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

Report No.: 13-10-MAS-008-02

Client:	JET OPTOELECTRONICS CO.,LTD.
Product:	RYK - Assembly
Model:	650001
FCC ID:	Z3K-RYK65000X
IC ID:	9930A-RYK65000X
Manufacturer/supplier:	PEGATRON CORPORATION

Date test item received:	2013/10/02
Date test campaign completed:	2014/02/17
Date of issue:	2014/02/17

The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

Total number of pages of this test report: 34 pages

Total number of pages of photos: External photos 3 pages
Internal photos 10 pages
Setup photos 2 pages

Test Engineer	Checked By	Approved By
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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	: PEGATRON CORPORATION
Address	: No.233, Jin Feng Road, Suzhou New District, China
EUT	: RYK - Assembly
Trade name	: GM
Model No.	: 650001
Power Source	: 12V 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 : RYK - Assembly
b) Model No. : 650001
c) Serial No. : ----
d) FCC ID : Z3K-RYK65000X
e) IC ID : 9930A-RYK65000X
f) 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

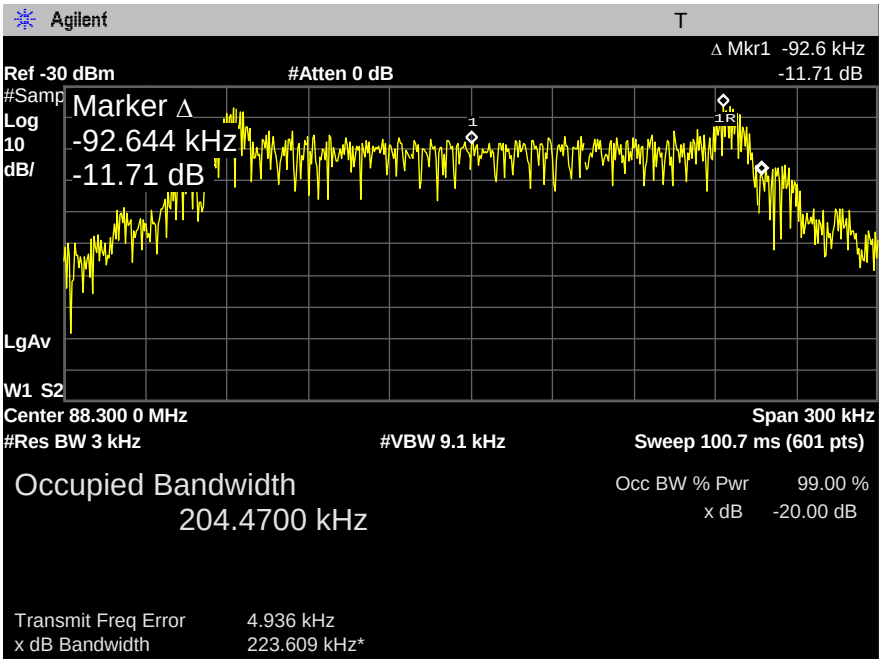
No	Device	Manufacture	Model No.	Cable Description
A	RYK - Assembly (Moniter A) *	PEGATRON CORPORATION	650001	2.5m*1 Unshielded Signal Line 0.60m*1 Unshielded Signal Line/Antenna
B	RYK - Assembly (Moniter B)	PEGATRON CORPORATION	650002	2.5m*1 Unshielded Signal Line
C	Filter	N/A	610002	0.4m*1 Unshielded power Line
D	Battery	YUASA	N/A	1.2m*1 Unshielded power 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: $\frac{92.6kHz}{2} = 46.3kHz$



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

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT (X and Y axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “X axis”. (Please see the test setup photos)

B. Final Measurement

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

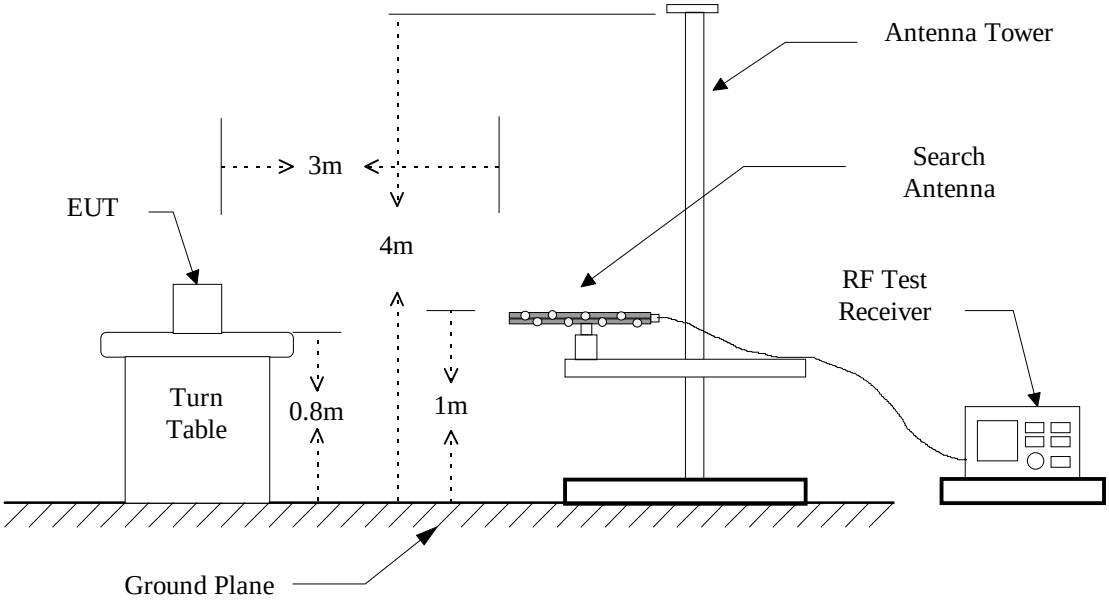
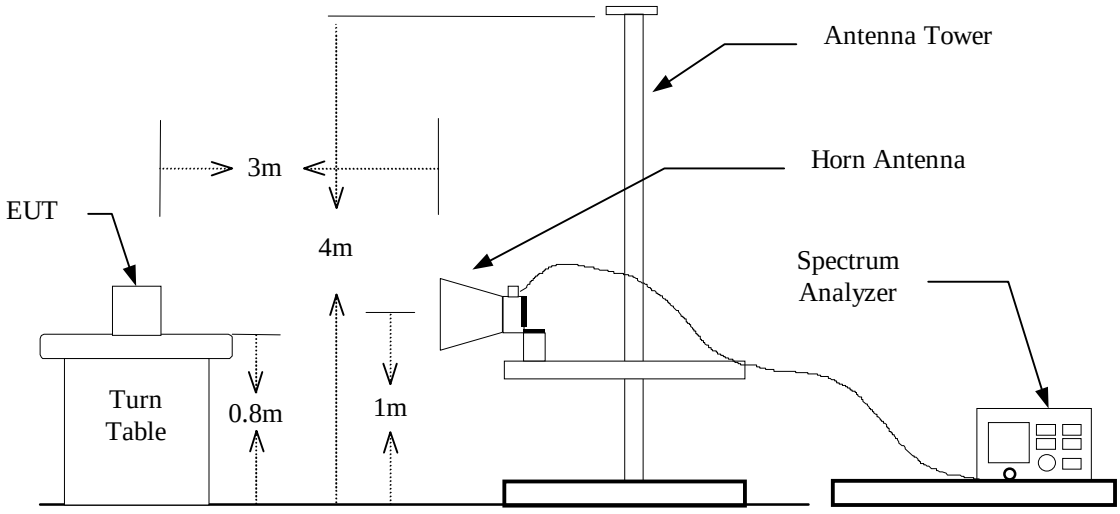


