



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

Report No.: 15-03-MAS-087-02

Client: JET OPTOELECTRONICS CO., LTD.
Product: ACTIVE RSE MONITOR-10.1 STD-BLACK
Model: ATK2010
FCC ID: Z3K-ATK2010AXX
IC ID: 9930A-ATK2010AXX
Manufacturer/supplier: JET OPTOELECTRONICS CO., LTD.

Date test item received: 2015/03/09
Date test campaign completed: 2015/03/27
Date of issue: 2015/03/27

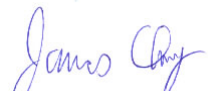
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Total number of pages of this test report: 37 pages

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Setup photos 1 pages

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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 STD-BLACK
Trade name : ATOM
Model No. : ATK2010
Power Source : 13.5V dc
Regulations applied : FCC 47 CFR, Part 15 Subpart C
Canada RSS-210 Issue 8 / RSS-Gen Issue 4

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



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1. GENERAL INFORMATION

1.1 Product Description

- a) Type of EUT : ACTIVE RSE MONITOR-10.1 STD-BLACK
b) Model No. : ATK2010
c) FCC ID : Z3K-ATK2010AXX
d) IC ID : 9930A-ATK2010AXX
e) Working Frequency : 88.3 ~ 107.7 MHz

1.2 Characteristics of Device:

ACTIVE RES MONITOR-10.1 STD-BLACK (Rear Seat Entertainment System)

1.3 Test Methodology

FCC:

Both Conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4 (2009).

IC:

Both Conducted and radiated testing were performed according to the procedures in chapter 7 and chapter 8 of ANSI C63.4 (2014).

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	8.9	pass
Bandwidth of Emission	15.239(a)	A2.8	N/A	pass
Conducted Emission	15.207	N/A	8.8	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

(1) FCC Restricted Frequency Bands

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) IC Restricted Frequency Bands^(Note)

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	1718.8-1722.2	9.0-9.2
2.1735-2.1905	16.69475 - 16.69525	2200-2300	9.3-9.5
3.020-3.026	16.80425 - 16.80475	2310-2390	10.6-12.7
4.125-4.128	25.5-25.67	2655-2900	13.25-13.4
4.17725-4.17775	37.5-38.25	3260-3267	14.47-14.5
4.20725-4.20775	73-74.6	3332-3339	15.35-16.2
5.677-5.683	74.8-75.2	3345.8-3358	17.7-21.4
6.215-6.218	108-138	3500-4400	22.01-23.12
6.26775-6.26825	156.52475-156.52525	4500-5150	23.6-24.0
6.31175-6.31225	156.7-156.9	5350-5460	31.2-31.8
8.291-8.294	240-285	7250-7750	36.43-36.5
8.362-8.366	322-335.4	8025-8500	Above 38.6
8.37625-8.38675	399.9-410		
8.41425-8.41475	608-614		
12.29-12.293	960-1427		
12.51975-12.52025	1435-1626.5		
12.57675-12.57725	1645.5-1646.5		
13.36-13.41	1660-1710		

Note: Certain frequency bands listed in Table and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200-and-300-series RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

2.3 Limitation

(1) Conducted Emission Limits :

For unintentional device, according to §15.107(a) and RSS-Gen_8.8 Line Conducted Emission Limits is as 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.

According to RSS-210_A2.8, The occupied bandwidth shall not exceed 200 kHz. If the audio input signal is audio and the transmitter is frequency modulated, compliance with the above requirement shall be demonstrated by modulating the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of 75kHz, or 50% of the manufacturer's rated deviation, whichever is less.

(3) Radiated Emission Limits :

According to 15.239 (c), the field strength of emissions appearing within the Restricted Bands shall not exceed.

According to RSS-210_A2.8, outside the 200 kHz band (as well as outside the 88-108 MHz band), the general field strength limits listed in RSS-Gen apply.

The general radiated limits in 15.209 and RSS-Gen_8.9, as following table:

Frequency (MHz)	Field Strength		Measurement Distance (meters)
	μ V/meter	dB μ V/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

*According to RSS-Gen_8.9, unless otherwise specified, for all frequencies greater than 1GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured emission is less than 20dB above the average limit.

According to 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) and RSS-Gen_8.9, 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

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 RSS-210_A2.8, the field strength shall not exceed 250 microvolts/m measured at 3 meters with an average meter. Any type of modulation (and carrier frequencies within the band 88-108 MHz) may be used for this category.

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.

The manufacturer, importer or distributor shall meet the labelling requirements set out in this section and in Notice 2014 – DRS1003 for electronic labelling for every unit:

- (i) prior to marketing in Canada, for devices manufactured in Canada and
- (ii) prior to importation into Canada, for imported devices.

The label for the radio apparatus represents the manufacturer's or importer's compliance to Industry Canada regulatory requirements.

2.5 User Information

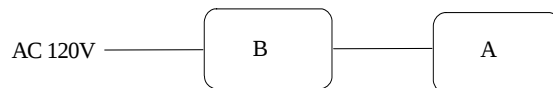
The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 STD-BLACK*	JET OPTOELECTRONICS CO., LTD.	ATK2010	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
☒	16 dB higher than 50% of the manufacturer's rated deviation 50% of the manufacturer's rated deviation: $\frac{75kHz}{2} = 37.5kHz$

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 3 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

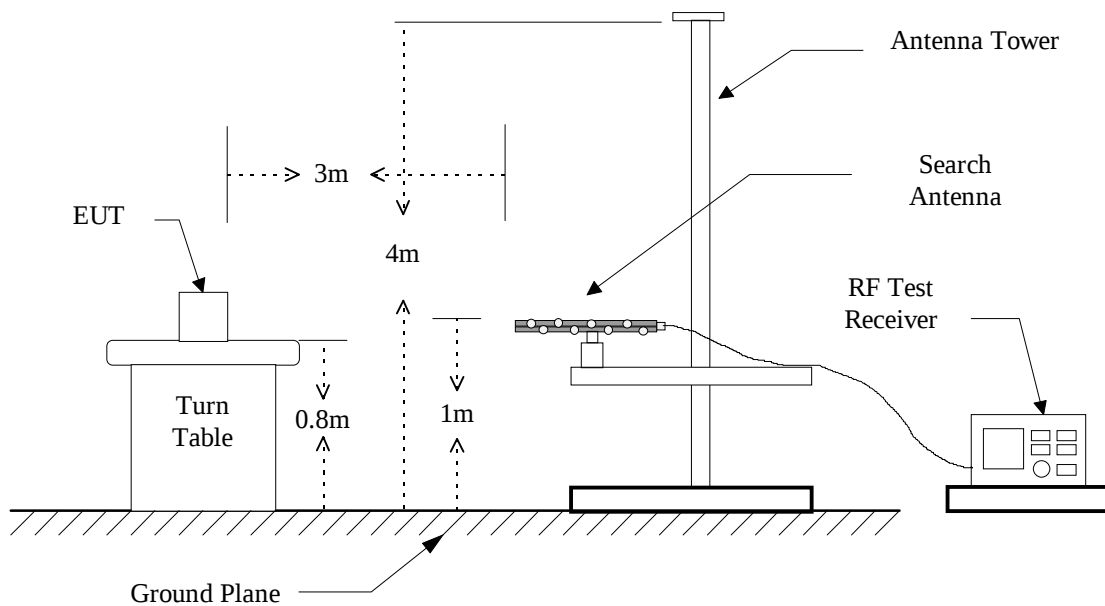
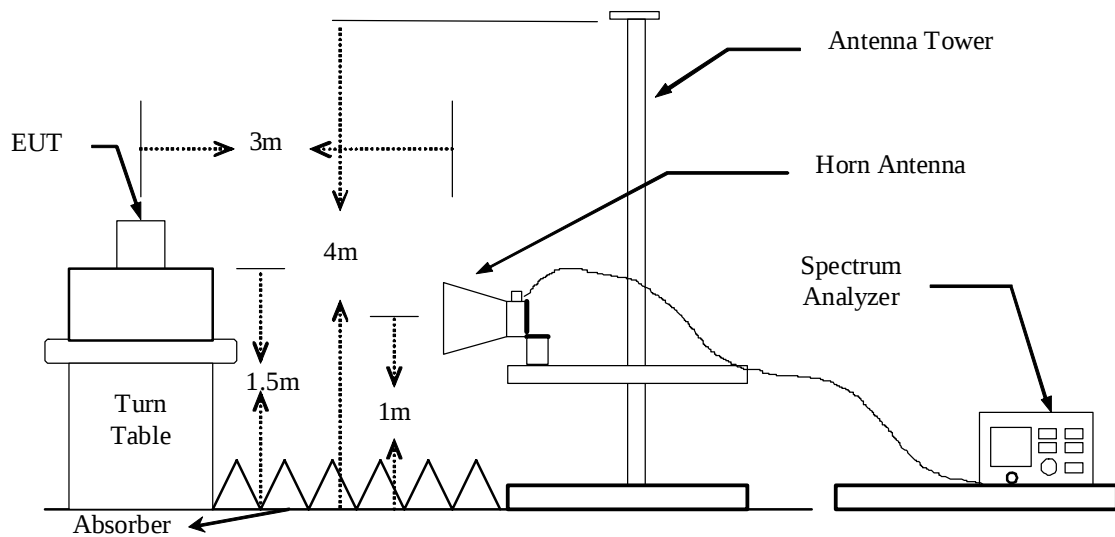


