FCC Radio Test Report

FCC ID: 2A6AAXMP2357

Report No.	:	BTL-FCCP-1-2312T040
Equipment	:	Access Control Card Reader
Model Name	:	XMP-TMC2357, XMP-TMC2357-xxx-xx-xx, XMP-TMC2367-xxx-xx-xx (x=0~9 or x=A~Z)
Brand Name	:	AUTEC Gesellschaft für Automationstechnik mbH
Applicant	:	Autec Gesellschaft fuer Automationstechnik mbH
Address	:	Bahnhofstr. 57-61b, 55234 Framersheim (Germany)
Radio Function	:	RFID (13.558 MHz)
FCC Rule Part(s)	:	FCC CFR Title 47, Part 15, Subpart C (15.225)
Measurement Procedure(s)	:	ANSI C63.10-2013
Date of Receipt	:	2023/12/29
Date of Test	:	2024/7/4 ~ 2024/7/11
Issued Date	:	2024/12/11

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

Prepared by : Eddie Lee, Engineer

Approved by : Jerry Chuang, Supervisor

ilac-MRA TAF Testing Laboratory 0659

BTL Inc.

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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-1-2312T040	R00	Original Report.	2024/9/27	Invalid
BTL-FCCP-1-2312T040	R01	Revised report to address TCB's comments.	2024/9/27	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	------	N/A	NOTE (3)
15.35 15.205 15.209 15.225	Radiated Emissions	APPENDIX A APPENDIX B APPENDIX C	Pass	------
15.225(e)	Frequency Stability	APPENDIX D	Pass	------
15.203	Antenna Requirement	------	Pass	------
15.215(c)	20 dB Bandwidth	APPENDIX E	Pass	------

Statement of Conformity
The statement of conformity is based on the binary decision rule according to IEC Guide 115 and ILAC G8 "simple acceptance" principle. Without considering measurement uncertainty, its specific risk is less than 50% PFA. (PFA: Probability of False Accept)

NOTE:
(1) ”N/A” denotes test is not applicable in this Test Report.
(2) The report format version is TP.1.1.1.
(3) This is a DC input device.

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)
☐ C05 ☐ CB08 ☐ CB11 ☐ SR10 ☒ SR11
No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ C06 ☒ CB21 ☐ CB22

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. Radiated emissions test :

Test Site	Method	Measurement Frequency Range	U (dB)
CB21	CISPR	9 kHz ~ 150 kHz	2.82
		150 kHz ~ 30 MHz	2.58

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

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
Radiated emissions (9KHz-30MHz)	Refer to data	DC 24V	Sean Huang
Radiated emissions (30MHz TO 1000MHz)	Refer to data	DC 24V	Sean Huang
Frequency Stability	25.5 °C, 55 %	DC 24V	Tim Lian
20 dB Bandwidth	25.5 °C, 55 %	DC 24V	Tim Lian

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Access Control Card Reader
Model Name	XMP-TMC2357, XMP-TMC2357-xxx-xx-xx, XMP-TMC2367-xxx-xx-xx (x=0~9 or x=A~Z)
Brand Name	AUTEC Gesellschaft für Automationstechnik mbH
Model Difference	Different models distribute to different area.
Power Source	DC Voltage supplied from DC power supply or Battery supplied.
Power Rating	DC 12/24V
Products Covered	N/A
Operation Frequency	13.558 MHz
Max H-field strength	91.80 dBuV/m@1m(Peak)
Test Model	XMP-TMC2357
Sample Status	Engineering Sample
EUT Modification(s)	N/A

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)
01	13.558

(3) Table for Filed Antenna:

Antenna	Brand Name	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	loop antenna	N/A	0

(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.

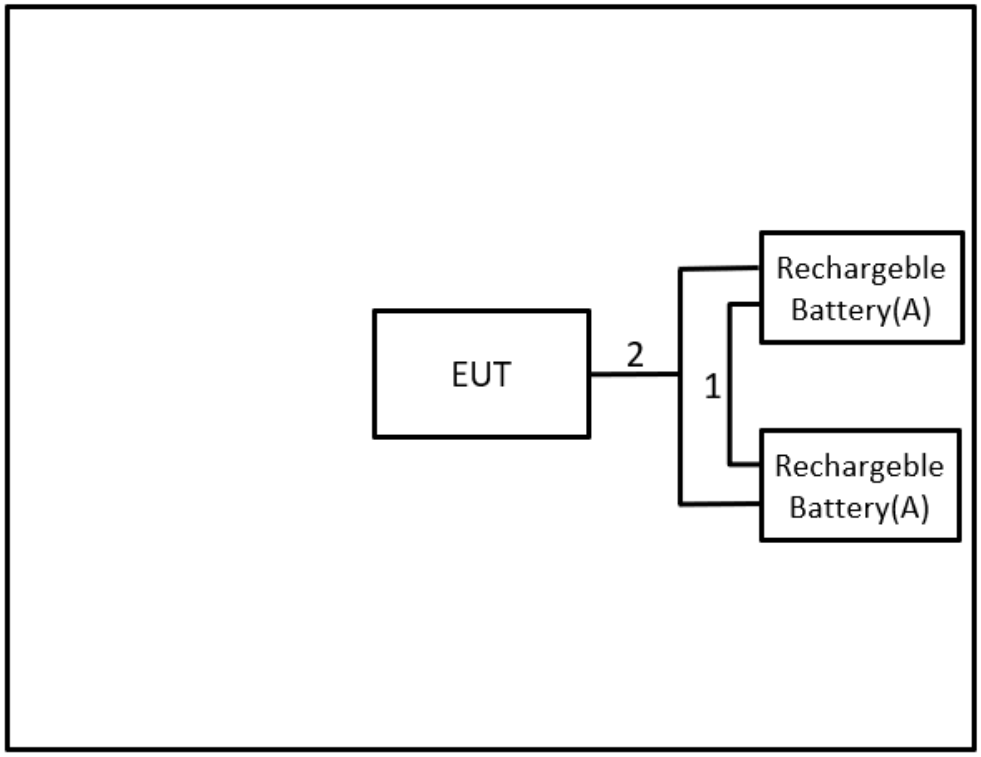
2.2 TEST MODES

Test Items	Test mode	Channel	Note
Radiated emissions (9KHz-30MHz)	TX	01	-
Radiated emissions (30MHz TO 1000MHz)	TX	01	
Frequency Stability	TX	01	-
20 dB Bandwidth	TX	01	-

NOTE:
(1) There were no emissions found within 20dB of the limit.

