

FCC 15.225  
13.56MHz Test Report

for

Elitegroup Computer Systems Co., Ltd.

No. 239, Sec. 2., TiDing Blvd., Taipei,  
Taiwan 11493

Product Name : Personal Computer  
Model No. : mPC  
Family Name : mPCXXXXXXXXXXXXX  
(The X "." in the model name can be 0  
to 9, A to Z, a-z, "-", "\_", "\", "/" or  
blank, for marketing use only.)  
FCC ID : WL6-MPC

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## APPENDIX A TEST PHOTOGRAPHS

## TEST REPORT CERTIFICATION

Applicant : Elitegroup Computer Systems Co., Ltd.  
Manufacturer : Elitegroup Computer Systems Co., Ltd.  
Product Name : Personal Computer  
Model No. : mPC  
Family Name : mPCxxxxxxxxxxxxx  
(The X "." in the model name can be 0 to 9, A to Z, a-z, "-", "\_", "\",  
"/" or blank, for marketing use only.)  
Serial No. : N/A  
Power Supply : DC 12V

Applicable Standards:

FCC Rules and Regulations Part 15 Subpart C, Oct. 2014  
ANSI C63.10:2013

AUDIX Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report. AUDIX Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Test: 2015. 10. 02 ~ 14

Date of Report: 2015. 10. 15

Producer: Annie Yu  
(Annie Yu/Administrator)

Signatory: Ben Cheng  
(Ben Cheng/Manager)

## 1. REPORT HISTORY

Revision	Date	Revision Summary	Report Number
0	2015. 10. 15	Original Report.	EM-F150604

## 2. SUMMARY OF TEST RESULTS

Rule	Description	Results
15.207	Conducted Emission	PASS
15.225(a)(b)(c)	In-Band Emission	PASS
15.225(d)/15.209	Out-of-Band Emission	PASS
15.215 (c)	20dB Bandwidth	PASS
15.225(e)	Frequency Stability Tolerance	PASS

### 3. GENERAL INFORMATION

#### 3.1. Description of EUT

Product	Personal Computer
Model No.	mPC
Family Name	mPCxxxxxxxxxxxx (The X "." in the model name can be 0 to 9, A to Z, a-z, "-", "_", "\", "/" or blank, for marketing use only.)
Test Model	mPC-A
Serial Number	N/A
Applicant	Elitegroup Computer Systems Co., Ltd. No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493
Manufacturer	Elitegroup Computer Systems Co., Ltd. No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493
RF Features	NFC
Interface Ports	Front Side: USB 3.0 Ports *2 Back Side: 12V DC Jack *1 LAN Port *1 HDMI Port *1 USB Ports *2 Audio Jack *1
Date of Receipt of Sample	2015. 09. 17