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Test Data

4.3.1 Fundamental and Harmonic

4.3.1.1 Operated mode : Tx;88.300 MHz

Test Date : Mar. 09, 2015

Temperature : 20 °C

Humidity : 57%

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	37.6	----	H	10.20	47.8	----	245.5	----	2500.0	250.0	-4.5
88.300	34.0	----	V	10.20	44.2	----	162.2	----	2500.0	250.0	-87.8

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	17.1	H	22.51	39.6	46.0	-6.4
618.100	21.0	V	22.51	43.5	46.0	-2.5
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 : Mar. 09, 2015

Temperature : 20 °C

Humidity : 57%

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	35.8	----	H	11.94	47.7	----	242.7	----	2500.0	250.0	-7.3
98.100	35.0	----	V	11.94	46.9	----	221.3	----	2500.0	250.0	-28.7

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 : Mar. 09, 2015

Temperature : 20 °C

Humidity : 57%

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	34.0	----	H	13.32	47.3	----	231.7	----	2500.0	250.0	-18.3
107.700	33.4	----	V	13.32	46.7	----	216.3	----	2500.0	250.0	-33.7

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)
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	19.1	H	25.24	44.3	46.0	-1.7
861.600	----	V	25.24	----	46.0	----
969.300	----	H	26.30	----	54.0	----
969.300	----	V	26.30	----	54.0	----

Frequency	Reading @3m (dBuV/m)	Ant Pol	Correct Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin
				Peak	AVG	Peak	AVG	
1077.000	----	H	-14.01	----	----	74	54	----
1077.000	----	V	-14.01	----	----	74	54	----

Note:

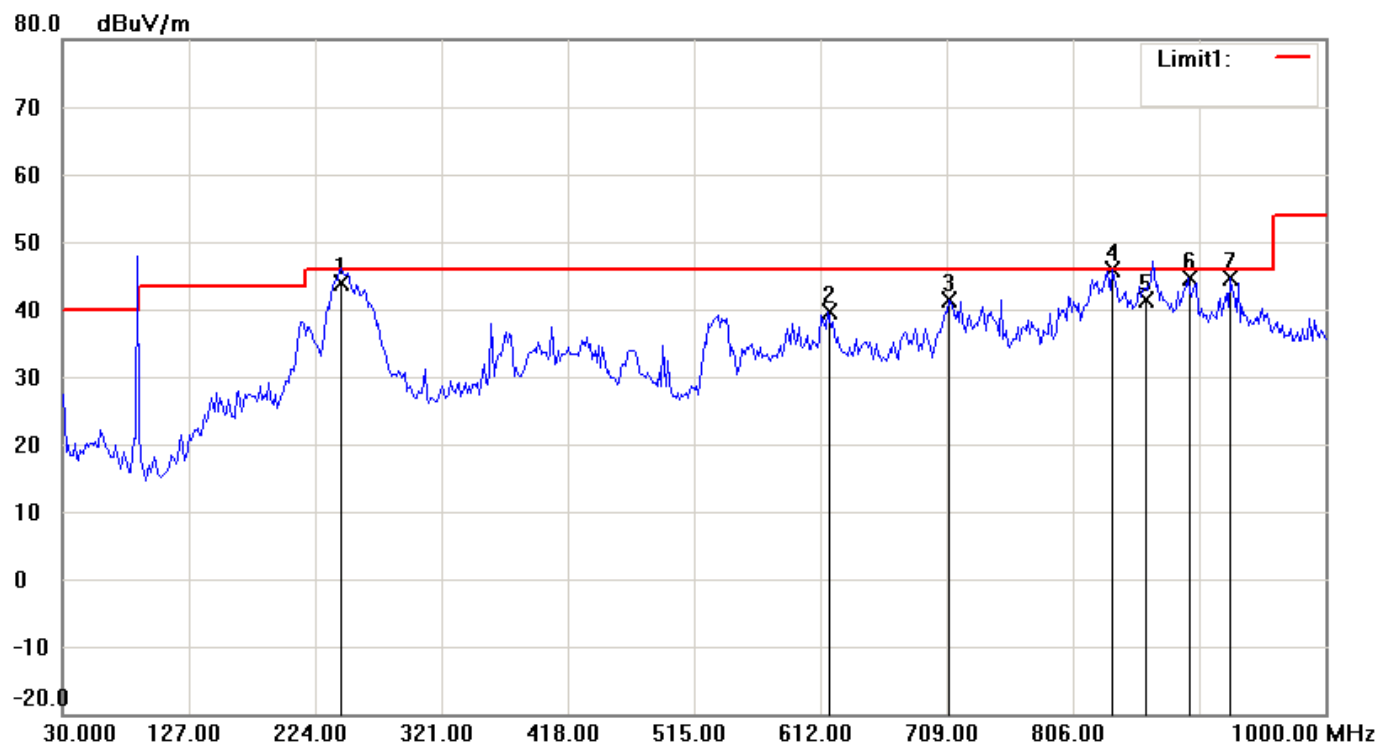
1. Peak Result = Peak Reading + Correct Factor
2. AVG Result = AVG Reading + Correct Factor
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.
4. Remark "----" means that there is no emission to be measured.

