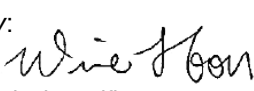


Prüfbericht-Nr.: Test Report No.:	17041894 001	Auftrags-Nr.: Order No.:	164011659	Seite 1 von 53 Page 1 of 53
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	06.03.2014	
Auftraggeber: Client:	PLUS Corporation, 1033-1, Oshitate, Inagi-shi, Tokyo 206-0811, JAPAN			
Prüfgegenstand: Test item:	COPYBOARD			
Bezeichnung / Typ-Nr.: Identification / Type No.:	N-31S, N-31W, N-314			
Auftrags-Inhalt: Order content:	FCC Certification			
Prüfgrundlage: Test specification:	CFR47 FCC Part 15: Subpart C Section 15.225 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart C Section 15.207 RSS-210 Issue 8 December 2010 RSS-102 Issue 4 March 2010 ICES-003 Issue 5 August 2012 CFR47 FCC Part 15: Subpart B Section 15.109 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-Gen Issue 3 December 2010 FCC KDB Publication 447498 v05r01			
Wareneingangsdatum: Date of receipt:	15.04.2014			
Prüfmuster-Nr.: Test sample No.:	A000050218-001			
Prüfzeitraum: Testing period:	17.04.2014 - 29.06.2014			
Ort der Prüfung: Place of testing:	Accurate Technology Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
22.09.2014 Owen Tian/Project Manager 		22.09.2014 Winnie Hou/Technical Certifier 		
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
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. <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>				

TEST SUMMARY

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

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*Test Report No.***Seite 4 von 53**
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1. General Remarks

1.1 Complementary Materials

None.

2. Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

(FCC Registration No.: 752051)

(Test site Industry Canada No.: 5077A-2)

F1, Bldg. A, Changyuan New Material Port
Keyuan Rd., Science & Industry Park, Nanshan
Shenzhen, P.R. China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Transmitter spurious emissions & Receiver spurious emissions				
Spectrum Analyzer	Agilent	E7405A	MY45115511	2015-01-11
Test Receiver	Rohde & Schwarz	ESCS30	100307	2015-01-11
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	2015-01-11
Loop Antenna	Schwarzbeck	FMZB1516	1516131	2015-01-11
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	2015-01-11
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	2015-01-11
Pre-Amplifier	Rohde & Schwarz	CBLU118354 0-01	3791	2015-01-11
Temp. & Humid. Chamber	Gongwen	HSD-500	0109	2015-01-11
Radio Spectrum Test				
EMI Test Receiver	Rohde & Schwarz	ESPI-3	100396/003	2015-01-11
Spectrum Analyzer	Agilent	E7405A	MY45115511	2015-01-11
Temp. & Humid. Chamber	Gongwen	HSD-500	0109	2015-01-11
Conducted Emission				
Test Receiver	Rohde & Schwarz	ESCS30	100307	2015-01-11
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	2015-01-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	2015-01-11
50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283933	2015-01-11
Radiated Emission				
Spectrum Analyzer	Agilent	E7405A	MY45115511	2015-01-11
Test Receiver	Rohde & Schwarz	ESCS30	100307	2015-01-11
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	2015-01-11
Loop Antenna	Schwarzbeck	FMZB1516	1516131	2015-01-11
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	2015-01-11
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	2015-01-11
Pre-Amplifier	Rohde & Schwarz	CBLU118354 0-01	3791	2015-01-11
RF Coaxial Cable (966 Chamber) (for below 1GHz test)	Suhner	N-3m	No.8	2015-01-11
RF Coaxial Cable (966 Chamber) (for below 1GHz test)	Resenberger	N-3.5m	No.9	2015-01-11
RF Coaxial Cable (966 Chamber) (for below 1GHz test)	Suhner	N-6m	No.10	2015-01-11
RF Coaxial Cable (966 Chamber) (for above 1GHz test)	Resenberger	N-12m	No.11	2015-01-11
RF Coaxial Cable (966 Chamber) (for above 1GHz test)	Resenberger	N-0.5m	No.12	2015-01-11

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, 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

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Radio Spectrum	$< \pm 0.60$ dB
Radiated emission of transmitter, valid up to 12.75 GHz	$< \pm 4.42$ dB
Radiated emission of receiver, valid up to 12.75 GHz	$< \pm 4.42$ dB
Conducted Emission	$< \pm 2.23$ dB
Radiated Emission	$< \pm 4.42$ dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

Accurate Technology Co., Ltd. test facility located at F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan, Shenzhen, P.R. 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.

Table 3: Model difference

Model	N-31S	N-31W	N-314
External dimension	W1480*D675*H1947mm	W1980*D675*H1947mm	W1480*D675*H1947mm
Panel size	H910*W1300mm	H910*W1800mm	H910*W1300mm
Effective reading size	H900*W1280	H900*W1780	H900*W1280
Main unit weight	20.0kg	25.0kg	25.0kg
Number of page	2	2	4

3.2 Ratings and System Details

Table 4: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	PLUS COPYBOARD
Type Designation	N-31S, N-31W, N-314
Operating Frequency band	13.56MHz
Channel Bandwidth	14kHz
Extreme Temperature Range	-20~+45°C
Operation Voltage	DC 12V (via marketed AC/DC adapter)
Modulation	ASK
Antenna Gain	-64dBi

3.3 Independent Operation Modes

The basic operation modes are:

- A. On
 - 1. NFC function, transmitting
 - 2. Connected to PC
 - 3. USB mode
 - 4. Printing
- B. Standby
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document
- Circuit Diagram
- Instruction Manual
- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power 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. All testing were performed according to the procedures in ANSI C63.4: 2003.

According to clause 3.1, all tests were applied on model N-31W only.

4.3 Special Accessories and Auxiliary Equipment

The EUT was tested together with the following accessories:

Description	Manufacturer	Part No.	S/N
Notebook	Lenovo	ThinkPad x230i	---
Printer	HP	HP Deskjet 1000	CN13J21H6X
AC/DC adapter (marketed)	LI TONE ELECTRONICS CO., LTD.	LTE36E.S2.3	N/A

The EUTs were tested with following cables:

Interface(s)/Port(s):	Max. cable length, shielding	Cable classification
AC Mains of Adapter	2 cores, non-shielded port, 3m	AC Power Input
DC input of EUT	2 cores, non-shielded port, 3m	DC Power Input
RJ 45 port	8 cores, non-shielded port, 3m	Signal port
USB port	4 cores, non-shielded port, 3m	Signal port
USB port (connecting to printer)	4 cores, non-shielded port, 3m	Signal port

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

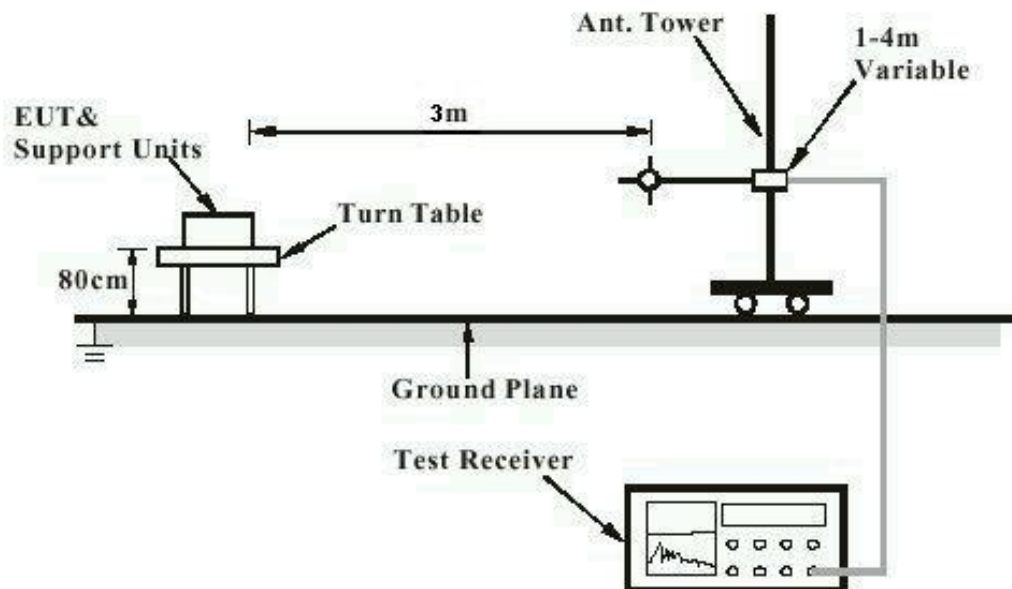


Diagram of Measurement Equipment Configuration for Conduction Measurement

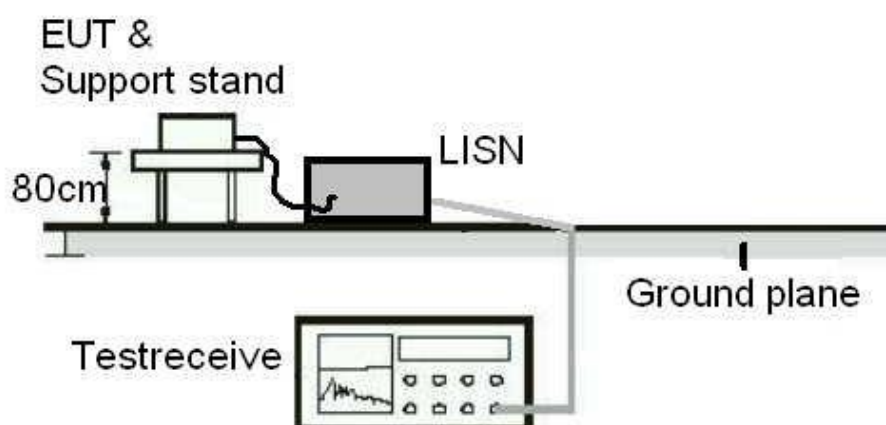
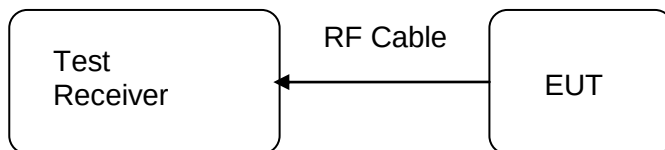


