FCC TEST REPORT

According to

FCC CFR Title 47 Part 15 Subpart C

Applicant	:	Pradotec Corporation Sdn. Bhd.
Address	:	IRIS Smart Technology Complex, Technology Park Malaysia 57000, Bukit Jalil, Kuala Lumpur, Malaysia
Manufacturer	:	Pradotec Corporation Sdn. Bhd.
Address	:	IRIS Smart Technology Complex, Technology Park Malaysia 57000, Bukit Jalil, Kuala Lumpur, Malaysia
Equipment	:	Full Page ePassport Reader
Trade Mark	:	PRADOTEC
Model No.	:	DPS500
FCC ID	:	W5TDPS500

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Document history

Attachment No.	Date	Description
SEFI1011018	Jan 07, 2011	First issue

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Model No.		DPS500
FCC ID	:	W5TDPS500

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2003** and the energy emitted by this equipment was ***passed*** **CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Sep 27, 2010 at ***Cerpass Technology Corp.***

Documented By:

Jason Wang

Jeson Wang/ Administration

Approved By:

Clinton Kao

Clinton Kao/ Technical director

1. Report of Measurements and Examinations

FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003			
Clause	Test Parameter	Test Performed	Remark
15.225 (a)	In-band Emission	YES	PASS
15.225 (b)	In-band Emission	YES	PASS
15.225 (c)	In-band Emission	YES	PASS
15.225 (d) 15.209	Out-of –band Emission	YES	PASS
15.225 (e)	Frequency Stability Tolerance	YES	PASS
15.207	Conducted Emissions	YES	PASS

2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Full Page ePassport Reader	Model No：	DPS500
Power Adapter	Manufacturer:	UE
	Model No.:	UE60-120500SPA
	Input:	100-240V~50/60Hz,1.50A
	Output:	12V⎓5.0A 60W MAX
USB Cable	Shielded, 1.8m	

Spreading	ASK
Number of Channels	1 channel
Data Rate	848kbps max
Antenna Type	Loop Antenna
Antenna Gain	-30dB

2.2. Carrier Frequency of Channels

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	13.56	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---

2.3. Test Mode & Test Software

The device has two identical RFID transmitters (RF Module and RF Module+SAM) that cannot transmit simultaneously at the same time, That are two identical contactless module but only can activate one at any time. RF Module+SAM was selected for full test based on pre-test.

The EUT had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

2.4. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	Notebook	ASUS	W6A	Power by adaptor

2.5. General Information of Test

Test Site:	Cerpass Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

Laboratory accreditation

2.6. Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz
Maximum Peak Output Power	---	---	±1.4 dB
Band Edges	---	---	±2.2 dB
Power Spectral Density	---	---	±2.2 dB

3. Test of Conducted Emission

3.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

3.2. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

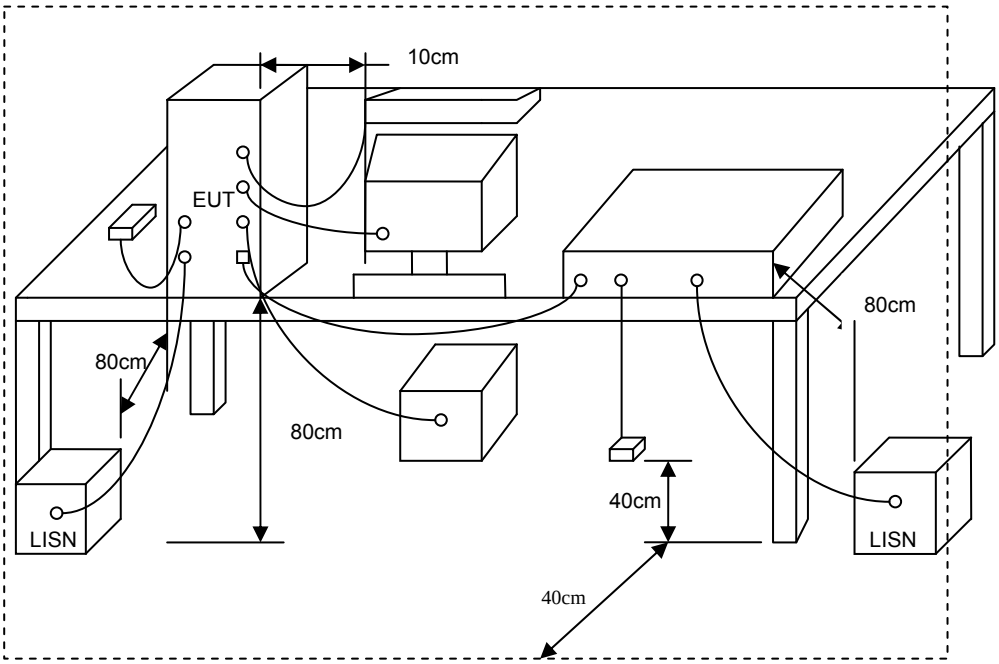
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.3. Typical Test Setup