4.3.2 Other Emission

4.3.2.1 Operated mode : Tx;88.300 MHz

A. 30MHz to 1GHz

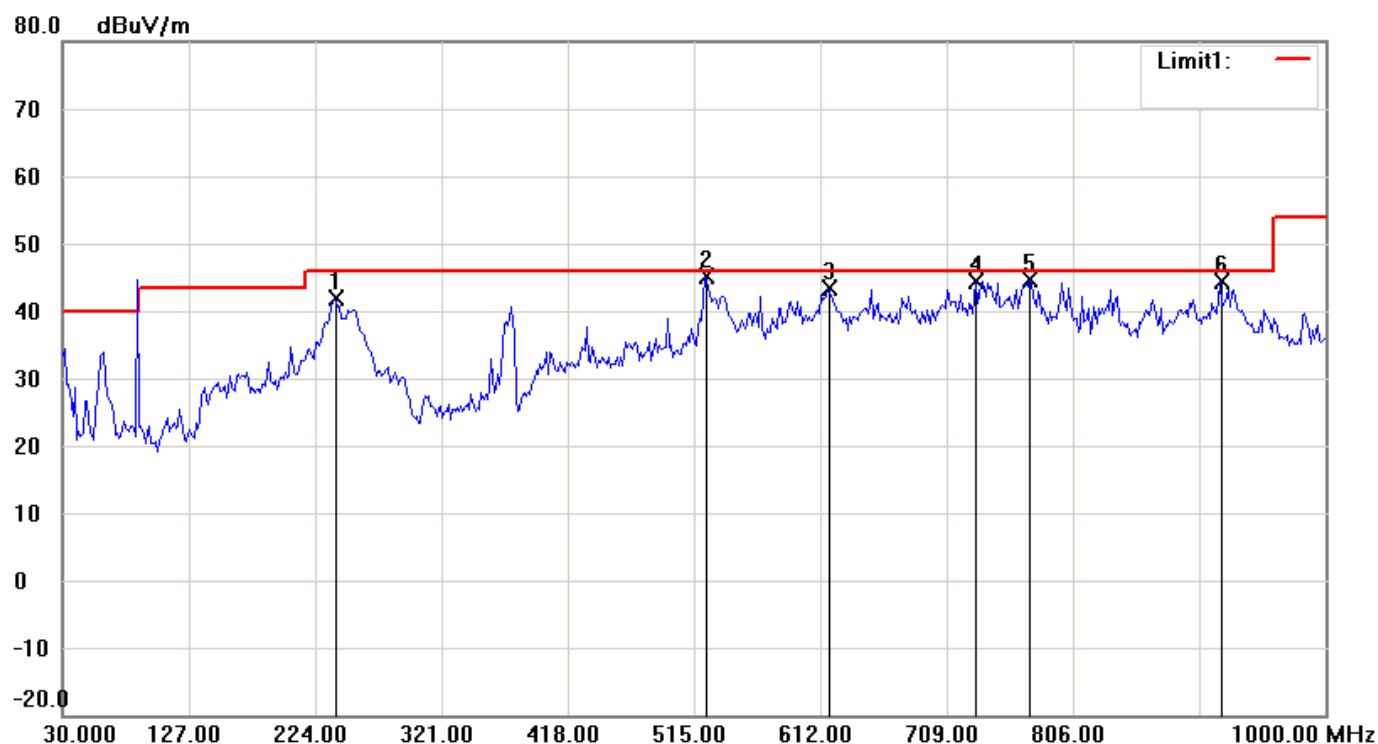
File: 0309 Data: #19 Date: 2015/3/9 Temperature: 20 °C
Time: PM 04:17:48 Humidity: 57 %



Condition: FCC Class B 3M Radiation Polarization: Horizontal
EUT: Distance:
Model: ATK2010
Test Mode: FM-LOW
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	243.2692	30.53	QP	13.39	43.92	46.00	-2.08
2	617.5962	17.49	peak	22.10	39.59	46.00	-6.41
3	710.8654	18.04	peak	23.38	41.42	46.00	-4.58
4	836.7788	20.27	peak	25.56	45.83	46.00	-0.17
5	861.1700	15.58	QP	25.91	41.49	46.00	-4.51
6	894.2950	18.30	peak	26.26	44.56	46.00	-1.44
7	926.9391	18.26	peak	26.41	44.67	46.00	-1.33

File: 0309 Data: #18 Date: 2015/3/9 Temperature: 20 °C
Time: PM 02:58:03 Humidity: 57 %



Condition: FCC Class B 3M Radiation Polarization: Vertical
EUT: Distance:
Model: ATK2010
Test Mode: FM-LOW
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	238.3013	28.57	peak	13.20	41.77	46.00	-4.23
2	522.7723	25.00	peak	20.14	45.14	46.00	-0.86
3	617.5962	21.39	peak	22.10	43.49	46.00	-2.51
4	731.0737	20.79	peak	23.65	44.44	46.00	-1.56
5	773.0448	20.31	peak	24.38	44.69	46.00	-1.31
6	919.1667	17.99	peak	26.39	44.38	46.00	-1.62

B. below 30MHz

Frequency (MHz)	. Reading (dBuV/m) Peak	Duty (dB)	Factor (dB)	Result @3m (dBuV/m)			Limit @3m (dBuV/m)	
				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

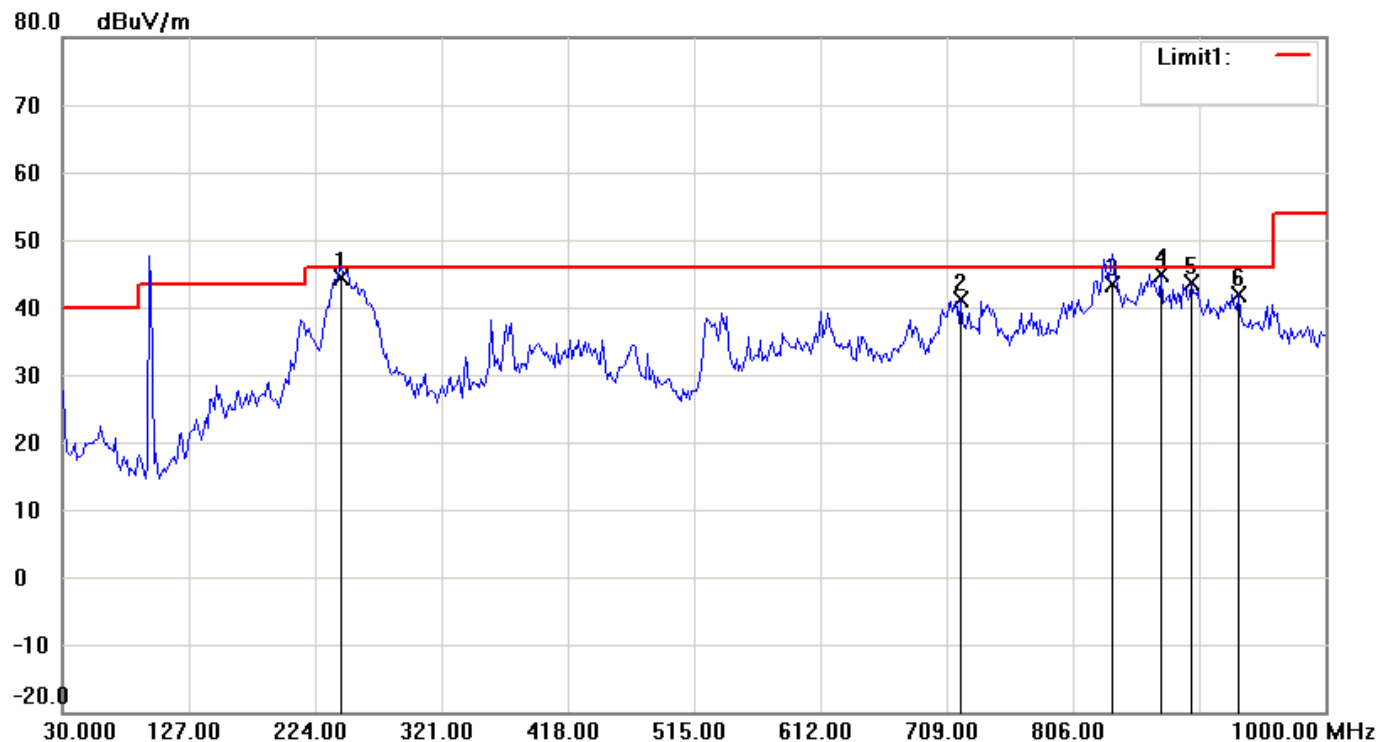
File: 20150309 凱銳 Data #20
:

Date: 2015/3/9

Temperature: 20 °C

Time: 下午 04:31:31

Humidity: 57 %



Condition: FCC Class B 3M Radiation
EUT:
Model: RSE-2010
Test Mode: FM-MID
Note:

Polarization: Horizontal
Distance:

No.	Frequenc y (MHz)	Reading (dBuV/m)	Detecto r	Correcte d (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margi n (dB)	Heigh t (cm)	Degre e (°)	Comment
1	242.9647	31.12	QP	13.38	44.50	46.00	-1.50	---	---	
2	720.1923	17.73	peak	23.50	41.23	46.00	-4.77	---	---	
3	836.0737	17.89	QP	25.55	43.44	46.00	-2.56	110	125	
4	874.0865	18.73	peak	26.04	44.77	46.00	-1.23	---	---	
5	897.4038	17.39	peak	26.29	43.68	46.00	-2.32	---	---	
6	933.1571	15.46	peak	26.44	41.90	46.00	-4.10	---	---	

