RF Test Report

Report Number	:	6128625017801
Applicant	:	HiTi Digital, Inc.
Product	:	HiTi Card Printer
Model	:	CS-260e; CS-270e
FCC ID	:	W53CARDPRINTER1

In accordance with

FCC rule part §15.225

RESPONSIBLE FOR	NAME	SIGNATURE	DATE
Approved By	**Jack Chang**		**2025.08.14**
Prepared By	**Ariel Hsu**		**2025.08.14**

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service control rules.

EXECUTIVE SUMMARY

TÜV SÜD Asia Ltd., reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Asia Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Asia Ltd. issued reports.

Contents

1 General Information

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

History of this test report

Issue	Description of Change	Date of Issue
1	Initial Issue	2025.08.14

1.2 Introduction

The information contained in this report is intended to show verification of RF qualification approval. The testing requirements of the standards for the tests listed in Section 1.5.

Applicant	:	HiTi Digital, Inc.
Address	:	7F, No. 207-2, Sec. 3, Beixin Rd., Xindian Dist., 231 New Taipei City, TAIWAN
Manufacturer	:	HiTi Digital, Inc.
Address	:	7F, No. 207-2, Sec. 3, Beixin Rd., Xindian Dist., 231 New Taipei City, TAIWAN
Product Name	:	HiTi Card Printer
Model Number(s)	:	CS-260e; CS-270e
Trade name	:	HiTi
Firmware Version	:	N/A
Hardware Version	:	N/A
Date of Receipt of EUT	:	2025-04-15
Start of Test	:	2025-05-20
Finish of Test	:	2025-05-20
Test Laboratory	:	TÜV SÜD Asia Ltd., Taiwan Branch
Address	:	7F., No. 37, Sec. 2, Zhongyang S. Rd., Beitou District, Taipei City 11270, R.O.C. Taiwan
Test Location	:	TÜV SÜD Asia Ltd., Taiwan Branch, Guishan Laboratory
Address	:	No. 31, Dinghu Road, Guishan District, Taoyuan City, TAIWAN (R.O.C.)

The test facility is accredited by TAF (member of ILAC), under number 2573 according to ISO/IEC 17025: 2017.

FCC Designation Number No.: TW2573

ISED CAB identifier No./ Company Number: TW2573 / 32030

1.3 Applied Standard

FCC rule part §15.225
Deviation from standards FCC Part 15, Subpart C §15.225 ANSI C63.10:2013

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

FCC Rules	Test item	Result	Remark
§15.207	AC Power Line Conducted Emission	Compliant	
§15.225 (a)-(d)	Radiated Emission	Compliant	
§15.209	Radiated Emission Limits, general requirement	Compliant	
§15.225 (e)	Frequency Stability	Compliant	
§2.1049 §15.215 (c)	Emission Bandwidth	Compliant	

2 General EUT Information

All information in this chapter was provided by the applicant.

2.1 General Description

2.2 Variation of family model(s)

2.2.1 List of family model(s)

Brand	Type Identification	Difference
HiTi	CS-2XXX	The X in model name can be 0-9, A-Z, a-z or blank for marketing purpose and All models are electrically identical.

2.3 Technical Specification of EUT

Items	EUT information
Operating Frequency	13.56 MHz
Channel number	1
Field Strength of Fundamental	11.46dBuV/m @30m, 51.46 dBμV/m @3m
Extreme Temperature Range	15 ~ 32 °C
Operation Voltage	24 Vac from Adapter
Modulation	ASK
Antenna Type	PCB

2.4 Antenna Information

Antenna Type	Supplier	Model	Frequency (MHz)	Peak Antenna Gain (dBi)
Loop	HITI	CS-270e	13.56	N/A

3 Configuration of Equipment

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

An engineering test mode (software/firmware) that applicant provided was utilized to ma-nipulate the EUT into transmit, selection of the test channel, and modulation scheme.

Numbers assigned to equipment on the diagram in “3.2 System configuration” correspond to the list in “3.1 Equipment and Cable(s) used”

This test configuration is based on the manufacture’s instruction.

Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

The EUT has been tested as an independent unit with other necessary accessories or support units.

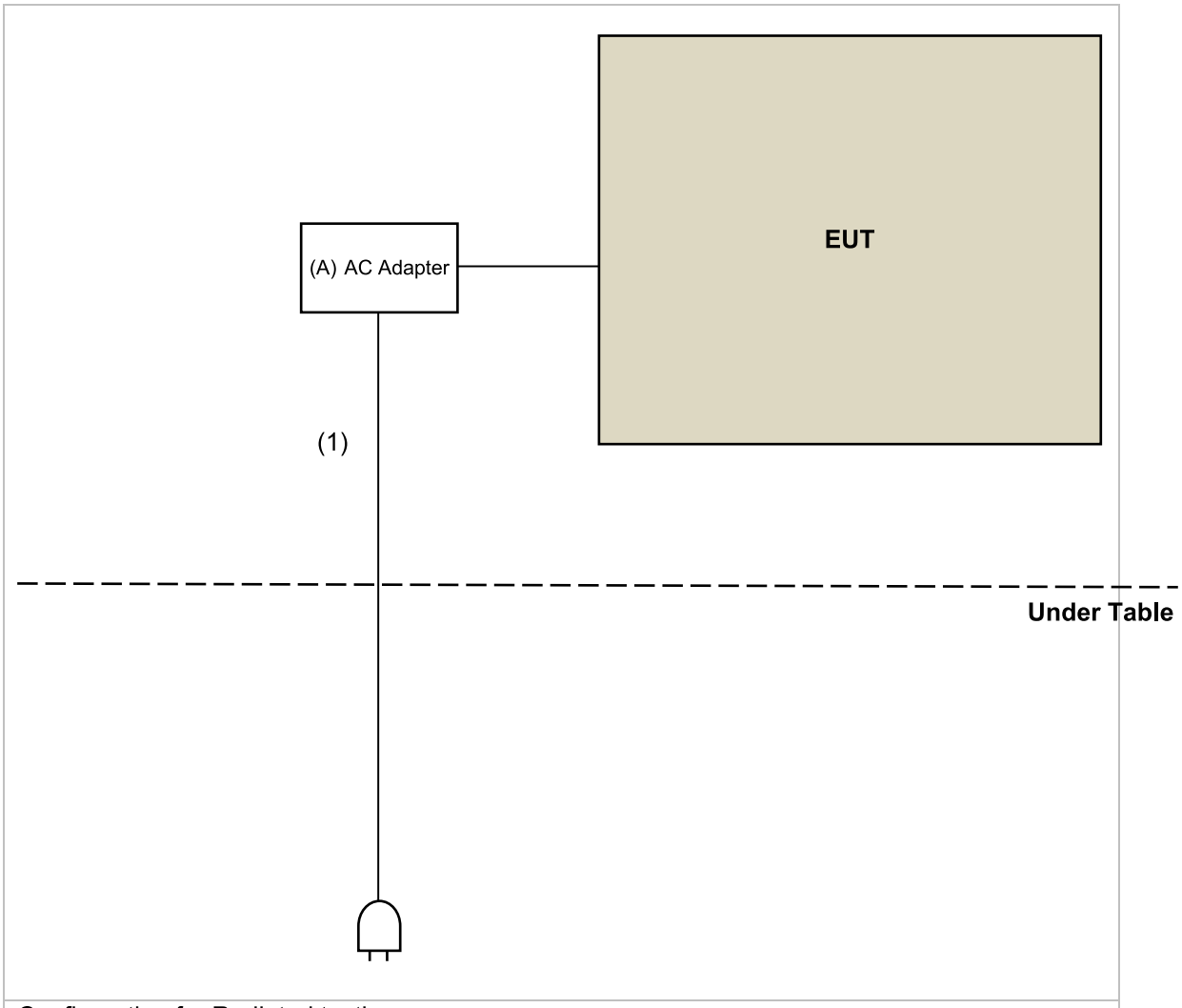
3.1 Equipment and Cable(s) used

No.	Product	Brand	Model	Serial No.	Remarks
A	AC Adapter	EDAC	EA10933F-240	N/A	Provided by Client
B	Laptop	Lenovo	TP00048A	PC-00NQMT	Provided by Lab