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Test Data

4.3.1 Fundamental and Harmonic

4.3.1.1 Operated mode : Tx，88.300 MHz

Test Date : Nov. 25, 2013 Temperature : 23 ℃ Humidity : 58%

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	38.0	36.7	H	10.20	48.2	46.9	257.0	221.3	2500.0	250.0	-28.7
88.300	35.6	----	V	10.20	45.8	----	195.0	----	2500.0	250.0	-2305.0

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 : Nov. 25, 2013 Temperature : 23 ℃ Humidity : 58%

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	31.9	----	H	11.94	43.8	----	154.9	----	2500.0	250.0	-95.1
98.000	29.4	----	V	11.92	41.3	----	116.1	----	2500.0	250.0	-133.9

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 : Nov. 25, 2013 Temperature : 23 ℃ Humidity : 58%

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	29.6	----	H	13.32	42.9	----	139.6	----	2500.0	250.0	-110.4
107.700	31.1	----	V	13.32	44.4	----	166.0	----	2500.0	250.0	-84.0

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:

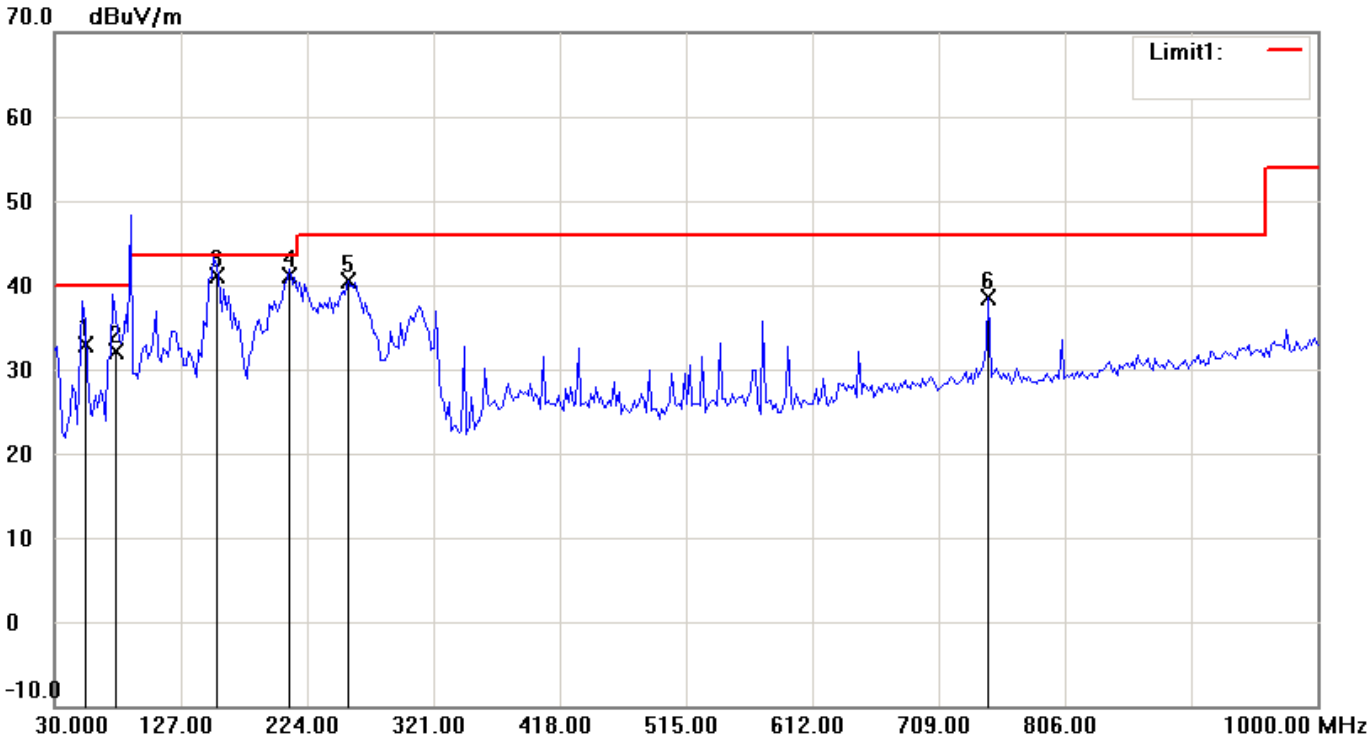
1. *Peak Result =Peak Reading + Correct Factor*
2. *AVG Result = AVG Reading + Correct Factor*
3. *If the result of peak value is under the limit of average, the average value doesn't need to be measured.*
4. *Remark "----" means that there is no emission to be measured.*

4.3.2 Other Emission

4.3.2.1 Operated mode : Tx，88.300 MHz

A. 30MHz to 1GHz

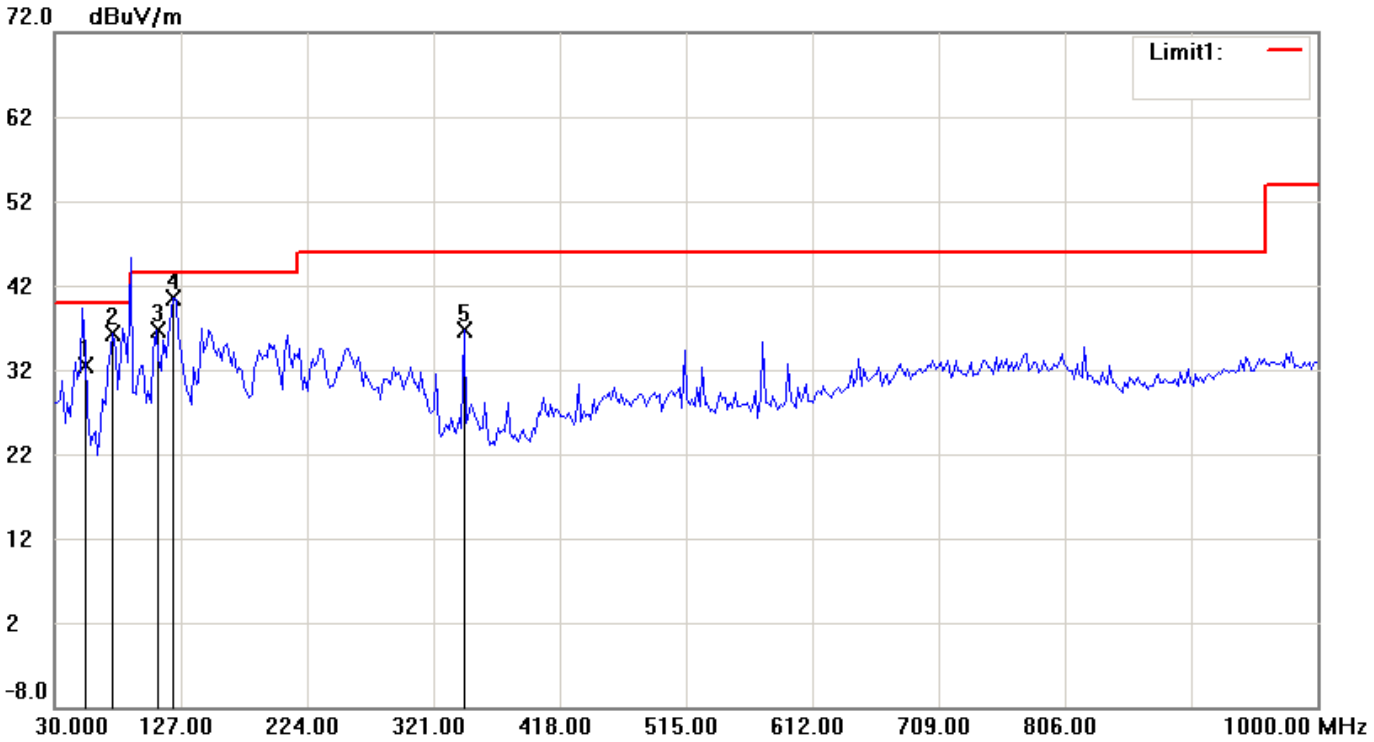
File: FM_TX **Data:** #22 **Date:** 2013/11/25 **Temperature:** 23 ℃
Time: AM 11:16:42 **Humidity:** 58 %