#### 3.2. EUT Specifications Assessed in Current Report

Fundamental Range (MHz)	Channel Number	Modulation
13.56	1	ASK

### 3.3. Descriptions of Key Components and Operating Modes

#### 3.3.1. List of key components under test

Item	Supplier	Description	Character
Main Board	ECS	BTM-S	---
CPU	Intel	N2830	2.16GHz, Up to 2.41GHz
Chassis	Hunt key	mPC-A	Metal Case (Case B)
			Plastic Case (Case A)
VESA Mount Bracket	ECS	---	Case C
SATADOM	Innodisk	DESSH-64GD07RCADC	64GB SATAIII DOM-SH 3ME
	Innodisk	DESSH-32GD07RC1SC	32GB SATAIII DOM-SH 3ME
	Innodisk	DESSH-16GD07RC1SC	16GB SATAIII DOM-SH 3ME
Memory	SK HYNIX	HMT425S6CFR6A-PB	2GB DDR3L 1600 SO-DIMM
	SK HYNIX	HMT451S6BFR8A-PB	4GB DDR3L 1600 SO-DIMM
	SK HYNIX	HMT41GS6BFR8A-PB	8GB DDR3L 1600 SO-DIMM
	Kingston	ACR16D3LFS1KBG/2G	2GB DDR3L 1600 SO-DIMM
	Kingston	ACR16D3LS1KNG/4G	4GB DDR3L 1600 SO-DIMM
	Kingston	ACR16D3LS1KNG/8G	8GB DDR3L 1600 SO-DIMM
	SAMSUNG	M471B5173EB0-YK0 LF	4GB DDR3L 1600 SO-DIMM
	SAMSUNG	M471B1G73EB0-YK0	8GB DDR3L 1600 SO-DIMM
	A DATA	AM1L16BC4R1-B1WS	4GB DDR3L 1600 SO-DIMM
	A DATA	AM1L16BC8R2-B1XS	8GB DDR3L 1600 SO-DIMM
	Transcend	TS512MSK64W6H-ME	4GB DDR3L 1600 SO-DIMM
Transcend	TS1GSK64W6H	8GB DDR3L 1600 SO-DIMM	
WLAN Combo Module	Realtek	RTL8723BE	802.11b/g/n RTL8723BE Combo module
NFC Module	ASTAG	RFM-ECS-8640	---
AC Adapter	Asian Power	WA-36A12FG (For EU Plug)-Test Used (Wall-mount, 2C)	AC Input: 100-240V~, 50-60Hz, 0.9A Max. DC Output: 12V, 3A
		WA-36A12FK (For UK Plug) (Wall-mount, 2C)	
		WA-36A12FN (For AU Plug) (Wall-mount, 2C)	
	Power Cord: Non-Shielded, Undetachable, 1.5m (Bonded one ferrite core)		

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.



## 3.3.2. List of operating modes under test:

Item	Supplier	Model / Type	Character
Main Board	ECS	BTM-S	---
CPU	Intel	N2830	2.16GHz, Up to 2.41GHz
Chassis	Hunt key	mPC-A	Metal Case (Case B)
SATADOM	Innodisk	DESSH-64GD07RCADC	64GB
Memory	Kingston	ACR16D3LS1KNG/8G	8GB
WLAN Combo Module	Realtek	RTL8723BE	802.11b/g/n RTL8723BE Combo module
NFC Module	ASTAG	RFM-ECS-8640	---
AC Adapter	Asian Power	WA-36A12FG (For EU Plug) (Wall-mount, 2C)	AC Input: 100-240V~, 50-60Hz, 0.9A Max. DC Output: 12V, 3A

## 3.4. Tested Supporting System List

## 3.4.1. Support Peripheral Unit

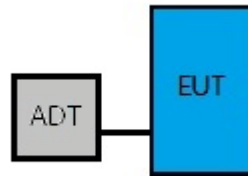
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	LCD TV	LG	22LK330-DB	N/A	N/A
2.	USB Mouse	acer	M-UVACR1	N/A	N/A
3.	Power Socket	N/A	N/A	N/A	N/A

## 3.4.2. Cable Lists

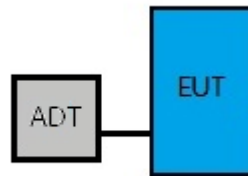
No.	Cable Description Of The Above Support Units
1.	HDMI Cable: Shielded, Detachable, 1.8m AC Power Cord: Unshielded, Detachable, 1.8m
2.	USB Cable: Shielded, Detachable, 1.8m
3.	Power Cord: Unshielded, Detachable, 1.8m

### 3.5. Setup Configuration

#### 3.5.1. EUT Configuration for Power Line and Radiated Emission



#### 3.5.2. EUT Configuration for Conducted Test Items



### 3.6. Operating Condition of EUT

To Set EUT on RF function under continues transmitting.

### 3.7. Description of Test Facility

Test Firm Name	:	AUDIX Technology Corporation EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
Test Location & Facility	:	No. 7 Shielded Room No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan  Semi-Anechoic Chamber No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Renewal on May 06, 2015 Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

### 3.8. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	± 3.5dB
Radiation Test (Distance: 3m)	9kHz-30MHz	± 2.3dB
	30MHz~1000MHz	± 4.7dB

Remark : Uncertainty =  $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	± 0.2kHz
Frequency Stability	±0.78ppm

## 4. MEASUREMENT EQUIPMENT LIST

### 4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESR3	101774	2015. 02. 06	1 Year
2.	A.M.N.	R&S	ESH2-Z5	100366	2015. 03. 11	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-1539-3	2015. 01. 22	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	101495	2015. 01. 17	1 Year

