



Neutron Engineering Inc.

RFID 13.56 MHz Radio Test Report

FCC ID: HLEMT65MF1

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

Issued Date : Aug. 26, 2011
Project No. : R1106003
Equipment : Video T&A Terminal
Model Name : MT650-AQUEAG; MT650;
MT650-XXXXXG (Where X is 0-9, A-Z, -
or blank for marketing purpose)

Applicant : unitech electronics co., ltd.
5F, No. 136, Lane 235, Pao-Chiao Rd.,
Hsin-Tien Dist., New Taipei City Taiwan.

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Jul. 13, 2011
Date of Test: Jul. 13, 2011 ~ Aug. 03, 2011

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of R.O.C., or National Institute of Standards and Technology (NIST) of U.S.A.

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Limitation

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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1. CERTIFICATION

Equipment : Video T&A Terminal

Brand Name : unitech

Model Name : MT650-AQUEAG; MT650; MT650-XXXXXG (Where X is 0-9, A-Z, - or blank for marketing purpose)

Applicant : unitech electronics co., ltd.

Data of Test : Jul. 13, 2011 ~ Aug. 03, 2011

Standards : FCC Part15, Subpart C / ANCI C63.4 : 2003

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-5-R1106003) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C			
Standard Section	Test Item	Judgment	Remark
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:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) Portable device; SAR report is required.
- (3) **The EUT include WiFi function and RFID function, this report covers EUT RFID function only. Its WiFi function testing is covered in another test report:
NEI-FCCP-2-R1106003**



2.1 TEST FACILITY

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

- C01:** (VCCI RN: C-2918; T-1666; FCC RN: 95335; FCC DN: TW1010)
No.132-1, Lane 329, Sec. 2, Palian Road, Shijr City, Taipei, Taiwan.
- CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054;
IC Assigned Code: 4428C-1)
1F., No. 61, Ln. 77, Sing-ai Rd., Neihs Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

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

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C01	ANSI	150 kHz ~ 30 MHz	1.94	

B. Radiated Measurement :

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE
CB08	Radiated mission at 3m	Horizontal Polarization	30 - 00MHz	3.35 dB
			200 - 1000MHz	3.11 dB
			1 - 18GHz	3.97 dB
			18 - 40GHz	4.01 dB
	Vertical Polarization		30 - 200MHz	3.22 dB
			200 - 1000MHz	3.24 dB
			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} .



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Video T&A Terminal	
Brand Name	unitech	
Model Name	MT650-AQUEAG; MT650; MT650-XXXXXG (Where X is 0-9, A-Z, - or blank for marketing purpose)	
OEM Brand Name	TASHI	
Model Difference	Please refer to Note 2.	
Product Description	The EUT is a Video T&A Terminal.	
	Operation Frequency:	13.56 MHz
	Antenna Designation:	LOOP Antenna
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage supplied from External Power Supply or PoE.	
Power Rating	SWITCHING ADAPTER: I/P: AC 100-240V 1.0A MAX 50-60Hz / O/P: DC +12V 2.0A PoE: I/P: DC +48V	
Products Covered	Please refer to the User's Manual	
Connecting I/O Port(s)	1 * CPU: Samsung 6410 667MHz 1 * 5.7" LCD Panel: DATA IMAGE FX050720DWSWDGT5 1 * Battery: Lithium-Ion @ 7.4V 1400mAh 1 * WiFi 802.11b/g Module: USI WM-G-MR-9-REF-2 1 * RFID Module (13.56MHz): Mifare MP-702MF 1 * Fingerprint Reader (optional): (1) TCEBB1CE010 (2) SFM3020 1 * SWITCHING ADAPTER: Sunny SYS1319-2412-T3	
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.
2. The EUT has two brand names (unitech, TASHI) and three types and all models are based on these three types:

Type	WiFi 802.11b/g	RFID Module	Fingerprint Reader	Bar Code Reader	Power Source
A	YES	13.56MHz	SFM3020	None	Adapter or PoE
B	YES	13.56MHz	TCEBB1CE010	None	Adapter or PoE
C	YES	13.56MHz	None	None	Adapter or PoE

All the above types were tested, and the type: A was found to be the worst cases during the pre-scanning test. This type of the worst case was used for final testing and collecting test data included in this report.



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.