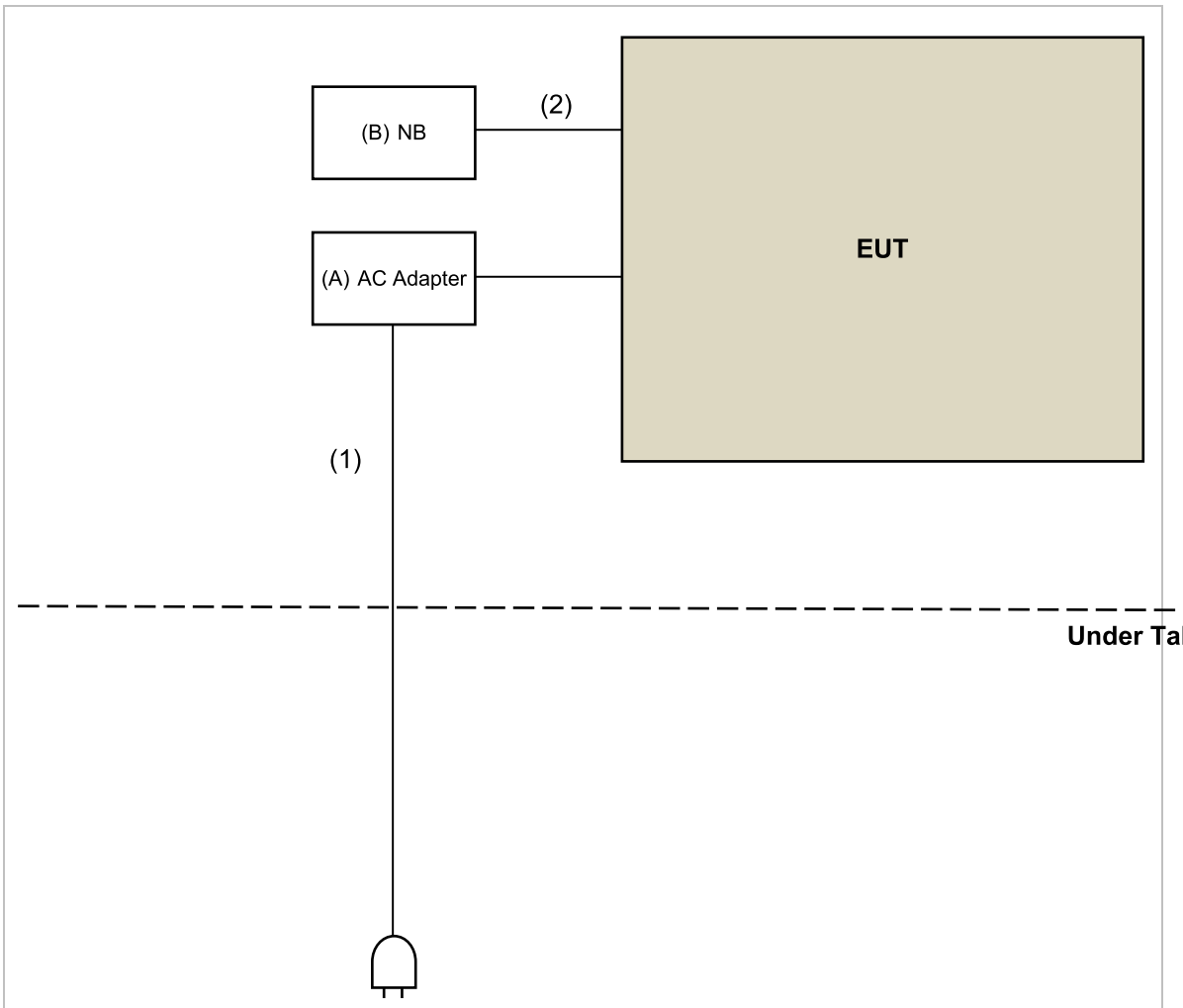
3.2 Cable(s) used

No.	Cable Descriptions	Brand	Model	Length(m)	Remarks
1	DC Cable	EDAC	N/A	1.8	Provided by Client
2	USB A To B	LINDY	36642	2	Provided by Lab

3.3 System configuration



Configuration for Radiated testing



Configuration for System & Conduction testing

4 General Test Configurations

The equipment under test (EUT) was configured to measure its maximum emission level. The test modes were adapted accordingly in reference to the instructions for use.

4.1 Description of test mode

1) The EUT has been tested under continuous transmission mode.

2) The frequency 13.56 MHz is the default channel to test, where it is the only manipulative channel as this application supports.

3) The field strength of radiation emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

4) Only one configuration is supported/applicable as follows.

Field Strength of Fundamental Emissions

☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
-	13.56	13.56

Radiated Spurious Emissions

☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
-	13.56	13.56

Frequency Stability

☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
-	13.56	13.56

20 dB Bandwidth

☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
-	13.56	13.56

Mains Conducted Emission

☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
-	13.56	13.56

4.2 Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Field Strength of Fundamental Emissions	22-26 °C	50-65 %	Sam Huang
Radiated Spurious Emissions	22-26 °C	50-65 %	Sam Huang
Frequency Stability	22-26 °C	50-65 %	Sam Huang
20 dB Bandwidth	22-26 °C	50-65 %	Sam Huang
Mains Conducted Emission	22-26 °C	50-65 %	Sam Huang

5 Test Result

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Refer to EUT photo for details.

5.2 Field Strength of Fundamental Emissions

5.2.1 Measurement procedure

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL – AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Distance Extrapolation Factor

30m to 3m

Distance extrapolation = 40 *log (30/3) = 40 dB

30m to 10m

Distance extrapolation = 40 *log (30/10) = 19.08 dB

10m to 3m

Distance extrapolation = 40 *log (10/3) = 20.92 dB

Note:

a) Distance extrapolation factor = 40 log (required distance/ test distance) (dB)

b) The lower limit shall apply at the transition frequencies.

c) KDB 414788 D01 OATS and 3m semi-anechoic chamber Justification:
Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. OATS and 3m SAC chamber testing had been performed and 3m SAC measured test result is the worst case test result.

Actual FS (dBμV/m) = Spectrum. Reading level(dBμV) + Factor(dB)

Below 30 MHz of Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Distance Factor (dB)

Above 30 MHz of Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amp Gain (dB)

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

5.2.2 Measurement procedure

1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3-meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

3) Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.