Condition: FCC_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: CHL

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	51.8137	23.02	QP	9.98	33.00	40.00	-7.00
2	75.3306	23.74	QP	8.27	32.01	40.00	-7.99
3	153.5270	27.07	QP	14.00	41.07	43.50	-2.43
4	210.3207	25.98	QP	15.17	41.15	43.50	-2.35
5	255.4910	23.97	peak	16.58	40.55	46.00	-5.45
6	747.2945	12.61	peak	25.82	38.43	46.00	-7.57

File: **FM_TX** **Data:** **#24** **Date:** **2013/11/25** **Temperature:** **23 ℃**
Time: **PM 12:15:25** **Humidity:** **58 %**



Condition: **FCC_30-1000MHz** **Polarization:** **Vertical**
EUT: **Distance:** **3m**
Model:
Test Mode:
Note: **CHL**

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	51.8436	22.54	QP	9.96	32.50	40.00	-7.50
2	74.7094	28.19	peak	8.16	36.35	40.00	-3.65
3	107.7555	24.33	peak	12.29	36.62	43.50	-6.88
4	121.3627	27.39	peak	13.11	40.50	43.50	-3.00
5	344.9098	17.53	peak	19.09	36.62	46.00	-9.38

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)
1012.5000	H	50.0	----	-14.22	35.8	----	74.0	54.0	-18.2
1033.0128	H	49.0	----	-14.11	34.9	----	74.0	54.0	-19.1
1090.3846	H	50.3	----	-13.85	36.5	----	74.0	54.0	-17.5
1141.0256	H	47.8	----	-13.60	34.2	----	74.0	54.0	-19.8
1161.8590	H	46.8	----	-13.51	33.3	----	74.0	54.0	-20.7
1168.2692	H	46.6	----	-13.47	33.1	----	74.0	54.0	-20.9
1003.5256	V	51.8	----	-14.25	37.6	----	74.0	54.0	-16.4
1006.7308	V	52.3	----	-14.24	38.1	----	74.0	54.0	-15.9
1012.8205	V	53.6	----	-14.22	39.4	----	74.0	54.0	-14.6
1032.3718	V	51.1	----	-14.12	37.0	----	74.0	54.0	-17.0
1090.3846	V	55.5	----	-13.85	41.7	----	74.0	54.0	-12.3
1193.5897	V	48.8	----	-13.36	35.4	----	74.0	54.0	-18.6

C. below 30MHz

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

Note:

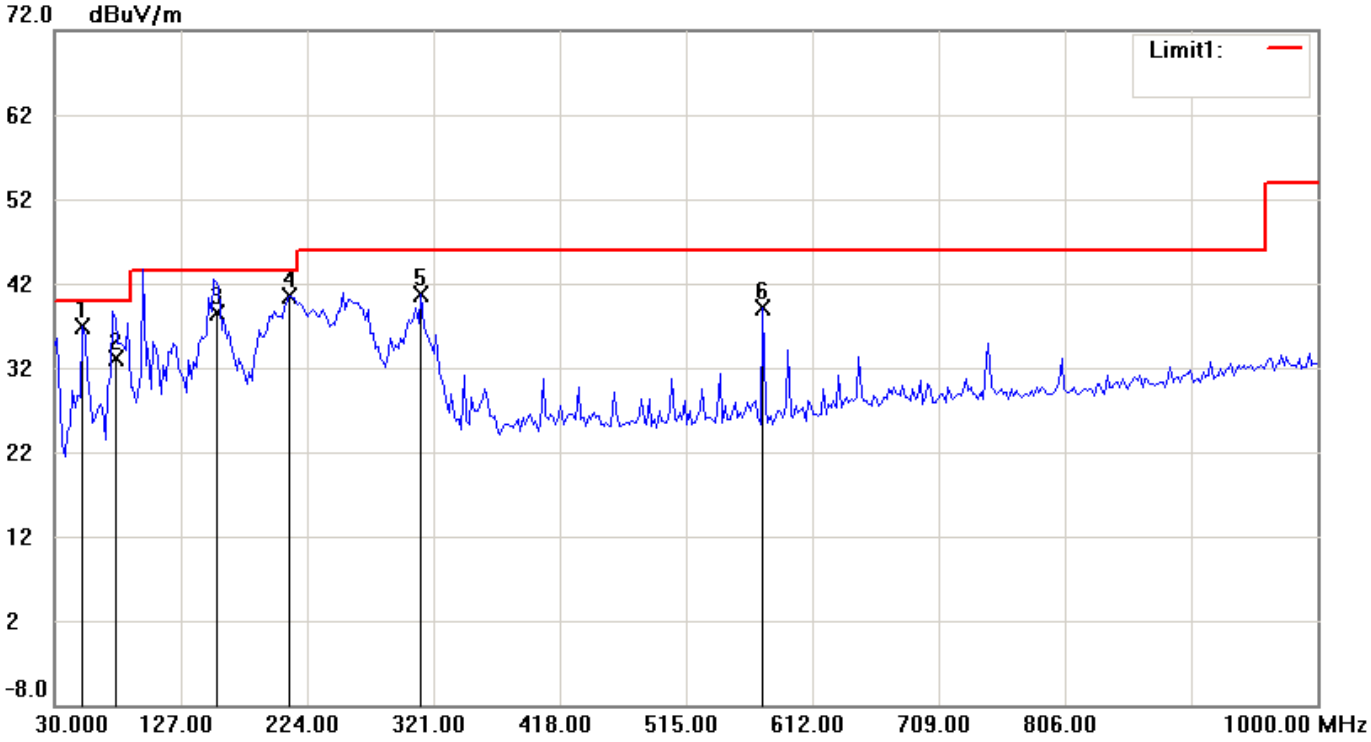
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB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

