

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>60414056 001</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	168271809	Seite 1 von 32 <i>Page 1 of 32</i>
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2020-06-29	
<b>Auftraggeber:</b> <i>Client:</i>	<b>PLUS Corporation</b> 11F, Toranomon Towers Office, 4-1-28, Toranomon, Minato-ku, Tokyo, 105-0001 Japan			
<b>Prüfgegenstand:</b> <i>Test item:</i>	COPYBOARD (Network board)			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	N-31S, N-31W, N-314, N-32S, N-32W, N-324 (Trademark: PLUS)			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	FCC approval			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.225 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 FCC KDB Publication 447498 D01 v06	RSS-210 Issue 10 October 2019 RSS-GEN issue 5 March 2019 RSS-102 issue 5 March 2015 ICES-003 Issue 6 April 2019		
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2020-08-17	Please refer to photo documents		
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A002888012			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2020-08-21 – 2020-09-03			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von:</b> <i>tested by:</i>	<b>genehmigt von:</b> <i>authorized by:</i>			
<b>Datum:</b> <i>Date:</i> 2020-10-23		<b>Ausstellungsdatum:</b> <i>Issue date:</i> 2020-10-23		
<b>Stellung / Position</b>	Alex Lan / Senior Project Engineer	<b>Stellung / Position</b>	Winnie Hou / Technical Certifier	
<b>Sonstiges / Other:</b>				
FCC ID: Z2ZN-32SW IC: 12133A-N32SW, HVIN: N-31S, N-31W, N-314, N-32S, N-32W, N-324				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		<b>Prüfmuster vollständig und unbeschädigt</b> <i>Test item complete and undamaged:</i>		
* Legende: 1 = sehr gut      2 = gut      3 = befriedigend      4 = ausreichend      5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n)      F(ail) = entspricht nicht o.g. Prüfgrundlage(n)      N/A = nicht anwendbar      N/T = nicht getestet		Legend: 1 = very good      2 = good      3 = satisfactory      4 = sufficient      5 = poor P(ass) = passed a.m. test specifications(s)      F(ail) = failed a.m. test specifications(s)      N/A = not applicable      N/T = not tested		
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

v05

## Test Summary

**5.1.1 ANTENNA REQUIREMENT***RESULT: Pass***5.1.2 EMISSION WITHIN BAND***RESULT: Pass***5.1.3 SPURIOUS EMISSION OUTSIDE BAND***RESULT: Pass***5.1.4 FREQUENCY TOLERANCE OF CARRIER SIGNAL***RESULT: Pass***5.1.5 99% BANDWIDTH***RESULT: Pass***5.1.6 20dB BANDWIDTH***RESULT: Pass***5.1.7 CONDUCTED EMISSIONS***RESULT: Pass***5.1.8 CONDUCTED EMISSIONS***RESULT: Pass***5.1.9 RADIATED EMISSIONS***RESULT: Pass***6.1.1 ELECTROMAGNETIC FIELDS***RESULT: Pass*

## Contents

<b>1</b>	<b>GENERAL REMARKS .....</b>	<b>4</b>
<b>1.1</b>	<b>COMPLEMENTARY MATERIALS.....</b>	<b>4</b>
<b>2</b>	<b>TEST SITES.....</b>	<b>4</b>
<b>2.1</b>	<b>TEST FACILITIES .....</b>	<b>4</b>
<b>2.2</b>	<b>LIST OF TEST AND MEASUREMENT INSTRUMENTS .....</b>	<b>5</b>
<b>2.3</b>	<b>TRACEABILITY .....</b>	<b>7</b>
<b>2.4</b>	<b>CALIBRATION.....</b>	<b>7</b>
<b>2.5</b>	<b>MEASUREMENT UNCERTAINTY.....</b>	<b>7</b>
<b>2.6</b>	<b>LOCATION OF ORIGINAL DATA.....</b>	<b>7</b>
<b>2.7</b>	<b>STATUS OF FACILITY USED FOR TESTING .....</b>	<b>7</b>
<b>3</b>	<b>GENERAL PRODUCT INFORMATION .....</b>	<b>8</b>
<b>3.1</b>	<b>PRODUCT FUNCTION AND INTENDED USE .....</b>	<b>8</b>
<b>3.2</b>	<b>RATINGS AND SYSTEM DETAILS.....</b>	<b>9</b>
<b>3.3</b>	<b>INDEPENDENT OPERATION MODES.....</b>	<b>9</b>
<b>3.4</b>	<b>NOISE GENERATING AND NOISE SUPPRESSING PARTS .....</b>	<b>9</b>
<b>3.5</b>	<b>SUBMITTED DOCUMENTS.....</b>	<b>9</b>
<b>4</b>	<b>TEST SET-UP AND OPERATION MODES.....</b>	<b>10</b>
<b>4.1</b>	<b>PRINCIPLE OF CONFIGURATION SELECTION .....</b>	<b>10</b>
<b>4.2</b>	<b>TEST OPERATION AND TEST SOFTWARE .....</b>	<b>10</b>
<b>4.3</b>	<b>SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT .....</b>	<b>10</b>
<b>4.4</b>	<b>COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE .....</b>	<b>10</b>
<b>4.5</b>	<b>TEST SETUP DIAGRAM .....</b>	<b>11</b>
<b>5</b>	<b>TEST RESULTS .....</b>	<b>13</b>
<b>5.1</b>	<b>TRANSMITTER REQUIREMENT &amp; TEST SUITES.....</b>	<b>13</b>
<b>5.1.1</b>	<i>Antenna Requirement.....</i>	<i>13</i>
<b>5.1.2</b>	<i>Emission within band.....</i>	<i>14</i>
<b>5.1.3</b>	<i>Spurious Emission outside band .....</i>	<i>15</i>
<b>5.1.4</b>	<i>Frequency tolerance of carrier signal .....</i>	<i>21</i>
<b>5.1.5</b>	<i>99% Bandwidth.....</i>	<i>22</i>
<b>5.1.6</b>	<i>20dB Bandwidth .....</i>	<i>23</i>
<b>5.1.7</b>	<i>Conducted Emissions.....</i>	<i>24</i>
<b>5.1.8</b>	<i>Conducted Emissions.....</i>	<i>27</i>
<b>5.1.9</b>	<i>Radiated Emissions.....</i>	<i>28</i>
<b>6</b>	<b>SAFETY HUMAN EXPOSURE.....</b>	<b>29</b>
<b>6.1</b>	<b>RADIO FREQUENCY EXPOSURE COMPLIANCE .....</b>	<b>29</b>
<b>6.1.1</b>	<i>Electromagnetic Fields .....</i>	<i>29</i>
<b>7</b>	<b>PHOTOGRAPHS OF THE TEST SET-UP .....</b>	<b>30</b>
<b>8</b>	<b>LIST OF TABLES.....</b>	<b>32</b>