4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

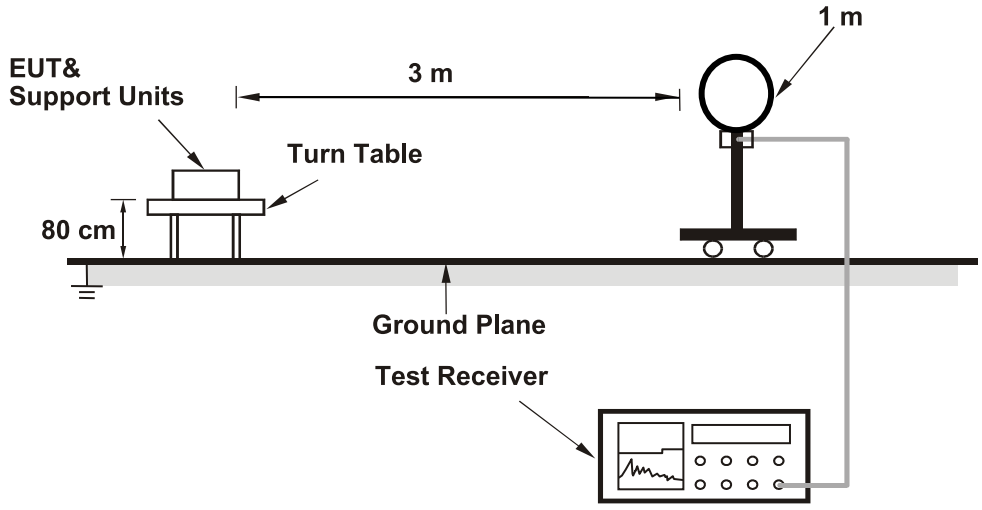
Limit at 30m = 15848 (uV/m)

**Limit at 3m = 20*log(15848)+40log(30m/3m) (dBuV/m)

= 84+40 (dBuV/m)

= 124 (dBuV/m)

5.2.3 Test Setup



5.2.4 Limit

Rules and specifiactions	CFR 47 Part 15 section 15.225(a)-(d)	
Frequency of Emission (MHz)	**Field Strength (μV/m)at 30m**	**Field Strength (dBμV/m)at 30m**
1.705~13.110	30	29.5
13.110~13.410	106	40.5
13.410~13.553	334	50.5
13.553~13.567	15848	84
13.567~13.710	334	50.5
13.710~14.010	106	40.5
14.010~30.00	30	29.5

5.2.5 Measurement result

Please refer to Appendix B

5.3 Radiated Spurious Emissions

5.3.1 Measurement procedure

For Radiated Emissions below 30 MHz

a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c) Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.

d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

2) All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

a) The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. 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 from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f) The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.

2) All modes of operation were investigated and the worst-case emissions are reported.

3) The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

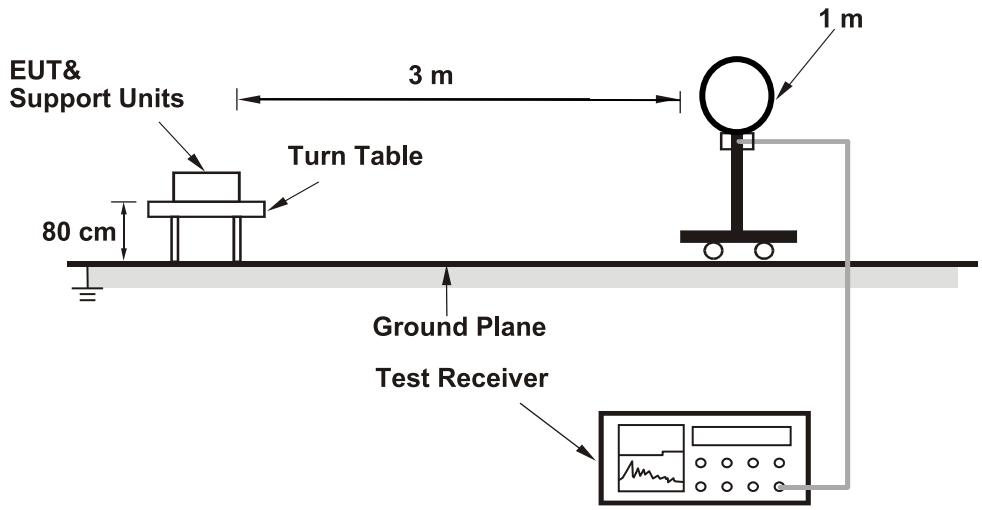
Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

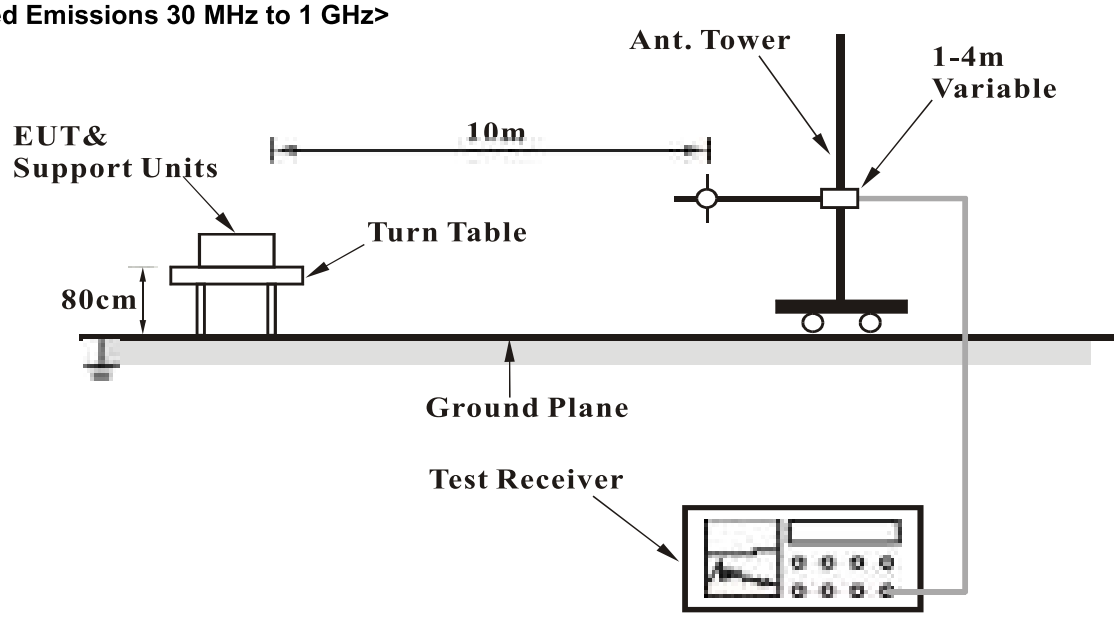
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

5.3.2 Test Setup

<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



5.3.3 Limit

The field strength of any emissions appearing outside of the 13.110-14.010 MHz shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field strength (μV/m)	Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Notes:

1) Emission level in dBμV/m=20 log (μV/m)
2) Distance extrapolation factor = 40 log (required distance/ test distance) (dB)
3) 20*log(30uV/m) = 29.54 dBuV/m
4) The lower limit shall apply at the transition frequencies.
5) The measurement was undertaken in closer distance at 3m, where extrapolation factor is offset to convert the limit of the measurement.
6) Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of §15.205
7) The general radiated emission limits in §15.209 apply for the spurious emission generate from UE, except for the fundamental emission where the respective section specifies otherwise.