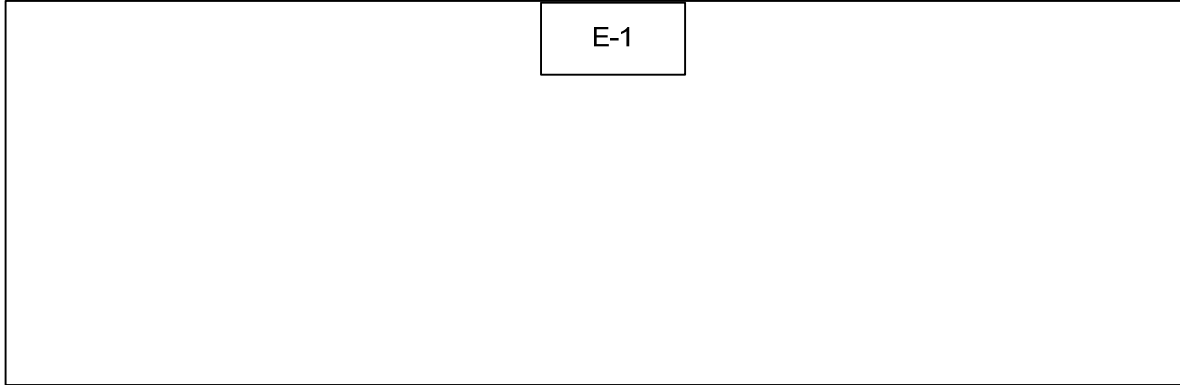
Pretest Test Mode	Description
Mode 1	TX

For Conducted Test	
Final Test Mode	Description
Mode 1	TX

For Radiated Test	
Final Test Mode	Description
Mode 1	TX



3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



**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	Video T&A Terminal	unitech	MT650-AQUEAG	HLEMT65MF1	N/A	EUT

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

Note:

- (1) The support equipment was authorized by Declaration of Conformity.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION (FREQUENCY RANGE 150 KHZ-30MHZ)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	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.
- (3) 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

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00042991	Feb. 16, 2012
2	Test Cable	TIMES	LMR-400	SR03_C_01&02	Aug. 20, 2011
3	Pulse Limiter	Electro-Metrics	EM-7600	112647	Dec. 13, 2011
4	EMI Test Receiver	R&S	ESCI	100082	Mar. 15, 2012
5	50Ω BNC TYPE Terminator	N/A	N/A	01	Jun. 02, 2013
6	50Ω BNC TYPE Terminator	N/A	N/A	03	Jun. 02, 2013
7	LISN	EMCO	4825/2	00028234	Jul. 21, 2012

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

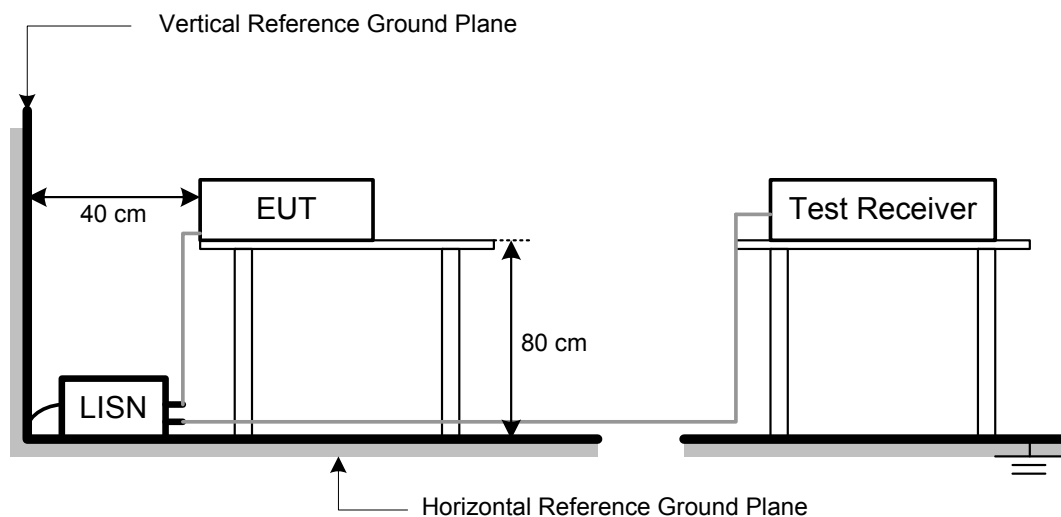
4.1.3 TEST PROCEDURE

- 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.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP





4.1.6 EUT OPERATING CONDITIONS

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

The EUT has been programmed to continuously transmit during test.



