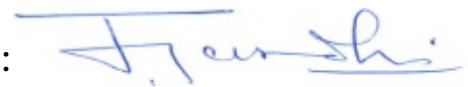


NCC RADIO TEST REPORT

Product name	Panel PC 平板電腦
Applicant	Qbic Technology Co., Ltd. 和暢科技股份有限公司
Manufacture	Qbic Technology Co., Ltd. 和暢科技股份有限公司
Rating(s)	DC12V from adapter
Trademark	Qbic
Model and/or type reference	TD-1060 Slim
Standard	LP0002:2018
Test Result	PASS

Date of receipt : 03-05-2020

signature :



Date of Issue : 03-17-2020

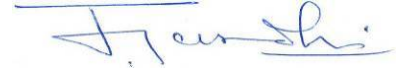
NCC RADIO TEST REPORT

Report Reference No..... M200305N5-07

Compiled by (+ signature) Kevin Bothmann



Approved by (+ signature) Jay Gandhi



Date of issue..... 2020-03-27

Applicant's name	Qbic Technology Co., Ltd. 和暢科技股份有限公司
Address	新北市汐止區新台五路一段 99 號 26 樓之 12 邮编: 22175 26F.-12, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22175, Taiwan
Manufacture's Name	Qbic Technology Co., Ltd. 和暢科技股份有限公司
Address	新北市汐止區新台五路一段 99 號 26 樓之 12 邮编: 22175 26F.-12, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22175, Taiwan

Test specification:

Standard	LP0002: 2018
Test procedure	EIA 603、ANSI、FCC/47 CFR/2.1046、2.1047、2.1049、2.1051、2.1053 and 2.1055
Non-standard test method.....	N/A

Test item description

Product name	Panel PC 平板電腦
Brand name	Qbic
Model and/or type reference	TD-1060 Slim
Rating(s)	DC12V from adapter

Testing Laboratory information:

Testing Laboratory Name	Electro Magnetic Test, Inc.
Address	1547 Plymouth Street, Mountain View, CA 94043
CAB Identifier Number	US0036
Tel	(650) 965-4000
Fax	(650) 965-3000
E-mail	jgandhi@emtlabs.com

Testing.....

Date of receipt of test item.....	Mar. 05, 2020
Date (s) of performance of tests.....	Mar. 05~ Mar. 16, 2020
Date of Issue	Mar. 17, 2020
Test Result	Pass

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Electro Magnetic Test, Inc., which is an independent testing and consulting firm. The test report is based on testing performed Electro Magnetic Test, Inc. personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government.

Electro Magnetic Test, Inc. is recognized by the following agencies for performing EMI/EMC testing:

COUNTRY	AGENCY	IDENTIFYING #
USA	Federal Communications Commission (FCC) (EMT's test site is recognized by the FCC)	Registration Number: 90576
USA, Canada, Taiwan, Australia/New Zealand, European Community	National Voluntary Lab Accreditation Program (NVLAP) (EMT is accredited by NVLAP. A copy of the NVLAP Scope Of Accreditation is available upon request.)	Lab Code: 200147-0
Canada	Industry Canada	File No.: IC 2804
Japan	Voluntary Control Council For Interference (VCCI)	A-0118
	Open Field Test Site "A"	-
	Mains Conducted Emissions Test Site "A"	-
	Telecom Conducted Emissions Test Site "A"	-
	3 Meter Semi-Anechoic Chamber Site "E"	-
	3 Meter Semi-Anechoic Chamber Site "E" (1GHz – 6GHz)	-
	Mains Conducted Emissions Test Site "E"	-
	Telecom Conducted Emissions Test Site "E"	-
Korea	Ministry of Information and Communication's Radio Research Laboratory (RRL) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (A copy of the Scope Of Accreditation is available upon request)	US0036
Taiwan	Bureau Of Standards, Metrology and Inspection (BSMI)	Reference Number: SL2-IN-E-1024
Australia / New Zealand	Australian Communications Authority (AUSTEL)	*

***THESE AGENCIES DO NOT ISSUE AN IDENTIFYING NUMBER TO TEST LABS.**

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

LP0002 : 2018			
Standard Section	Test Item	Judgment	Remark
2.3	Conducted Emission	PASS	None
3.2.1.2/2.8	Radiated Spurious Emission	PASS	None
3.2.1.1	Field Strength of Fundamental	PASS	None
3.10.1(6.2.1)	20dB &99%Occupied Bandwith	PASS	None
3.2.1.3	Frequency Stability	PASS	None
3.2.1.3	Voltage Variation	PASS	None
3.10.1(3)	Antenna Requirement	PASS	None

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	1.38dB
2	Radiated Emission Test	3.17dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Panel PC 平板電腦	
Brand Name	Qbic	
Model Name	TD-1060 Slim	
OEM Brand/Model Name	N/A	
Product Description	The EUT is a Panel PC 平板電腦.	
	Operation Frequency:	13.56 MHz
	Modulation Type:	ASK
	Antenna Designation:	1CH .Please see Note 2.
	Antenna Gain(Peak)	0 dBi
	Field Strength@distance	68.22 dBμV/m@3m
Channel List	Please refer to the Note 3.	
Power Rating	DC12V from adapter	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	

Note:

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

2.

