

FCC Radio Test Report

FCC ID: 2A3TY-H10L

This report concerns: Original Grant

Project No. : 2111C113

Equipment: Wireless Probe Type Ultrasound Scanner

Brand Name : SonoMe Test Model : H10L Series Model : H5C

Applicant: Bionet Co., Ltd.

Address : 5F, 61 Digital-ro 31-gil, Guro-gu, Seoul 08375, REPUBLIC OF KOREA

Manufacturer : Bionet Co., Ltd.

Address : 5F, 61 Digital-ro 31-gil, Guro-gu, Seoul 08375, REPUBLIC OF KOREA

Factory : Bionet Co., Ltd.

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14119, REPUBLIC OF KOREA

Date of Receipt : Nov. 16, 2021

Date of Test : Nov. 19, 2021 ~ Dec. 28, 2021

Issued Date : May 13, 2022

Report Version : R00

Test Sample : Engineering Sample No.: DG2021111894 **Standard(s)** : FCC CFR Title 47, Part 15, Subpart C

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by 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** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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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.



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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-1-2111C113	R00	Original Report.	May 13, 2022	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		
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS		
15.247(a)(2)	Bandwidth	APPENDIX E	PASS		
15.247(b)(3)	Maximum Output Power	APPENDIX F	PASS		
15.247(d)	Conducted Spurious Emissions	APPENDIX G	PASS		
15.247(e)	Power Spectral Density	APPENDIX H	PASS		
15.203	Antenna Requirement		PASS	Note(2)	

Note:

- (1) "N/A" denotes test is not applicable in this test report.(2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.



1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

BTL's Registration Number for FCC: 357015 BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.60

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)	
DG-CB01	CISPR	9kHz ~ 30MHz	2.36	l

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
		30MHz ~ 200MHz	V	4.36
DG-CB03	CIEDD	30MHz ~ 200MHz	Н	3.32
(3m)	CISPR	200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	Н	3.96

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 CISPR		1GHz ~ 6GHz	3.80
(3m)	CIOPK	6GHz ~ 18GHz	4.82

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03	CISPR	18 ~ 26.5 GHz	3.62
(1m)	CISPR	26.5 ~ 40 GHz	4.00



C. Other Measurement:

Test Item	Uncertainty
Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Conducted Spurious Emission	±2.71 dB
Power Spectral Density	±0.86 dB
Temperature	±0.08 °C
Humidity	±1.5%

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	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	24°C	50%	DC 5V	Rod Tang
Radiated Emissions-9kHz to 30 MHz	22°C	56%	DC 5V	Torocat Yuan
Radiated Emissions-30MHz to 1000MHz	20°C	61%	DC 5V	Jakyri Wen
Radiated Emissions-Above 1000MHz	20°C	61%	DC 5V	Jakyri Wen
Bandwidth	17°C	42%	DC 3.85V	Nicole Chen
Maximum Output Power	17°C	42%	DC 3.85V	Nicole Chen
Conducted Spurious Emissions	17°C	42%	DC 3.85V	Nicole Chen
Power Spectral Density	17°C	42%	DC 3.85V	Nicole Chen



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Probe Type Ultrasound Scanner		
Brand Name	SonoMe		
Test Model	10L		
Series Model	H5C		
Model Difference(s)	The H10L and H5C have the same structural composition and circulonfiguration. The only difference is the probe type which will not influence the RF characteristics.		
Power Source	1# Supplied from PC USB port. 2# Battery supplied. Model: XDD-SNP5600		
Power Rating	1# DC 5V 2# DC 3.85V		
Operation Frequency	2412 MHz ~ 2462 MHz		
Modulation Type	IEEE 802.11n: OFDM		
Bit Rate of Transmitter	IEEE 802.11n: up to 72.2 Mbps		
Maximum Peak Output Power	IEEE 802.11n20: 18.56 dBm (0.0718 W)		
Maximum Average Output Power	IEEE 802.11n20: 6.29 dBm (0.0043 W)		

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Official List	•						
	CH01 - CH11 for IEEE 802.11n(HT20)						
Channel	Channel Frequency (MHz) Channel Frequency (MHz) Channel Frequency (MHz) Channel Frequency (MHz)						
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	80	2447	11	2462
03	2422	06	2437	09	2452		

3. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	TAIYO YUDEN	AH104N2450D1	Chip	N/A	2.1

Note:

1) The antenna gain is provided by the manufacturer.



2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX N(HT20) Mode Channel 01/06/11
Mode 2	TX N(HT20) Mode Channel 01

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test				
Final Test Mode Description				
Mode 2 TX N(HT20) Mode Channel 01				

Radiated emissions test - Below 1GHz			
Final Test Mode	Description		
Mode 2	TX N(HT20) Mode Channel 01		

Radiated emissions test- Above 1GHz			
Final Test Mode Description			
Mode 1 TX N(HT20) Mode Channel 01/06/11			

Conducted test		
Final Test Mode Description		
Mode 1	TX N(HT20) Mode Channel 01/06/11	

NOTE:

- (1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (2) For AC power line conducted emissions and radiated emission below 1 GHz test, the TX N(HT20) Mode Channel 01 is found to be the worst case and recorded.
- (3) 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.

2.3 PARAMETERS OF TEST SOFTWARE

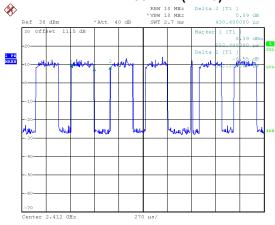
Test Software Version	N/A		
Frequency (MHz)	2412	2437	2462
IEEE 802.11n(HT20)	N/A	N/A	N/A



2.4 DUTY CYCLE

If duty cycle is \geq 98 %, duty factor is not required. If duty cycle is < 98 %, duty factor shall be considered. The output power = measured power + duty factor.

