TEST REPORT

No. 2010TAR356

for

TCT Mobile Limited

GSM/GPRS quad bands mobile phone

Model Name：MINI+ A

Marketing Name: OT-710A

FCC ID: RAD139

with

Hardware Version: PIO

Software Version: V438

Issued Date: 2010-08-31

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

Shouxiang Science Building, No 51, Xueyuan Road, Haidian District, Beijing, P.R.China 100191

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CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	TMC Beijing, Telecommunication Metrology Center of MIIT
Address:	Shouxiang Science Building, No 51, Xueyuan Road, Haidian District, Beijing, P.R.China
Postal Code:	100191
Telephone:	00861062304633
Fax:	00861062304633

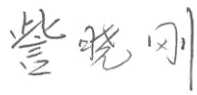
1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	20-75%

1.3. Project data

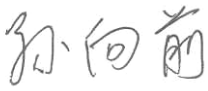
Testing Start Date:	2010-08-29
Testing End Date:	2010-08-31

1.4. Signature



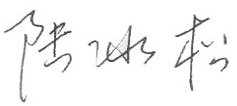
Zi Xiaogang

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
Contact	Gong Zhizhou
Email:	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	4/F, South Building,No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
Contact	Gong Zhizhou
Email:	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/GPRS quad bands mobile phone
Model Name	MINI+ A
Marketing Name	OT-710A
FCC ID	RAD139
Frequency	GSM 850MHz; PCS 1900MHz; GSM 900MHz; DCS 1800MHz
Antenna	Internal, can't be changed by user
Power supply	Battery or Charger(AC Adaptor)
Output power	28.87 dBm maximum EIRP measured for GSM1900
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
N19	012321000122115	PIO	V438

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/
AE2	Charger	/
AE3	Charger	/

AE1

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850mAh
Nominal Voltage	3.7V

AE2

Model	CBA3120AG0C1
Manufacturer	BYD
Length of Micro usb	120cm

AE3

Model	CBA3120AG0C2
Manufacturer	TENPAO
Length of Micro usb	120cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/GPRS quad bands mobile phone with integrated antenna. It consists of Hand Telephone Set and normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test.
Samples under test were selected by the Client.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart C	Radio frequency devices	July 10, 2008 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

6. SUMMARY OF TEST RESULTS

Items	List	Clause in FCC rules	Verdict
1	Conducted Emission	15.207	P
2	20dB Spectrum Bandwidth	15.239(a)	P
3	Field Strength of Fundamental Emissions	15.239(b)	P
4	Radiated Emissions	15.239(c)	P
5	Band Edge Emissions	15.239(c)	P

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Test Receiver	ESS	847151/015	R&S	2010-10-30
2	Test Receiver	ESI40	831564/002	R&S	2011-2-10
3	BiLog Antenna	3142B	9908-1403	EMCO	2011-1-15
4	BiLog Antenna	3142B	9908-1405	EMCO	2010-9-19
5	Signal Generator	SMT06	831285/005	R&S	2010-12-25
6	Signal Generator	SMP04	100070	R&S	2011-4-19
7	LISN	ESH2-Z5	829991/012	R&S	2011-8
8	Spectrum Analyzer	FSU26	200030	R&S	2011-6-17
9	Universal Radio Communication Tester	CMU200	100680	R&S	2011-8-22
10	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2011-3
11	Dual-Ridge Waveguide Horn Antenna	3115	9906-5831	EMCO	2011-3
12	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2011-3
13	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2011-3
14	Climatic chamber	PL-2G	343074	ESPEC	2011-5-15

ANNEX A: MEASUREMENT RESULTS

A.1 CONDUCTED EMISSION (§15.207)

