

Radio Test Report FCC ID: SXE-ST150B01

This report concerns (check one) : ⊠ Original Grant ☐ Class II Change

Issued Date: Dec. 03, 2013 **Project No.** : 1308212 Equipment : Panel PC Model Name: ST-150B

Applicant: Barco N.V.

Address : President Kennedypark 35, 8500 Kortrijk,

Belgium

Tested by: Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Sep. 10, 2013

Date of Test: Sep. 10, 2013 ~ Nov. 28, 2013

Testing Engineer: (Josh Lin)

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Authorized Signatory:

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Declaration

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For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Revised Version No.	Description	Issued Date
-	Initial Issue.	Dec. 03, 2013

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1 CERTIFICATION

Equipment: Panel PC Brand Name: Barco Model Name: ST-150B Applicant: Barco N.V.

Date of Test: Sep. 10, 2013 ~ Nov. 28, 2013 Standards: FCC Part 15, Subpart C: 2012

ANSI C63.4: 2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1308212) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

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2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Standard Section	Test Item	Result
15.207	Conducted emission	PASS
15.35 / 15.205 / 15.209 / 15.225	Radiated emission	PASS
15.225(e)	Frequency Stability	PASS
15.203	Antenna Requirement	PASS

NOTE:

- N/A: denotes test is not applicable in this Test Report
 Portable device; SAR report is required.

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2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

C02: (VCCI RN: C-3477; FCC RN: 614388; FCC DN: TW1054)

1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

Radiated emission Test:

CB08: (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)

1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty is not specified by FCC/Industry Canada rules and for reference only.

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

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

A. Conducted emission test:

Test Site	Measurement Frequency Range	U, (dB)	NOTE
C02	150 kHz ~ 30 MHz	2.59	

B. Radiated emission test:

Test Site	Item	Measurement	Frequency Range	Uncertainty	NOTE
			30 - 200MHz	3.35 dB	
		Horizontal	200 - 1000MHz	3.11 dB	
CB08	Dadiated	Polarization	1 - 18GHz	3.97 dB	
	Radiated emission at		18 - 40GHz	4.01 dB	NOTE
	3m		30 - 200MHz	3.22 dB	
	3111	Vertical	200 - 1000MHz	3.24 dB	
		Polarization	1 - 18GHz	4.05 dB	
			18 - 40GHz	4.04 dB	

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR} .

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3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Panel PC		
Brand Name	Barco		
Model Name	ST-150B		
OEM Brand/Model Name	N/A		
Model Difference	N/A		
Product Description	The EUT is a Panel PC. Operation Frequency: 13.56 MHz Antenna Designation: LOOP Antenna More details of EUT technical specification, please refer to the User's Manual.		
Power Source	DC Voltage supplied from External Power Supply.		
Power Rating	1. EUT: I/P: DC 19V 4.74A 2. External Power Supply: I/P: AC 100-240V 1.5A 50-60Hz / O/P: DC 19V 4.74A MAX 90W MAX		
Connecting I/O Port(s)	Please refer to the User's Manual		
Products Covered	1 * CPU: Intel, Atom(TM) CPU D2550, 1.86 GHz 1 * Memory: i-DIMM, 2 GB, DDR3-1333 1 * HDD: TOSHIBA, MK3276GSX, 320 GB 1 * RFID Module: EZM710AU 1 * Wi-Fi Module: (FCC ID: NUK-DNXA92) 1 * Bluetooth Module: (FCC ID: SI4-MBD-200) 1 * Smart IC Card Reader 1 * Panel: AUO, G150XG01 1 * Headset module 1 * Wired remote (rimo) 1 * External Power Supply: FSP, FSP090-DMAB1		
EUT Modification(s)	N/A		

Note:

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

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3.2 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 Test Mode	Description
Mode 1	TX

Conducted emission test		
Final Test Mode	Description	
Mode 1	TX	

Radiated emission test		
Final Test Mode	Description	
Mode 1	TX	

Frequency Stability test		
Final Test Mode Description		
Mode 1	TX	

Antenna Requirement test		
Final Test Mode Description		
Mode 1	TX	

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3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

E-1 EUT	

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3.4 DESCRIPTION OF SUPPORT UNITS

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.	FCC ID	Series No.	Note
E-1	Panel PC	Barco	ST-150B	SXE-ST150B01	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
N/A	-		-	-

N	ot	Δ.
1 4	v	

(1) The support equipment was authorized by Declaration of Conformity (DOC).