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Emission within band

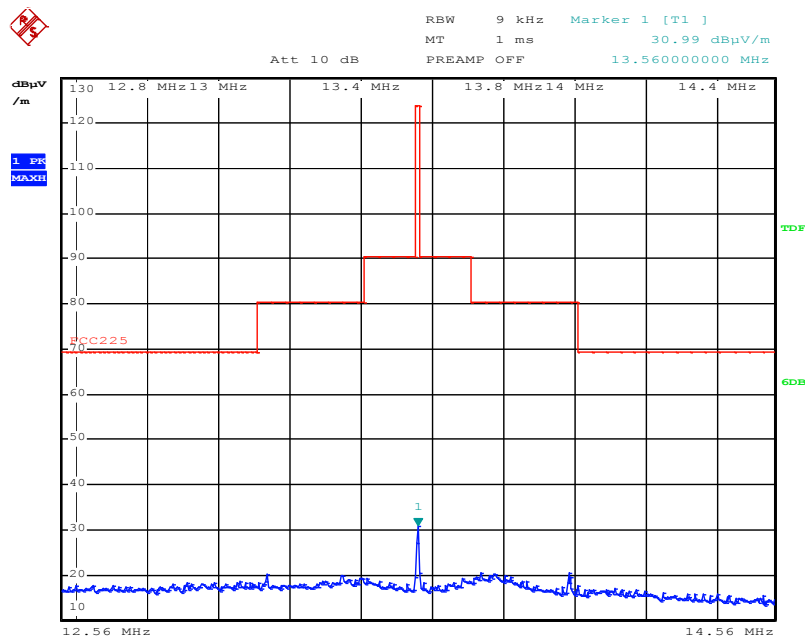
RESULT:**Pass**

Test standard	:	FCC Part 15.225 (a), (b), (c) RSS-210 A2.6 (a), (b), (c)
Basic standard	:	ANSI C63.4: 2003
Limit	:	FCC Part 15.225 (a), (b), (c)
Kind of test site	:	Shielded room

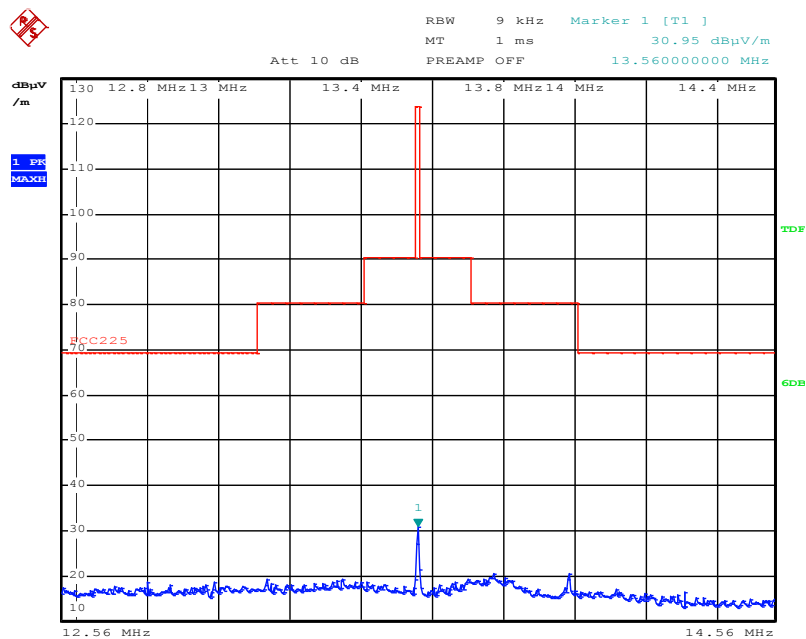
Test setup

Test date	:	2014-06-29
Operation mode	:	A.1.a
Ambient temperature	:	25°C
Relative humidity	:	52%
Atmospheric pressure	:	101kPa

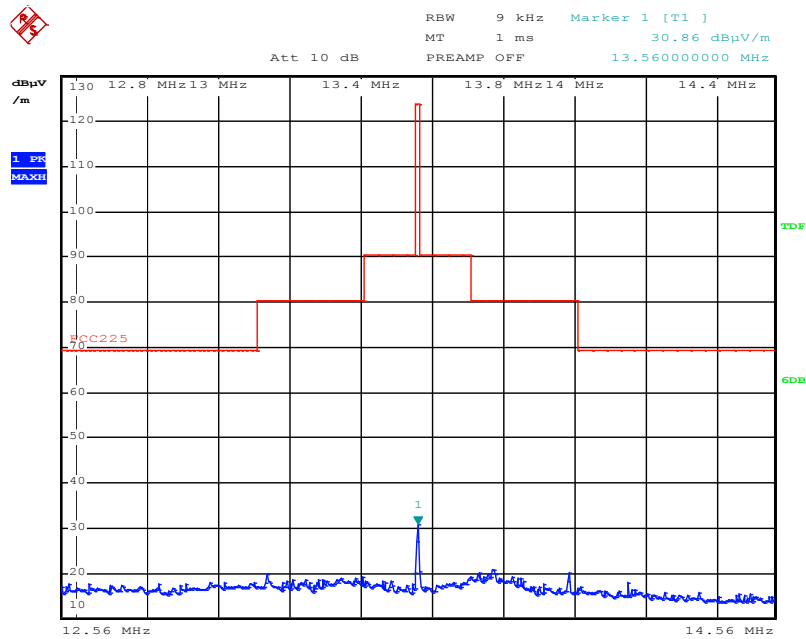
For details refer to following test plot.



Date: 29.JUN.2014 20:01:14



Date: 29.JUN.2014 20:02:14



Date: 29.JUN.2014 20:03:15

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5.1.2 Spurious Emission outside band**RESULT:****Pass**

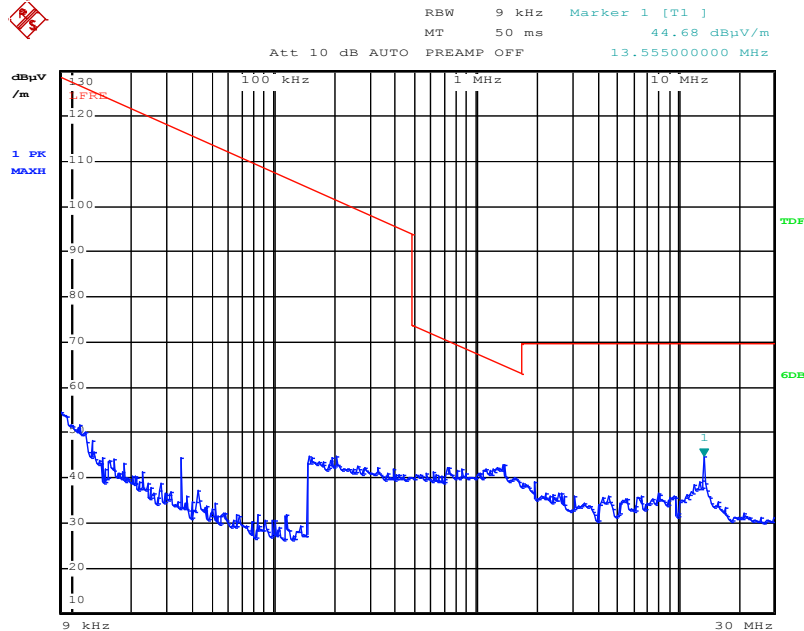
Test standard	:	FCC part 15.225 (d) RSS-210 A2.6 (d)
Basic standard	:	ANSI C63.4: 2003
Limits	:	FCC part 15.209(a)
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Date of testing	:	2014-06-29
Operation mode	:	A.1.a
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101kPa

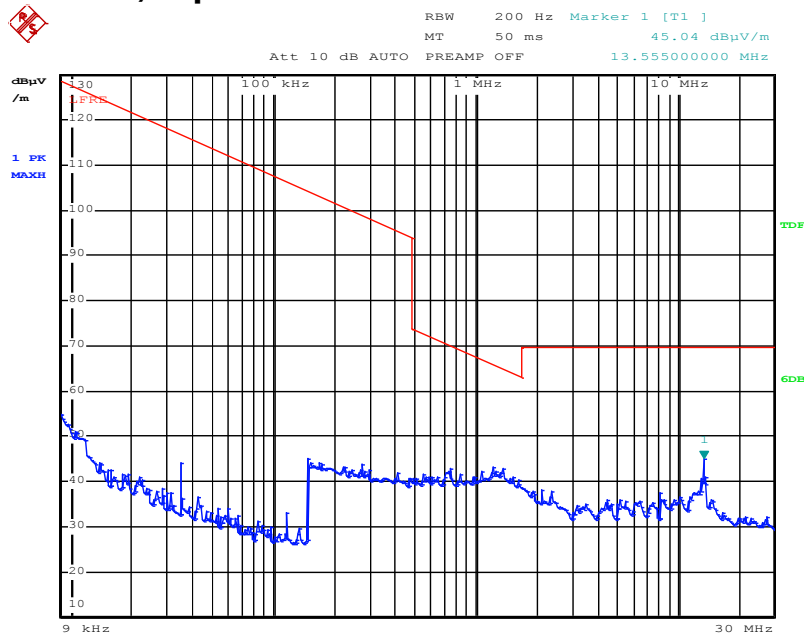
For details refer to following test plot.