### 4.2. Radiated Emission Measurement

#### 4.2.1. Frequency Range 9kHz~30MHz

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2015. 09. 14	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2015. 06. 24	1 Year
3.	Loop Antenna	R & S	HFH2-Z2	891847/27	2014. 12. 13	1 Year

#### 4.2.2. Frequency Range 30MHz~1000MHz

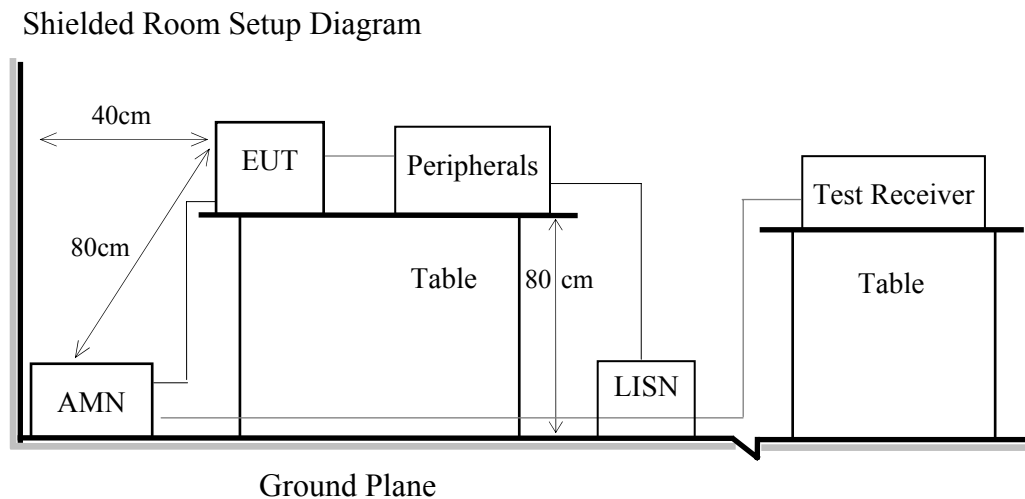
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2015. 09. 14	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2015. 06. 24	1 Year
3.	Amplifier	Agilent	8447D	2944A06305	2015. 02. 12	1 Year
4.	Bilog Antenna	CHASE	CBL6112D	33821	2015. 02. 27	1 Year

### 4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	R&S	FSV30	101181	2015. 03. 06	1 Year
2.	Programmable Temperature & Humidity Chamber	GIANT	GTH-150-40-CP-AR	MAA1505-008	2015. 05. 07	1 Year
3.	Transformer	TAILI	TL-220	N/A	N.C.R.	N.C.R.

## 5. CONDUCTED EMISSION MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. Power Line Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

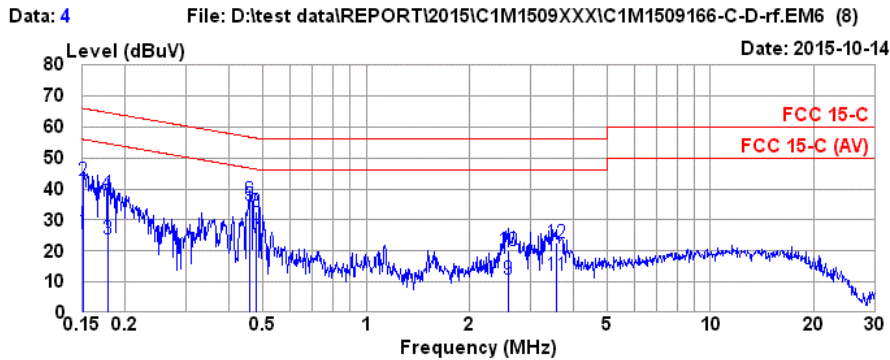
### 5.3. Test Procedure

- 5.3.1. To set up the EUT as indicated in ANSI C 63.10 The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

### 5.4. Conducted Emission Measurement Results

PASSED.