<b>9</b>	<b>LIST OF PHOTOGRAPHS.....</b>	<b>32</b>
----------	---------------------------------	-----------

## **1 General Remarks**

### **1.1 Complementary Materials**

None

## **2 Test Sites**

### **2.1 Test Facilities**

**TÜV Rheinland (Shenzhen) Co., Ltd.**

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

<b>Radio Spectrum Testing</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Calibrated until</b>
Wireless Connectivity Tester	Rohde & Schwarz	CMW270	101375	20.08.2021
Signal Analyzer	Rohde & Schwarz	FSV 40	101441	20.08.2021
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263301	21.08.2021
Signal Generator	Rohde & Schwarz	SMB100A	115186	21.08.2021
OSP	Rohde & Schwarz	OSP 150	101017	20.12.2020
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	Rohde & Schwarz	WMS32 (V10.40.10)	N/A	N/A
Power Meter	Rohde & Schwarz	NRP2	107105	20.12.2020
Wideband Power Sensor	Rohde & Schwarz	NRP-Z81	105350	20.12.2020
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	16.04.2021
Shielding Room 8#	Albatross	SR8	APC17151-SR8	23.07.2023
<b>Unwanted Emission Testing</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Calibrated until</b>
EMI Test Receiver	Rohde & Schwarz	ESR 7	102021	19.08.2021
Signal Analyzer	Rohde & Schwarz	FSV 40	101439	21.08.2021
System Controller Interface	Rohde & Schwarz	SCI-100	S10010038	N/A
Filterbank	Rohde & Schwarz	Wlan	100759	21.08.2021
OSP	Rohde & Schwarz	OSP 120	102040	N/A
Pre-amplifier	Rohde & Schwarz	SCU08F1	08320031	20.08.2021
Amplifier	Rohde & Schwarz	SCU-18F	180070	20.08.2021
Amplifier	Rohde & Schwarz	SCU40A	100475	20.08.2021
Trilog Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VULB9162	193	02.09.2021
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	02.09.2021
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	02.09.2021
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	01.09.2021
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18313	02.09.2021

Test software	Rohde & Schwarz	V10.40.10-EMC32	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	07.06.2021

**Conducted Emissions (TUV)**

Description	Manufacturer	Model	Serial No.	Calibrated until
EMI Test Receiver	R&S	ESR3	102428	03.09.2021
Artificial Mains Network	R&S	ENV216	102333	19.08.2021
Artificial Mains Network	R&S	ENV432	101411	19.08.2021
Impedance Stabilisation Network	R&S	ENY81	100323	19.08.2021
Impedance Stabilisation Network	R&S	ENY81-CA6	101810	20.08.2021
Current Probe	R&S	EZ-17	101247	19.08.2021
Voltage Probe	R&S	ESH2-Z3	100557	19.08.2021
Attenuator	R&S	ESH2Z31	100300	19.08.2021
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A
Click test software	R&S	Click Rate Analyzer 2.4.2	N/A	N/A

**Radiated Emissions (TUV)**

Description	Manufacturer	Model	Serial No.	Calibrated until
3m SAC	ETS	SAC3	CT001632-Q1362	23.08.2021
EMI Test Receiver	R&S	ESR7	102111	23.01.2021
Horn Antenna	R&S	HF907	102706	01.09.2021
Preamplifier	FIT	SCU-18F	180077	19.08.2021
Active magnetic loop antenna	SCHWARZBECK	FMZB1519B	00080	19.08.2021
Trilog-Broadband antenna	SCHWARZBECK	VULB9168	0945	12.09.2021
Switching Controller Interface	R&S	OSP 120	102039	N/A
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Test	Parameters	Expanded uncertainty ( $U_{lab}$ )	Expanded uncertainty ( $U_{CISPR}$ )
Conducted Emission	Level accuracy (9kHz to 150kHz)	$\pm 3.70$ dB	$\pm 3.8$ dB
	(150kHz to 30MHz)	$\pm 3.30$ dB	$\pm 3.4$ dB
Radiated Emission (3m SAC)	Level accuracy (30MHz to 1000MHz)	$\pm 4.52$ dB	$\pm 6.3$ dB
	Level accuracy (above 1000MHz)	$\pm 4.37$ dB	N/A

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were in this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

### 3 General Product Information

#### 3.1 Product Function and Intended Use

The EUTs are copyboards with NFC function (13.56MHz), which can communicate with an IC card. These models are identical except the panel size.

<b>Model No.</b>	<b>N-31S</b>	<b>N-31W</b>	<b>N-314</b>	<b>N-32S</b>	<b>N-32W</b>	<b>N-324</b>
<b>Difference</b>						
External dimensions	W1480*D675 *H1947mm	W1980*D675 *H1947mm	W1480*D675 *H1947mm	W1480*D675 *H1947mm	W1980*D675 *H1947mm	W1480*D675 *H1947mm
Panel Size	H910*W1300 mm	H910*W1800 mm	H910*W1300 mm	H910*W1300 mm	H910*W1800 mm	H910*W1300 mm
Effective reading size	H900*W1280 mm	H900*W1780 mm	H900*W1280 mm	H900*W1280 mm	H900*W1780 mm	H900*W1280 mm
Main unit Weight	20.0kg	25.0kg	25.0kg	20.0kg	25.0kg	25.0kg
Number of Page	2	2	4	2	2	4
<b>Switch</b>	Function key + numeric keypad + NFC			Function key + NFC		
<b>Mainboard, AC Adapter, step motor</b>	Same					

For details refer to the User Manual, Technical Description and Circuit Diagram.