Test Plot of Spurious Emission of transmitter Below 30MHz, X polarization:



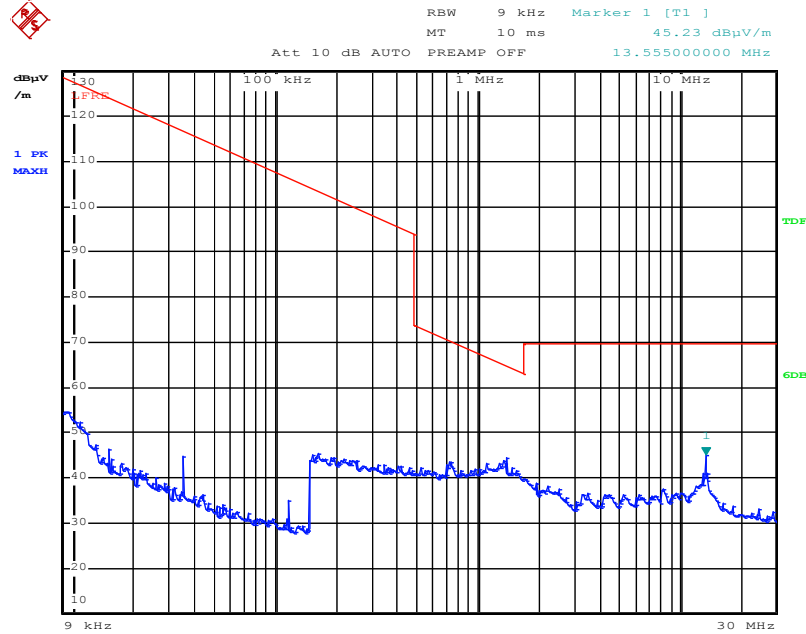
Date: 29.JUN.2014 20:26:29

Below 30MHz, Y polarization:



Date: 29.JUN.2014 20:28:30

Below 30MHz, Z polarization:



Date: 29.JUN.2014 20:39:04


ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

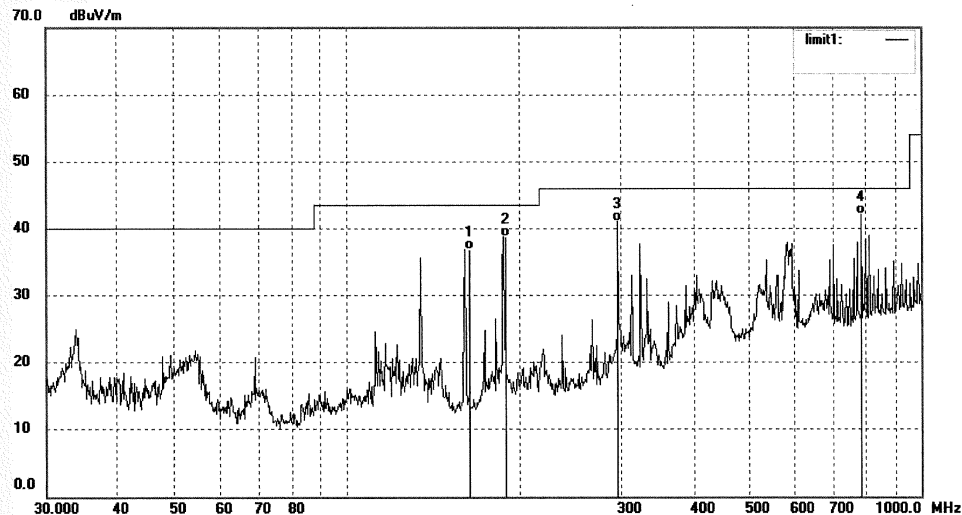
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: PZ #787
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Copyboard
Mode: TX
Model: N-31W
Manufacturer: PLUS Corporation

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2014/06/29
Time: 21:04:39
Engineer Signature: PEI
Distance:

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	162.7200	51.26	-14.50	36.76	43.50	-6.74	QP			
2	189.8410	51.44	-12.65	38.79	43.50	-4.71	QP			
3	298.3240	50.43	-9.32	41.11	46.00	-4.89	QP			
4	786.4885	42.35	-0.27	42.08	46.00	-3.92	QP			


ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

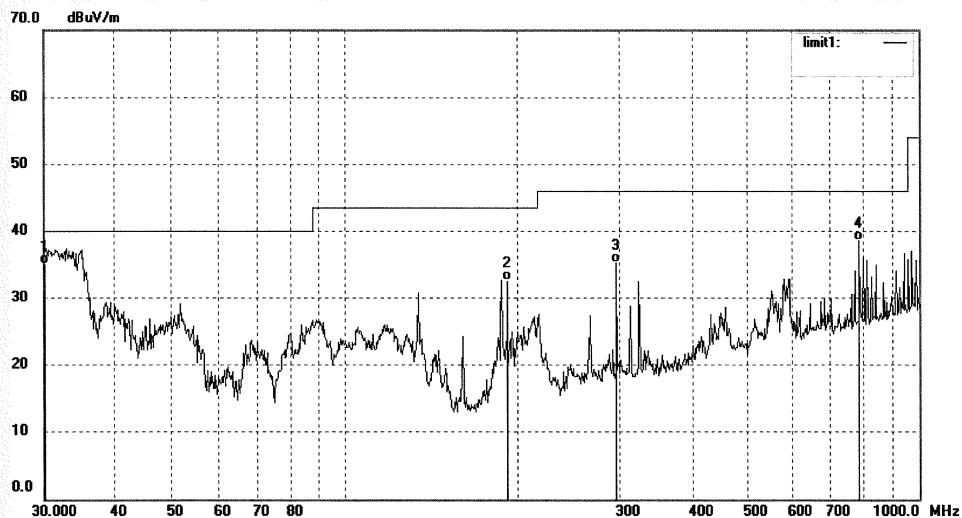
Tel:+86-0755-26503290

Fax:+86-0755-26503396

 Job No.: PZ #788
 Standard: FCC Class B 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: TX
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Vertical
 Power Source: AC 120V/60Hz
 Date: 2014/06/29
 Time: 21:15:34
 Engineer Signature: PEI
 Distance:

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.0000	45.01	-9.93	35.08	40.00	-4.92	QP			
2	189.8400	45.35	-12.65	32.70	43.50	-10.80	QP			
3	298.3200	44.60	-9.32	35.28	46.00	-10.72	QP			
4	786.4820	38.87	-0.27	38.60	46.00	-7.40	QP			

5.1.3 Frequency tolerance of carrier signal

RESULT:
Pass

Test standard : FCC part 15.225 (e)
 RSS-210 A2.6
 Basic standard : ANSI C63.4: 2003
 Limits : $\pm 0.01\%$
 Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Date of testing : 2014-06-27
 Operation mode : A.1.a
 Ambient temperature : 23°C
 Relative humidity : 48%
 Atmospheric pressure : 101kPa

Table 5: Test result of frequency tolerance of voltage variation

Voltage	Frequency tolerance	
	Test result (ppm)	Limit (ppm)
AC 102V	1.47	100
AC 120V	1.47	
AC 138V	1.47	

Table 6: Test result of frequency tolerance of voltage variation

Temperature	Frequency tolerance	
	Test result (ppm)	Limit (ppm)
-20°C	2.95	100
-10°C	2.21	
0°C	2.95	
10°C	2.95	
20°C	2.21	
30°C	2.21	
40°C	2.95	
50°C	2.21	
60°C	1.47	
70°C	2.21	

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5.1.4 20dB Bandwidth and 99% Bandwidth of NFC**RESULT:****Pass**

Test standard : FCC part 15.225
: RSS-210 A2.6
Basic standard : ANSI C63.4: 2003
Kind of test site : Shielded room

Test setup

Date of testing : 2014-06-27
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Table 7: Test result of 20dB & 99% Bandwidth

Channel Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
13.56MHz	2.64	10.72

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5.1.5 Conducted emissions

RESULT:**Pass**

Test standard	:	FCC Part 15.207 RSS-Gen Issue 3 December 2010
Basic standard	:	ANSI C63.4: 2003
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207 (a) Table 4 of RSS-Gen Issue 3 December 2010
Kind of test site	:	Shield room

Test setup

Date of testing	:	2014-04-17
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Earthing	:	Not Connected
Ambient temperature	:	25°C
Relative humidity	:	52%
Atmospheric pressure	:	101kPa

For details refer to following test plot.