Table for Filed Antenna

Ant	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	深圳市億聖邦 科技有限公司	SLK-YBD-463 8-R-70II-RB	FPC Antenna	N/A	0	ANT

3. Operation Frequency each of channel

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
1	13.56	-	-	-	-	-	-

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX mode

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX charge mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX mode

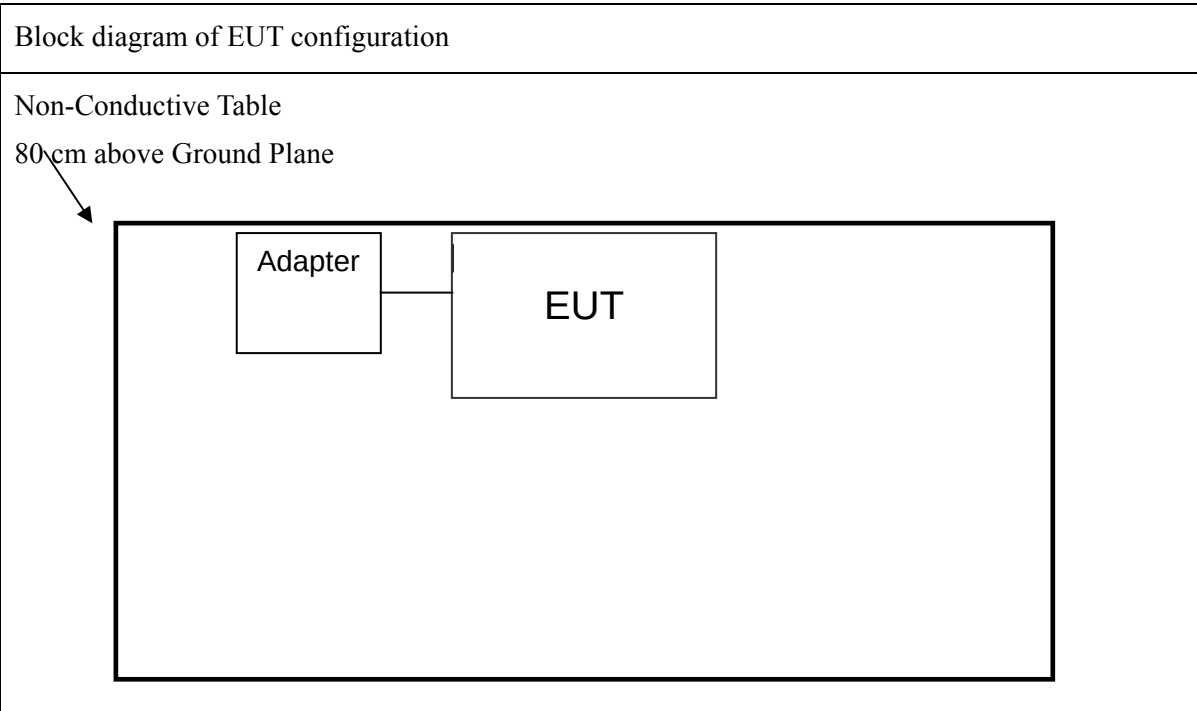
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters.

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	NCC ID	Series No.	Note
1	Panel PC 平板電腦	Qbic	TD-1060 Slim	N/A	N/A	EUT
2	Adapter	HONOR	ADS-25D-12 12018E	N/A	N/A	EUT
3	Tag	N/A	N/A	N/A	N/A	Provided by lab

Item	Shielded Type	Ferrite Core	Length	Note
1#	N/A	N/A	N/A	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” or “with ferrite core”; “NO” means “unshielded” or “without ferrite core”

2.5.1 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	April 29, 2019	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	April 29, 2019	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	April 29, 2019	1 Year
Preamplifier	Com Power	PA-102	1482	April 29, 2019	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 8, 2019	1 Year
LISN	Com Power	LI-200	12012	September 10, 2019	1 Year
LISN	Com Power	LI-200	12214	September 10, 2019	1 Year
LISN	Com Power	LI-200	1767	September 10, 2019	1 Year
LISN	Com Power	LI-200	1768	September 10, 2019	1 Year
Biconical Antenna	Com Power	AB-100	01557	December 29, 2018	1 Year
Log Periodic Antenna	Com Power	AL-100	16037	December 22, 2019	1 Year
Horn Antenna	Com Power	AHA-118	711054	December 22, 2019	1 Year
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Dell, Inc.	DHS	DNSV641	N/A	N/A
Printer	Hewlett Packard	C8124A	CN39B2234T	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A

EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACT URER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	June 12, 2019	1 Year
BiConiLog Antenna	ETS-Lindgren	3142D	00102183	August 14, 2019	1 Year
Horn Antenna	ETS-Lindgren	3117	00109294	May 6, 2019	1 Year
Preamplifier	Rohde & Schwarz	TS-PR18	100056	June 12, 2019	1 Year
Antenna Mast	ETS-Lindgren	2175	00095727	N/A	N/A
Turntable	ETS-Lindgren	2187-3.0	00118231	N/A	N/A
Computer	Acer	Aspire 8930	85100050123	N/A	N/A
Multi-Function Controller	ETS-Lindgren	2090	00102270	N/A	N/A
Loop Antenna	ARA	PLA-1030/B	1029	May 19, 2019	1 Year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150kHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP0002
0.50 -5.0			56.00	46.00	LP0002
5.0 -30.0			60.00	50.00	LP0002

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.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

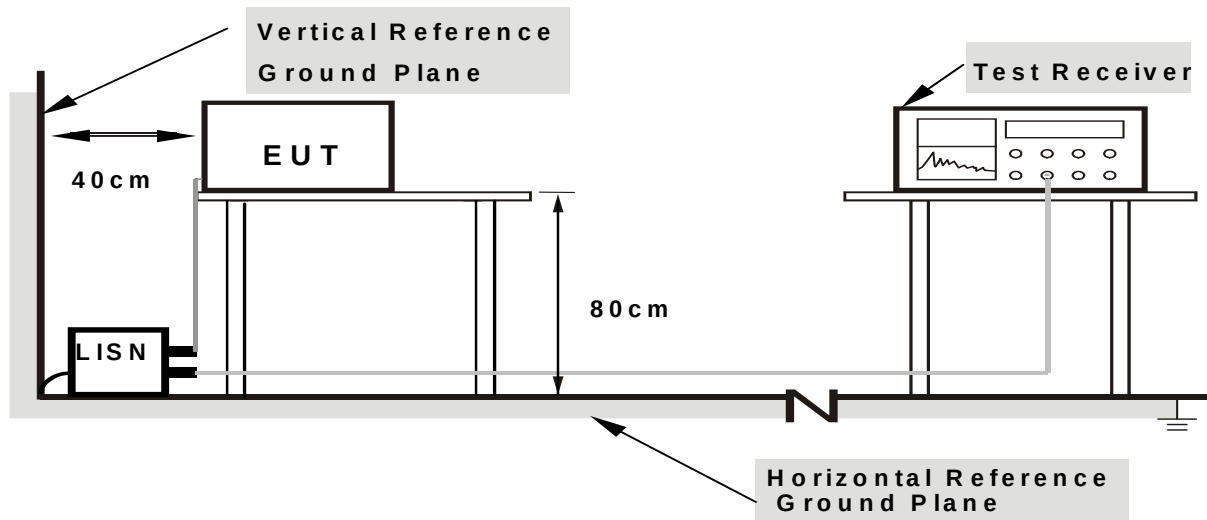
3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP