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.	Series No.	Remarks
A	Rechargeable Battery	Zebra-CSP	ZB9-12	N/A	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1.6m	Alligator Clip Jumper Wires	Furnished by test lab.
2	N/A	N/A	1.1m	Alligator Clip Jumper Wires	Furnished by test lab.

3 RADIATED EMISSIONS TEST

3.1 LIMIT

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500
FCC Part 15.225(a)/(b)/(c)				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
13.553 – 13.567	15,848	30 m	15,848*100	124
13.567 – 13.710	334	30 m	334*100	90.5
13.110 – 13.410 13.710 – 14.010	106	30 m	106*100	80.5

NOTE:

(1) The tighter limit shall apply at the boundary between two frequency range.

(2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).

(3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d_2/d_1)^2$.
Example:
F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as $L_{d1} = L_1 = 30uV/m * (10)^2 = 100 * 30$ uV/m

(4) 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

3.2 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. (9 KHz to 30 MHz).
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. (30 MHz to 1GHz).
c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m, 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. 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.
e. 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.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE: (FCC PART 15.209)

a. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.
b. 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.

NOTE: (FCC PART 15.225)

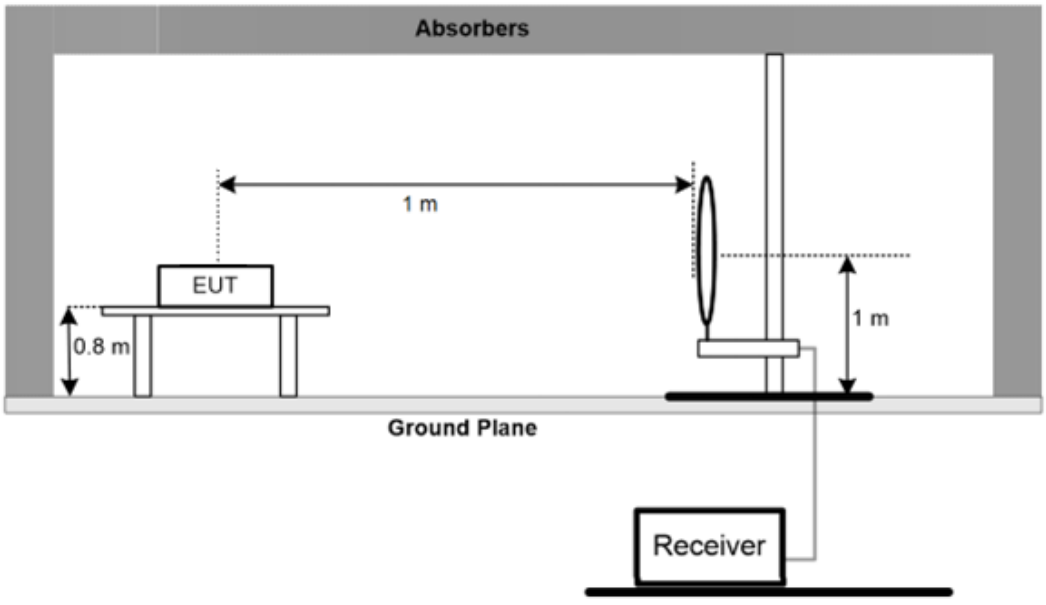
a. Spectrum Setting:
9 KHz – 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.
150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.
30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform.
c. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

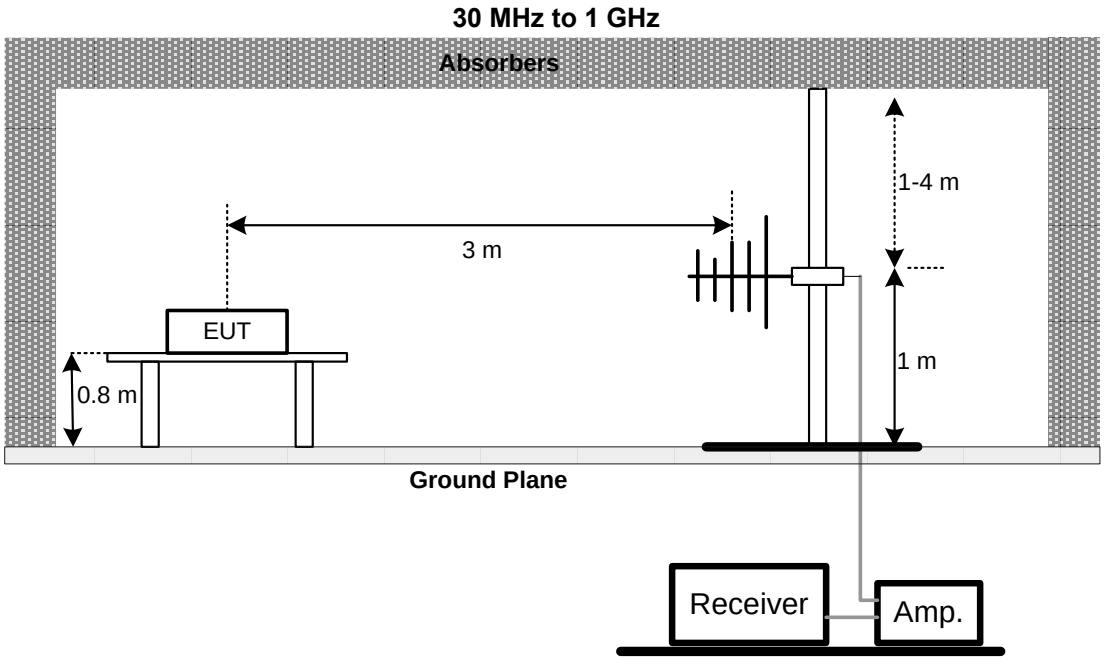
3.3 DEVIATION FROM TEST STANDARD

No deviation.