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4 CONDUCTED EMISSION

4.1 LIMITS

FREQUENCY	Class A	(dBuV)	Class B (dBuV)		
(MHz)	Quasi-peak	Average	Quasi-peak	Average	
0.15 - 0.5	79.00	66.00	66 - 56 *	56 - 46 *	
0.50 - 5.0	73.00	60.00	56.00	46.00	
5.0 - 30.0	73.00	60.00	60.00	50.00	

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 test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value Limit Value

4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	Schwarzbeck	NSLK 8127	8127685	Feb. 24, 2014
2	Test Cable	TIMES	CFD300-NL	C01	Jun. 16, 2014
3	EMI Test Receiver	Agilent	N9038A	MY51210215	Mar. 21, 2014
4	Measurement Software	EZ	EZ_EMC (Version NB-02A)	N/A	N/A

NOTE: N/A: denotes No Model Name, No Serial No. or No Calibration specified.

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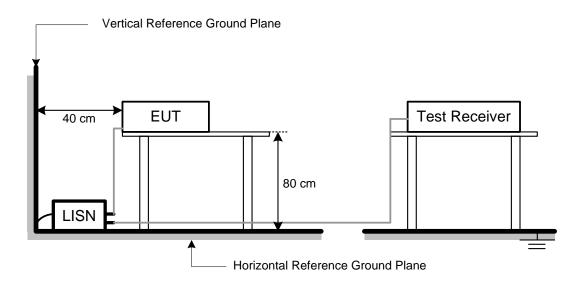
4.3 TEST PROCEDURES

- a. The EUT was placed 0.8 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

NOTE:

- a. Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
- b. All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.

4.4 TEST SETUP LAYOUT



4.5 DEVIATION FROM TEST STANDARD

No deviation

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4.6 EUT OPERATING CONDITIONS

The EUT used during radiated and/or conducted emission measurement was designed to exercise in a manner similar to a typical use.

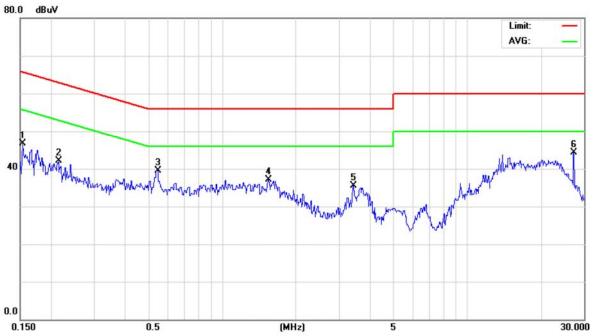
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4.7 TEST RESULTS

EUT	Panel PC	Model Name	ST-150B
Temperature	24°C	Relative Humidity	46%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		





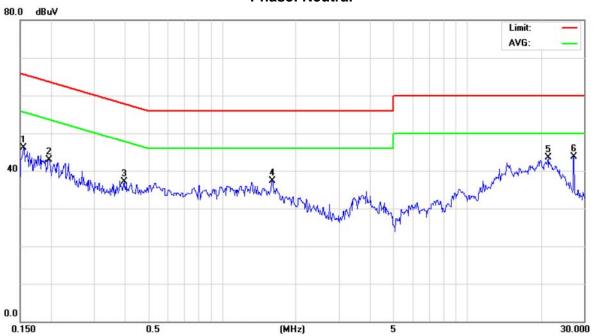
No. M	1k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	(0.1534	37.88	8.74	46.62	65.81	-19.19	peak	
2	(0.2150	32.87	9.25	42.12	63.01	-20.89	peak	
3	(0.5450	30.88	8.63	39.51	56.00	-16.49	peak	
4	•	1.5439	27.52	9.49	37.01	56.00	-18.99	peak	
5	3	3.4250	26.00	9.41	35.41	56.00	-20.59	peak	
6 *	27	7.1498	34.60	9.64	44.24	60.00	-15.76	peak	

