CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart C
and
Canada RSS-210

Report No.: 14-02-MAS-044-02

Client:	JET OPTOELECTRONICS CO., LTD.
Product:	ACTIVE RSE MONITOR-10.1 PREM
Model:	ATM1020
FCC ID:	Z3KATM1020AAJ
IC ID:	9930A-ATM1020AAJ
Manufacturer/supplier:	JET OPTOELECTRONICS CO., LTD.

Date test item received:	2014/02/11
Date test campaign completed:	2014/02/21
Date of issue:	2014/02/21

Total number of pages of this test report: 34 pages

Total number of pages of photos: External photos 3 pages
Internal photos 12 pages
Setup photos 1 pages

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Client	: JET OPTOELECTRONICS CO., LTD.
Address	: 3F., No.300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan,R.O.C
Manufacturer	: JET OPTOELECTRONICS CO., LTD.
Address	: 3F., No.300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan,R.O.C
EUT	: ACTIVE RSE MONITOR-10.1 PREM
Trade name	: ATOM
Model No.	: ATM1020
Power Source	: 13.5V dc
Regulations applied	: FCC 47 CFR, Part 15 Subpart C Canada RSS-210 Issue 8 / RSS-Gen Issue 3

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

① ISO9001: TüV Product Service

② ISO/IEC 17025: BSMI, TAF, NCC, NVLAP, ILAC MRA, UL, Compliance

③ Filing: FCC, Industry Canada, VCCI

④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF

⑤ FCC Registration Number: 91095, 392735, 278818

⑥ Industry Canada Site Registration Number: IC 2949A-2

NVLAP Lab Code 200133-0

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1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : ACTIVE RSE MONITOR-10.1 PREM
b) Model No. : ATM1020
c) FCC ID : Z3KATM1020AAJ
d) IC ID : 9930A-ATM1020AAJ
e) Working Frequency : 88.3 ~ 107.7 MHz

1.2 Characteristics of Device:

CAR DVD player & HDMI Video/Audio monitor with FM transmitter.

1.3 Test Methodology

Both Conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4 (2003).
The equipment under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, the circuit rewired by the manufacturer to affect its intended operation. The receiving antenna was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the equipment transmitter under test.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

1.5 Test Summary

Requirement	FCC Paragraph #	IC RSS-210 Paragraph #	IC RSS-Gen Paragraph #	Test Pass
Radiated Emission	15.239(b)(c)&15.209	A2.8	7.2.5	☒
Bandwidth of Emission	15.239(a)	A2.8	N/A	☒
Conducted Emission	15.207	N/A	7.2.4	N/A

2. DEFINITION AND LIMITS

2.1 Definition

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Remark "**" : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.3 Limitation

(1) Conducted Emission Limits :

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the conducted limit is the following:

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

(2) Bandwidth Emission Limits:

According to 15.239(a), Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

(3) Radiated Emission Limits :

According to 15.239 (b), The field strength of any emissions within the permitted 200kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

According to 15.239 (c), the field strength of emissions appearing within the Restricted Bands shield not exceed. The general radiated limits in 15.209, as following table:

Frequenciey (MHz)	Field Strength		Measurement Distance (meters)
	μV/meter	dBμV/meter	
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

For intentional radiator device, according to §15.209(a), the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

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

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

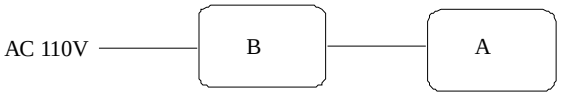
The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To comply with the FCC RF exposure compliance requirement, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

3. SYSTEM TEST CONFIGURATION

3.1 Devices for Tested System

No	Device	Manufacture	Model No.	Cable Description
A	ACTIVE RSE MONITOR-10.1 PREM*	JET OPTOELECTRONICS CO., LTD.	ATM1020	2.5m*1 Unshielded Signal Line 0.60m*1 Unshielded Signal Line/Antenna
B	DC Power Supply	GW	GPS-3030D	1.8m*1 Unshielded power Line 3.0m*1 Unshielded Signal Line



Remark : "*" means equipment under test.

3.2 Selection of The Audio Input Signal

A 2.5 kHz tone at a level:

☐	16dB higher than that required to produce a frequency deviation of 75 kHz
☒	Higher than 50% of the manufacturer's rated deviation 50% of the manufacturer's rated deviation: $\frac{92.1kHz}{2} = 46.05kHz$

4. RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For periodic operation intentional radiator, the radiated emission shall comply with § 15.239(b)&15.239(c).

4.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 1 : Frequencies measured below 1 GHz configuration

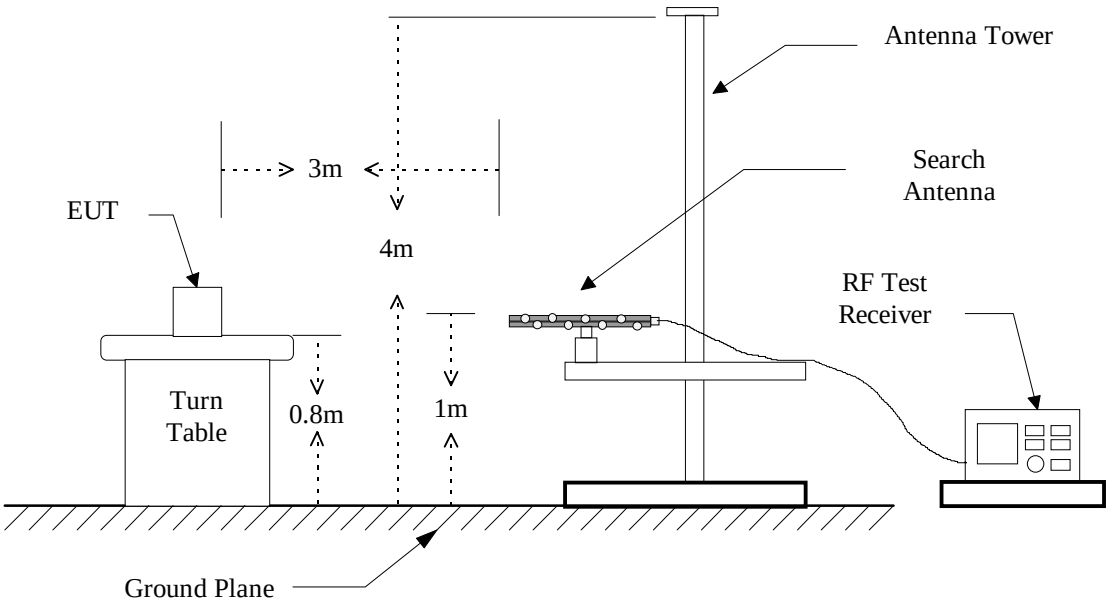
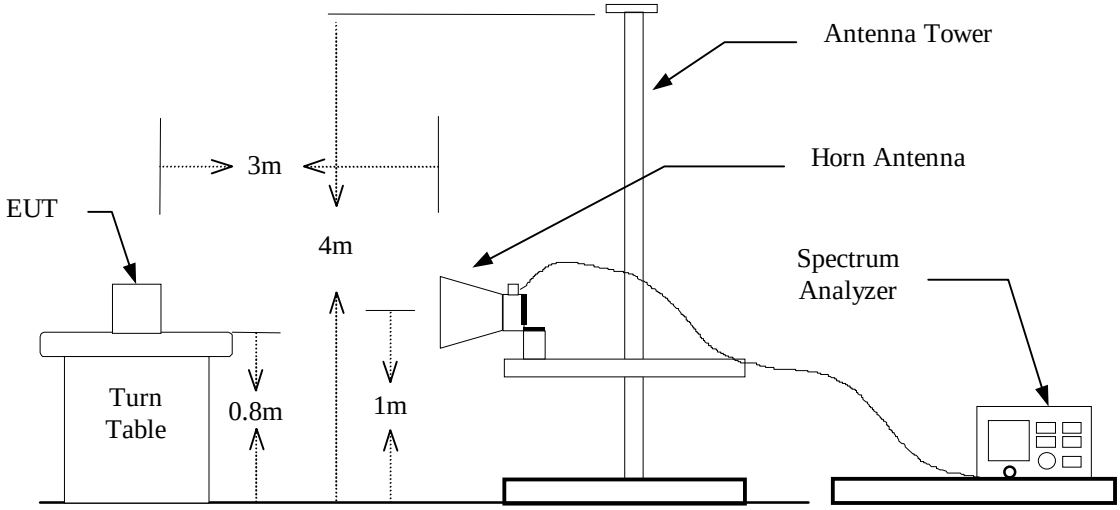


