FCC Radio Test Report

FCC ID: 2AF82-TD1070LH

Report No.	:	BTL-FCCP-1-2201T135B
Equipment	:	Panel PC
Model Name	:	TD-1070, TD-1070 Lite, TD-107XXXXXX (where "X" may be any alphanumeric, blank "_" or "-" for marketing purpose only)
Brand Name	:	Qbic
Applicant	:	Qbic Technology Co., Ltd.
Address	:	26F.-12, NO.99, SEC. 1, XINTAI 5TH RD., XIZHI DIST., NEW TAIPEI CITY 22175, TAIWAN
Radio Function	:	NFC (13.56 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	:	2024/5/14
Date of Test	:	2024/6/14 ~ 2024/7/2
Issued Date	:	2024/7/22

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

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-1-2201T135B	R00	Original Report.	2024/7/22	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	------
15.35 15.205 15.209 15.225	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	Pass	------
15.225(e)	Frequency Stability	APPENDIX E	Pass	------
15.203	Antenna Requirement	------	Pass	------
15.215(c)	20 dB Bandwidth	APPENDIX F	Pass	------

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

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. 68-2, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☒ SR05
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. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
SR05	CISPR	150 kHz ~ 30MHz	3.44

B. 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
AC Power Line Conducted Emissions	28 °C, 47 %	AC 120V	Ken Lan
Radiated emissions (9KHz-30MHz)	Refer to data	AC 120V	Mark Wang
Radiated emissions (30MHz TO 1000MHz)	Refer to data	AC 120V	Mark Wang
Frequency Stability	27.6 °C, 43 %	AC 120V	Ken Lan
20 dB Bandwidth	25.4 °C, 56 %	AC 120V	Ken Lan

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Panel PC
Model Name	TD-1070, TD-1070 Lite, TD-107XXXXXX (where "X" may be any alphanumeric, blank " _ " or "-" for marketing purpose only)
Brand Name	Qbic
Model Difference	Please refer to NOTE (5).
Power Source	DC Voltage supplied from PoE and AC/DC adapter.
Power Rating	EUT Rating: DC 12V, 2.5A For PoE: DC 36~57V For Adapter: I/P: 100-240V~, 50-60Hz 0.9A Max O/P: 12V ⎓ 2.5A 30.0W
Products Covered	1 * Adapter: APD / WA-30P12R 1 * I/O Cover 1 * Bracket
Operation Frequency	13.56 MHz
Max H-field strength	66.57 dBuV/m@1m(Peak)
Test Model	TD-1070
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	13.56

(3) Table for Filed Antenna:

Antenna	Brand Name	Model Name	Antenna Type	Connector	Gain (dBi)
1	SMARFID	TH6M22S	N/A	FPC	N/A

(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.

(5) Model Difference

Model	TD-1070, TD-107XXXXXX	TD-1070 Lite, TD-107XXXXXX
Features		
OS	Android 11 / Android 12	Android 11 / Android 12
Touch	Yes, Multi touch AF Direct-Bonding,GG3 Anti-Microbial Glass	Yes, Multi touch AF Direct-Bonding, Sodalime Glass (7H)
	Option 2: H Version, (Embedded Human-Interface-Device) (13.56M&125KHz)	Option 2: H Version, (Embedded Human-Interface-Device) (13.56M&125KHz)
Memory	2GB LPDDR4	2GB LPDDR4
Storage	32GB eMMC	32GB eMMC
Video decoder	H264 / H265,VC-1, MPEG-4, VP9/VP8	H264 / H265,VC-1, MPEG-4, VP9/VP8
Image codecs	JPEG/BMP/GIF/PNG	JPEG/BMP/GIF/PNG
Audio codecs	MPEG/OGG/AAC	MPEG/OGG/AAC
CPU	RK3568, ARM Quad-core Cortex-A55 up to 2.0GHz (64 bit)	RK3568, ARM Quad-core Cortex-A55 up to 2.0GHz (64 bit)
PoE	PoE+ (25W)	PoE+ (25W)
Beacon (BLE)	Yes	Yes
Microphone	2 (Noise Reduction & Auto Echo Cancellation)	-
ALS + Proximity sensor	Yes	-
WatchDog	Yes, Independent watchdog	Yes, Independent watchdog
LED indicator	1 Front LED & 2 side-bar	2 side-bar
Display		
Size	10.1" (85/85/85/85)	10.1" (85/85/85/85)
Resolution	1920 x 1200 (FHD)	1920 x 1200 (FHD)
Contrast	1000:1	1000:1
Brightness	430 nits	430 nits
I/O Interface		
Ethernet	1 x RJ45 (10M/100M/1000M) (PoE+)	1 x RJ45 (10M/100M/1000M) (PoE+)
WLAN	802.11 a/b/g/n/ac, WiFi 5	802.11 a/b/g/n/ac, WiFi 5
USB	2 x USB2.0 type A/ 1 x USB3.0 type C (w/ ADB)	2 x USB2.0 type A/ 1 x USB3.0 type C (w/ ADB)
Analog Stereo out	1 x 3.5mm stereo (MIC-in & Audio-out)	1 x 3.5mm stereo (MIC-in & Audio-out)
Expansion storage	1 x Micro SDHC/SDXC slot	1 x Micro SDHC/SDXC slot
Speaker	2W x 2	2W x 2
Camera	1 x 8M Auto-focuing	-
Mechanical & Environment		
Dimension (WxDxH) (Without stand)	242.9 x 173.4 x 20.5 mm	242.9 x 173.4 x 21.25 mm
Mounting	Glass / Surface / Recessed	Glass / Surface / Recessed
Housing	Metal	Plastic
Environment	Operating Temp. 0~50°C	Operating Temp. 0~50°C

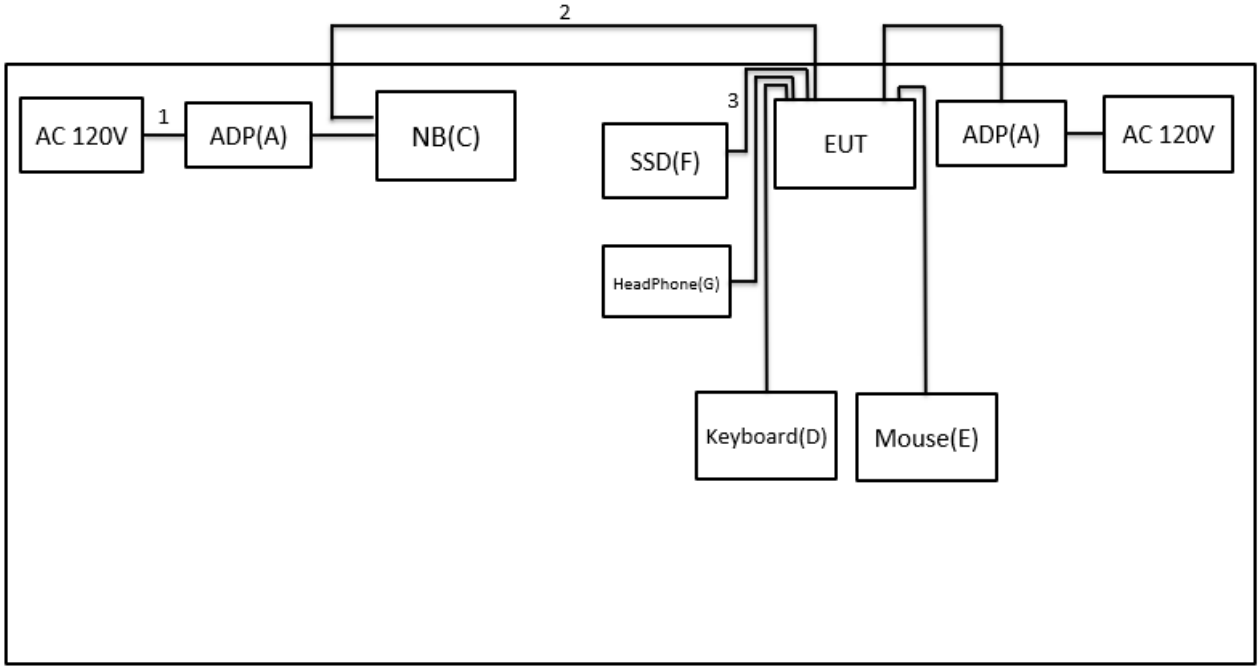
2.2 TEST MODES

Test Items	Test mode	Channel	Note
AC power line conducted emissions	Normal/Idle	-	-
Radiated emissions (9KHz-30MHz)	TX	01	-
Radiated emissions (30MHz TO 1000MHz)	TX	01	
Frequency Stability	TX	01	-
20 dB Bandwidth	TX	01	-