File: 0309

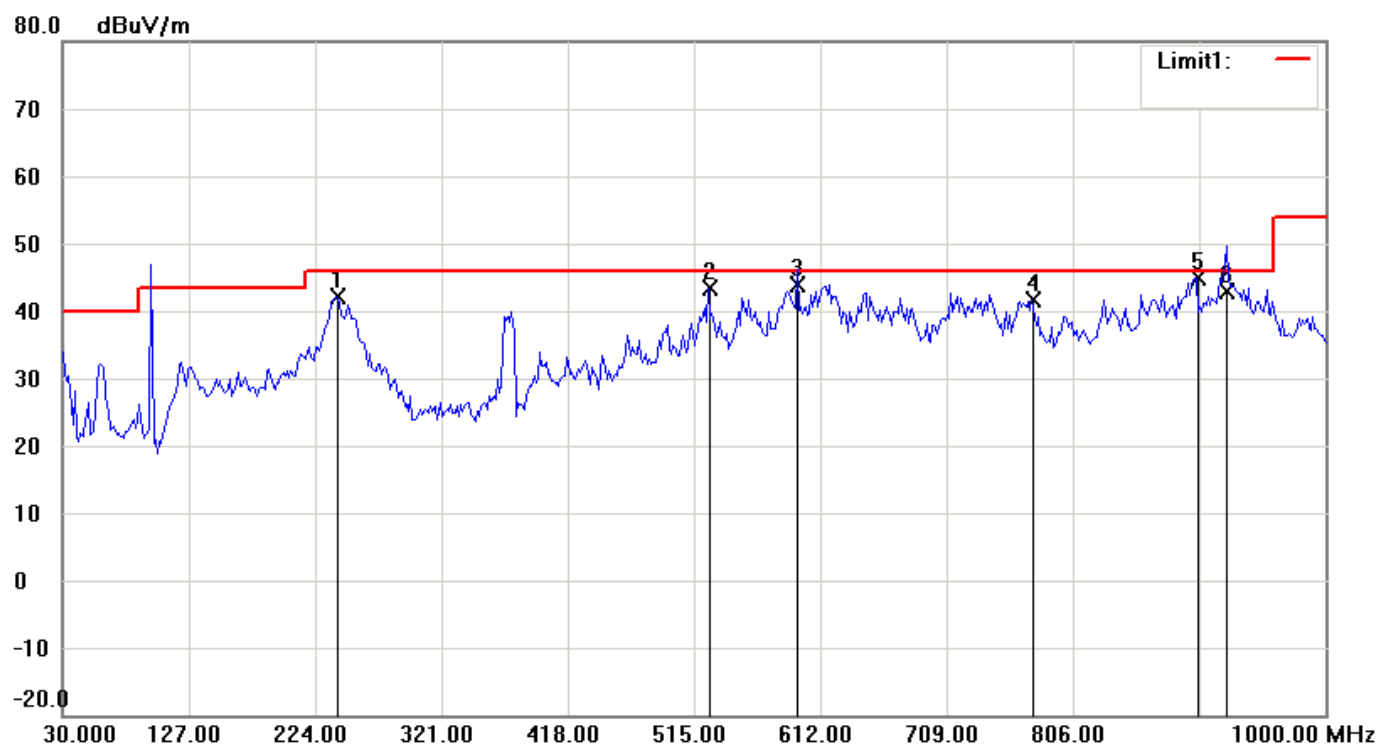
Data: #21

Date: 2015/3/9

Temperature: 20 °C

Time: PM 04:37:25

Humidity: 57 %



Condition: FCC Class B 3M Radiation

Polarization: Vertical

EUT:

Distance:

Model: ATK2010

Test Mode: FM-MID

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	239.8558	28.83	peak	13.27	42.10	46.00	-3.90
2	525.8814	23.26	peak	20.21	43.47	46.00	-2.53
3	593.9903	22.31	QP	21.56	43.87	46.00	-2.13
4	774.5994	17.21	peak	24.40	41.61	46.00	-4.39
5	900.5128	18.64	peak	26.32	44.96	46.00	-1.04
6	922.8045	16.40	QP	26.41	42.81	46.00	-3.19

B. below 30MHz

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

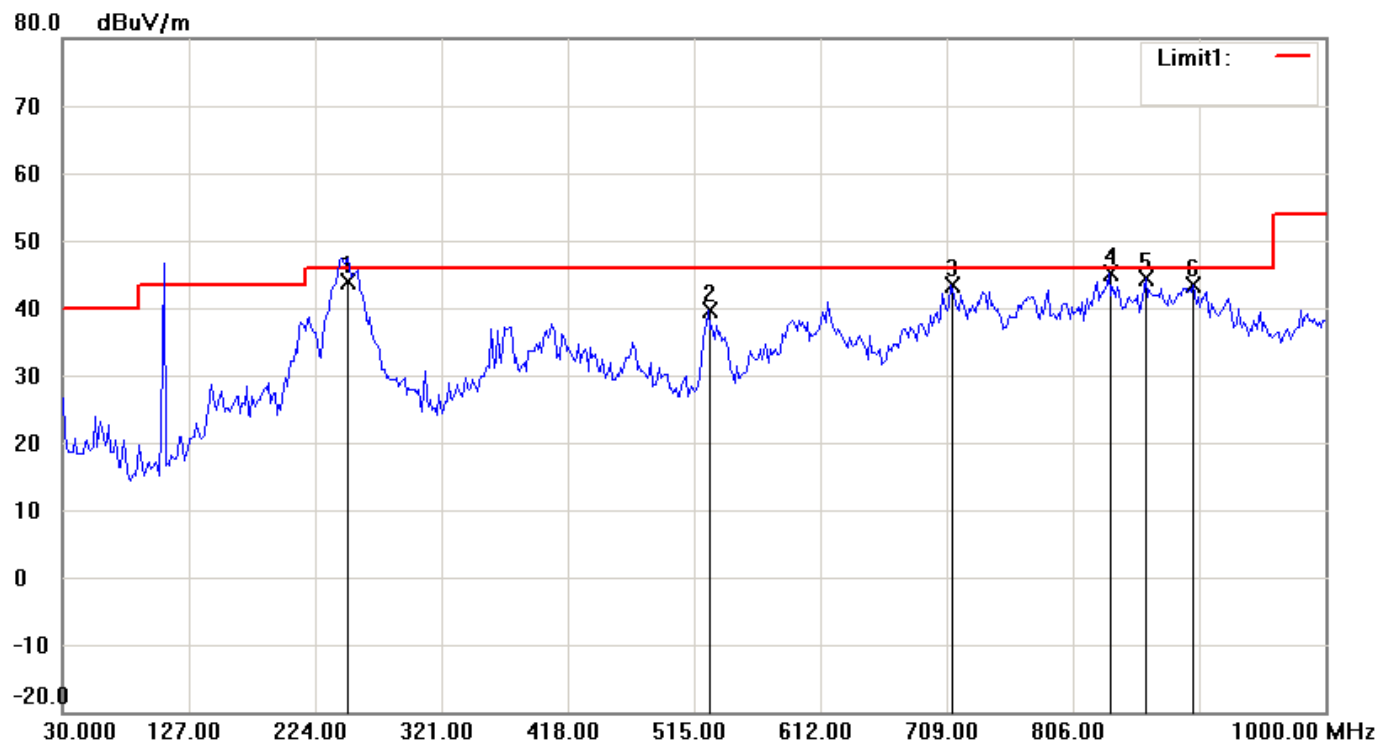
Note:

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
 - $\pm 4.2\text{dB}$ ($9\text{kHz} \leq f \leq 30\text{MHz}$)
 - $\pm 4.6\text{dB}$ ($30\text{MHz} \leq f < 300\text{MHz}$).
 - $\pm 4.4\text{dB}$ ($300\text{MHz} \leq f < 1000\text{MHz}$).
 - $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$).
 - $\pm 4.4\text{dB}$ ($18\text{GHz} < f \leq 40\text{GHz}$).
- 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: 0309 Data: #23 Date: 2015/3/9 Temperature: 20 °C
Time: PM 04:58:02 Humidity: 57 %



Condition: FCC Class B 3M Radiation Polarization: Horizontal
EUT: Distance:
Model: ATK2010
Test Mode: FM-HI
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	248.2212	30.25	QP	13.56	43.81	46.00	-2.19
2	525.8814	19.32	peak	20.21	39.53	46.00	-6.47
3	712.4200	19.91	peak	23.40	43.31	46.00	-2.69
4	833.6700	19.71	peak	25.51	45.22	46.00	-0.78
5	861.6506	18.35	peak	25.91	44.26	46.00	-1.74
6	898.9583	17.11	peak	26.31	43.42	46.00	-2.58