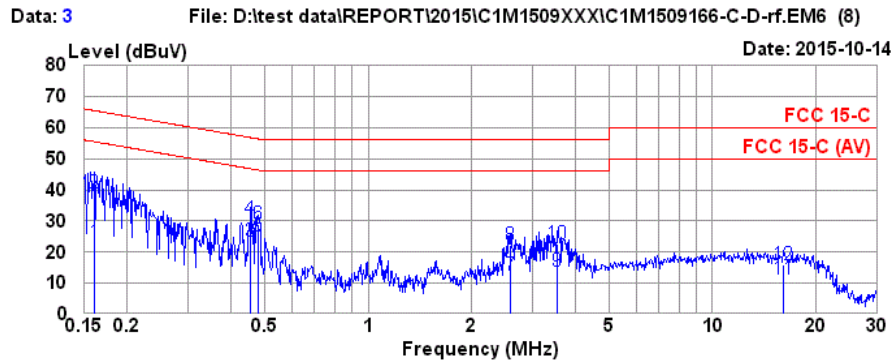
Test Date	2015/10/14	Temp./Hum.	26 /50%
Test Voltage	DC 12V (Via AC Adaptor)		



Site no. : No.7 Shielded Room Data no. : 4  
 Condition : ESH2-Z5 366 Phase : NEUTRAL  
 Limit : FCC 15-C  
 Env. / Ins. : 26°C / 50% ESR3 (1774) Engineer : Ken Yang  
 EUT : mPC-A  
 Power Rating : DC 12V (via adaptor)  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.152	0.11	0.03	9.85	16.57	26.56	55.91	29.35	Average
2	0.152	0.11	0.03	9.85	32.57	42.56	65.91	23.35	QP
3	0.179	0.12	0.03	9.85	14.01	24.01	54.55	30.54	Average
4	0.179	0.12	0.03	9.85	28.36	38.36	64.55	26.19	QP
5	0.461	0.13	0.03	9.86	24.77	34.79	46.67	11.88	Average
6	0.461	0.13	0.03	9.86	26.45	36.47	56.67	20.20	QP
7	0.479	0.14	0.03	9.86	14.30	24.33	46.36	22.03	Average
8	0.479	0.14	0.03	9.86	22.75	32.78	56.36	23.58	QP
9	2.581	0.22	0.07	9.86	0.63	10.78	46.00	35.22	Average
10	2.581	0.22	0.07	9.86	10.14	20.29	56.00	35.71	QP
11	3.565	0.25	0.08	9.87	2.14	12.34	46.00	33.66	Average
12	3.565	0.25	0.08	9.87	12.56	22.76	56.00	33.24	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
 2. If the average limit is met when using a quasi-peak detector,  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.



Site no. : No.7 Shielded Room Data no. : 3  
 Condition : ESH2-Z5 366 Phase : LINE  
 Limit : FCC 15-C  
 Env. / Ins. : 26°C / 50% ESR3 (1774) Engineer : Ken Yang  
 EUT : mPC-A  
 Power Rating : DC 12V (via adaptor)  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.161	0.11	0.03	9.85	12.97	22.96	55.43	32.47	Average
2	0.161	0.11	0.03	9.85	28.87	38.86	65.43	26.57	QP
3	0.456	0.12	0.03	9.86	13.42	23.43	46.76	23.33	Average
4	0.456	0.12	0.03	9.86	20.42	30.43	56.76	26.33	QP
5	0.481	0.13	0.03	9.86	15.03	25.05	46.32	21.27	Average
6	0.481	0.13	0.03	9.86	18.98	29.00	56.32	27.32	QP
7	2.581	0.20	0.07	9.86	2.45	12.58	46.00	33.42	Average
8	2.581	0.20	0.07	9.86	12.14	22.27	56.00	33.73	QP
9	3.528	0.23	0.08	9.87	3.50	13.68	46.00	32.32	Average
10	3.528	0.23	0.08	9.87	12.50	22.68	56.00	33.32	QP
11	16.055	0.57	0.18	9.93	0.79	11.47	50.00	38.53	Average
12	16.055	0.57	0.18	9.93	5.46	16.14	60.00	43.86	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
 2. If the average limit is met when using a quasi-peak detector,  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.