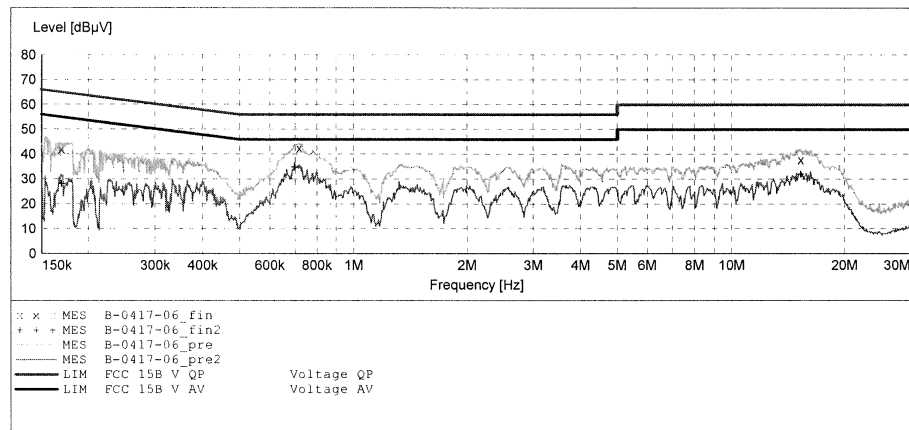
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: NFC
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-06_fin"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169084	42.10	10.5	65	22.9	QP	L1	GND
0.717310	42.50	10.8	56	13.5	QP	L1	GND
15.266191	37.80	11.4	60	22.2	QP	L1	GND

MEASUREMENT RESULT: "B-0417-06_fin2"

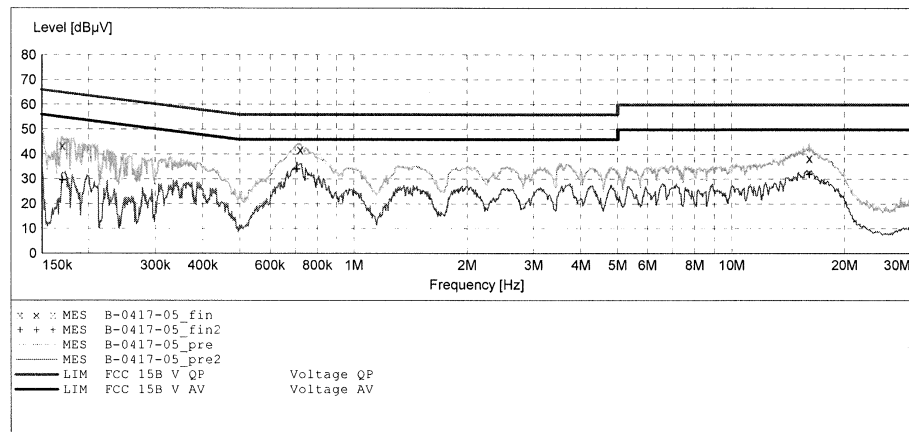
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169084	28.10	10.5	55	26.9	AV	L1	GND
0.697543	34.70	10.8	46	11.3	AV	L1	GND
15.266191	31.80	11.4	50	18.2	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD
CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: NFC
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average


MEASUREMENT RESULT: "B-0417-05_fin"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169760	43.60	10.5	65	21.4	QP	N	GND
0.720179	41.90	10.8	56	14.1	QP	N	GND
16.079367	38.40	11.4	60	21.6	QP	N	GND

MEASUREMENT RESULT: "B-0417-05_fin2"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.169760	29.50	10.5	55	25.5	AV	N	GND
0.705947	33.90	10.8	46	12.1	AV	N	GND
16.079367	31.70	11.4	50	18.3	AV	N	GND

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5.1.6 Conducted emissions**RESULT:****Pass**

Test standard	:	FCC Part 15.107 ICES-003 Issue 5 August 2012
Basic standard	:	ANSI C63.4: 2003
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.107 (b) Table 1 of ICES-003 Issue 5 August 2012
Kind of test site	:	Shield room

Test setup

Date of testing	:	2014-04-17
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A
Earthing	:	Not Connected
Ambient temperature	:	25°C
Relative humidity	:	52%
Atmospheric pressure	:	101kPa

For details refer to following test plot.

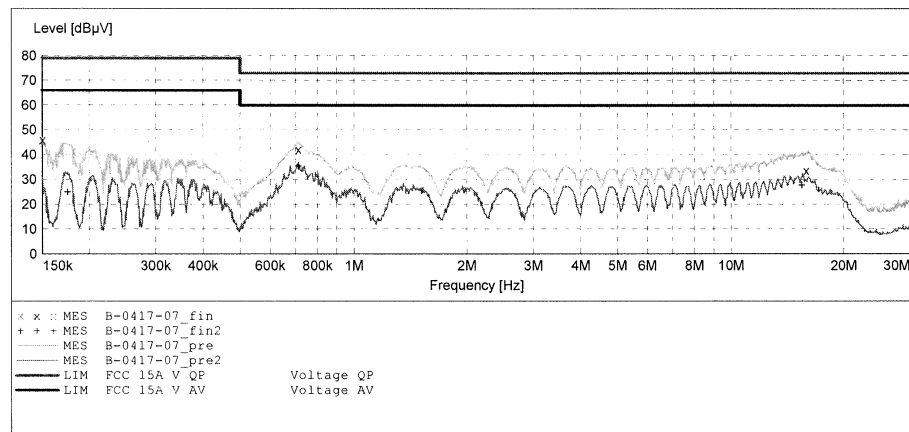
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: Communication
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-07_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	46.00	10.5	79	33.0	QP	L1	GND
0.711605	42.10	10.8	73	30.9	QP	L1	GND
15.887948	33.70	11.4	73	39.3	QP	L1	GND

MEASUREMENT RESULT: "B-0417-07_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.174571	24.90	10.5	66	41.1	AV	L1	GND
0.711605	35.30	10.8	60	24.7	AV	L1	GND
15.450119	27.60	11.4	60	32.4	AV	L1	GND

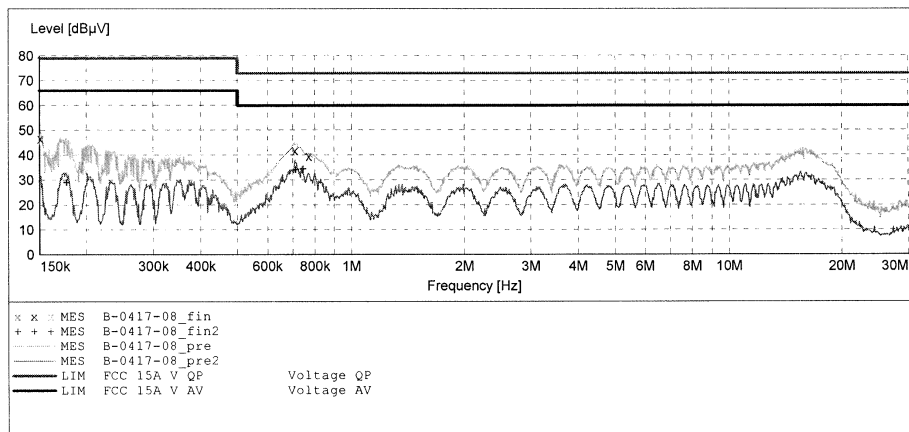
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: Communication
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-08_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150600	46.70	10.5	79	32.3	QP	N	GND
0.708770	41.80	10.8	73	31.2	QP	N	GND
0.770750	39.50	10.8	73	33.5	QP	N	GND

MEASUREMENT RESULT: "B-0417-08_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.176674	28.90	10.5	66	37.1	AV	N	GND
0.711605	34.00	10.8	60	26.0	AV	N	GND
0.743550	34.30	10.8	60	25.7	AV	N	GND

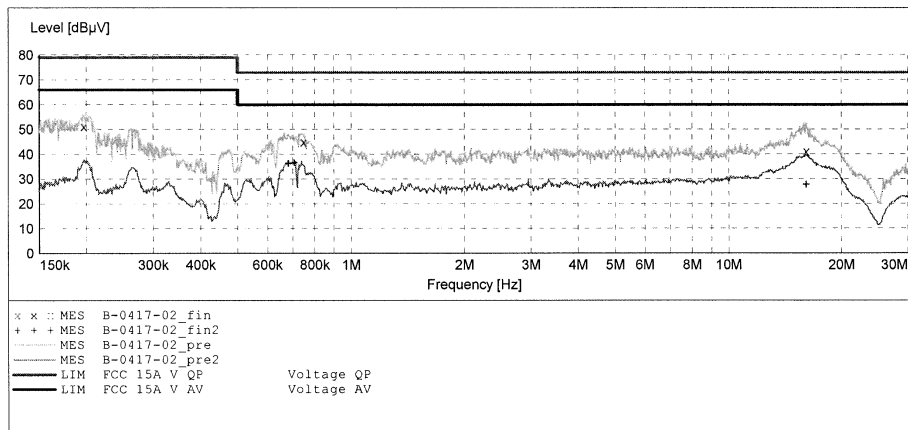
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: USB mode
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-02_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.196781	51.20	10.5	79	27.8	QP	L1	GND
0.746522	45.00	10.8	73	28.0	QP	L1	GND
16.079304	41.10	11.4	73	31.9	QP	L1	GND

MEASUREMENT RESULT: "B-0417-02_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.681033	36.20	10.8	60	23.8	AV	L1	GND
0.705947	36.50	10.8	60	23.5	AV	L1	GND
16.079304	27.60	11.4	60	32.4	AV	L1	GND

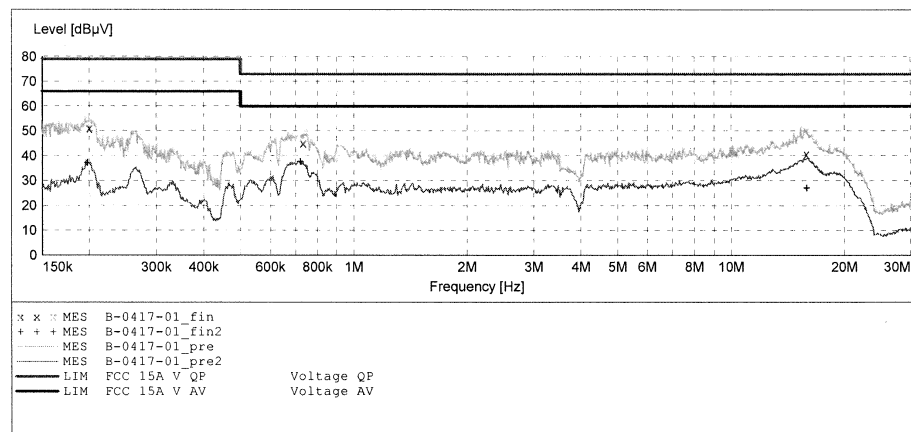
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: USB mode
 Test Site: 1#Shielding Room
 Operator: IAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-01_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199949	51.10	10.5	79	27.9	QP	N	GND
0.731769	45.10	10.8	73	27.9	QP	N	GND
15.824587	40.60	11.4	73	32.4	QP	N	GND