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EUT	Panel PC	Model Name	ST-150B
Temperature	24°C	Relative Humidity	48%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		

Phase: Neutral



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1548	37.24	8.85	46.09	65.74	-19.65	peak	
2	0.1961	32.62	10.36	42.98	63.77	-20.79	peak	
3	0.3984	29.41	7.77	37.18	57.89	-20.71	peak	
4	1.5979	27.77	9.48	37.25	56.00	-18.75	peak	
5	21.3498	33.98	9.57	43.55	60.00	-16.45	peak	
6 *	27.1498	34.01	9.64	43.65	60.00	-16.35	peak	

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5 RADIATED EMISSION

5.1 LIMITS

FCC Part 15.209								
Frequency	Field Streng Limitation	4	Field Strength Limitation at 3m Measurement Dist					
(MHz)	(uV/m)	Dist	(uV/m)	(dBuV/m)				
0.009 - 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80				
0.490 - 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40				
1.705 – 30.00	30	30m	100* 30	20log 30 + 40				
30.0 – 88.0 100		3m	100	20log 100				
88.0 – 216.0	150	3m	150	20log 150				
216.0 – 960.0	200	3m	200	20log 200				
Above 960.0	500	3m 500		20log 500				
		FCC P	art 15.225(a)/(b)/(c)					
Frequency	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist					
(MHz)	(uV/m)	Dist	(uV/m)	(dBuV/m)				
13.553 – 13.567	15,848	30 m	15,848*100	124				
13.567 – 13.710	334	30 m	334*100	90.5				
13.110 – 13.410 13.710 – 14.010	106	30 m	106*100	80.5				

NOTE:

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d_2/d_1)^2$.

Example:

F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as $L_{d1}=L_1=30uV/m * (10)^2=100 * 30 uV/m$

(4) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)

Margin Level = Measurement Value - Limit Value

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5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014
2	Test Cable	LMR	LMR-400	12m	May. 14, 2014
3	Test Cable	LMR	LMR-400	3m	May. 14, 2014
4	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 18, 2014
5	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 11, 2014
6	Preamplifier With Adaptor	EMC	EMC2654045	980030	Feb. 18, 2014
7	Horn Antenna	Schwarzbeck	BBHA 9170	187	Dec. 24, 2013
8	Loop Ant.	EMCO	6502	00042960	Sep. 29. 2014

Remark: "N/A" denotes No Model Name, No Serial No. or No Calibration specified.

5.3 TEST PROCEDURE

- a. 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.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting radiated 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.
- e. 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.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE: (FCC PART 15.209)

- a. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.
- b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

NOTE: (FCC PART 15.225)

- a. Spectrum Setting:
 - 9 KHz 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.
 - $150~\mathrm{K}~\mathrm{Hz} 30~\mathrm{MHz},~\mathrm{RBW} = 10~\mathrm{KHz},~\mathrm{VBW} = 10~\mathrm{KHz},~\mathrm{Sweep~time} = 200~\mathrm{ms}.$
 - 30 MHz 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
- b. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- c. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

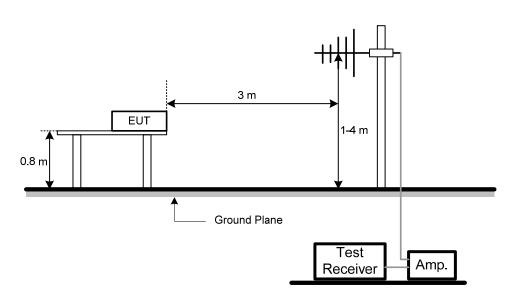
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5.4 DEVIATION FROM TEST STANDARD