## 3.2 Ratings and System Details

**Table 2: Technical Specification of EUT**

Technical Specification	Value
Kind of Equipment	COPYBOARD (Network board)
Type Designation	N-31S, N-31W, N-314, N-32S, N-32W, N-324
Trade Mark	PLUS
Operating Frequency	13.56 MHz
Operating Temperature Range	-20 °C ~ +45 °C
Operating Voltage	DC 12.0V via AC/DC adapter
Adapter	Model No.: LTE36ES-S2-3 Input: AC 100-240~50/60Hz 0.75A Output: DC 12.0V, 3.0A
Type of Modulation	ASK
Antenna Type	PCB Antenna
Antenna Gain	-61.24 dBi

## 3.3 Independent Operation Modes

The basic operation modes are:

- A. On
  - 1. USB mode
  - 2. Printing mode
  - 3. Connected to PC via LAN port mode
- B. NFC mode
- C. Off

## 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

## 3.5 Submitted Documents

- Block Diagram
- Schematics
- User Manual

## 4 Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5&6. All testing were performed according to the procedures in ANSI C63.10: 2013 & ANSI C63.4: 2014

According to clause 3.1, all tests were applied on model N-32W only.

### 4.3 Special Accessories and Auxiliary Equipment

**Table 3: List of Accessories and Auxiliary Equipment**

Description	Manufacturer	Model	S/N	Rating
Laptop	DELL	Inspiron 14-7460	RHKKJA00DPC	DC 19.5V ; 3.34A
Printer	HP	Deskjet Ink Advantage 1018	CN37G18NQ2	DC 22V ; 455mA
AC/DC Adapter	LTE	LTE36ES-S2-3	200138146	INPUT: AC 100-240V, 50/60Hz, 0.75A OUTPUT: DC 12V, 3A

### 4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

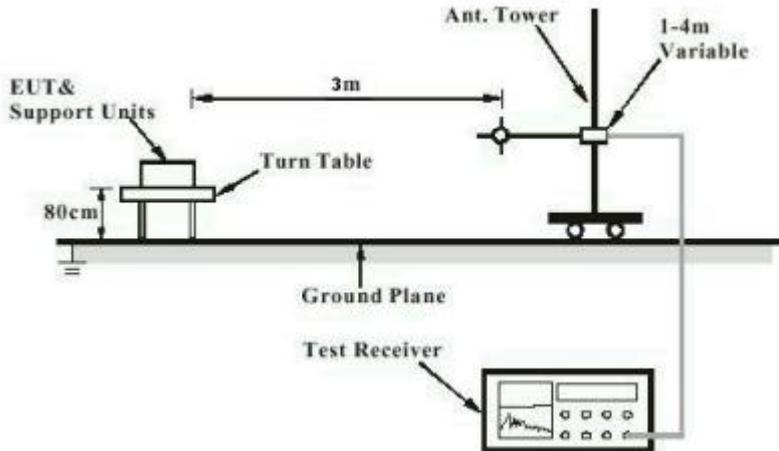


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

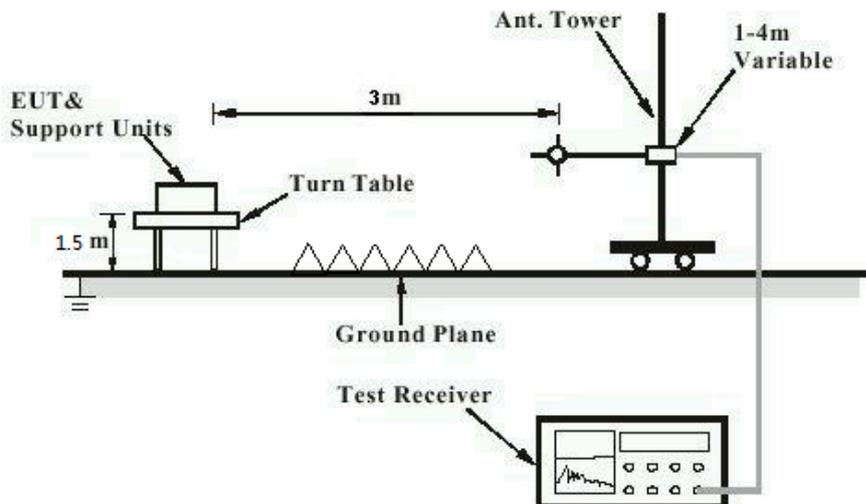


Diagram of Measurement Configuration for Conducted Transmitter Measurement

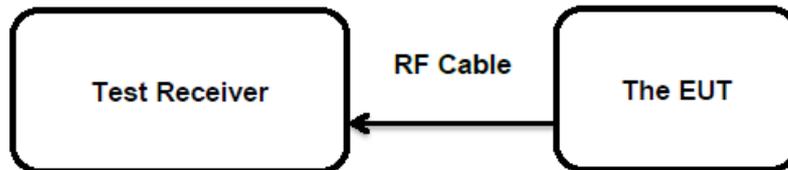
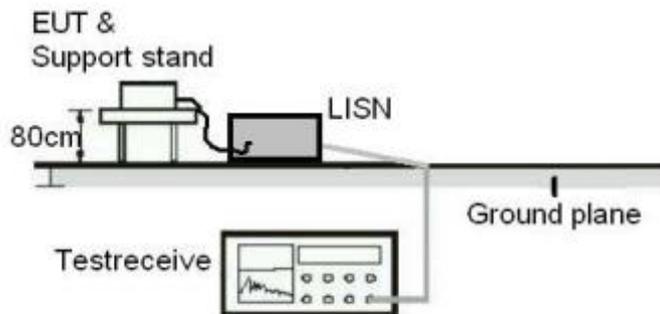


Diagram of Measurement Equipment Configuration for Mains Conduction Measurement



## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**RESULT:****Pass****Test Specification**

Test standard : Part 15.203  
Limit : the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has one internal antenna, the directional gain of antenna are -64.31 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.