File: 0309

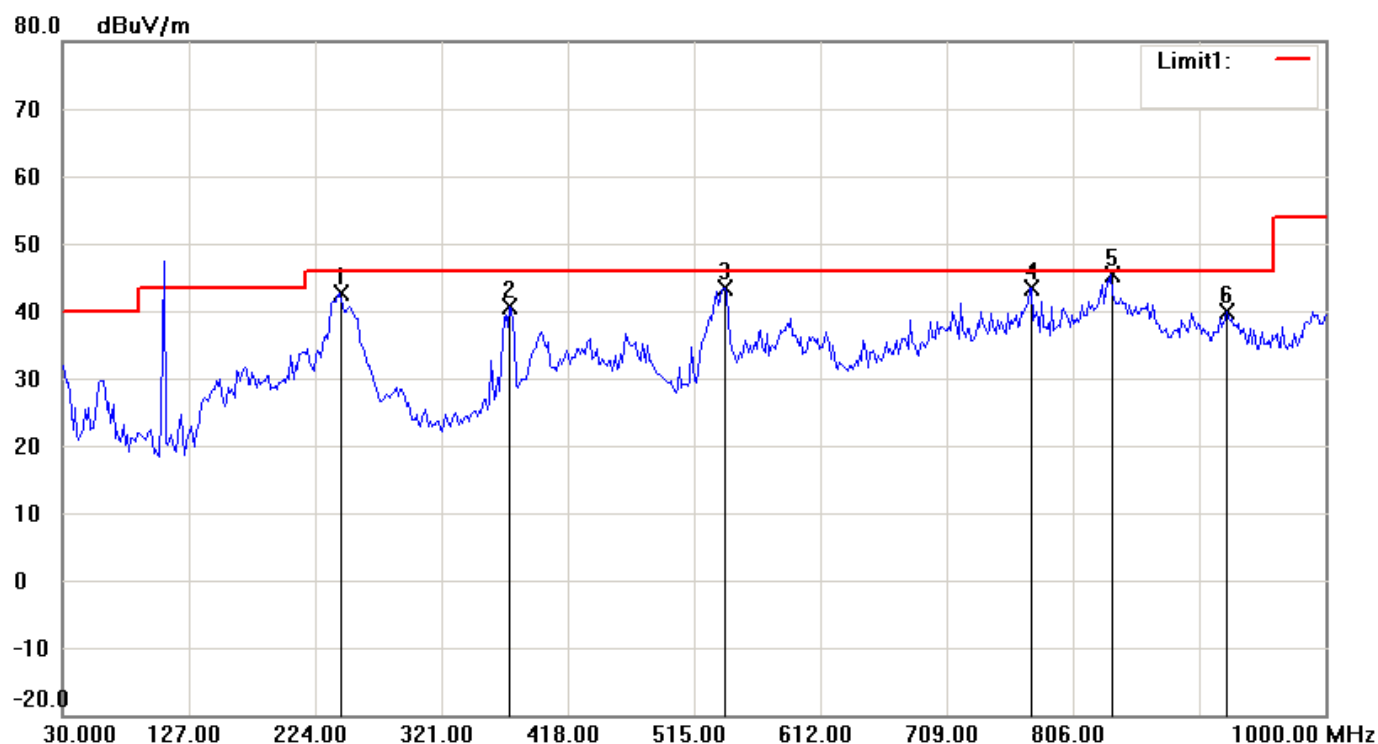
Data: #22

Date: 2015/3/9

Temperature: 20 °C

Time: PM 04:52:09

Humidity: 57 %



Condition: FCC Class B 3M Radiation

Polarization: Vertical

EUT:

Distance:

Model: ATK2010

Test Mode: FM-HI

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	242.9647	29.17	peak	13.38	42.55	46.00	-3.45
2	373.5416	23.75	peak	16.96	40.71	46.00	-5.29
3	538.3173	22.79	peak	20.50	43.29	46.00	-2.71
4	773.0450	19.04	peak	24.38	43.42	46.00	-2.58
5	835.2244	19.76	peak	25.53	45.29	46.00	-0.71
6	923.8301	13.36	peak	26.41	39.77	46.00	-6.23

B. above 1GHz

Frequency (MHz)	Ant Pol	Reading (dBuV/m)@3m		Correct Factor (dB)	Result (dBuV/m)@3m		Limit (dBuV/m)@3m		Margin (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
1079.1230	H	68.6	----	-25.30	43.3	----	74	54	-10.7
1079.1230	V	71.0	----	-25.30	45.7	----	74	54	-8.3