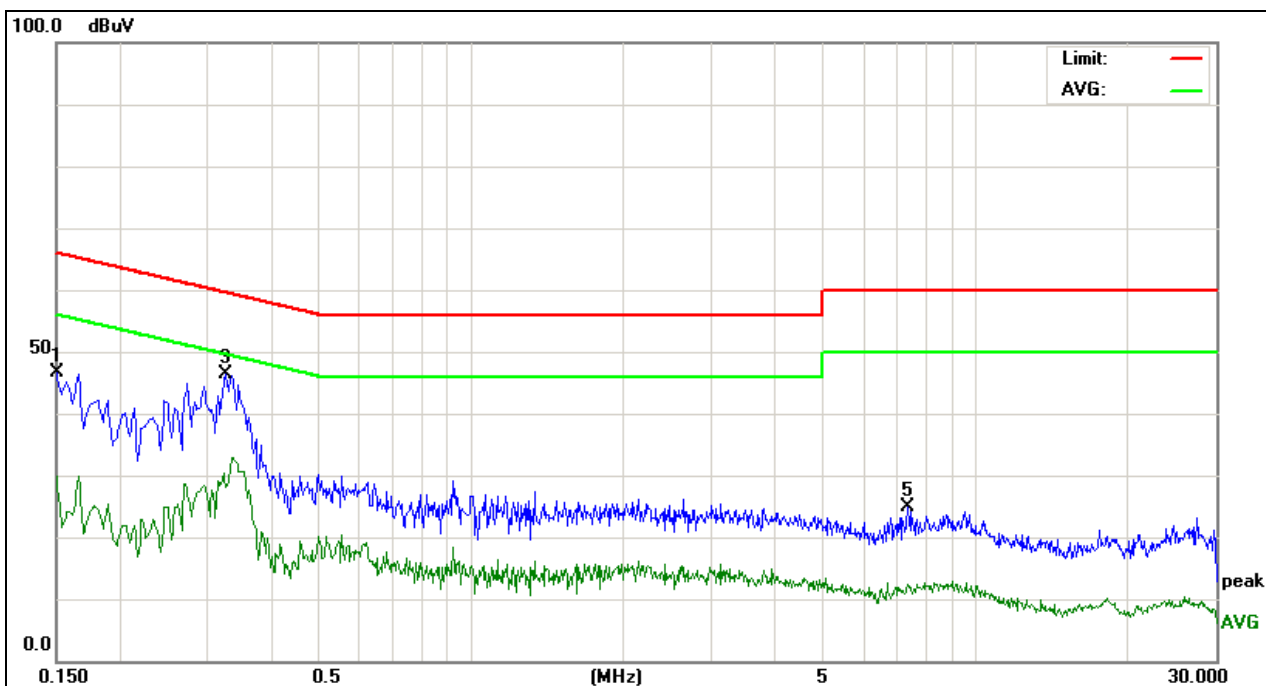


Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 TEST RESULTS

EUT :	Panel PC 平板電腦	Model Name. :	TD-1060 Slim
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2020-03-12
Test Mode :	Running	Phase :	L
Test Voltage :	AC 110V/60Hz for Adapter		