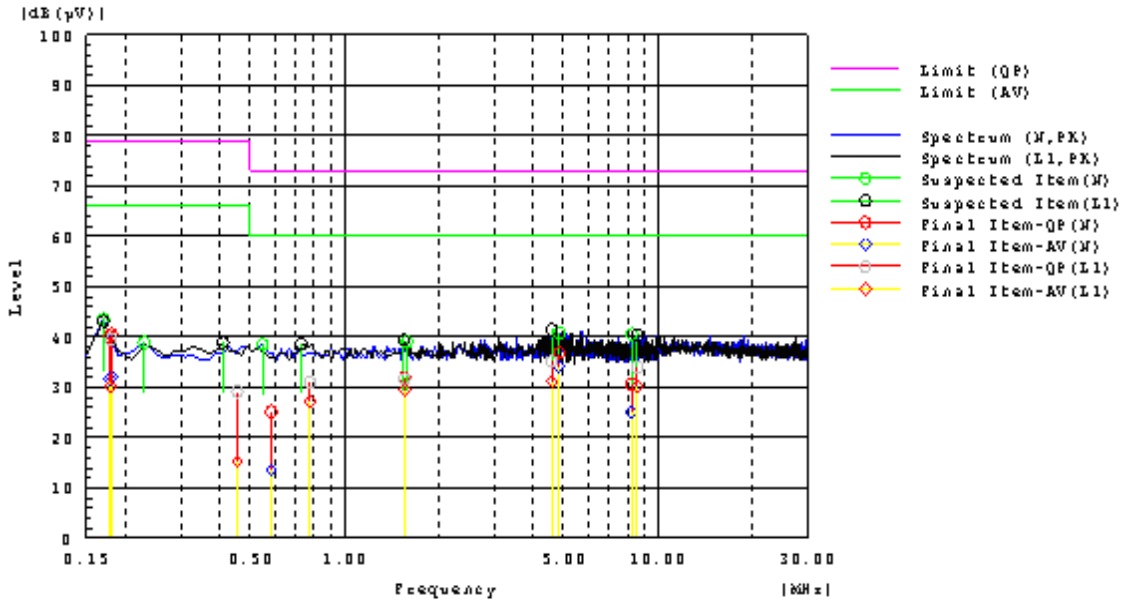


3.4. Measurement Equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
Test Receiver	R&S	ESCI	100565	2010.01.15
AMN	R&S	ESH2-Z5	100182	2010.06.23
Two-Line V-Network	R&S	ENV216	100325	2010.04.18
ISN	FCC	FCC-TLISN-T2-02	20379	2010.06.23
ISN	FCC	FCC-TLISN-T4-02	20380	2010.06.23
ISN	FCC	FCC-TLISN-T8-02	20381	2010.06.23
Attenuator	R&S	ESH3-Z2	100529	2010.01.11
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2010.08.14

3.5. Test Result and Data

Test Mode :	Normal Link		
AC Power :	AC 120V/60Hz	Phase :	L&N
Temperature :	22°C	Humidity	50%
Pressur(mbar) :	1002	Date:	2010/12/25



Frequency MHz	Line Phase	Reading dB(uV) QP	Reading dB(uV) AV	Factor dB	Level dB(uV) QP	Level dB(uV) AV	Limit dB(uV) QP	Limit dB(uV) AV	Margin dB QP	Margin dB AV	Pass/Fail
0.17975	L1	19.6	10.2	19.9	39.5	30.1	79.0	66.0	39.5	35.9	Pass
0.45476	L1	9.3	-4.6	19.9	29.2	15.3	79.0	66.0	49.8	50.7	Pass
0.77607	L1	11.2	7.5	19.8	31.0	27.3	73.0	60.0	42.0	32.7	Pass
1.5552	L1	12.0	9.9	19.7	31.7	29.6	73.0	60.0	41.3	30.4	Pass
4.58033	L1	15.5	11.5	19.7	35.2	31.2	73.0	60.0	37.8	28.8	Pass
8.57136	L1	14.3	10.5	19.7	34.0	30.2	73.0	60.0	39.0	29.8	Pass
0.17837	N	20.6	12.3	19.5	40.1	31.8	79.0	66.0	38.9	34.2	Pass
0.18054	N	21.1	12.7	19.5	40.6	32.2	79.0	66.0	38.4	33.8	Pass
0.58379	N	5.7	-5.9	19.5	25.2	13.6	73.0	60.0	47.8	46.4	Pass
1.55638	N	12.5	10.1	19.5	32.0	29.6	73.0	60.0	41.0	30.4	Pass
4.84215	N	17.2	14.6	19.6	36.8	34.2	73.0	60.0	36.2	25.8	Pass
8.2398	N	10.9	5.5	19.7	30.6	25.2	73.0	60.0	42.4	34.8	Pass

Note: Measurement Level = Reading Level + Correct Factor

4. Out-of-band Emission (15.225 (d),15.209)

4.1. Test Limit

15.225 (d) The Field Strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in 15.209

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

In accordance with Section 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in Section 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in Section 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in Section 15.109 that are applicable to the incorporated digital device.

