



FCC PART 90 CLASS II PERMISSIVE CHANGE TEST REPORT

APPLICANT	RELM WIRELESS CORP. – BK RADIO
	7100 TECHNOLOGY DRIVE
	WEST MELBOURNE FLORIDA 32094 USA
FCC ID	K95KNGM800
MODEL NUMBER	KNG-M800
PRODUCT DESCRIPTION	MOBILE 700-800MHz RADIO
DATE TESTED	04/12/13
TESTED BY	Clinton McClanahan
APPROVED BY	
TOTAL PAGES	13
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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GENERAL REMARKS

This report contains the test data required to add Emissions Designator 8K10F1W to the existing grant K95KNGM800 via a Class II permissive change.

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made, under my supervision, at:

RELM WIRELESS CORP. – BK RADIO
Engineering Lab
4830 Bob Billings Parkway
Suite 200 Lawrence KS. 66049

Authorized Signatory Name:

Date: 4/12/13

Tested by: Clinton McClanahan

Signature: *Clinton McClanahan*

GENERAL INFORMATION

DUT Specification

DUT Description	MOBILE 700-800MHz RADIO
FCC ID	K95KNGM800
Model Number	KNG-M800
Operating Frequency	763-870MHz
No. of Channels	2048
Type of Emission	8K10F1W
Modulation	FM
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz
	<input checked="" type="checkbox"/> DC Power 12V
	<input type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype
	<input type="checkbox"/> Pre-Production
	<input checked="" type="checkbox"/> Production
Type of Equipment	<input type="checkbox"/> Fixed
	<input checked="" type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
Test Conditions	The temperature was 26°C with a relative humidity of 50%.
Modification to the DUT	None
Test Exercise	The DUT was placed in continuous transmit mode.
Applicable Standards	TIA-102.CCAA, TIA-102.CCAB, FCC CFR 47 Part 90
Test Facility	Relm Wireless Corp. – BK Radio

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EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
PXA Signal Analyzer	Agilent	N9030A	MY51360190	03/22/12	03/22/14
Spectrum Analyzer	Hewlett Packard	8562E	08471	03/19/13	03/19/14

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TEST SETUP

1. Occupied Bandwidth /Emission Mask

8K10F1W

Test Method: TIA-102.CCAA 2.2.5

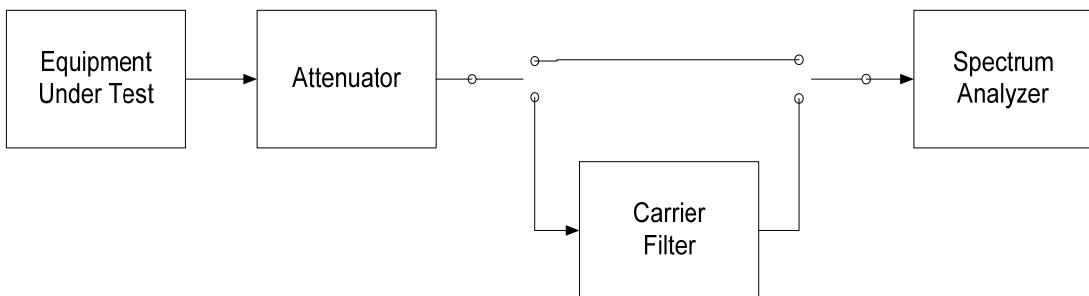
Equipment Used: Agilent PXA Signal Analyzer (03-22-14)



2. Conducted Spurious Emissions

Test Method: TIA-102.CCAA 2.2.7

Equipment Used: Hewlett Packard 8562E Spectrum Analyzer (03-19-14)



3. Adjacent Channel Power Ratio

Test Method: TIA-102.CCAA 2.2.8 & TIA-102.CCAB 3.2.8

Equipment Used: Agilent PXA Signal Analyzer (03-22-14)



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MODULATION CHARACTERISTICS

Note: this modulation characteristic is based on the APCO P25 TDMA Phase II Standard

Part 2.1033(c)

Part 2.1033(c) (4) Type of Emission: 8K10F1W

Part 90.209

Part 90.207 BW=8.1KHZ from using 99% energy bandwidth
F1W indicates digital TDMA.