## 6. RADIATED SPURIOUS EMISSION MEASUREMENT

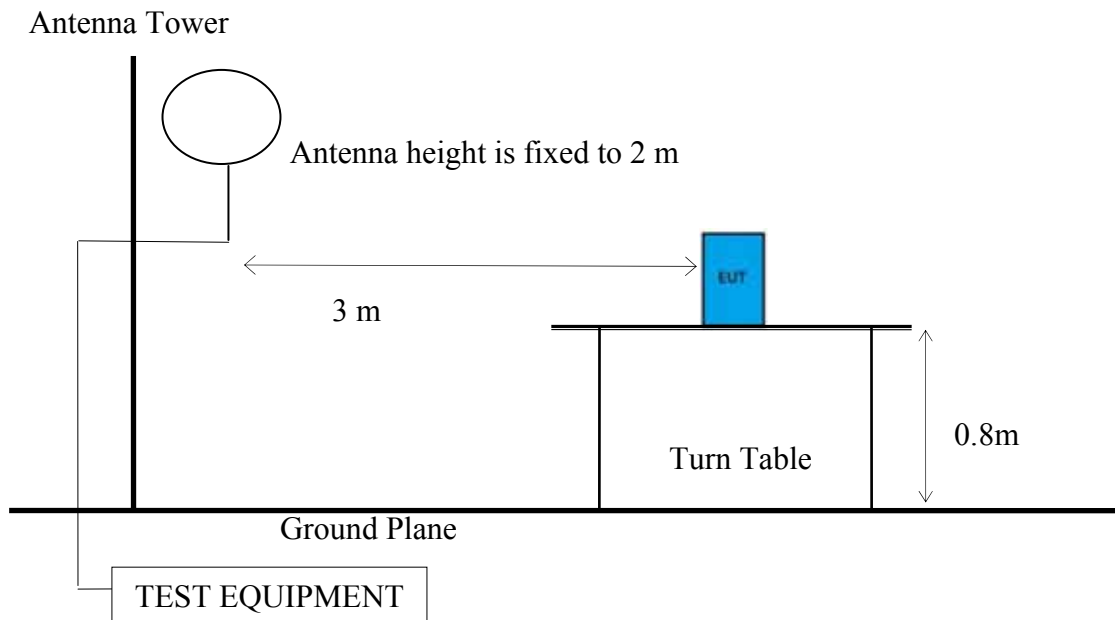
### (IN-BAND)

#### 6.1. Block Diagram of Test Setup

##### 6.1.1. Block Diagram of EUT

Indicated as section 3.5

##### 6.1.2. Setup Diagram for 9kHz-30MHz





## 6.2. IN-Band Radiated Spurious Emission Limits

Frequency (MHz)	Distance (m)	Limits	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
13.553-13.567	30	15848	84
	3	1584893	124
13.410 -13.553 and 13.567-13.710	30	334	50.50
	3	33381	90.50
13.110 -13.410 and 13.710-14.010	30	106	40.5
	3	10592	80.50

Remark : (1)  $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$

$$(2) 15848\mu\text{V/m} = 84\text{dB}\mu\text{V/m} = 84 + 40\log(30\text{m}/3\text{m}) = 124\text{dB}\mu\text{V/m}$$

$$334\mu\text{V/m} = 50.5\text{dB}\mu\text{V/m} = 50.5 + 40\log(30\text{m}/3\text{m}) = 90.5\text{dB}\mu\text{V/m}$$

$$106\mu\text{V/m} = 40.5\text{dB}\mu\text{V/m} = 40.5 + 40\log(30\text{m}/3\text{m}) = 80.5\text{dB}\mu\text{V/m}$$

## 6.3. Test Procedure

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 2 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-2013 regulation.

Below 30MHz:

(1) RBW = 9kHz with peak and average detector.

(2) Detector: average and peak (10kHz-490kHz)

Q.P. (490kHz-30MHz)

## 6.4. Test Results

PASSED.

Test Date	2015/10/02	Temp./Hum.	24 /59%
Test Voltage	DC 12V (Via AC Adaptor)		

### Antenna at 0 Degree

Test Frequency (MHz)	Test Result (dB $\mu$ V/m at 3m)	Limits (dB $\mu$ V/m at 3m)	Margin (dB)	Detector
13.560	40.30	123.99	83.69	Peak

### Antenna at 90 Degree

Test Frequency (MHz)	Test Result (dB $\mu$ V/m at 3m)	Limits (dB $\mu$ V/m at 3m)	Margin (dB)	Detector
13.560	36.20	123.99	87.79	Peak

Note: All emissions are lower than the ambient level cannot be measured.