3.4 TEST SETUP

9 KHz to 30 MHz





3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULT – 9 kHZ TO 30 MHZ– FCC PART 15.209

Please refer to the APPENDIX A

3.7 TEST RESULT – 30 MHZ TO 1 GHZ – FCC PART 15.209

Please refer to the APPENDIX B.

3.8 TEST RESULT – FCC PART 15.225

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.

4 FREQUENCY STABILITY

4.1 LIMIT

FCC Part 15.225(e)
The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of - 20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.2 TEST PROCEDURE

a. The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.
b. At room temperature (25±5°C), an external variable AC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.5 TEST RESULT

Please refer to the APPENDIX D.

5 20 DB BANDWIDTH

5.1 LIMIT

FCC Part 15.215(c)
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.

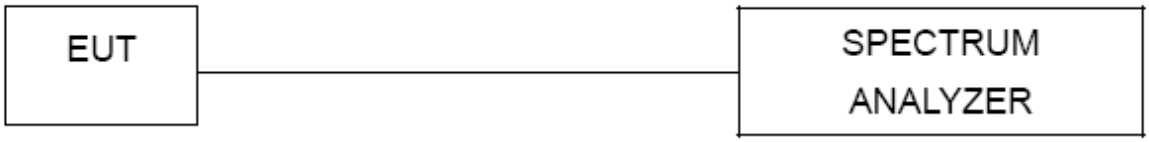
5.2 TEST PROCEDURE

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= 1 kHz, VBW=1 kHz, Sweep time = 20 ms.

5.3 DEVIATION FROM TEST STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULT

Please refer to the APPENDIX E.

6 LIST OF MEASURING EQUIPMENTS

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	EMC001340	980579	2023/9/6	2024/9/5
3	Test Cable	EMCI	EMC104-SM-1000	180809	2024/3/8	2025/3/7
4	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2024/3/8	2025/3/7
5	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2024/3/8	2025/3/7
6	EXA Signal Analyzer	keysight	N9020B	MY57120120	2024/2/23	2025/2/22
7	Loop Ant	Electro-Metrics	EMCI-LPA600	291	2023/9/12	2024/9/11
8	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2024/6/14	2025/6/13
9	6dB Attenuator	EMCI	EMCI-N-6-06	AT-06001	2024/6/14	2025/6/13
10	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Frequency Stability Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 40	101139	2024/3/8	2025/3/7
2	Thermal Chamber	HOLINK	H-TH-2SP-B	EK04101902	2024/6/28	2025/6/27

20 dB Bandwidth Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 40	101139	2024/3/8	2025/3/7

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

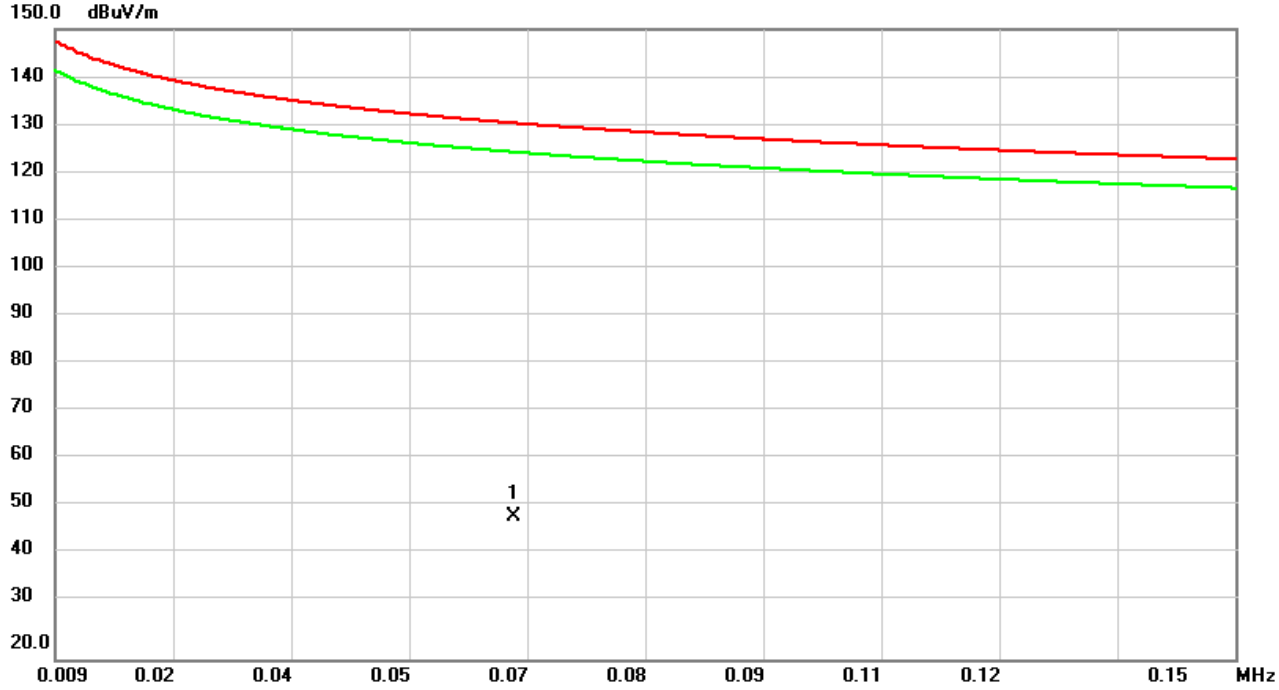
Please refer to document Appendix No.: TP-2312T040-FCCP-1 (APPENDIX-TEST PHOTOS).

