

FCC Radio Test Report

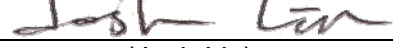
FCC ID: XHM-J640111

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

Project No. : 1508081
Equipment : POS
Model Name : Aures 640, J2 640
Applicant : FLYTECH Technology Co., Ltd.
Address : 1F, No. 168, Sing-Ai Rd., NeiHu District 11494,
Taipei, Taiwan

Date of Receipt : Aug. 06, 2015
Date of Test : Aug. 06, 2015 ~ Jan. 25, 2017
Issued Date : Feb. 06, 2017
Tested by : BTL Inc.

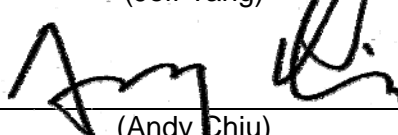
Testing Engineer

: 
(Josh Lin)

Technical Manager

: 
(Jeff Yang)

Authorized Signatory

: 
(Andy Chiu)

B T L I N C .

B1, No. 37, Lane 365, Yang-guang St.,
Nei-hu District, Taipei City 114, Taiwan.
TEL:+886-2-2657-3299 FAX: +886-2- 2657-3331

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL's** authorized written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

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.

Table of Contents

REPORT ISSUED HISTORY	5
1 CERTIFICATION	6
2 SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3 GENERAL INFORMATION	9
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	10
3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
3.4 DESCRIPTION OF SUPPORT UNITS	11
4 CONDUCTED EMISSION	12
4.1 LIMITS	12
4.2 TEST PROCEDURES	12
4.3 TEST SETUP LAYOUT	13
4.4 DEVIATION FROM TEST STANDARD	13
4.5 EUT OPERATING CONDITIONS	13
4.6 EUT TEST CONDITIONS	13
4.7 TEST RESULTS	13
5 RADIATED EMISSION	14
5.1 LIMITS	14
5.2 TEST PROCEDURE	15
5.3 DEVIATION FROM TEST STANDARD	16
5.4 TEST SETUP	16
5.5 EUT OPERATING CONDITIONS	16
5.6 EUT TEST CONDITIONS	17
5.7 TEST RESULTS (BELOW 30MHZ) - FCC PART 15.209	17
5.8 TEST RESULTS - (30-1000MHZ) - FCC PART 15.209	17
5.9 TEST RESULTS- FCC PART 15.225	17
6 FREQUENCY STABILITY	18
6.1 LIMITS	18
6.2 TEST PROCEDURE	18
6.3 DEVIATION FROM TEST STANDARD	18
6.4 EUT OPERATING CONDITIONS	18
6.5 EUT TEST CONDITIONS	18
6.6 TEST RESULTS	18
7 20 DB BANDWIDTH	19
7.1 LIMITS	19
7.2 TEST PROCEDURE	19

Table of Contents

7.3	DEVIATION FROM TEST STANDARD	19
7.4	TEST SETUP	19
7.5	EUT OPERATING CONDITIONS	19
7.6	EUT TEST CONDITIONS	19
7.7	TEST RESULTS	19
8 .	MEASUREMENT INSTRUMENTS LIST	20
9	EUT TEST PHOTO	21
	ATTACHMENT A - CONDUCTED EMISSION	24
	ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)	27
	ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	29
	ATTACHMENT D - RADIATED EMISSION (FCC PART 15.225)	32
	ATTACHMENT E - FREQUENCY STABILITY MEASUREMENT	35
	ATTACHMENT F - 20 DB BANDWIDTH	37

REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
BTL-FCCP-1-1508081	Original Issue.	Feb. 06, 2017

1 CERTIFICATION

Equipment : POS
Brand Name : FLYTECH
Model Name : Aures 640, J2 640
Applicant : FLYTECH Technology Co., Ltd.
Manufacturer : FLYTECH Technology Co., Ltd.
Address : 1F, No. 168, Sing-Ai Rd., NeiHu District 11494, Taipei, Taiwan
Factory : FLYTECH TECHNOLOGY CO., LTD.
Address : No.36 Huaya 3rd Rd., Guishan Township, Taoyuan Country 33383,Taiwan
Date of Test : Aug. 06, 2015 ~ Jan. 25, 2017
Test Sample : Engineering Sample
Standards : FCC Part 15, Subpart C: 2014
ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc..

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1508081) 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).

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
15.215(c)	20 dB bandwidth	PASS
15.203	Antenna Requirement	PASS

NOTE:

1. **N/A**: denotes test is not applicable in this Test Report

2.1 TEST FACILITY

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

Conducted emission Test:

C05: (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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 $y \pm U$, 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. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{CISPR} requirement.

A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	2.04

B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB08	CISPR	9kHz ~ 150kHz	4.00
		150kHz ~ 30MHz	4.00

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
CB08	CISPR	30MHz ~ 200MHz	V	3.06
		30MHz ~ 200MHz	H	2.58
		200MHz ~ 1,000MHz	V	3.50
		200MHz ~ 1,000MHz	H	3.10

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} .