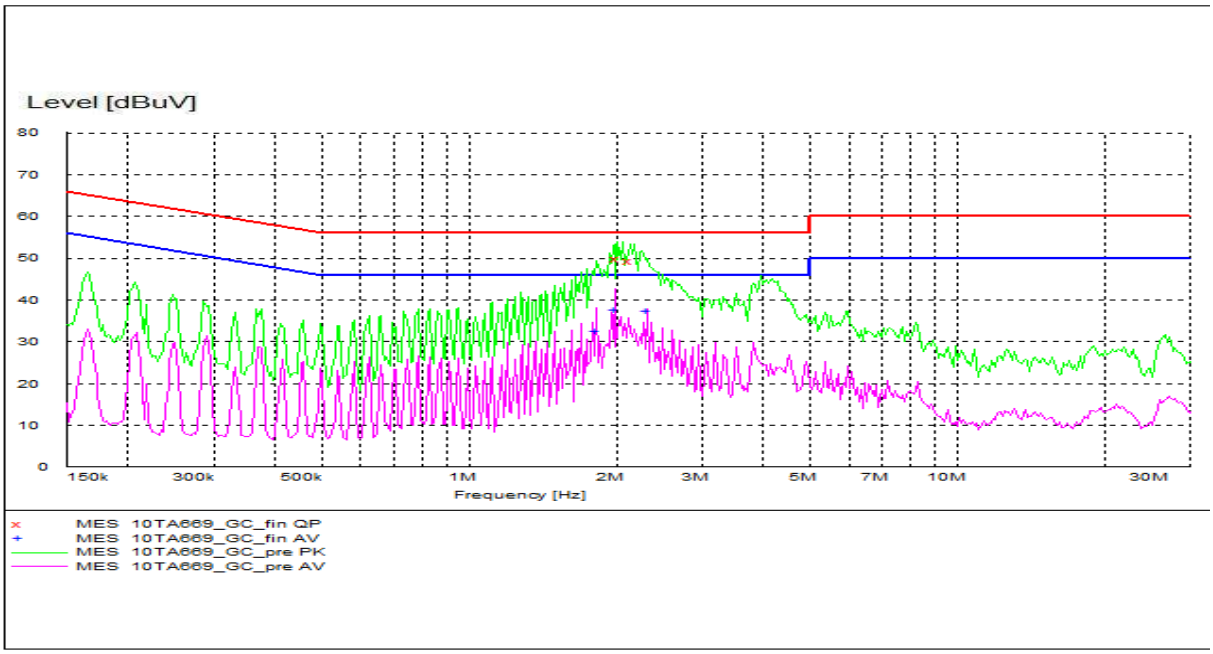
The measurement procedure in ANSI C63.4-1003 is used. Conducted Emission is measured with travel charger.