IEEE 802.11n(HT20)



Date: 7.DEC.2021 16:11:40

Duty cycle = 0.252 ms / 0.430 ms = 58.65% Duty Factor = 10 log(1/Duty cycle) = 2.32

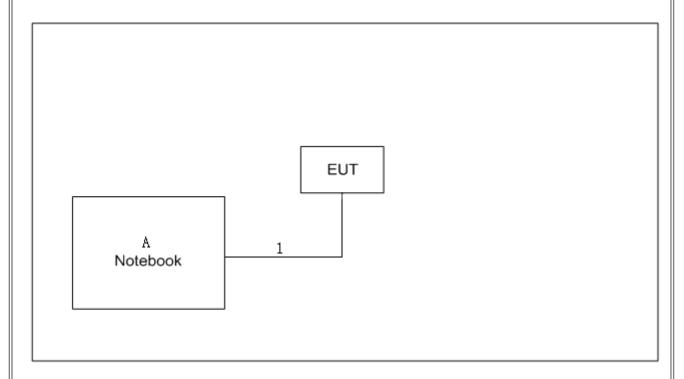
NOTE:

For IEEE 802.11n(HT20):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz.



2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
Α	Notebook	HONOR	NBLK-WAX9X	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1m



3. AC POWER LINE CONDUCTED EMISSIONS

3.1 LIMIT

Fraguency of Emission (MHz)	Limit (dBµV)		
Frequency of Emission (MHz)	Quasi-peak	Average	
0.15 - 0.5	66 to 56*	56 to 46*	
0.5 - 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.

3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling 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 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

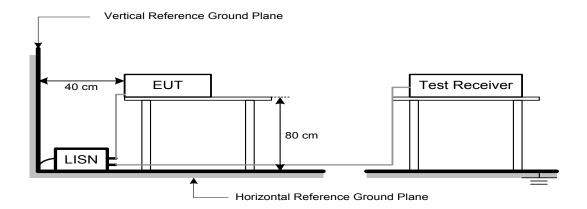
Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.3 DEVIATION FROM TEST STANDARD

No deviation.



3.4 TEST SETUP



3.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULTS

Please refer to the APPENDIX A.



4. RADIATED EMISSIONS

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
Frequency (WITIZ)	Peak	Average
Above 1000	74	54

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).



4.2 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 1 GHz)
- 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 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m 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. 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 1 GHz.
- 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 1 GHz)
- 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 1 GHz)
- i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW	1 MHz / 3 MHz for PK value
(Emission in restricted band)	1 MHz / 1/T Hz for AVG value

Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

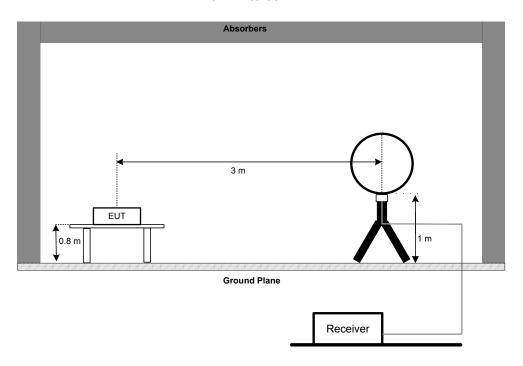


4.3 DEVIATION FROM TEST STANDARD

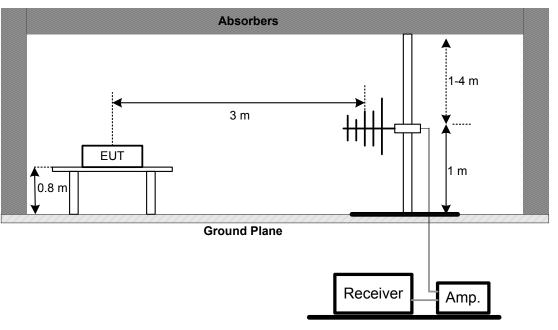
No deviation.

4.4 TEST SETUP

9 kHz to 30 MHz

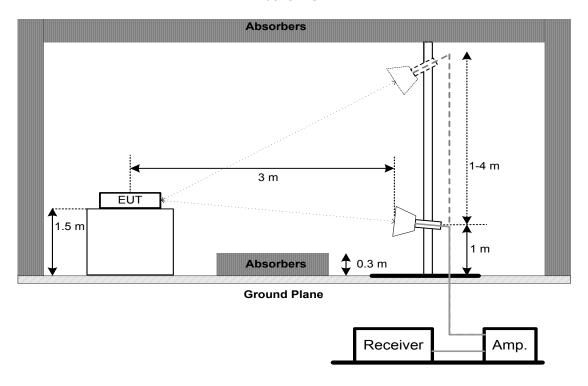


30 MHz to 1 GHz





Above 1 GHz



4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B.

Remark:

- (1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

4.8 TEST RESULTS - ABOVE 1000 MHZ

Please refer to the APPENDIX D.

Remark:

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



5. BANDWIDTH

5.1 LIMIT

Section	Test Item	Limit
ECC 15 247(a)(2)	6 dB Bandwidth	Minimum 500 kHz
FCC 15.247(a)(2)	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:

or o ab banawatii.		
Spectrum Parameters	Setting	
Span Frequency	> Measurement Bandwidth	
RBW	100 kHz	
VBW	300 kHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

For 99% Emission Bandwidth:

Spectrum Parameters	Setting	
Span Frequency	Between 1.5 times and 5.0 times the OBW	
RBW	300 kHz For 20MHz	
VBW	1 MHz For 20MHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.



6. MAXIMUM OUTPUT POWER

6.1 LIMIT

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

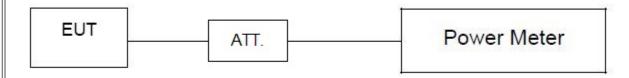
6.2 TEST PROCEDURE

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- b. The maximum conducted output power was performed in accordance with method 11.9.1.3 and 11.9.2.3.1 of ANSI C63.10-2013.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX F.



7. CONDUCTED SPURIOUS EMISSIONS

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:

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 G.



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	25 MHz (20 MHz)
RBW	3 kHz
VBW	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 TEST RESULTS

Please refer to the APPENDIX H.