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	POS	
Brand Name	FLYTECH	
Model Name	Aures 640, J2 640	
OEM Brand/Model Name	N/A	
Model Difference	For marketing purpose.	
Product Description	Operation Frequency	13.56 MHz
	Antenna Designation	LOOP Antenna
Power Source	DC Voltage supplied from AC/DC adapter. Brand/Model: DELTA / ADP-65JH HB	
Power Rating	I/P: 100-240V~ 1.5A 50-60Hz O/P: DC 19V 3.42A	

Note:

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

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	13.56MHz Transmit

Conducted emission test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

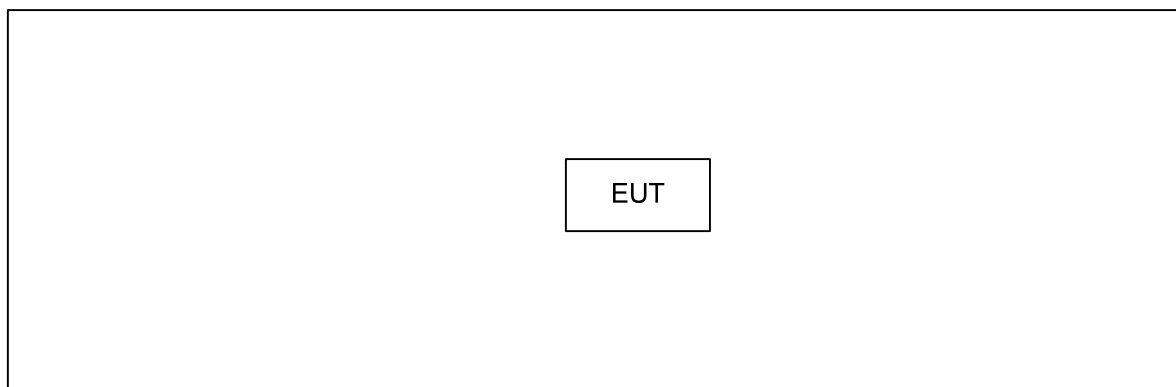
Radiated emission test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

Frequency Stability test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

20 dB Bandwidth test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

Antenna Requirement test	
Final Test Mode	Description
Mode 1	13.56MHz Transmit

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
-	-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

Note:

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

4 CONDUCTED EMISSION

4.1 LIMITS

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

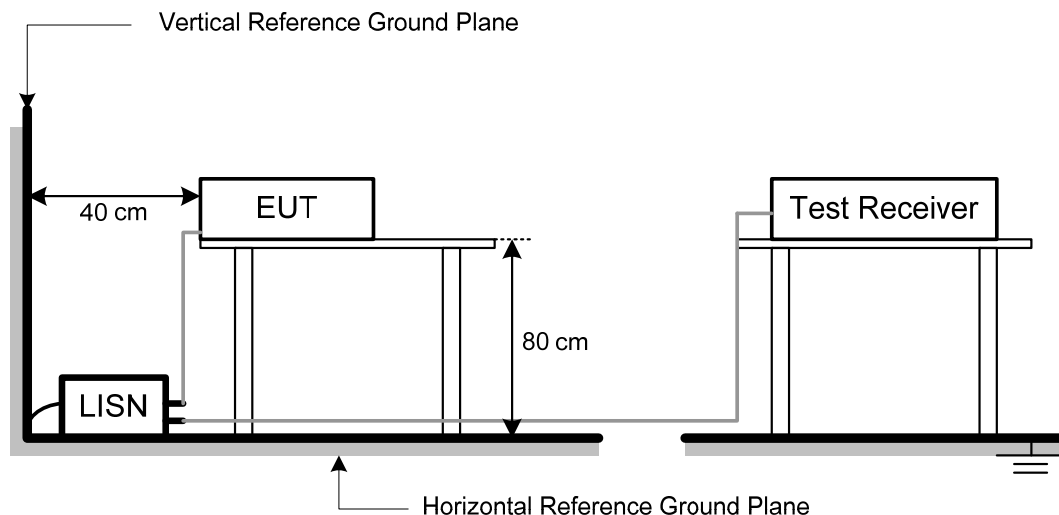
4.2 TEST PROCEDURES

- 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.

4.3 TEST SETUP LAYOUT



4.4 DEVIATION FROM TEST STANDARD

No deviation

4.5 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.

4.6 EUT TEST CONDITIONS

Temperature: 24°C

Relative Humidity: 60%

Test Voltage: AC 120V/60Hz

4.7 TEST RESULTS

Please refer to the Attachment A.

Remark

- (1) 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.
- (2) Measuring frequency range from 150KHz to 30MHz.

5 RADIATED EMISSION

5.1 LIMITS

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
13.410 – 13.553 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
- (5) The field strength of any emissions appearing outside of the 13.110-14.010MHz band shall not exceed the general radiated emission limits in Part 15.209

5.2 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. 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.
- c. 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.
- d. 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.
- e. 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)

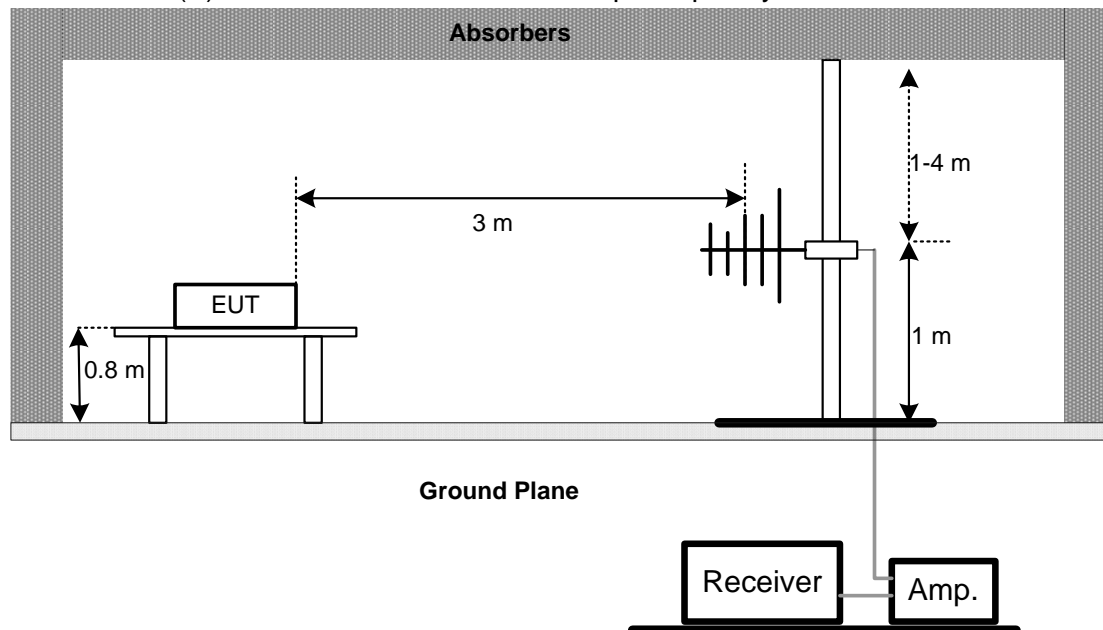
- a. Spectrum Setting:
 - 9 KHz – 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms.
 - 150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.
 - 30 MHz – 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
- b. All readings are Peak unless otherwise stated QP in column of Note. Peak 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.