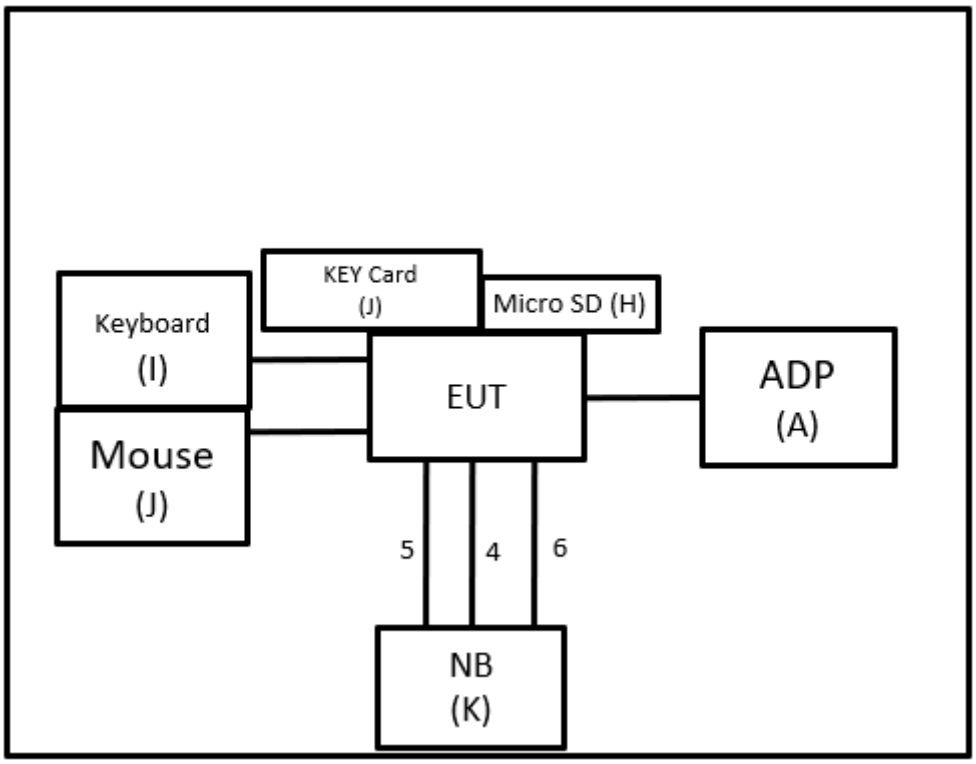
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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

AC Power Line Conducted Emissions Test



Radiated Emissions Test



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	ADP	APD	WA-30P12R	N/A	Supplied by test requester.
B	ADP	HP	HP-HSTNN-CA40	N/A	Furnished by test lab.
C	NB	HP	HP-240 G5	N/A	Furnished by test lab.
D	Keyboard	Dell	KB216t	N/A	Furnished by test lab.
E	Mouse	Dell	MOCZUL	N/A	Furnished by test lab.
F	SSD	WD	My Passport SSD	N/A	Furnished by test lab.
G	HeadPhone	NA	NA	N/A	Furnished by test lab.
H	Micro SD	ADATA	UHS-I	N/A	Furnished by test lab.
I	Keyboard	Bloody	KB-8	N/A	Furnished by test lab.
J	Mouse	Logitech	B100	N/A	Furnished by test lab.
K	NB	HP	TPN-I119	N/A	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1m	Power Cord	Furnished by test lab.
2	N/A	N/A	3m	LAN Cable	Furnished by test lab.
3	N/A	N/A	0.25m	USB Type-C to C	Furnished by test lab.
4	N/A	N/A	1m	TypeC to USB Cable	Furnished by test lab.
5	N/A	N/A	1m	LAN CABLE	Furnished by test lab.
6	N/A	N/A	0.5m	Audio Cable	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

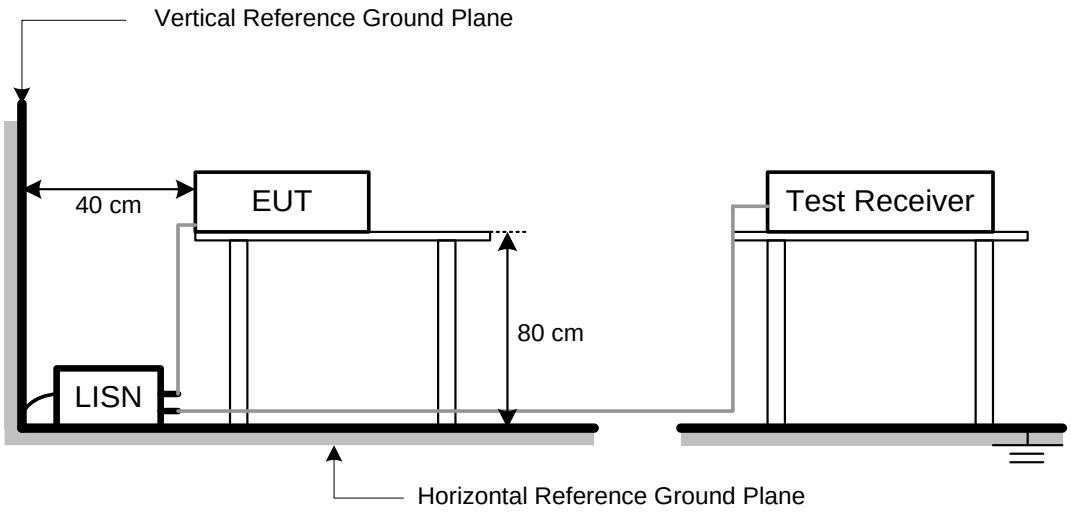
a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
All other support equipment were powered from an additional LISN(s).
The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.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

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

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 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.
c. 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.
d. 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.
e. 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)

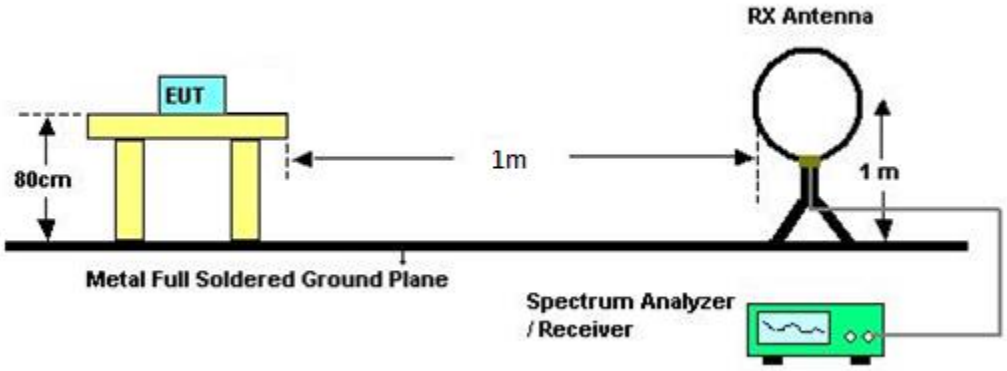
a. Spectrum Setting:
9 KHz – 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.
150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.
30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that 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.