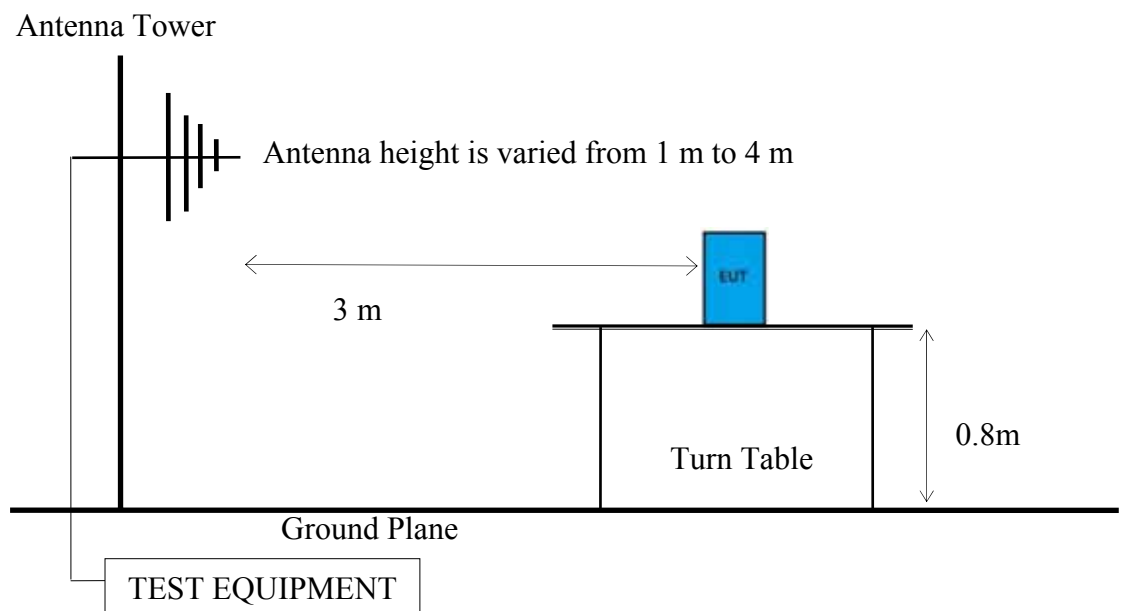
## 7. RADIATED SPURIOUS EMISSION MEASUREMENT (OUT-BAND)

### 7.1. Block Diagram of Test Setup

#### 7.1.1. Block Diagram of EUT

Indicated as section 3.5

#### 7.1.2. Setup Diagram for 30MHz-1000MHz



## 7.2. Out-Band Radiated Spurious Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Field Strengths Limits	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
1.705 ~ 30	30 (3)	30 (2985)	29.54 (69.54)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

Remark : (1)  $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$

- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

## 7.3. Test Procedure

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 regulation.

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

## 7.4. Measurement Result Explanation

Emission Level=Antenna Factor + Cable Loss + Meter Reading

## 7.5. Test Results

PASSED.

Test Date	2015/10/02	Temp./Hum.	24 /59%
Test Voltage	DC 12V (Via AC Adaptor)		

### 7.5.1. Emissions within Restricted Frequency Bands

#### 7.5.1.1. Frequency Range 9kHz~30MHz

##### **Antenna at 0 Degree**

Test Frequency (MHz)	Test Result (dB $\mu$ V/m at 3m)	Limits (dB $\mu$ V/m at 3m)	Margin (dB)	Detector
27.12	--- <sup>Note</sup>	69.54	---	Peak

##### **Antenna at 90 Degree**

Test Frequency (MHz)	Test Result (dB $\mu$ V/m at 3m)	Limits (dB $\mu$ V/m at 3m)	Margin (dB)	Detector
27.12	--- <sup>Note</sup>	69.54	---	Peak

Note: All emissions are lower than the ambient level cannot be measured.