5.3 DEVIATION FROM TEST STANDARD

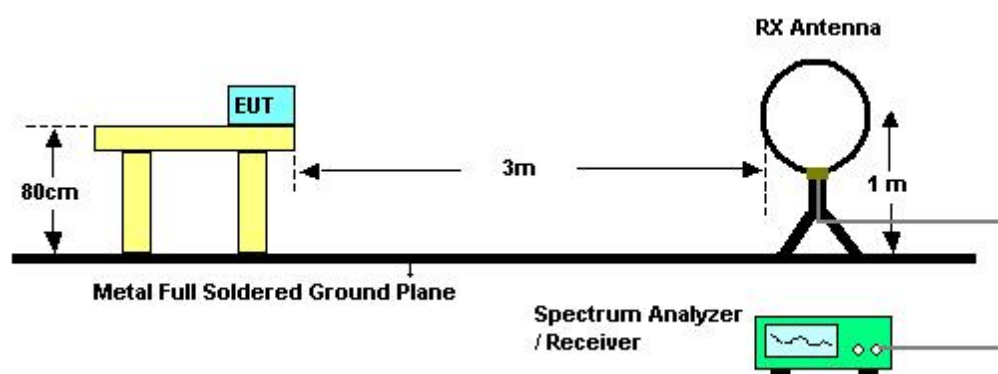
No deviation

5.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) For radiated emissions below 30MHz



5.5 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.

5.6 EUT TEST CONDITIONS

Temperature: 24°C

Relative Humidity: 60%

Test Voltage: AC 120V/60Hz

5.7 TEST RESULTS (BELOW 30MHZ) - FCC PART 15.209

Please refer to the Attachment B.

5.8 TEST RESULTS - (30-1000MHZ) - FCC PART 15.209

Please refer to the Attachment C.

5.9 TEST RESULTS- FCC PART 15.225

Please refer to the Attachment D.

6 FREQUENCY STABILITY

6.1 LIMITS

FCC Part 15.225(e)
<p>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.</p> <p>For battery operated equipment, the equipment tests shall be performed using a new battery.</p>

6.2 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.

6.3 DEVIATION FROM TEST STANDARD

No deviation

6.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.5**. Unless otherwise a special operating condition is specified in the follows during the testing.

6.5 EUT TEST CONDITIONS

Temperature: 23°C
Relative Humidity: 62%
Test Voltage: AC 120V/60Hz

6.6 TEST RESULTS

Please refer to the Attachment E.

7 20 DB BANDWIDTH

7.1 LIMITS

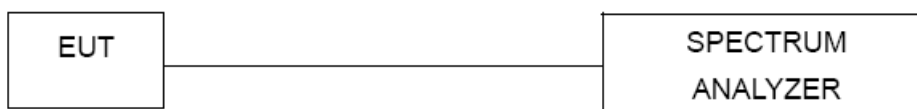
FCC Part 15.215(c)		
Item	Frequency Range (MHz)	Result
20 dB Bandwidth	13.56	PASS

7.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW=100KHz, VBW=100KHz, Sweep time = Auto.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RBW	100 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.3 DEVIATION FROM TEST STANDARD



7.4 TEST SETUP

No deviation

7.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.5** unless otherwise a special operating condition is specified in the follows during the testing.

7.6 EUT TEST CONDITIONS

Temperature: 22°C
 Relative Humidity: 66%
 Test Voltage: AC 120V/60Hz

7.7 TEST RESULTS

Please refer to the Attachment F.

8. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 26, 2017
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 13, 2017
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 09, 2016
4	Power Dividers	HP	11636A	8103	May 03, 2017
5	Measurement Software	EZ	EZ EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 05, 2018
2	Microflex Cable	Harbour industries	27478LL142	1m	Apr. 12, 2017
3	Test Cable	LMR	LMR-400	10m	May 11, 2017
4	Test Cable	LMR	LMR-400	3m	May 11, 2017
5	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 15, 2017
6	Log-Bicon Antenna	Schwarzbeck	VULB9168-35 2	9168-352	Jul. 29, 2017
7	Loop Antenna	EMCO	6502	00042960	Nov. 14, 2017