8 EUT PHOTOS

Please refer to document Appendix No.: EP-2312T040-1 (APPENDIX-EUT PHOTOS).

APPENDIX A RADIATED EMISSIONS - 9 KHZ TO 30 MHZ

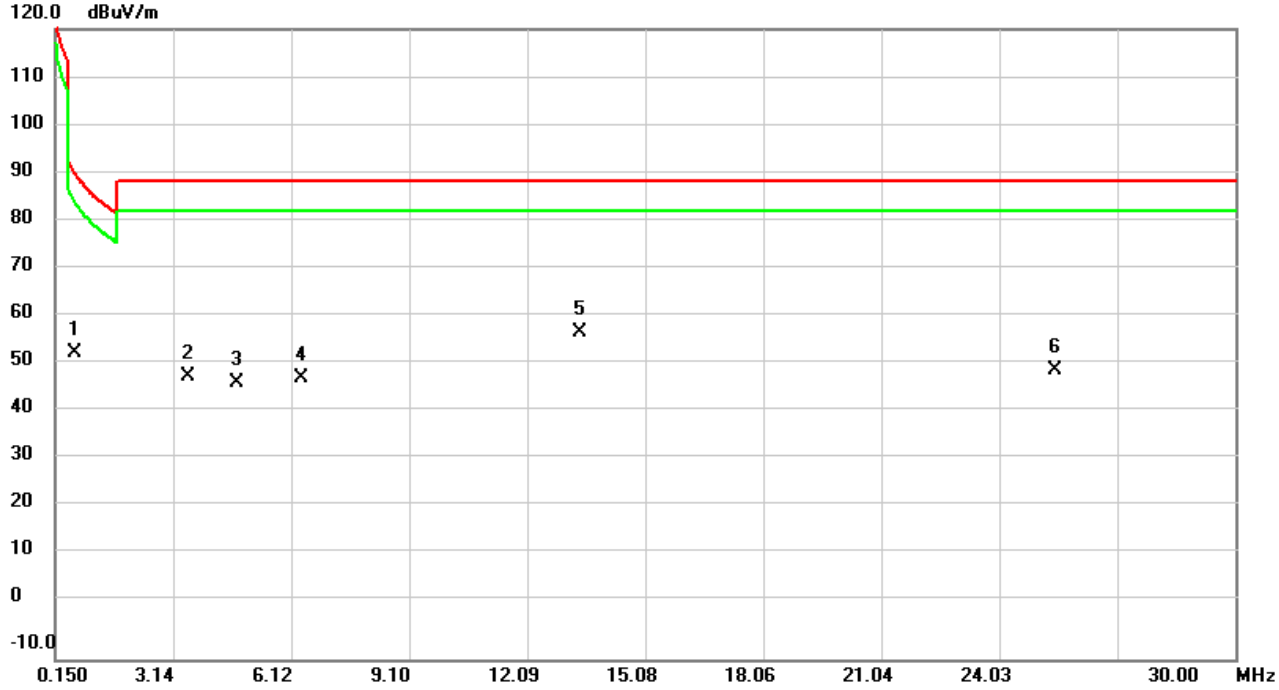
Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Vertical
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0638	27.79	21.51	49.30	130.59	-81.29	AVG	

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

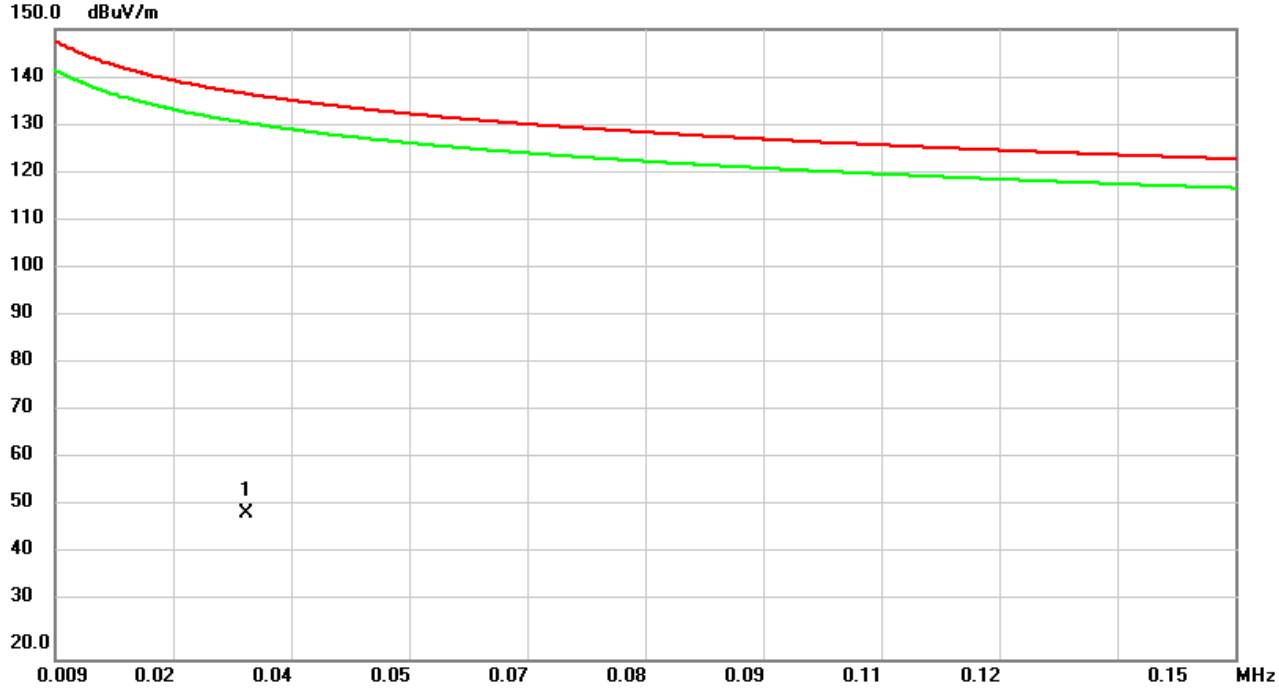
Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Vertical
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.6544	49.39	3.90	53.29	90.36	-37.07	QP	
2		3.4971	52.35	-3.90	48.45	88.62	-40.17	QP	
3		4.7667	51.36	-4.33	47.03	88.62	-41.59	QP	
4		6.3637	52.07	-4.07	48.00	88.62	-40.62	QP	
5	*	13.4242	60.97	-3.49	57.48	88.62	-31.14	QP	
6		25.4310	51.26	-1.52	49.74	88.62	-38.88	QP	