For unintentional device, according to § 15.109(b), for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 10/3 meters shall not exceed the following values:

Limits for Class A Equipment			
Frequency (MHz)	Distance (m)	Level (dBuV/m)	Level (dBuV/m)
30 - 88	10	39.0(QP)	N/A
88 - 216	10	43.5 (QP)	N/A
216-960	10	46.4 (QP)	N/A
Above 960	10	49.5 (QP)	N/A

Limits for Class A Equipment			
Frequency (MHz)	Distance (m)	Level (dBuV/m)	Level (dBuV/m)
30 - 88	3	50 (QP)	N/A
88 - 216	3	53(QP)	N/A
216-960	3	56(QP)	N/A
960-1000	3	60(QP)	N/A
1000-18000	3	80(PK)	60(AV)

4.2. Test Procedures

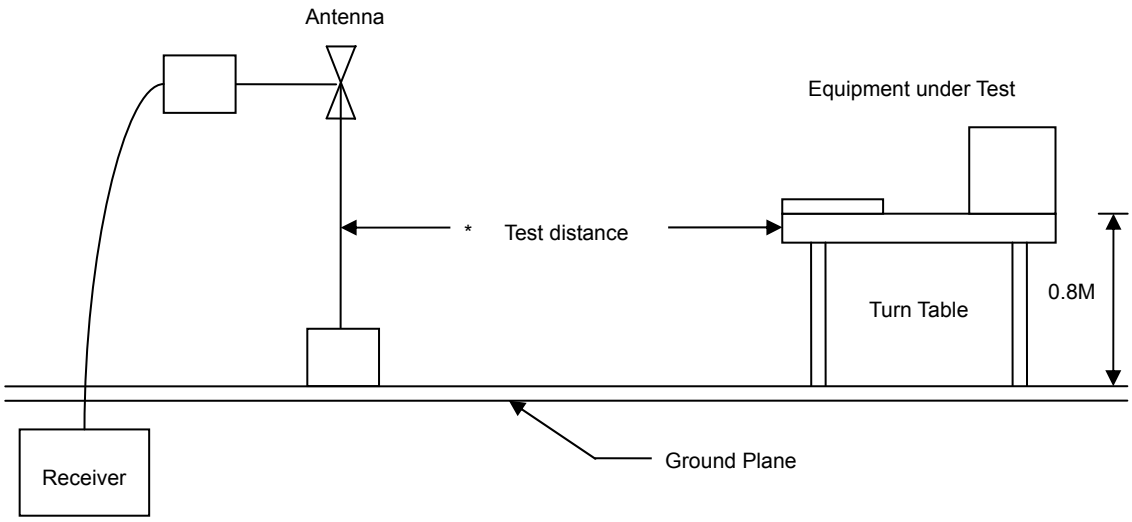
The spurious emissions from the EuT will be measured on an 10m Anechoic chamber in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna.
The antenna was positioned 3, 10 or 30 meters horizontally from the EuT.
Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions.
In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2].
The final measurement will be performed with an EMI Receiver set to Quasi Peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used according to Section 15.209 (d) [2].
The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit. The resolution
bandwidth during the measurement is as follows:

9 kHz – 150 kHz: ResBW: 200 Hz
150 kHz – 30 MHz: ResBW: 9 kHz

The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions in an anechoic chamber at a distance of 3 meters.
The EUT was placed on the top of the 0.8-meter height, 1 × 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360°.
The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 30 to 1000 MHz using the BILOG antenna.
To obtain the final measurement data, the EUT was arranged on a turntable situated on a 10m chamber. The EUT was tested at a distance 3 meters.
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 function with specified bandwidth.