### 5.1.3 Spurious Emission outside band

**RESULT:****Pass****Test Specification**

Test standard : FCC part 15.225 (d)  
RSS-210 A2.6 (d)  
Basic standard : ANSI C63.10: 2013  
Limit : FCC part 15.209(a)  
Kind of test site : 3m Semi-anechoic Chamber

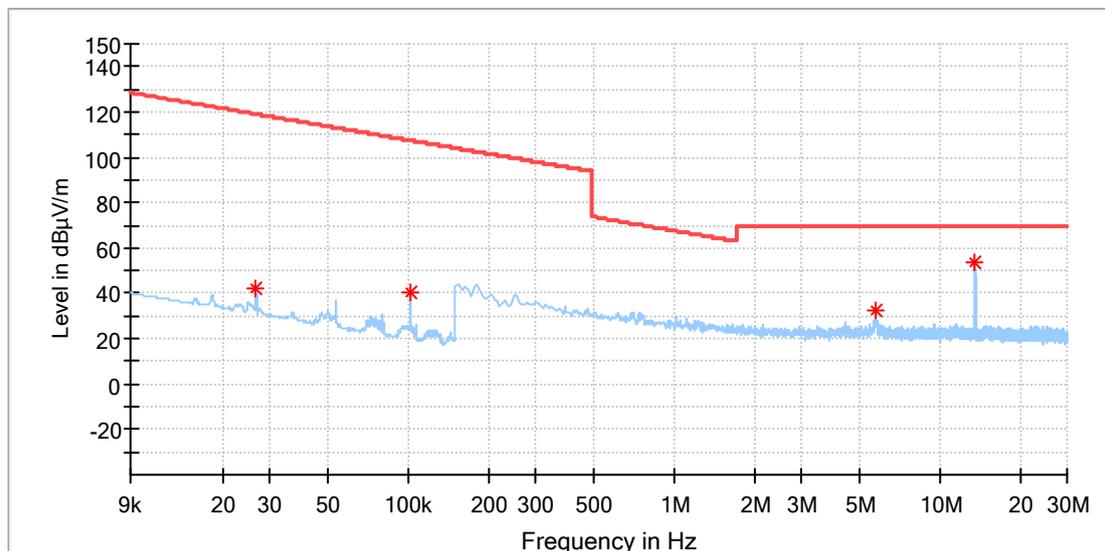
**Test Setup**

Date of testing : 28.08.2020  
Input voltage : AC 120V, 60Hz  
Operation mode : B  
Earthing : Not connected  
Ambient temperature : 24 °C  
Relative humidity : 45 %  
Atmospheric pressure : 101 kPa

Refer to following test plots for details of test result.

## EUT Information

EUT Name:	COPYBOARD (Network board)
Model:	N-32W
Test Mode:	13.56MHz
Test Voltage::	AC 120V/60Hz
Remark:	Temp 24 Humi:45%
Test Standard:	FCC Part 15C
Tested By:	Kei Zhang
Reviewed By:	Terry Yin
Polarity:	X:

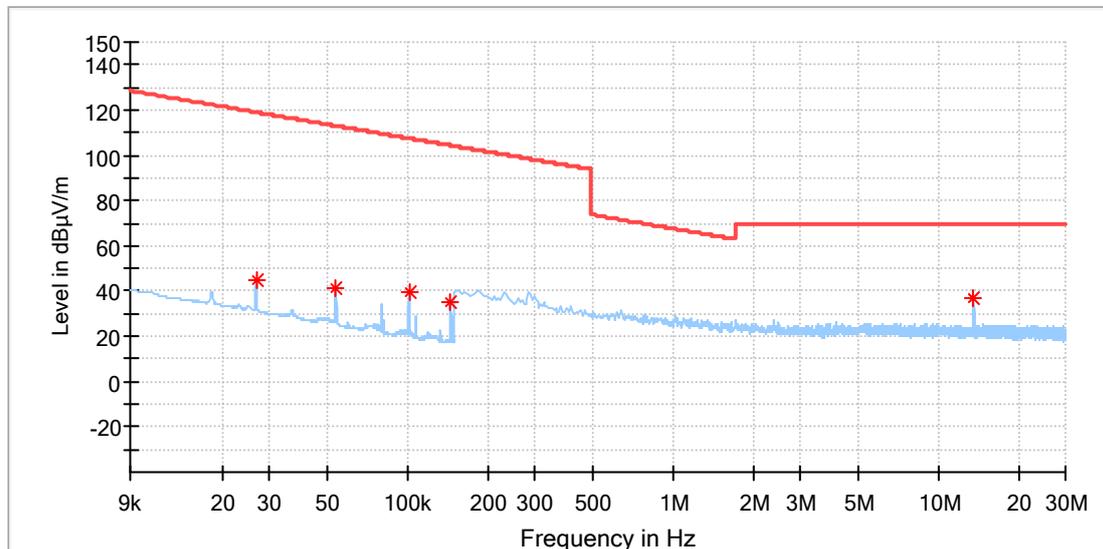


## Critical Freqs

Frequency (MHz)	Max peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Corr. (dB/m)	Preamp (dB)	Trd Corr. (dB/m)
0.026524	42.12	119.12	77.00	100.0	147.0	20.0	0.0	20.0
0.101053	40.41	107.51	67.09	100.0	0.0	20.0	0.0	20.0
5.711757	32.26	69.50	37.24	100.0	142.0	20.0	0.0	20.0
13.560552	53.41	69.50	16.09	100.0	91.0	20.0	0.0	20.0