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

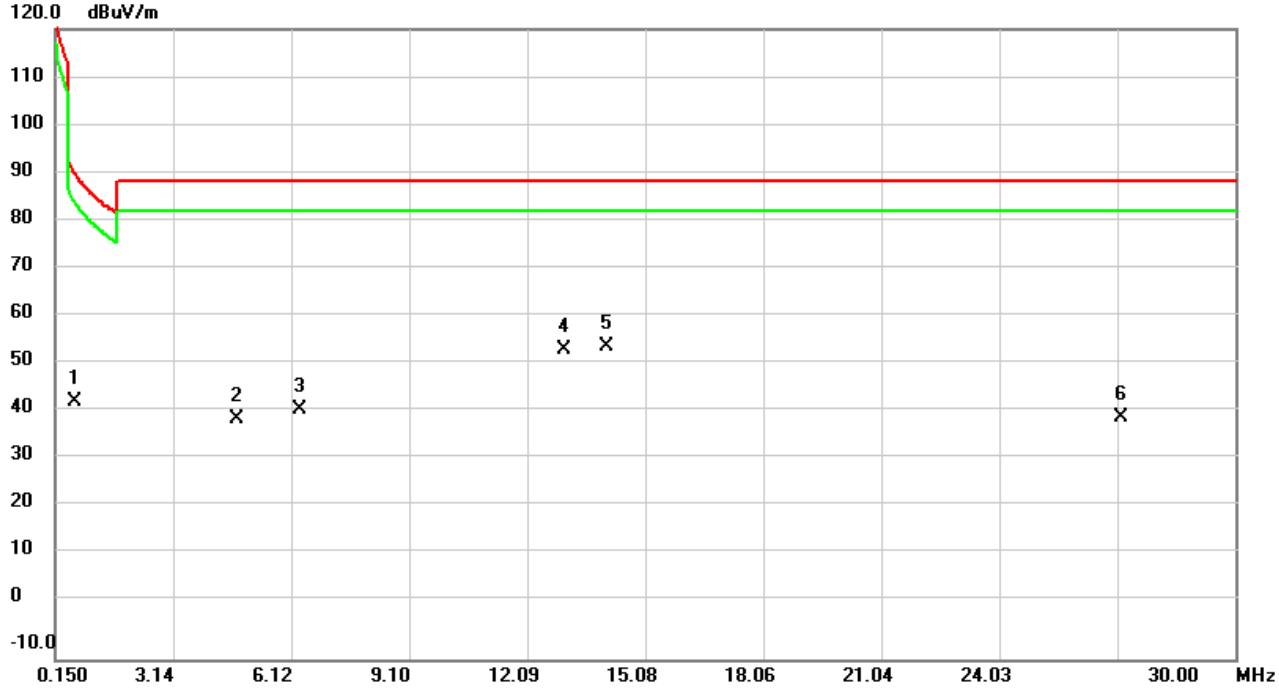
Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Horizontal
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0318	22.25	27.84	50.09	136.64	-86.55	AVG	

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

Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Horizontal
Temp	21°C	Hum.	60%

