

Certification of Compliance

CFR 47 Part 15 Subpart C

Test Report File No. : 07-IST-0301

Date of Issue : September 30, 2007

Model(s) : DE-PCA20
Kind of Product : Portable Card Checking Machine
FCC ID : SWUDE-PCA20
Applicant : DUALi INC.
Address : #505, Samsung Technopark, 471, Woncheon-dong, Yungtong-gu
Suwon, Korea
Manufacturer : DUALi INC.
Address : #505, Samsung Technopark, 471, Woncheon-dong, Yungtong-gu
Suwon, Korea
Registration Number : 400603

Test Result

☒ Positive

☐ Negative

Reviewed By

Approved By



S.J.CHO / EMC Group Manager



B.S.Kim / Chief

Comment (s)

- Investigations requested : Measurement to the relevant clauses of FCC rules and regulations Part 15 Subpart C.
 - The test report with appendix consists of 24 pages.
 - The test result only responds to the tested sample.
 - This equipment as for has been shown to be capable of continued compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4
- I assume full responsibility for accuracy and completeness of these data.



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Note:

FCCID:SWUDE-PCA20

INFORMATIONS OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd. (**FCC Filing Lab.**)
400-19 Singal-dong, Giheung-gu Yongin-City
Gyeonggi-Do, 449-860, Korea
TEL : +82 31 326 6797 FAX : +82 31 326 9767

ENVIRONMENTAL CONDITIONS

Temperature	29 °C
Humidity	64 %
Atmospheric pressure	1013 mbar

POWER SUPPLY SYSTEM USED

Power supply system AC120V60Hz to DC 12V 0.7A
(Refer to the product information)

PRODUCT INFORMATION

The Equipment Under Test(EUT) is portable smart card reader.
(FCC ID : SWUDE-PCA20)

Item	Specification	note
CPU	ARM9, S3C2410	32bit RISC
SIZE	215mm(w) x 86mm(l) x 37mm(h)	
RF Spec	13.56 MHz	
Weight	Under 300g	Not include Battery
Battery Capacity	3.7V / 2200mAh	Over 4 hours to use
Program memory1	32MBYTE NAND FLASH	WIN-CE part
Program memory2	32MBYTE NAND FLASH	USER APP, DATA part
Data memory	64MBYTE SDRAM	Execute program
HOST Communication	USB1.1, RS-232	Basic
RF Card that can be used	ISO 14443 A/B, Mifare	
Contact Card that can be used	ISO 7816 T=0	
Security Module	4 SIM SOCKET	
Electronic Specification of Battery charger Power(Adapter)	Over DC12V, 700mA 120~230V 50/60Hz	Adapter

- EMC suppression device is not used during the test.
- Please refer to user's manual.

DESCRIPTION OF TEST

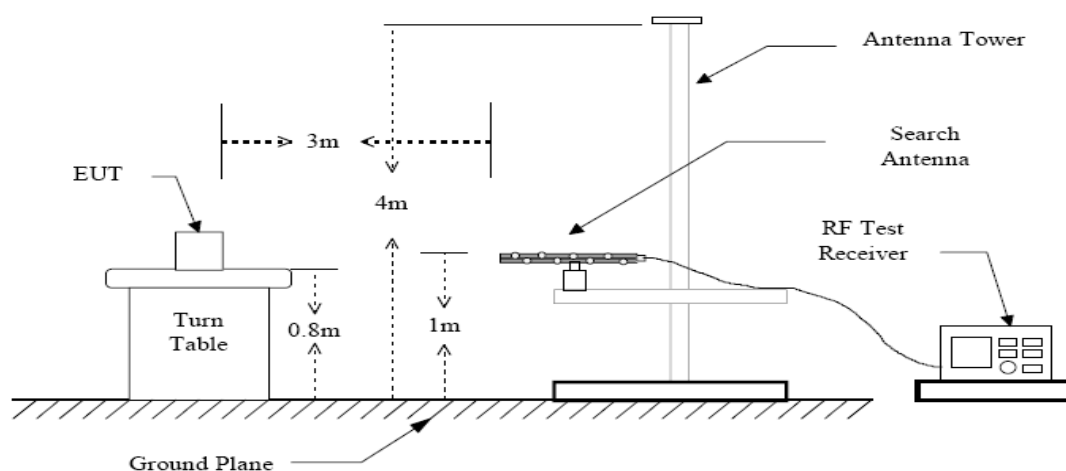
Radiated Emissions(30MHz~1000MHz):

The measurement was performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120KHz.

-Procedure of Test

Preliminary measurements were made at 3 meter using bi-log antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30MHz to 1000MHz using bi-log antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.

Figure 1 : Frequencies measured below 1 GHz configuration



Radiated Emissions Test,9kHz to 30MHz(Magnetic Field Test)

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions at a distance of 3 meters according to Section 15.31(f) (2).
2. The EUT was placed on the top of the 0.8-meter height, 1 x 1.5 meter non-metallic table.
3. Emissions from the EUT are maximized by adjusting the orientation of the Loop antenna and rotating the EUT on the turntable. Manipulating the system cables also maximizes EUT emissions if applicable.
4. To obtain the final measurement data, each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector with specified bandwidth.