5.3.4 Measurement result

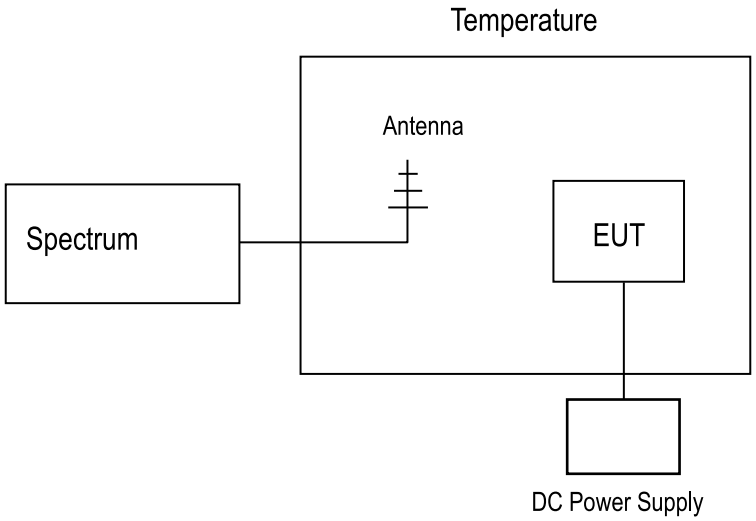
Please refer to Appendix C

5.4 Frequency Stability

5.4.1 Measurement procedure

1) The EUT was placed on a turn table which is 0.8m above ground plane.
2) Set EUT as normal operation
3) Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10kHz, Span =100kHz.
4) Set SPA Max hold. Mark peak.

5.4.2 Test Setup



5.4.3 Limit

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.

5.4.4 Measurement result

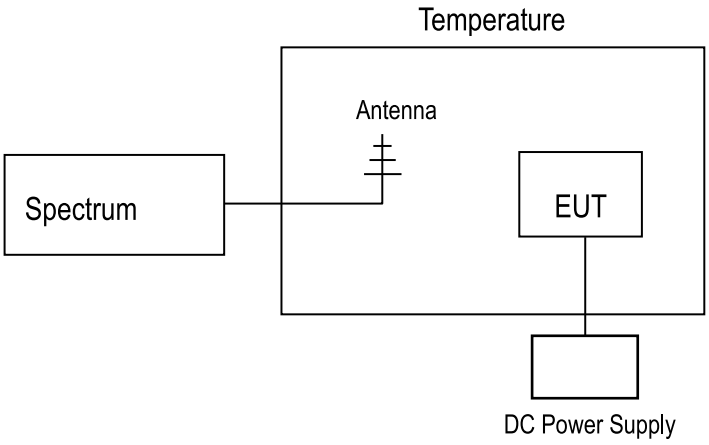
Please refer to Appendix D

5.5 20 dB Bandwidth and 99% Occupied Bandwidth

5.5.1 Measurement procedure

1) Placed the EUT on the testing table.
2) Set the EUT under transmission condition continuously at specific channel frequency.
3) The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used.
4) Measured the spectrum width with power higher than 20dB below carrier.

5.5.2 Test Setup



5.5.3 Limit

The 20 dB bandwidth shall be specified in operating frequency band

5.5.4 Measurement result

Please refer to Appendix E

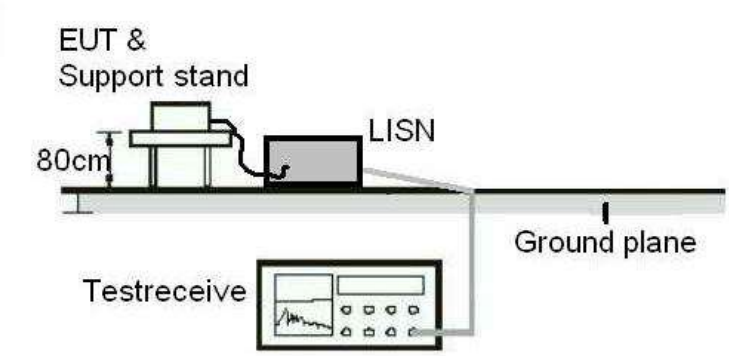
5.6 Mains Emission

5.6.1 Measurement procedure

1. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
2. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
3. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

5.6.2 Test Setup



5.6.3 Limit

Frequency range MHz	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

5.6.4 Measurement result

Please refer to Appendix F

Note: Refer to next page for measurement data and plots.
Note2: The * reveals the worst-case results that closest to the limit.

6 Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

Radiated Spurious Emission Measurement Uncertainty		
Frequency	**Polarization**	**Measurement uncertainty**
9kHz~30MHz	**Vertical**	± 2.61 dB
30MHz - 1000MHz		± 1.8 dB
1GHz - 18GHz		± 2.11 dB
18GHz - 40GHz		± 2.41 dB
9kHz~30MHz	**Horizontal**	± 2.61 dB
30MHz - 1000MHz		± 1.82 dB
1GHz - 18GHz		± 2.11 dB
18GHz - 40GHz		± 2.41 dB

Test Items	Measurement uncertainty
AC Power Line Conducted Emission	± 2.69 dB
Frequency Stability	± 29 Hz
Emission Bandwidth	± 0.7 Hz
Temperature	± 0.51 °C
Humidity	± 4.7 %
DC / AC Power Source	± 1.5 %

Appendix A. Test Equipment

Test Software	Manufacturer	Model No.	Version	Remark
Test Software	Keysight	IOT0047A	224.11.25.17	Conducted
Test Software	Audix	e3	V9	Radiation/Conduction

Test Equipment Used (spurious emission)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSV3044	101346	Jul. 15, 2024	Jul. 14, 2025
Spectrum Analyzer	R&S	ESR	102601	Jul. 05, 2024	Jul. 04, 2025
Bi-log	Schwarzbeck &EMEC	VULB9168&EM-ATT3000-6-NN	01497&2205	Nov. 29, 2024	Nov. 28, 2025
Preamplifier(30M-1G)	`SGH	SGH0301	20230214-2	Jun. 04, 2024	Jun. 03, 2025
Loop Antenna	TESEQ	HLA-6121	64165	Mar. 27, 2025	Mar. 26, 2026

Test Equipment Used (Mains conduction)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
EMI Receiver	R&S	ESR	102599	Aug. 05, 2024	Aug. 04, 2025
LISN	R&S	ENV216	101517	Oct. 22, 2024	Oct. 21, 2025

Test Equipment Used (Power Density/Emission Bandwidth/in of Band Emission)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9010B	MY63440384	Jul. 09, 2024	Jul. 08, 2025

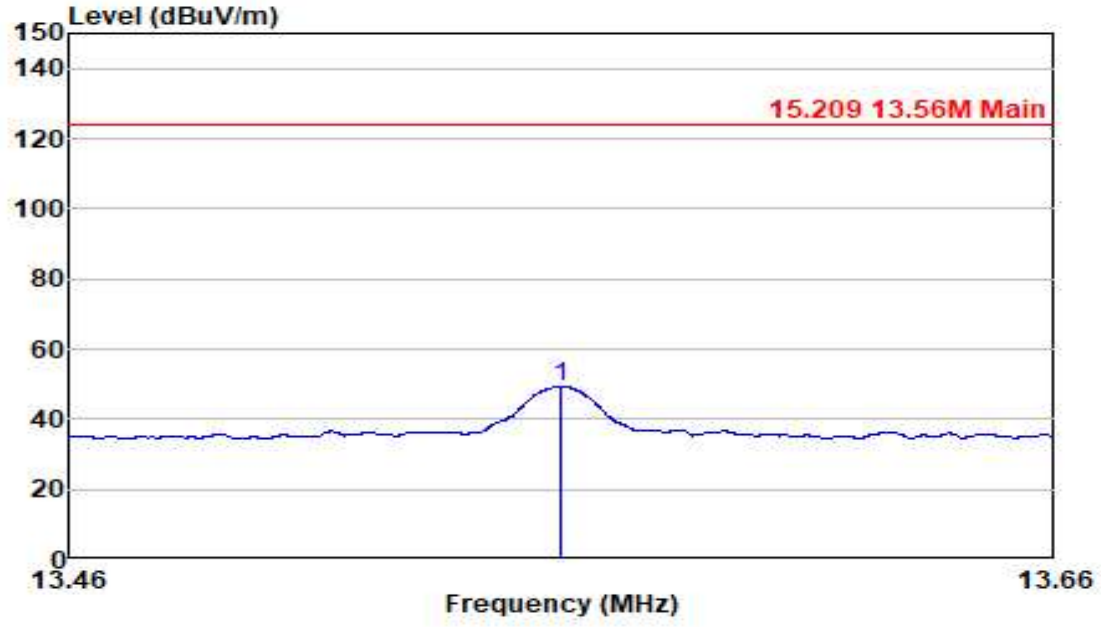
Test Equipment Used (Frequency Stability)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9010B	MY63440384	Jul. 09, 2024	Jul. 08, 2025
Temperature humidity chamber	TERCHY	MHK-408LK	1111131	Sep. 10, 2024	Sep. 09, 2025