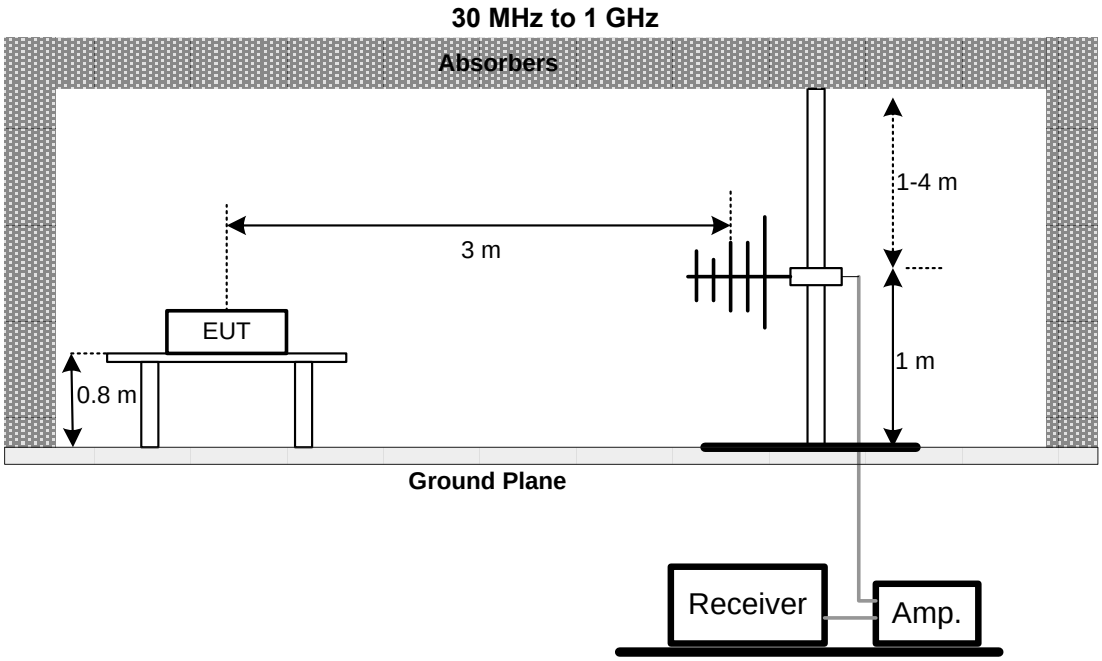
4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP

9 KHz to 30 MHz





4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

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

Please refer to the APPENDIX B

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

Please refer to the APPENDIX C.

4.8 TEST RESULT – FCC PART 15.225

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 FREQUENCY STABILITY

5.1 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.

5.2 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.

5.3 DEVIATION FROM TEST STANDARD

No deviation.

5.4 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.5 TEST RESULT

Please refer to the APPENDIX E.

6 20 DB BANDWIDTH

6.1 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.

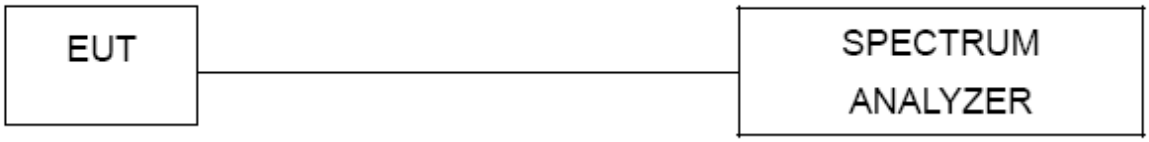
6.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 1 kHz, VBW=1 kHz, Sweep time = 20 ms.

6.3 DEVIATION FROM TEST STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULT

Please refer to the APPENDIX F.

7 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	101497	2024/5/20	2025/5/19
2	Test Cable	EMCI	EMC400-BM-BM-5000	170501	2023/8/1	2024/7/31
3	EMI Test Receiver	R&S	ESR3	102950	2024/4/12	2025/4/11
4	Measurement Software	EZ	EZ_EMC (Version 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	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	TRILOG Broadband Antenna	Schwarzbeck	VULB9168	1371	2024/6/14	2025/6/13
9	6dB Attenuator	EMCI	EMCI-N-6-06	AT-N06001	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	Spectrum Analyzer	R&S	FSP 40	100129	2024/3/27	2025/3/26
3	Thermal Chamber	HOLINK	H-TH-2SP-B	EK04101902	2023/7/3	2024/7/2

20 dB Bandwidth Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP 40	100129	2024/3/27	2025/3/26

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

8 EUT TEST PHOTO

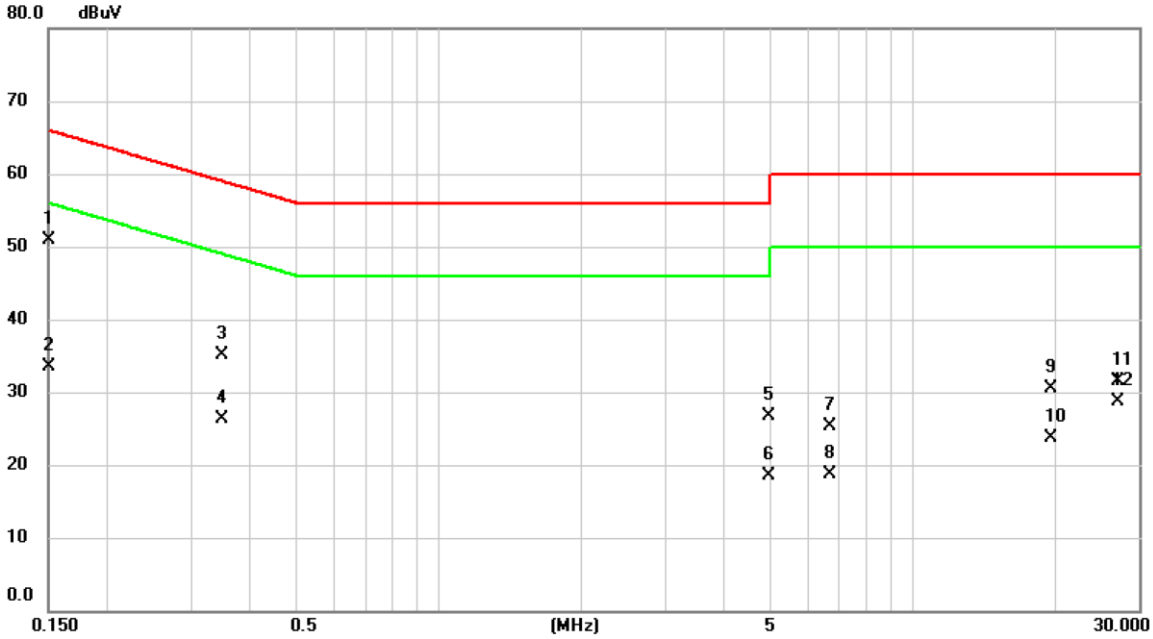
Please refer to document Appendix No.: TP-2201T135B-FCCP-1 (APPENDIX-TEST PHOTOS).

9 EUT PHOTOS

Please refer to document Appendix No.: EP-2201T135B-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

