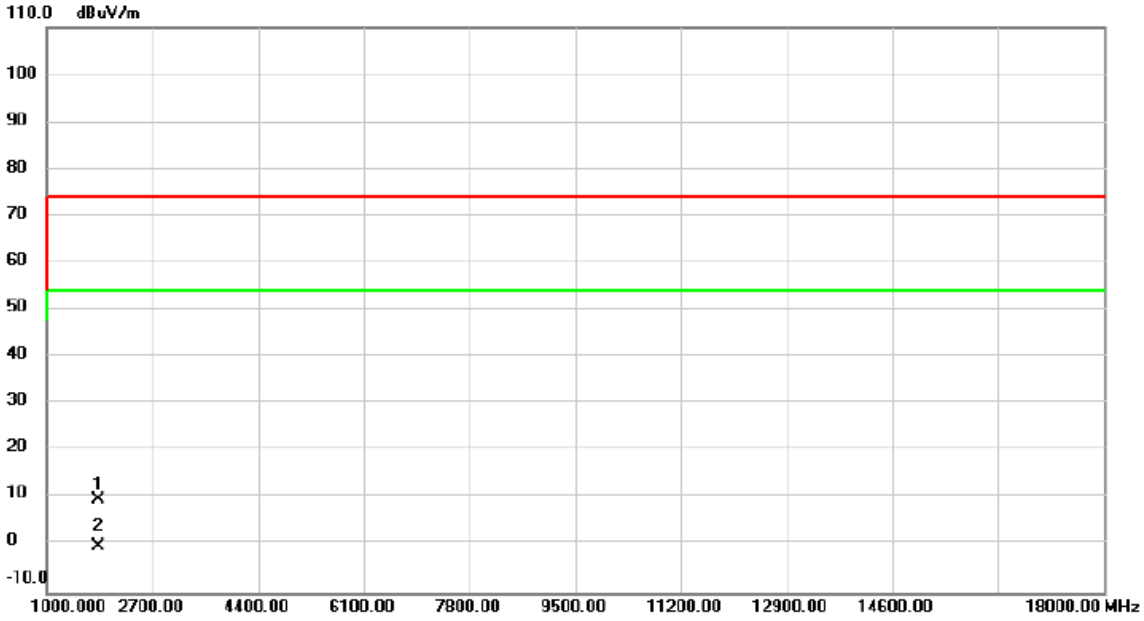
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	916.00MHz	Polarization	Horizontal
Temp	25°C	Hum.	65%



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		1832.000	27.46	-17.52	9.94	74.00	-64.06	peak			
2	*	1832.000	17.75	-17.52	0.23	54.00	-53.77	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

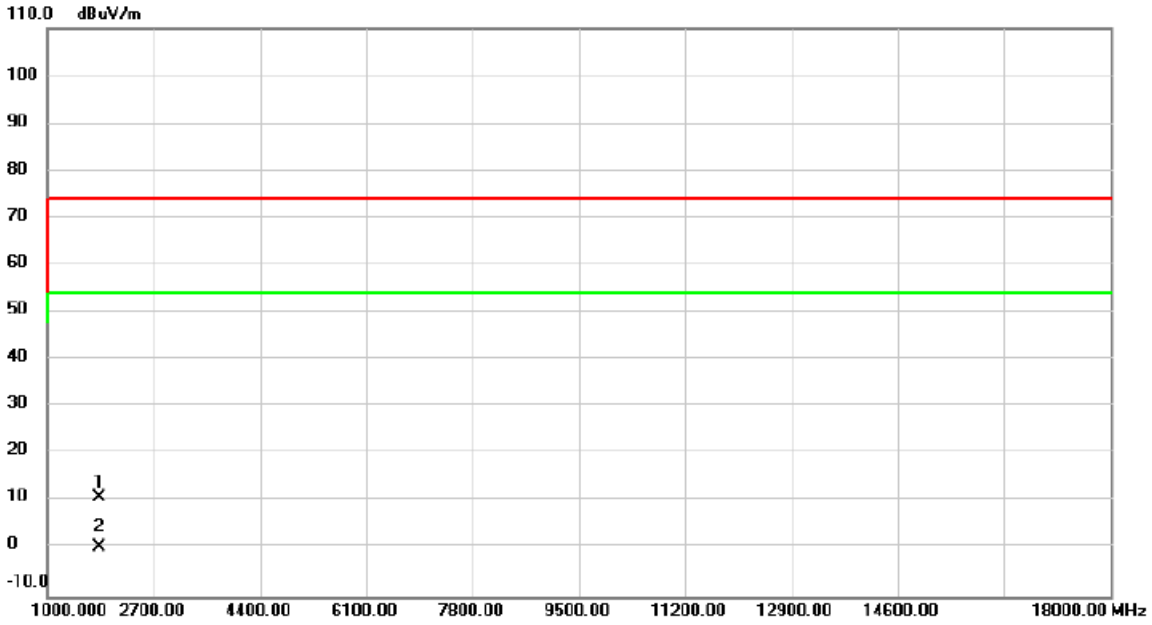
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.40MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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		1816.800	27.24	-17.58	9.66	74.00	-64.34	peak			
2	*	1816.800	17.39	-17.58	-0.19	54.00	-54.19	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