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

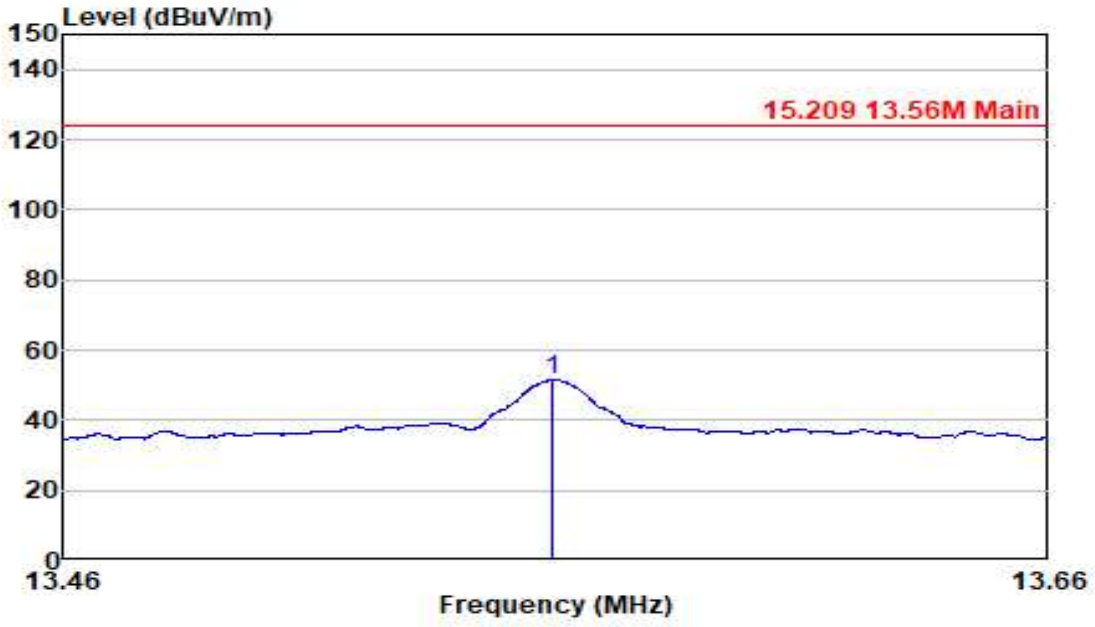
Appendix B. Field Strength of Fundamental Emissions

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Vertical**
Mode	**:Main**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
13.560	26.57	22.80	49.37	124.00	-74.63	Peak	100	97

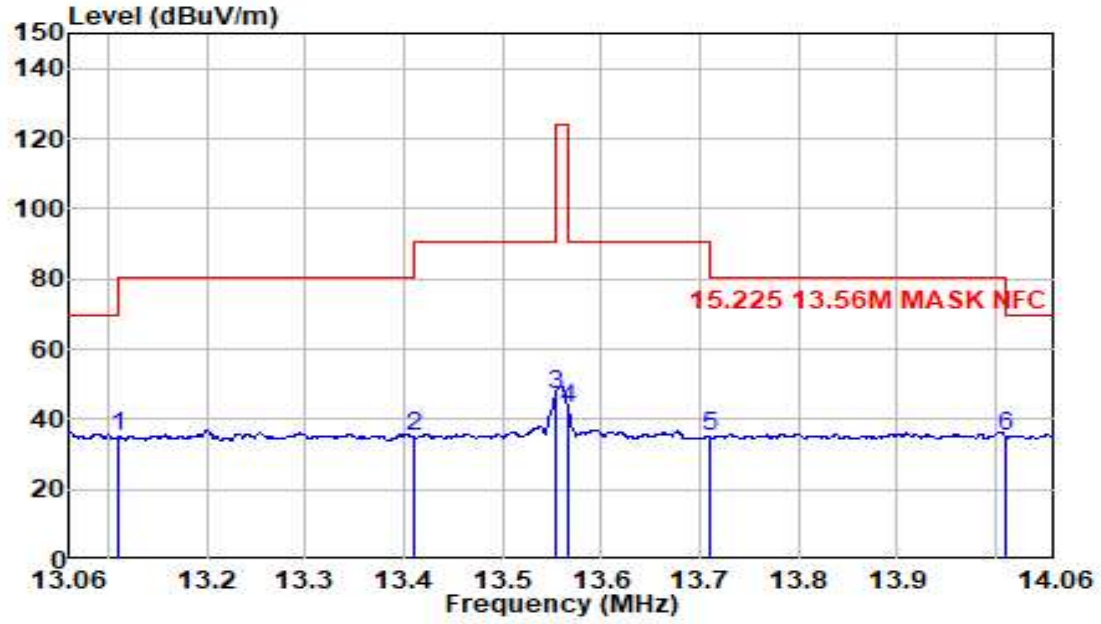
Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Horizontal**
Mode	**:Main**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
13.559	28.65	22.80	51.46	124.00	-72.54	Peak	100	284

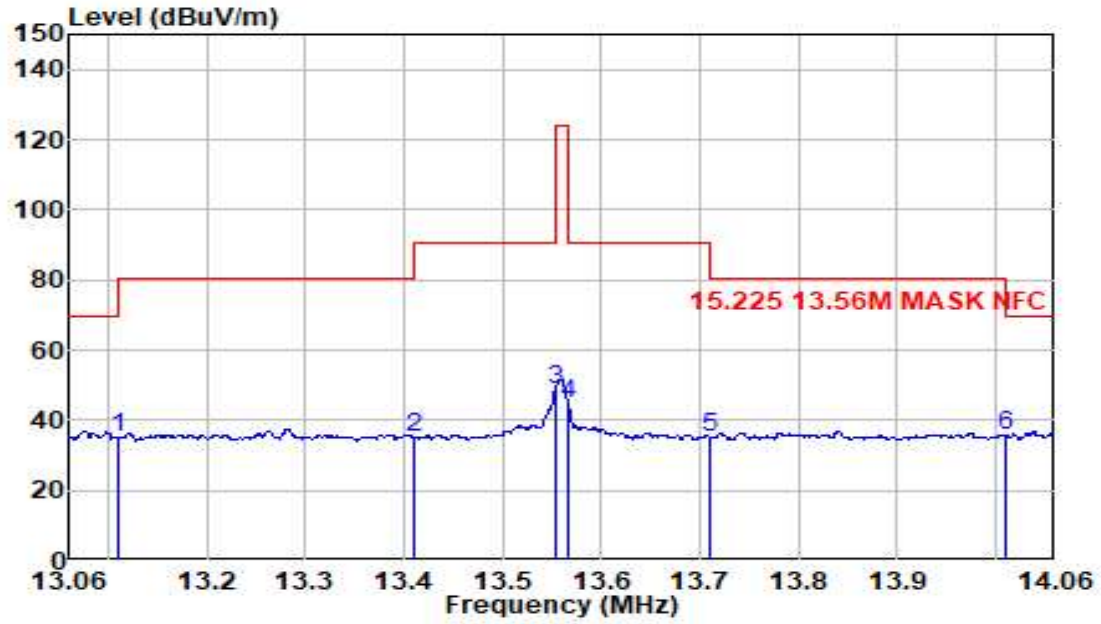
Appendix C. Radiated Spurious Emissions

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Vertical**
Mode	**:Mask**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