A.1.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

A.1.2 Measurement result

For AE2 FM 98.1MHz



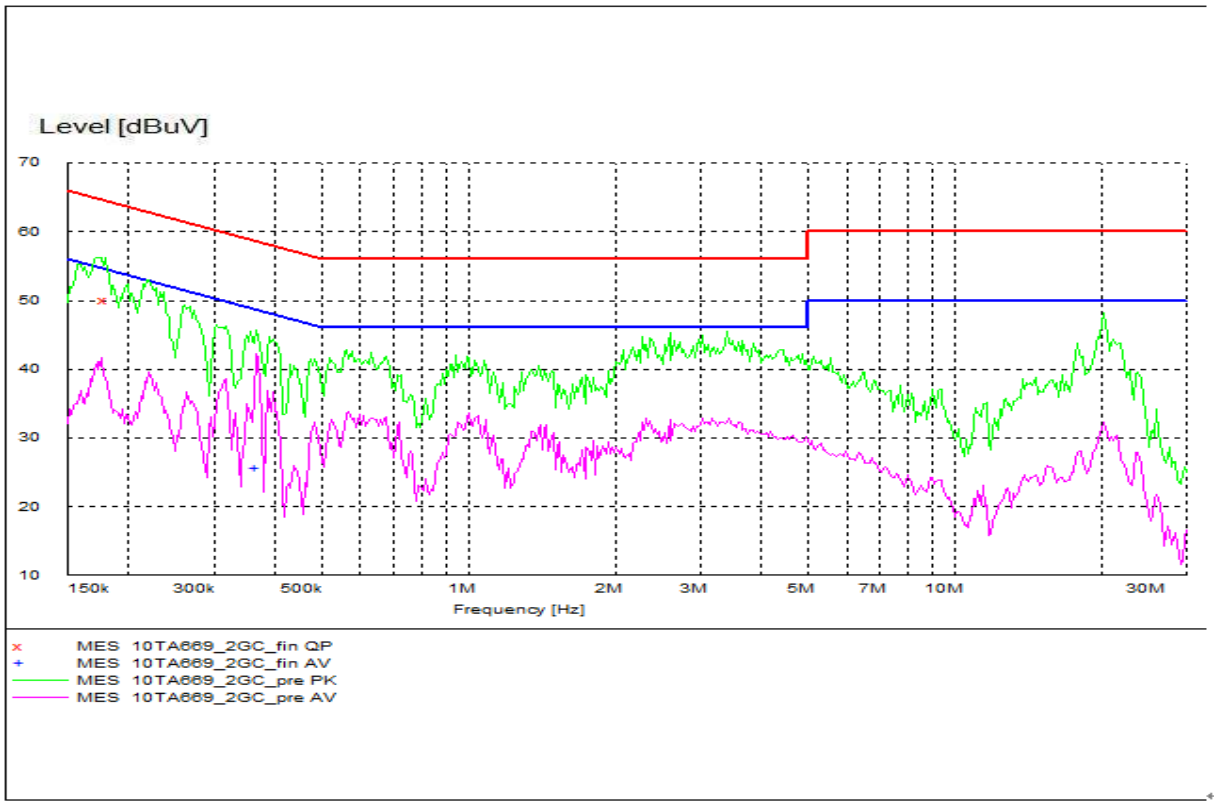
MEASUREMENT RESULT: "10TA669_GC_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
2.020000	49.80	10.1	56	6.2	L1	FLO
2.144271	49.40	10.1	56	6.6	L1	FLO

MEASUREMENT RESULT: "10TA669_GC_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
1.822872	32.30	10.1	46	13.7	L1	GND
1.993648	37.50	10.1	46	8.5	L1	GND
2.321938	37.30	10.1	46	8.7	L1	FLO

For AE3 FM 98.1MHz



MEASUREMENT RESULT: "10TA669_2GC_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBµV	dB	dBµV	dB		
0.179422	50.10	10.1	65	14.4	L1	FLO

MEASUREMENT RESULT: "10TA669_2GC_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBµV	dB	dBµV	dB		
0.367295	25.50	10.1	49	23.1	L1	GND

A.2 20dB Spectrum Bandwidth (§15.239(a))

A.2.1 Occupied Bandwidth Results

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.

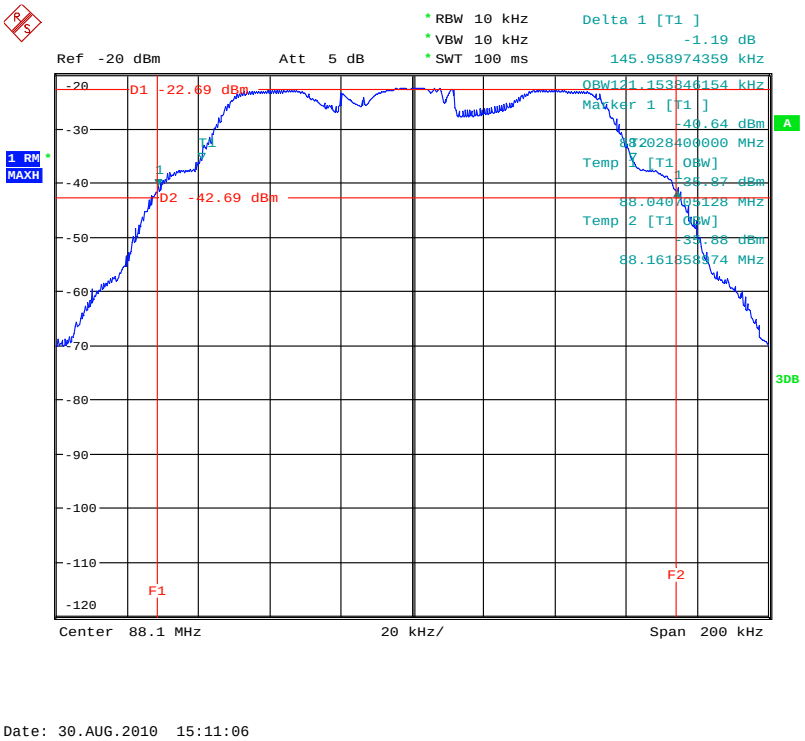
Data were taken at the extreme and mid frequencies of the FM frequency band. The table below lists the measured -20dBc BW and 99%. Spectrum analyzer plots are included on the following pages.