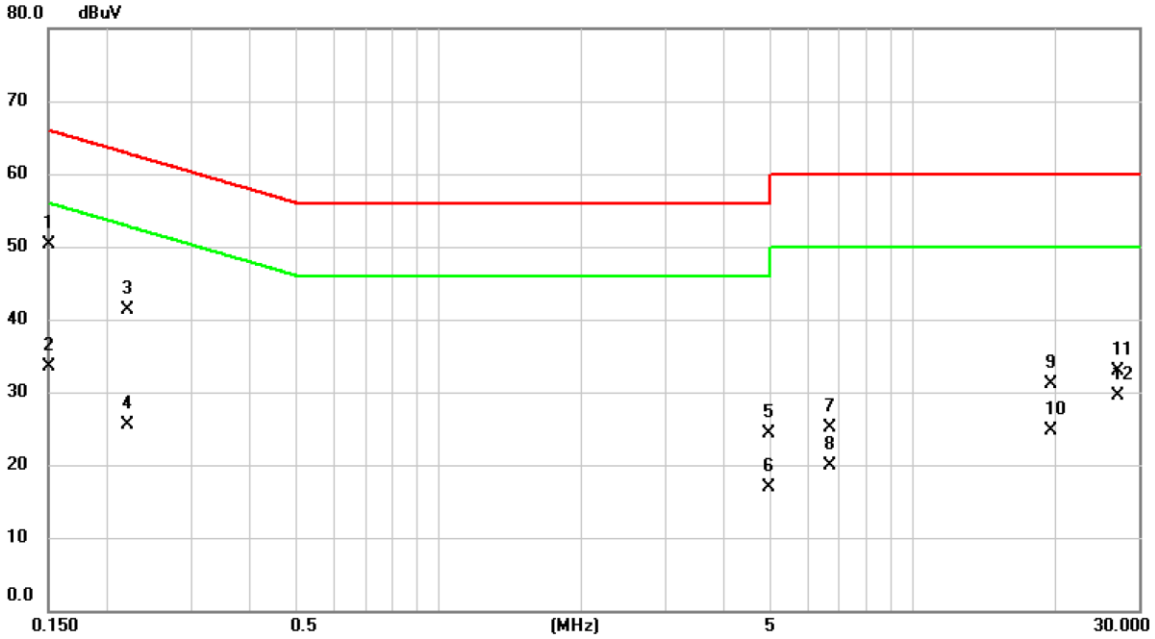
Test Mode	Normal	Tested Date	2024/6/20
Test Frequency	-	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	41.27	9.58	50.85	66.00	-15.15	QP	
2		0.1500	23.92	9.58	33.50	56.00	-22.50	AVG	
3		0.3480	25.47	9.58	35.05	59.01	-23.96	QP	
4		0.3480	16.71	9.58	26.29	49.01	-22.72	AVG	
5		4.9605	16.90	9.74	26.64	56.00	-29.36	QP	
6		4.9605	8.83	9.74	18.57	46.00	-27.43	AVG	
7		6.7043	15.47	9.76	25.23	60.00	-34.77	QP	
8		6.7043	8.94	9.76	18.70	50.00	-31.30	AVG	
9		19.5788	20.74	9.86	30.60	60.00	-29.40	QP	
10		19.5788	13.87	9.86	23.73	50.00	-26.27	AVG	
11		27.1185	21.64	9.84	31.48	60.00	-28.52	QP	
12		27.1185	18.82	9.84	28.66	50.00	-21.34	AVG	

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

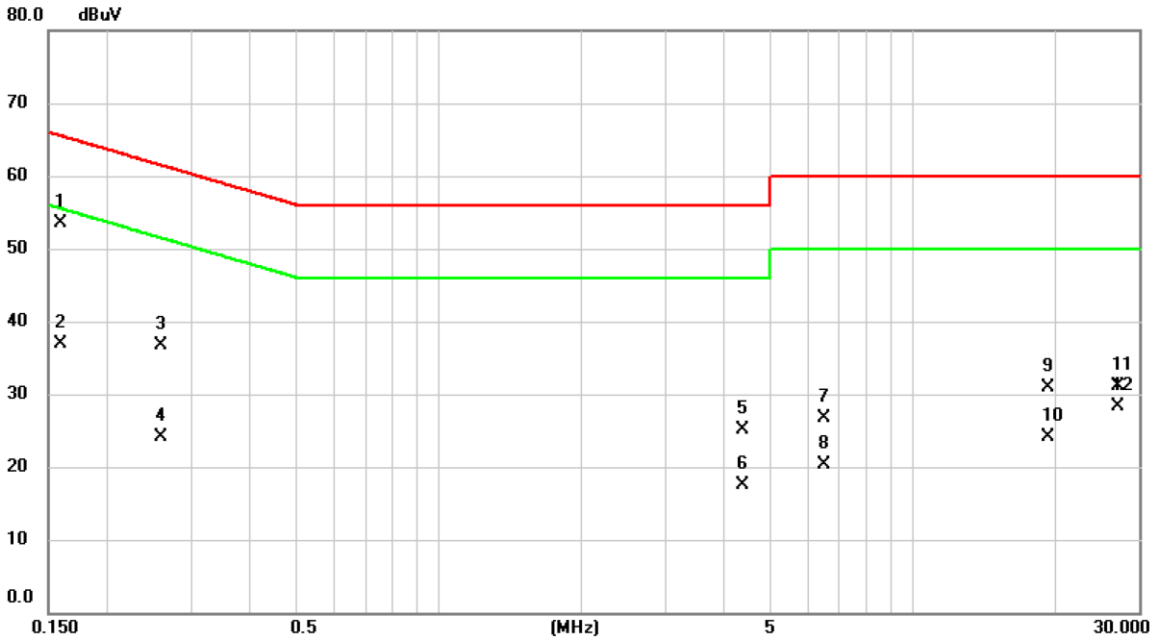
Test Mode	Normal	Tested Date	2024/6/20
Test Frequency	-	Phase	Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	40.82	9.56	50.38	66.00	-15.62	QP	
2		0.1500	23.95	9.56	33.51	56.00	-22.49	AVG	
3		0.2198	31.66	9.57	41.23	62.83	-21.60	QP	
4		0.2198	15.84	9.57	25.41	52.83	-27.42	AVG	
5		4.9605	14.58	9.77	24.35	56.00	-31.65	QP	
6		4.9605	7.07	9.77	16.84	46.00	-29.16	AVG	
7		6.7043	15.32	9.79	25.11	60.00	-34.89	QP	
8		6.7043	10.13	9.79	19.92	50.00	-30.08	AVG	
9		19.5788	21.01	10.04	31.05	60.00	-28.95	QP	
10		19.5788	14.76	10.04	24.80	50.00	-25.20	AVG	
11		27.1185	22.69	10.15	32.84	60.00	-27.16	QP	
12		27.1185	19.35	10.15	29.50	50.00	-20.50	AVG	

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

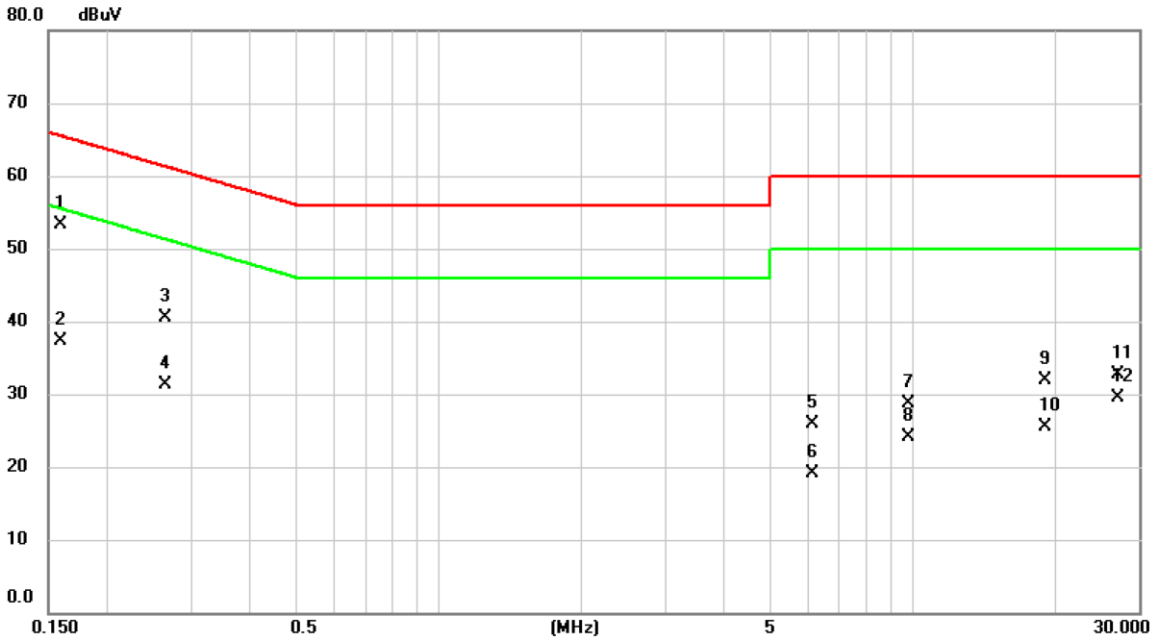
Test Mode	Idle	Tested Date	2024/6/20
Test Frequency	-	Phase	Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1590	43.92	9.59	53.51	65.52	-12.01	QP	
2		0.1590	27.28	9.59	36.87	55.52	-18.65	AVG	
3		0.2602	27.06	9.59	36.65	61.43	-24.78	QP	
4		0.2602	14.54	9.59	24.13	51.43	-27.30	AVG	
5		4.3800	15.36	9.71	25.07	56.00	-30.93	QP	
6		4.3800	7.85	9.71	17.56	46.00	-28.44	AVG	
7		6.5040	16.89	9.76	26.65	60.00	-33.35	QP	
8		6.5040	10.46	9.76	20.22	50.00	-29.78	AVG	
9		19.2705	20.96	9.85	30.81	60.00	-29.19	QP	
10		19.2705	14.23	9.85	24.08	50.00	-25.92	AVG	
11		27.1208	21.25	9.84	31.09	60.00	-28.91	QP	
12		27.1208	18.42	9.84	28.26	50.00	-21.74	AVG	