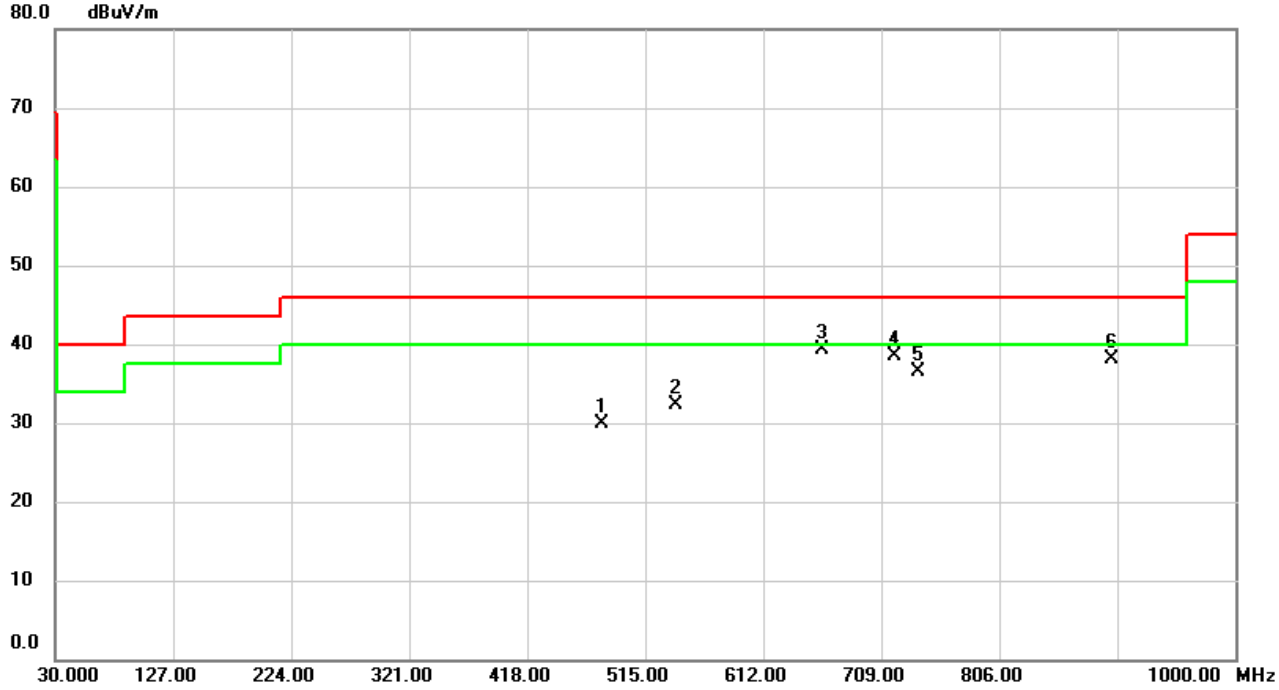


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.6592	39.31	3.86	43.17	90.30	-47.13	QP	
2		4.7310	43.79	-4.32	39.47	88.62	-49.15	QP	
3		6.3428	45.64	-4.07	41.57	88.62	-47.05	QP	
4		13.0401	57.18	-3.44	53.74	88.62	-34.88	QP	
5	*	14.0930	57.97	-3.55	54.42	88.62	-34.20	QP	
6		27.1162	40.68	-0.71	39.97	88.62	-48.65	QP	

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

APPENDIX B RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

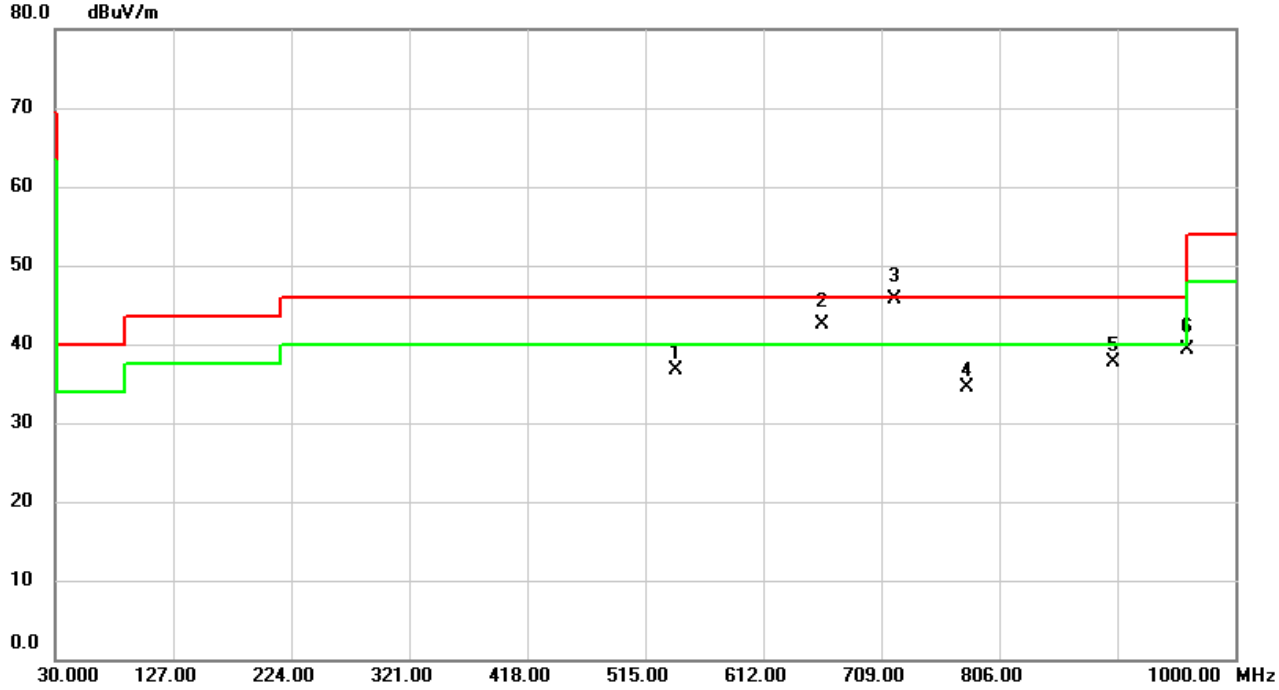
Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Vertical
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		480.0153	36.92	-6.96	29.96	46.00	-16.04	peak	
2		539.9937	38.32	-5.94	32.38	46.00	-13.62	peak	
3	*	659.9827	42.69	-3.39	39.30	46.00	-6.70	peak	
4		719.9610	40.96	-2.41	38.55	46.00	-7.45	peak	
5		739.0377	38.43	-1.99	36.44	46.00	-9.56	peak	
6		897.8267	38.34	-0.15	38.19	46.00	-7.81	peak	

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

Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Horizontal
Temp	21°C	Hum.	60%