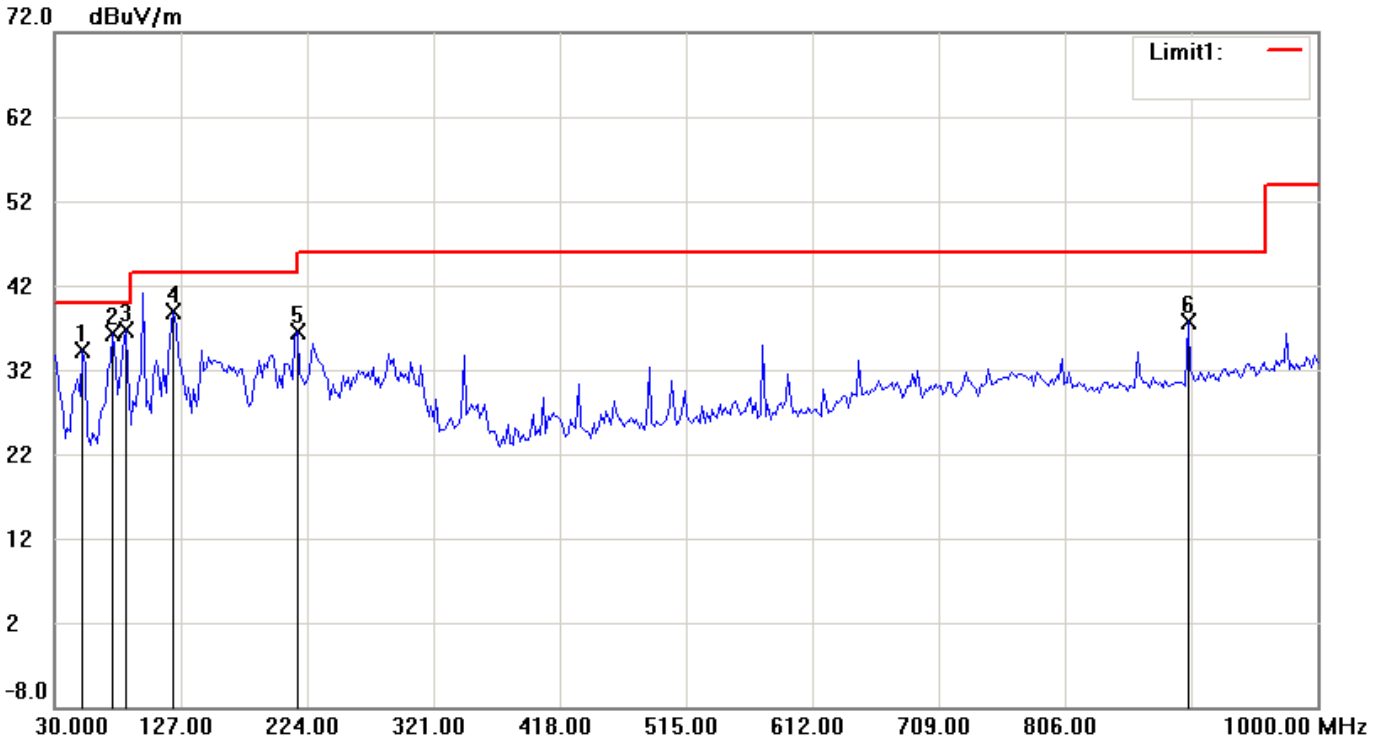
File: FM_TX **Data:** #25 **Date:** 2013/11/25 **Temperature:** 23 ℃
Time: PM 12:38:56 **Humidity:** 58 %



Condition: FCC_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: CHM

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	51.3828	26.78	peak	10.13	36.91	40.00	-3.09
2	75.8416	24.79	QP	8.36	33.15	40.00	-6.85
3	153.3267	24.50	QP	14.01	38.51	43.50	-4.99
4	210.7815	25.33	peak	15.12	40.45	43.50	-3.05
5	311.8636	22.45	peak	18.25	40.70	46.00	-5.30
6	574.2884	15.65	peak	23.36	39.01	46.00	-6.99

File: **FM_TX** **Data:** **#26** **Date:** **2013/11/25** **Temperature:** **23 ℃**
Time: **PM 12:43:20** **Humidity:** **58 %**



Condition: **FCC_30-1000MHz** **Polarization:** **Vertical**
EUT: **Distance:** **3m**
Model:
Test Mode:
Note: **CHM**

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	51.3828	24.19	peak	10.13	34.32	40.00	-5.68
2	74.7094	28.21	peak	8.16	36.37	40.00	-3.63
3	84.4288	27.02	peak	9.73	36.75	40.00	-3.25
4	121.3627	25.77	peak	13.11	38.88	43.50	-4.62
5	216.6132	22.02	peak	14.51	36.53	46.00	-9.47
6	900.8617	9.49	peak	28.25	37.74	46.00	-8.26

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)
1024.6795	H	48.3	----	-14.16	34.1	----	74.0	54.0	-19.9
1070.8333	H	49.6	----	-13.95	35.7	----	74.0	54.0	-18.3
1075.3205	H	48.9	----	-13.91	35.0	----	74.0	54.0	-19.0
1090.3846	H	50.2	----	-13.85	36.4	----	74.0	54.0	-17.6
1141.0256	H	48.7	----	-13.60	35.1	----	74.0	54.0	-18.9
1187.5000	H	47.2	----	-13.39	33.8	----	74.0	54.0	-20.2
1002.8846	V	51.4	----	-14.25	37.2	----	74.0	54.0	-16.8
1012.1795	V	50.5	----	-14.22	36.3	----	74.0	54.0	-17.7
1069.8718	V	51.7	----	-13.95	37.8	----	74.0	54.0	-16.2
1082.6923	V	52.0	----	-13.88	38.1	----	74.0	54.0	-15.9
1088.1410	V	55.4	----	-13.85	41.6	----	74.0	54.0	-12.4
1184.6153	V	49.3	----	-13.41	35.9	----	74.0	54.0	-18.1

C. below 30MHz

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

Note:

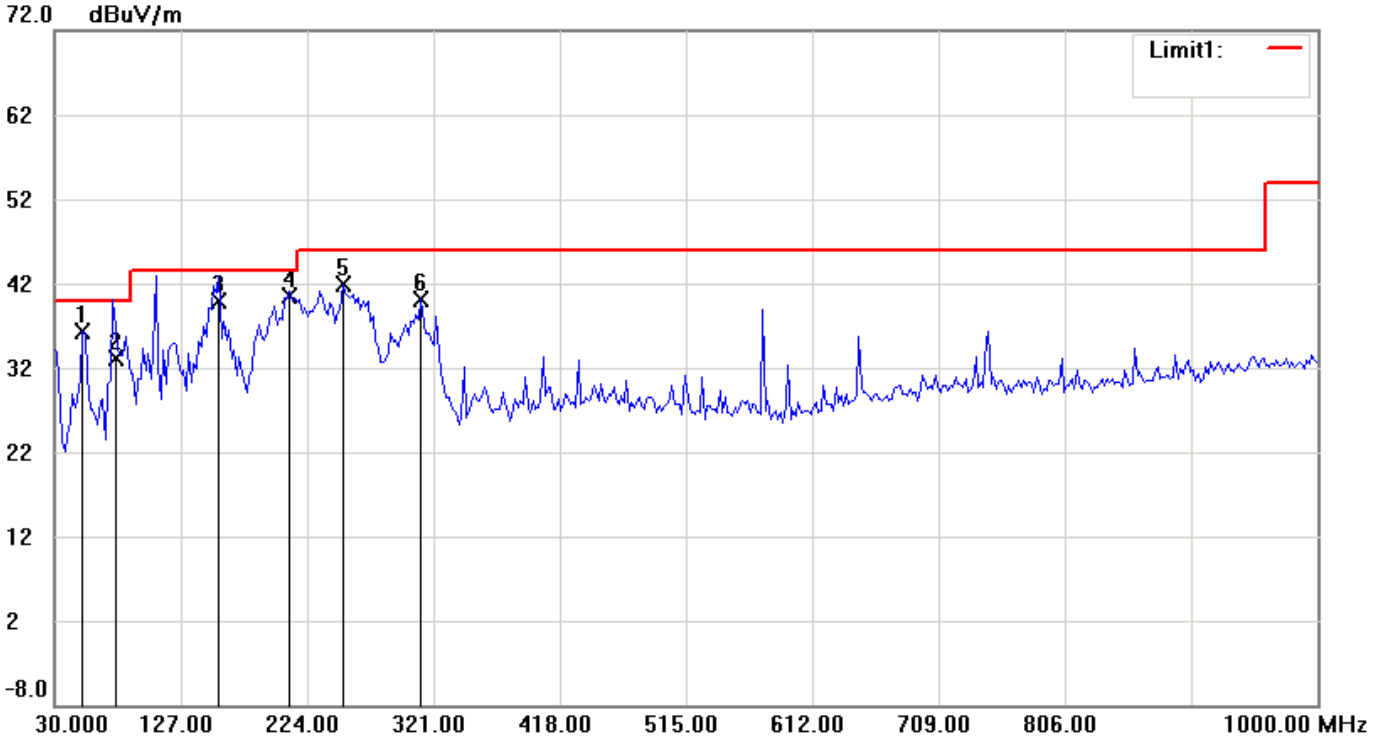
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB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