FM Tx(20dB)

Frequency(MHz)	Occupied Bandwidth (20dB)(kHz)	Occupied Bandwidth (99%)	Limit (kHz)
88.1	145.96	121.15	200
98.1	153.21	126.60	200
107.9	144.55	117.95	200

FM

88.1MHz Occupied Bandwidth (20dB)



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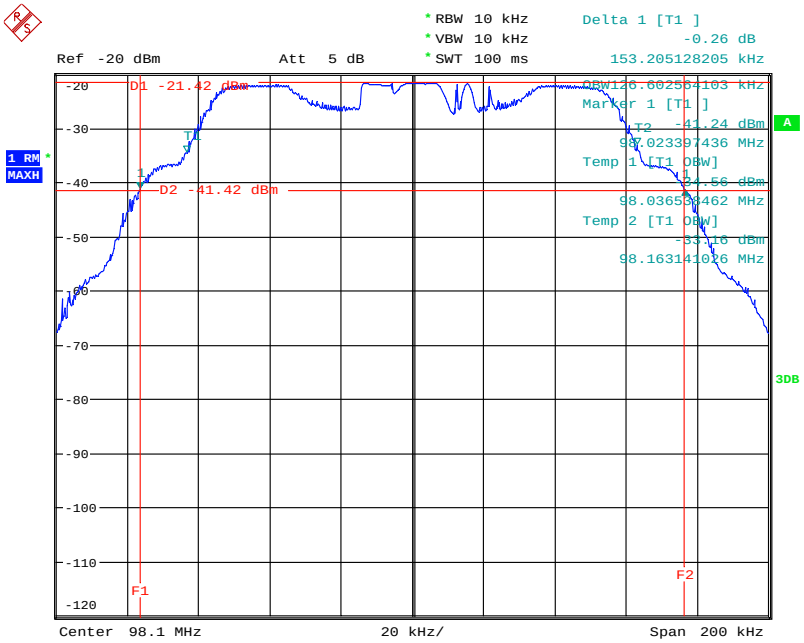
89.1MHz Occupied Bandwidth (20dB)



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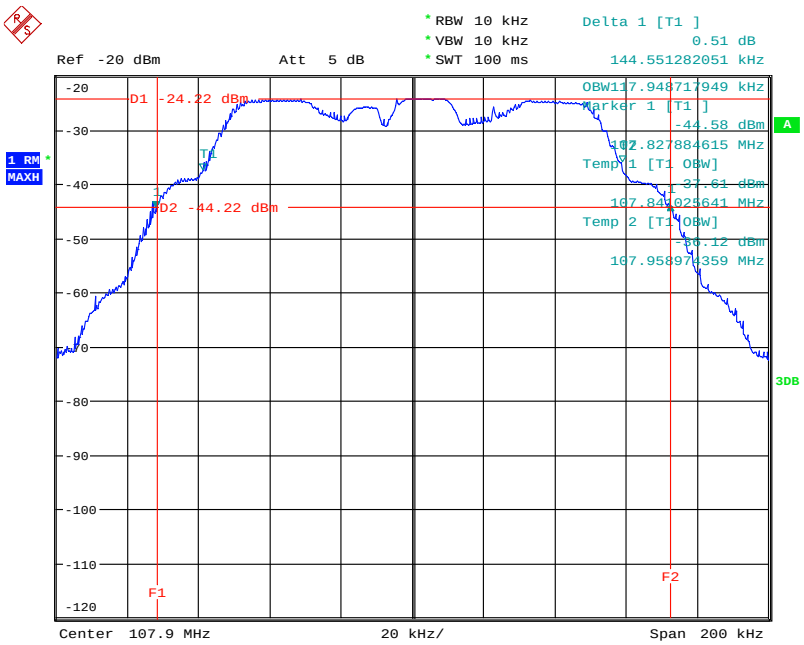
107.9MHz Occupied Bandwidth (20dB)