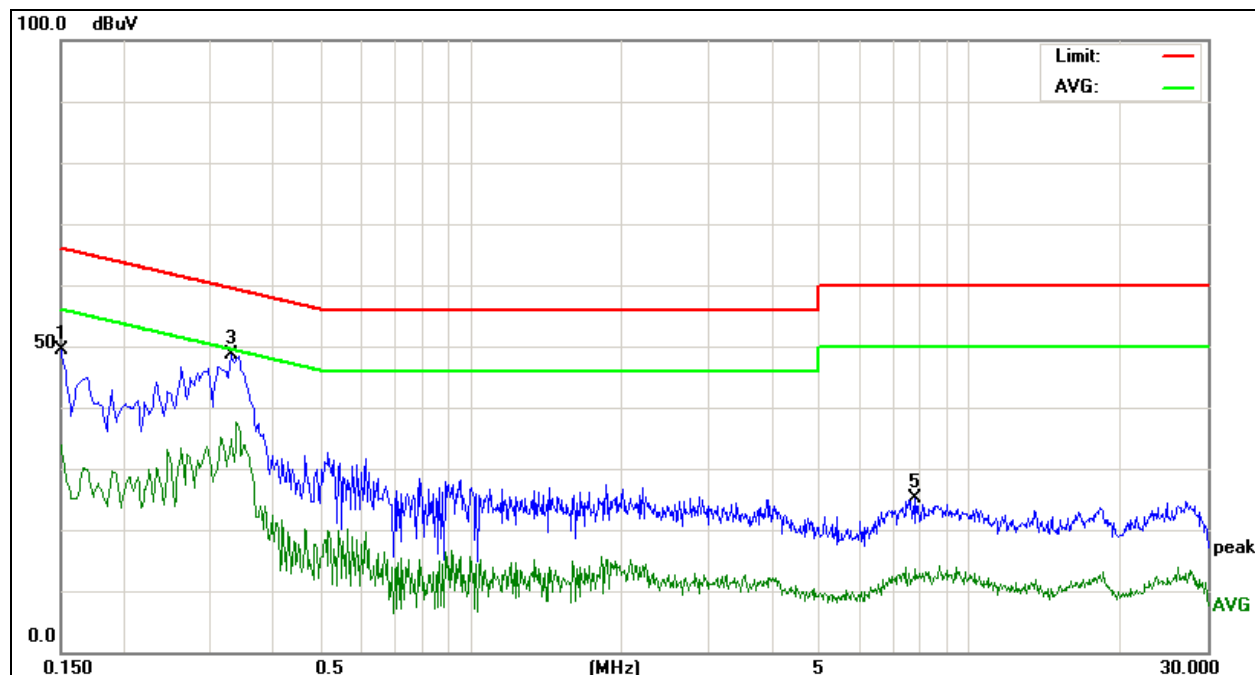


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	34.73	11.94	46.67	65.99	-19.32	peak
2		0.1500	17.89	11.94	29.83	55.99	-26.16	AVG
3	*	0.3260	36.13	10.18	46.31	59.55	-13.24	peak
4		0.3260	22.74	10.18	32.92	49.55	-16.63	AVG
5		7.3380	14.59	10.18	24.77	60.00	-35.23	peak
6		7.3380	2.46	10.18	12.64	50.00	-37.36	AVG

EUT :	Panel PC 平板電腦	Model Name. :	TD-1060 Slim
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2020-03-12
Test Mode :	Running	Phase :	N
Test Voltage :	AC 110V/60Hz for Adapter		



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	37.32	11.94	49.26	65.99	-16.73	peak
2		0.1500	22.04	11.94	33.98	55.99	-22.01	AVG
3	*	0.3300	38.38	10.18	48.56	59.45	-10.89	peak
4		0.3300	27.42	10.18	37.60	49.45	-11.85	AVG
5		7.7820	14.98	10.19	25.17	60.00	-34.83	peak
6		7.7820	3.90	10.19	14.09	50.00	-35.91	AVG

Test result: The unit does meet the NCC requirements.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 2.7, then the 2.8 limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (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 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to LP0002.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

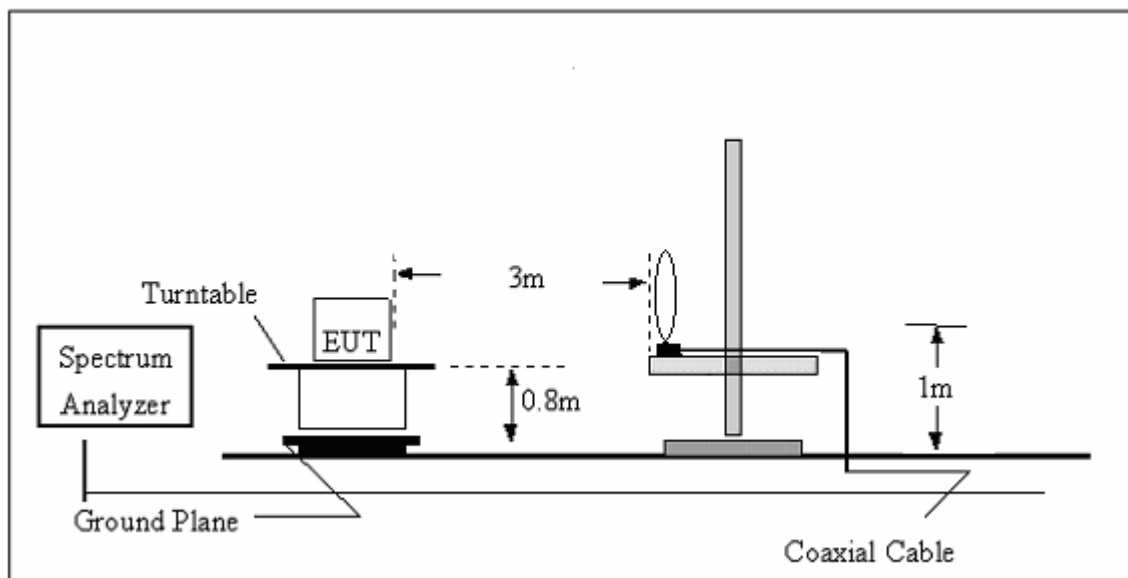
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

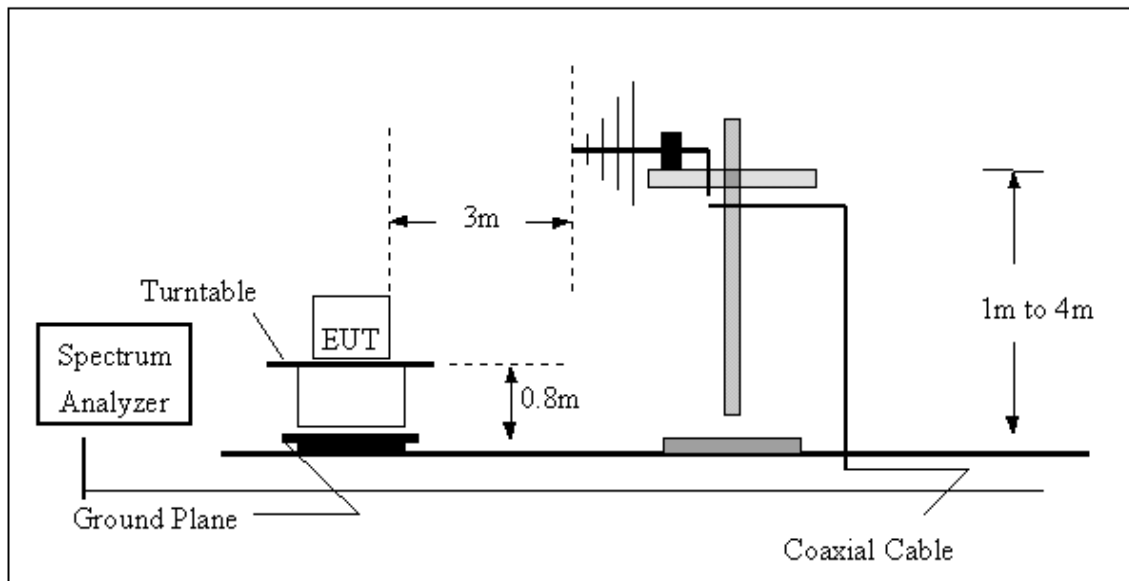
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall 1 m(below 30MHz) ; The height of the test antenna shall vary between 1 m to 4 m(above 30MHz). Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency 9kHz-30 MHz