MEASUREMENT RESULT: "B-0417-01_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.197568	37.10	10.5	66	28.9	AV	N	GND
0.720179	37.60	10.8	60	22.4	AV	N	GND
15.887885	27.00	11.4	60	33.0	AV	N	GND

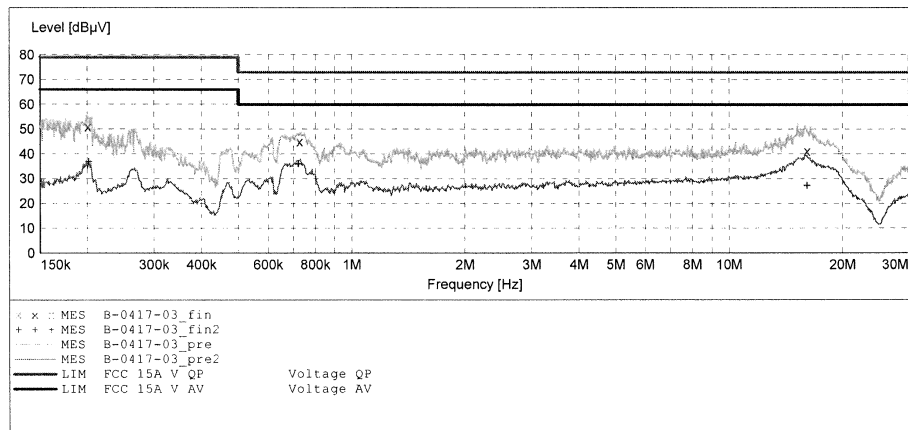
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: Printing
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: L 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0417-03_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.200748	51.00	10.5	79	28.0	QP	L1	GND
0.725950	45.00	10.8	73	28.0	QP	L1	GND
16.079278	41.20	11.4	73	31.8	QP	L1	GND

MEASUREMENT RESULT: "B-0417-03_fin2"

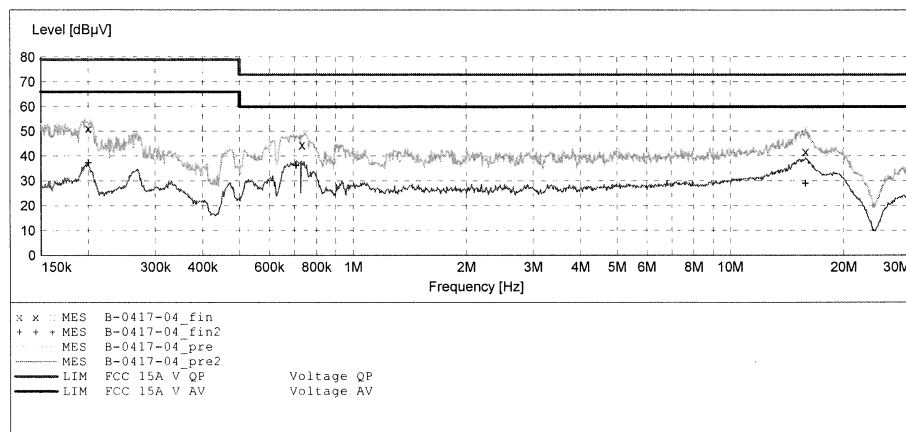
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.201551	36.80	10.5	66	29.2	AV	L1	GND
0.720177	35.90	10.8	60	24.1	AV	L1	GND
16.079278	27.20	11.4	60	32.8	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD
CONDUCTED EMISSION STANDARD FCC PART 15 A

EUT: Copyboard M/N:N-31W
 Manufacturer: PLUS Corporation
 Operating Condition: Printing
 Test Site: 1#Shielding Room
 Operator: LAN
 Test Specification: N 120V/60Hz
 Comment: Mains Port
 Start of Test: 4/17/2014 /

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average


MEASUREMENT RESULT: "B-0417-04_fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199949	51.20	10.5	79	27.8	QP	N	GND
0.731769	44.60	10.8	73	28.4	QP	N	GND
15.824579	41.80	11.4	73	31.2	QP	N	GND

MEASUREMENT RESULT: "B-0417-04_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199949	37.20	10.5	66	28.8	AV	N	GND
0.705947	36.10	10.8	60	23.9	AV	N	GND
15.824579	28.80	11.4	60	31.2	AV	N	GND

5.1.1 Radiated emissions**RESULT:****Pass**

Test standard	:	FCC Part 15.109 ICES-003 Issue 5 August 2012
Basic standard	:	ANSI C63.4: 2003
Frequency range	:	30 – 2000MHz *
Limits	:	FCC Part 15.109 (b) Table 4 & 6 of ICES-003 Issue 5 August 2012
Kind of test site	:	3m Semi-Anechoic Chamber

Test Setup

Date of testing	:	2014-04-17
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.2, A.3, A.4
Earthing	:	Not Connected
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101kPa

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

For details refer to following test plot.


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 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1791
 Standard: FCC Class A 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Communication
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note: LAN:10M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	115.6320	39.12	-13.15	25.97	53.50	-27.53	QP			
2	592.4289	44.84	-3.04	41.80	56.40	-14.60	QP			
3	996.4926	30.69	2.78	33.47	59.50	-26.03	QP			


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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV #1792

Standard: FCC Class A 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Copyboard

Mode: Communication

Model: N-31W

Manufacturer: PLUS Corporation

Polarization: Vertical

Power Source: AC 120V/60Hz

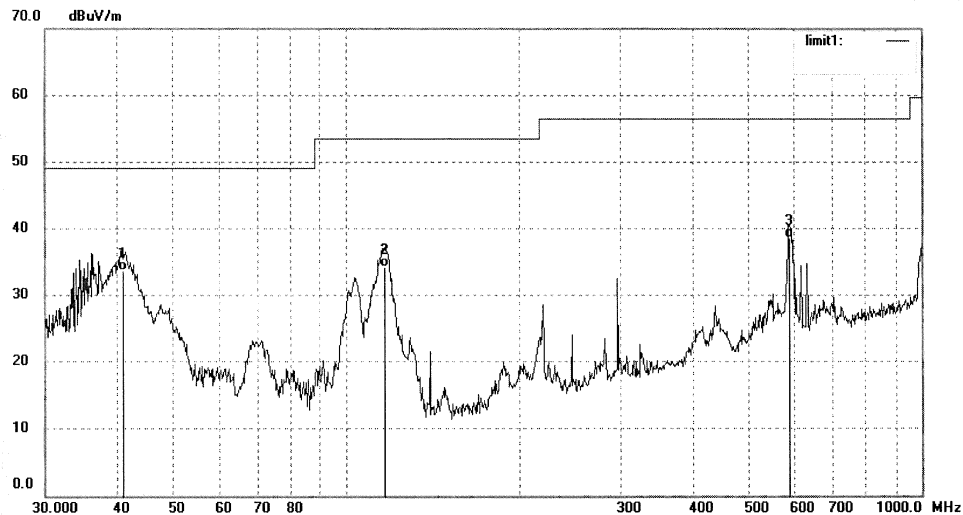
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Time:

Engineer Signature:

Distance: 3m

Note: LAN:10M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	40.8699	45.44	-11.74	33.70	49.00	-15.30	QP			
2	116.4475	47.39	-13.16	34.23	53.50	-19.27	QP			
3	588.2804	41.64	-3.07	38.57	56.40	-17.83	QP			

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Site: 1# Chamber

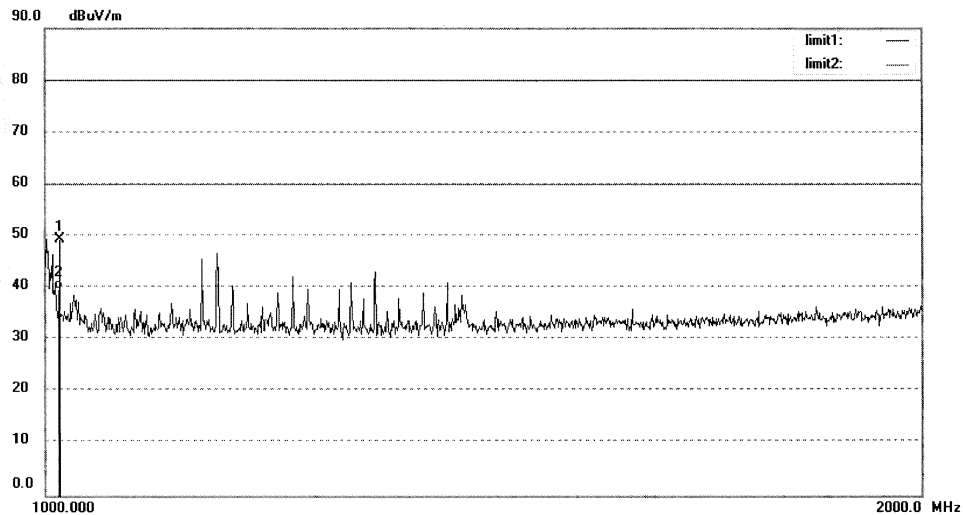
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV #1805
Standard: FCC PK Class A
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Copyboard
Mode: Communication
Model: N-31W
Manufacturer: PLUS Corporation