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

Test Mode	Idle	Tested Date	2024/6/20
Test Frequency	-	Phase	Neutral

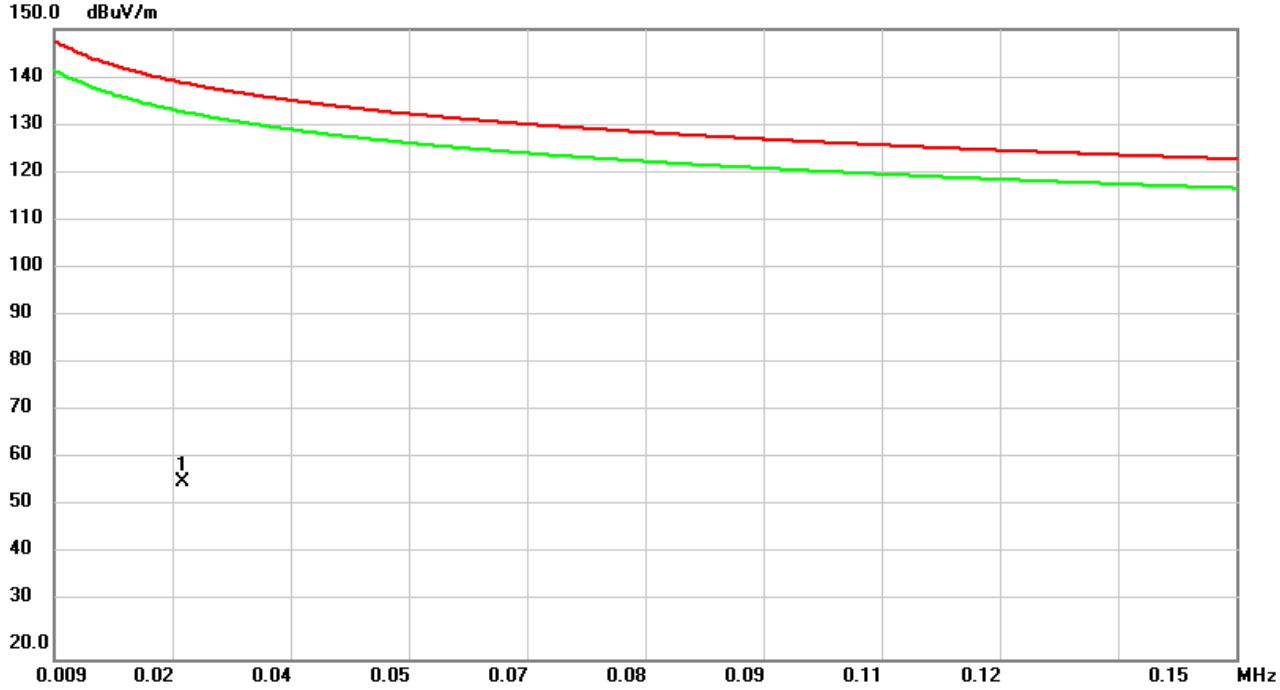


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1590	43.79	9.57	53.36	65.52	-12.16	QP	
2		0.1590	27.75	9.57	37.32	55.52	-18.20	AVG	
3		0.2647	30.86	9.57	40.43	61.28	-20.85	QP	
4		0.2647	21.78	9.57	31.35	51.28	-19.93	AVG	
5		6.1463	16.20	9.78	25.98	60.00	-34.02	QP	
6		6.1463	9.38	9.78	19.16	50.00	-30.84	AVG	
7		9.8093	18.78	9.83	28.61	60.00	-31.39	QP	
8		9.8093	14.22	9.83	24.05	50.00	-25.95	AVG	
9		18.9893	21.83	10.02	31.85	60.00	-28.15	QP	
10		18.9893	15.42	10.02	25.44	50.00	-24.56	AVG	
11		27.1185	22.58	10.15	32.73	60.00	-27.27	QP	
12		27.1185	19.27	10.15	29.42	50.00	-20.58	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

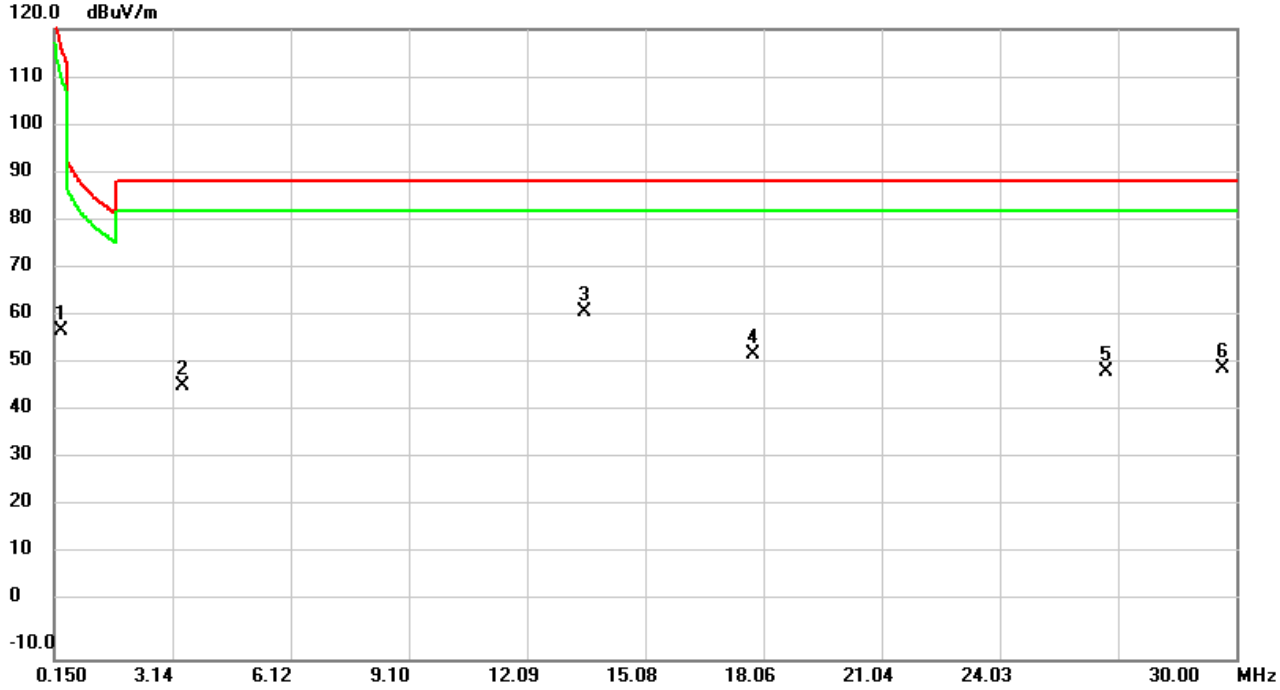
Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0243	25.96	30.45	56.41	138.97	-82.56	peak	