Designator is therefore: 8K10F1W

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OCCUPIED BANDWIDTH

Part 90.210(d) Emission Mask D - 12.5 kHz channel BW equipment.

For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- (1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
- (2) On any frequency from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27 (f_d - 2.88)$ dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10\log(P)$ dB or 70 dB, whichever is the lesser attenuation.

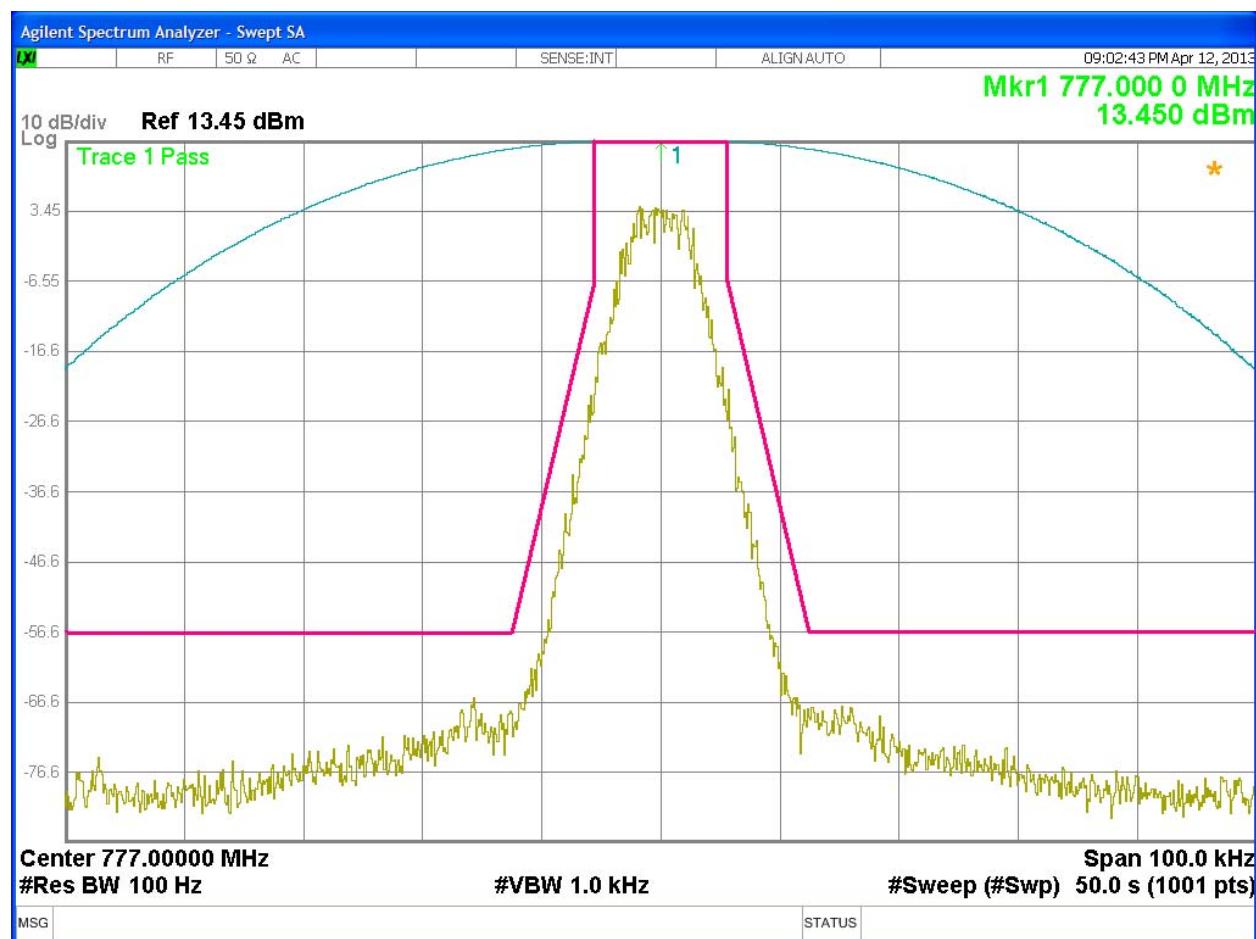
OCCUPIED BANDWIDTH PLOTS

Part 90.210(d) Emission Mask D - 12.5 kHz channel

Frequency = 777MHz

Digital TDMA

8K10F1W



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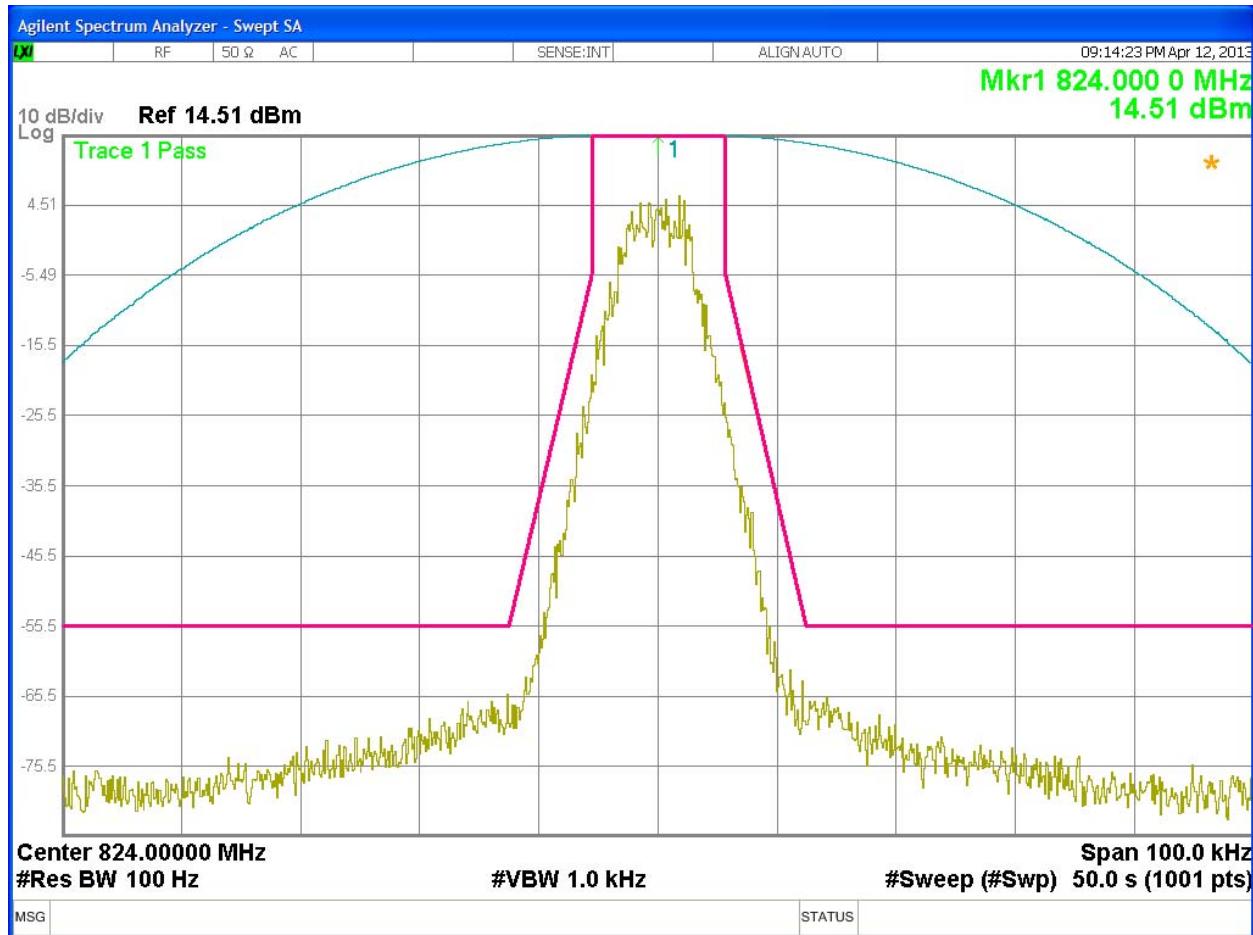
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Part 90.210(d) Emission Mask D - 12.5 kHz channel
Frequency = 824MHz