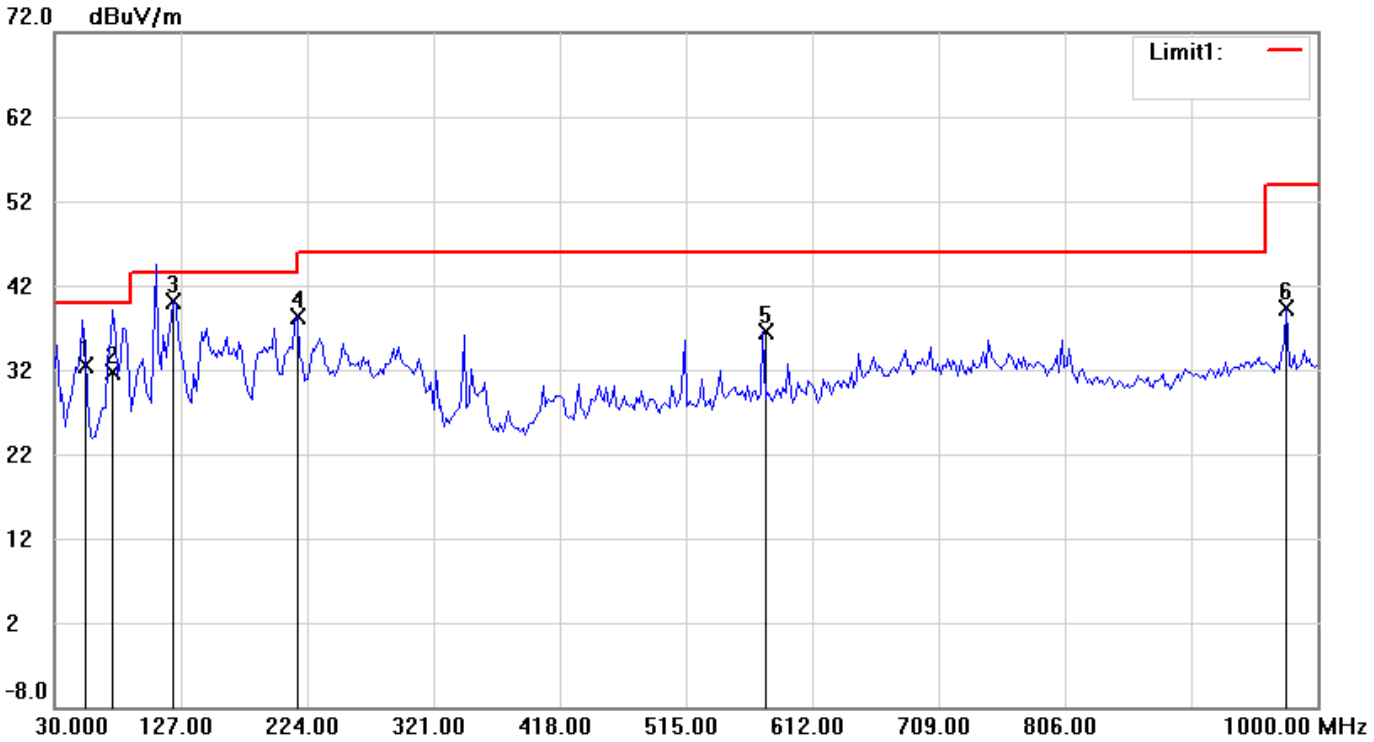
File: FM_TX **Data:** #27 **Date:** 2013/11/25 **Time:** PM 01:08:53 **Temperature:** 23 ℃ **Humidity:** 58 %



Condition: FCC_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: CHH

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	51.3828	26.16	peak	10.13	36.29	40.00	-3.71
2	76.0922	24.75	QP	8.41	33.16	40.00	-6.84
3	154.6893	25.83	QP	13.98	39.81	43.50	-3.69
4	210.2404	25.23	QP	15.18	40.41	43.50	-3.09
5	251.6031	25.40	peak	16.56	41.96	46.00	-4.04
6	311.8636	21.86	peak	18.25	40.11	46.00	-5.89

File: FM_TX **Data:** #28 **Date:** 2013/11/25 **Temperature:** 23 ℃
Time: PM 01:13:17 **Humidity:** 58 %



Condition: FCC_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode:
Note: CHH

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	52.1523	22.68	QP	9.86	32.54	40.00	-7.46
2	74.2004	23.74	QP	8.06	31.80	40.00	-8.20
3	121.3627	26.97	peak	13.11	40.08	43.50	-3.42
4	216.6132	23.77	peak	14.51	38.28	46.00	-7.72
5	574.2886	13.10	peak	23.36	36.46	46.00	-9.54
6	976.6733	9.35	peak	29.94	39.29	54.00	-14.71

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)
1012.1795	H	49.3	----	-14.22	35.1	----	74.0	54.0	-18.9
1032.6923	H	49.5	----	-14.12	35.4	----	74.0	54.0	-18.6
1053.8461	H	48.9	----	-14.02	34.9	----	74.0	54.0	-19.1
1067.3077	H	48.9	----	-13.95	35.0	----	74.0	54.0	-19.0
1088.1410	H	50.5	----	-13.85	36.7	----	74.0	54.0	-17.3
1092.3077	H	49.2	----	-13.84	35.4	----	74.0	54.0	-18.6
1013.1410	V	51.1	----	-14.22	36.9	----	74.0	54.0	-17.1
1032.6923	V	49.8	----	-14.12	35.7	----	74.0	54.0	-18.3
1071.1538	V	53.7	----	-13.94	39.8	----	74.0	54.0	-14.2
1089.7436	V	56.3	----	-13.85	42.5	----	74.0	54.0	-11.5
1185.8974	V	50.1	----	-13.40	36.7	----	74.0	54.0	-17.3
1199.0385	V	49.9	----	-13.33	36.6	----	74.0	54.0	-17.4

C. below 30MHz

Frequency	. Reading (dBuV/m)	Duty	Factor	Result @3m (dBuV/m)			Limit @3m (dBuV/m)	
(MHz)	Peak	(dB)	(dB)	Peak	QP	AVG	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	194.9 kHz
Chart	Page 26
Result	PASS