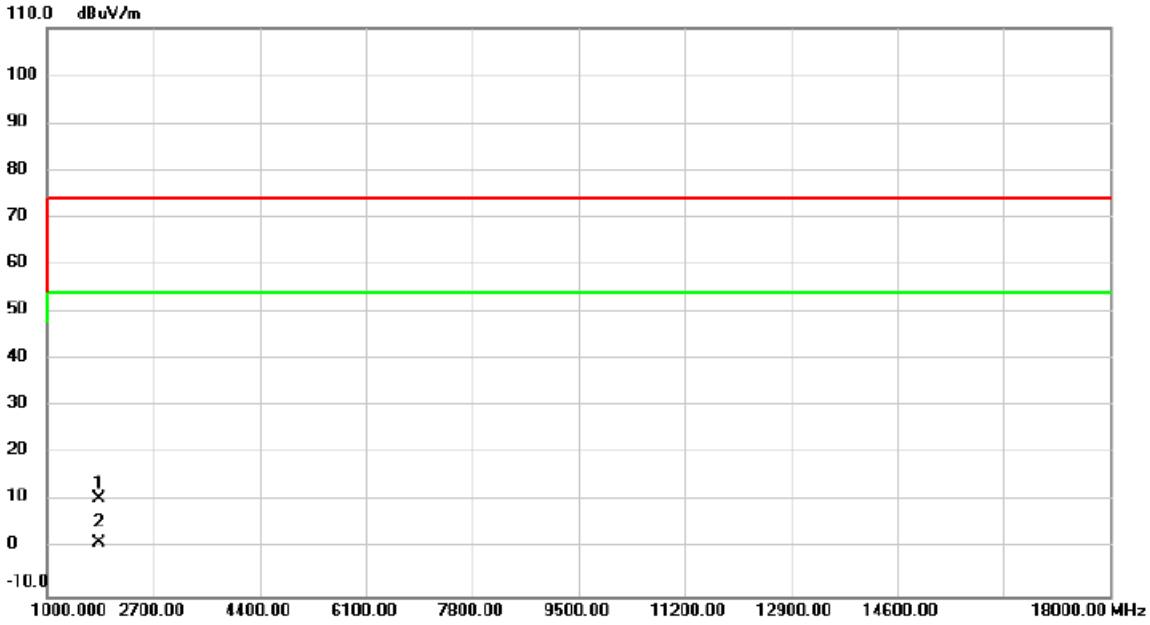
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.40MHz	Polarization	Horizontal
Temp	25°C	Hum.	65%



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		1816.800	28.33	-17.58	10.75	74.00	-63.25	peak			
2	*	1816.800	18.03	-17.58	0.45	54.00	-53.55	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

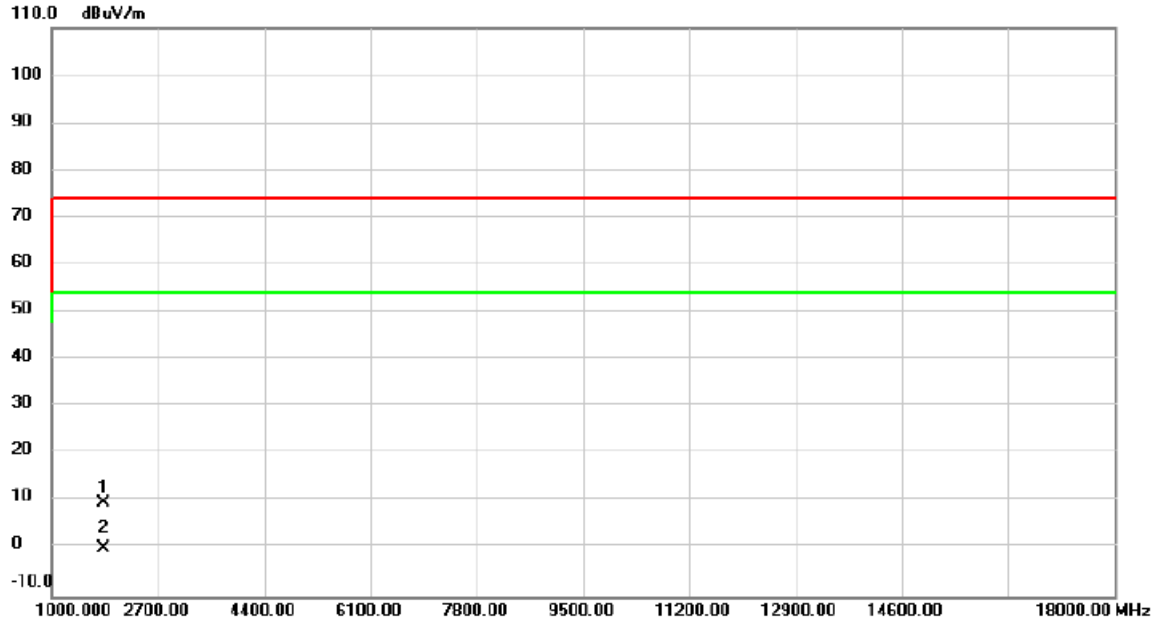
Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Vertical
Temp	25°C	Hum.	65%