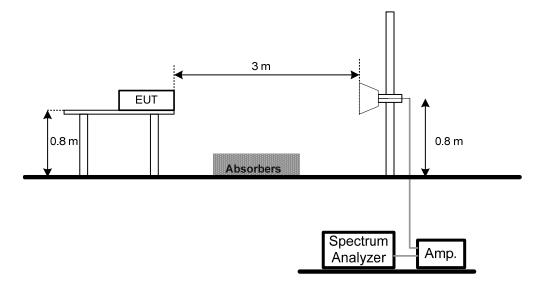
No deviation

5.5 TEST SETUP

Below 1 GHz



Above 1 GHz



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5.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

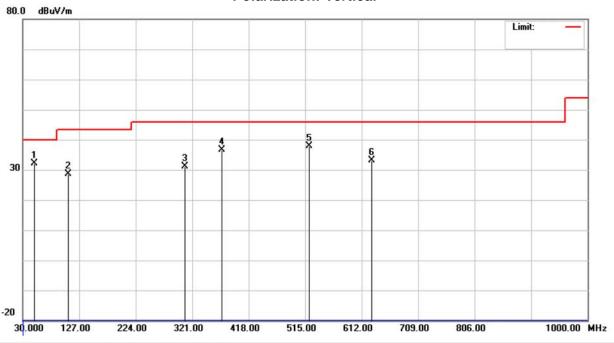
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5.7 TEST RESULTS- FCC PART 15.209

EUT	Panel PC	Model Name	ST-150B
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		

Polarization: Vertical



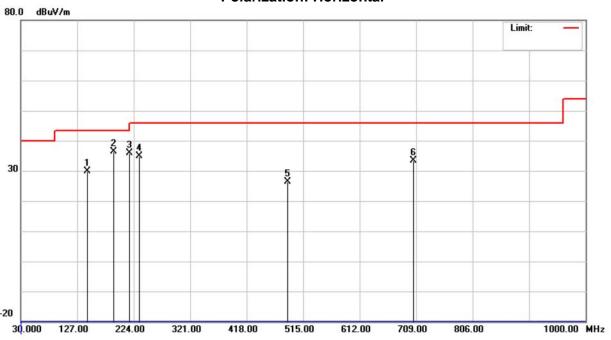
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	49.4000	45.74	-13.64	32.10	40.00	-7.90	peak		
2		107.5999	46.48	-17.82	28.66	43.50	-14.84	peak		
3		308.8750	44.60	-13.58	31.02	46.00	-14.98	peak		
4		371.9249	48.70	-12.09	36.61	46.00	-9.39	peak		
5		522.2750	46.77	-8.92	37.85	46.00	-8.15	peak		
6		628.9749	40.02	-6.84	33.18	46.00	-12.82	peak		

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EUT	Panel PC	Model Name	ST-150B
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		