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

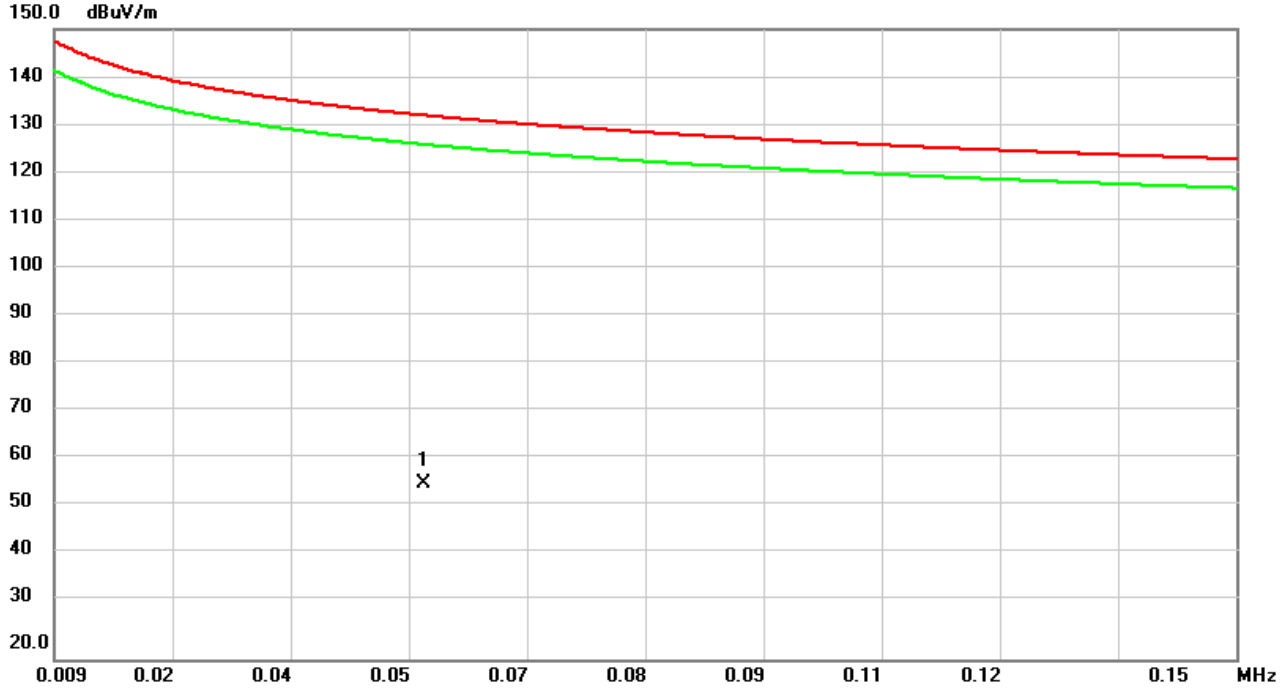
Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.3430	50.30	7.40	57.70	115.98	-58.28	peak	
2		3.3976	50.23	-3.88	46.35	88.62	-42.27	peak	
3	*	13.5596	65.19	-3.50	61.69	88.62	-26.93	peak	
4		17.8072	56.91	-3.89	53.02	88.62	-35.60	peak	
5		26.6995	50.20	-0.91	49.29	88.62	-39.33	peak	
6		29.6616	49.62	0.50	50.12	88.62	-38.50	peak	

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

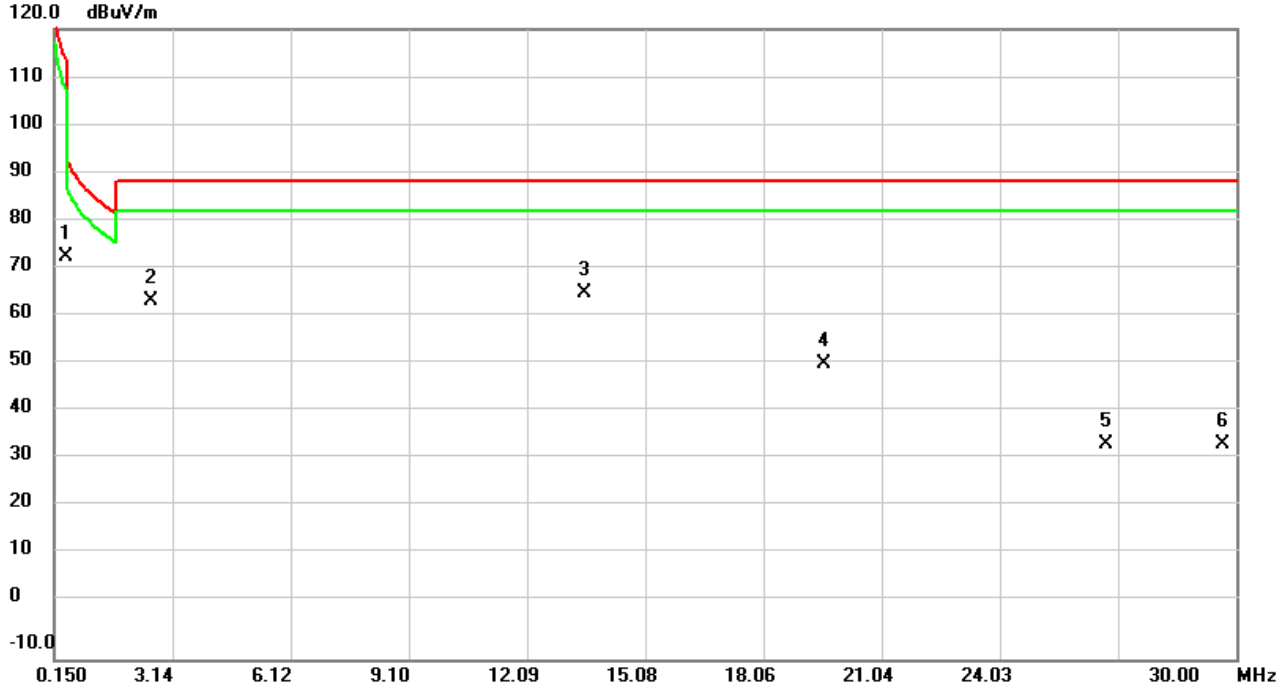
Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Horizontal
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0530	33.39	22.97	56.36	132.20	-75.84	AVG	

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

Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Horizontal
Temp	25°C	Hum.	61%