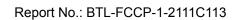
9. MEASUREMENT INSTRUMENTS LIST

	AC Power Line Conducted Emissions									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until					
1	EMI Test Receiver	R&S	ESCI	100382	Jan. 22, 2023					
2	LISN	EMCO	3816/2	52765	Jan. 23, 2023					
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	Jan. 23, 2023					
4	50Ω Terminator	SHX	TF5-3	15041305	N/A					
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A					
6	Cable	N/A	RG223	12m	Mar. 09, 2022					
7	643 Shield Room	ETS	6*4*3	N/A	N/A					

	Radiated Emissions - 9 kHz to 30 MHz									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until					
1	MXE EMI Receiver	Keysight	N9038A	MY56400091	Jan. 22, 2023					
2*	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 23, 2024					
3	Cable	N/A	RG 213/U(9kHz~1GHz)	N/A	May 27, 2022					
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A					
5	966 Chamber Room	ETS	9*6*6	N/A	Jul. 17, 2022					

	Radiated Emissions - 30 MHz to 1 GHz									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until					
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 15, 2022					
2	Amplifier	HP	8447D	2944A08742	Jan. 22, 2023					
3	Cable	emci	LMR-400	N/A	Nov. 30, 2022					
4	Controller	CT	SC100	N/A	N/A					
5	Controller	MF	MF-7802	MF780208416	N/A					
6	Receiver	Agilent	N9038A	MY52130039	Mar. 19, 2022					
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A					
8	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022					

Radiated Emissions - Above 1 GHz									
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	Double Ridged Horn Antenna	ARA	DRG-118A	16554	Apr. 21, 2022				
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022				
3	Amplifier	Agilent	8449B	3008A02584	Jul. 10, 2022				
4	Controller	CT	SC100	N/A	N/A				
5	Controller	MF	MF-7802	MF780208416	N/A				
6	Receiver	Agilent	N9038A	MY52130039	Mar. 19, 2022				
7	EXA Spectrum Analyzer	Keysight	N9010A	MY56480488	Jan. 22, 2023				
8	Low Noise Amplifier	CONNPHY	CLN-18G40G-4330 -K	619413	Jul. 16, 2022				
9	Cable	N/A	A81-SMAMSMAM- 12.5M	N/A	Oct. 15, 2022				
10	Cable	Talent microwave	A40-2.92M2.92M- 2.5M	N/A	Nov. 30, 2022				
11	Filter	STI	STI15-9912	N/A	Jul. 10, 2022				
12	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				
13	966 Chamber Room	RM	9*6*6	N/A	Jul. 24, 2022				





Bandwidth & Conducted Spurious Emissions & Power Spectral Density									
Item	m Kind of Equipment Manufacturer Type No. Serial No. Calibrated un								
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 10, 2022				
2	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A				
3	RF Cable	Tongkaichuan	N/A	N/A	N/A				
4	DC Block	Mini	N/A	N/A	N/A				

Maximum Output Power										
Item	em Kind of Equipment Manufacturer Type No. Serial No. Calibrated									
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Jul. 10, 2022					
2	Wideband power sensor	Keysight	N1923A	MY58310004	Jul. 10, 2022					
3	Attenuator	WOKEN	6SM3502	VAS1214NL	N/A					
4	RF Cable	Tongkaichuan	N/A	N/A	N/A					

Remark: "N/A" denotes no model name, serial no. or calibration specified.

Except * item, all calibration period of equipment list is one year.

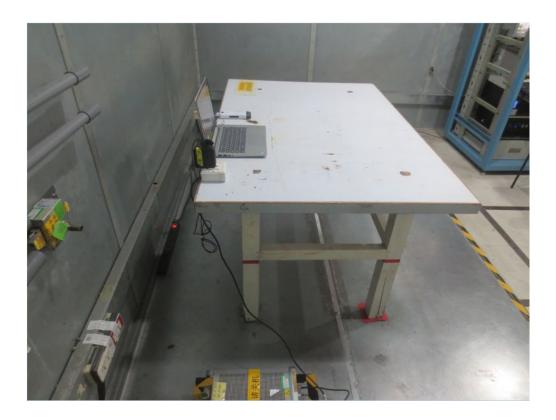
[&]quot;*" calibration period of equipment list is three year.