20 dB Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 05, 2018

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 05, 2018

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

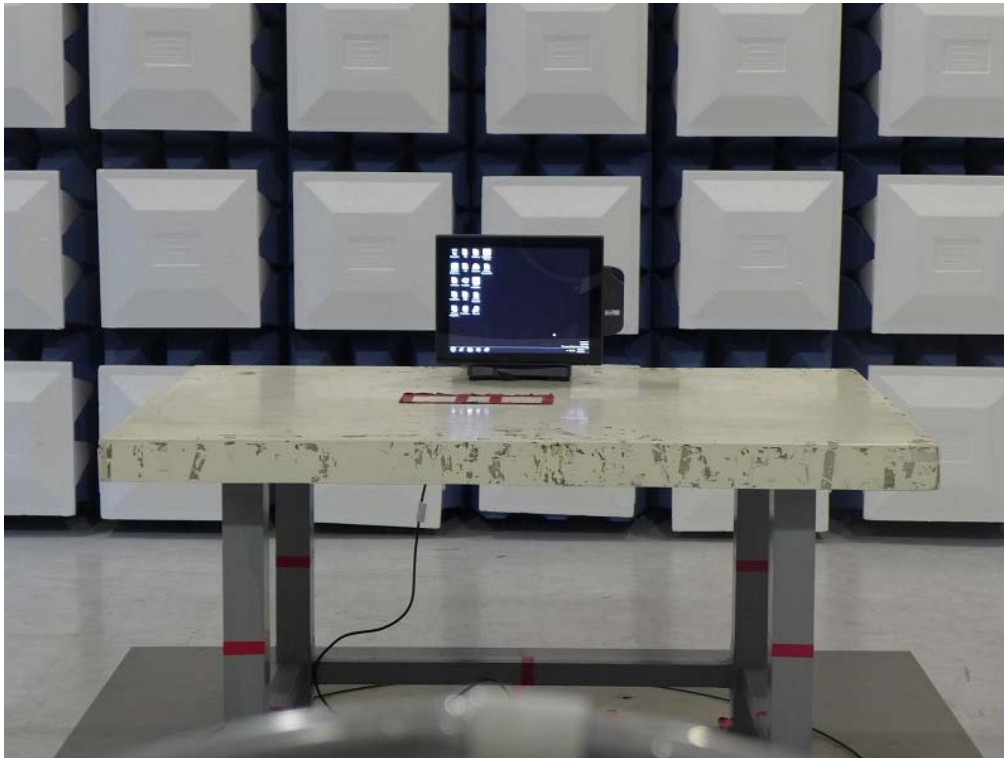
9 EUT TEST PHOTO

Conducted emission test photos



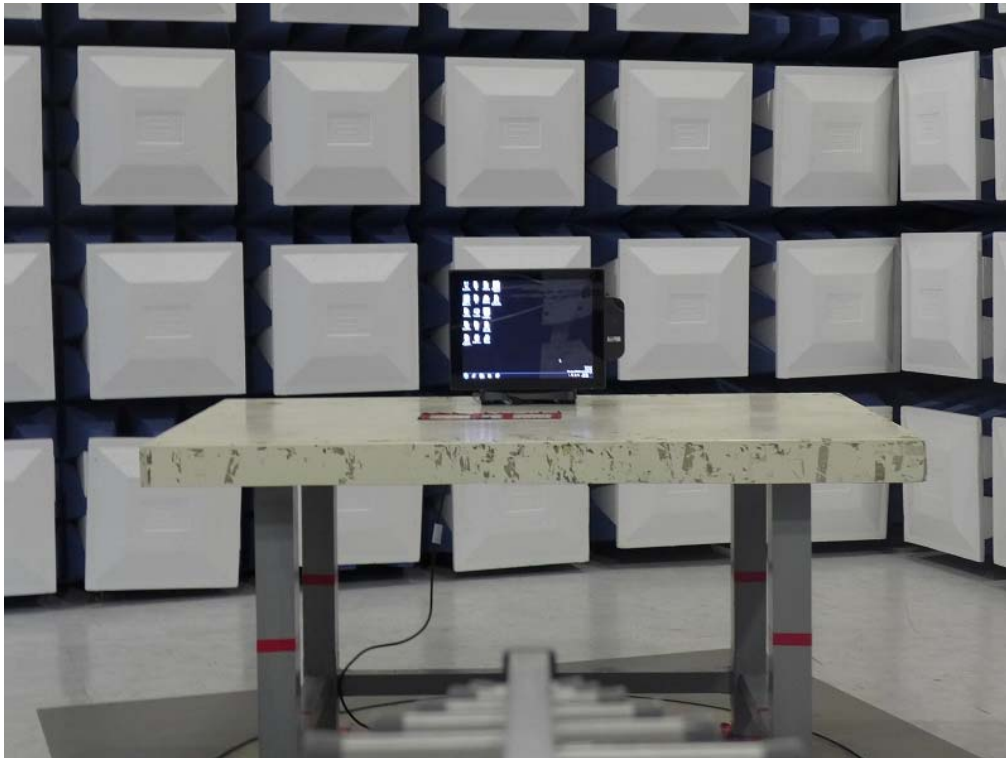
Radiated emission test photos

9KHz to 30MHz



Radiated emission test photos

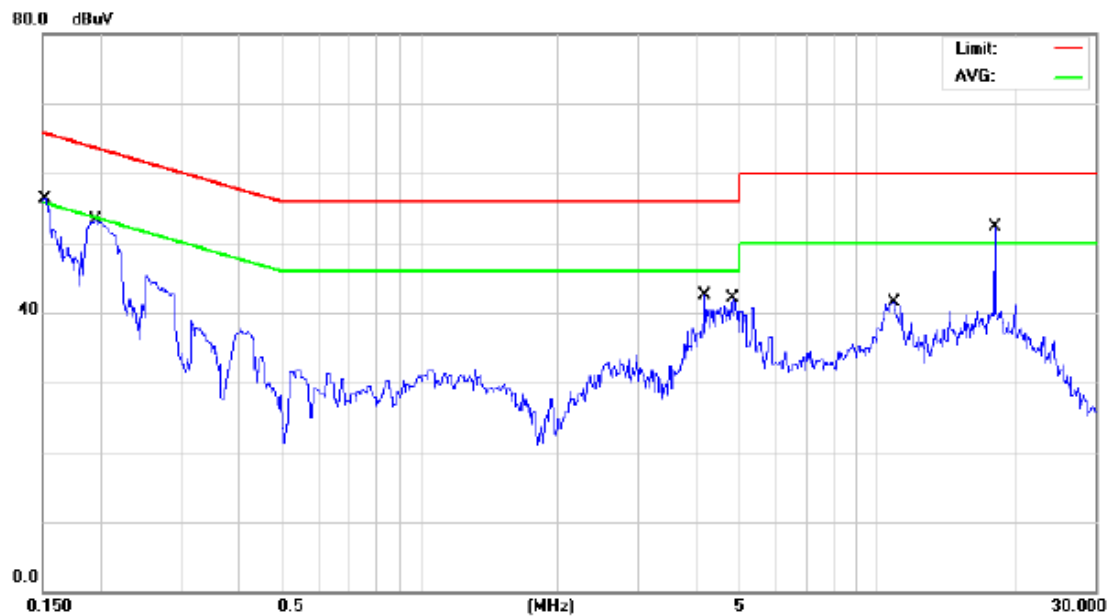
30MHz to 1000MHz



ATTACHMENT A - CONDUCTED EMISSION

Test Mode : 13.56MHz Transmit

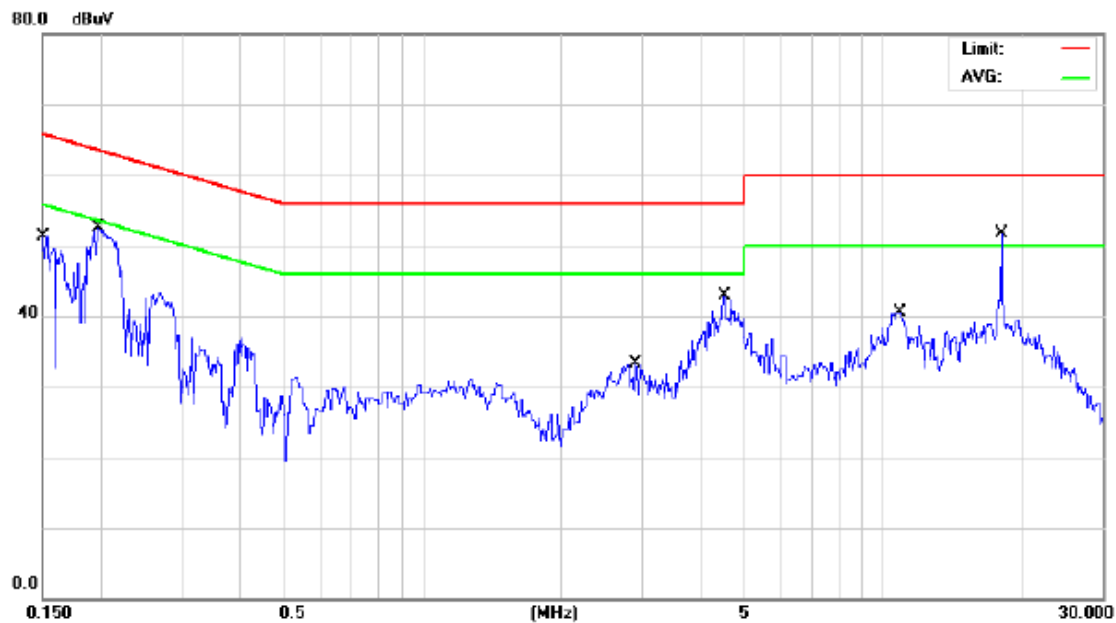
Line



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1514	44.10	9.64	53.74	65.92	-12.18	QP	
2	0.1514	18.40	9.64	28.04	55.92	-27.88	AVG	
3	0.1955	43.80	9.63	53.43	63.80	-10.37	QP	
4	0.1955	23.10	9.63	32.73	53.80	-21.07	AVG	
5	4.1989	23.70	9.82	33.52	56.00	-22.48	QP	
6	4.1989	12.00	9.82	21.82	46.00	-24.18	AVG	
7	4.8110	25.00	9.85	34.85	56.00	-21.15	QP	