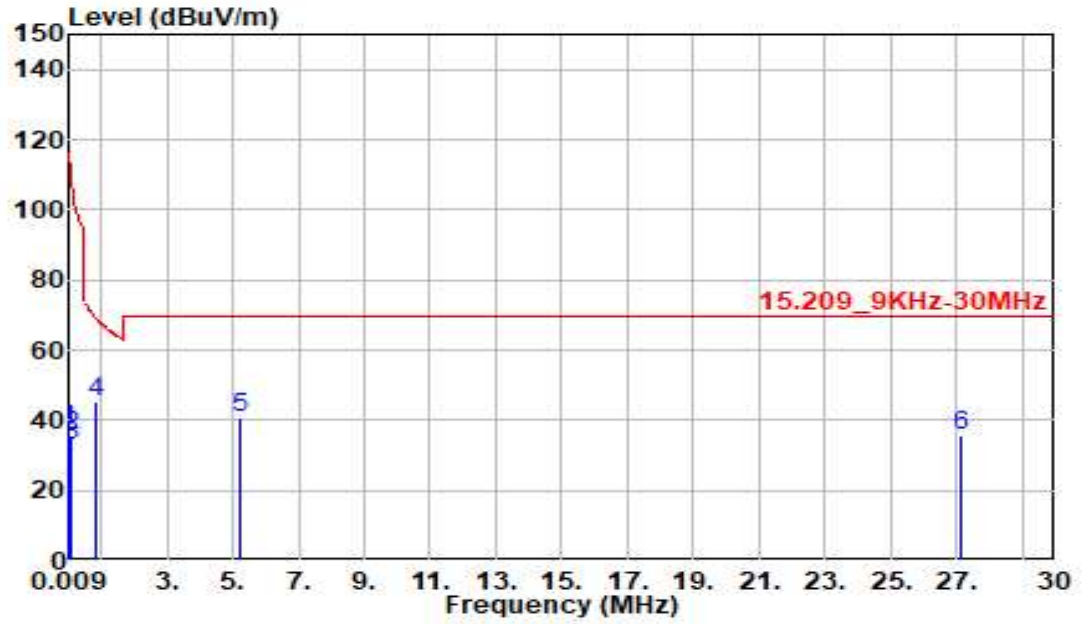
Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
13.110	12.05	22.78	34.83	69.54	-34.71	Peak	100	34
13.410	12.25	22.80	35.05	80.50	-45.45	Peak	100	331
13.553	24.22	22.80	47.03	90.47	-43.44	Peak	100	96
13.567	20.04	22.81	42.85	90.47	-47.62	Peak	100	100
13.710	12.18	22.81	35.00	80.50	-45.50	Peak	100	6
14.010	12.17	22.83	35.00	69.54	-34.54	Peak	100	0

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Horizontal**
Mode	**:Mask**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



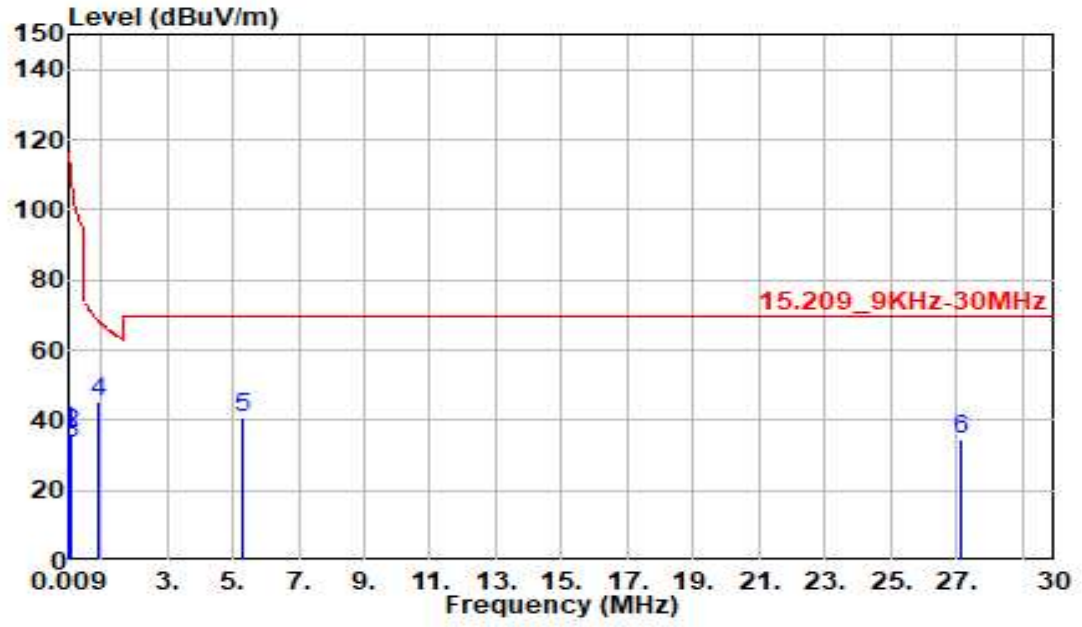
Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
13.110	12.06	22.78	34.83	69.54	-34.71	Peak	100	79
13.410	12.29	22.80	35.09	80.50	-45.41	Peak	100	12
13.553	26.14	22.80	48.94	90.47	-41.53	Peak	100	0
13.567	21.99	22.81	44.79	90.47	-45.68	Peak	100	176
13.710	12.18	22.81	35.00	80.50	-45.50	Peak	100	360
14.010	12.84	22.83	35.67	69.54	-33.87	Peak	100	4

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Vertical**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



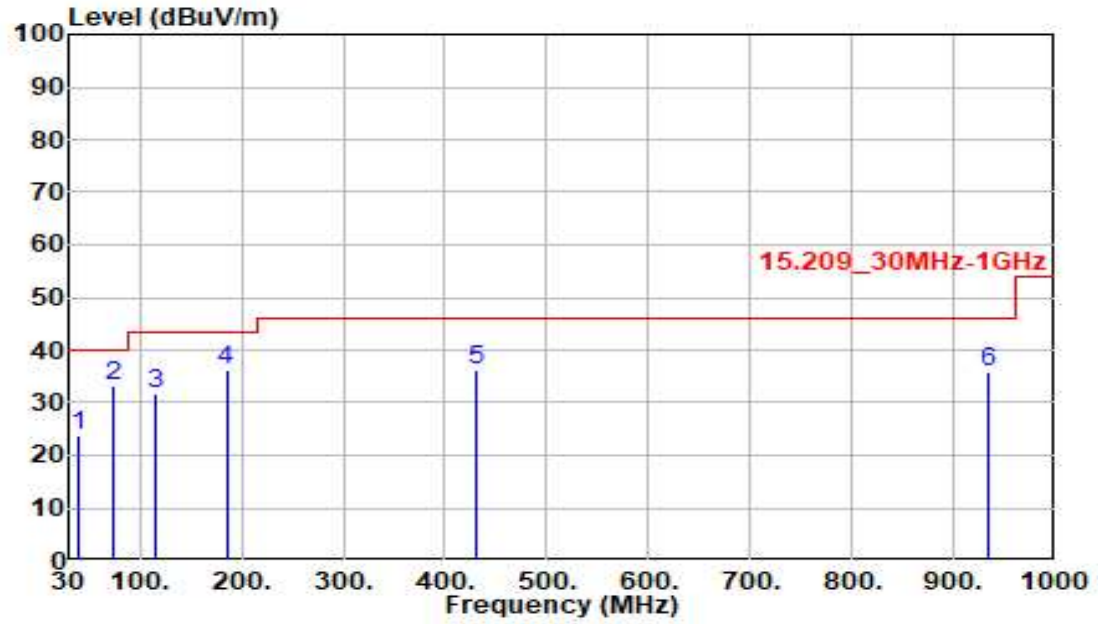
Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
0.038	16.69	20.64	37.33	116.05	-78.72	Peak	100	134
0.076	15.56	20.08	35.64	110.00	-74.36	Peak	100	189
0.114	13.42	19.60	33.02	106.49	-73.47	Peak	100	0
0.866	24.64	20.47	45.11	68.82	-23.71	Peak	100	316
5.195	20.28	20.58	40.86	69.54	-28.68	Peak	100	265
27.120	12.25	23.33	35.58	69.54	-33.96	Peak	100	0