(B) Radiated Emission Test Set-Up Frequency between 30MHz-1000MHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

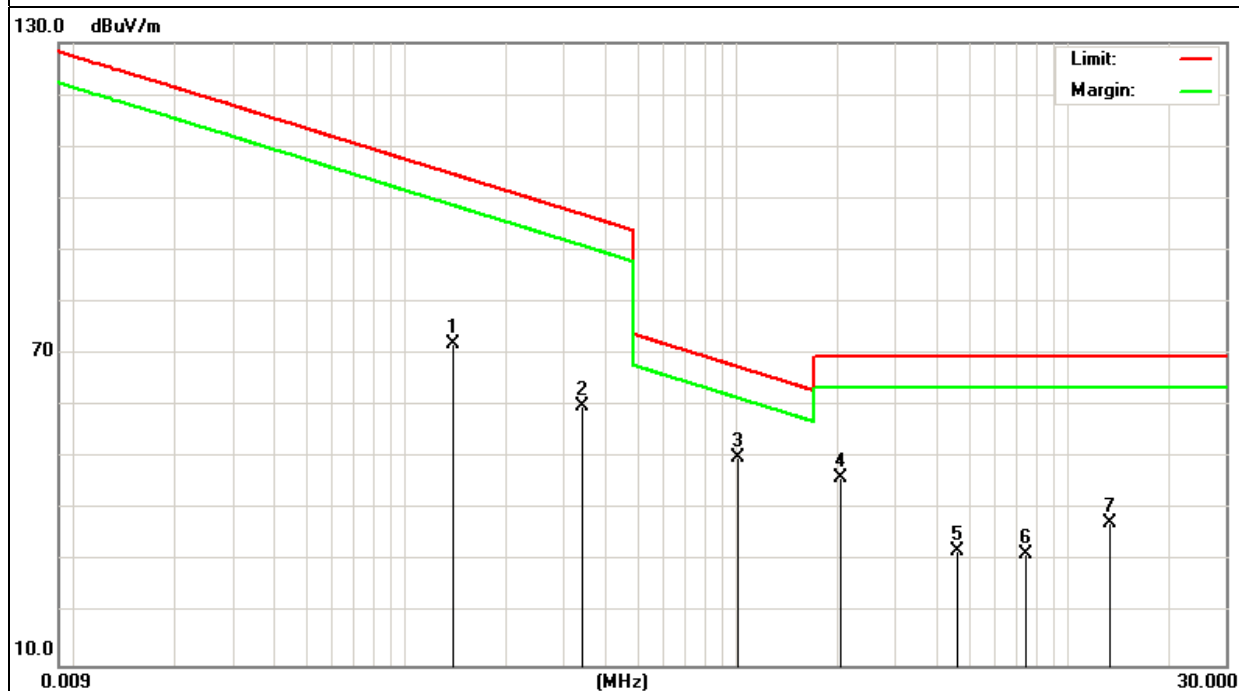
3.2.5 TEST RESULTS (BLOW 30MHZ)

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	AC 110V/60Hz for Adapter		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.1396	31.3	40.61	71.91	104.6 4	-32.73	Quasi-Peak
0.3436	26.68	33.22	59.9	96.86	-36.96	Quasi-Peak
1.0023	24	26.01	50.01	67.6	-17.59	Quasi-Peak
2.0632	24.29	21.85	46.14	69.5	-23.36	Quasi-Peak
4.6436	16.53	15.63	32.16	69.5	-37.34	Quasi-Peak
7.4333	17	14.48	31.48	69.5	-38.02	Quasi-Peak
13.348	23.93	13.59	37.52	69.5	-31.98	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