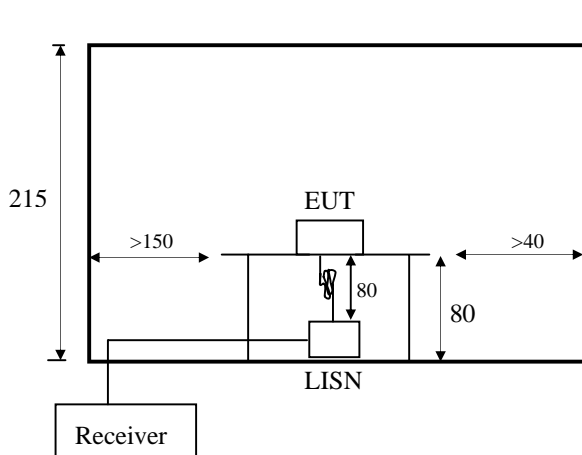
FCCID:SWUDE-PCA20

Conducted Emissions:

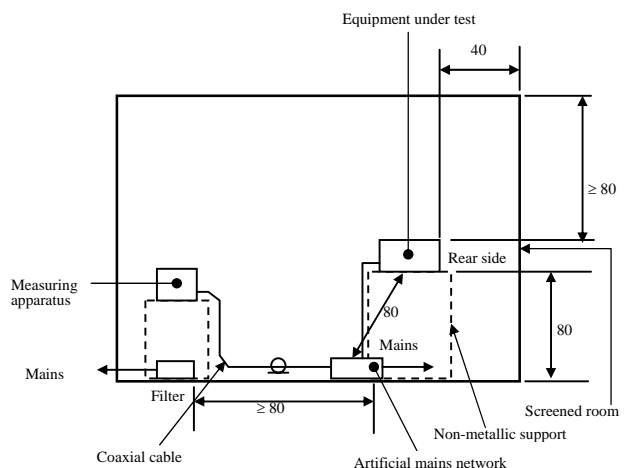
The measurement were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω /50 uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10KHz or for "quasi-peak" & "Average" within a bandwidth of 9 KHz.

-Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1 m X 1.5 m wooden table 80 cm height is placed 40 cm away from the vertical wall and 1.5 m away from the other wall of the shielded room. The R/S ESCI and Hyup-Rip KNW-407 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80 cm from the LISN and powered from the EMCO LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.15 to 30 MHz. The bandwidth of the receiver was set to 10 kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



< Side View >



< Concept Drawing >

FCCID:SWUDE-PCA20

Measurement Uncertainty Calculations

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and NIS 81 (1994).

Contribution (Conducted Emissions)	Probability Distribution	Uncertainty (±dB)
		0.15-30 MHz
LISN		
Impedance Test	Normal (k=2)	± 0.60
Insertion Loss	Normal (k=2)	± 0.09
Voltage Division Factor	Rectangular	± 0.30
Cable Loss	Rectangular	± 0.20
Receiver		
QP Sine-wave Voltage Accuracy	Normal (k=2)	± 0.20
QP Pulse Amplitude Sensibility		± 0.40
QP Pulse Frequency Response		± 0.57
Random Noise		± 0.35
Mismatch AMNto Reciver	U-Shaped	-0.80/+0.70
System Repeatability	Normal (k=1)	± 0.20
Combined Standard Uncertainty	Normal	± 0.86
Expanded Uncertainty U	Normal (k=2)	± 1.72

U = ± 1.72(k=2, 95.45 % confidence level)

Contribution (Radiated Emissions)	Probability Distribution	Uncertainties (±dB)
		10 m
Antenna		
Factor Frequency Interpolation	Normal (k=2)	± 0.5
Height Variation	Rectangular	-2.60/+1.50
Directivity Difference	Rectangular	-1.00/+0.00
Phase Center Location	Rectangular	± 1.00
Cable Loss	Rectangular	± 0.50
Receiver		
QP Sine-wave Voltage Accuracy	Normal (k=2)	± 0.20
QP Pulse Amplitude Sensibility		± 0.40
QP Pulse Frequency Response		± 0.57
Random Noise		± 0.35
Mismatch to Receiver Γ_{antenna} = 0.33 Γ_{receiver} = 0.33	U-Shaped	-1.00/+0.90
System Repeatibility	Std Deviation	± 0.20
Combined Standard Uncertainty	Normal	± 1.35
Expanded Uncertainty U	Normal (k=2)	± 2.70

U = ± 2.70(k=2, 95.45 % confidence level)

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FCCID:SWUDE-PCA20

Equipment Under Test

EUT Type :

- ☒ Table-Top. ☐ Floor-Standing.
☐ Table-Top and Floor-Standing(Combination).
☐ Built-in

EUT Operating Mode(s):

The equipment under test was operated during the measurement under following conditions :

- ☐ Standby Mode
☒ Operational Condition : Continue TX Mode and File up & Download mode

Configuration of the equipment under test :