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/04/17/
Time:
Engineer Signature:
Distance: 3m

Note: LAN:10M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1012.390	61.78	-12.48	49.30	80.00	-30.70	peak			
2	1012.390	52.28	-12.48	39.80	60.00	-20.20	AVG			


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Site: 1# Chamber

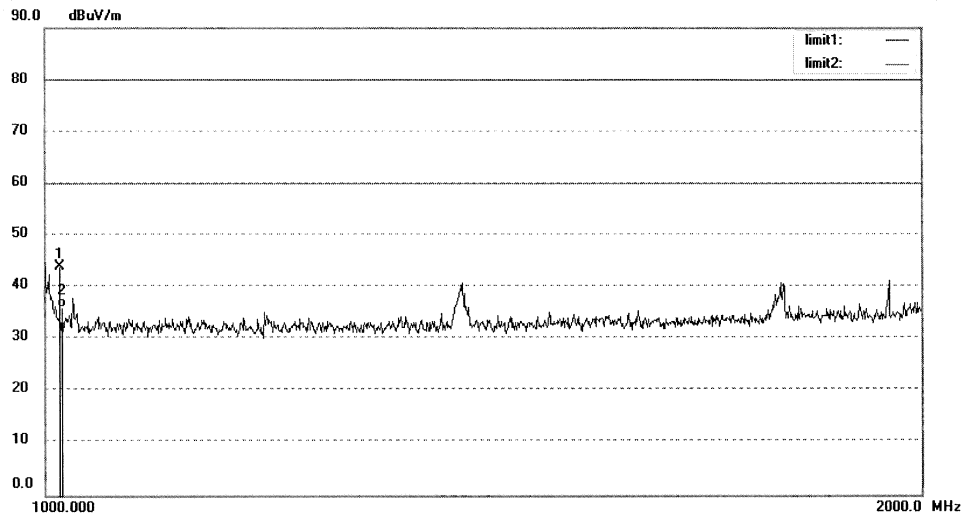
Tel:+86-0755-26503290

Fax:+86-0755-26503396

 Job No.: TUV #1806
 Standard: FCC PK Class A
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Communication
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Vertical
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note: LAN:10M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1012.347	56.56	-12.48	44.08	80.00	-35.92	peak			
2	1012.347	48.69	-12.48	36.21	60.00	-23.79	AVG			


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 Site: 1# Chamber
 Tel: +86-0755-26503290
 Fax: +86-0755-26503396

 Job No.: TUV #1794
 Standard: FCC Class A 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Communication
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note: LAN:100M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	116.0391	42.61	-13.15	29.46	53.50	-24.04	QP			
2	586.2172	44.73	-3.09	41.64	56.40	-14.76	QP			
3	1000.0000	30.32	2.84	33.16	59.50	-26.34	QP			

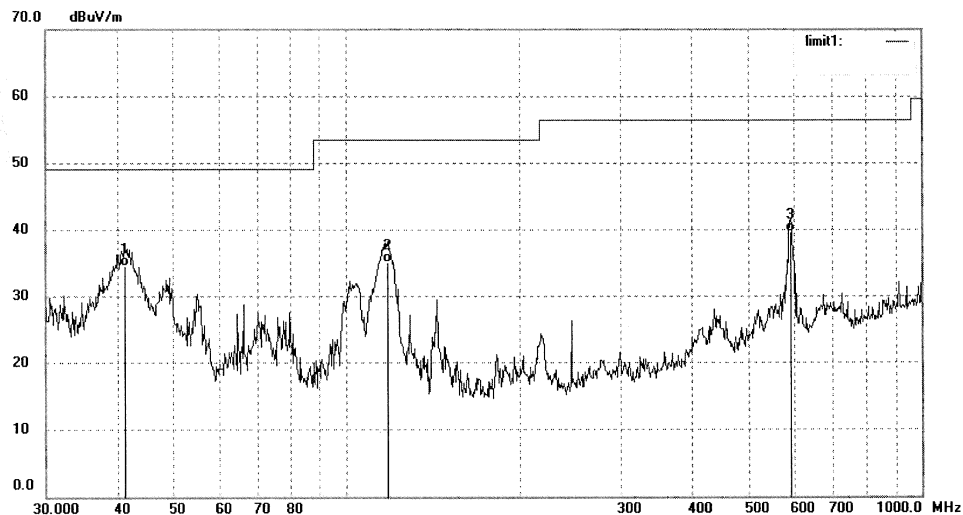

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1793
 Standard: FCC Class A 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Communication
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Vertical
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note: LAN:100M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	41.1580	46.31	-11.80	34.51	49.00	-14.49	QP			
2	117.6814	48.30	-13.14	35.16	53.50	-18.34	QP			
3	590.3510	42.70	-3.05	39.65	56.40	-16.75	QP			

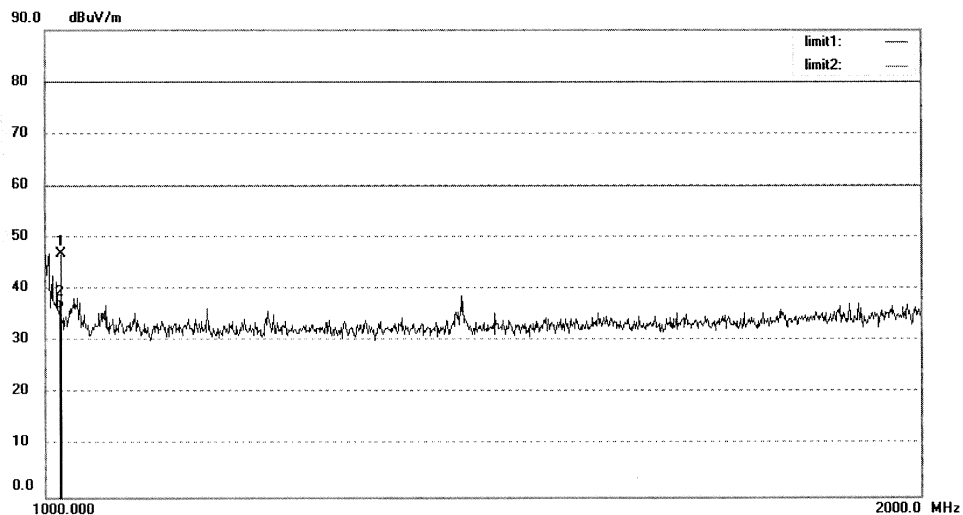

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1804
 Standard: FCC PK Class A
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Communication
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note: LAN:100M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1012.782	59.38	-12.47	46.91	80.00	-33.09	peak			
2	1012.782	48.81	-12.47	36.34	60.00	-23.66	AVG			

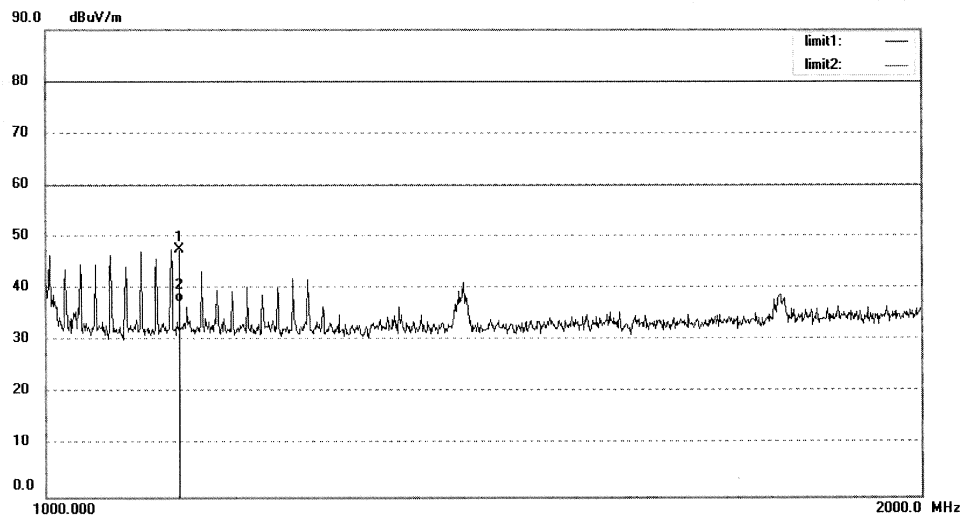
Prüfbericht - Nr.: 17041894 001
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 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: TUV #1803	Polarization: Vertical
Standard: FCC PK Class A	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Copyboard	Engineer Signature:
Mode: Communication	Distance: 3m
Model: N-31W	
Manufacturer: PLUS Corporation	

Note: LAN:100M



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1112.418	60.23	-12.58	47.65	80.00	-32.35	peak			
2	1112.418	49.98	-12.58	37.40	60.00	-22.60	AVG			


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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV #1784

Standard: FCC Class A 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Copyboard