## 7.5.1.2. Frequency Range 30MHz ~ 1000MHz

**Antenna at Horizontal Polarization**

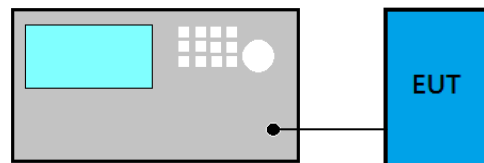
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
108.57	11.55	3.29	23.56	38.40	43.50	5.10	Peak
359.80	14.64	5.28	13.25	33.17	46.00	12.83	Peak
815.70	20.12	7.23	6.45	33.80	46.00	12.20	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
34.85	16.00	2.43	19.53	37.96	40.00	2.04	Peak
108.57	11.55	3.29	25.23	40.07	43.50	3.43	Peak
504.33	17.03	6.44	11.65	35.12	46.00	10.88	Peak

## 8. 20dB BANDWIDTH MEASUREMENT

### 8.1. Block Diagram of Test Setup



### 8.2. Specification Limits

The 20dB bandwidth shall be specified in operating frequency band.

### 8.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r02:

#### Option 2

- (1) Set RBW = 1% of Span.
- (2) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -20 dB to record the final bandwidth.

### 8.4. Test Results

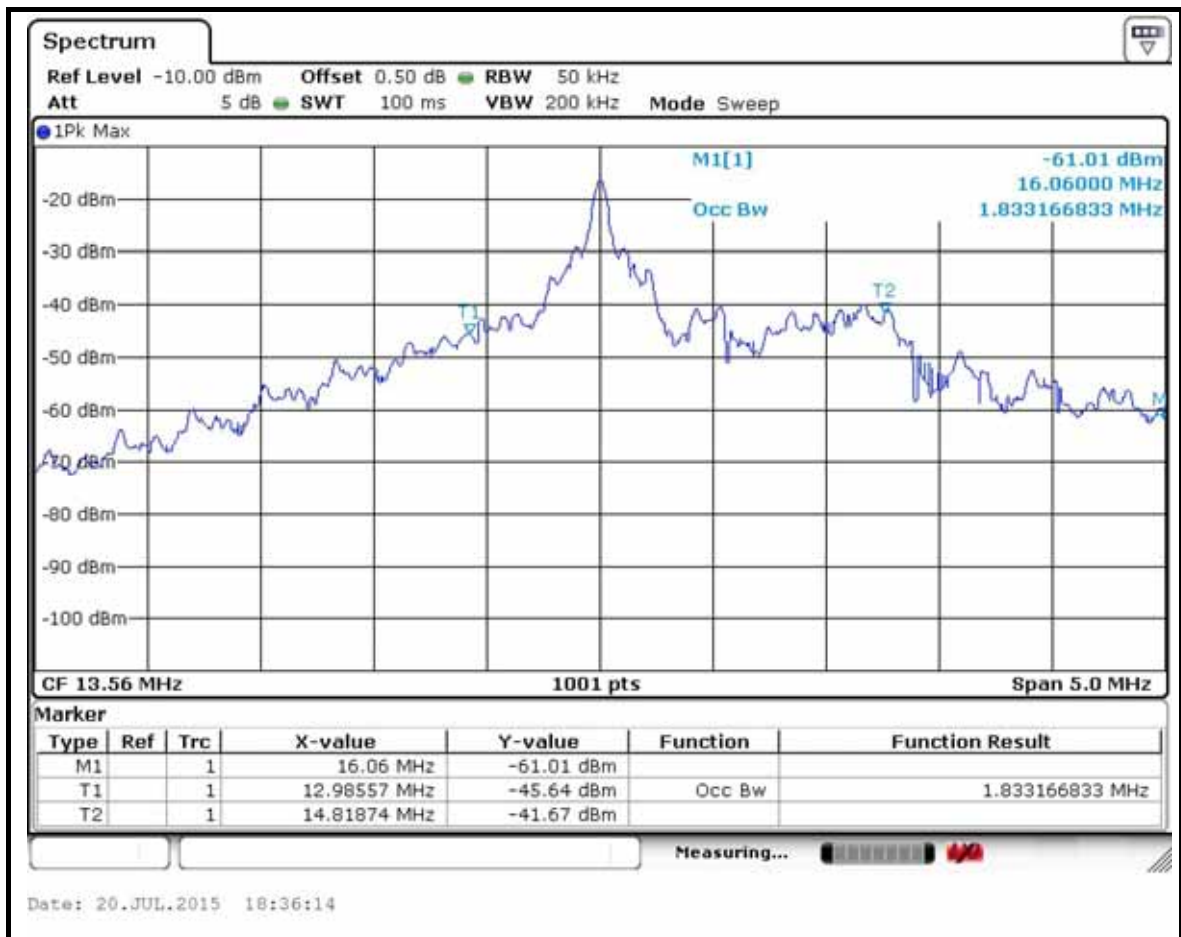
Test Date	2015/10/02	Temp./Hum.	24 /50%
Cable Loss	0.5dB	Test Voltage	DC 12V (Via AC Adaptor)