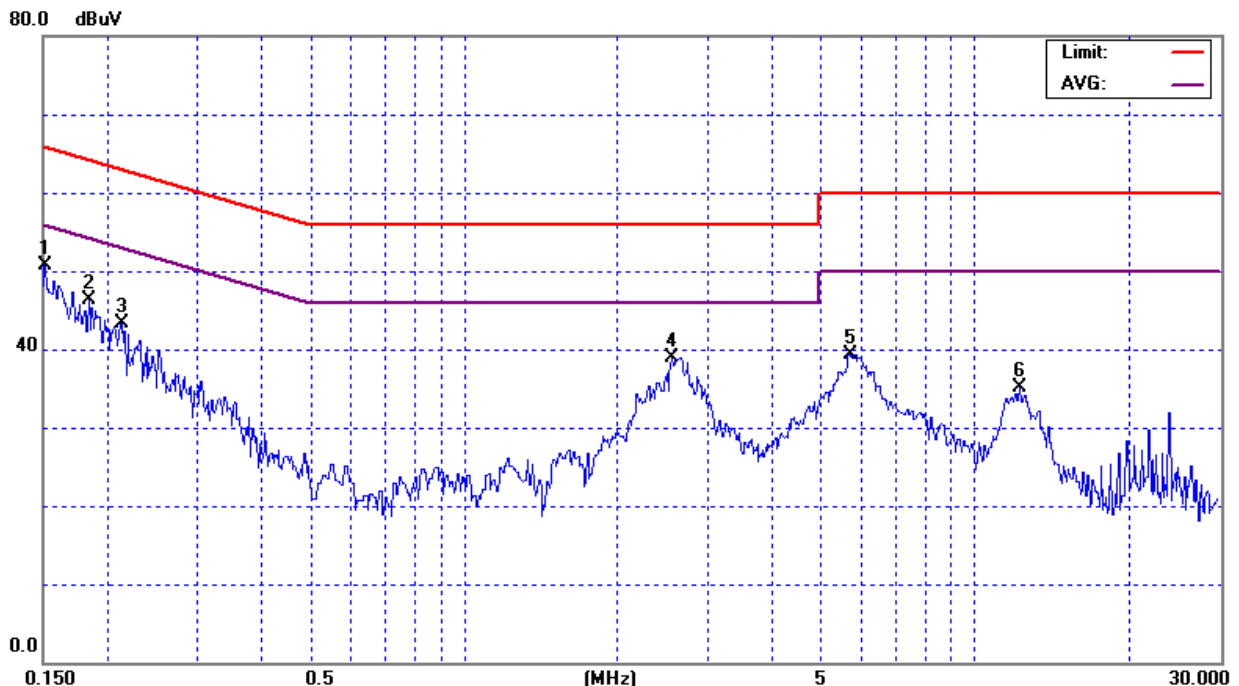
4.1.7 TEST RESULTS

E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	24° C	Relative Humidity :	48%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1514	Line	40.49	*	10.14	50.63	*	65.92	55.92	-15.29	(QP)
0.1843	Line	36.16	*	10.08	46.24	*	64.29	54.29	-18.05	(QP)
0.2130	Line	33.33	*	10.04	43.37	*	63.09	53.09	-19.72	(QP)
2.5520	Line	30.13	*	8.86	38.99	*	56.00	46.00	-17.01	(QP)
5.7000	Line	30.26	*	8.97	39.23	*	60.00	50.00	-20.77	(QP)
12.2500	Line	26.03	*	9.16	35.19	*	60.00	50.00	-24.81	(QP)

Remark:

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the 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 QP Mode was measured, but AVG Mode didn't perform. In this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
- (3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