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Test Data

4.3.1 Fundamental and Harmonic

4.3.1.1 Operated mode : Tx，88.300 MHz

Test Date : Feb. 12, 2014 Temperature : 18 ℃ Humidity : 62%

Frequency	Reading @3m (dBuV/m)		Ant Pol	Correct Factor	Result @3m (dBuV/m)		Result @3m (uV/m)		Limit @3m (uV/m)		Margin
(MHz)	Peak	AVG	H/V	(dB)	Peak	AVG	Peak	AVG	Peak	AVG	(uV/m)
88.300	39.3	33.3	H	10.20	49.5	43.5	298.5	149.6	2500.0	250.0	-100.4
88.300	36.1	31.5	V	10.20	46.3	41.7	206.5	121.6	2500.0	250.0	-128.4

Frequency	Reading @3m (dBuV/m)	Ant Pol	Correct Factor	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin
(MHz)	Peak/QP	H/V	(dB)	Peak/QP	QP	(dB)
176.600	----	H	11.49	----	43.5	----
176.600	----	V	11.49	----	43.5	----
264.900	----	H	15.64	----	46.0	----
264.900	----	V	15.64	----	46.0	----
353.200	----	H	17.74	----	46.0	----
353.200	----	V	17.74	----	46.0	----
441.500	----	H	19.68	----	46.0	----
441.500	----	V	19.68	----	46.0	----
529.800	----	H	21.37	----	46.0	----
529.800	----	V	21.37	----	46.0	----
618.100	----	H	22.51	----	46.0	----
618.100	----	V	22.51	----	46.0	----
706.400	----	H	23.14	----	46.0	----
706.400	----	V	23.14	----	46.0	----
794.700	----	H	24.27	----	46.0	----
794.700	----	V	24.27	----	46.0	----
883.000	----	H	25.43	----	46.0	----
883.000	----	V	25.43	----	46.0	----

Note:

1. Peak Result =Peak Reading + Correct Factor

2. AVG Result = AVG Reading + Correct Factor

3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.

4. Remark "----" means that there is no emission to be measured.

4.3.1.2 Operated mode : Tx，98.100 MHz

Test Date : Feb. 12, 2014 Temperature : 18 ℃ Humidity : 62%

Frequency	Reading @3m (dBuV/m)		Ant Pol	Correct Factor	Result @3m (dBuV/m)		Result @3m (uV/m)		Limit @3m (uV/m)		Margin
(MHz)	Peak	AVG	H/V	(dB)	Peak	AVG	Peak	AVG	Peak	AVG	(uV/m)
98.100	35.2	30.1	H	11.94	47.1	42.0	226.5	125.9	2500.0	250.0	-124.1
98.000	38.3	32.2	V	11.92	50.2	44.1	323.6	160.3	2500.0	250.0	-89.7

Frequency	Reading @3m (dBuV/m)	Ant Pol	Correct Factor	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin
(MHz)	Peak/QP	H/V	(dB)	Peak/QP	QP	(dB)
196.200	----	H	11.51	----	43.5	----
196.200	----	V	11.51	----	43.5	----
294.300	----	H	15.85	----	46.0	----
294.300	----	V	15.85	----	46.0	----
392.400	----	H	18.89	----	46.0	----
392.400	----	V	18.89	----	46.0	----
490.500	----	H	20.57	----	46.0	----
490.500	----	V	20.57	----	46.0	----
588.600	----	H	22.14	----	46.0	----
588.600	----	V	22.14	----	46.0	----
686.700	----	H	23.02	----	46.0	----
686.700	----	V	23.02	----	46.0	----
784.800	----	H	24.18	----	46.0	----
784.800	----	V	24.18	----	46.0	----
882.900	----	H	25.43	----	46.0	----
882.900	----	V	25.43	----	46.0	----
981.000	----	H	26.42	----	54.0	----
981.000	----	V	26.42	----	54.0	----

Note:

1. Peak Result =Peak Reading + Correct Factor

2. AVG Result = AVG Reading + Correct Factor

3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.

4. Remark "----" means that there is no emission to be measured.

4.3.1.3 Operated mode : Tx，107.700 MHz

Test Date : Feb. 12, 2014 Temperature : 18 ℃ Humidity : 62%

Frequency	Reading @3m (dBuV/m)		Ant Pol	Correct Factor	Result @3m (dBuV/m)		Result @3m (uV/m)		Limit @3m (uV/m)		Margin
(MHz)	Peak	AVG	H/V	(dB)	Peak	AVG	Peak	AVG	Peak	AVG	(uV/m)
107.700	26.8	20.7	H	13.32	40.1	34.0	101.2	50.1	2500.0	250.0	-199.9
107.700	37.8	32.4	V	13.32	51.1	45.7	358.9	192.8	2500.0	250.0	-57.2

Frequency	Reading @3m (dBuV/m)	Ant Pol	Correct Factor	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin
(MHz)	Peak/QP	H/V	(dB)	Peak/QP	QP	(dB)
215.400	----	H	12.28	----	43.5	----
215.400	----	V	12.28	----	43.5	----
323.100	----	H	16.75	----	46.0	----
323.100	----	V	16.75	----	46.0	----
430.800	----	H	19.53	----	46.0	----
430.800	----	V	19.53	----	46.0	----
538.500	----	H	21.55	----	46.0	----
538.500	----	V	21.55	----	46.0	----
646.200	----	H	22.91	----	46.0	----
646.200	----	V	22.91	----	46.0	----
753.900	----	H	23.89	----	46.0	----
753.900	----	V	23.89	----	46.0	----
861.600	----	H	25.24	----	46.0	----
861.600	----	V	25.24	----	46.0	----
969.300	----	H	26.30	----	54.0	----
969.300	----	V	26.30	----	54.0	----
215.400	----	H	12.28	----	43.5	----
215.400	----	V	12.28	----	43.5	----

Note:

1. Peak Result =Peak Reading + Correct Factor

2. AVG Result = AVG Reading + Correct Factor

3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.

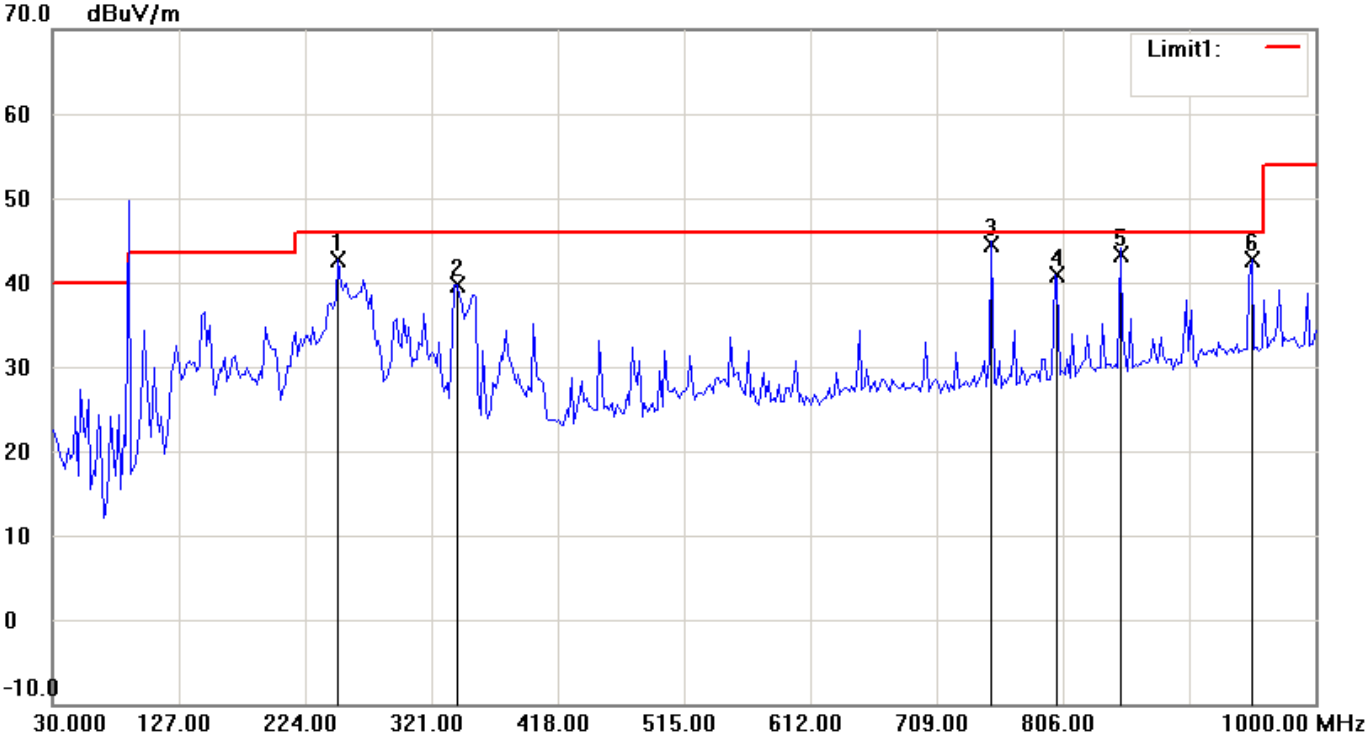
4. Remark "----" means that there is no emission to be measured.