Polarization: Horizontal

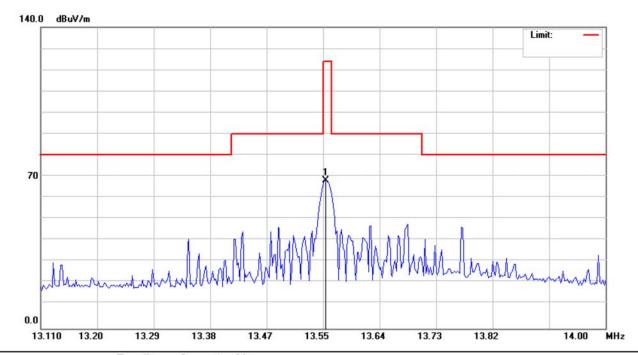


Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	143.9750	44.25	-14.43	29.82	43.50	-13.68	peak	
*	190.0500	53.18	-16.75	36.43	43.50	-7.07	peak	
	216.7250	52.71	-16.92	35.79	46.00	-10.21	peak	
	233.6999	50.78	-15.99	34.79	46.00	-11.21	peak	
	488.3250	36.03	-9.55	26.48	46.00	-19.52	peak	
	704.1500	39.73	-6.38	33.35	46.00	-12.65	peak	
	*	MHz 143.9750	Mk. Freq. Level MHz dBuV 143.9750 44.25 * 190.0500 53.18 216.7250 52.71 233.6999 50.78 488.3250 36.03	Mk. Freq. Level Factor MHz dBuV dB 143.9750 44.25 -14.43 * 190.0500 53.18 -16.75 216.7250 52.71 -16.92 233.6999 50.78 -15.99 488.3250 36.03 -9.55	Mk. Freq. Level Factor ment MHz dBuV dB dBuV/m 143.9750 44.25 -14.43 29.82 * 190.0500 53.18 -16.75 36.43 216.7250 52.71 -16.92 35.79 233.6999 50.78 -15.99 34.79 488.3250 36.03 -9.55 26.48	Mk. Freq. Level Factor ment Limit MHz dBuV dB dBuV/m dBuV/m dBuV/m 143.9750 44.25 -14.43 29.82 43.50 * 190.0500 53.18 -16.75 36.43 43.50 216.7250 52.71 -16.92 35.79 46.00 233.6999 50.78 -15.99 34.79 46.00 488.3250 36.03 -9.55 26.48 46.00	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB dBuV/m dBuV/m dB dBuV/m dB 143.9750 44.25 -14.43 29.82 43.50 -13.68 * 190.0500 53.18 -16.75 36.43 43.50 -7.07 216.7250 52.71 -16.92 35.79 46.00 -10.21 233.6999 50.78 -15.99 34.79 46.00 -11.21 488.3250 36.03 -9.55 26.48 46.00 -19.52	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB dBuV/m dBuV/m dB Detector 143.9750 44.25 -14.43 29.82 43.50 -13.68 peak * 190.0500 53.18 -16.75 36.43 43.50 -7.07 peak 216.7250 52.71 -16.92 35.79 46.00 -10.21 peak 233.6999 50.78 -15.99 34.79 46.00 -11.21 peak 488.3250 36.03 -9.55 26.48 46.00 -19.52 peak



5.8 TEST RESULTS- FCC PART 15.225

EUT	Panel PC	Model Name	ST-150B
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	13.5594	57.74	11.18	68.92	124.0	-55.08	peak		

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EUT	Panel PC	Model Name	ST-150B
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		



No.	Mk	Freq.	Level	Factor	ment	Limit	Over			
		MHz	MHz dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	27.1000	21.28	9.92	31.20	69.54	-38.34	peak		

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6 FREQUENCY STABILITY

6.1 LIMITS

FCC Part 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.

6.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-30	100854	Sep. 08, 2014

Remark: "N/A" denotes No Model Name, No Serial No. or No Calibration specified.

6.3 TEST PROCEDURE

- a. The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.
 - After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.
- b. At room temperature (25±5°C), an external variable AC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

6.4 DEVIATION FROM TEST STANDARD

No deviation

6.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

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6.6 TEST RESULTS

EUT	Panel PC	Model Name	ST-150B
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	TX		

	Freq	uency Stabi	lity Versus Env	ironmental Temper	ature	
	Temperature (°C)	Voltage (AC)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
	20	120V	13.55970			
0 min	50	120V	13.55970	0.000	+/- 1.356	PASS
	-20	120V	13.55970	0.000	+/- 1.356	PASS
2 min	50	120V	13.55980	0.100	+/- 1.356	PASS
	-20	120V	13.55960	-0.100	+/- 1.356	PASS
5 min	50	120V	13.55980	0.100	+/- 1.356	PASS
	-20	120V	13.55960	-0.100	+/- 1.356	PASS
10 min	50	120V	13.55980	0.100	+/- 1.356	PASS
	-20	120V	13.55970	0.000	+/- 1.356	PASS

	Fuequency Stability Versus Input Voltage										
Temperature (°C)		tage (C)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result					
20	V-nom	120	13.55970								
20	V-min	102	13.5598	0.1	+/- 1.356	PASS					
20	V-max	138	13.5596	-0.1	+/- 1.356	PASS					

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