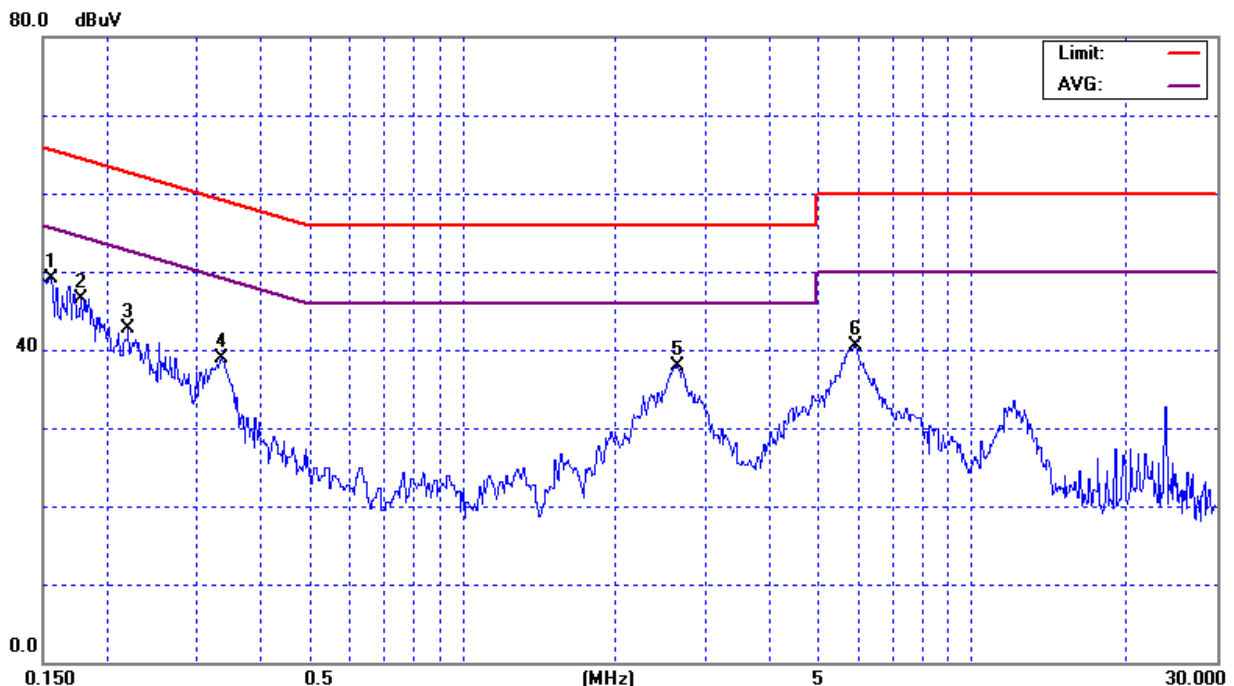


E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	24 ° C	Relative Humidity :	48%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06		

Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1549	Neutral	39.22	*	9.93	49.15	*	65.73	55.73	-16.58	(QP)
0.1780	Neutral	36.61	*	9.91	46.52	*	64.58	54.58	-18.06	(QP)
0.2207	Neutral	32.79	*	9.87	42.66	*	62.79	52.79	-20.13	(QP)
0.3362	Neutral	29.11	*	9.70	38.81	*	59.30	49.30	-20.49	(QP)
2.6420	Neutral	29.19	*	8.68	37.87	*	56.00	46.00	-18.13	(QP)
5.9000	Neutral	31.68	*	8.74	40.42	*	60.00	50.00	-19.58	(QP)

Remark:

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.2 sec./ MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the 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 QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 30MHz-1000MHz)

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(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 Part 15.225(a)/(b)/(c)				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(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

Notes:

- (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 $L_{d1} = L_1 = 30uV/m * (10)^2 = 100 * 30 uV/m$

**4.2.2 MEASUREMENT INSTRUMENTS LIST**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011
2	Microflex Cable	N/A	N/A	1m	May. 18, 2012
3	Test Cable	N/A	LMR-400	966_12m	Jun. 16, 2012
4	Test Cable	N/A	LMR-400	966_3m	Jun. 16, 2012
5	Pre-Amplifier	EMC	EMC-330	980001	Jun. 02, 2012
6	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 20, 2012
7	Loop Ant.	EMCO	6502	00042960	Jan. 12, 2012

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

4.2.3 TEST PROCEDURE

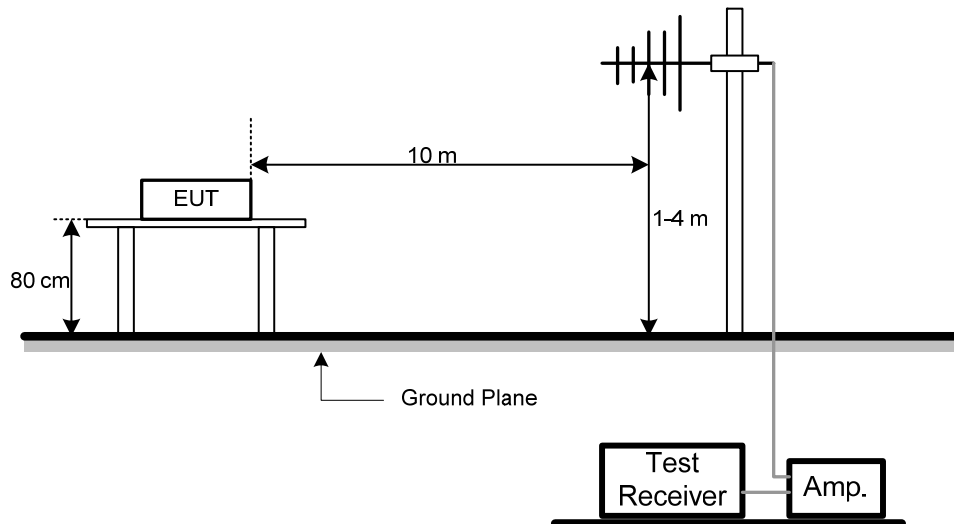
- The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