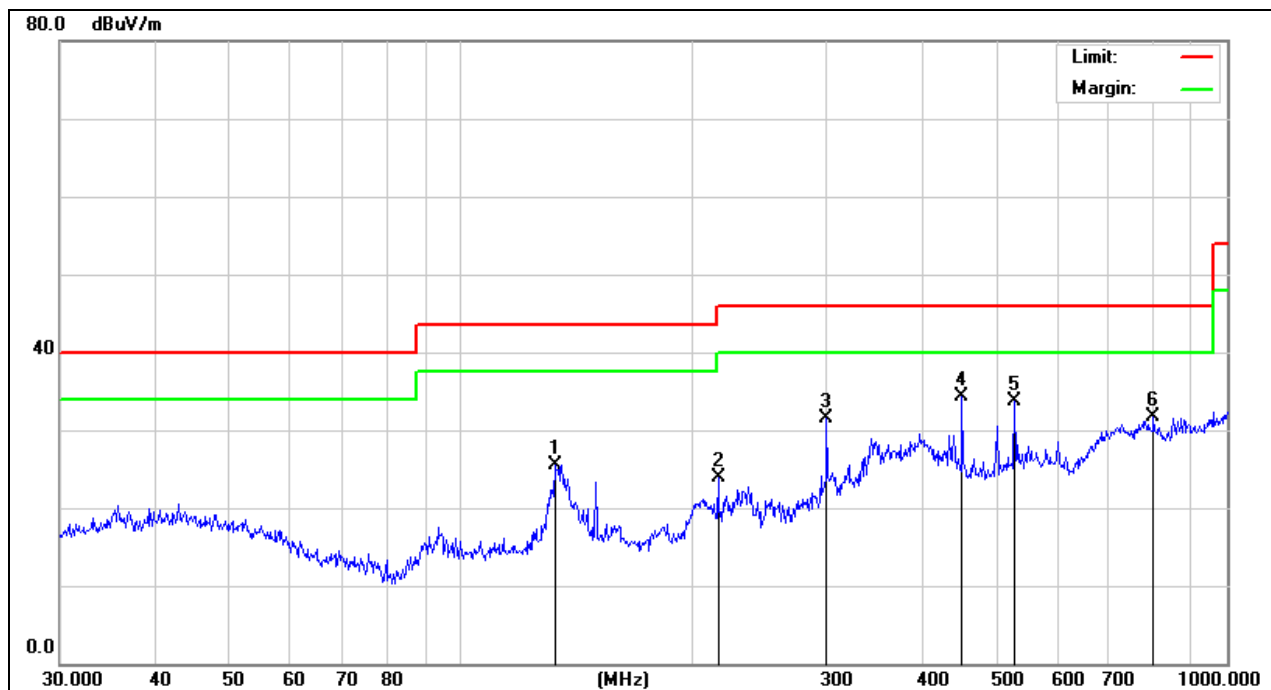


Note:

Pre-scan in the all of mode and antenna was aligned along the site axis, orthogonal to the axis, the worst case in of was recorded.

3.2.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	AC 110V/60Hz for Adapter		

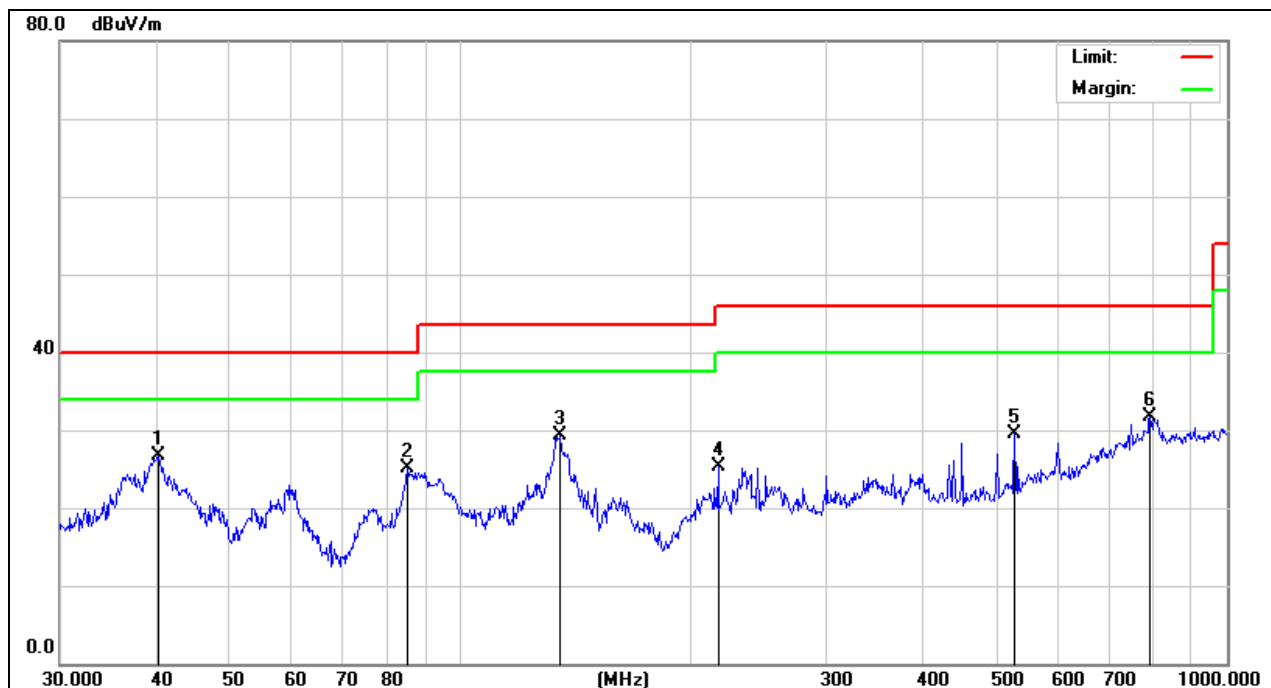


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		132.6850	33.33	-7.80	25.53	43.50	-17.97	peak
2		216.7828	30.77	-6.95	23.82	46.00	-22.18	peak
3		300.3672	36.38	-4.79	31.59	46.00	-14.41	peak
4	*	451.1350	32.20	2.05	34.25	46.00	-11.75	peak
5		528.2458	29.93	3.73	33.66	46.00	-12.34	peak
6		801.7863	24.49	7.17	31.66	46.00	-14.34	peak

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	AC 110V/60Hz for Adapter		



Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	40.2757	31.18	-4.56	26.62	40.00	-13.38	peak
2		85.2980	35.82	-10.79	25.03	40.00	-14.97	peak
3		135.0319	38.02	-8.71	29.31	43.50	-14.19	peak
4		216.7828	31.00	-5.65	25.35	46.00	-20.65	peak
5		528.2458	29.32	0.22	29.54	46.00	-16.46	peak
6		793.3960	24.18	7.53	31.71	46.00	-14.29	peak

3.3 FIELD STRENGTH OF FUNDAMENTAL MEASUREMENT

3.3.1 RADIATED EMISSION LIMITS

LIMITS OF FIELD STRENGTH OF FUNDAMENTAL MEASUREMENT

The RF fundamental field strength requirement is the power radiated in the direction of the maximum level under specified conditions of measurements in the presence of modulation.

The RF fundamental field strengths shall not exceed LP0002:2018 Section 3.2.1.1

The field strength of any emission in the band of 13.553 and 13.567 MHz shall be less than 84 dBuV/m (15848 uV/m) at 30 meter distance; or 124 dBuV/m at 3 meter.