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A.3 Field Strength of Fundamental Emissions (§15.239(b))

A.3.1 Summary

During the process of testing, the EUT was transmitted max power transmission and proper modulation.

This result contains average Field Strength of Fundamental Emissions for the EUT.

A.3.2 Radiated

A.3.2.1 Description

This is the test for the maximum Field Strength of Fundamental Emissions from the EUT.

Rule Part 15.239(b) specifies, " The field strength of any emissions within the permitted 200 kHz 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."

A.3.2.2 Result

FM 15.239(b)

Limits

	Detector	Field Strength (mV/m)	Field Strength (dB μ V/m)
FM	Average	250	54

Measurement result

GSM

Frequency(MHz)	Power	Peak (dB μ V/m)	A_{Rpl} (dB)	P_{Mea} (dB μ V/m)	Polarization
88.1	Maximum	32.11	15.30	16.81	Horizontal
98.1	Maximum	36.36	16.66	19.70	Horizontal
107.9	Maximum	33.54	15.75	17.79	Horizontal

Frequency**:** 107.9MHz

Peak Field Strength (dB μ V/m)= P_{Mea}(19.70 dB μ V/m)+ A_{Rpl} (16.66dB) = 36.36 dB μ V/m

A.4 Radiated Emission (§15.239(b))

A.4.1 Method of measurement

The field strength of radiated emissions from the FM transmitter radiator at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2003, section 8.3.

A.4.2 EUT Operating Mode:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.4.3 Measurement Limit

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

A.4.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100KHz/300KHz	5

A.4.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable los.
The measurement results are obtained as described below:
Result=P_{Mea}+A_{Rpl}

FM 88.1MHz

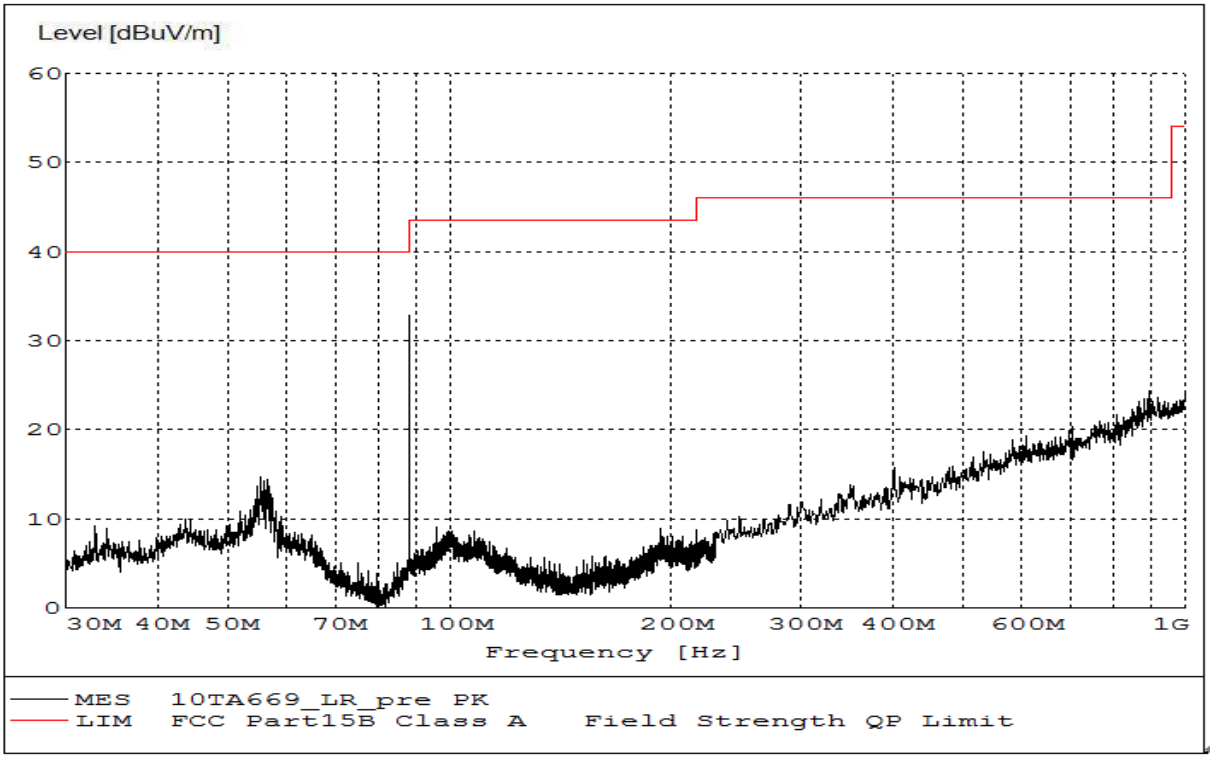
Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
896	24.37	24.46	-0.09	VERTICAL
999.4	24.21	25.59	-1.38	VERTICAL
1000	23.72	26.24	-2.52	VERTICAL
919	23.59	25.49	-1.9	VERTICAL
881.6	23.54	24.46	-0.92	HORIZONTAL
891.2	23.54	24.46	-0.92	HORIZONTAL