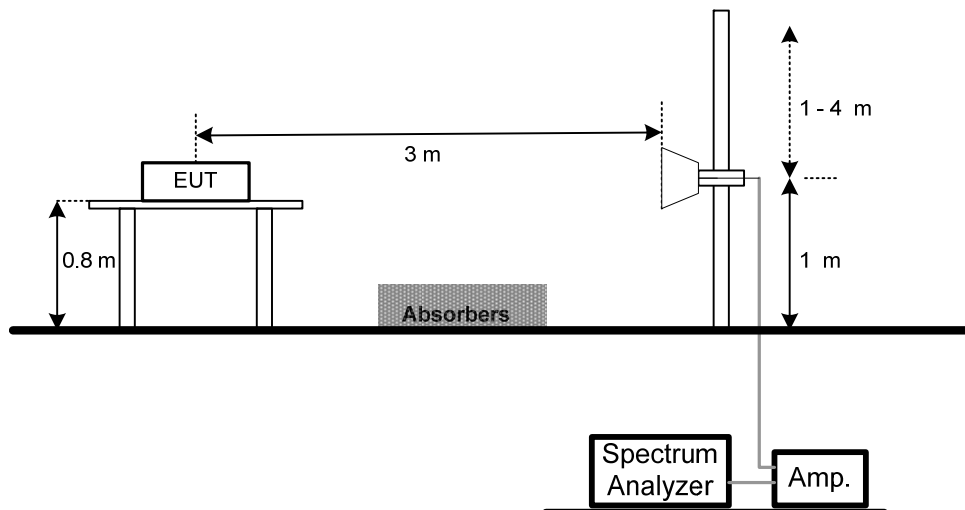
No deviation

4.2.5 TEST SETUP

Radiated Emission Test Set-Up Frequency 30 - 1000MHz



Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 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.