8	4.8110	12.00	9.85	21.85	46.00	-24.15	AVG	
9	10.8000	25.50	9.90	35.40	60.00	-24.60	QP	
10	10.8000	16.20	9.90	26.10	50.00	-23.90	AVG	
11	18.0000	41.20	9.84	51.04	60.00	-8.96	QP	
12 *	18.0000	37.40	9.84	47.24	50.00	-2.76	AVG	

Test Mode :	13.56MHz Transmit
-------------	-------------------

Neutral



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1500	39.60	9.63	49.23	65.99	-16.76	QP	
2	0.1500	17.80	9.63	27.43	55.99	-28.56	AVG	
3	0.1969	40.20	9.63	49.83	63.74	-13.91	QP	
4	0.1969	22.60	9.63	32.23	53.74	-21.51	AVG	
5	2.8939	16.90	9.76	26.66	56.00	-29.34	QP	
6	2.8939	6.90	9.76	16.66	46.00	-29.34	AVG	
7	4.5049	23.60	9.82	33.42	56.00	-22.58	QP	
8	4.5049	11.60	9.82	21.42	46.00	-24.58	AVG	
9	10.8000	24.90	9.90	34.80	60.00	-25.20	QP	
10	10.8000	15.60	9.90	25.50	50.00	-24.50	AVG	
11	18.0000	40.90	9.85	50.75	60.00	-9.25	QP	
12 *	18.0000	37.30	9.85	47.15	50.00	-2.85	AVG	

ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)