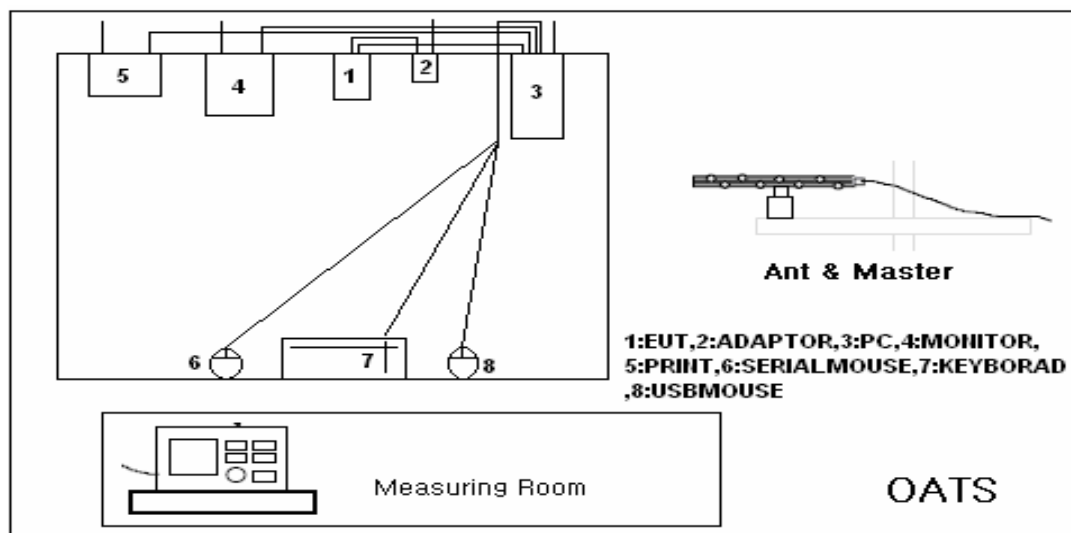
Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No.
Desktop Pc	dx6120MT	HP	CNG550092Q
PS/2 KEYBORAD	SK-2880	HP	N/A
USB Mouse	M-UV69a	HP	N/A
Serial Mouse	M-M28	Logitech	N/A
Print	A0302380	Northern Telecom	2516S60951

Connecting Interface Cables(1 ferrite core):USB
Unshielded POWER cable(without ferrite core) :AC to DC adaptor

Note :

Test Set-Up Configuration



Radiated/Conducted Emissions

SUMMARY

Emissions

■ Conducted Emission 15.207

The requirements are ☒ MET ☐ Not MET
 Minimum limit margin 21.75 dB at 27.12 MHz

■ Radiated Emission-15.225(a)

Test result ☒ MET ☐ Not MET

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(30m)	Field Strength of Fundamental dBuV/m(3m)
13.553 - 13.567	15,848	83.9	123.9

■ Radiated Electric Field Emission-15.225(b) (c)

Test result ☒ MET ☐ Not MET

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(30m)	Field Strength of Fundamental dBuV/m(3m)
13.110 - 13.410	106	40.5	80.5
13.410 - 13.553	334	50.4	90.4
13.567 - 13.710	334	50.4	90.4
13.710 - 14.010	106	40.5	80.5

■ Radiated Electric Field Emission-15.225(d)

Test result ☒ MET ☐ Not MET

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(3m)
1.705 - 30.0	30	49.5
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	600	54

■ Frequency Stability -15.225(e)

Test result ☒ MET ☐ Not MET

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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.

Test Date

Begin of Testing : Jul 02, 2007

End of Testing : Jul 29, 2007

Note :

Prepared By



C.W.Kim / Project Engineer

- ■ means the test is applicable,
- □ is not applicable.

TEST CONDITIONS AND DATA**Conducted Emissions****[Applicable]**

◆ Test Equipment Used

Model Name	Description	Manufacturer	Calibration Date	Serial No.
ESCI	Test Receiver	Rohde & Schwarz	May 18, 2007	100373
KNW-407	LISN	Hyup-Rip	Oct. 13, 2006	8-883-10
ESH3-Z2	Pulse Limiter	Rohde & Schwarz	May 21, 2007	357.8810.52