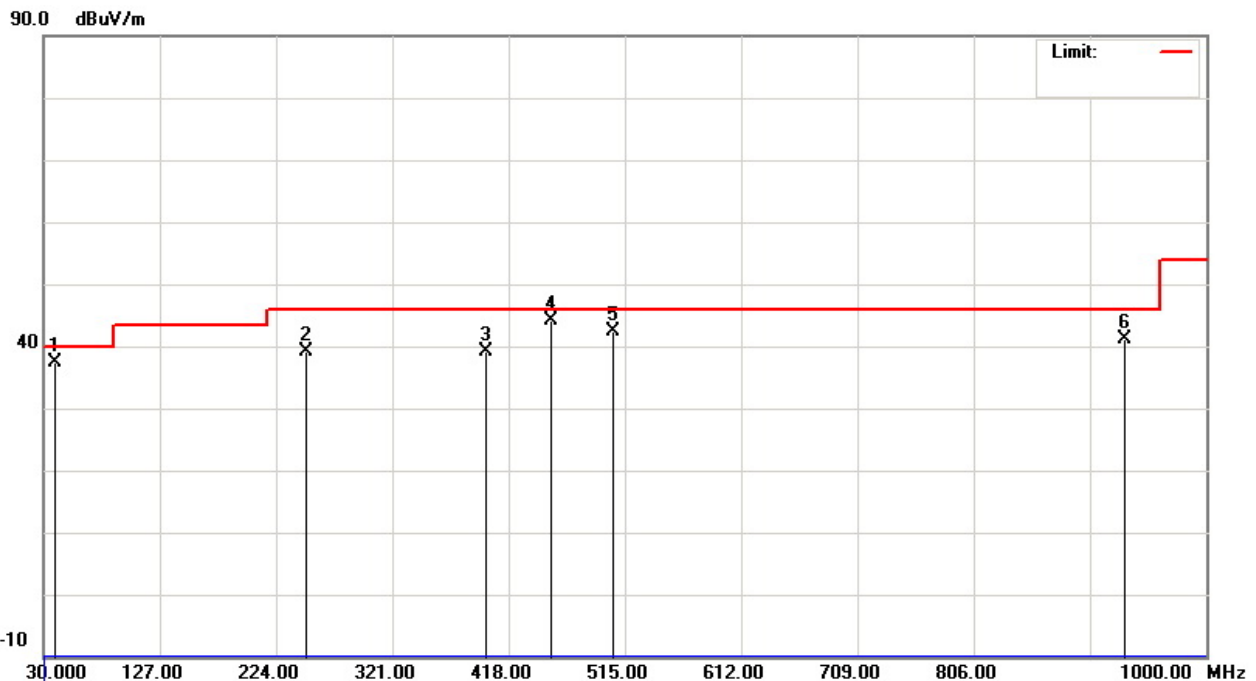
4.2.7 TEST RESULTS- FCC PART 15.209

E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	25° C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX		

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit-3m (dBuV/m)	Safe Margins (dBuV/m)	Note
39.7000	V	Peak	49.94	- 12.45	37.49	40.00	- 2.51	(QP)
249.2200	V	Peak	53.23	- 14.14	39.09	46.00	- 6.91	
398.6000	V	Peak	49.14	- 10.09	39.05	46.00	- 6.95	
452.9200	V	Peak	52.76	- 8.71	44.05	46.00	- 1.95	(QP)
505.3000	V	Peak	50.31	- 7.90	42.41	46.00	- 3.59	
932.1000	V	Peak	43.24	- 2.17	41.07	46.00	- 4.93	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) 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 ◦
- (3) Measuring frequency range from 30MHz to 1000MHz ◦
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not how in table ◦



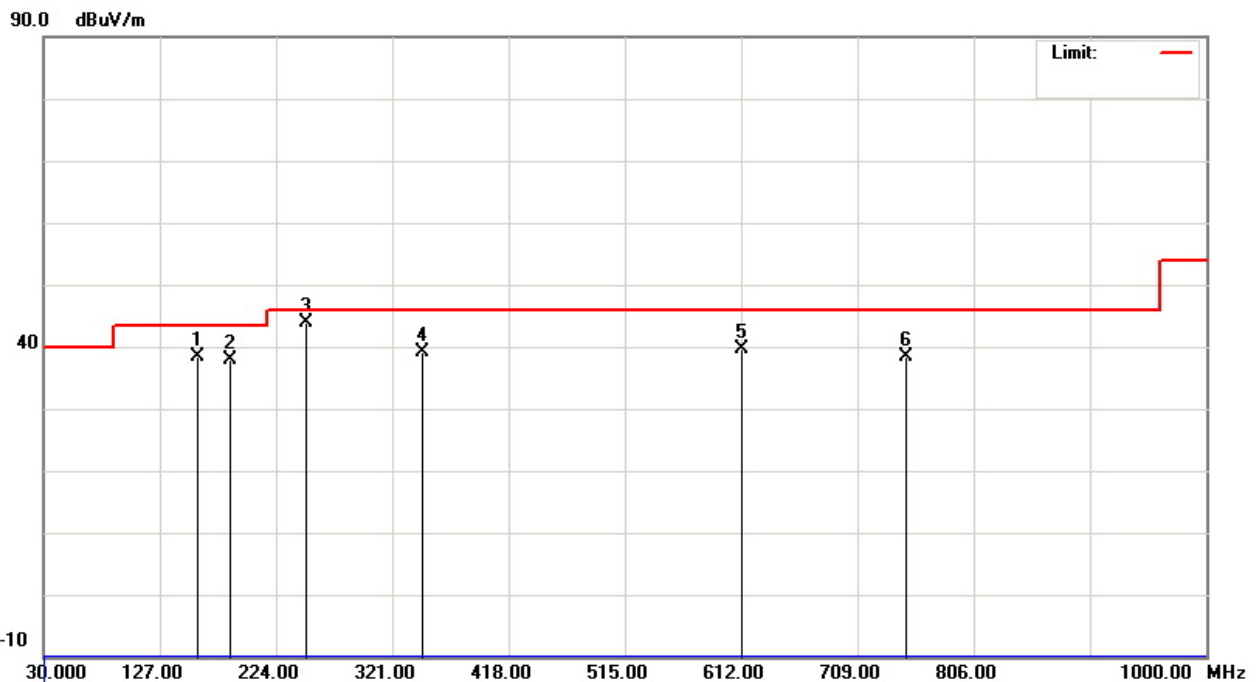


E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	25 ° C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX		