#### 8.4.1. 20dB Bandwidth Result

Centre Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	183.317

Note: Bandwidth=Mark 2-Mark 3=14.81874MHz-12.98557MHz=183.317kHz

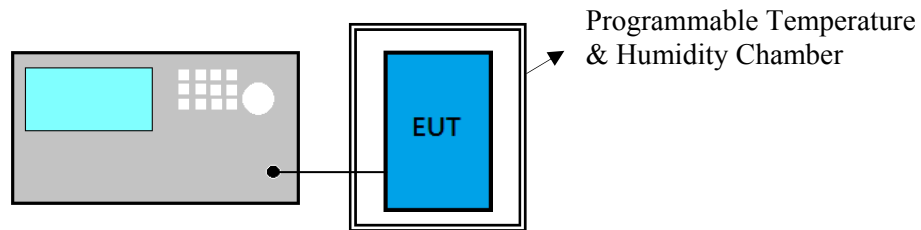
#### 8.4.2. Measurement Plots





## 9. FREQUENCY STABILITY MEASUREMENT

### 9.1. Block Diagram of Test Setup



### 9.2. Specification Limits

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  $20$  degree C.

### 9.3. Test Procedure

The device operating in the  $13.553$ - $13.567$  MHz shall maintain the carrier frequency within  $0.01\%$  of the operating frequency over the temperature variation of  $-20$  degrees to  $+50$  degree C at normal supply voltage.

#### 9.4. Test Results

Test Date	2015/10/02	Temp./Hum.	25 /62%
Cable Loss	0.5dB	Test Voltage	DC 12V (Via AC Adaptor)

##### Test Mode: 2 Minute

Temperature( )	-20	-10	0	10	20
Voltage	AC 120V	AC 120V	AC 120V	AC 120V	AC 138V
Frequency(MHz)	13.55920	13.55940	13.55972	13.55997	13.56041
Error (%)	-0.00590	0.00442	-0.00206	-0.00022	0.00302

Temperature( )	20	30	40	50	20
Voltage	AC 102V	AC 120V	AC 120V	AC 120V	AC 120V
Frequency(MHz)	13.55947	13.55958	13.55974	13.55986	13.56026
Error (%)	-0.00391	-0.00310	-0.00192	-0.00103	0.00192

##### Test Mode: 5 Minute

Temperature( )	-20	-10	0	10	20
Voltage	AC 120V	AC 120V	AC 120V	AC 120V	AC 138V
Frequency(MHz)	13.56042	13.55969	13.55964	13.55989	13.55996
Error (%)	0.00310	-0.00229	-0.00265	-0.00081	-0.00029

Temperature( )	20	30	40	50	20
Voltage	AC 102V	AC 120V	AC 120V	AC 120V	AC 120V
Frequency(MHz)	13.56005	13.55997	13.55945	13.55927	13.55957
Error (%)	0.00037	-0.00022	-0.00406	-0.00538	-0.00317

##### Test Mode: 10 Minute

Temperature( )	-20	-10	0	10	20
Voltage	AC 120V	AC 120V	AC 120V	AC 120V	AC 138V
Frequency(MHz)	13.55963	13.55933	13.55961	13.55952	13.55981
Error (%)	-0.00273	-0.00494	-0.00288	-0.00354	-0.00140

Temperature( )	20	30	40	50	20
Voltage	AC 102V	AC 120V	AC 120V	AC 120V	AC 120V
Frequency(MHz)	13.55958	13.56061	13.56014	13.55964	13.55982
Error (%)	-0.00310	0.00450	0.00103	-0.00265	-0.00133

## 10. DEVIATION TO TEST SPECIFICATIONS

**【NONE】**