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

◆ Test Program Continue TX Mode and File up & Download mode

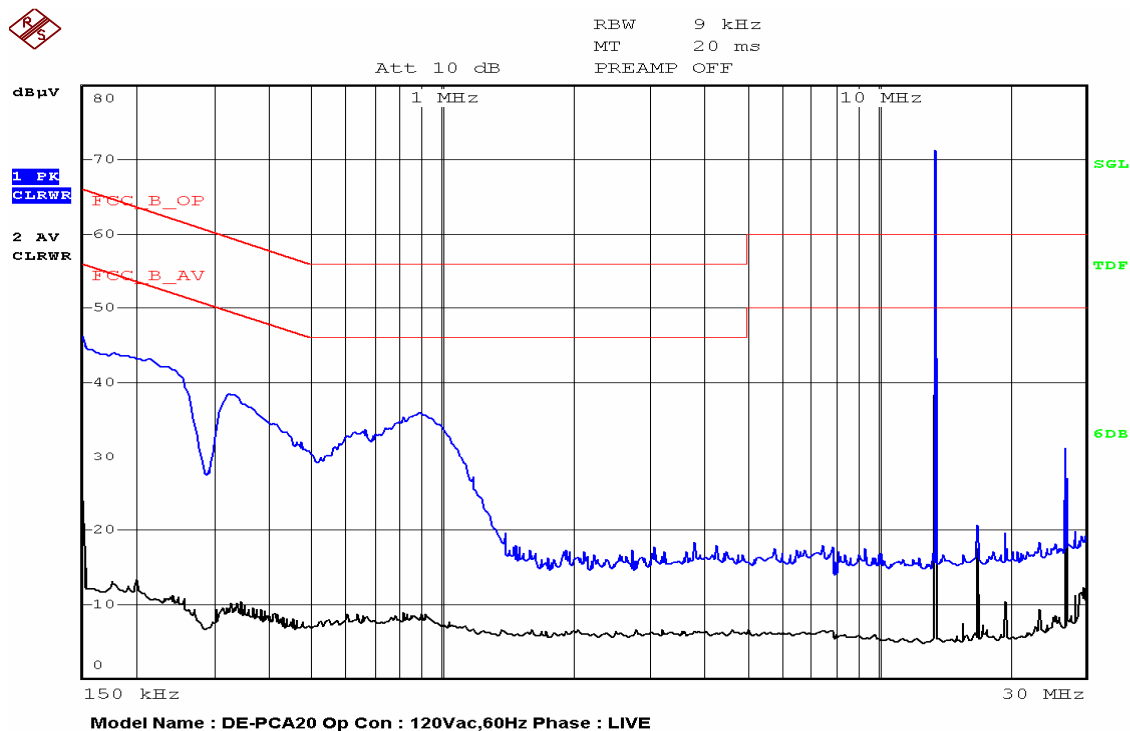
◆ Test Date September 28, 2007

◆ Test Area Conducted room No.1

Note : The equipment used is calibrated in regular for every year.

Conducted Emissions

Test Mode : RFID Signal transmitting (Live Phase)



Freq. [MHz]	Measurement [dB μ V]		Limit [dB μ V]		Insertion Loss [dB]	Cable Loss [dB μ V]	Result [dB μ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average			Q-peak	Average	Q-peak	Average
0.15	37.67	23.25	66.00	56.00	0.37	0.80	38.84	24.42	27.16	31.58
0.33	31.90	8.73	59.44	49.44	0.24	0.13	32.27	9.10	27.17	40.34
0.96	28.70	8.12	56.00	46.00	0.21	0.30	29.21	8.63	26.79	37.37
8.49	29.84	20.82	60.00	50.00	0.40	0.45	30.69	21.67	29.31	28.33
10.75	30.37	23.05	60.00	50.00	0.45	0.32	31.14	23.82	28.86	26.18
11.66	29.74	25.38	60.00	50.00	0.47	0.23	30.44	26.08	29.56	23.92
13.56	71.01	71.29	60.00	50.00	0.52	0.44	71.97	72.25	(11.97)	(22.25)
16.90	17.91	16.54	60.00	50.00	0.60	0.60	19.11	17.74	40.89	32.26
27.12	28.29	25.65	60.00	50.00	0.73	0.58	29.60	26.96	30.40	23.04

Note : It operates the signal of the EUT.

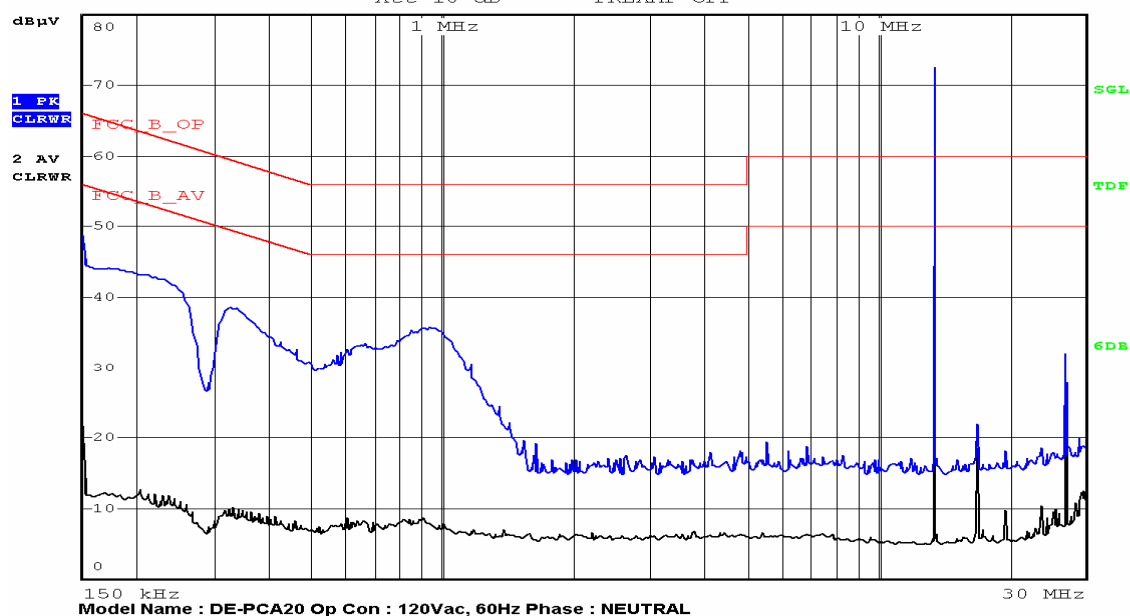
FCCID:SWUDE-PCA20

Conducted Emissions

Test Mode : RFID Signal transmitting(Neutral Phase)