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit-3m (dBuV/m)	Safe Margins (dBuV/m)	Note
158.0400	H	Peak	51.58	- 13.15	38.43	43.50	- 5.07	
185.2000	H	Peak	53.31	- 15.49	37.82	43.50	- 5.68	
249.2200	H	Peak	58.12	- 14.14	43.98	46.00	- 2.02	(QP)
346.2200	H	Peak	50.64	- 11.45	39.19	46.00	- 6.81	
612.0000	H	Peak	45.36	- 5.81	39.55	46.00	- 6.45	
749.7400	H	Peak	41.87	- 3.46	38.41	46.00	- 7.59	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz ◦
- (2) 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 ◦
- (3) Measuring frequency range from 30MHz to 1000MHz ◦
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦



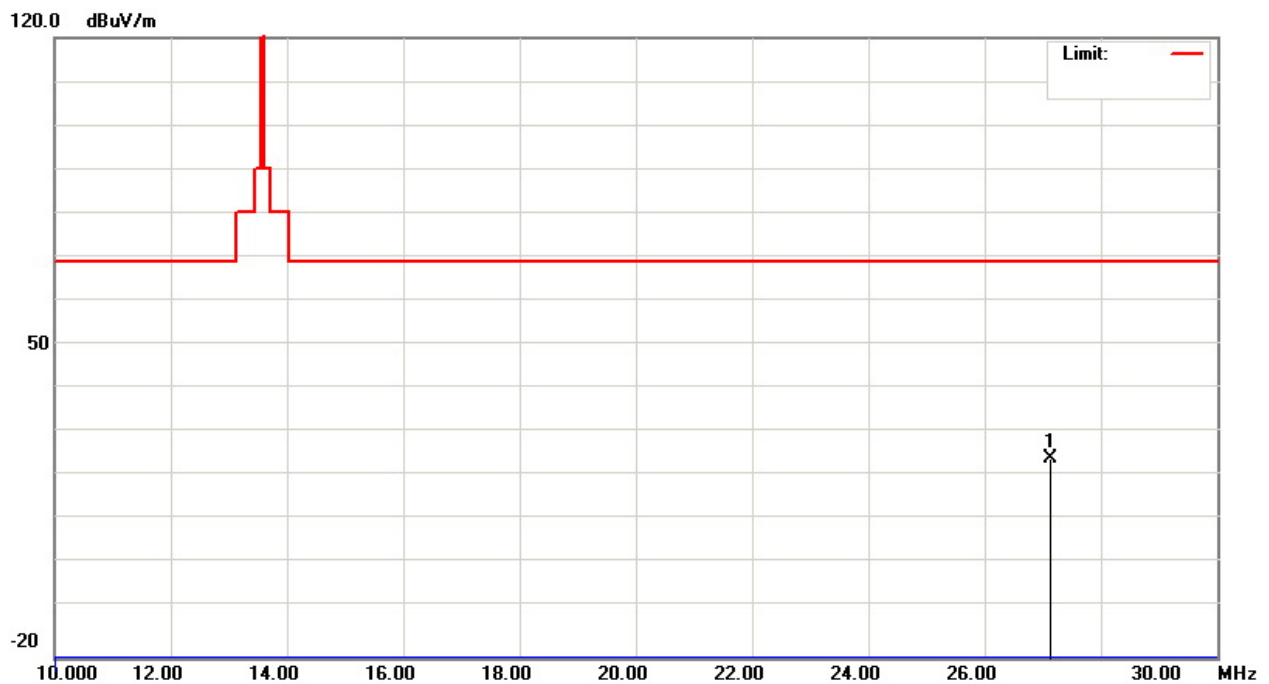
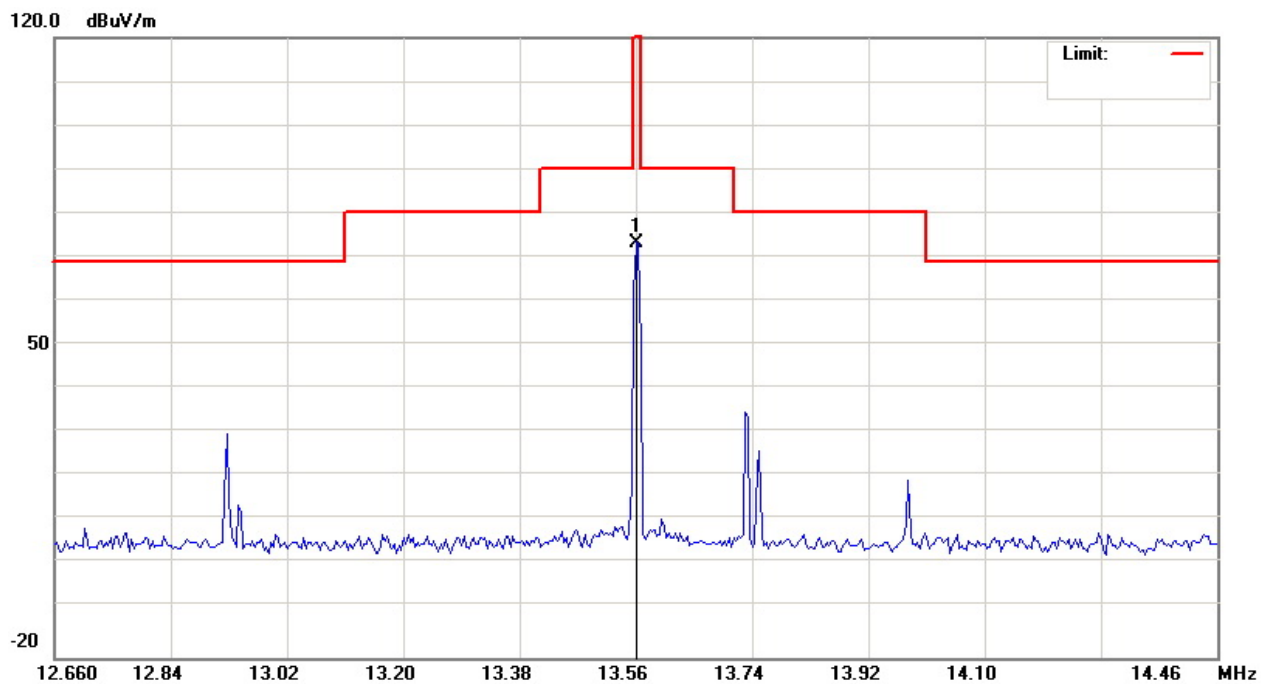
**4.2.8 TEST RESULTS- FCC PART 15.225**