4.3.2 Other Emission

4.3.2.1 Operated mode : Tx，88.300 MHz

A. 30MHz to 1GHz

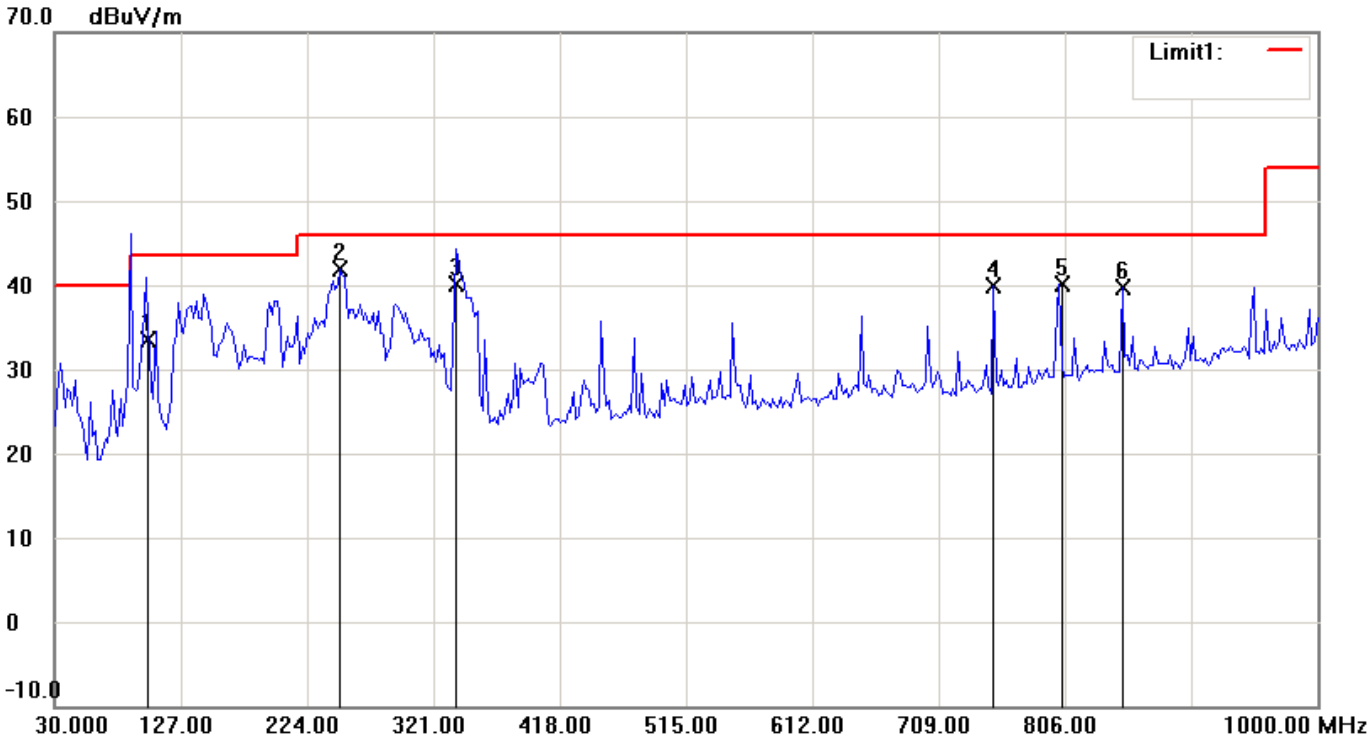
File: 0210+ **Data:** #1 **Date:** 2014/2/12 **Time:** PM 05:31:23 **Temperature:** 18 ℃ **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 88.3(OK)

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	249.6593	26.13	peak	16.50	42.63	46.00	-3.37
2	341.0220	20.77	peak	18.99	39.76	46.00	-6.24
3	749.9881	18.75	QP	25.85	44.60	46.00	-1.40
4	799.7795	14.22	peak	26.75	40.97	46.00	-5.03
5	849.9604	15.58	QP	27.75	43.33	46.00	-2.67
6	951.4027	13.08	peak	29.65	42.73	46.00	-3.27

File: 0210+ **Data:** #2 **Date:** 2014/2/12 **Temperature:** 18 ℃
Time: PM 05:35:52 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 88.3(OK)

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	100.8656	21.84	QP	11.76	33.60	43.50	-9.90
2	249.6593	25.50	peak	16.50	42.00	46.00	-4.00
3	338.6530	21.11	QP	18.92	40.03	46.00	-5.97
4	751.1824	14.02	peak	25.87	39.89	46.00	-6.11
5	801.7234	13.24	peak	26.79	40.03	46.00	-5.97
6	850.3206	12.03	peak	27.75	39.78	46.00	-6.22

B. above 1GHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	H	57.2	---	-14.27	42.9	---	74	54	-11.1
1000.0000	V	56.1	---	-14.27	41.8	---	74	54	-12.2
1049.6193	H	63.0	---	-14.03	49.0	---	74	54	-5.0
1049.7947	V	62.0	---	-14.03	48.0	---	74	54	-6.0
1099.9400	H	54.9	---	-13.80	41.1	---	74	54	-12.9
1100.2907	V	51.8	---	-13.80	38.0	---	74	54	-16.0

C. below 30MHz

Frequency (MHz)	. Reading (dBuV/m) Peak	Duty (dB)	Factor (dB)	Result @3m (dBuV/m) Peak	QP	AVG	Limit @3m (dBuV/m) Peak	AVG
Radiated emission frequencies from 9 kHz to 30 MHz were too low to be measured.								

Note:

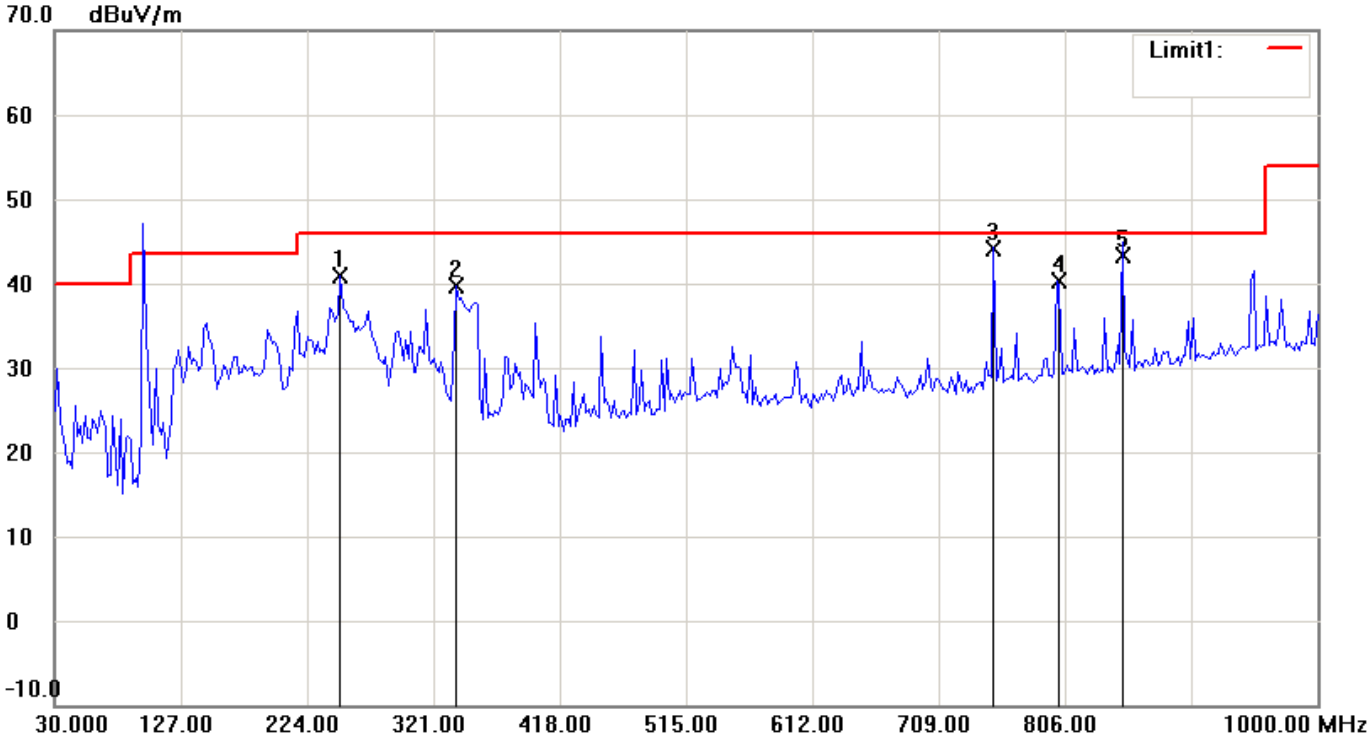
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
   ±4.4dB (18GHz<f≦40GHz).