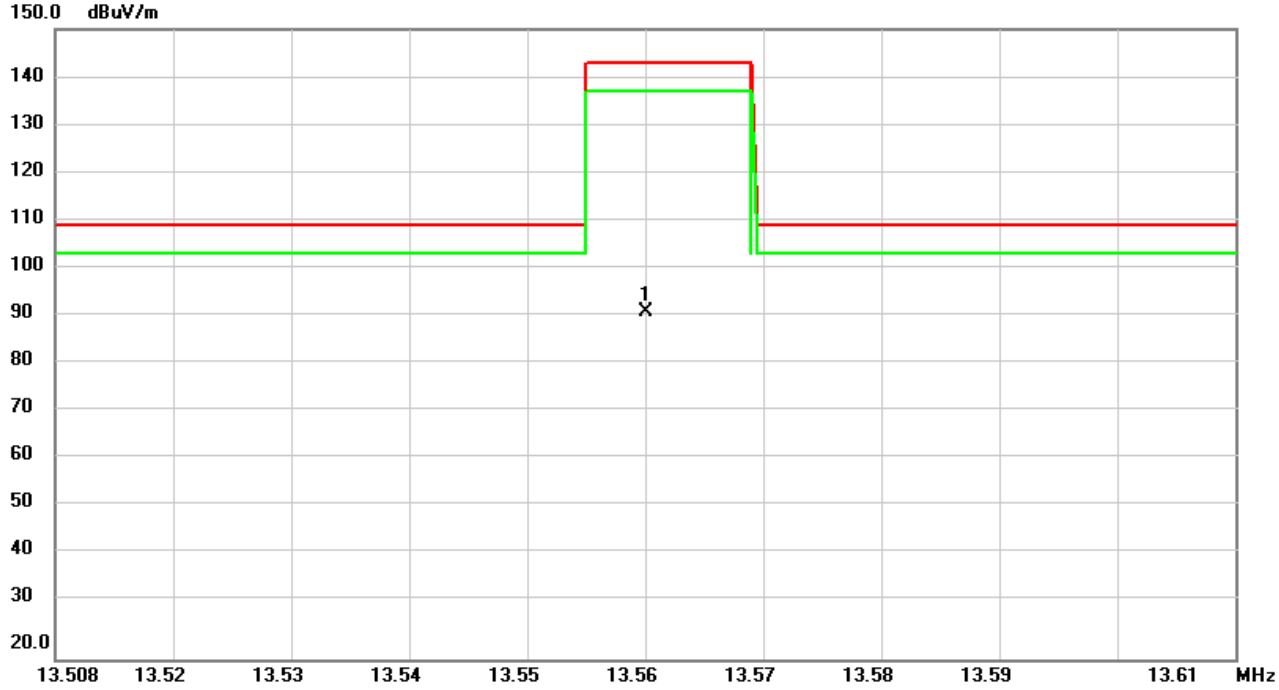


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		539.9936	42.66	-5.94	36.72	46.00	-9.28	peak	
2	!	659.9825	45.83	-3.39	42.44	46.00	-3.56	QP	
3	*	719.9933	48.19	-2.41	45.78	46.00	-0.22	QP	
4		780.0040	35.97	-1.47	34.50	46.00	-11.50	peak	
5		899.9606	37.82	-0.13	37.69	46.00	-8.31	peak	
6		959.9713	38.61	0.72	39.33	46.00	-6.67	QP	

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

APPENDIX C RADIATED EMISSIONS - FCC PART 15.225

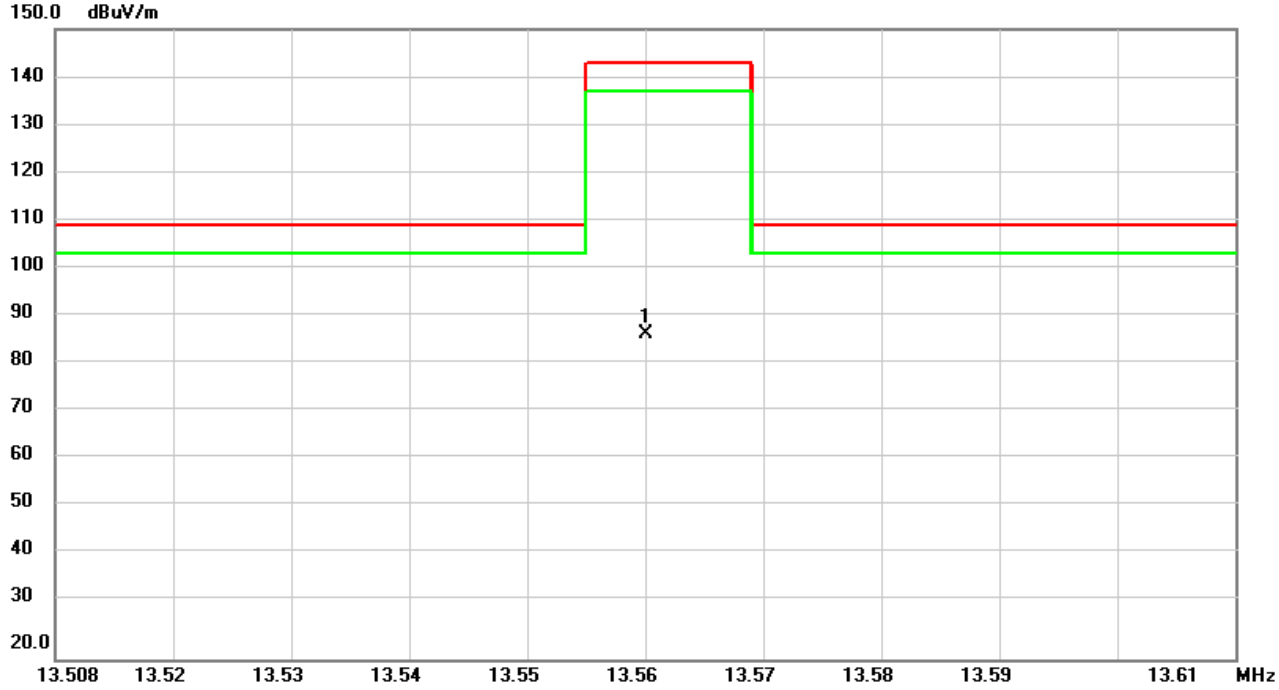
Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Horizontal
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5580	95.30	-3.50	91.80	143.07	-51.27	peak	