FM 98.1MHz

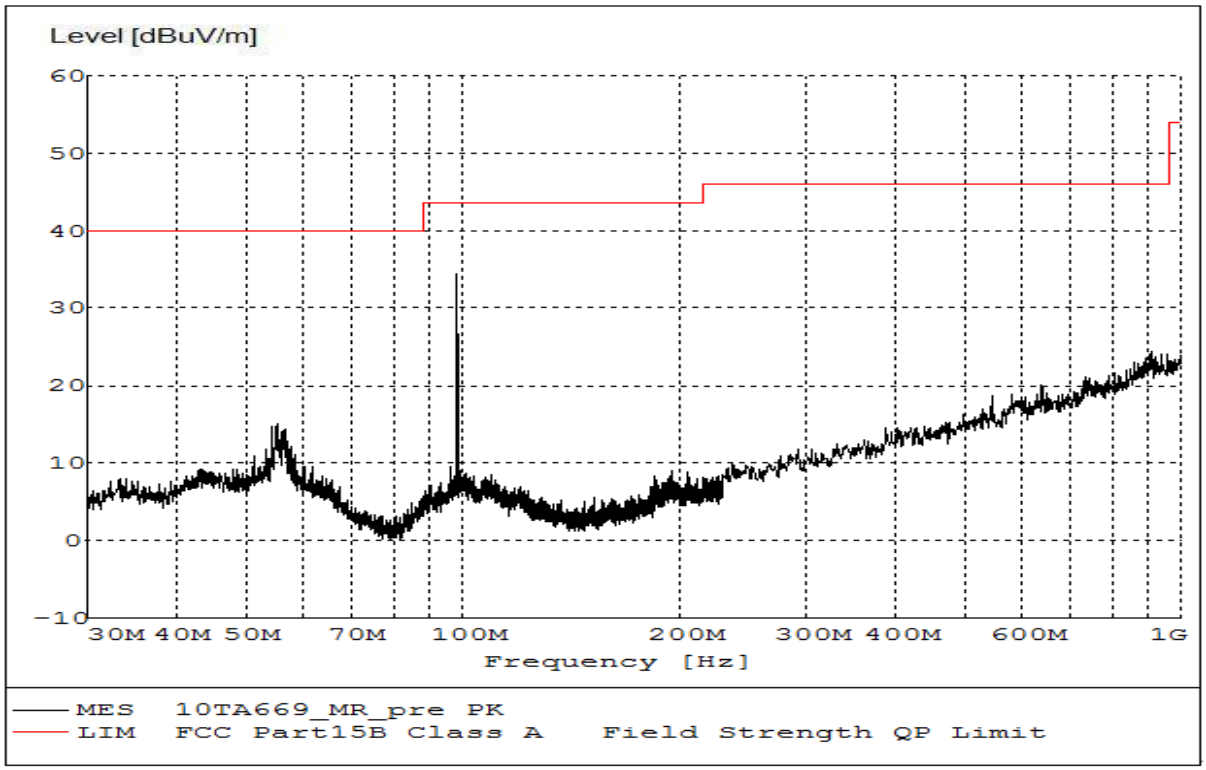
Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
909.4	24.46	25.49	-1.03	HORIZONTAL
957.4	24.04	25.49	-1.45	HORIZONTAL
1000	24.03	26.24	-2.21	VERTICAL
901	24	25.49	-1.49	VERTICAL
939.4	24	25.49	-1.49	HORIZONTAL
920.2	23.77	25.49	-1.72	VERTICAL