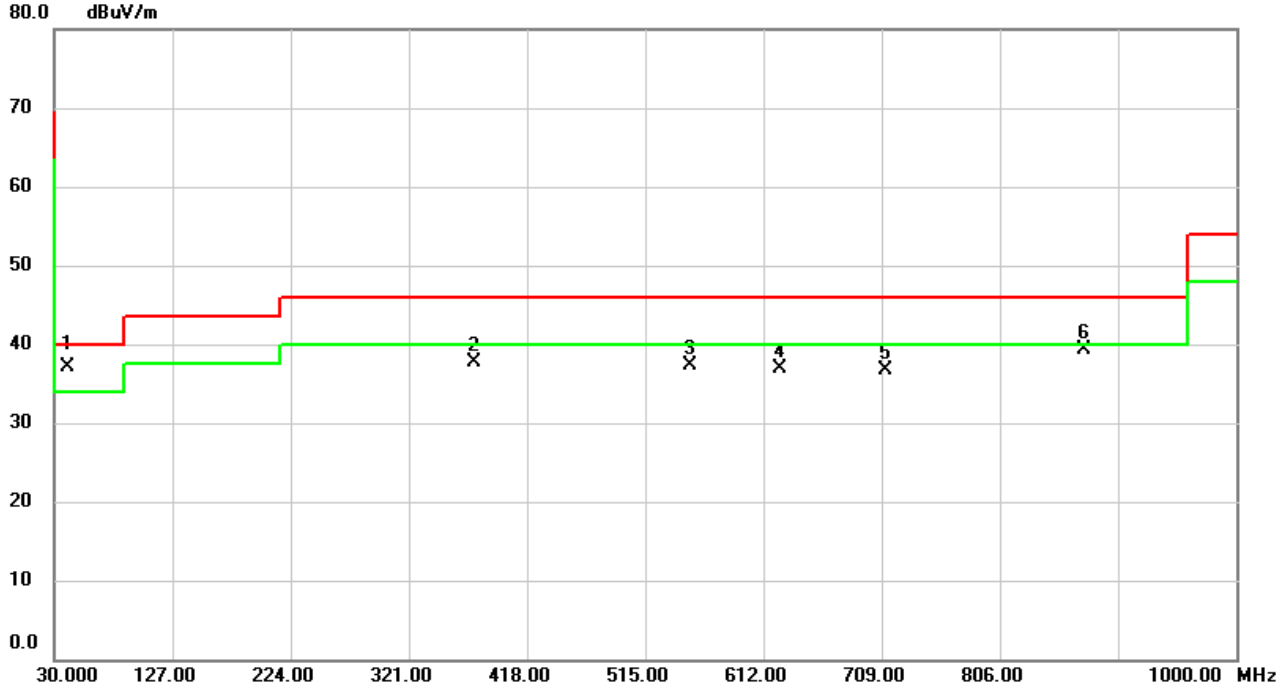


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.4326	66.71	6.17	72.88	113.96	-41.08	QP	
2		2.5967	67.01	-2.94	64.07	88.62	-24.55	QP	
3	*	13.5596	69.06	-3.50	65.56	88.62	-23.06	QP	
4		19.5803	54.97	-4.06	50.91	88.62	-37.71	QP	
5		26.7036	35.43	-0.91	34.52	88.62	-54.10	QP	
6		29.6587	33.78	0.50	34.28	88.62	-54.34	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

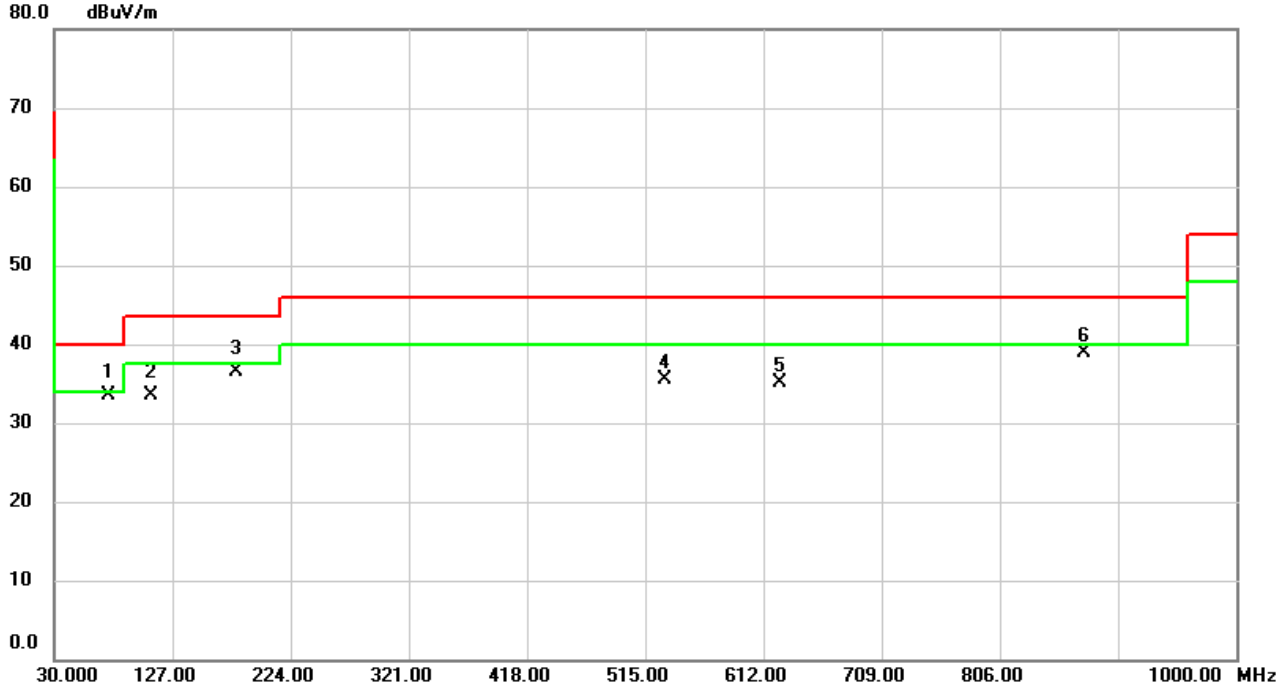
Test Mode	TX	Test Date	2024/7/2
Test Frequency	13.56MHz	Polarization	Vertical
Temp	27°C	Hum.	53%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	40.8640	49.20	-12.14	37.06	40.00	-2.94	QP	
2		374.9967	47.45	-9.70	37.75	46.00	-8.25	peak	
3		551.9247	42.93	-5.70	37.23	46.00	-8.77	peak	
4		624.9980	40.86	-3.98	36.88	46.00	-9.12	peak	
5		711.5867	39.39	-2.60	36.79	46.00	-9.21	peak	
6		874.9993	39.78	-0.42	39.36	46.00	-6.64	peak	

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

Test Mode	TX	Test Date	2024/7/2
Test Frequency	13.56MHz	Polarization	Horizontal
Temp	27°C	Hum.	53%

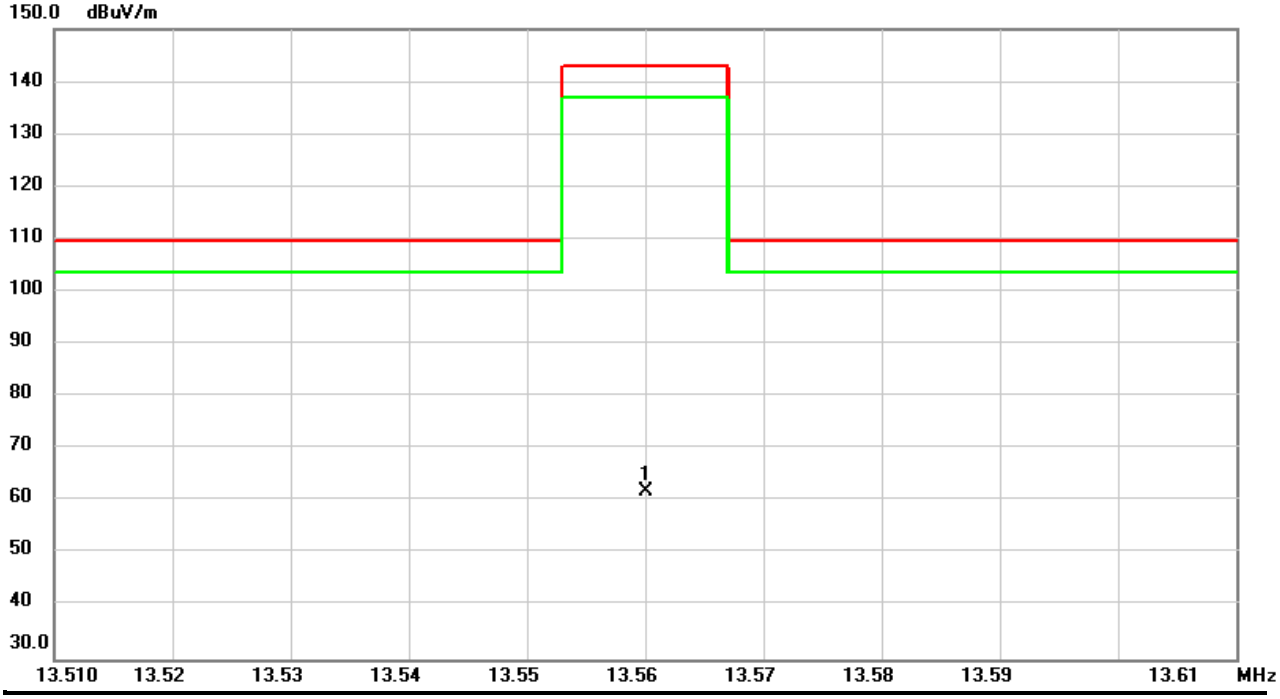


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	74.9756	49.19	-15.66	33.53	40.00	-6.47	QP	
2		109.5076	48.74	-15.30	33.44	43.50	-10.06	QP	
3		178.9596	50.02	-13.43	36.59	43.50	-6.91	QP	
4		531.1990	41.61	-6.09	35.52	46.00	-10.48	peak	
5		624.9980	39.04	-3.98	35.06	46.00	-10.94	peak	
6		874.9993	39.42	-0.42	39.00	46.00	-7.00	peak	