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

Test Mode	TX	Test Date	2024/7/11
Test Frequency	13.558MHz	Polarization	Vertical
Temp	21°C	Hum.	60%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5580	90.73	-3.50	87.23	143.07	-55.84	peak	

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

APPENDIX D FREQUENCY STABILITY MEASUREMENT

Test Mode	TX	Tested Date	2024/7/4

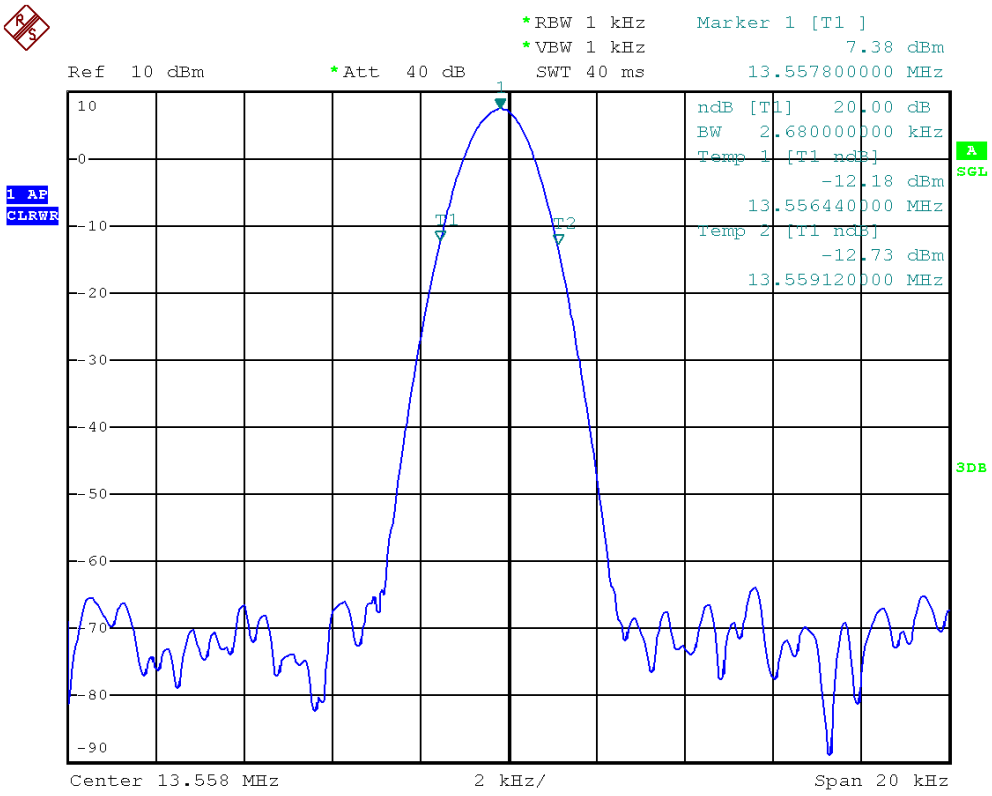
Condition			Frequency Error (ppm)									
Temperature	Modulation Mode	Test Freq.	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	Limit (ppm)	Result
			Normal									
$T_{20°C}$Vmax	CW	13.558	13.557800	13.557800	13.557800	13.557800	-14.75	-14.75	-14.75	-14.75	100	Pass
$T_{20°C}$Vmin	CW	13.558	13.557800	13.557800	13.557800	13.557800	-14.75	-14.75	-14.75	-14.75		Pass
			Extreme									
$T7_{0°C}$Vnom	CW	13.558	13.557720	13.557720	13.557720	13.557720	-20.65	-20.65	-20.65	-20.65	100	Pass
$T6_{0°C}$Vnom	CW	13.558	13.557760	13.557760	13.557760	13.557760	-17.70	-17.70	-17.70	-17.70		Pass
$T_{50°C}$Vnom	CW	13.558	13.557760	13.557760	13.557760	13.557760	-17.70	-17.70	-17.70	-17.70		Pass
$T_{40°C}$Vnom	CW	13.558	13.557800	13.557800	13.557800	13.557800	-14.75	-14.75	-14.75	-14.75		Pass
$T_{30°C}$Vnom	CW	13.558	13.557840	13.557840	13.557840	13.557840	-11.80	-11.80	-11.80	-11.80		Pass
$T_{20°C}$Vnom	CW	13.558	13.557800	13.557800	13.557800	13.557800	-14.75	-14.75	-14.75	-14.75		Pass
$T_{10°C}$Vnom	CW	13.558	13.557800	13.557800	13.557800	13.557800	-14.75	-14.75	-14.75	-14.75		Pass
$T_{0°C}$Vnom	CW	13.558	13.557840	13.557840	13.557840	13.557840	-11.80	-11.80	-11.80	-11.80		Pass
$T_{-10°C}$Vnom	CW	13.558	13.557840	13.557840	13.557840	13.557840	-11.80	-11.80	-11.80	-11.80		Pass
$T_{-20°C}$Vnom	CW	13.558	13.557880	13.557880	13.557880	13.557880	-8.85	-8.85	-8.85	-8.85		Pass

NOTE: 0.01 % = 100 ppm.

APPENDIX E 20 DB BANDWIDTH

Test Mode	TX

Frequency (MHz)	20 dB Bandwidth (MHz)	Operated Frequency Range (MHz)	Designated Frequency Band (MHz)	Result
13.558	13.558	0.00268	0.014	Complied



Date: 4.JUL.2024 18:13:59

End of Test Report