4 Remark “----” means that the emissions level is too low to be measured.

4.3.2.2 Operated mode : Tx，98.100 MHz

A. 30MHz to 1GHz

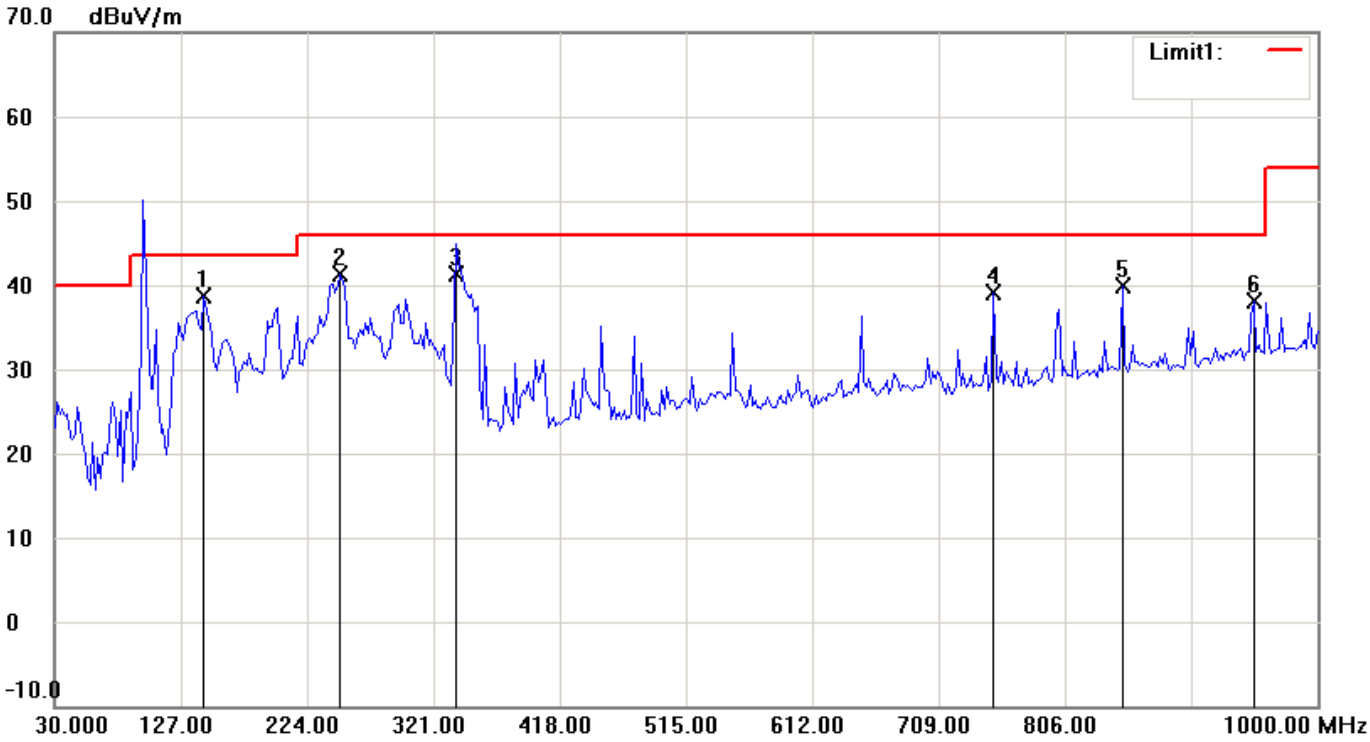
File: 0210+ **Data:** #3 **Date:** 2014/2/12 **Temperature:** 18 ℃
Time: PM 06:25:45 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 98.1(OK)

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	249.6593	24.49	peak	16.50	40.99	46.00	-5.01
2	339.0781	20.70	peak	18.93	39.63	46.00	-6.37
3	749.9795	18.31	QP	25.85	44.16	46.00	-1.84
4	799.7795	13.58	peak	26.75	40.33	46.00	-5.67
5	850.0256	15.55	QP	27.75	43.30	46.00	-2.70

File: 0210+ **Data:** #4 **Date:** 2014/2/12 **Temperature:** 18 ℃
Time: PM 06:30:14 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 98.1(OK)

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	144.6894	24.58	peak	14.10	38.68	43.50	-4.82
2	249.6593	24.80	peak	16.50	41.30	46.00	-4.70
3	338.7028	22.45	QP	18.92	41.37	46.00	-4.63
4	751.1824	13.32	peak	25.87	39.19	46.00	-6.81
5	850.3206	12.13	peak	27.75	39.88	46.00	-6.12
6	951.4027	8.50	peak	29.65	38.15	46.00	-7.85

B. above 1GHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	V	58.4	---	-14.27	44.1	---	74	54	-9.9
1015.2540	H	55.9	---	-14.19	41.7	---	74	54	-12.3
1049.9700	H	61.6	---	-14.03	47.6	---	74	54	-6.4
1050.3207	V	62.1	---	-14.03	48.1	---	74	54	-5.9
1084.5107	V	56.8	---	-13.87	42.9	---	74	54	-11.1
1099.5893	H	53.9	---	-13.80	40.1	---	74	54	-13.9
1099.5893	V	53.8	---	-13.80	40.0	---	74	54	-14.0

C. below 30MHz

Frequency (MHz)	. Reading (dBuV/m) Peak	Duty (dB)	Factor (dB)	Result @3m (dBuV/m) Peak	QP	AVG	Limit @3m (dBuV/m) Peak	AVG
Radiated emission frequencies from 9 kHz to 30 MHz were too low to be measured.								

Note:

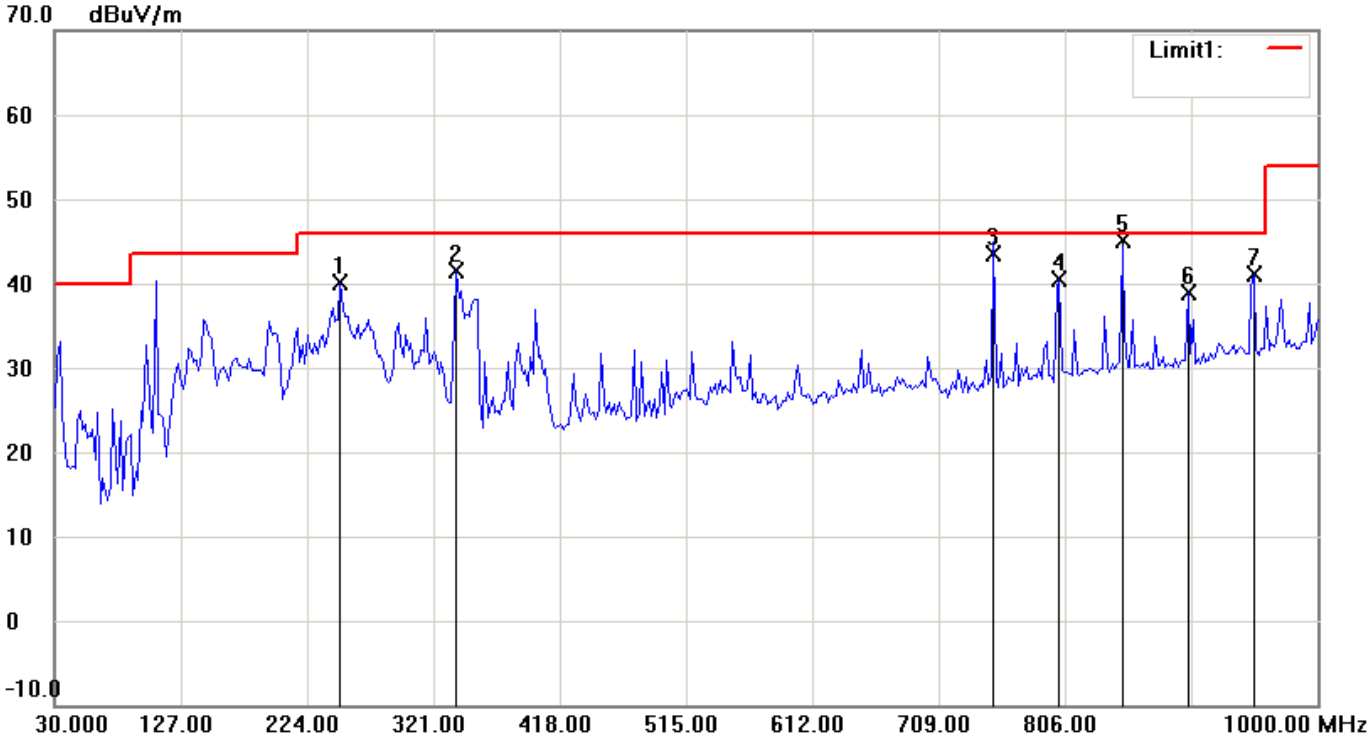
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
   ±4.4dB (18GHz<f≦40GHz).