## EUT Information

EUT Name:	COPYBOARD (Network board)
Model:	N-32W
Test Mode:	13.56MHz
Test Voltage::	AC 120V/60Hz
Remark:	Temp 24 Humi:45%
Test Standard:	FCC Part 15C
Tested By:	Kei Zhang
Reviewed By:	Terry Yin
Polarity:	Y

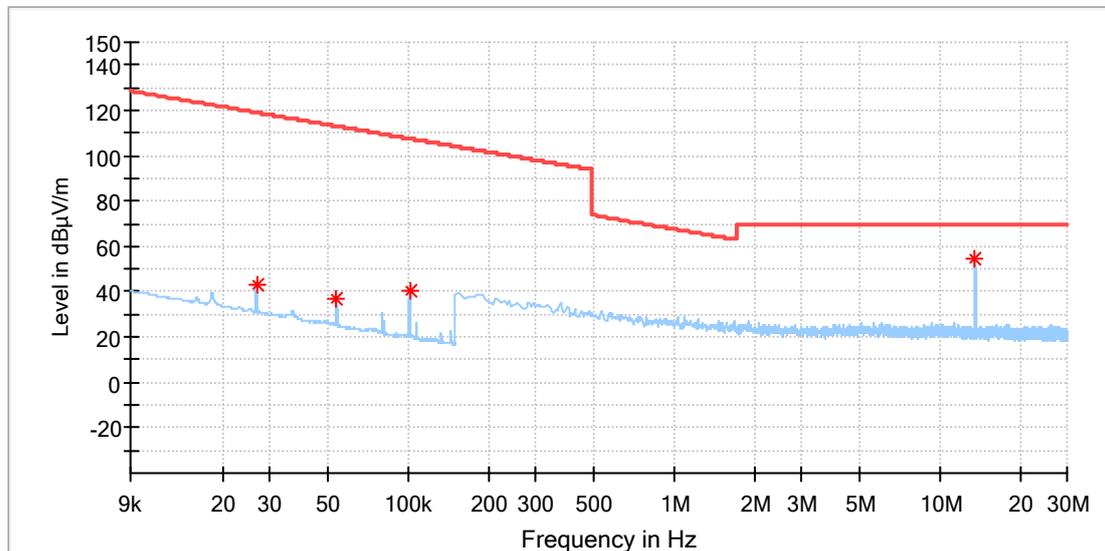


## Critical Freqs

Frequency (MHz)	Max peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Corr. (dB/m)	Preamp (dB)	Trd Corr. (dB/m)
0.026826	44.56	119.02	74.46	100.0	27.0	20.0	0.0	20.0
0.053214	41.63	113.07	71.44	100.0	216.0	20.0	0.0	20.0
0.100851	39.93	107.52	67.59	100.0	0.0	20.0	0.0	20.0
0.144360	35.06	104.41	69.35	100.0	335.0	20.0	0.0	20.0
13.560552	36.69	69.50	32.81	100.0	300.0	20.0	0.0	20.0

## EUT Information

EUT Name:	COPYBOARD (Network board)
Model:	N-32W
Test Mode:	13.56MHz
Test Voltage::	AC 120V/60Hz
Remark:	Temp 24 Humi:45%
Test Standard:	FCC Part 15C
Tested By:	Kei Zhang
Reviewed By:	Terry Yin
Polarity	Z

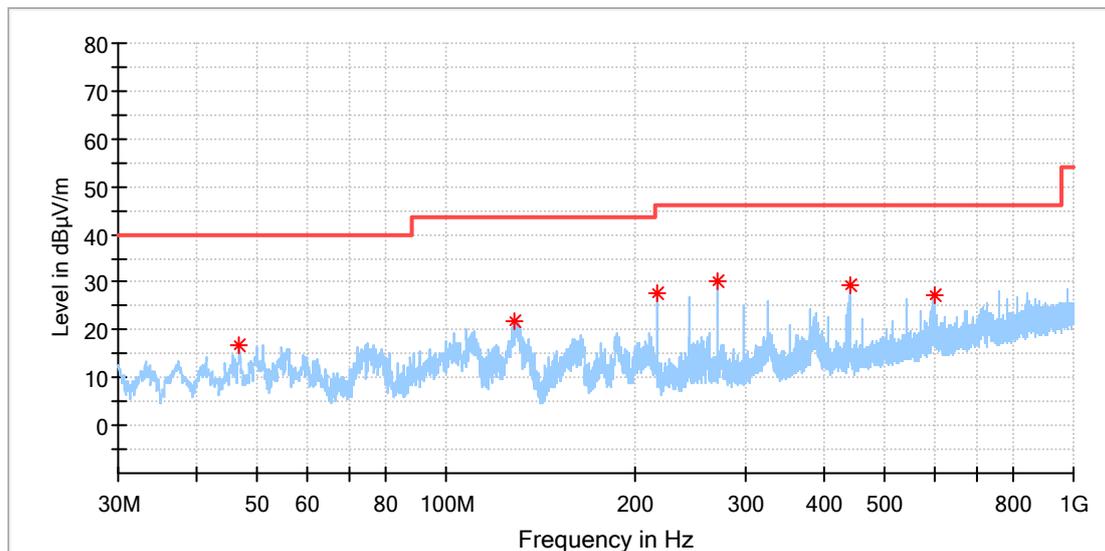


## Critical Freqs

Frequency (MHz)	Max peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Corr. (dB/m)	Preamp (dB)	Trd Corr. (dB/m)
0.026826	42.95	119.02	76.07	100.0	92.0	20.0	0.0	20.0
0.053717	36.81	112.99	76.18	100.0	2.0	20.0	0.0	20.0
0.100851	40.66	107.52	66.86	100.0	164.0	20.0	0.0	20.0
13.560552	54.76	69.50	14.74	100.0	223.0	20.0	0.0	20.0