 RBW 9 kHz
 MT 20 ms
 PREAMP OFF

Att 10 dB



Freq. [MHz]	Measurement [dB μ V]		Limit [dB μ V]		Insertion Loss	Cable Loss	Result [dB μ V]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB μ V]	Q-peak	Average	Q-peak	Average
0.15	37.92	19.53	66.00	56.00	0.38	0.80	39.10	20.71	26.90	35.29
0.35	30.47	8.37	59.03	49.03	0.24	0.14	30.85	8.75	28.18	40.28
0.99	28.21	7.43	56.00	46.00	0.23	0.30	28.74	7.96	27.26	38.04
10.64	30.10	22.26	60.00	50.00	0.43	0.33	30.86	23.02	29.14	26.98
11.66	29.74	25.38	60.00	50.00	0.46	0.23	30.43	26.07	29.57	23.93
13.56	72.22	72.49	60.00	50.00	0.51	0.44	73.17	73.44	(13.17)	(23.44)
16.90	18.11	16.75	60.00	50.00	0.60	0.60	19.31	17.95	40.69	32.05
27.12	29.80	26.94	60.00	50.00	0.73	0.58	31.11	28.25	28.89	21.75

Note : It operates the signal of the EUT.

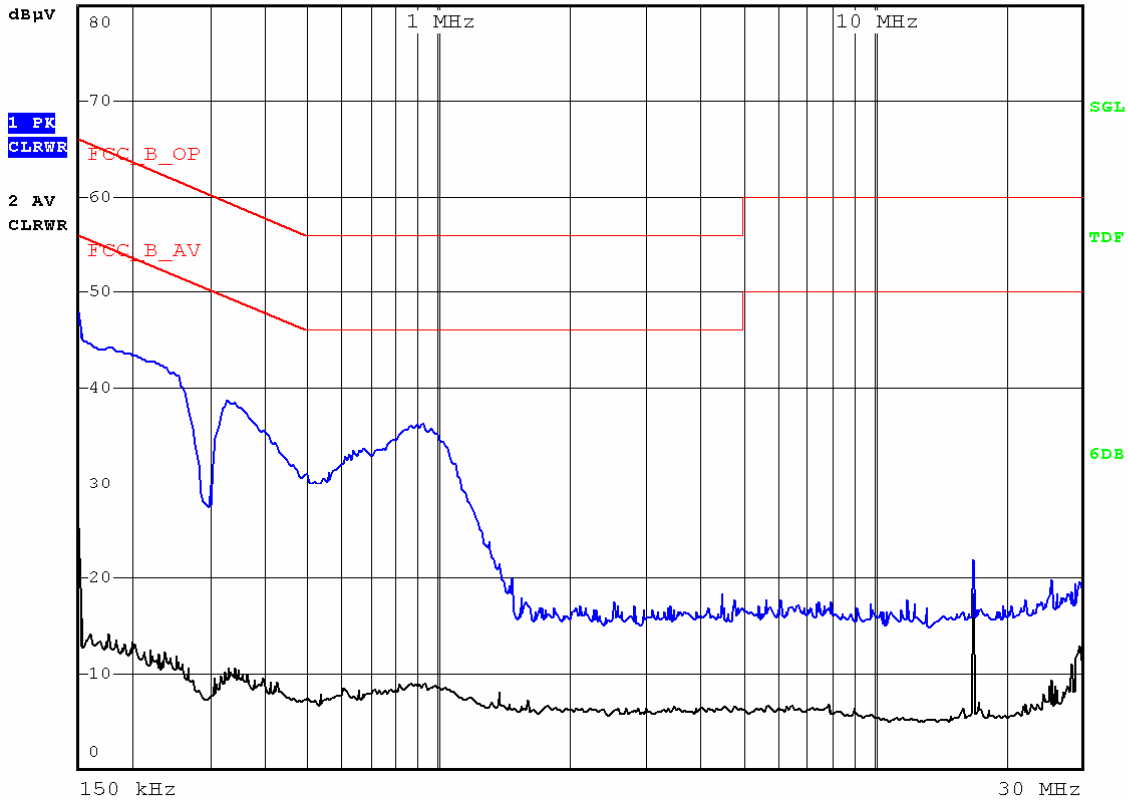
Conducted Emissions

Test Mode : antenna terminated with dummy load(Live Phase)