10. EUT TEST PHOTO

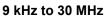


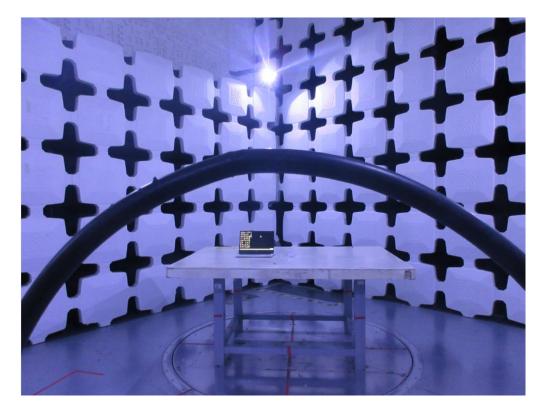


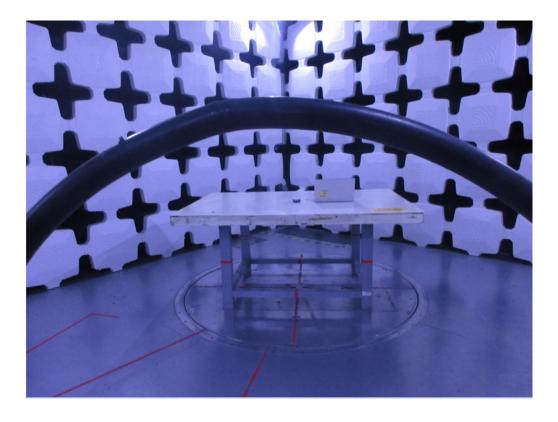




Radiated Emissions Test Photos





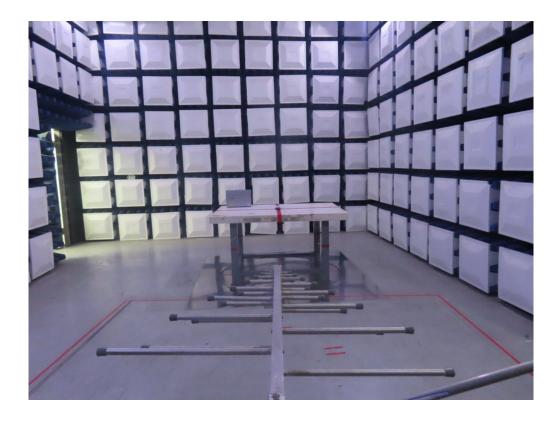




Radiated Emissions Test Photos

30 MHz to 1 GHz



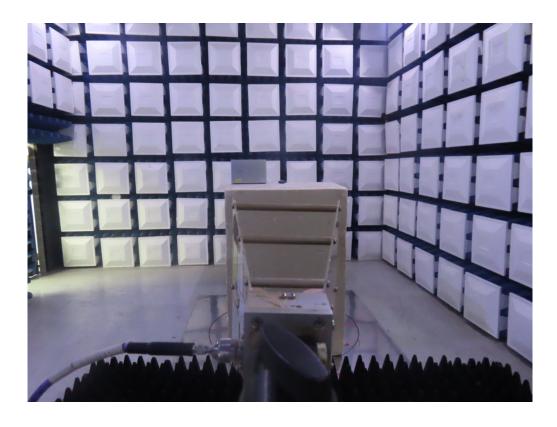




Radiated Emissions Test Photos

Above 1 GHz







Conducted Test Photos



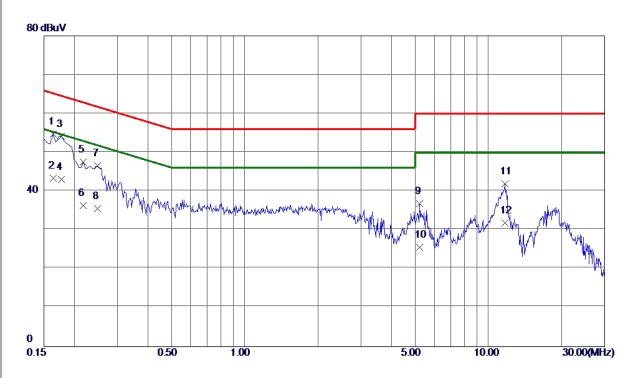




APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS







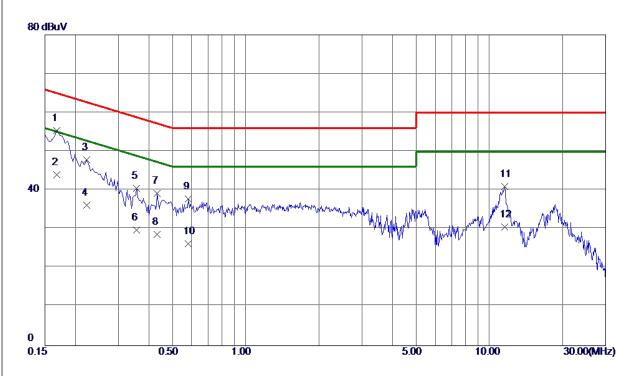
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0. 1635	44. 92	9. 79	54. 71	65. 28	-10. 57	QP	
2	0. 1635	33. 60	9. 79	43. 39	55. 28	-11. 89	AVG	
3	0. 1770	44. 22	9. 80	54. 0 2	64.63	-10. 61	QP	
4	0. 1770	33. 19	9. 80	42. 99	54. 63	-11. 64	AVG	
5	0. 2175	37. 72	9.82	47. 54	62. 91	-15. 37	QP	
6	0. 2175	26. 50	9. 82	36. 32	52. 91	-16. 59	AVG	
7	0. 2490	36. 74	9.82	46. 56	61. 79	-15. 23	QP	
8	0. 2490	25. 70	9. 82	35. 52	51. 79	-16. 27	AVG	
9	5. 2125	26. 48	10. 32	36. 80	60.00	-23. 20	QP	
10	5. 2125	15. 30	10. 32	25. 62	50.00	-24. 38	AVG	
11	11. 6835	31. 45	10. 45	41. 90	60. 00	-18. 10	QP	
12	11. 6835	21. 40	10. 45	31. 85	50. 00	-18. 15	AVG	

REMARKS:

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







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0. 1680	45. 59	9. 84	55. 43	65.06	-9. 63	QP	
2	0. 1680	34. 20	9. 84	44. 04	55. 06	-11. 02	AVG	
3	0. 2220	37. 94	9. 85	47. 79	62.74	-14. 95	QP	
4	0. 2220	26. 30	9. 85	36. 15	52. 74	-16. 59	AVG	
5	0. 3570	30. 51	9. 91	40. 42	58. 80	-18. 38	QP	
6	0. 3570	19. 80	9. 91	29. 71	48. 80	-19. 09	AVG	
7	0. 4335	29. 25	9. 93	39. 18	57. 19	-18. 01	QP	
8	0. 4335	18. 69	9. 93	28. 62	47. 19	-18. 57	AVG	
9	0. 5820	27. 80	9. 97	37. 77	56. 00	-18. 23	QP	
10	0. 5820	16. 30	9. 97	26. 27	46. 00	-19. 73	AVG	
11	11. 5620	30. 39	10. 52	40. 91	60. 00	-19. 09	QP	
12	11. 5620	20. 10	10. 52	30. 62	50. 00	-19. 38	AVG	

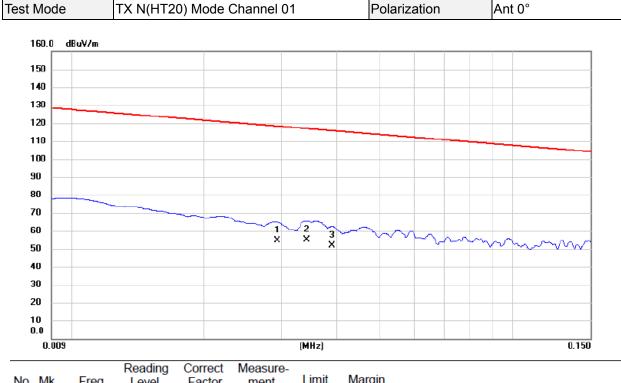
REMARKS:

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



APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ



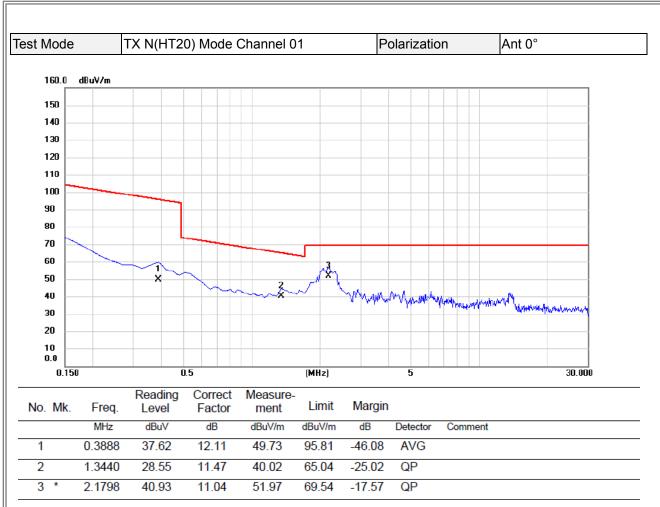


No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0293	41.95	12.85	54.80	118.27	-63.47	AVG	
2 *	0.0341	42.23	12.72	54.95	116.95	-62.00	AVG	
3	0.0390	39.36	12.59	51.95	115.78	-63.83	AVG	

REMARKS:

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

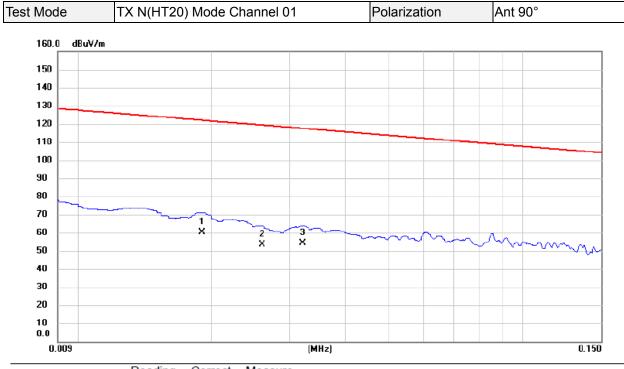




REMARKS:

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

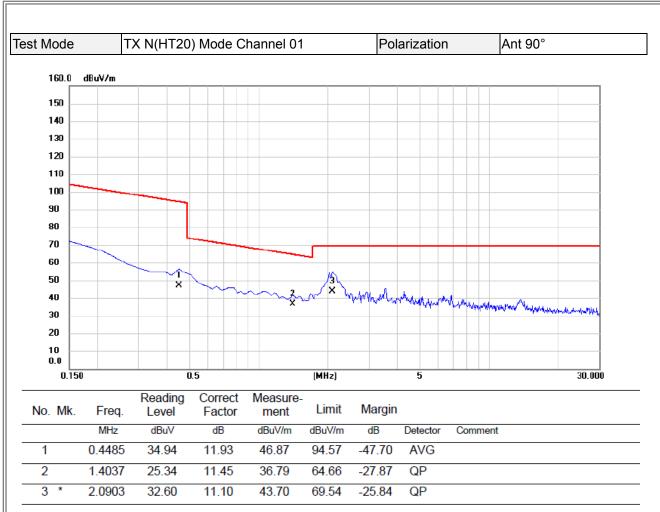




No. IV	∕lk.	Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	ī	0.0190	46.91	13.41	60.32	122.03	-61.71	AVG	
2		0.0260	40.32	12.94	53.26	119.31	-66.05	AVG	
3		0.0321	41.62	12.78	54.40	117.47	-63.07	AVG	

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



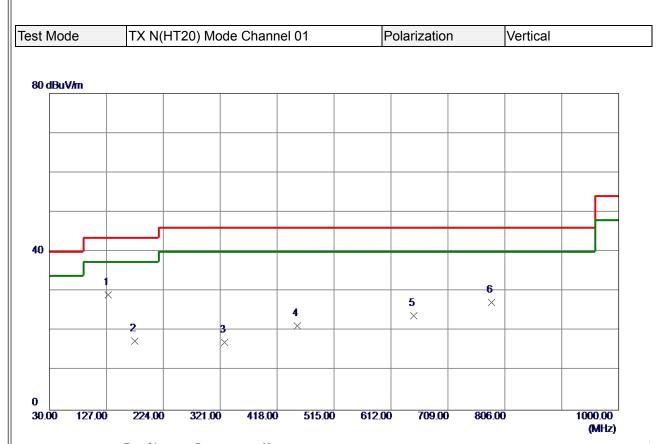


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

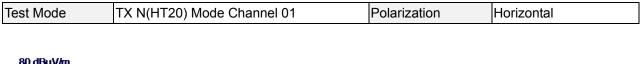


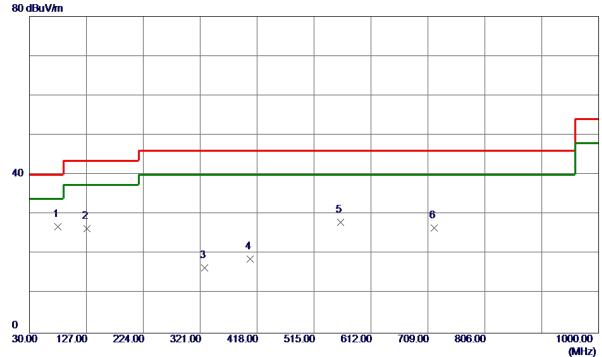


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	130. 3950	42. 49	-13. 43	29.06	43. 50	-14. 44	Peak	
2	175. 5000	30. 65	-13. 23	17. 42	43. 50	−26. 08	Peak	
3	328. 2750	27. 59	-10. 49	17. 10	46.00	-28.90	Peak	
4	452. 9200	28. 90	−7. 56	21. 34	46.00	-24. 66	Peak	
5	650. 3150	27. 78	-3. 99	23. 79	46. 00	-22. 21	Peak	
6	783. 2050	28. 51	-1. 27	27. 24	46.00	-18. 76	Peak	