### EUT Information

EUT Name:	COPYBOARD (Network board)
Model:	N-32W
Test Mode:	13.56MHz
Test Voltage::	AC 120V/60Hz
Remark:	Temp 24 Humi:45%
Test Standard:	FCC Part 15C
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

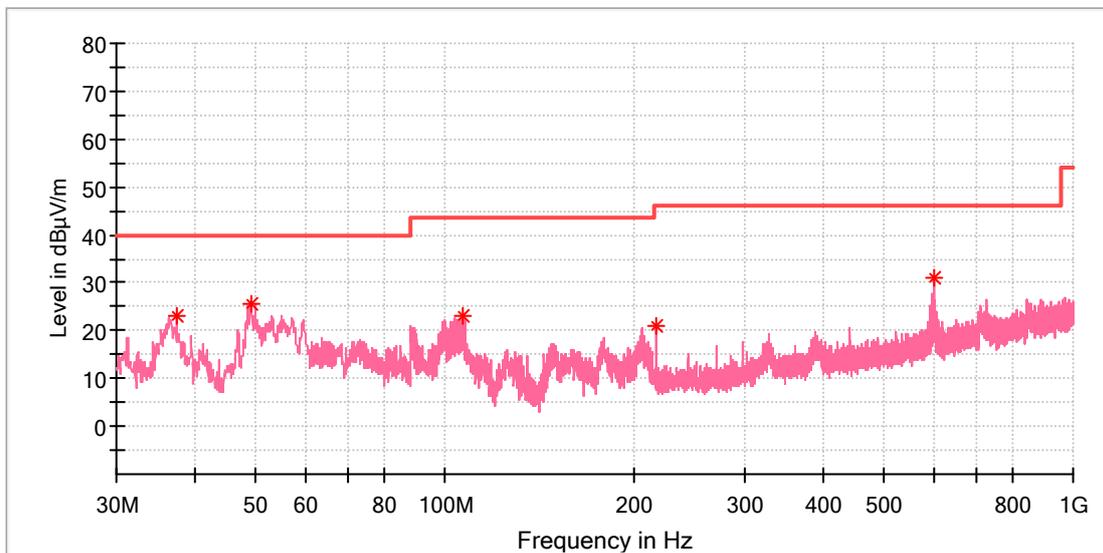


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
46.829500	16.75	40.00	23.25	100.0	H	153.0	-18.9
128.746000	21.84	43.50	21.66	100.0	H	145.0	-22.0
216.919000	27.85	46.00	18.15	100.0	H	54.0	-19.0
271.190500	30.33	46.00	15.67	100.0	H	24.0	-17.2
440.310000	29.24	46.00	16.76	100.0	H	108.0	-13.5
600.602500	27.11	46.00	18.89	100.0	H	34.0	-10.2

## EUT Information

EUT Name:	COPYBOARD (Network board)
Model:	N-32W
Test Mode:	13.56MHz
Test Voltage::	AC 120V/60Hz
Remark:	Temp 24 Humi:45%
Test Standard:	FCC Part 15C
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



## Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	23.04	40.00	16.96	150.0	V	228.0	-21.3
49.157500	25.47	40.00	14.53	150.0	V	272.0	-18.6
106.921000	22.86	43.50	20.64	150.0	V	244.0	-19.2
216.919000	20.83	46.00	25.17	150.0	V	282.0	-19.0
599.438500	31.15	46.00	14.85	150.0	V	191.0	-10.2



### 5.1.5 99% Bandwidth

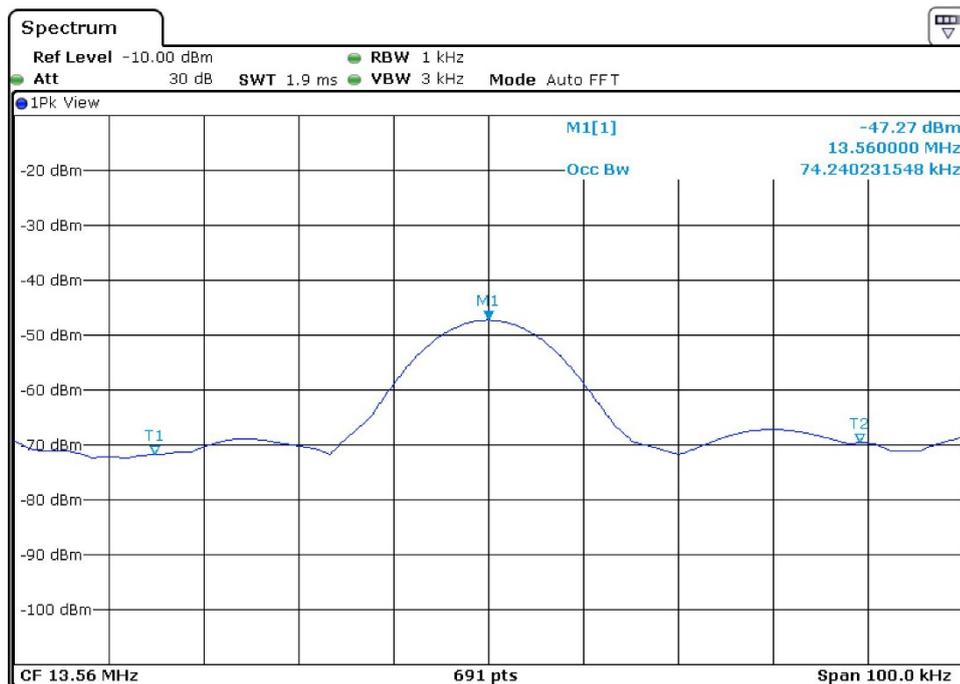
**RESULT:**
**Pass**
**Test Specification**

Test standard : RSS-Gen Clause 6.7  
 Basic standard : ANSI C63.10: 2013  
 Kind of test site : Shielded Room

**Test Setup**

Date of testing : 03.09.2020  
 Input voltage : AC 120V, 60Hz  
 Operation mode : B  
 Ambient temperature : 23 °C  
 Relative humidity : 48 %  
 Atmospheric pressure : 101 kPa

For details refer to following test result.