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Horizontal**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



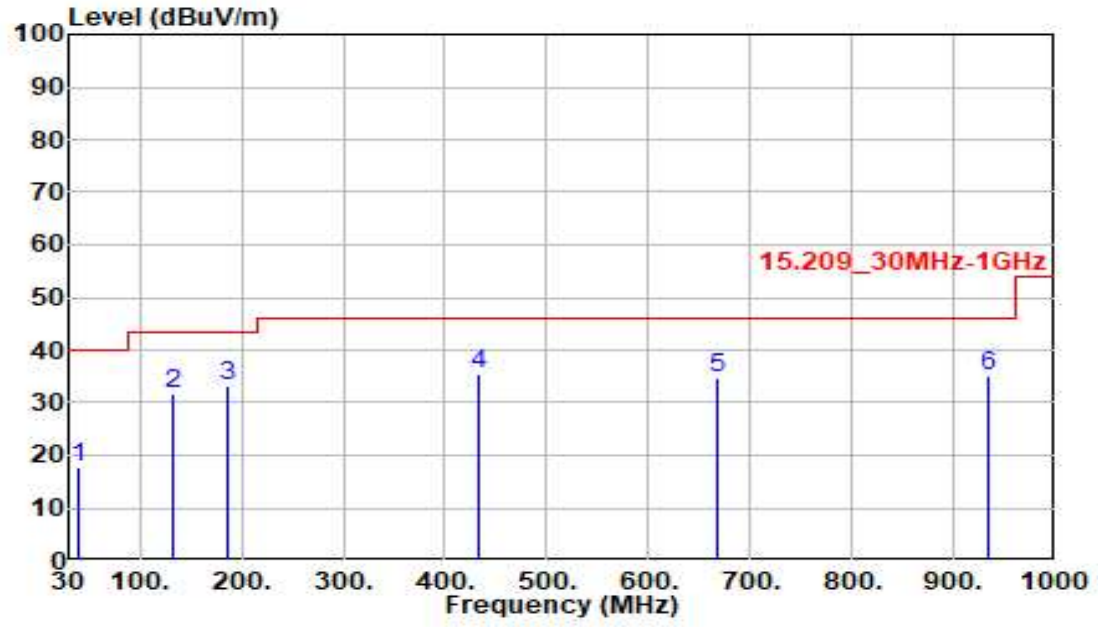
Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
0.038	16.43	20.64	37.07	116.05	-78.98	Peak	100	6
0.076	16.24	20.08	36.32	110.00	-73.68	Peak	100	247
0.114	13.54	19.60	33.14	106.49	-73.35	Peak	100	66
0.896	24.88	20.47	45.35	68.52	-23.17	Peak	100	231
5.284	19.97	20.62	40.59	69.54	-28.95	Peak	100	258
27.120	11.29	23.33	34.61	69.54	-34.93	Peak	100	3

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Vertical**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
40.680	47.90	-24.01	23.89	40.00	-16.11	Peak	100	97
73.650	59.62	-26.48	33.14	40.00	-6.86	Peak	121	128
116.330	58.60	-26.86	31.74	43.50	-11.76	QP	117	31
185.200	62.11	-25.95	36.16	43.50	-7.34	Peak	134	75
431.580	55.25	-19.15	36.10	46.00	-9.90	Peak	143	308
933.070	46.58	-10.56	36.02	46.00	-9.98	Peak	100	39

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C/58%**
Channel	**:13.56 MHz**	**Antenna Pol**	**:Horizontal**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power Setting	**:default**	**Test Site**	**:chamber B**
Plane	**:E2 P1ane**	**Voltage**	**:24V**
Note	**:**		



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit @3m dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
40.680	41.59	-24.01	17.58	40.00	-22.42	Peak	285	360
133.790	56.88	-25.18	31.70	43.50	-11.80	Peak	100	93
186.170	59.30	-26.02	33.28	43.50	-10.22	QP	210	360
432.550	54.58	-19.12	35.47	46.00	-10.53	Peak	272	360
667.290	48.94	-14.21	34.74	46.00	-11.26	Peak	100	63
933.070	45.58	-10.56	35.01	46.00	-10.99	Peak	100	142

Appendix D. Frequency Stability

Temperature Variation Limit : ± 0.01%								
Temperature (℃)	Frequency (MHz)							
	0 minute		2 minute		5 minutes		10 minutes	
	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)
50	13.56043	0.00317	13.56037	0.00273	13.55902	-0.00723	13.56111	0.00819
40	13.56120	0.00885	13.56093	0.00686	13.55999	-0.00007	13.55941	-0.00435
30	13.55913	-0.00642	13.55977	-0.00170	13.56058	0.00428	13.55887	-0.00833
20	13.55952	-0.00354	13.56107	0.00789	13.56088	0.00649	13.55963	-0.00273
10	13.56044	0.00324	13.56085	0.00627	13.55951	-0.00361	13.56037	0.00273
0	13.56026	0.00192	13.56107	0.00789	13.55960	-0.00295	13.55944	-0.00413
-10	13.55960	-0.00295	13.56082	0.00605	13.56040	0.00295	13.55982	-0.00133
-20	13.55929	-0.00524	13.55928	-0.00531	13.56117	0.00863	13.55872	-0.00944

Voltage Variation Limit : ± 0.01%								
Voltage (Vac)	Frequency (MHz)							
	0 minute		2 minute		5 minutes		10 minutes	
	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)	Reading (MHz)	Drift(%)
138	13.56033	0.00243	13.56085	0.00627	13.56062	0.00457	13.56110	0.00811
120	13.56085	0.00627	13.55990	-0.00074	13.56034	0.00251	13.55938	-0.00457
102	13.56011	0.00081	13.56026	0.00192	13.56132	0.00973	13.55928	-0.00531