Test Mode :	13.56MHz Transmit
-------------	-------------------

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0147	0°	33.85	22.28	56.13	104.26	-48.13	AVG
0.0147	0°	43.28	22.28	65.56	124.26	-58.70	PK
0.0254	0°	27.25	22.02	49.27	99.51	-50.24	AVG
0.0254	0°	32.54	22.02	54.56	119.51	-64.95	PK
0.0468	0°	24.86	21.48	46.34	94.20	-47.86	AVG
0.0468	0°	33.14	21.48	54.62	114.20	-59.58	PK
0.0721	0°	26.28	21.05	47.33	90.45	-43.12	AVG
0.0721	0°	34.48	21.05	55.53	110.45	-54.92	PK
1.3540	0°	32.21	20.25	52.46	64.97	-12.52	QP
1.6800	0°	32.85	19.92	52.77	63.10	-10.33	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
0.0165	90°	36.24	22.24	58.48	103.25	-44.78	AVG
0.0165	90°	43.21	22.24	65.45	123.25	-57.81	PK
0.0210	90°	27.84	22.13	49.97	101.16	-51.19	AVG
0.0210	90°	34.58	22.13	56.71	121.16	-64.45	PK
0.0428	90°	26.72	21.58	48.30	94.98	-46.68	AVG
0.0428	90°	31.25	21.58	52.83	114.98	-62.15	PK
0.0690	90°	25.34	21.10	46.44	90.83	-44.39	AVG
0.0690	90°	33.28	21.10	54.38	110.83	-56.45	PK
1.6400	90°	32.68	19.96	52.64	63.31	-10.67	QP
1.7620	90°	32.18	19.84	52.02	69.54	-17.52	QP

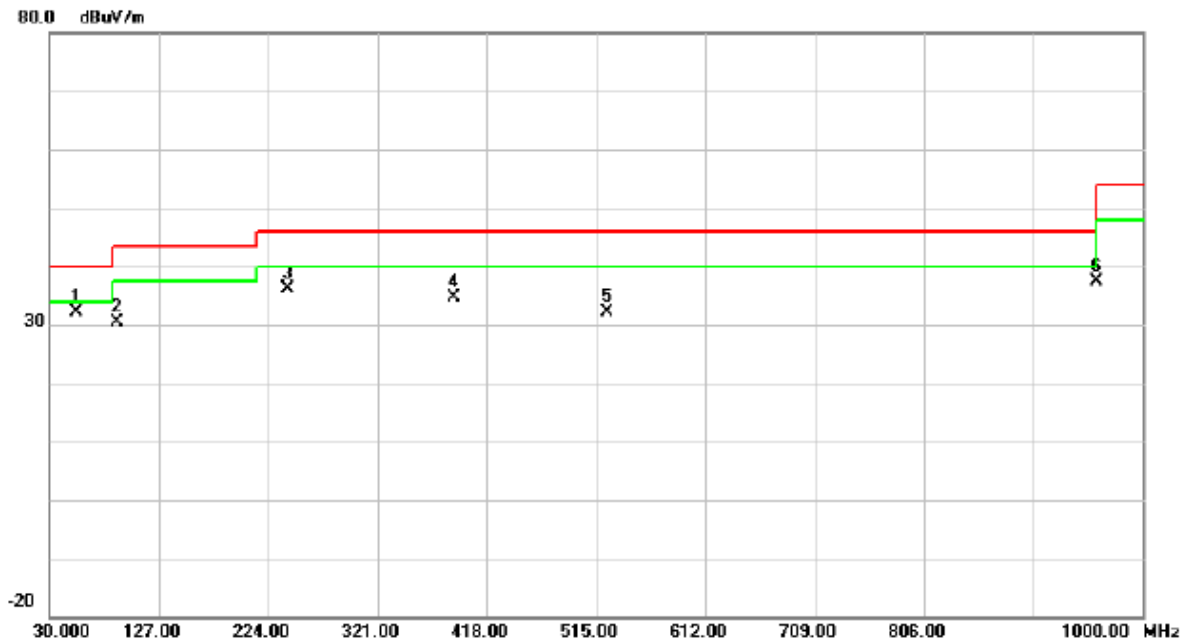
Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported. ◦
- (2) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB); ◦
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor. ◦

ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode: 13.56MHz Transmit

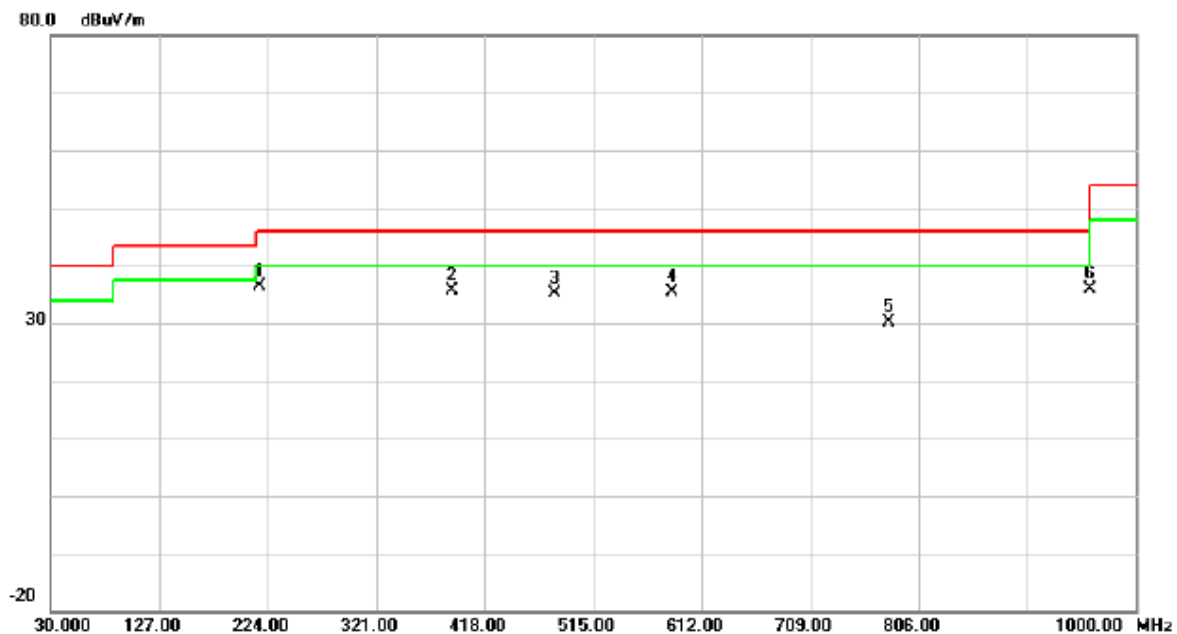
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	54.2500	46.11	-13.92	32.19	40.00	-7.81	peak	
2		90.6250	50.73	-20.24	30.49	43.50	-13.01	peak	
3		240.9750	51.33	-15.25	36.08	46.00	-9.92	peak	
4		388.9000	46.11	-11.45	34.66	46.00	-11.34	peak	
5		524.7000	40.92	-8.81	32.11	46.00	-13.89	peak	
6		958.7750	39.11	-1.79	37.32	46.00	-8.68	peak	