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBμV/m @ 3m)	Field Strength of Harmonics (dBμV/m @ 3m)
13.56	124.0	84.0

Notes:

- (1) The limit for radiated test was performed according to LP0002.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.3.2 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Test Mode :	TX	Polarization :	Horizontal
Test Power :	DC 12V from Adapter		

Test Conditions: Radiated Measurement, Normal Temperature and Voltage only

Antenna Type: Integrated

Power Setting: Fixed at Chipset

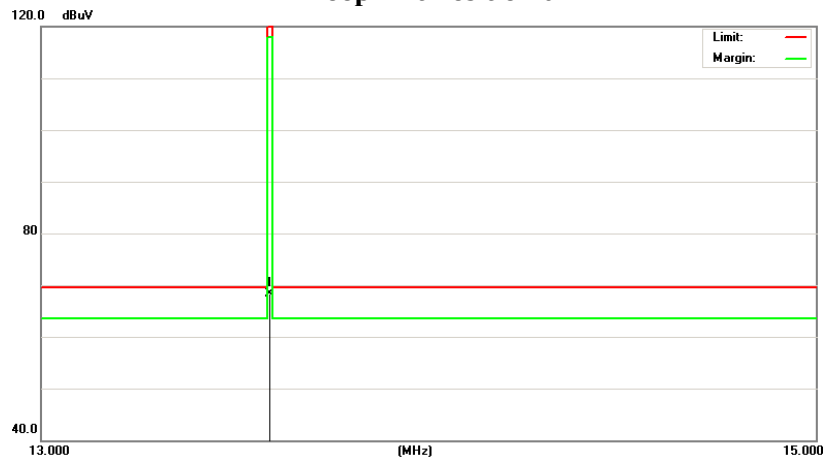
Signal State: Modulated

Duty Cycle: See below.

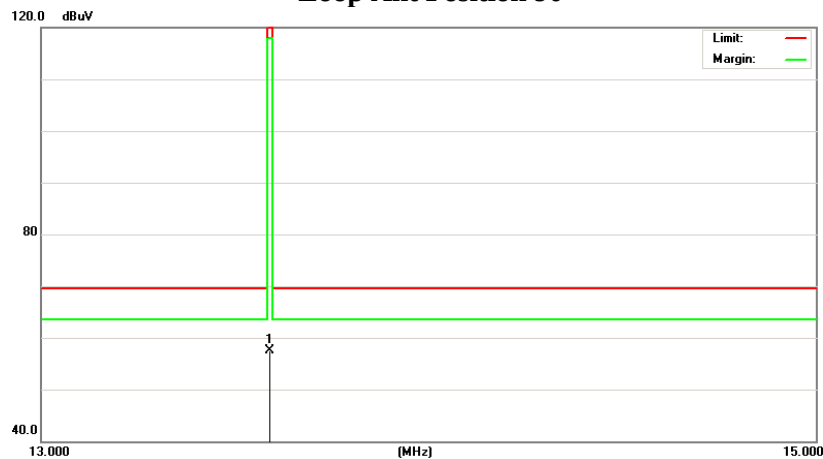
Operating Frequency:	Test Results					
13.56 MHz	Measured Level [dBuV/m]	Loop Ant Position	Table [degree]	Antenna [cm]	Limit [dBuV/m]	Margin [dB]
	68.22	0	74	100	124.00	-55.78
	57.53	90	343	100	124.00	-66.47

Note: Measurements were taken at 3 meter distance, and the limit was extrapolated accordingly.

Loop Ant Position 0



Loop Ant Position 90



Test result: The unit does meet the NCC requirements.

4. OCCUPIED BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

The occupied bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The 99% bandwidth is the bandwidth in which 99% of the transmitted power occupied.

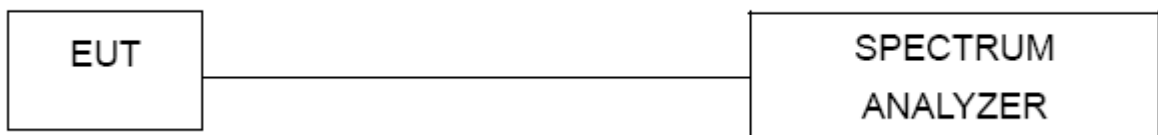
The 20dB bandwidth is defined the bandwidth of 20 dBr from highest transmitted level of the fundamental frequency.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	100 kHz (6dB Bandwidth) / 100 kHz (Channel Separation)
VB	300 kHz (6dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

4.1.2 TEST SETUP



4.1.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.4 TEST RESULTS

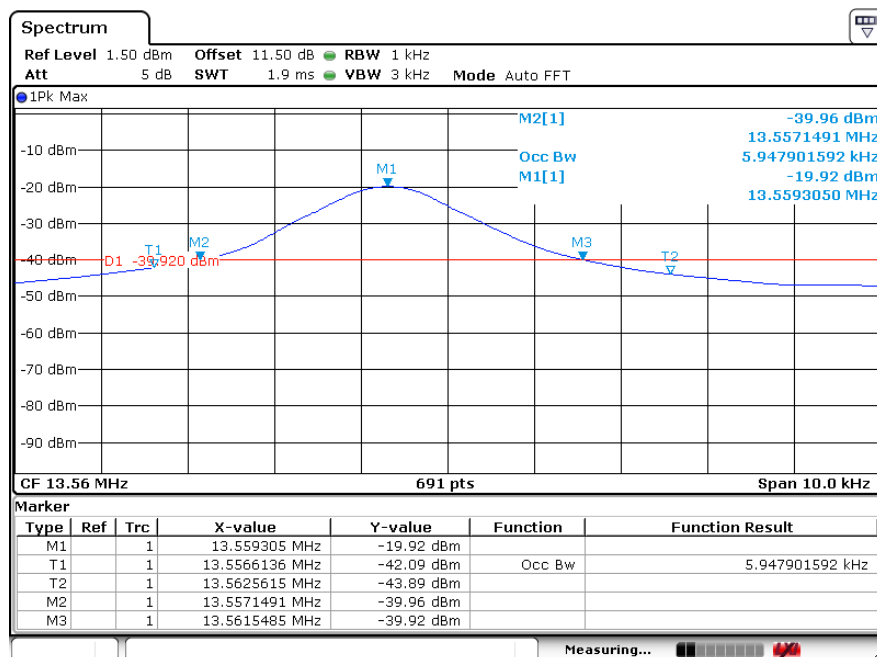
EUT :	Panel PC 平板电脑	Model Name :	TD-1060 Slim
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Signal State:	Modulated	Power Setting:	Fixed at Chipset
Test Mode :	Mode 1	Duty Cycle:	See below
Test Conditions:	Conducted Measurement, Normal Temperature and Voltage only		