4 Remark "----" means that the emissions level is too low to be measured.

4.3.2.3 Operated mode : Tx，107.700 MHz

A. 30MHz to 1GHz

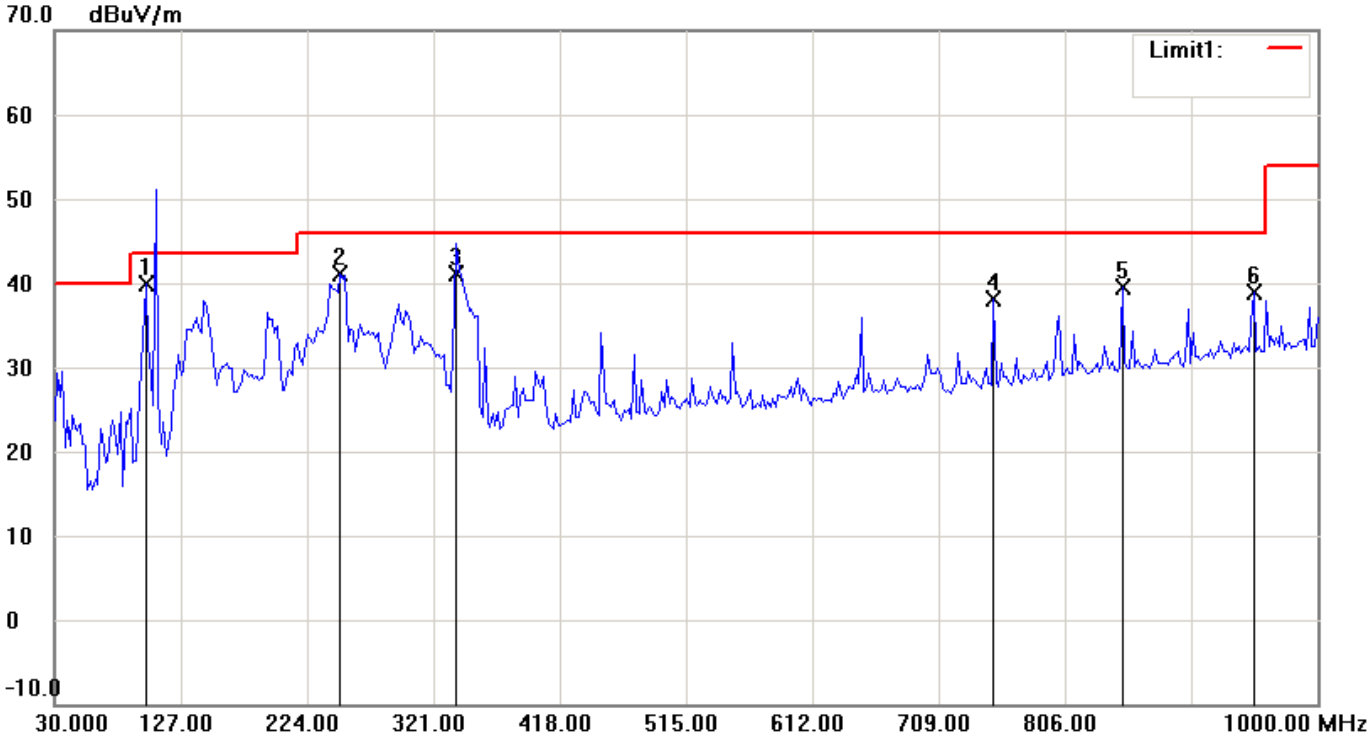
File: 0210+ **Data:** #5 **Date:** 2014/2/12 **Temperature:** 18 ℃
Time: PM 07:10:56 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 107.7(OK)

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	249.6593	23.52	peak	16.50	40.02	46.00	-5.98
2	339.0781	22.53	peak	18.93	41.46	46.00	-4.54
3	749.9872	17.58	QP	25.85	43.43	46.00	-2.57
4	801.7232	13.67	peak	26.79	40.46	46.00	-5.54
5	849.9843	17.28	QP	27.75	45.03	46.00	-0.97
6	900.8617	10.56	peak	28.25	38.81	46.00	-7.19
7	951.4027	11.53	peak	29.65	41.18	46.00	-4.82

File: 0210+ **Data:** #6 **Date:** 2014/2/12 **Temperature:** 18 ℃
Time: PM 07:15:26 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 107.7(OK)

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	99.9800	28.19	peak	11.69	39.88	43.50	-3.62
2	249.6593	24.55	peak	16.50	41.05	46.00	-4.95
3	338.7062	22.11	QP	18.92	41.03	46.00	-4.97
4	751.1824	12.24	peak	25.87	38.11	46.00	-7.89
5	850.3206	11.75	peak	27.75	39.50	46.00	-6.50
6	951.4027	9.33	peak	29.65	38.98	46.00	-7.02

B. above 1GHz

Frequency	Ant Pol	Reading (dBuV/m)@3m		Correct Factor	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	H	55.0	---	-14.27	40.7	---	74	54	-13.3
1000.0000	V	58.0	---	-14.27	43.7	---	74	54	-10.3
1016.3060	H	57.3	---	-14.19	43.1	---	74	54	-10.9
1049.7947	V	64.0	---	-14.03	50.0	---	74	54	-4.0
1049.9700	H	60.8	---	-14.03	46.8	---	74	54	-7.2
1063.9967	H	53.8	---	-13.97	39.8	---	74	54	-14.2
1099.9400	V	55.5	---	-13.80	41.7	---	74	54	-12.3
1100.1153	H	54.0	---	-13.80	40.2	---	74	54	-13.8

C. below 30MHz

Frequency (MHz)	. Reading (dBuV/m) Peak	Duty (dB)	Factor (dB)	Result @3m (dBuV/m) Peak	QP	AVG	Limit @3m (dBuV/m) Peak	AVG
Radiated emission frequencies from 9 kHz to 30 MHz were too low to be measured.								

Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
   ±4.4dB (18GHz<f≦40GHz).

4 Remark "----" means that the emissions level is too low to be measured.

4.4 Field Strength Calculation

Field Strength:

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + CORR. FACTOR

where CORR. FACTOR = Antenna FACTOR + Cable FACTOR

4.5 Radiated Test Equipment

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.
EMI Receiver	R&S	ESIB7
BiLog Antenna	ETC	MCTD2786
Horn Antenna	EMCO	3115
PRE-Amplifier	Agilent	8449B
Spectrum Analyzer	Rohde & Schwarz	FSU46
Loop Antenna	EMCO	6512
PRE-Amplifier	ADVANTEST	BB525C

Note: The standards used to perform this calibration are traceable to NML/ROC, NIST/USA and NPL.