Test Mode: 13.56MHz Transmit

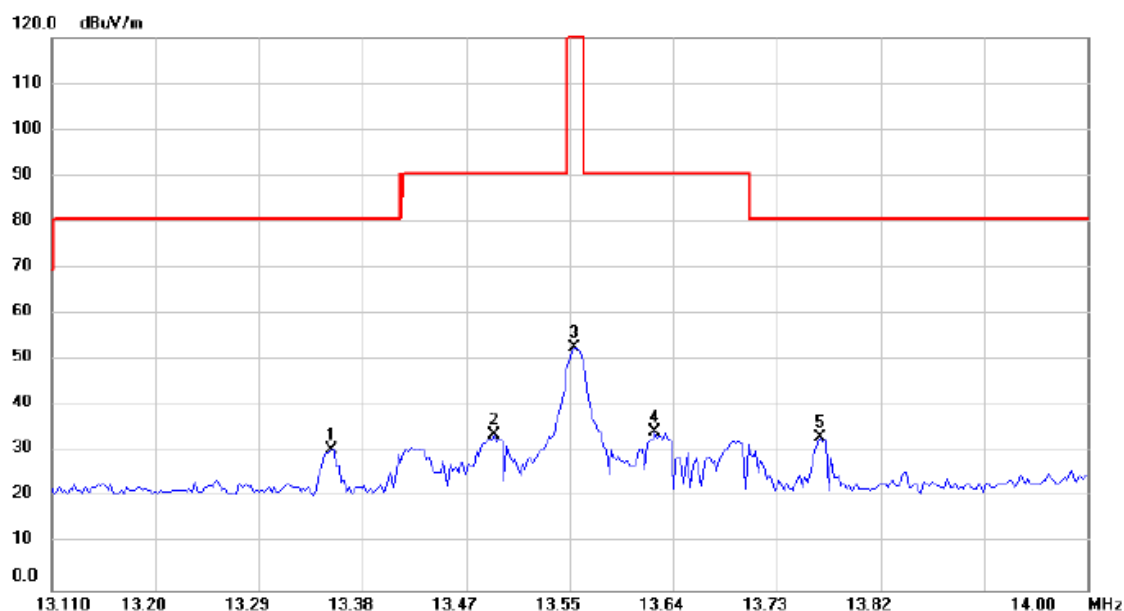
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	216.7250	52.92	-16.63	36.29	46.00	-9.71	peak	
2		388.9000	47.03	-11.45	35.58	46.00	-10.42	peak	
3		481.0500	44.74	-9.55	35.19	46.00	-10.81	peak	
4		585.3250	42.92	-7.46	35.46	46.00	-10.54	peak	
5		779.3250	34.36	-4.29	30.07	46.00	-15.93	peak	
6		958.7750	37.66	-1.79	35.87	46.00	-10.13	peak	

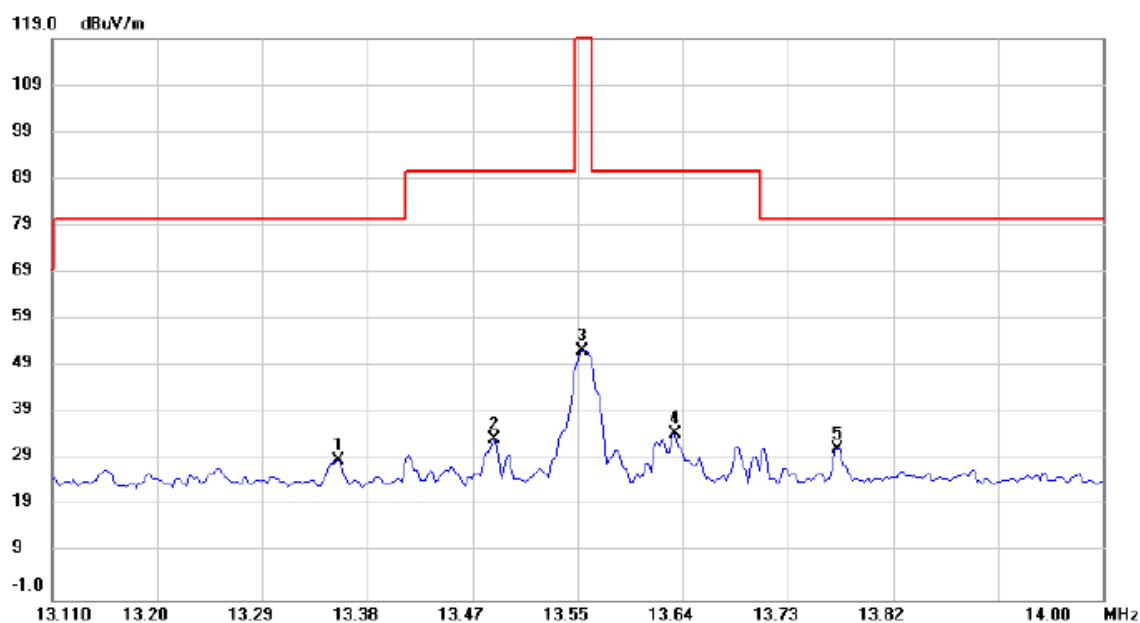
ATTACHMENT D - RADIATED EMISSION (FCC PART 15.225)