### 5.1.6 20dB Bandwidth

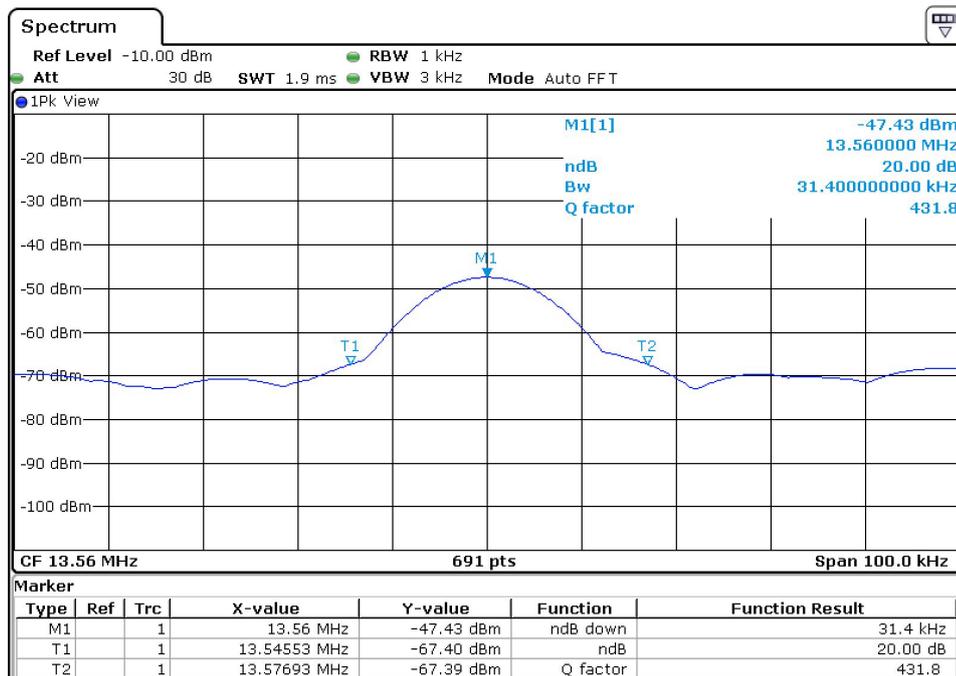
**RESULT:**
**Pass**
**Test Specification**

Test standard : FCC part 15.215  
 Basic standard : ANSI C63.10: 2013  
 Kind of test site : Shielded Room

**Test Setup**

Date of testing : 03.09.2020  
 Input voltage : AC 120V, 60Hz  
 Operation mode : B  
 Ambient temperature : 23 °C  
 Relative humidity : 48 %  
 Atmospheric pressure : 101 kPa

For details refer to following test result.



## 5.1.7 Conducted Emissions

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.207 RSS-Gen Issue 5 March 2019
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	150 kHz – 30 MHz
Kind of test site	:	Shielded Room
Limit	:	FCC Part 15.207 (a) Table 4 of RSS-Gen Issue 5 March 2019

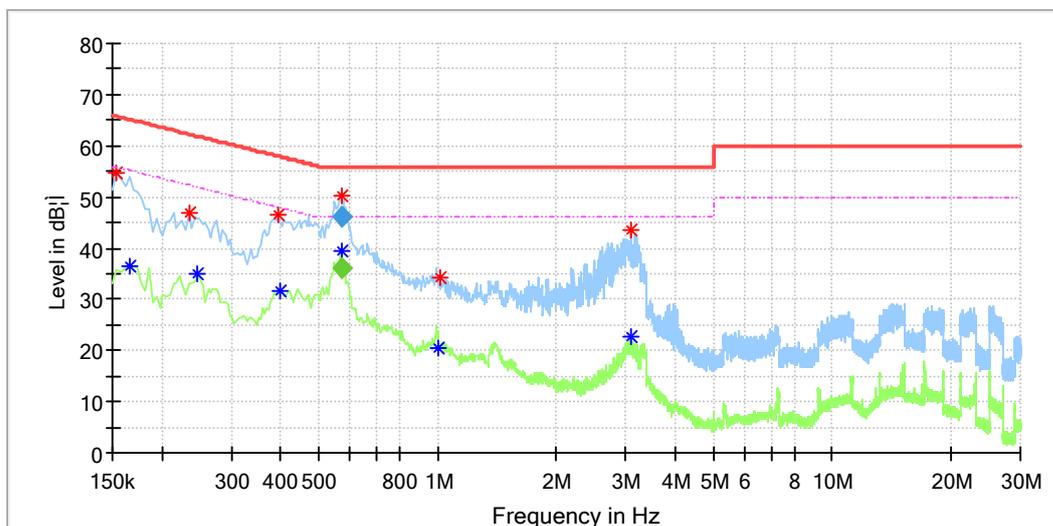
**Test Setup**

Date of testing	:	21.08.2020
Test voltage	:	AC 120V, 60Hz
Operation mode	:	B
Test Ports	:	AC mains power port
Artificial hand	:	N/A
Earthing	:	Not connected
Ambient temperature	:	23 °C
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the following test plots.