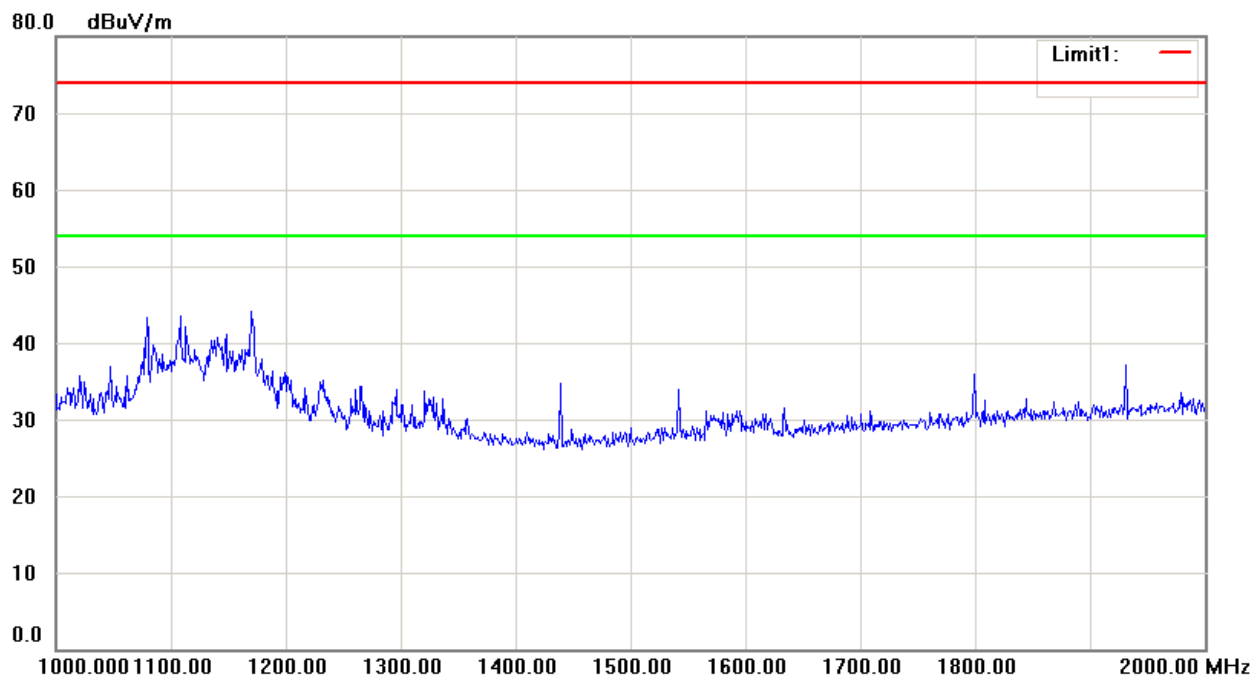
C. below 30MHz

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

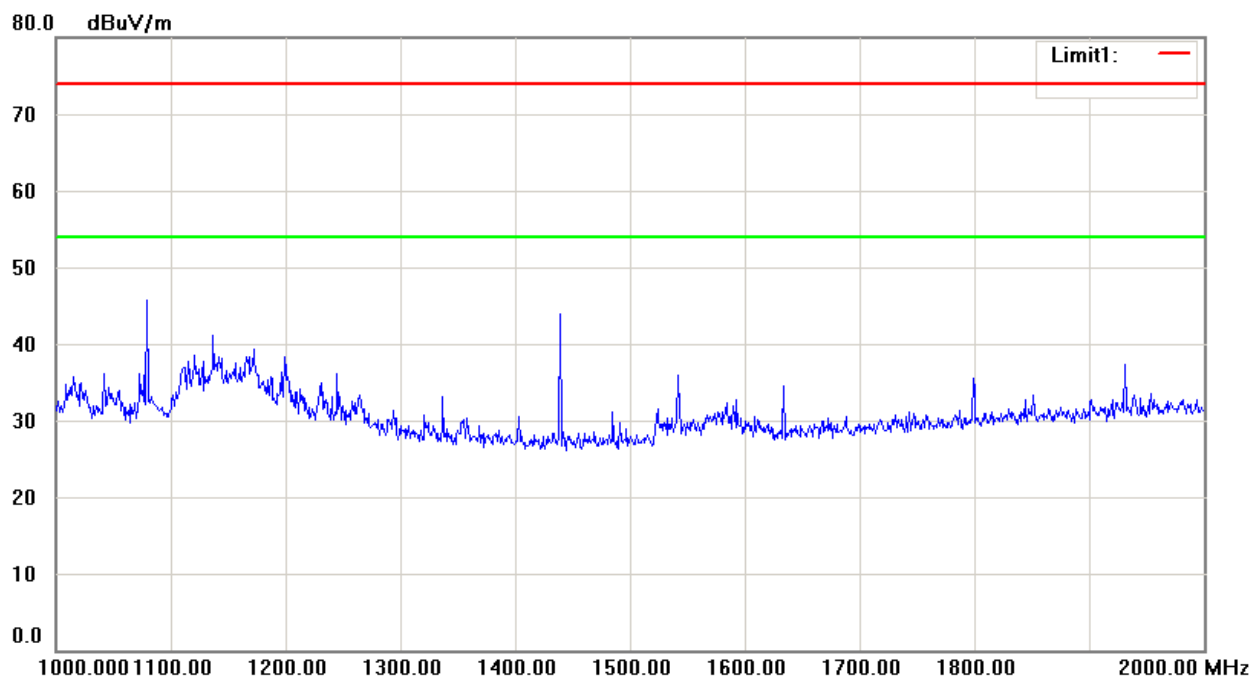
Note:

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
 - $\pm 4.2\text{dB}$ ($9\text{kHz} \leq f \leq 30\text{MHz}$)
 - $\pm 4.6\text{dB}$ ($30\text{MHz} \leq f < 300\text{MHz}$).
 - $\pm 4.4\text{dB}$ ($300\text{MHz} \leq f < 1000\text{MHz}$).
 - $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$).
 - $\pm 4.4\text{dB}$ ($18\text{GHz} < f \leq 40\text{GHz}$).
- 4 Remark "----" means that the emissions level is too low to be measured.
5. Please refer to page 25 for chart

HORIZONTAL



VERTICAL



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:

$$\text{RESULT} = \text{READING} + \text{CORR. FACTOR}$$

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	FSU
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

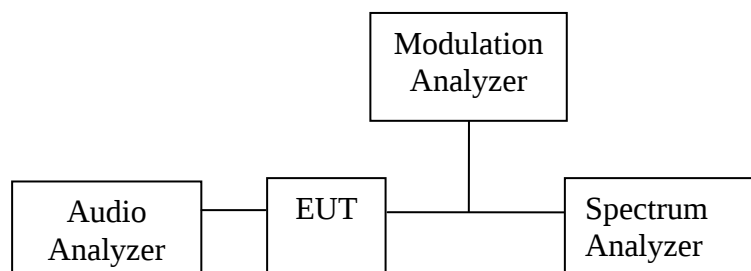
Per FCC rule §15.239(a), Emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operation frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

According to RSS-210_A2.8, The occupied bandwidth shall not exceed 200 kHz. If the audio input signal is audio and the transmitter is frequency modulated, compliance with the above requirement shall be demonstrated by modulating the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of 75kHz, or 50% of the manufacturer's rated deviation, whichever is less.

5.2 Test Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Rohde & Schwarz	FSU
Modulation Analyzer	HP	8901A
Audio Analyzer	Rohde & Schwarz	UPV

Figure 3: Emission bandwidth measurement configuration.



5.3.1 Test Result

Test Date : Mar. 26, 2015 Temperature : 18°C Humidity : 62%

CH Low

Center Frequency	88.3 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	198.0769 kHz
Chart	Page 29
Result	PASS

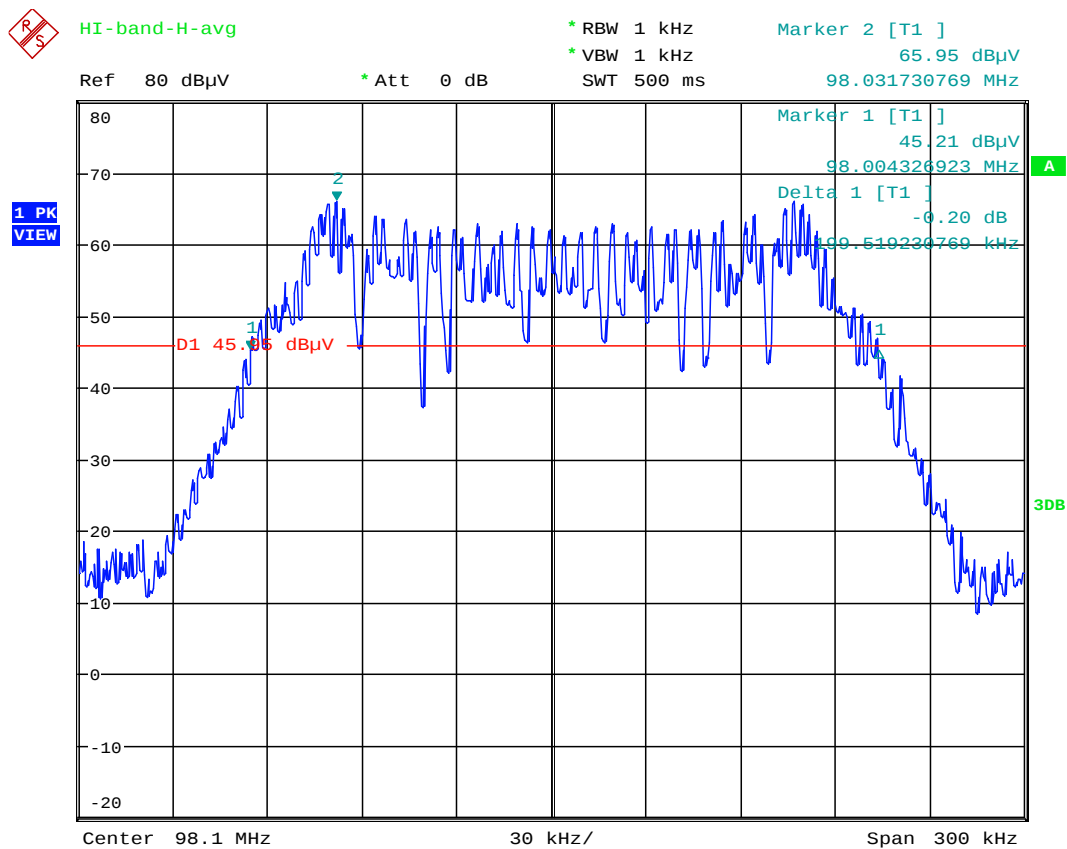
CH Mid

Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	199.5192 kHz
Chart	Page 30
Result	PASS