4.6 Measuring Instrument Setup

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	EMI Test Receiver	Peak	120 kHz	300 kHz
1000 to 4500	EMI Test Receiver	Peak	1 MHz	1 MHz

5. BANDWIDTH OF EMISSION

5.1 Applicable Standard Plot Graphic of Bandwidth

Per FCC rule §15.239(a), Emissions from the intentional radiator shall be fonfined within a band 200kHz wide centered on the operation frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

5.2 Test Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A

5.3.1 Test Result

Test Date : Feb. 17, 2014 Temperature : 18℃ Humidity : 62%

CH Low

Center Frequency	88.3 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	194.8 kHz
Chart	Page 26
Result	PASS

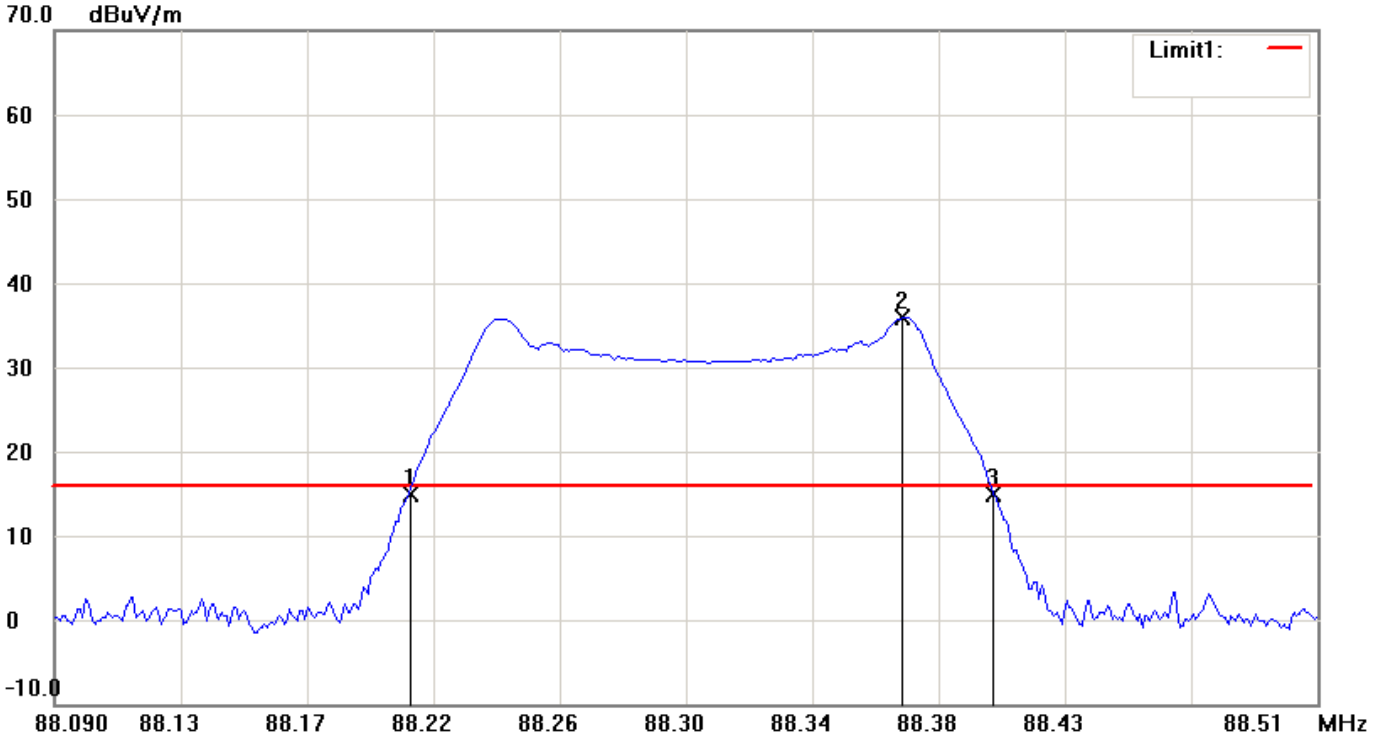
CH Mid

Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	197.4 kHz
Chart	Page 27
Result	PASS

CH High

Center Frequency	107.7 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	197.4 kHz
Chart	Page 28
Result	PASS

File: 0210+ **Data:** #33 **Date:** 2014/2/17 **Temperature:** 18 ℃
Time: PM 05:27:25 **Humidity:** 62 %

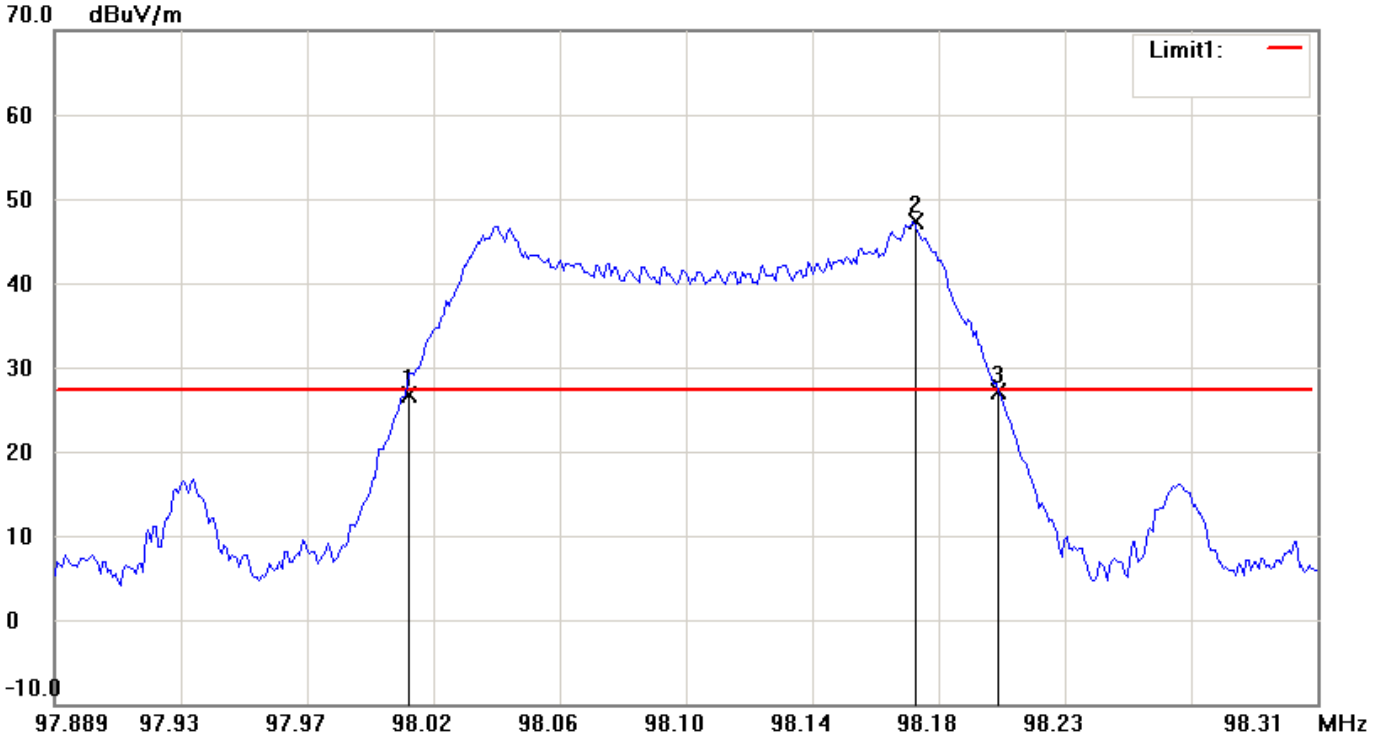


Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 88.3(OK) A0.15

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	88.2076	4.60	peak
2	88.3721	25.56	peak
3	88.4024	4.67	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1948	0.1

File: 0210+ **Data:** #29 **Date:** 2014/2/17 **Temperature:** 18 ℃
Time: PM 05:18:26 **Humidity:** 62 %