4.3. Typical Test Setup



4.4. Measurement Equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100563	2010.06.23
H64 Amplifier	HP	8447F	3113A05582	2010.08.14
Preamplifier	Agilent	8449B	ED-HE-EMI-077	2010.02.10
Preamplifier	Agilent	8449B	3008A02342	2010.02.10
Ultra Broadband Antenna	R&S	HL562	100362	2010.08.14
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2010.08.14
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-347	2010.08.14
Loop Antenna	R&S	HFH2-Z2	100150	2010.08.14
Spectrum Analyzer	R&S	FSP40	100324	2010.08.14
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2010.08.17

4.5. Test Result and Data

Engineer : Jeff	
Site : EMC Lab AC 102	**Time : 2010/12/28 - 11:35**
Limit : FCC	**Margin : 6**
EUT : DSMAle	**Probe : (30-1000MHz)**
Power : AC 120V/60Hz	**Note : Normal link**

Freq. (MHz)	Ant.Pol. H/V	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)	Note
39.68	V	51.68	-12.971	38.709	40	-1.29	QP	Unwanted emission
55.17	V	60.2	-22.183	38.017	40	-1.98	QP	Unwanted emission
150.12	V	64.25	-18	46.25	53	-6.75	Peak	harmonic
622.45	V	56.14	-6.824	49.316	56	-6.68	Peak	harmonic
719.68	V	53.4	-4.595	48.805	56	-7.20	Peak	harmonic
894.88	V	48.61	-2.254	46.356	56	-9.64	Peak	harmonic
109.381	H	56.89	-16.697	40.193	43.5	-3.31	QP	Unwanted emission
135.58	H	64.95	-17.188	47.762	53	-5.24	Peak	harmonic
151.23	H	65.7	-18.048	47.652	53	-5.35	Peak	harmonic
720.6	H	55.08	-4.572	50.51	56	-5.49	Peak	harmonic
813.65	H	49.77	-3.453	46.317	56	-9.68	Peak	harmonic
909.11	H	51.36	-0.963	50.397	56	-5.60	Peak	harmonic

Note:

1. Measuring frequencies from 9 KHz to the 1GHz, No emission found between lowest internal used/generated frequency to 30 MHz.
2. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
3. " * ", means this data is the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

5. In-band Emission (15.225 (a))

5.1. Minimum Standard

15.225 (a) The field strength of any emission within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

5.2. Measurement Procedure

Test Procedure The Radiated Electric Field Strength intensity has been measured on semi anechoic chamber with a ground plane and at a distance of 3m.

Frequency : From 9kHz to 30MHz at distance 3m The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

Frequency : From 30MHz to 1GHz at distance 3m The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

Measurements were performed with a QP, PK, and AV detector. The radiated emission measurements were made with the following detector function of the test receiver (below 1GHz).

Freq	9-90kHz	90-110kHz	150-490kHz	490kHz-30MHz	490kHz-30MHz
Detecter type	PK/AV	QP	PK/AV	QP	QP
IF bandwidth	200Hz	200Hz	9kHz	9kHz	120kHz

Note: Part 15 Section 15.31 (f)(2) (9kHz-30MHz)

[Limit at 3m]=[Limit at 300m]-40 x log(3[m]/300[m])

[Limit at 3m]=[Limit at 30m]-40 x log (3[m]/30[m])

5.3. Test Result

Frequency	Reading (dBuV)	Correction Factor	field strength dBμV/m at 3 m
13.56 MHz	90.33	18.56	108.89
Maximum Level(dBμV/m)			108.89
Limit(dBuV/m) at 3m			124 dBuV/m
margin			15.11

Note: Field strength limit was calculated with 40dB/dec.

6. In-band Emission (15.225 (b)(c))

6.1. Regulation

15.225 (b) With in the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

15.225 (c) With in the bands 13.110-13.410 MHz and 13.710-14.010 MHz, the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

6.2. Test Result

Freq. (MHz)	Ant.Pol. H/V	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
13.42	V	72.56	-11.53	61.03	90.47	-29.44	Peak
13.51	H	73.69	-11.50	62.19	90.47	-28.28	Peak
13.37	V	71.88	-11.56	60.32	80.51	-20.19	Peak

NOTE: All emissions not reported were more than 20 dB below the specified limit or in the noise floor.

7. Frequency tolerance (15.225 (e))

7.1. Regulation

15.225 (e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

7.2. Test Result

VOLTAGE (%)	POWER (V)	TEMP (°C)	FREQ (Hz)	FREQ.DEV (Hz)	Deviation (%)	Limit (%)
100	12	20	13561533	167	0.00123%	±0.01%
		-20	13561542	158	0.00117%	±0.01%
		-10	13561607	93	0.00069%	±0.01%
		0	13561566	134	0.00099%	±0.01%
		10	13561551	149	0.00110%	±0.01%
		20	13561558	142	0.00105%	±0.01%
		25	13561570	130	0.00096%	±0.01%
		30	13561572	128	0.00094%	±0.01%
		40	13561572	128	0.00094%	±0.01%
		50	13561589	111	0.00082%	±0.01%
85	10.2	20	13561545	155	0.00114%	±0.01%
115	13.8	20	13561547	153	0.00113%	±0.01%