Digital TDMA

8K10F1W



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SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Part 2.1051(a)

Requirements:

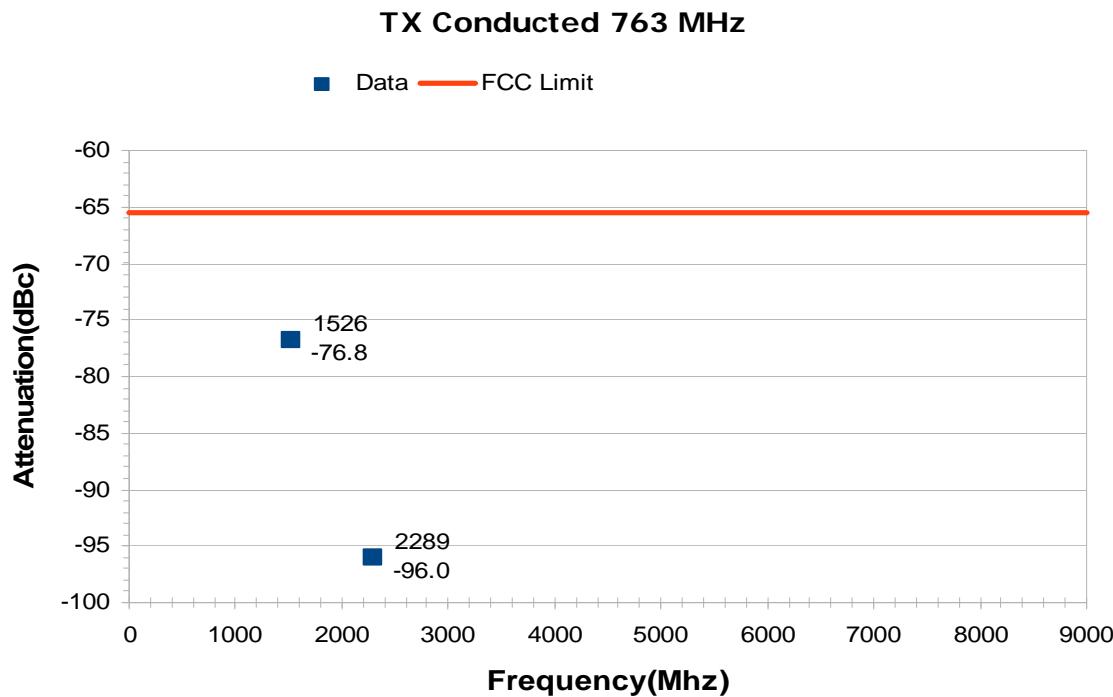
700MHz 12.5kHz Channel Spacing = $50+10\log(35.9) = 65.55 \text{ dBc}$