RBW 9 kHz
 MT 100 ms
 PREAMP OFF

Att 10 dB



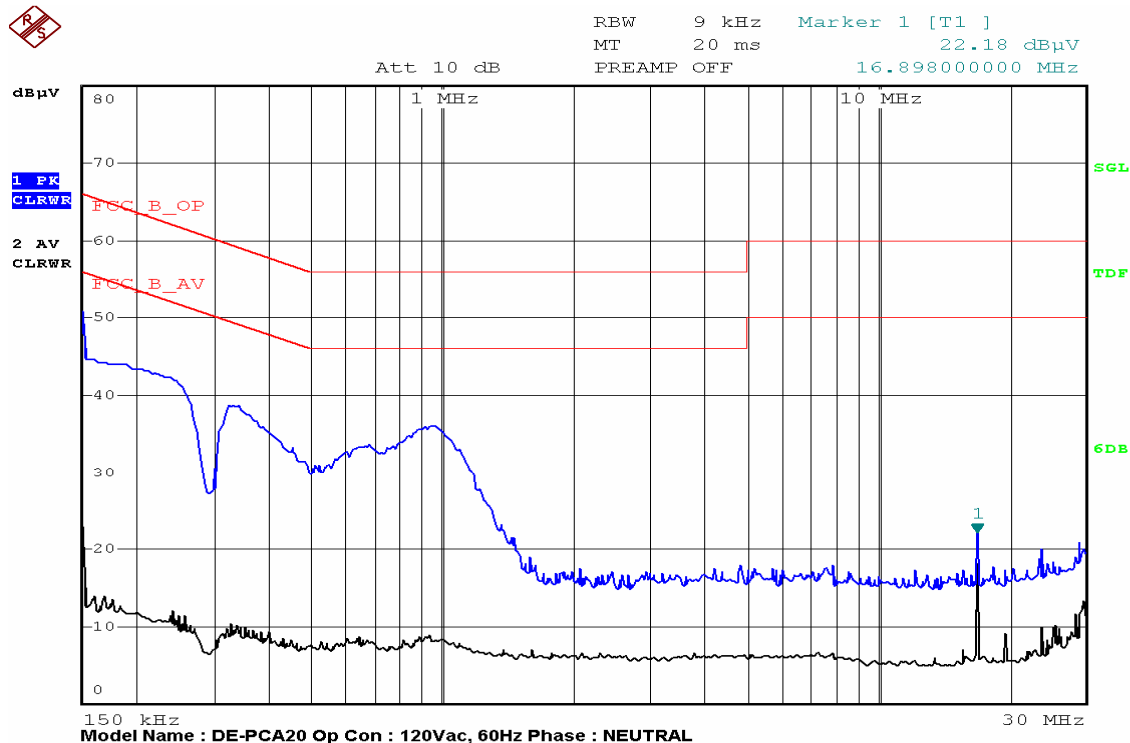
Freq. [MHz]	Measurement [dB μV]		Limit [dB μV]		Insertion Loss [dB]	Cable Loss [dB μV]	Result [dB μV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average			Q-peak	Average	Q-peak	Average
0.15	41.38	22.90	66.00	56.00	0.37	0.80	42.55	24.07	23.45	31.93
0.33	31.65	8.92	59.46	49.46	0.24	0.12	32.01	9.28	27.45	40.18
0.65	26.14	7.31	56.00	46.00	0.19	0.20	26.53	7.70	29.47	38.30
0.97	26.98	7.39	56.00	46.00	0.21	0.30	27.49	7.90	28.51	38.10
16.90	19.32	18.01	60.00	50.00	0.60	0.60	20.52	19.21	39.48	30.79

Note: This test used dummy load.

FCCID:SWUDE-PCA20

Conducted Emissions

Test Mode : antenna terminated with dummy load(Neutral Phase)



Freq. [MHz]	Measurement [dB μV]		Limit [dB μV]		Insertion Loss [dB]	Cable Loss [dB μV]	Result [dB μV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average			Q-peak	Average	Q-peak	Average
0.15	40.87	22.23	66.00	56.00	0.38	0.80	42.05	23.41	23.95	32.59
0.33	31.47	8.94	59.35	49.35	0.25	0.13	31.85	9.32	27.50	40.03
0.65	25.70	7.07	56.00	46.00	0.22	0.20	26.12	7.49	29.88	38.51
0.97	27.34	7.36	56.00	46.00	0.23	0.30	27.87	7.89	28.13	38.11
16.90	19.52	18.42	60.00	50.00	0.60	0.60	20.72	19.62	39.28	30.38

Note : This test used dummy load.

[Applicable]

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESCS30	Test Receiver	Rohde & Schwarz	Aug. 14, 2007	100171
VULB 9160	Antenna	Schwarzbeck	Aug. 14, 2007	3047
R3132	Spectrum analyzer	advantest	Sep. 08, 2007	110101565
E7405A	Spectrum analyzer	Agilent	Jul. 18, 2007	MY42000092
HFH2-Z2	Loop Antenna	Rohde & Schwarz	Oct. 10, 2006	892665/035

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Where

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

◆ Test Program

◆ Test Date September 28, 2007

◆ Test Area Open site, Shield Room(4.2 X 7.5 X 4.5)
 Testing was performed at a test distance of 3 m.