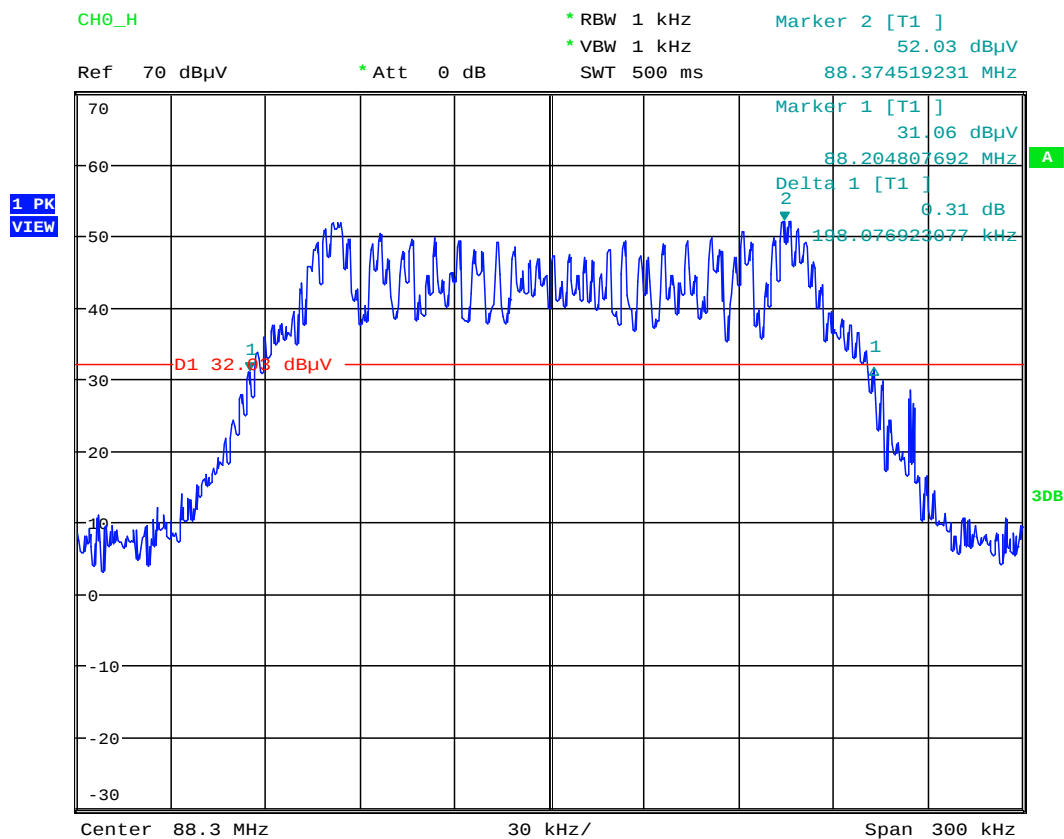
CH High

Center Frequency	107.7 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
20dB Bandwidth of Emission	197.1154 kHz
Chart	Page 31
Result	PASS

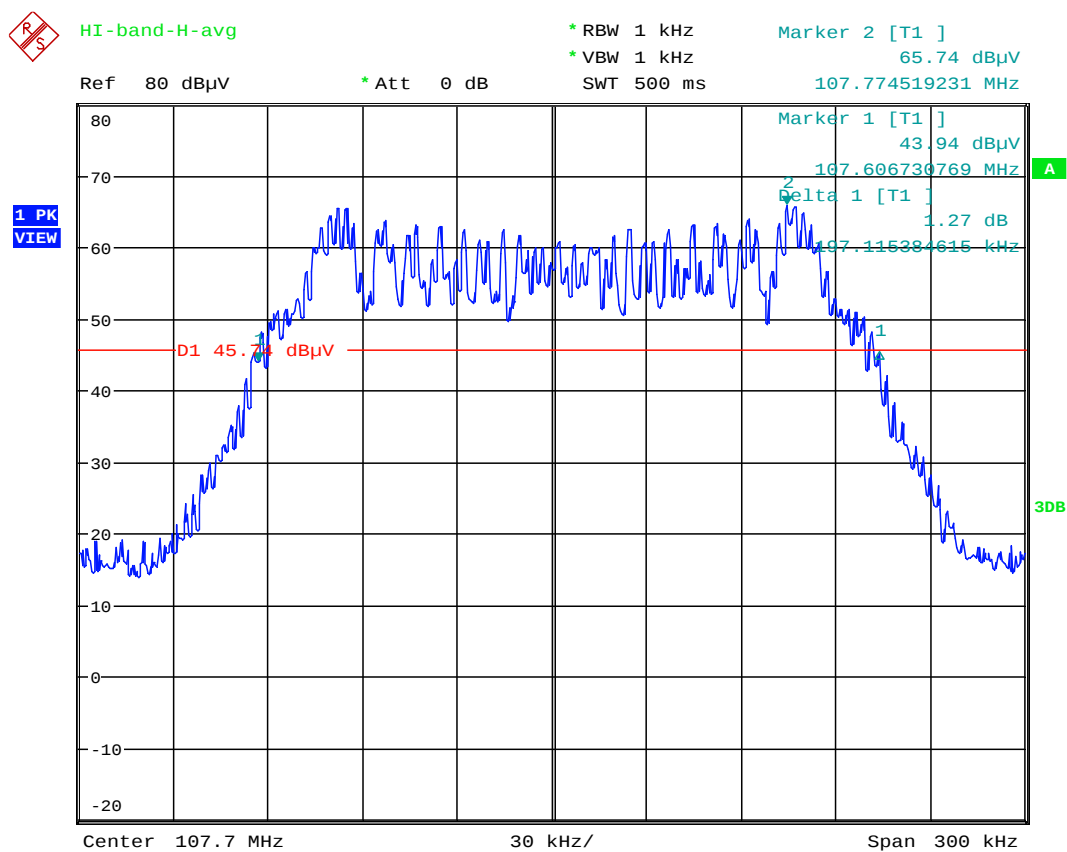
Note: The Level input to produce 50% modulation is 16 mV, therefore the magnitude 16 dB greater than it is 100.9 mV.



Date: 26.MAR.2015 08:52:37



Date: 26.MAR.2015 09:33:52



Date: 26.MAR.2015 09:03:27

5.3.2 Test Result (99% Bandwidth)

Test Date : Mar. 26, 2015

Temperature : 18°C

Humidity : 62%

CH Low

Center Frequency	88.3 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	183.1731 kHz
Chart	Page 33
Result	PASS

CH Mid

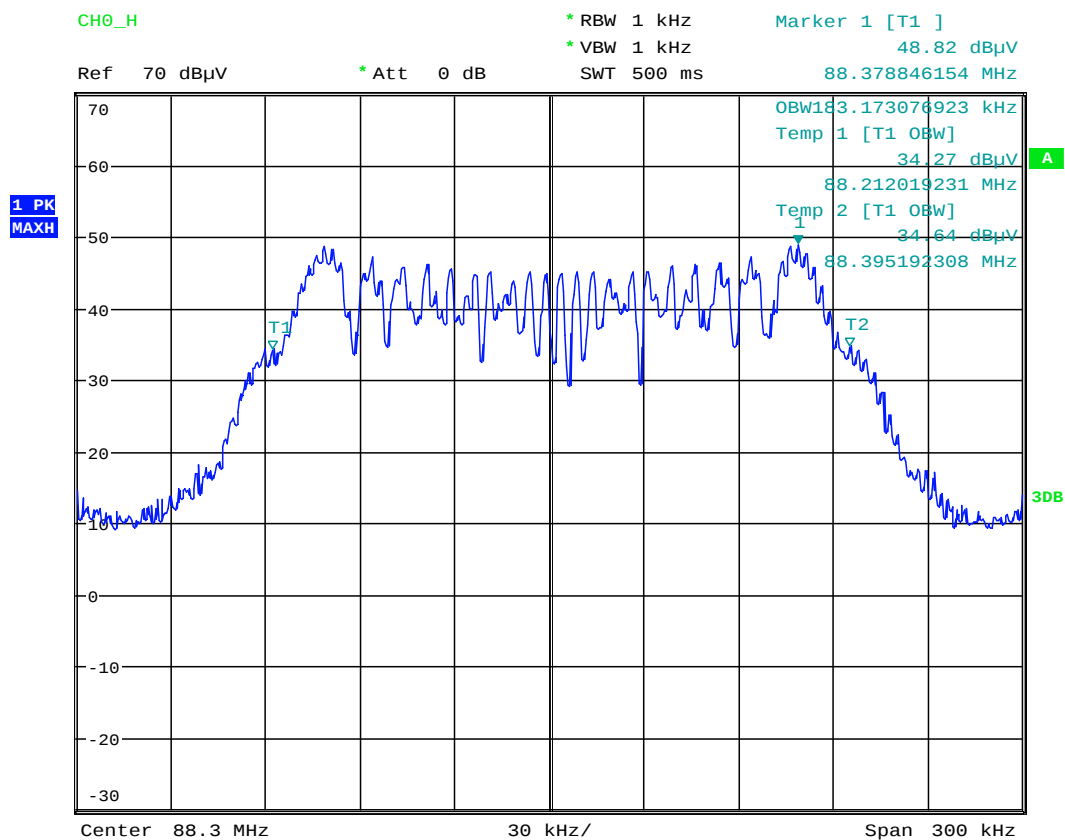
Center Frequency	98.1 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	181.7308 kHz
Chart	Page 34
Result	PASS