Occupied Bandwidth – Test Results

Occupied Bandwidth for 13.56 MHz			
Mode	Limit (kHz)	99% BW (kHz)	20 dB BW (kHz)
ASK Modulation	Na	5.9479	4.3994
Note: All lower and upper markers of 99% Bandwidth and 20 dB Bandwidth are within the allowable band; 13.553 MHz to 13.567 MHz			

20 dB Bandwidth Frequency – Test Results

20 dB Bandwidth Frequencies for 13.56 MHz				
Mode	Occupied Band Limit (MHz)	Lower Freq. (MHz)	Upper Freq. (MHz)	Results
ASK Modulation	13.553 < X < 13.567	13.5571491	13.5615485	Pass
Note: All lower and upper markers of 20 dB Bandwidth are within the allowable band; 13.553 MHz to 13.567 MHz the lower frequency and upper frequency.				



5. FREQUENCY STABILITY

5.1 APPLIED PROCEDURES / LIMIT

In accordance with LP0002 section 3.2.1.3 the frequency stability of RFID devices must be such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual. The Manufacturer declares the operating temperature ranges of -20° to +70° C.

5.1.1 TEST PROCEDURE

- a. The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions.

5.1.2 MANUFACTURER DECLARATION

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Per LP0002 section 3.2.1.3, all of the RF signal should have $\pm 0.01\%$ or $\pm 100\text{ppm}$ stability. This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

Worst case:

$\pm 100\text{ppm}$ at 13.56 GHz translates to a maximum frequency shift of $\pm 1.356\text{ kHz}$.

5.1.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.4 TEST RESULTS

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Signal State:	Modulated	Power Setting:	Fixed at Chipset
Test Mode :	Mode 1	Duty Cycle:	See below
Test Conditions:	Conducted Measurement		

Frequency Stability – Test Results

Temperature	Time	PPM
-20°C	Start	4.04
	2 Min.	4.19
	5 Min	4.28
	10 min	4.14
-10°C	Start	5.80
	2 Min.	5.80
	5 Min	5.80
	10 min	5.75
0°C	Start	6.63
	2 Min.	6.68
	5 Min	6.72
	10 min	6.63
10°C	Start	5.89
	2 Min.	5.62
	5 Min	5.57
	10 min	5.52
20°C	Start	5.59
	2 Min.	5.59
	5 Min	5.59
	10 min	5.59
30°C	Start	4.57
	2 Min.	4.30
	5 Min	4.30
	10 min	4.30
40°C	Start	4.64
	2 Min.	4.36
	5 Min	4.36
	10 min	4.36
50°C	Start	4.90
	2 Min.	4.90
	5 Min	4.90
	10 min	4.90
Note: All frequency drifts from 13.56 MHz were less than ±100 ppm.		

6. VOLTAGE VARIATION

6.1 APPLIED PROCEDURES / LIMIT

In accordance with LP0002 section 3.2.1.3 intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

6.1.1 TEST PROCEDURE

- a. The NFC was designed to operating within 10.2 Vdc to 13.8 Vdc . The fundamental frequency was observed during the variation. The module was powered by 12 Vdc by variable DC power supply. The voltage input on the connection was varied from 10.2 Vdc to 13.8 Vdc mean while the fundamental frequencies were observed and recorded for the maximum drift in ppm; part per millions.

6.1.2 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.3 TEST RESULTS

EUT :	Panel PC 平板電腦	Model Name :	TD-1060 Slim
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2020-03-12
Signal State:	Modulated	Power Setting:	Fixed at Chipset
Test Mode :	Mode 1	Duty Cycle:	See below
Test Conditions:	Conducted Measurement		

Voltage Variation – Test Results

Voltage	PPM
10.2V DC	5.50
12.00V DC	5.50
13.8V DC	5.50
Note: All frequency drifts were less than ± 100 ppm from 13.56 MHz No frequency change was observed with time.	

The fundamental frequencies drifted less than ± 100 ppm.

Test result: The unit does meet the NCC requirements.

7. ANTENNA REQUIREMENT

7.1 STANDARD REQUIREMENT

LP0002/2.2 section -Antenna transmitter or transceiver motor of low power radio frequency used, the sections of this specification except as otherwise provided, shall be for the whole Fixed and semi-fixed or unique coupling (unique coupling) connected body. The manufacturer may be designed for users. And the replacement of the antenna due to damage, but not design or using an antenna or connection of other than the original certification standards for various types of cable's dayJack or electrical connector, such as: BNC, F type, N type, M type, UG type, RCA, SMA, SMB ...Etc., and other types of industrial or communication standard connectors.

7.2 EUT ANTENNA

The antenna is a internal antenna and no consideration of replacement, Antenna max gain is 0 dBi.

The Panel PC 平板電腦 uses a permanently integrated antenna.

9. EUT TEST PHOTO

**Radiated Measurement Photos
Below 30MHz**



**Radiated Measurement Photos
30MHz ~ 1GHz**



Conducted Measurement Photos

**** End of Report ****