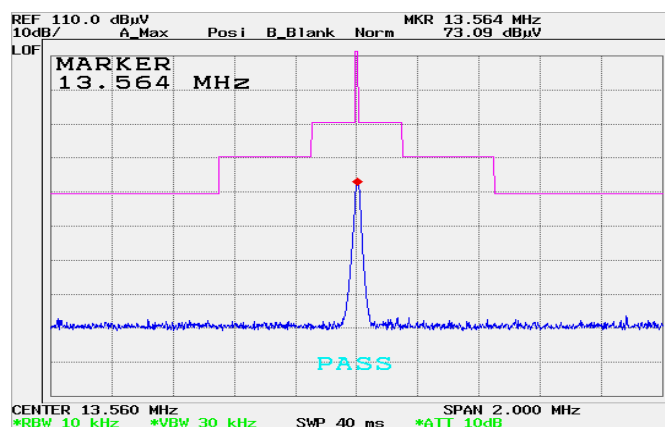
Note : The equipment used is calibrated in regular for every year.

Radiated Field Emission-15.225(a)

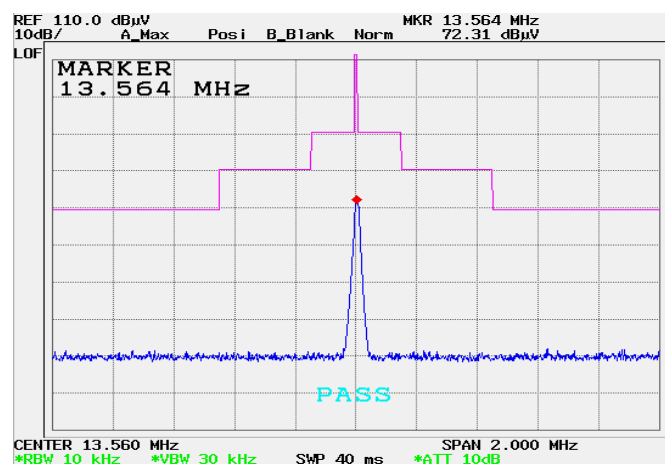
Frequency(MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(30m)	Field Strength of Fundamental dBuV/m(3m)
13.553 - 13.567	15,848	83.9	123.9

[Applicable]

Freq. [MHz]	Reading [dBuV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
13.56	73.09	1	18.3	0.6	H	91.99	123.9	31.91
13.56	72.31	1	18.3	0.6	V	91.21	123.9	32.69



[HOR]



[VER]

Note :

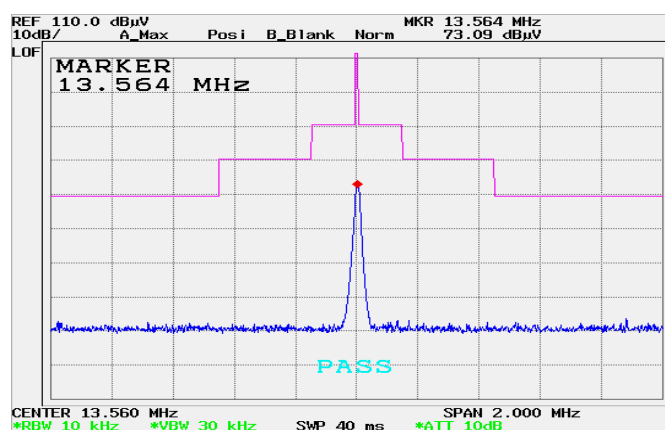
Radiated Electric Emission-15.225(b)(c)

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(30m)	Field Strength of Fundamental dBuV/m(3m)
13.110 - 13.410	106	40.5	80.5
13.410 - 13.553	334	50.4	90.4
13.567 - 13.710	334	50.4	90.4
13.710 - 14.010	106	40.5	80.5

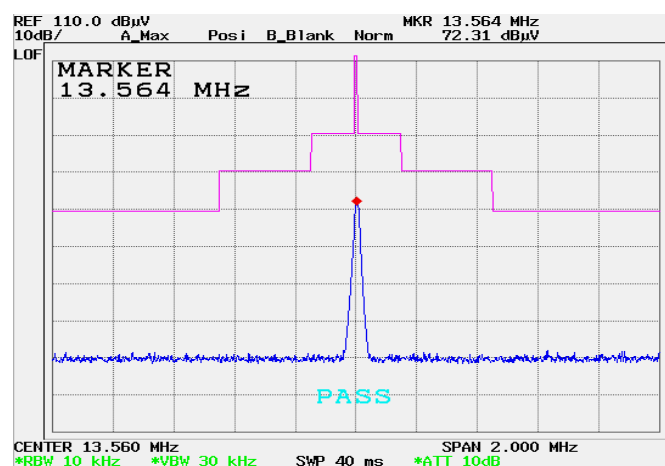
[Applicable]

Freq. [MHz]	Reading [dBuV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-	-	-	-

Note : Other emission don't exceed the level 20dB below the applicable limit.