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







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	78. 0150	44. 84	-17. 97	26. 87	40.00	-13. 13	Peak	
2	128. 4550	40.00	-13. 57	26. 43	43. 50	-17. 07	Peak	
3	328. 2750	26. 92	-10. 49	16. 43	46.00	-29. 57	Peak	
4	406. 3599	27. 44	-8. 78	18. 66	46.00	-27.34	Peak	
5	560. 1050	33. 83	-5. 90	27. 93	46.00	-18. 07	Peak	
6	720. 1550	29. 36	-2. 83	26. 53	46.00	-19. 47	Peak	

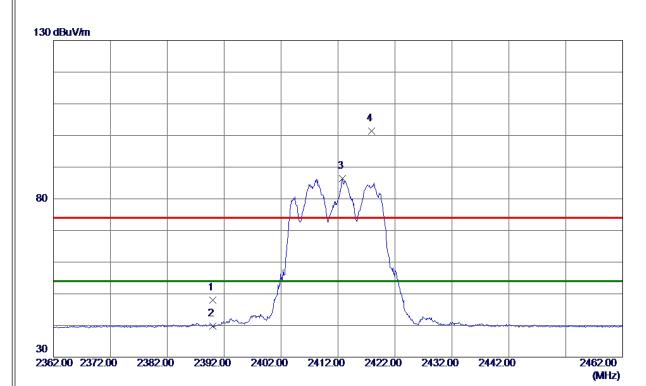
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ





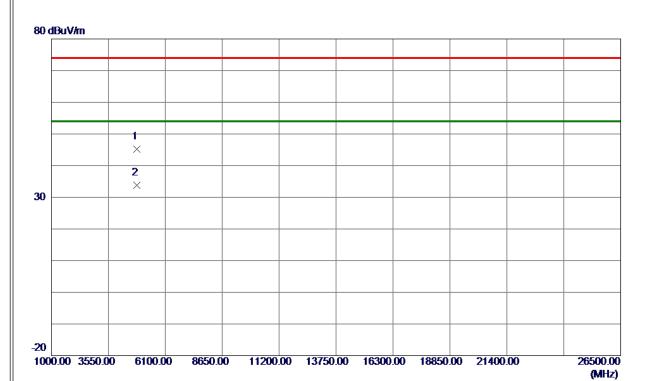


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	39. 75	8. 31	48. 06	74.00	-25.94	Peak	
2	2390. 0000	31. 43	8. 31	39. 74	54.00	-14. 26	AVG	
3 *	2412. 8000	78. 01	8. 33	86. 34	54.00	32. 34	AVG	No Limit
4	2417. 9000	92. 97	8. 34	101. 31	74.00	27. 31	Peak	No Limit
1								

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



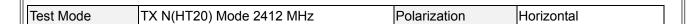


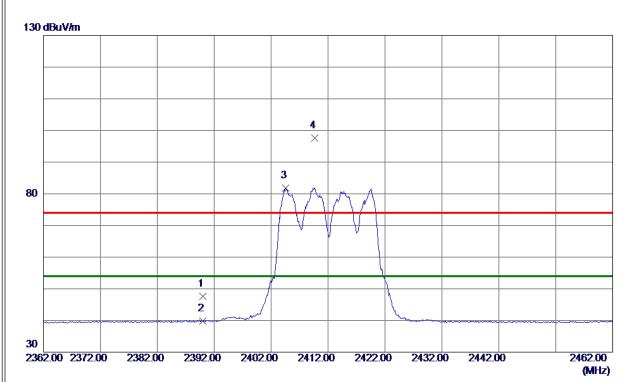


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4822. 4580	40. 01	5. 22	45. 23	74.00	-28. 77	Peak	
2 *	4825. 4880	28. 49	5. 24	33. 73	54. 00	-20. 27	AVG	

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





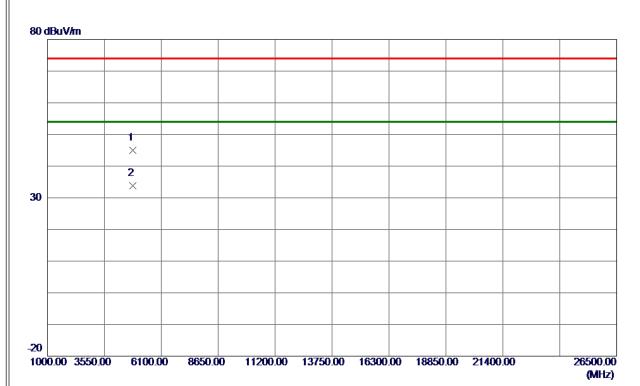


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390. 0000	39. 25	8. 31	47. 56	74.00	-26. 44	Peak	
2	2390. 0000	31. 43	8. 31	39. 74	54.00	-14. 26	AVG	
3 *	2404. 6000	73. 54	8. 32	81. 86	54. 00	27. 86	AVG	No Limit
4	2409. 7000	89. 18	8. 33	97. 51	74. 00	23. 51	Peak	No Limit

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





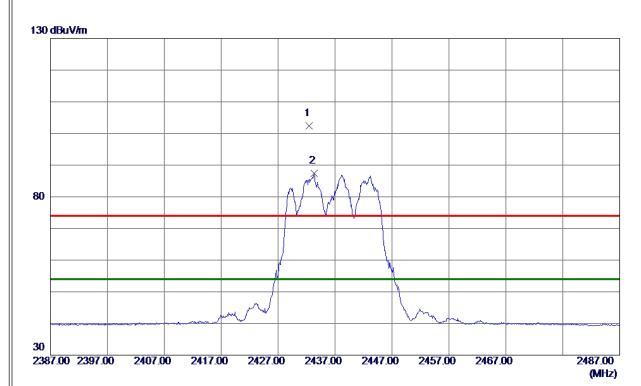


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4824. 4980	39. 72	5. 23	44. 95	74.00	-29.05	Peak	
2 *	4825. 7620	28. 54	5. 24	33. 78	54. 00	-20. 22	AVG	