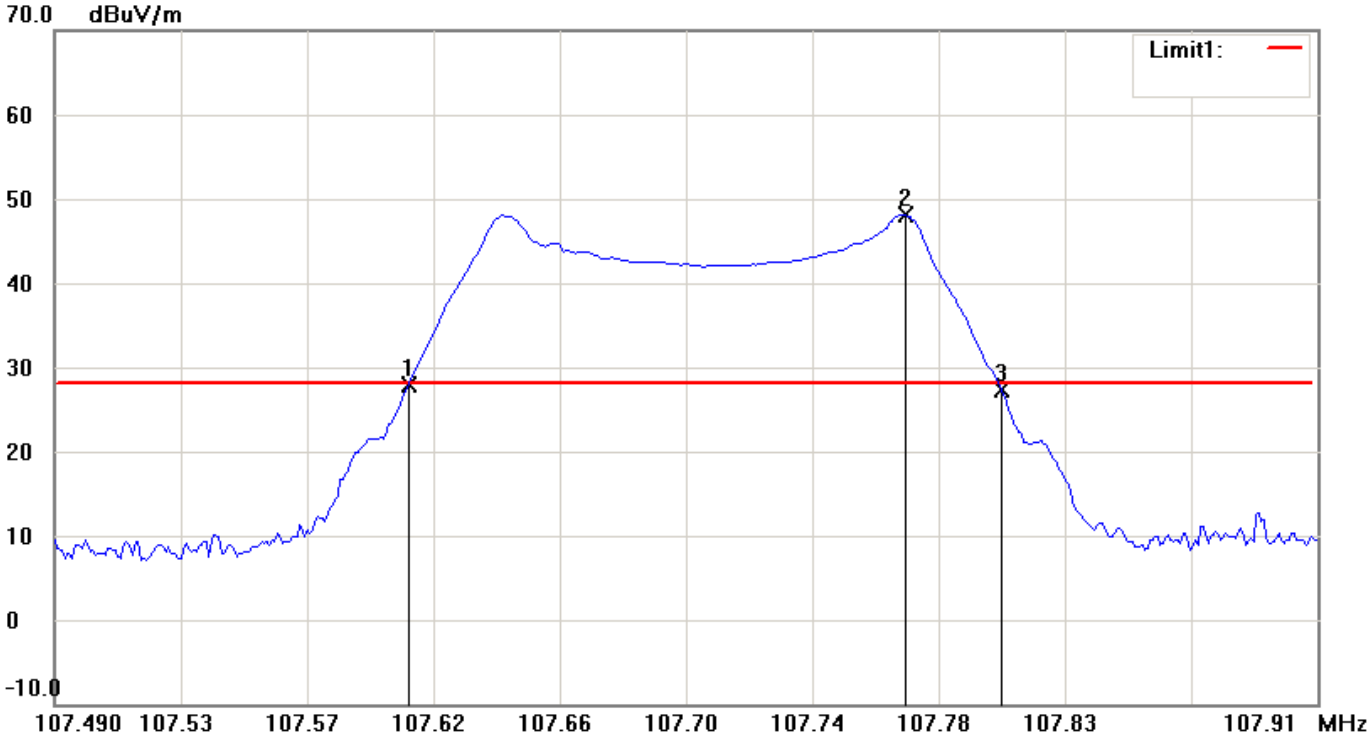


Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 98.1(OK) A0.15

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	98.0068	15.20	peak
2	98.1755	35.74	peak
3	98.2042	15.72	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1974	0.54

File: 0210+ **Data:** #27 **Date:** 2014/2/17 **Temperature:** 18 ℃
Time: PM 05:12:04 **Humidity:** 62 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: 107.7(OK) A0.15

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	107.6076	15.62	peak
2	107.7721	35.83	peak
3	107.8050	15.08	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1974	-0.52

5.3.2 Test Result (99% Bandwidth)

Test Date : Feb. 17, 2014 Temperature : 18℃ Humidity : 62%

CH Low

Center Frequency	88.3 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	132.7390 kHz
Chart	Page 30
Result	PASS