[HOR]



[VER]

Radiated Field Emission-15.225(d)

Frequency (MHz)	Field Strength of Fundamental uV/m	Field Strength of Fundamental dBuV/m(3m)
1.705 - 30.0	30	49.5
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	600	54

[Applicable]

Freq. [MHz]	Reading [dBuV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
122.04	7.30	100	11.54	3.14	V	21.98	43.50	21.52
135.60	8.50	100	12.43	3.41	V	24.34	43.50	19.16
149.17	2.70	100	12.96	3.63	V	19.29	43.50	24.21
162.70	3.00	100	12.92	3.84	V	19.76	43.50	23.74
244.08	3.80	100	10.72	4.82	V	19.34	46.00	26.66
257.64	3.50	100	11.17	5.00	V	19.67	46.00	26.33
311.88	4.50	100	12.74	5.65	V	22.89	46.00	23.11

Frequency Stability -15.225(e)

◆ Test Equipment Used

Name	Type	Manufacturer	Calibration. Date	Serial Number
5348A	Frequency counter	HP	Dec. 12, 2006	3009A01264
PL-4SP	Temp&Humi Chamber	TABAI	Jul. 19, 2007	44VH0266

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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

[Applicable]

Table 1 : Frequency Tolerance									
Reference Frequency : 13.5600 MHz, Limit : within ± 1356 Hz									
Environment Temperature [°C]	Power Supplied [Vdc]	Carrier Frequency Measured with Time Elapsed							
		STARTUP		2 minutes		5 minutes		10 minutes	
		[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]
+50	3.7	13560310	310	13560590	590	13560512	512	13560320	320
+40	3.7	13560375	375	13560544	544	13560559	559	13560354	354
+30	3.7	13560464	464	13560546	546	13560480	480	13560137	137
+20	3.7	13560529	529	13560553	553	13560477	477	13560517	517
+10	3.7	13560544	544	13560447	447	13560789	789	13560460	460
0	3.7	13560556	556	13560547	547	13560478	478	13560417	417
-10	3.7	13560563	563	13560523	523	13560278	278	13560388	388
-20	3.7	13560559	559	13560471	471	13560143	143	13560342	342

Table 2 : Frequency Tolerance								
Reference Frequency : 13.5600 MHz, Limit : within ± 1356 Hz								
Power Supplied [Vdc]	Carrier Frequency Measured with Time Elapsed							
	STARTUP		2 minutes		5 minutes		10 minutes	
	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]
85%	13560517	517	13560452	452	13560485	485	13560514	514
100%	13560529	529	13560531	531	13560494	494	13560557	557
115%	13560835	835	13560667	667	13560456	456	13560486	486

Err[Hz] = Measured carrier frequency (MHz) – Reference Frequency (13.56 MHz)

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ANTENNA REQUIREMENT

1 Standard Applicable

According to § 15.203, 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.

2 Antenna Construction

The antenna is permanently mounted on PCB, no consideration of replacement.

Appendix A. The Photos of Test Setup



Radiated Emissions - (X axis plane)



Radiated Emissions- (Y axis plane)

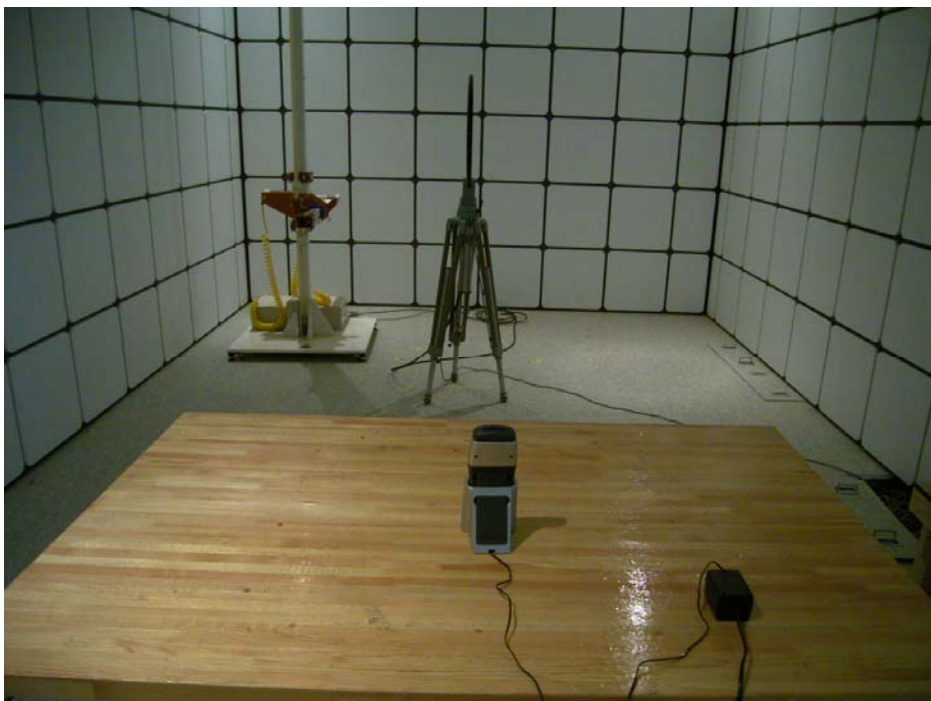
FCCID:SWUDE-PCA20

Appendix A. The Photos of Test Setup



Radiated Emissions- (Z axis plane)

Appendix A. The Photos of Test Setup(Shield Room)



Radiated Emissions - (X axis plane)

FCCID:SWUDE-PCA20

Appendix A. The Photos of Test Setup(Shield Room)



Radiated Emissions- (Y axis plane)



Radiated Emissions- (Z axis plane)

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Appendix B. The Photos of Equipment Under Test



Front View



Rear View