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





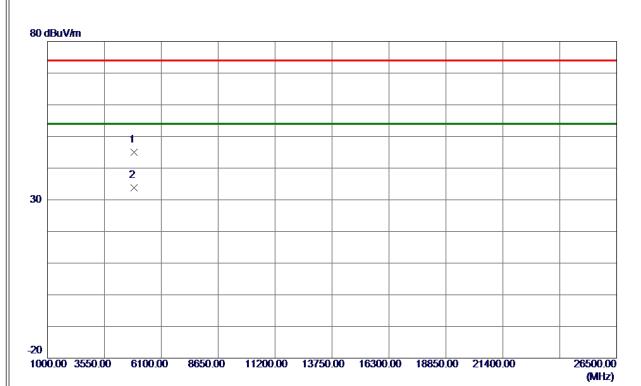


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2432. 4000	94. 10	8. 36	102. 46	74.00	28. 46	Peak	No Limit
2 *	2433. 3000	79. 05	8. 36	87. 41	54.00	33. 41	AVG	No Limit

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



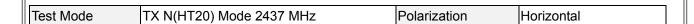


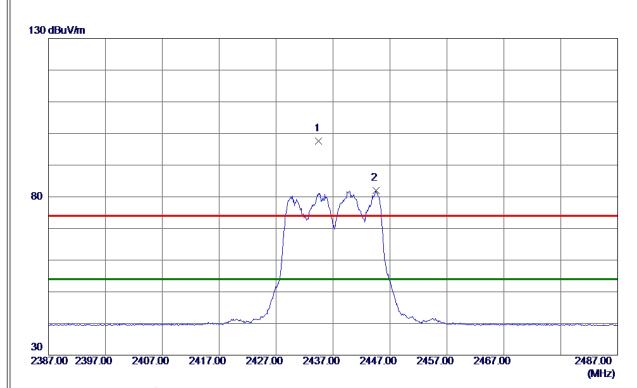


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4872. 4080	39. 62	5. 47	45. 09	74.00	-28. 91	Peak	
2 *	4874. 6000	28. 27	5. 48	33. 75	54. 00	-20. 25	AVG	

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





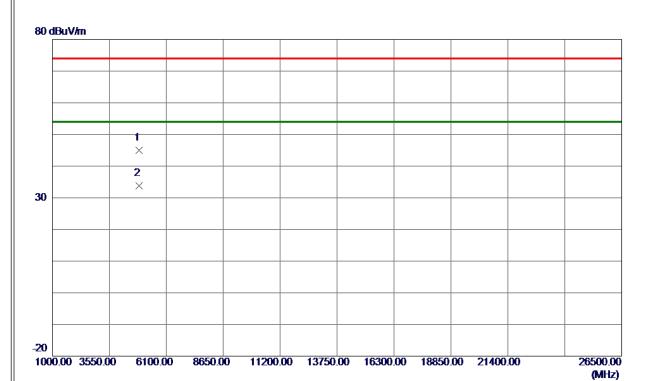


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2434. 5000	89. 30	8. 36	97. 66	74.00	23. 66	Peak	No Limit
2 *	2444. 6000	73. 69	8. 37	82. 06	54.00	28. 06	AVG	No Limit

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





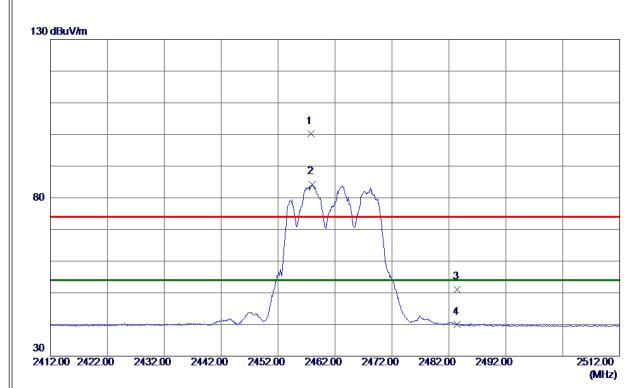


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4872. 6500	39. 55	5. 47	45.02	74.00	-28.98	Peak	
2 *	4876. 1250	28. 33	5. 49	33. 82	54.00	-20. 18	AVG	

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





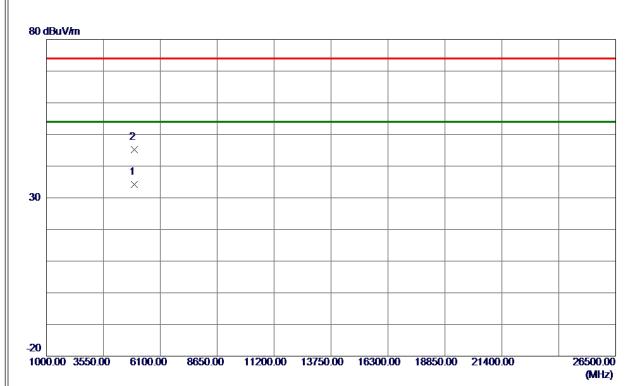


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2457. 8000	91. 81	8. 39	100. 20	74.00	26. 20	Peak	No Limit
2 *	2458. 0000	75. 91	8. 39	84. 30	54.00	30. 30	AVG	No Limit
3	2483. 5000	42.68	8. 42	51. 10	74.00	-22. 90	Peak	
4	2483. 5000	31. 54	8. 42	39. 96	54.00	-14. 04	AVG	

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





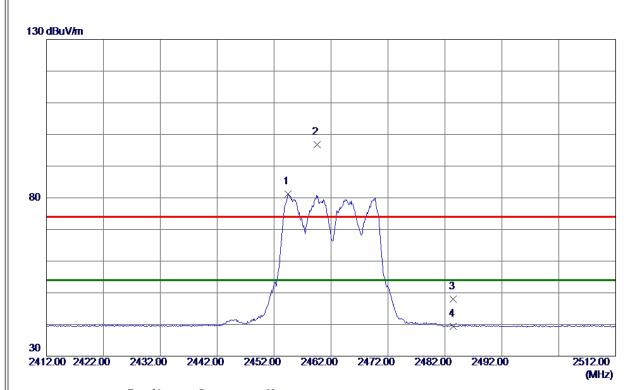


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	4926. 2480	28. 46	5. 75	34. 21	54.00	-19. 79	AVG	
2	4926. 4430	39. 40	5. 75	45. 15	74. 00	-28. 85	Peak	