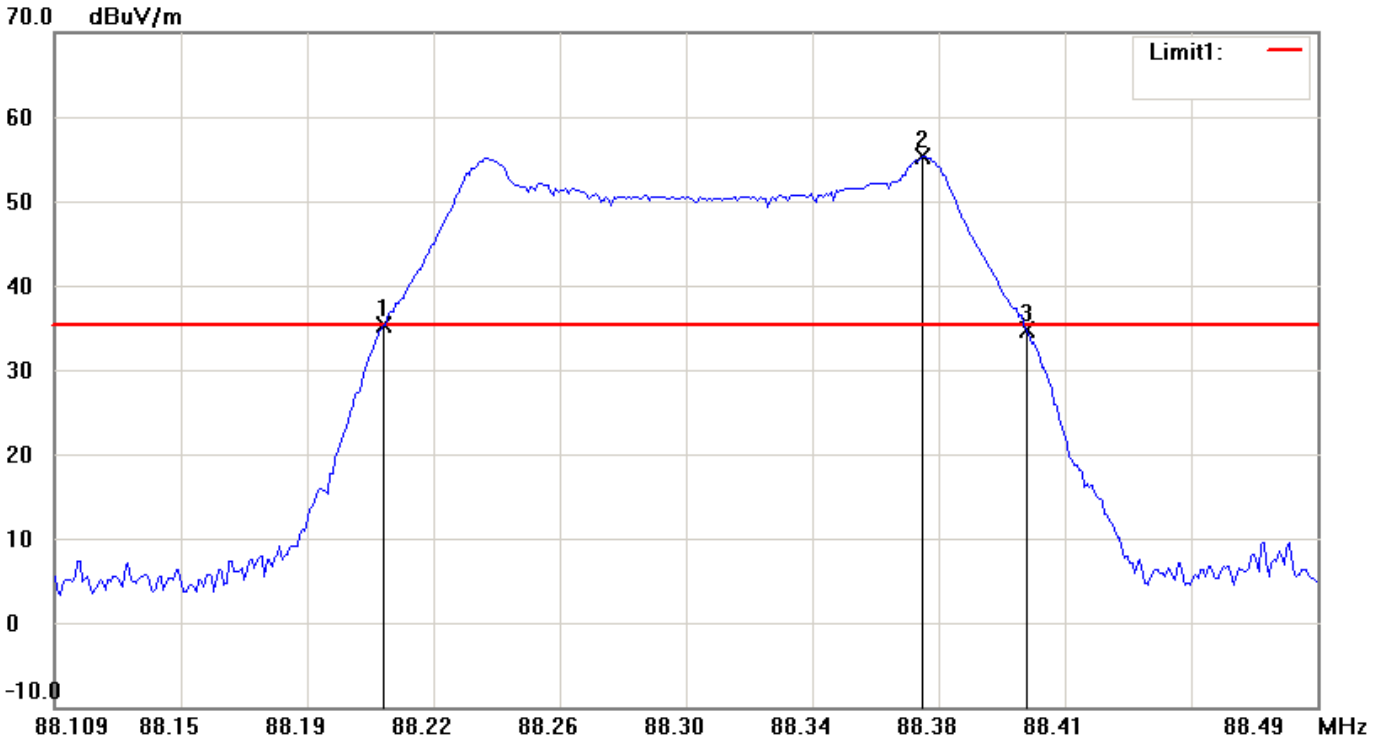
CH Mid

Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	196.5 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	195.7 kHz
Chart	Page 28
Result	PASS

File: **FM_TX_102_12_2219** **Data:** **#20** **Date:** **2014/2/17** **Temperature:** **18 ℃**
Time: **PM 01:17:00** **Humidity:** **62 %**



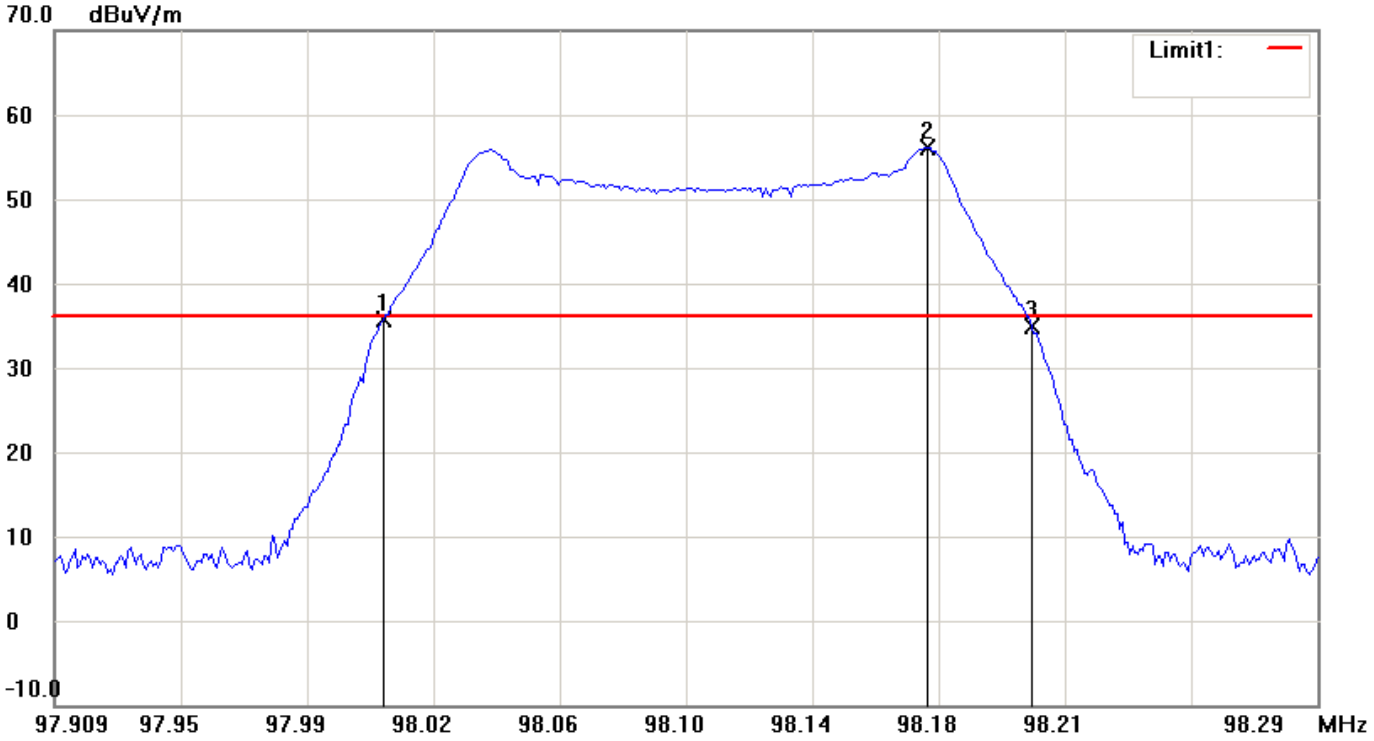
Condition: **FCC Part15 RE-Class B_30-1000MHz** **Polarization:** **Horizontal**
EUT: **Distance:** **3m**
Model:
Test Mode:
Note: **CHM**

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	88.2083	24.97	peak
2	88.3718	44.98	peak
3	88.4032	24.48	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1949	-0.46