800MHz 12.5kHz Channel Spacing = $50+10\log(40.3) = 66.05 \text{ dBc}$

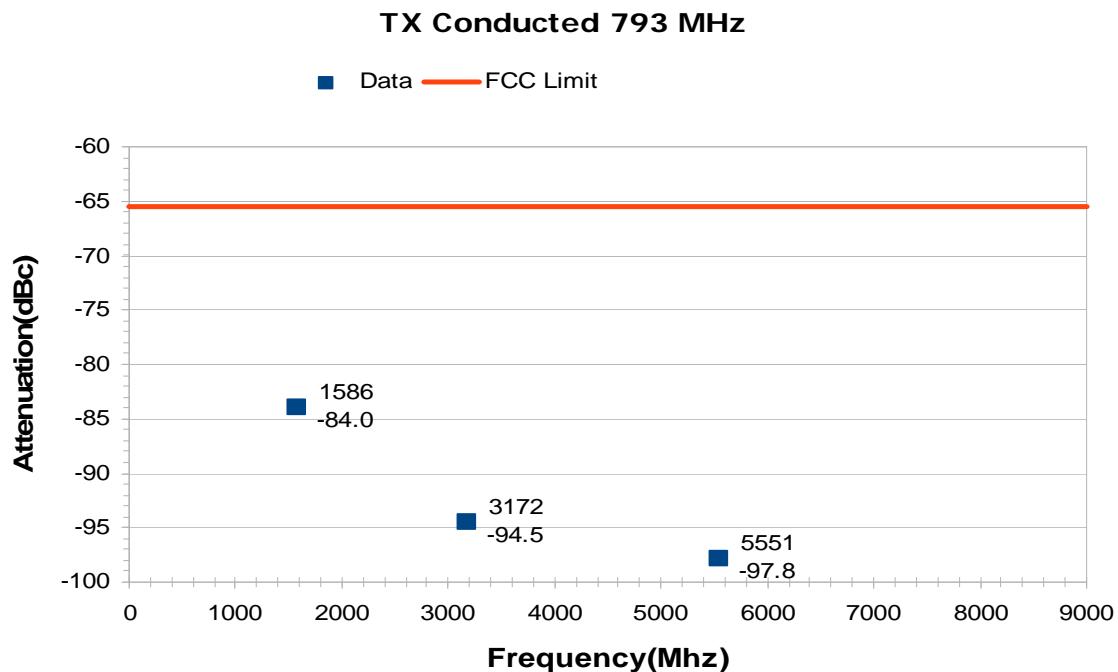
Method of Measurement: The EUT was placed in continuous transmit test mode. The spectrum was scanned from 30MHz to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard TIA-102.CCAA (August 2011).

Test Data:

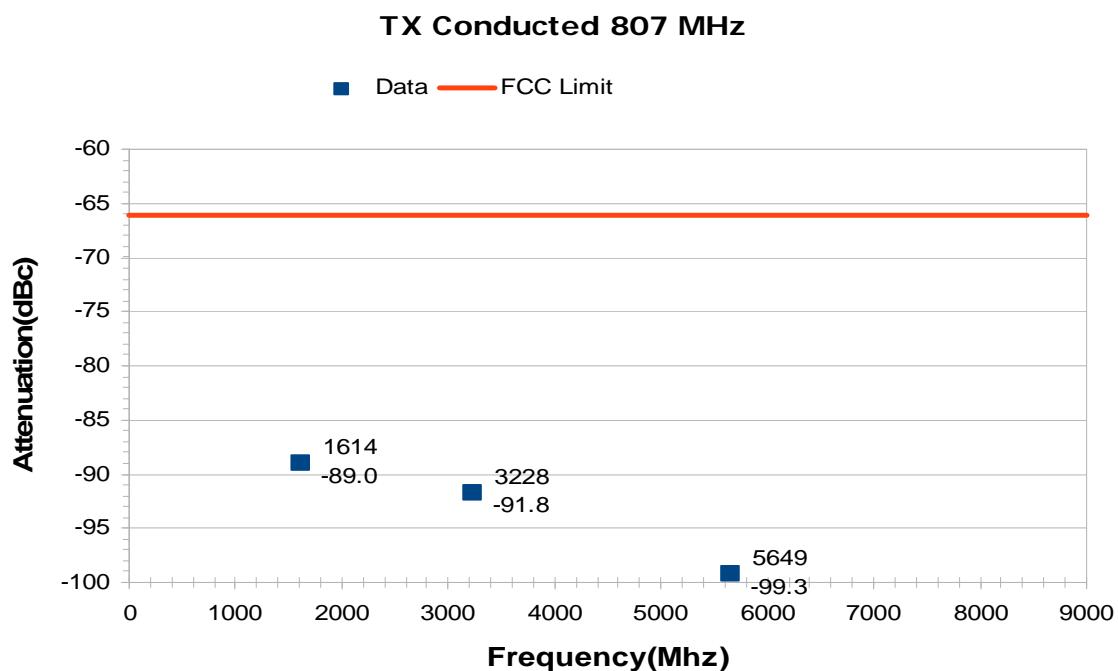
Transmit Conducted 763MHz



Transmit Conducted 793MHz



Transmit Conducted 807MHz

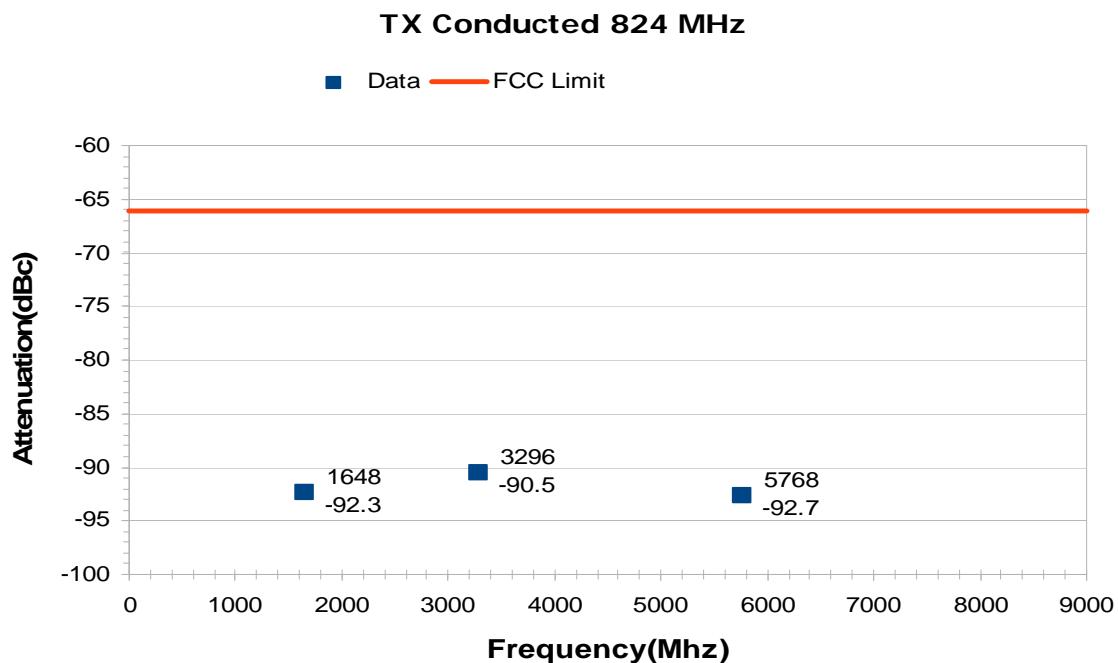


Applicant: RELM WIRELESS CORP. - BK RADIO

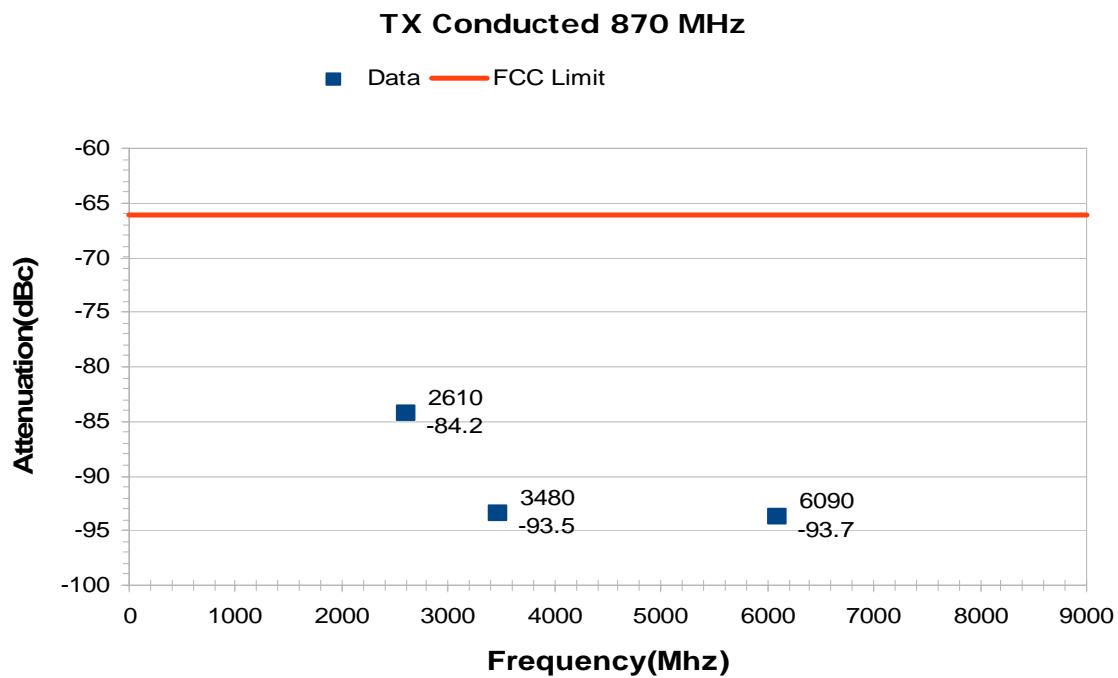
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Transmit Conducted 824MHz



Transmit Conducted 870MHz



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ADJACENT CHANNEL POWER

Part 90.543

Emission limitation – Adjacent Channel Power

APCO 12.5 KHz Channel Spacing		Digital TDMA		770MHz
Offset Frequency (KHz)	Measurement Bandwidth (KHz)	FCC Limit	Lower	Upper
9.375	6.25	-40	-40.62	-42.94
15.625	6.25	-60	-73.15	-73.73
21.875	6.25	-60	-76.16	-75.97
37.5	25	-60	-74.37	-74.42
62.5	25	-65	-80.58	-80.39
87.5	25	-65	-83.92	-83.79
150	100	-65	-78.29	-78.09
250	100	-65	-81.97	-81.80
350	100	-65	-85.28	-85.05
>400 to 12MHz	30 (Swept)	-75	<-75	<-75
12MHz to Rx	30 (Swept)	-75	<-75	<-75
Rx Band	30 (Swept)	-100	<-100	<-100

APCO 12.5 KHz Channel Spacing		Digital TDMA		800MHz
Offset Frequency (KHz)	Measurement Bandwidth (KHz)	FCC Limit	Lower	Upper
9.375	6.25	-40	-40.89	-40.62
15.625	6.25	-60	-74.09	-73.46
21.875	6.25	-60	-76.81	-77.23
37.5	25	-60	-75.50	-75.41
62.5	25	-65	-81.77	-81.25
87.5	25	-65	-84.25	-84.18
150	100	-65	-78.39	-78.27
250	100	-65	-82.03	-81.91
350	100	-65	-85.45	-85.33
>400 to 12MHz	30 (Swept)	-75	<-75	<-75
12MHz to Rx	30 (Swept)	-75	<-75	<-75
Rx Band	30 (Swept)	-100	<-100	<-100

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