Appendix E. Emission Bandwidth

20dB Bandwidth

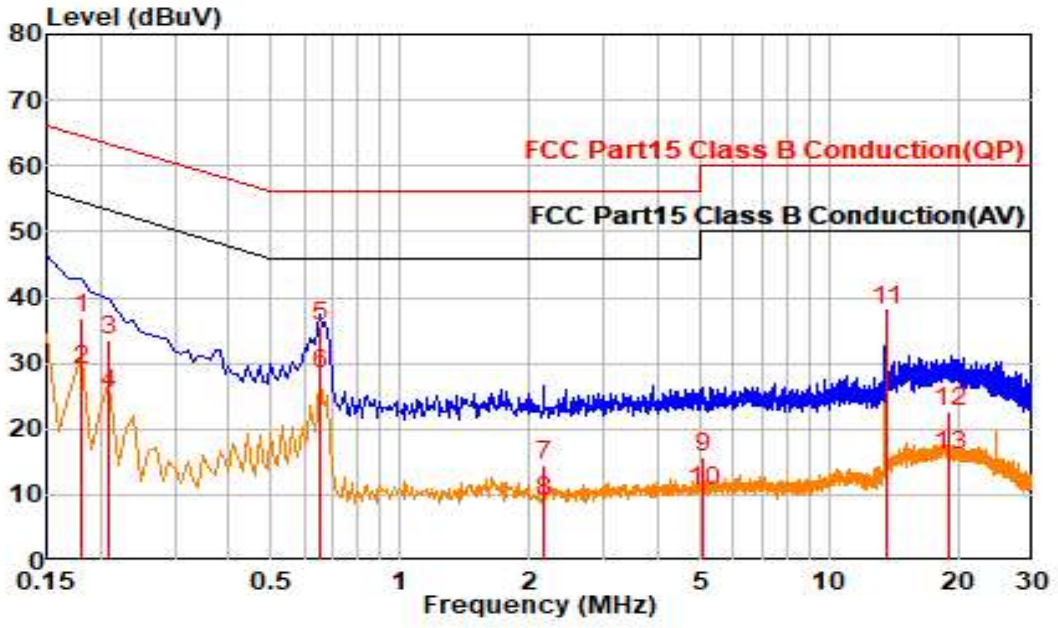
<NFC>

Channel	Channel Frequency (MHz)	20dB Bandwidth (KHz)
1	13.56	2.860

Lower & Upper Test Frequency Point (MHz)	Test Frequency (MHz)	Limit (MHz)
Lower	13.55857	13.11
Upper	13.56143	14.01

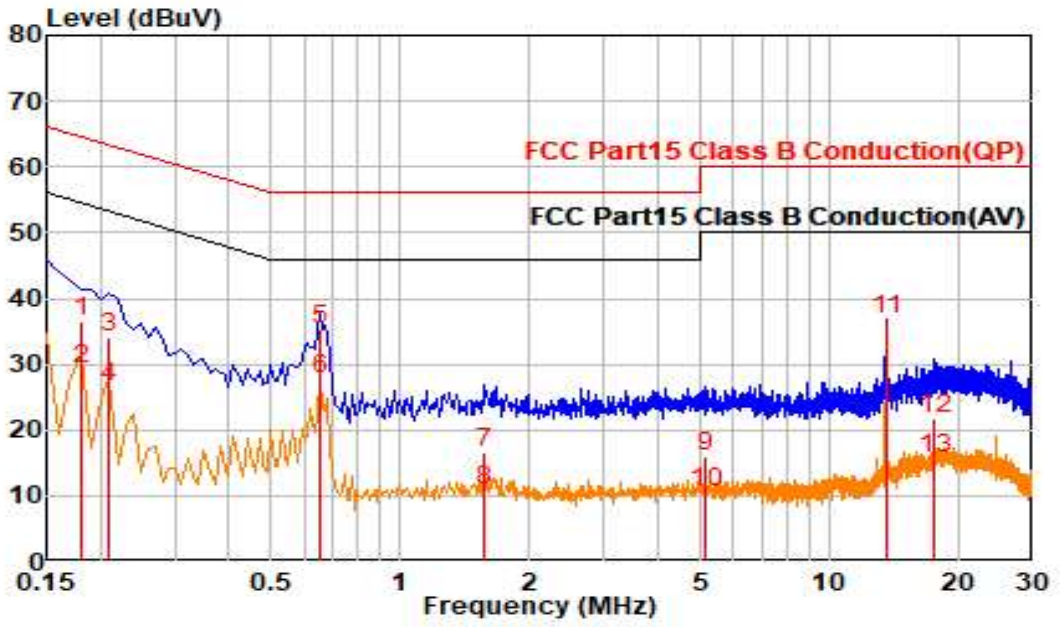
Appendix F. Mains Emission

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C 60%**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power	**:120V/60Hz**	**Test Site**	**:Shielded Room A**
Condition	**:Line**	**Note**	



Freq MHz	Read LV. dBuV	Factor dB	Cable Loss dB	LISN Factor dB	Emission LV dBuV	Limit dBuV	Margin dB	Detect QP/AV
0.180	27.13	9.62	0.01	9.61	36.76	64.48	-27.73	QP
0.180	19.28	9.62	0.01	9.61	28.90	54.48	-25.58	Average
0.210	23.85	9.62	0.01	9.61	33.47	63.20	-29.73	QP
0.210	15.82	9.62	0.01	9.61	25.44	53.20	-27.76	Average
0.651	25.96	9.63	0.01	9.62	35.59	56.00	-20.41	QP
0.651	18.62	9.63	0.01	9.62	28.25	46.00	-17.75	Average
2.161	4.70	9.66	0.03	9.63	14.36	56.00	-41.64	QP
2.161	-0.57	9.66	0.03	9.63	9.09	46.00	-36.91	Average
5.092	6.04	9.69	0.04	9.65	15.73	60.00	-44.27	QP
5.092	0.81	9.69	0.04	9.65	10.49	50.00	-39.51	Average
13.560	28.30	9.70	0.06	9.64	38.00	60.00	-22.00	Peak
19.167	12.95	9.68	0.07	9.61	22.63	60.00	-37.37	QP
19.167	6.28	9.68	0.07	9.61	15.96	50.00	-34.04	Average

Report No.	**:6128625017801**	**Test Date**	**:2025-05-20**
Product Name	**:HiTi Card Printer**	**Model Name**	**:CS-270e**
Operation Band	**:NFC**	**Temp/Humi**	**:22.7C 60%**
Mode	**:Tx**	**Test Engineer**	**:Kevin Syu**
Power	**:120V/60Hz**	**Test Site**	**:Shielded Room A**
Condition	**: Neutral**	**Note**	



Freq MHz	Read LV. dBuV	Factor dB	Cable Loss dB	LISN Factor dB	Emission LV dBuV	Limit dBuV	Margin dB	Detect QP/AV
0.180	26.98	9.62	0.01	9.61	36.61	64.48	-27.87	QP
0.180	19.67	9.62	0.01	9.61	29.29	54.48	-25.18	Average
0.210	24.53	9.62	0.01	9.61	34.15	63.21	-29.07	QP
0.210	17.08	9.62	0.01	9.61	26.70	53.21	-26.51	Average
0.650	25.60	9.62	0.01	9.61	35.22	56.00	-20.78	QP
0.650	18.27	9.62	0.01	9.61	27.89	46.00	-18.11	Average
1.577	6.81	9.64	0.02	9.62	16.45	56.00	-39.55	QP
1.577	1.19	9.64	0.02	9.62	10.83	46.00	-35.17	Average
5.159	6.26	9.68	0.04	9.64	15.94	60.00	-44.06	QP
5.159	0.85	9.68	0.04	9.64	10.53	50.00	-39.47	Average
13.560	27.20	9.73	0.06	9.67	36.93	60.00	-23.07	Peak
17.544	12.04	9.74	0.07	9.68	21.79	60.00	-38.21	QP
17.544	5.85	9.74	0.07	9.68	15.59	50.00	-34.41	Average