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

APPENDIX D RADIATED EMISSIONS - FCC PART 15.225

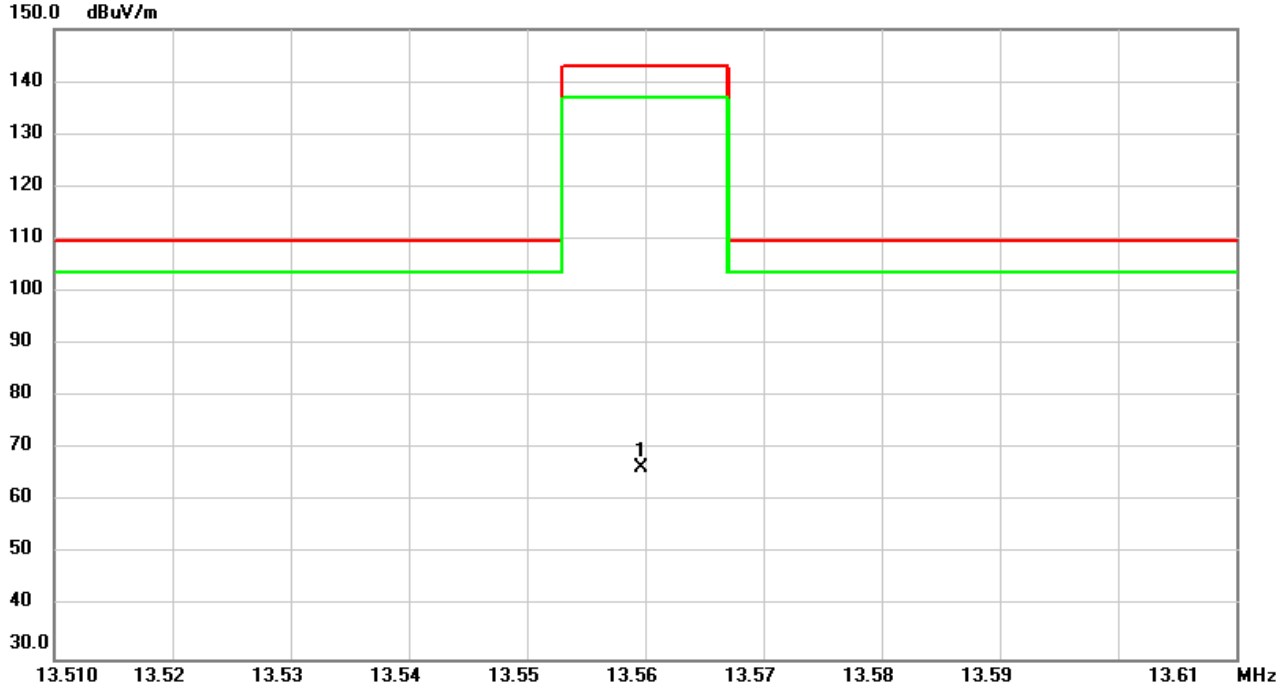
Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5600	65.59	-3.50	62.09	143.07	-80.98	peak	

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

Test Mode	TX	Test Date	2024/6/26
Test Frequency	13.56MHz	Polarization	Horizontal
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	13.5597	70.07	-3.50	66.57	143.07	-76.50	peak	

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

APPENDIX E FREQUENCY STABILITY MEASUREMENT

Test Mode	TX	Tested Date	2024/6/20

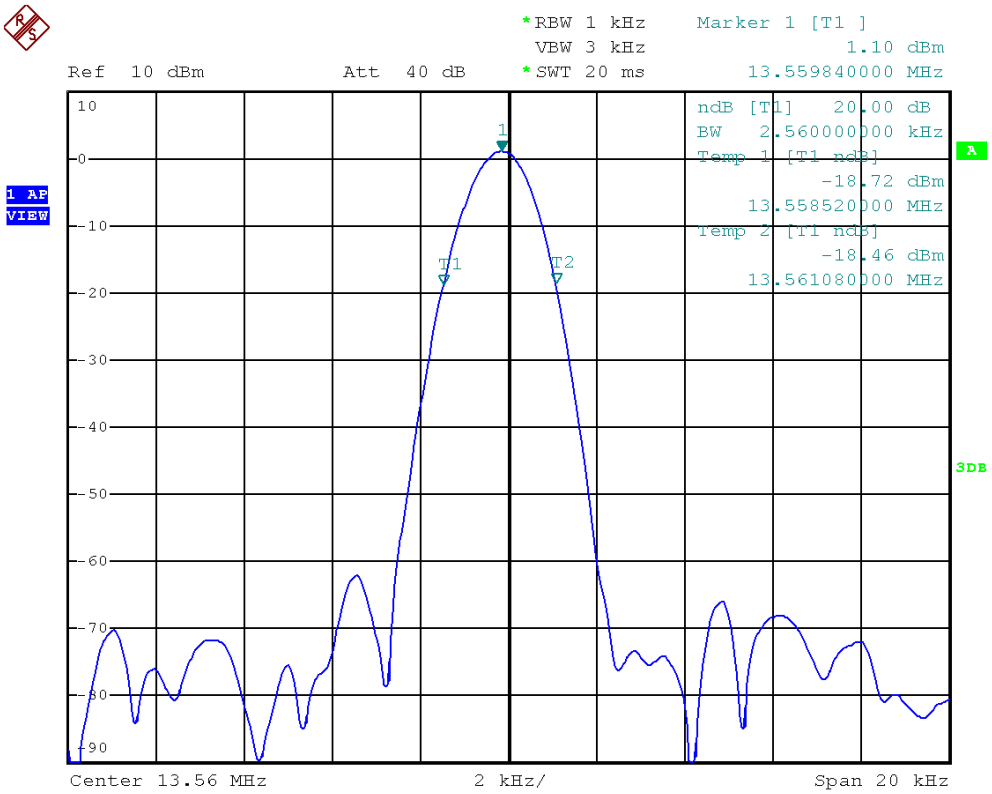
Condition			Frequency Error (ppm)									
Temperature	Modulation Mode	Test Freq.	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min	Limit (ppm)	Result
			Normal									
$T_{20°C}$Vmax	CW	13.56	13.559800	13.559800	13.559800	13.559800	-14.75	-14.75	-14.75	-14.75	100	Pass
$T_{20°C}$Vmin	CW	13.56	13.559800	13.559800	13.559800	13.559800	-14.75	-14.75	-14.75	-14.75		Pass
			Extreme									
$T_{50°C}$Vnom	CW	13.56	13.559680	13.559680	13.559680	13.559680	-23.60	-23.60	-23.60	-23.60		Pass
$T_{40°C}$Vnom	CW	13.56	13.559720	13.559720	13.559720	13.559720	-20.65	-20.65	-20.65	-20.65	100	Pass
$T_{30°C}$Vnom	CW	13.56	13.559800	13.559800	13.559800	13.559800	-14.75	-14.75	-14.75	-14.75		Pass
$T_{20°C}$Vnom	CW	13.56	13.559800	13.559800	13.559800	13.559800	-14.75	-14.75	-14.75	-14.75		Pass
$T_{10°C}$Vnom	CW	13.56	13.559800	13.559800	13.559800	13.559800	-14.75	-14.75	-14.75	-14.75		Pass
$T0_{°C}$Vnom	CW	13.56	13.559720	13.559720	13.559720	13.559720	-20.65	-20.65	-20.65	-20.65		Pass

NOTE: 0.01 % = 100 ppm.

APPENDIX F 20 DB BANDWIDTH

Test Mode	TX

Frequency (MHz)	20 dB Bandwidth (MHz)	Operated Frequency Range (MHz)	Designated Frequency Band (MHz)	Result
13.56	0.00256	13.56	0.014	PASS



Date: 14.JUN.2024 15:37:41

End of Test Report