E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	25° C	Relative Humidity :	36%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX		

Freq. (MHz)	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit-3m (dBuV/m)	Safe Margins (dBuV/m)	Note
13.5600	Peak	63.06	10.62	73.68	124.00	- 50.32	
27.1172	Peak	15.47	9.37	24.84	69.54	- 44.70	

Remark :

- (1) Spectrum Setting:
9 KHz – 150 KHz, RBW= 1 KHz, VBW=1 KHz, Sweep time = 200 ms.
150 K Hz – 30 MHz, RBW= 9 KHz, VBW=9 KHz, Sweep time = 200 ms.
30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
- (2) 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 °
- (3) 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.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table °





4.3 FREQUENCY STABILITY MEASUREMENT

4.3.1 FREQUENCY STABILITY 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.

4.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011

Remark: " N/A" denotes No Model No. / Serial No. and No Calibration specified.

4.3.3 TEST PROCEDURE

- 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.
- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 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.



4.3.6 TEST RESULTS

E.U.T :	Video T&A Terminal	Model Name :	MT650-AQUEAG
Temperature :	23 °C	Relative Humidity :	50%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX		

Frequency Stability Versus Environmental Temperature						
	Temperature (°C)	Voltage (Vac)	Frequency (MHz)	Freq Error (KHz)	Limit (KHz)	Results
	20	120V	13.56060			
0 min	50	120V	13.56062	0.020	+/- 1.356	PASS
	-20	120V	13.56034	-0.260	+/- 1.356	PASS
2 min	50	120V	13.56062	0.020	+/- 1.356	PASS
	-20	120V	13.56034	-0.260	+/- 1.356	PASS
5 min	50	120V	13.56064	0.040	+/- 1.356	PASS
	-20	120V	13.56030	-0.300	+/- 1.356	PASS
10 min	50	120V	13.56064	0.040	+/- 1.356	PASS
	-20	120V	13.56030	-0.300	+/- 1.356	PASS

Frequency Stability Versus Input Voltage						
Temperature (°C)	Voltage (Vac)		Frequency (MHz)	Freq Error (KHz)	Limit (KHz)	Results
20	V-nom	120	13.56060			
20	V-min	102	13.56060	0	+/- 1.356	PASS
20	V-max	138	13.56060	0	+/- 1.356	PASS