Mode: USB mode

Model: N-31W

Manufacturer: PLUS Corporation

Polarization: Horizontal

Power Source: AC 120V/60Hz

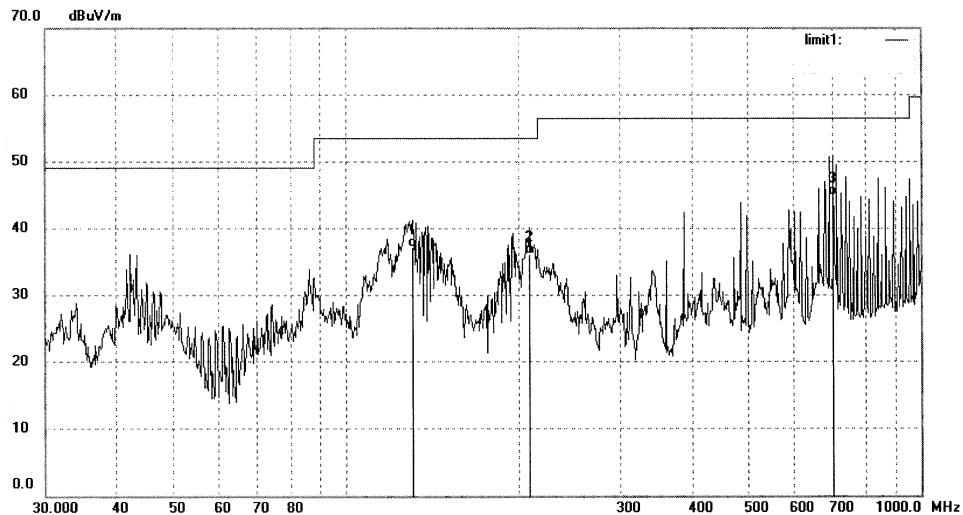
Date: 14/04/17/

Time:

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	130.3048	51.04	-13.88	37.16	53.50	-16.34	QP			
2	207.9261	48.36	-12.22	36.14	53.50	-17.36	QP			
3	703.7314	46.59	-1.68	44.91	56.40	-11.49	QP			


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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: TUV #1783

Standard: FCC Class A 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Copyboard

Mode: USB mode

Model: N-31W

Manufacturer: PLUS Corporation

Polarization: Vertical

Power Source: AC 120V/60Hz

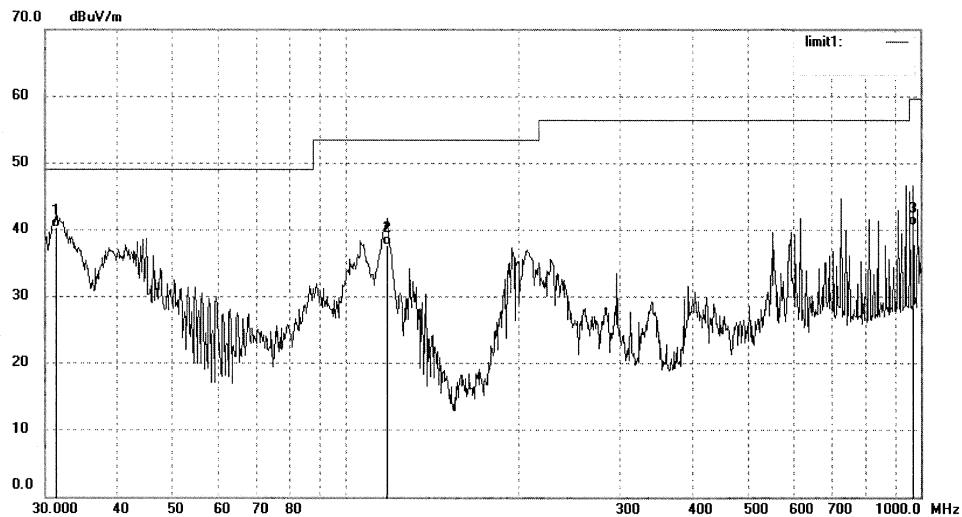
Date: 14/04/17/

Time:

Engineer Signature:

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.2918	50.34	-10.05	40.29	49.00	-8.71	QP			
2	117.6814	50.93	-13.14	37.79	53.50	-15.71	QP			
3	972.2826	38.16	2.46	40.62	59.50	-18.88	QP			

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Test Report No.
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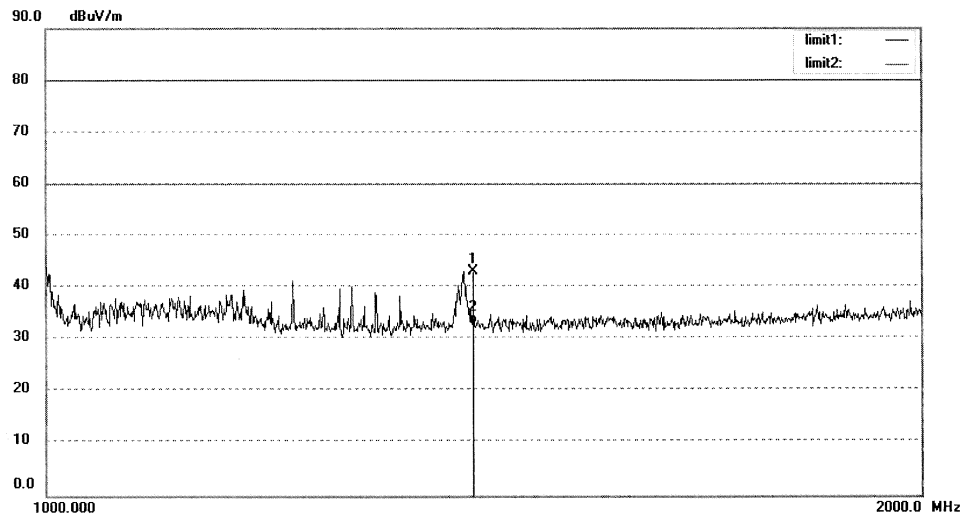
ACCURATE TECHNOLOGY CO., LTD.
 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1813
 Standard: FCC PK Class A
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: USB mode
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1403.102	54.89	-11.78	43.11	80.00	-36.89	peak			
2	1403.802	44.75	-11.78	32.97	60.00	-27.03	AVG			

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Test Report No.
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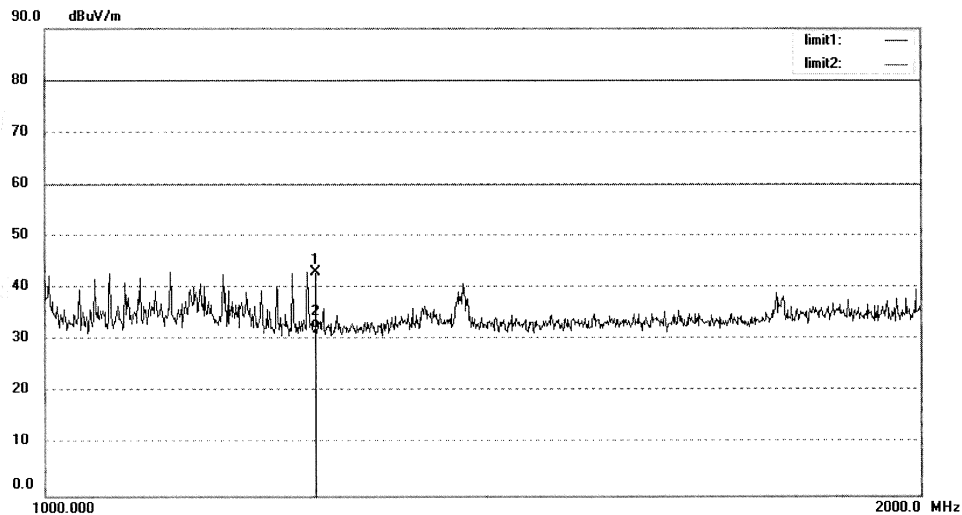
Site: 1# Chamber

Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: TUV #1814
Standard: FCC PK Class A
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Copyboard
Mode: USB mode
Model: N-31W
Manufacturer: PLUS Corporation

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/04/17/
Time:
Engineer Signature:
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1238.802	55.42	-12.34	43.08	80.00	-36.92	peak			
2	1238.802	44.67	-12.34	32.33	60.00	-27.67	AVG			

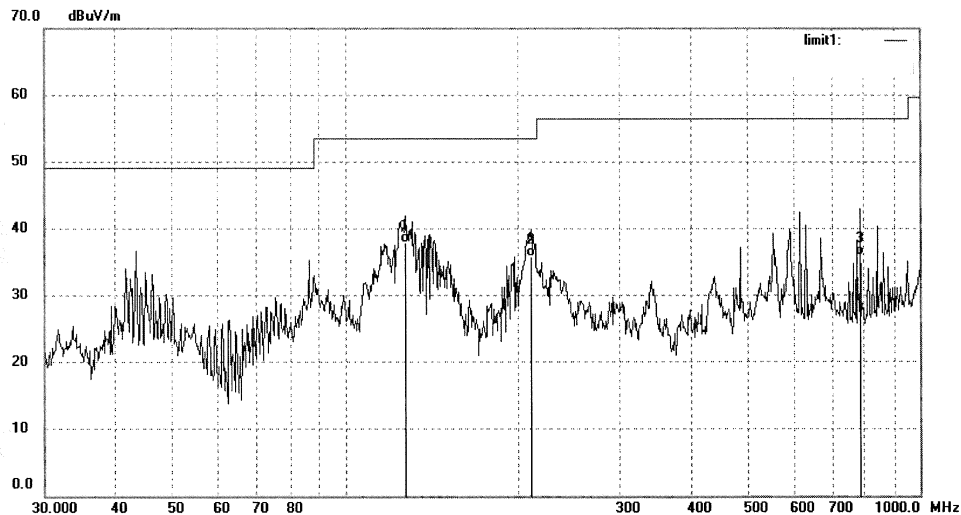

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 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1789
 Standard: FCC Class A 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Printing
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note:



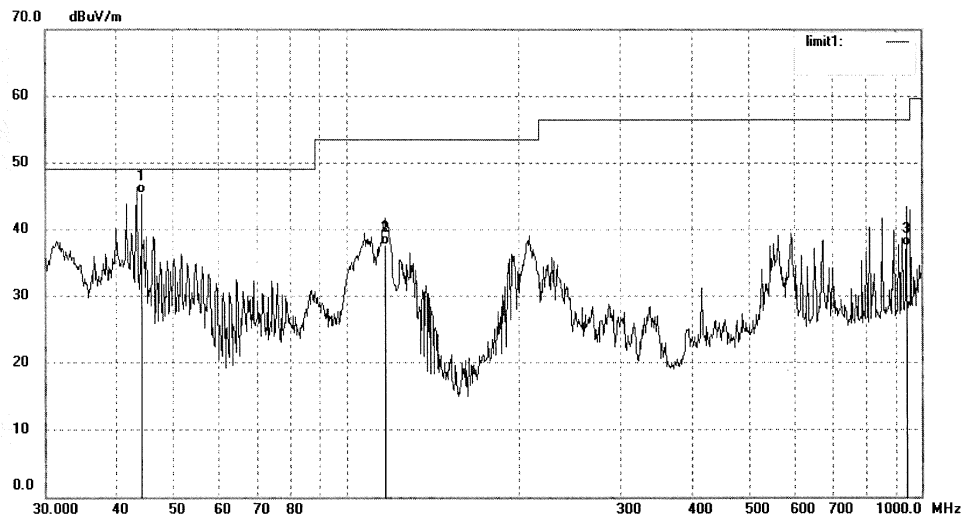
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	127.1389	51.69	-13.79	37.90	53.50	-15.60	QP			
2	210.1294	48.02	-12.17	35.85	53.50	-17.65	QP			
3	787.4749	36.13	-0.24	35.89	56.40	-20.51	QP			


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 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: TUV #1790	Polarization: Vertical
Standard: FCC Class A 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/04/17/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Copyboard	Engineer Signature:
Mode: Printing	Distance: 3m
Model: N-31W	
Manufacturer: PLUS Corporation	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	43.9853	57.78	-12.42	45.36	49.00	-3.64	QP			
2	116.4475	50.88	-13.16	37.72	53.50	-15.78	QP			
3	942.0180	35.53	1.97	37.50	56.40	-18.90	QP			


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Site: 1# Chamber

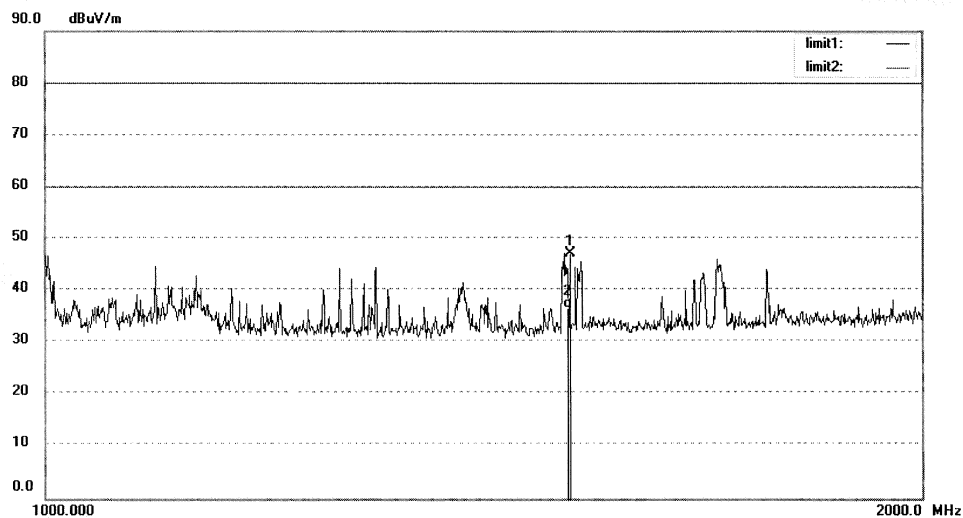
Tel:+86-0755-26503290

Fax:+86-0755-26503396

 Job No.: TUV #1808
 Standard: FCC PK Class A
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Printing
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Horizontal
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1515.575	58.42	-11.34	47.08	80.00	-32.92	peak			
2	1515.575	47.97	-11.34	36.63	60.00	-23.37	AVG			

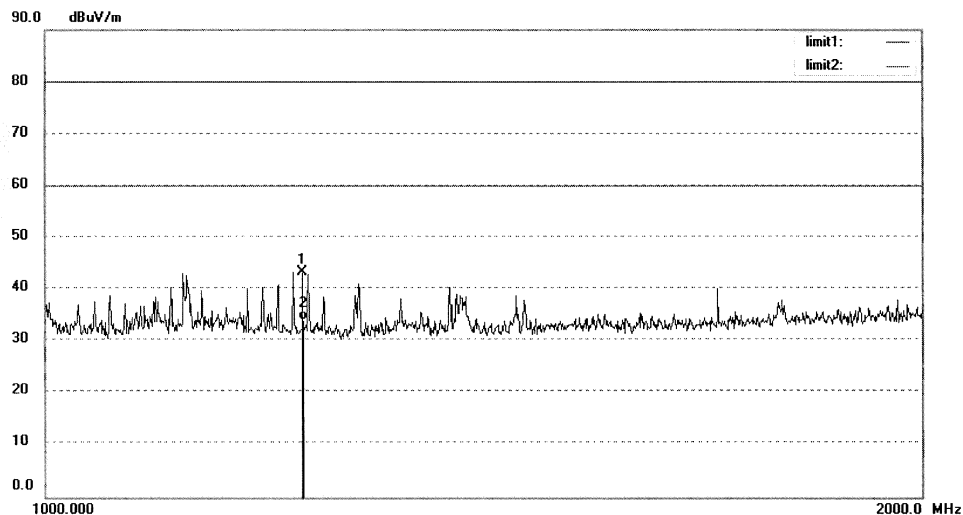

ACCURATE TECHNOLOGY CO., LTD.
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

 Job No.: TUV #1807
 Standard: FCC PK Class A
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Copyboard
 Mode: Printing
 Model: N-31W
 Manufacturer: PLUS Corporation

 Polarization: Vertical
 Power Source: AC 120V/60Hz
 Date: 14/04/17/
 Time:
 Engineer Signature:
 Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1224.356	55.69	-12.40	43.29	80.00	-36.71	peak			
2	1224.356	46.57	-12.40	34.17	60.00	-25.83	AVG			

6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:**Pass**

Test standard : RSS-102 Issue 4 March 2010
FCC KDB Publication 447498 D01 v05r01

The maximum peak output power of the transmitter is 0.68mW (-1.67dBm) 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 4.

Since maximum peak output power of the transmitter is 0.68mW<96mW, 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 v05r01.

7. Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emissions



Photograph 2: Set-up for Radiated Emissions



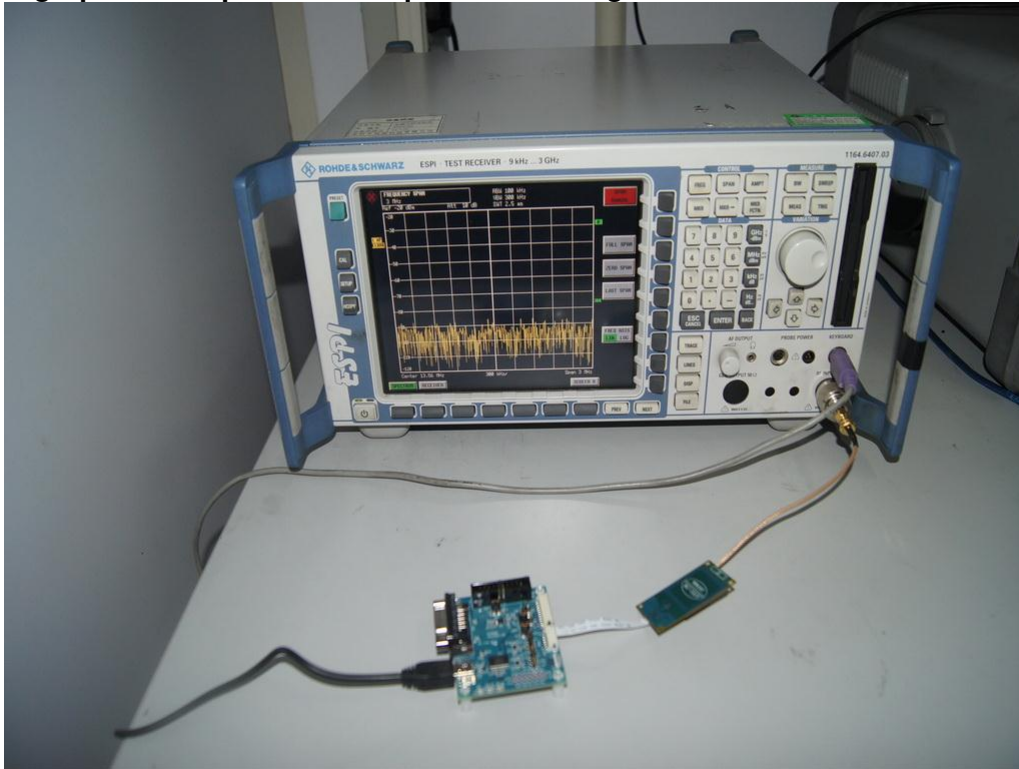
Photograph 3: Set-up for Spurious Emissions for below 30MHz



Photograph 4: Set-up for Spurious Emissions for 30 - 1000MHz



Photograph 5: Setup for Radio Spectrum testing



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