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		1816.840	28.02	-17.58	10.44	74.00	-63.56	peak			
2	*	1816.840	18.95	-17.58	1.37	54.00	-52.63	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

Test Mode	TX Mode	Test Date	2024/11/1
Test Frequency	908.42MHz	Polarization	Horizontal
Temp	25°C	Hum.	65%



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		1816.840	27.33	-17.58	9.75	74.00	-64.25	peak			
2	*	1816.840	17.74	-17.58	0.16	54.00	-53.84	AVG			

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3) Average Correct Factor = 20Log(duty cycle) = 0

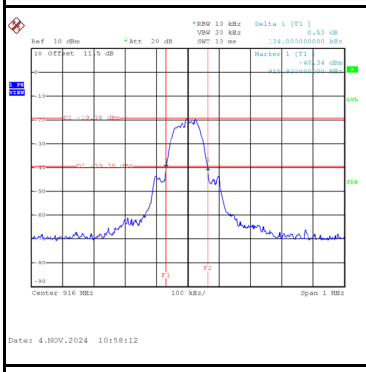
APPENDIX E BANDWIDTH

Test Mode:	TX Mode

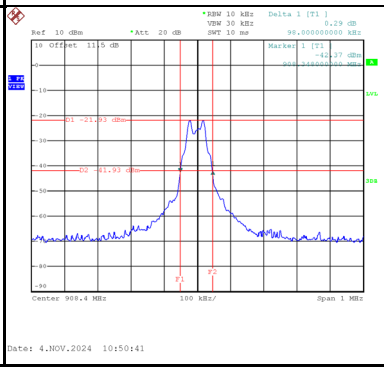
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
916.00	0.134	0.118	500	Pass
908.40	0.098	0.088	500	Pass
908.42	0.080	0.070	500	Pass

20dB Bandwidth

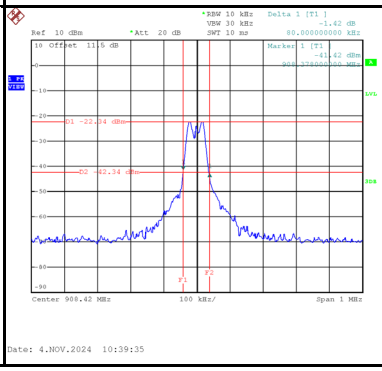
916.00 MHz



908.40 MHz

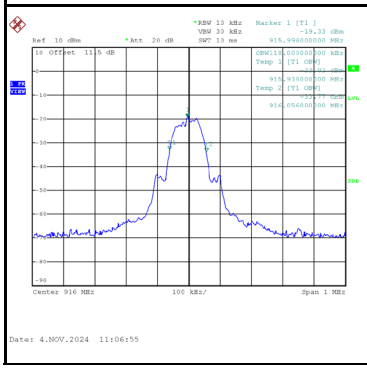


908.42 MHz

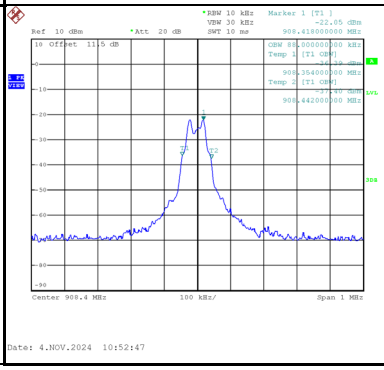


99% Occupied BW

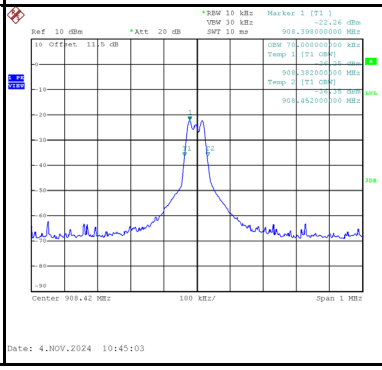
916.00 MHz



908.40 MHz



908.42 MHz



End of Test Report