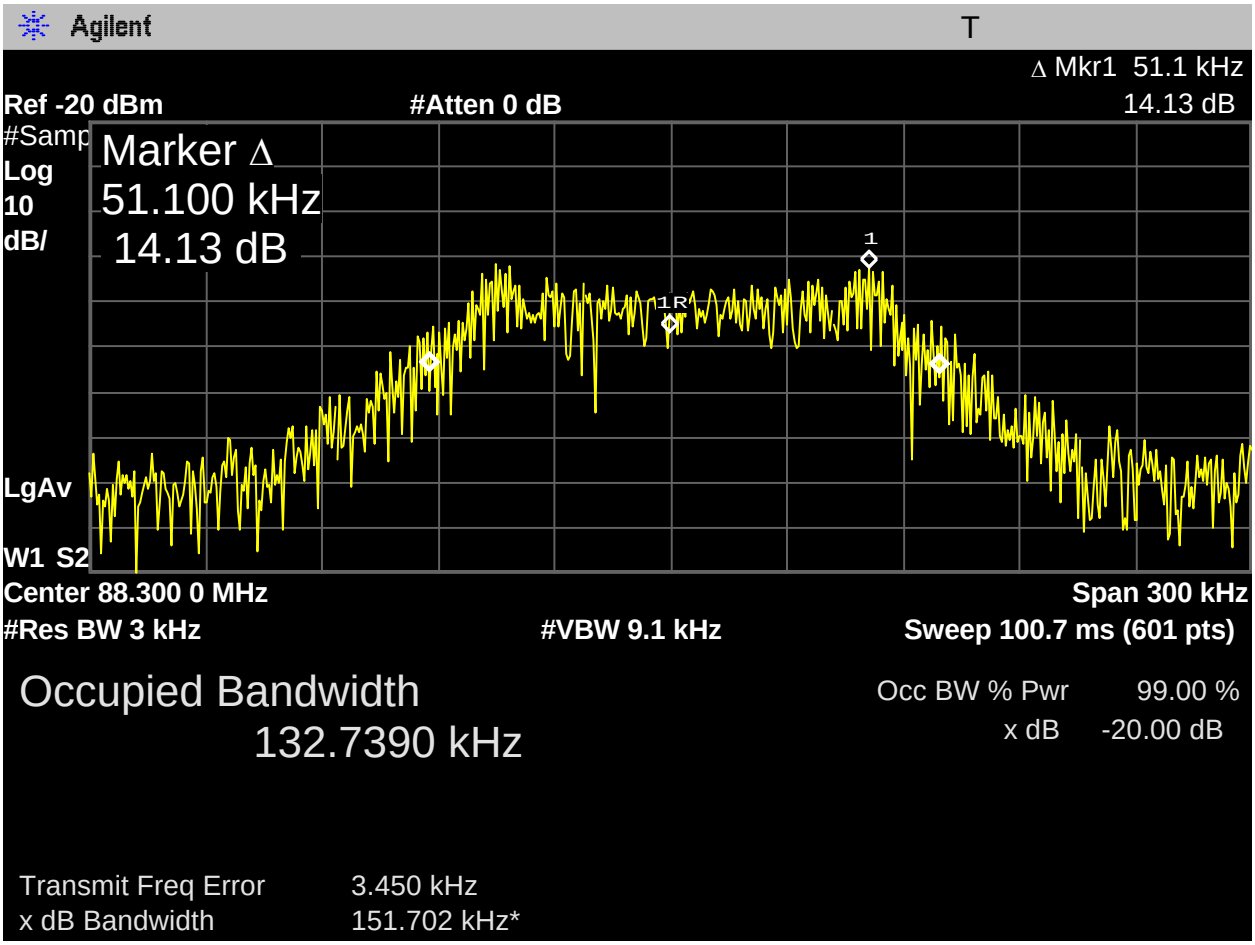
CH Mid

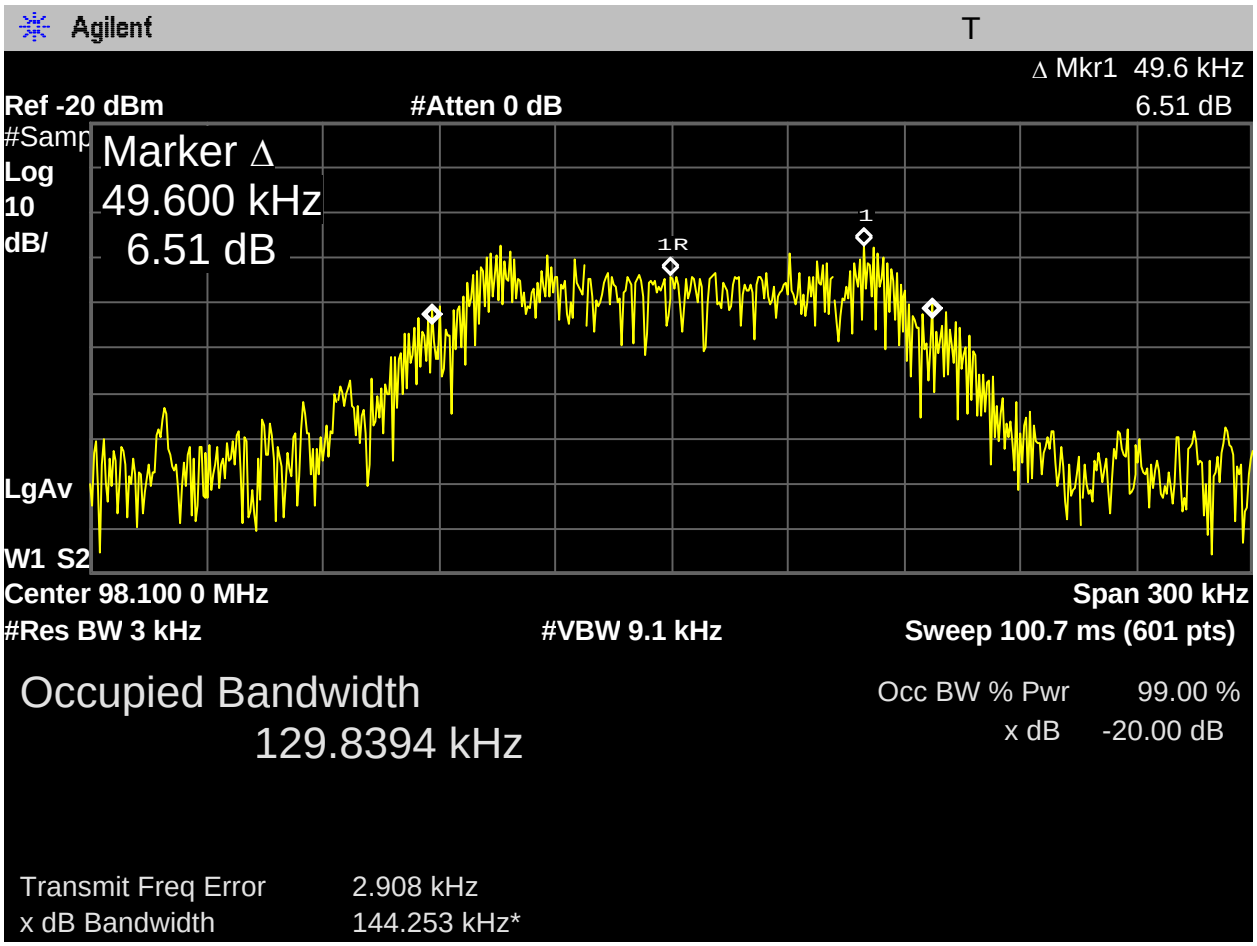
Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	129.8394 kHz
Chart	Page 31
Result	PASS

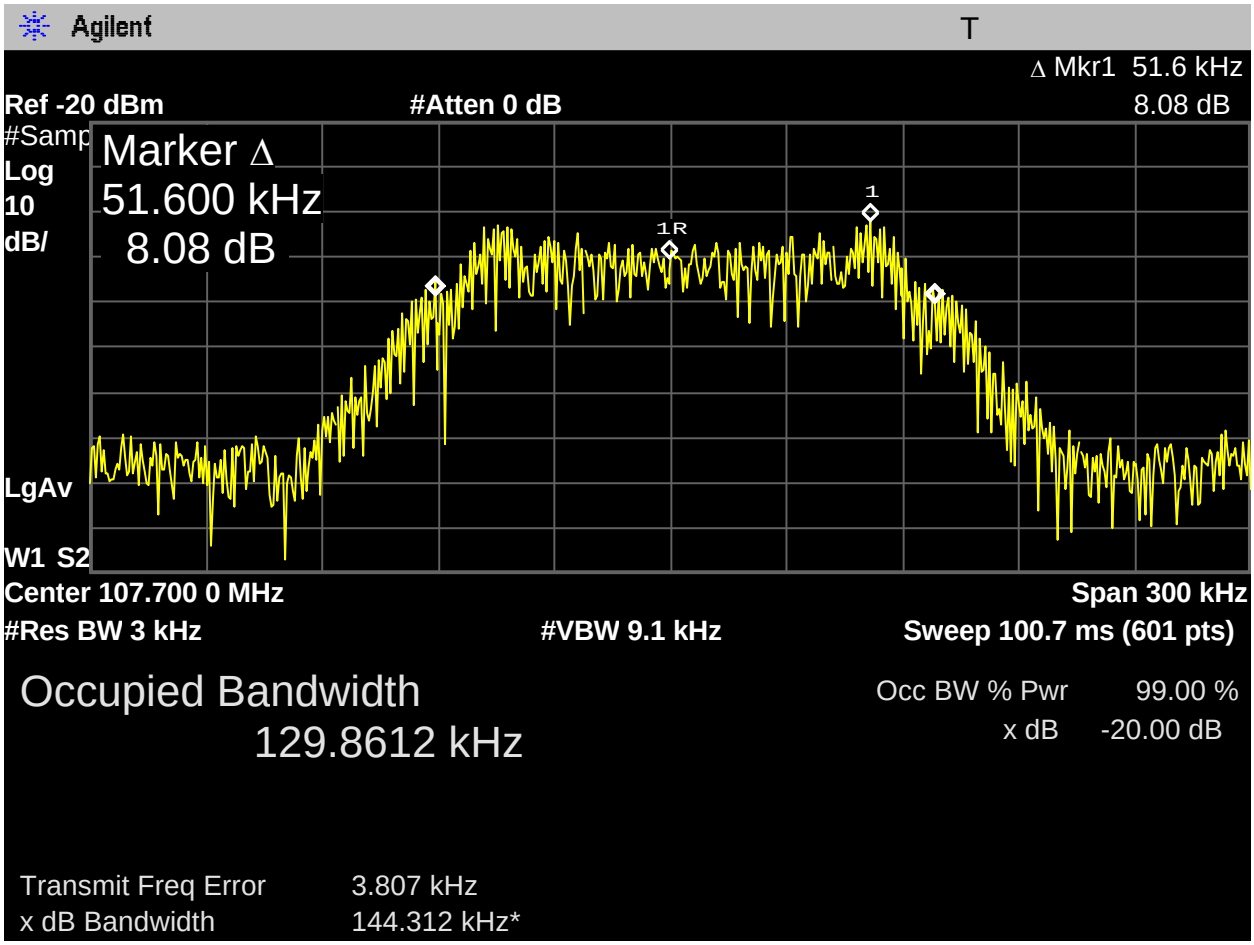
CH High

Center Frequency	107.7 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	129.8612 kHz
Chart	Page 32
Result	PASS

99% BANDWIDTH


Agilent
T
Δ Mkr1 51.1 kHz
14.13 dB
Ref -20 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
51.100 kHz
14.13 dB
1
1R
LgAv
W1 S2
Center 88.300 0 MHz
Span 300 kHz
#Res BW 3 kHz
#VBW 9.1 kHz
Sweep 100.7 ms (601 pts)
Occupied Bandwidth
132.7390 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 3.450 kHz
x dB Bandwidth 151.702 kHz*


Agilent
T
Δ Mkr1 49.6 kHz
6.51 dB
Ref -20 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
49.600 kHz
6.51 dB
1R
1
LgAv
W1 S2
Center 98.100 0 MHz
Span 300 kHz
#Res BW 3 kHz
#VBW 9.1 kHz
Sweep 100.7 ms (601 pts)
Occupied Bandwidth
129.8394 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 2.908 kHz
x dB Bandwidth 144.253 kHz*


Agilent
T
Δ Mkr1 51.6 kHz
8.08 dB
Ref -20 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
51.600 kHz
8.08 dB
1R
1
LgAv
W1 S2
Center 107.700 0 MHz
Span 300 kHz
#Res BW 3 kHz
#VBW 9.1 kHz
Sweep 100.7 ms (601 pts)
Occupied Bandwidth
129.8612 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 3.807 kHz
x dB Bandwidth 144.312 kHz*

6. CONDUCTED EMISSION MEASUREMENT

This EUT is excused from investigation of conducted emission, for it is powered by battery only. According to §15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

7. Test Equipment and Ancillaries Used for Tests

Equipment	Manufacturer	Model No.	Calibrated until
EMI Receiver	R&S	ESIB7	07/10/2014
BiLog Antenna	ETC	MCTD2786	02/06/2015
Horn Antenna	EMCO	3115	07/21/2014
PRE-Amplifier	Agilent	8449B	11/25/2014
Spectrum Analyzer	Rohde & Schwarz	FSU46	01/19/2015
Spectrum Analyzer	Agilent	E4446A	10/03/2014
Loop Antenna	EMCO	6512	06/03/2014
PRE-Amplifier	ADVANTEST	BB525C	04/24/2014