## EUT Information

EUT Name:	Copy Board
Model:	N-32W
Order No.:	
Test Mode:	NFC
Test Voltage:	AC120V/60Hz
Test By:	Tom Guo
Review By:	Gary Chen
Remark:	SR2



## Critical Freqs

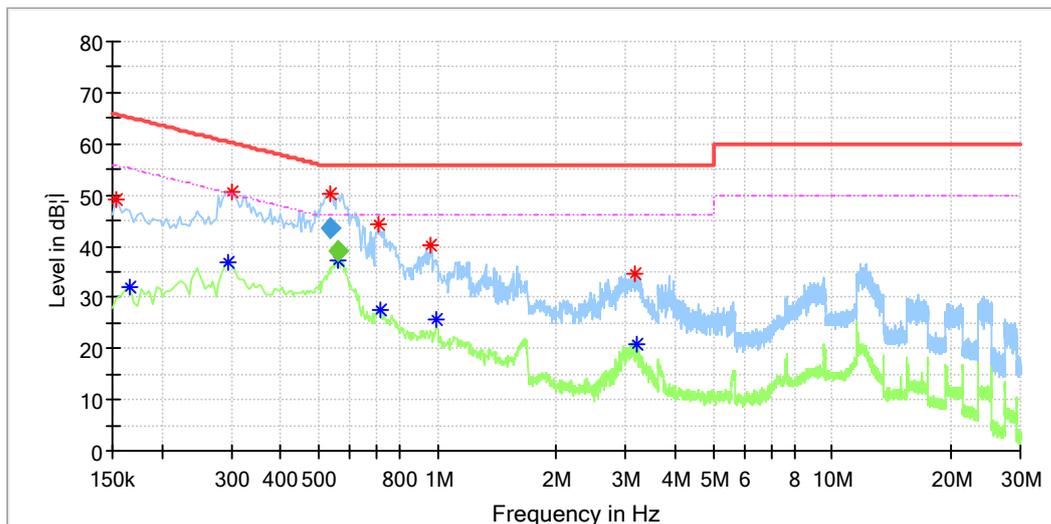
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	54.73	---	65.78	11.05	L1	9.7
0.166000	---	36.56	55.16	18.60	L1	9.7
0.234000	46.83	---	62.31	15.47	L1	9.7
0.246000	---	34.92	51.89	16.98	L1	9.7
0.394000	46.54	---	57.98	11.44	L1	9.7
0.398000	---	31.55	47.90	16.35	L1	9.7
0.571500	50.34	---	56.00	5.66	L1	9.7
0.572500	---	39.29	46.00	6.71	L1	9.7
1.008000	---	20.64	46.00	25.36	L1	9.7
1.012000	34.39	---	56.00	21.61	L1	9.7
3.104000	43.63	---	56.00	12.37	L1	9.8
3.108000	---	22.84	46.00	23.16	L1	9.8

## Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.571500	45.96	---	56.00	10.04	200.0	9.000	L1	9.7
0.572500	---	35.96	46.00	10.04	200.0	9.000	L1	9.7

## EUT Information

EUT Name:	Copy Board
Model:	N-32W
Order No.:	
Test Mode:	NFC
Test Voltage:	AC120V/60Hz
Test By:	Tom Guo
Review By:	Gary Chen
Remark:	SR2



## Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	49.20	---	65.78	16.58	N	9.7
0.166000	---	31.94	55.16	23.22	N	9.7
0.294000	---	36.91	50.41	13.50	N	9.7
0.302000	50.72	---	60.19	9.47	N	9.7
0.535500	50.36	---	56.00	5.64	N	9.7
0.559500	---	37.36	46.00	8.64	N	9.7
0.712000	44.22	---	56.00	11.78	N	9.7
0.720000	---	27.57	46.00	18.43	N	9.7
0.960000	40.27	---	56.00	15.73	N	9.7
0.992000	---	25.50	46.00	20.50	N	9.7
3.172000	34.51	---	56.00	21.49	N	9.8
3.200000	---	20.80	46.00	25.20	N	9.8

## Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.535500	43.60	---	56.00	12.40	200.0	9.000	N	9.7
0.559500	---	38.92	46.00	7.08	200.0	9.000	N	9.7

### 5.1.8 Conducted Emissions

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.107 ICES-003 Issue 6 April 2019
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	150 kHz – 30 MHz
Kind of test site	:	Shielded Room
Limit	:	FCC Part 15.107 (a) Table 1 of ICES-003 Issue 6 April 2019

**Test Setup**

Date of testing	:	21.08.2020
Test voltage	:	AC 120V, 60Hz
Operation mode	:	A
Test Ports	:	AC mains power port
Artificial hand	:	N/A
Earthing	:	Not connected
Ambient temperature	:	23 °C
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the following test plots.

## 5.1.9 Radiated Emissions

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.109 ICES-003 Issue 6 April 2019
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	30 – 2000MHz *
Limits	:	FCC Part 15.109 (b) Table 4 & 6 of ICES-003 Issue 6 April 2019
Kind of test site	:	3m Semi-Anechoic Chamber

**Test Setup**

Date of testing	:	21.08.2020 – 03.09.2020
Test voltage	:	AC 120V, 60Hz
Operation mode	:	A
Test Ports	:	Enclosure
Earthing	:	Not connected
Ambient temperature	:	23 °C
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

**Conditional Testing Procedure:**

\*- The EUT's highest frequency generated and used is 108MHz, hence the highest scan frequency is up to 2GHz only.

For the measurement records, refer to the following test plots.

## 6 Safety Human Exposure

### 6.1 Radio Frequency Exposure Compliance

#### 6.1.1 Electromagnetic Fields

**RESULT:****Pass**

Test standard : RSS-102 issue 5 March 2015  
FCC KDB Publication 447498 D01 v06

The maximum peak output power of the transmitter is 0.09uW (-40.47dBm) only, which less than 20mW. Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 2.5.1 of RSS-102 Issue 5.

Since maximum peak output power of the transmitter is 0.09uW (-40.47dBm), and the distance from EUT to human is >50mm, hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01 General RF Exposure Guidance v06.

## 8 List of Tables

Table 1: List of Test and Measurement Equipment.....	5
Table 2: Technical Specification of EUT.....	9
Table 3: List of Accessories and Auxiliary Equipment.....	10
Table 4: Test result of frequency tolerance of voltage variation .....	21
Table 5: Test result of frequency tolerance of temperature variation .....	21

## 9 List of Photographs

Photograph 1: Set-up for Radiated Spurious Emissions, below 30MHz .....	30
Photograph 2: Set-up for Radiated Spurious Emissions, above 30MHz.....	30
Photograph 3: Set-up for Conducted Emissions .....	31
Photograph 4: Set-up for Radiated Emissions .....	31