FM 107.9MHz

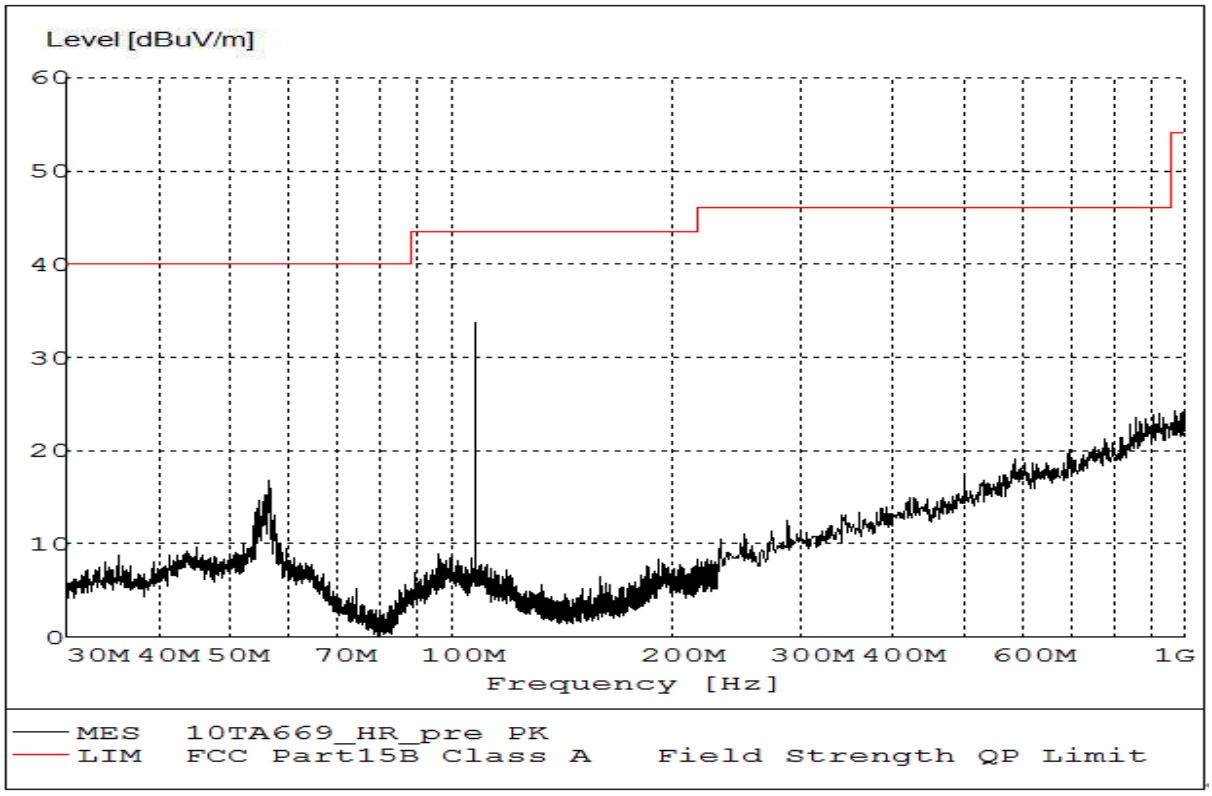
Frequency(MHz)	Result(dBuV/m)	ARpl (Db)	Pmea(dBuV/m)	Polarity
1000	24.35	26.24	-1.89	VERTICAL
969.4	24.21	25.59	-1.38	VERTICAL
989.8	24.11	25.59	-1.48	VERTICAL
921.4	23.95	25.49	-1.54	HORIZONTAL
988.6	23.87	25.59	-1.72	HORIZONTAL
907	23.82	25.49	-1.67	VERTICAL