File: FM_TX_102_12_2219 **Data:** #16 **Date:** 2014/2/17 **Temperature:** 18 ℃

Time: PM 12:40:42 **Humidity:** 62 %



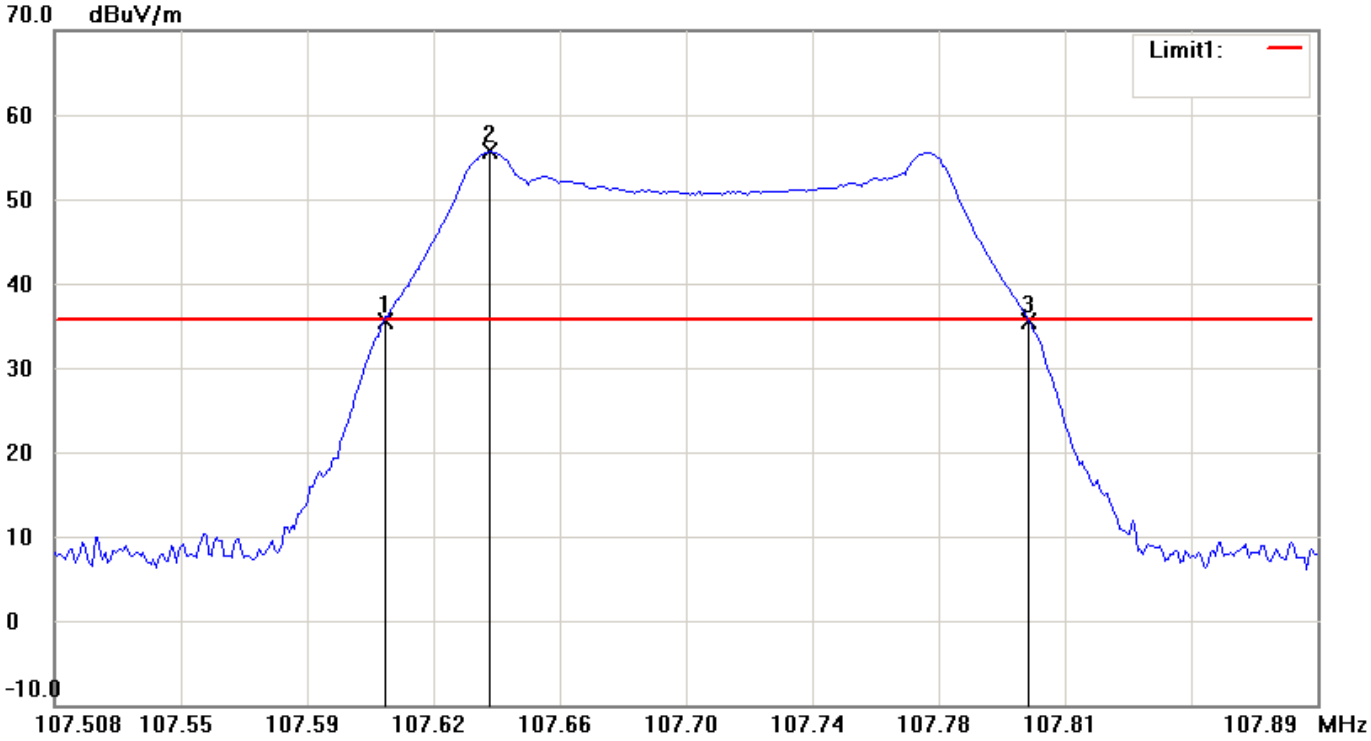
Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: CHM

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	98.0083	24.31	peak
2	98.1725	44.56	peak
3	98.2048	23.37	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1965	-0.92

File: FM_TX_102_12_2219 **Data:** #18 **Date:** 2014/2/17 **Temperature:** 18 ℃

Time: PM 12:44:20 **Humidity:** 62 %



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

No.	Frequency (MHz)	Reading (dBuV/m)	Detector
1	107.6083	23.21	peak
2	107.6405	43.34	peak
3	107.8040	23.12	peak

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.1957	-0.07

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	124.9226 kHz
Chart	Page 30
Result	PASS