CH High

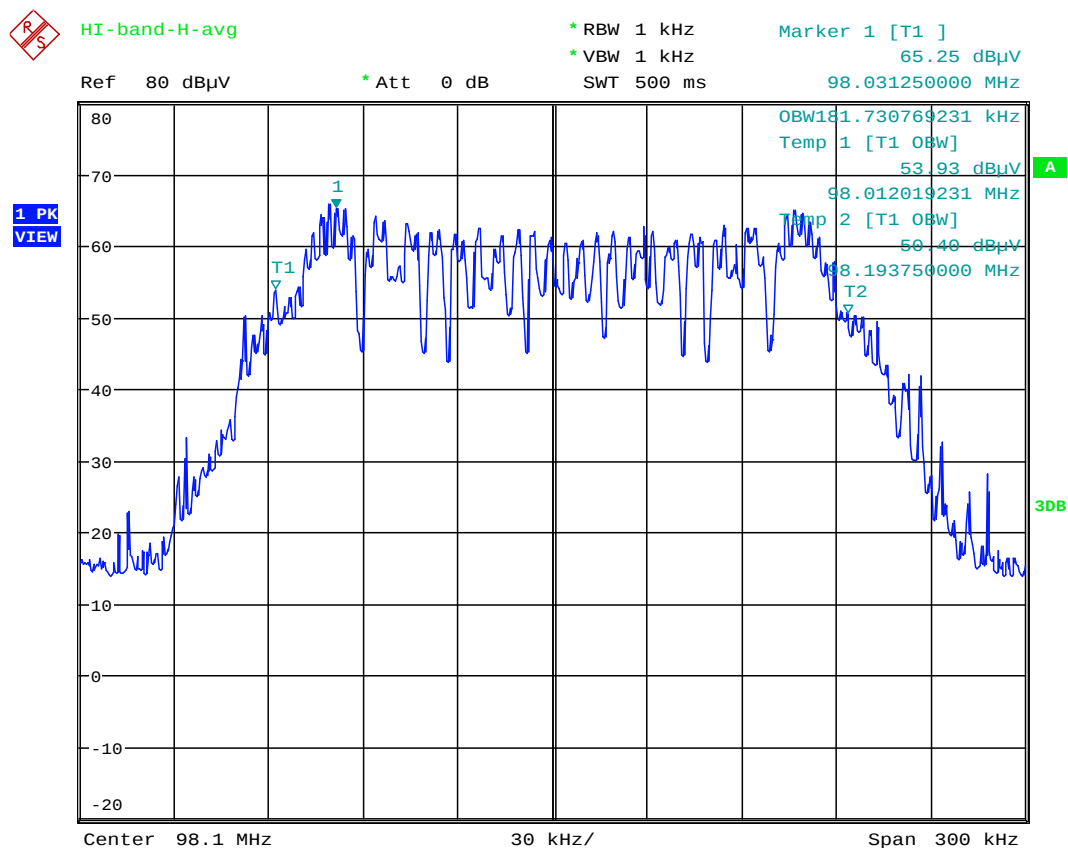
Center Frequency	107.7 MHz
Limit	< 200 kHz , frequency range of 88-108 MHz
99% Bandwidth	180.2285 kHz
Chart	Page 35
Result	PASS

Note: The Level input to produce 50% modulation is 16 mV, therefore the magnitude 16 dB greater than it is 100.9 mV.

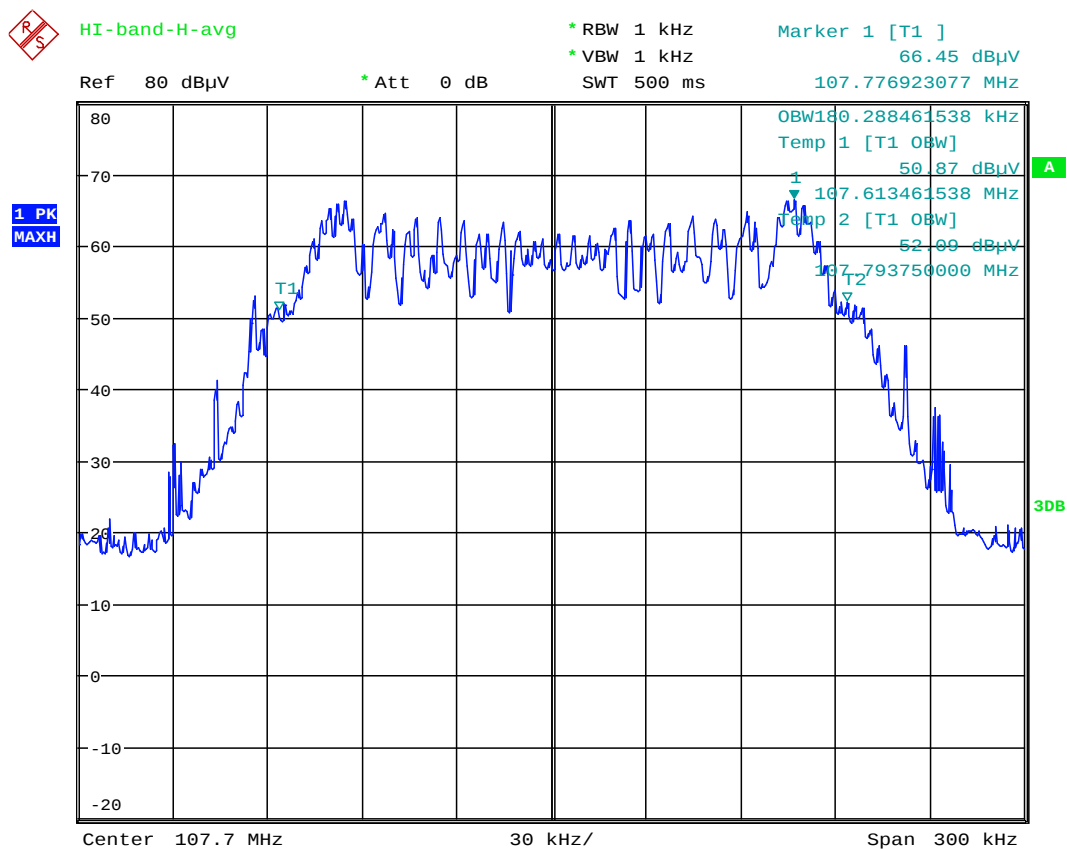
99% BANDWIDTH



Date: 26.MAR.2015 09:27:15



Date: 26.MAR.2015 08:46:48



Date: 26.MAR.2015 09:01:19

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) and RSS-Gen_8.8, 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.	S/N	Calibration Date	Next Cal. Due
EMI Receiver	R&S	ESIB 7	13054414-001	01/17/2015	01/16/2016
BiLog Antenna	ETC	MCTD2786	BL09D01004	02/07/2015	02/06/2016
Horn Antenna	EMCO	3115	13059201-001	07/22/2013	07/21/2015
PRE-Amplifier	Agilent	8449B	13040709-001	11/21/2014	11/20/2015
Spectrum Analyzer	Rohde & Schwarz	FSU	13040904-001	01/17/2015	01/16/2016
Audio Analyzer	Rohde & Schwarz	UPV	13044204-001	07/18/2014	07/17/2015
Modulation Analyzer	HP	8901A	43055404-001	04/16/2014	04/15/2015
Loop Antenna	EMCO	6512	13054104-001	07/01/2014	06/30/2015
PRE-Amplifier	ADVANTEST	BB525C	13052906-001	05/06/2014	05/05/2015