Radiated Emission from 30MHz to 1GHz 88.1MHz



Radiated Emission from 30MHz to 1GHz 98.1MHz

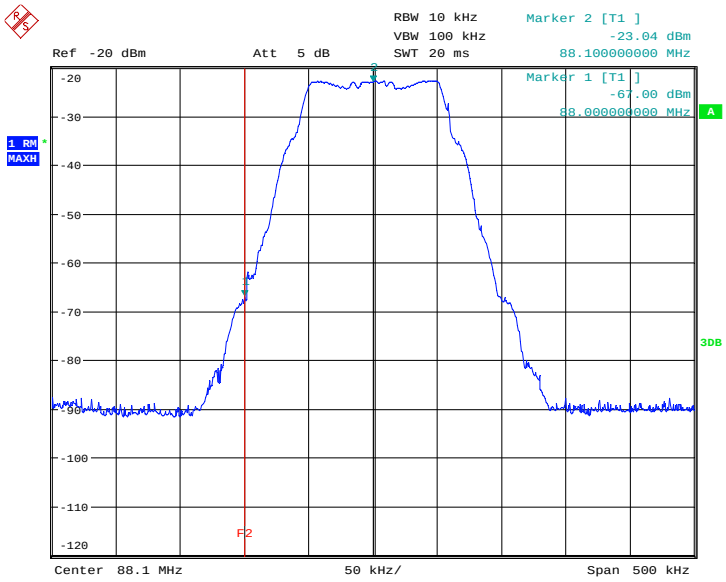


Radiated Emission from 30MHz to 1GHz 107.9MHz

A.5 BAND EDGE COMPLIANCE (§22.917(b)/§24.238(b))

FM

LOW BAND EDGE BLOCK 88.1MHz



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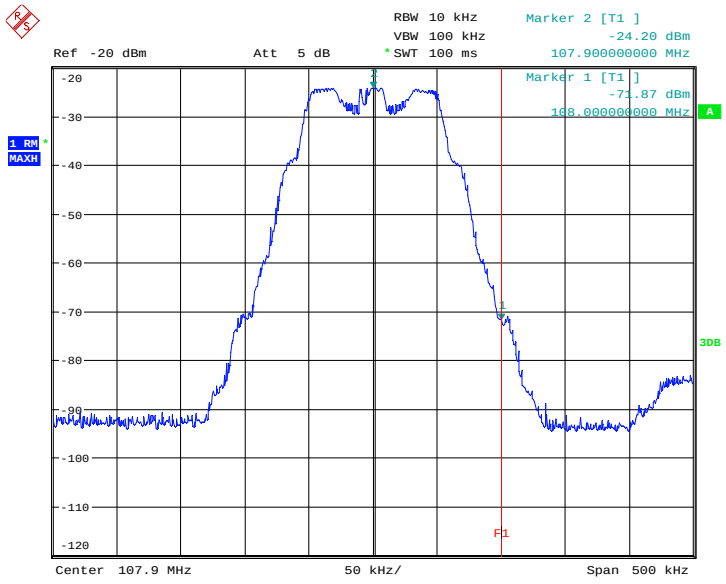
HIGH BAND EDGE BLOCK 107.9MHz



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