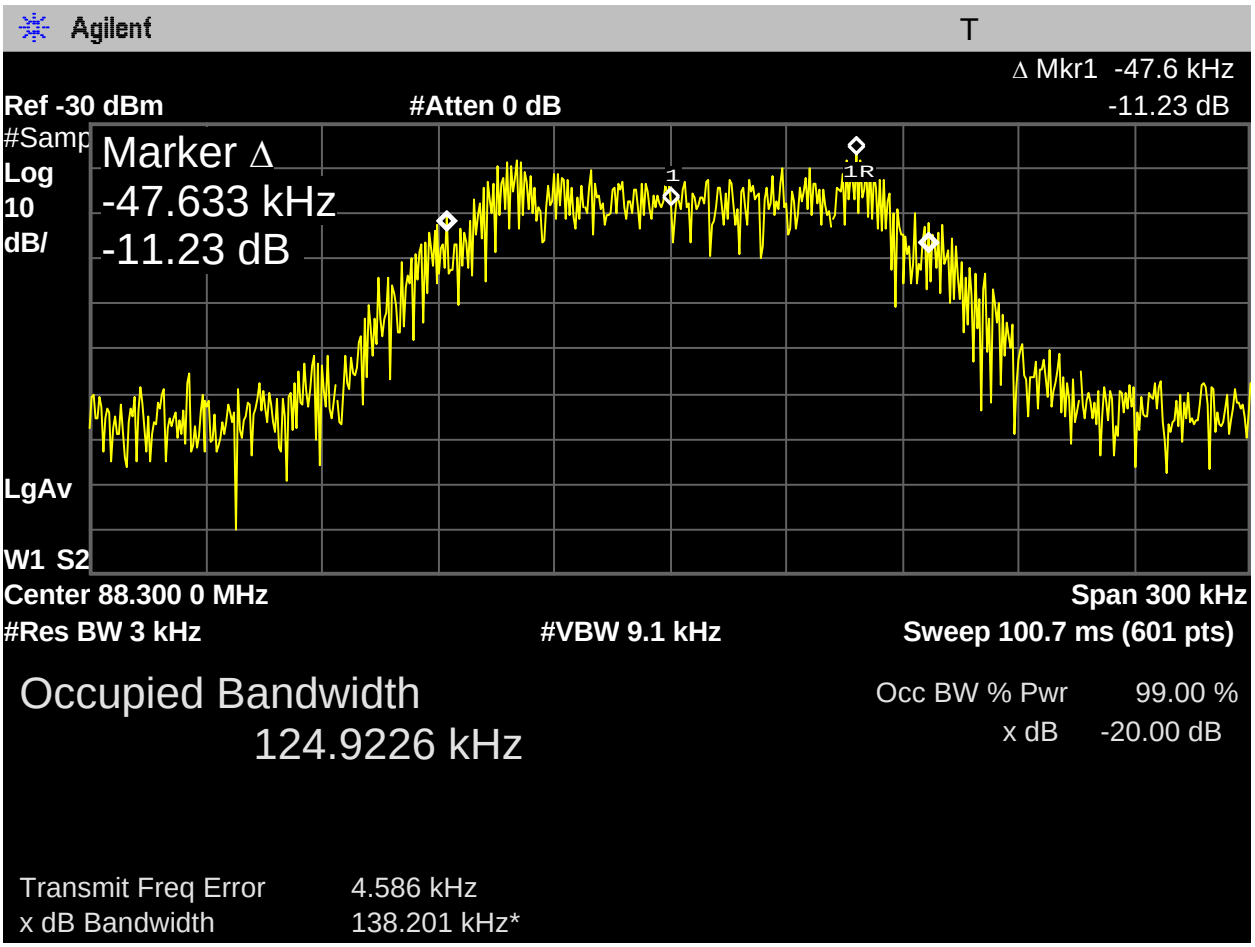
CH Mid

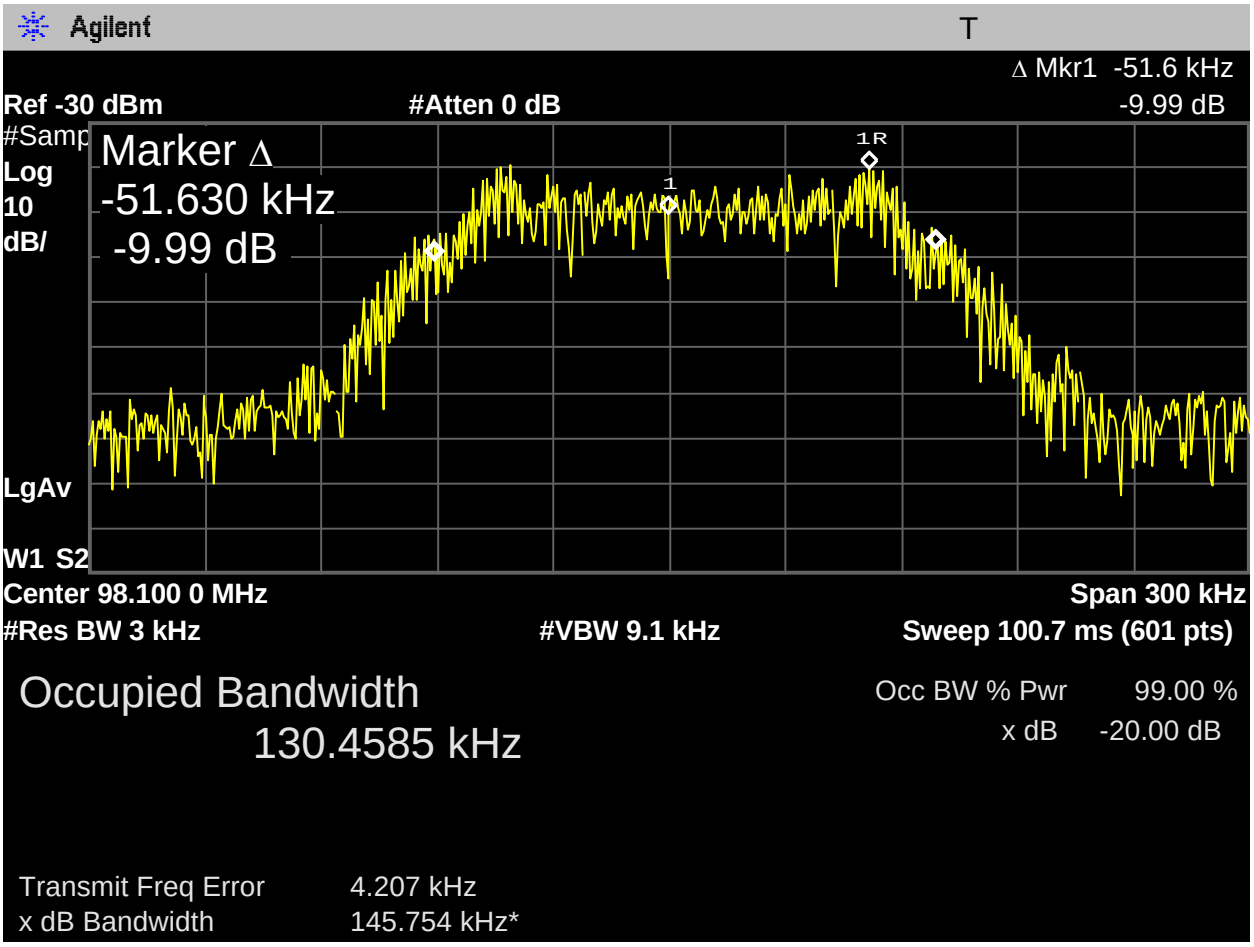
Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	130.4585 kHz
Chart	Page 31
Result	PASS

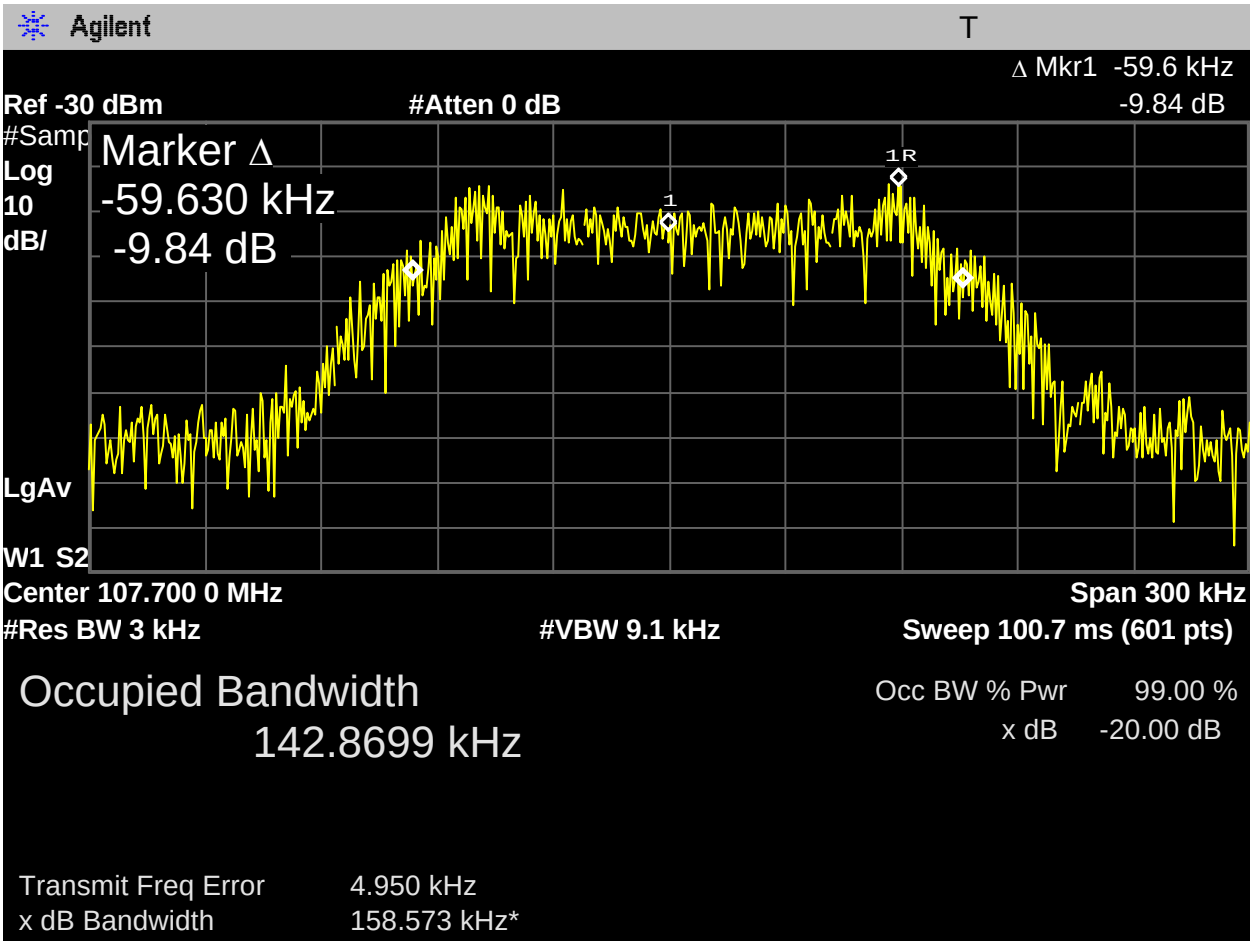
CH High

Center Frequency	107.7 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	142.8699 kHz
Chart	Page 32
Result	PASS

99% BANDWIDTH


Agilent
T
Δ Mkr1 -47.6 kHz
-11.23 dB
Ref -30 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
-47.633 kHz
-11.23 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
124.9226 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 4.586 kHz
x dB Bandwidth 138.201 kHz*


Agilent
T
Δ Mkr1 -51.6 kHz
-9.99 dB
Ref -30 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
-51.630 kHz
-9.99 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
130.4585 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 4.207 kHz
x dB Bandwidth 145.754 kHz*


Agilent
T
Δ Mkr1 -59.6 kHz
-9.84 dB
Ref -30 dBm
#Atten 0 dB
#Samp
Log
10
dB/
Marker Δ
-59.630 kHz
-9.84 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
142.8699 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 4.950 kHz
x dB Bandwidth 158.573 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	01/29/2014
Horn Antenna	EMCO	3115	07/21/2014
PRE-Amplifier	Agilent	8449B	11/25/2014
Spectrum Analyzer	Rohde & Schwarz	FSU46	01/08/2014
Spectrum Analyzer	Agilent	E4446A	10/03/2014
Loop Antenna	EMCO	6512	06/03/2014
PRE-Amplifier	ADVANTEST	BB525C	04/24/2014