Test Mode 13.56MHz Transmit- Open



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		13.3503	19.10	11.48	30.58	80.50	-49.92	peak	
2		13.4902	22.13	11.47	33.60	90.50	-56.90	peak	
3		13.5595	41.16	11.46	52.62	124.00	-71.38	peak	
4		13.6282	22.94	11.46	34.40	90.50	-56.10	peak	
5	*	13.7706	21.72	11.44	33.16	80.50	-47.34	peak	

Test Mode 13.56MHz Transmit- Close



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		13.3524	17.30	11.48	28.78	80.50	-51.72	peak	
2		13.4838	21.92	11.47	33.39	90.50	-57.11	peak	
3		13.5595	40.93	11.46	52.39	124.00	-71.61	peak	
4		13.6372	23.12	11.46	34.58	90.50	-55.92	peak	
5	*	13.7751	19.83	11.44	31.27	80.50	-49.23	peak	

ATTACHMENT E - FREQUENCY STABILITY MEASUREMENT

Test Mode:	13.56MHz Transmit
------------	-------------------

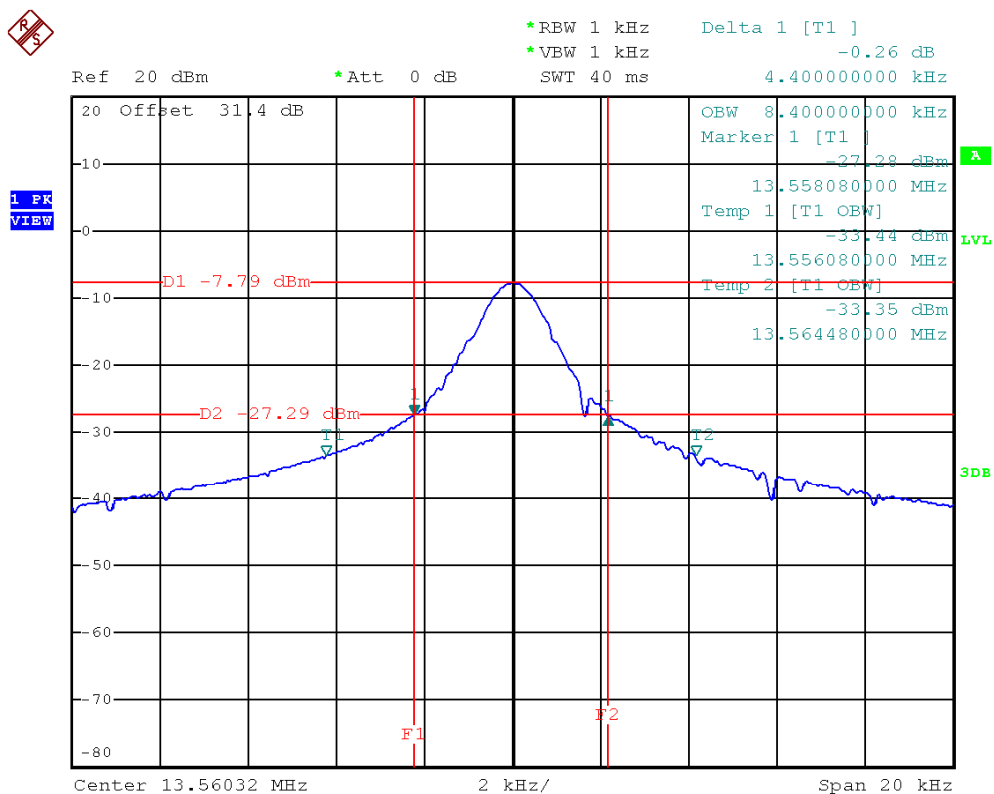
Frequency Stability Versus Environmental Temperature						
	Temperature (°C)	Voltage (AC)	Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
	20	120V	13.5603	-	-	-
0 min	50	120V	13.5606	0.0006	+/- 1.356	PASS
	-20	120V	13.5602	0.0002	+/- 1.356	PASS
2 min	50	120V	13.5606	0.0006	+/- 1.356	PASS
	-20	120V	13.5602	0.0002	+/- 1.356	PASS
5 min	50	120V	13.5604	0.0004	+/- 1.356	PASS
	-20	120V	13.5601	0.0001	+/- 1.356	PASS
10 min	50	120V	13.5604	0.0004	+/- 1.356	PASS
	-20	120V	13.5601	0.0001	+/- 1.356	PASS

Frequency Stability Versus Input Voltage						
Temperature (°C)	Voltage (AC)		Frequency (MHz)	Frequency Error (kHz)	Limit (kHz)	Result
20	V-nom	120	13.5603	-	-	-
-35	V-min	102	13.5603	0.0003	+/- 1.356	PASS
85	V-max	138	13.5603	0.0003	+/- 1.356	PASS

ATTACHMENT F - 20 DB BANDWIDTH

Test Mode:	13.56MHz Transmit
------------	-------------------

Frequency (MHz)	20 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Test Result
13.56	4.40	8.40	Pass



Date: 25.JAN.2017 16:56:52