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





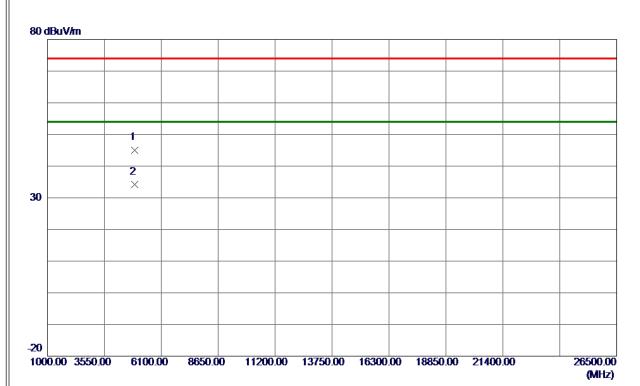


No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2454. 4000	72. 74	8. 39	81. 13	54.00	27. 13	AVG	No Limit
2	2459. 6000	88. 40	8. 39	96. 79	74.00	22. 79	Peak	No Limit
3	2483. 5000	39. 58	8. 42	48. 00	74.00	-26.00	Peak	
4	2483. 5000	31. 07	8. 42	39. 49	54.00	-14. 51	AVG	

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







No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4921. 6930	39. 38	5. 72	45. 10	74.00	-28.90	Peak	
2 *	4923. 1349	28. 38	5. 73	34. 11	54. 00	-19. 89	AVG	

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

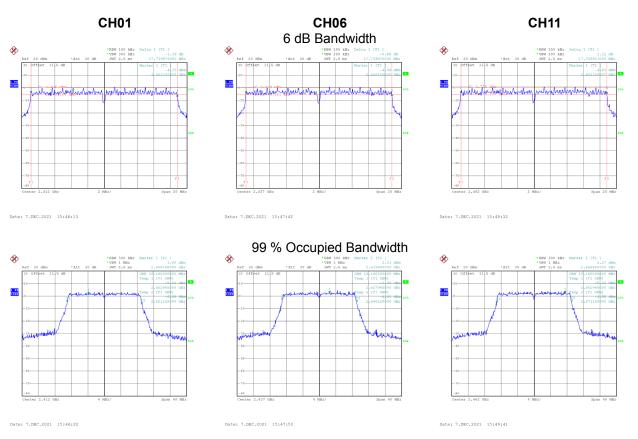


APPENDIX E - BANDWIDTH



l	Test Mode	TX N(HT20) Mode
ı		(=-)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Occupied Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Result
01	2412	17.740	18.160	0.5	Complies
06	2437	17.740	18.160	0.5	Complies
11	2462	17.760	18.160	0.5	Complies





APPENDIX F - MAXIMUM OUTPUT POWER



Test Mode	TX N(HT20) Mode

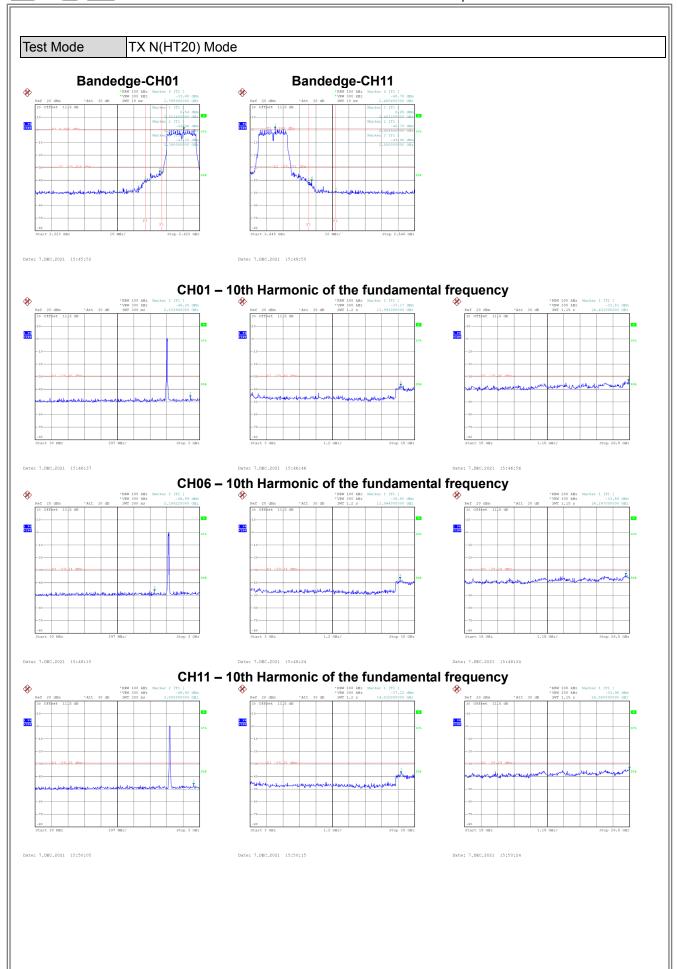
Channel	Frequency (MHz)	Peak Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	18.56	30.00	1.0000	Complies
06	2437	18.37	30.00	1.0000	Complies
11	2462	18.11	30.00	1.0000	Complies

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	3.97	2.32	6.29	30.00	1.0000	Complies
06	2437	3.17	2.32	5.49	30.00	1.0000	Complies
11	2462	3.30	2.32	5.62	30.00	1.0000	Complies



APPENDIX G - CONDUCTED SPURIOUS EMISSIONS







APPENDIX H - POWER SPECTRAL DENSITY



Test Mode	TX N(HT20) Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-13.98	8.00	Complies
06	2437	-14.50	8.00	Complies
11	2462	-14.45	8.00	Complies

