CETECOM ICT Services GmbH
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Fax: -9075
Fax: -8484

Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: IC 3463A-1
TCB ID: DE 0001

Accredited by the
German Accreditation Council
DAR–Registration Number
DAT-P-176/94-D1

Independent ETSI
compliance test house

Accredited Bluetooth® Test Facility (BQTF)

Test report no.	**:**	**4-2496-01-07/07**
Applicant	**:**	**Mitsubishi Electric Corp.**
Type	**:**	**FOMA D905i**
Test Standard	**:**	**FCC Part 15.225** **RSS210 Issue 7**
FCC ID	**:**	**BGBMT0WM07G0R25**
Certification No. IC	**:**	**662G-MT0WM07A**

Table of contents

1 General information

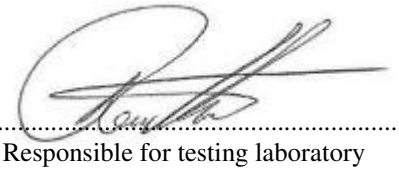
1.1. Administrative data of the test facility

1.1.1 Identification of the testing laboratory

Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-176/94-D1 Bluetooth Qualification Test Facility (BQTF) Federal Communications Commission (FCC) Identification/Registration No : 90462
Responsible for testing laboratory:	Jakob Reschke Phone: +49 681 598 0 Fax: +49 681 598 9075 email: info@ict.cetecom.de

1.2. Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.



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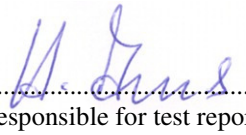
Responsible for testing laboratory
(Jakob Reschke)



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Responsible for test report
(Harro Ames)

1.3 Details of Applicant

Name	:	Mitsubishi Electric Corp.
Address	:	8-1-1 Tsukaguchi-Honmachi, Amagasaki City
City	:	Hyogo 661-8661
Country	:	Japan
Phone	:	+81-6-6495-6518
Fax	:	+81-6-6495-6522
Contact	:	Ono Hiroyuki
Phone	:	+81-6-6495-6518
Fax	:	+81-6-6495-6522
e-mail	:	Ono.Hiroyuki@cj.MitsubishiElectric.co.jp

1.4 Application Details

Date of receipt of application	:	2007-08-02
Date of receipt of test item	:	2007-08-08
Date(s) of test	:	2007-08-09 to 2007-08-10
Date of report	:	2007-08-13

1.5 Test Item

Type of equipment	:	Mobile Phone
Model name	:	FOMA D905i
Model number	:	-.-

Details of Manufacturer

Company	:	Mitsubishi Electric Corp.
Address	:	8-1-1 Tsukaguchi-Honmachi, Amagasaki City
City	:	Hyogo 661-8661
Country	:	Japan

Tested to Radio Standards Specification(RSS) No.	:	210 Issue 7
Open Area Test Site Industry Canada Number	:	IC 3463A-1
Temperature Range	:	-20 °C to +50 °C
Frequency Range (or fixed frequency)	:	13.56 MHz
Field strength (at what distance)	:	29 dBµV/m at 30m
Occupied Bandwidth (99% BW)	:	1 kHz
Type of Modulation	:	N0N
Antenna Information	:	Integrated antenna
Emission Designator	:	1K0N0N
Transmitter Spurious (worst case)	:	-.-
IC Reg. no.	:	662G-MT0WM07A
FCC ID	:	BGBMT0WM07G0R25

ATTESTATION:
DECLARATION OF COMPLIANCE: I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager :

2007-08-13	Jakob Reschke	
Date	Name	Signature

1.5.1 RF Technical Brief Cover Sheet acc. to RSS-102

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: 662G

2. MODEL NUMBER: FOMA D905i

3. MANUFACTURER: Mitsubishi Electric Corp.

4. TYPE OF EVALUATION:

(c) RF Evaluation
- Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐
- Duty cycle used in evaluation: 100 %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 10 m
- RF value: 49 dBµV/m ☒ V/m ☐ A/m ☐ µW/m^2 ☐

Measured ☒ Computed ☐ Calculated ☐

Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in 0 is correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.

Name: Jakob Reschke
Title: Engineer
Company: Cetecom ICT Services GmbH

1.5.2 Test conditions testing

Description	Shortcut	Unit	Value
Nominal Temperature / humidity	T_{nom}	°C / %	+23 / 49
Low Temperature	T_{low}	°C	-20
High Temperature	T_{high}	°C	+50
Nominal Power Source	V_{nom}	V	3.8

Type of powersource: V DC

1.6 Test Setup

Hardware	:	070705
Software	:	MITS0672AM070711
Serial number	:	IMEI 355291010002190

1.7 Test Specifications

FCC:	CFR Part 15 – Radio Frequency Devices CFR Part 15.209 – Radiated emission limits. CFR Part 15.207 – Conducted limits CFR Part 15.225
IC:	RSS 210, Issue 7 Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

2.1 Summary of Measurement Results

2.1.1 CFR 47 Part 15 Radio frequency devices

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210	applicable	Verdict
4.1	§ 15.35 (c) Timing of the transmitter (Duty cycle correction factor)	6.5 Pulsed Operation	NO	
4.2	§ 15.225 (a) FIELDSTRENGTH OF FUNDAMENTAL	Annex 2.6	YES	pass
4.3	§ 15.225 (b,c,d) FIELDSTRENGTH OF HARMONICS and SPURIOUS	Annex 2.6	YES	pass
4.4	§ 15.225 (e) Frequency tolerance	Annex 2.6	YES	pass
4.5	§ 15.107 / 15.207 Conducted Limits	Section 6.6 , 7.4	YES	pass

3 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers or free field. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.
The receiving antennas are conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.
The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.
Antennas are conform with ANSI C63.2-1996 item 15.
150 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna
200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna
>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

4 FCC Part 15 Subpart C

4.1 Timing of the transmitter

Not applicable

Reference

FCC:	CFR Part SUBCLAUSE § 15.35 (c)
IC:	RSS 210, ISSUE 5 6.5 Pulsed operation

Limits: § 15.35 (c)

(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

4.2 Field strength of the fundamental

Reference

FCC:	CFR Part SUBCLAUSE § 15.225 (a)
IC:	RSS 210, Annex 2.6

Maximum output power (quasi peak) - (radiated)

Measured at 10m distance, recalculated to 30m according to FCC part15.31 (f2)

TEST CONDITIONS		MAXIMUM POWER (dBµV/m)		
Frequency			13.56 MHz	13.56 MHz
			In 10m	Calculated in 30m
T_{nom} +23 °C			49.0	29.0
Measurement uncertainty		±3dB		

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

Limits **SUBCLAUSE § 15.225 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (µV/m)	Measurement Distance (meters)
13.553 to 13.567	15848 µV/m (84 dBµV/m)	30
	158489 µV/m (104 dBµV/m)	10
		Recalculated acc. to FCC part15.31 (f2)

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

4.3 Field strength of the harmonics and the spurious

Reference

FCC:	CFR Part SUBCLAUSE § 15.209 (a)
IC:	RSS 210, Annex 2.6

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBµV/m) Average/QP (30 m)	limit max. allowed field strength (30 m)		results
13.56		29.0	84.0		Operating frequency
Measurement uncertainty			± 3dB		

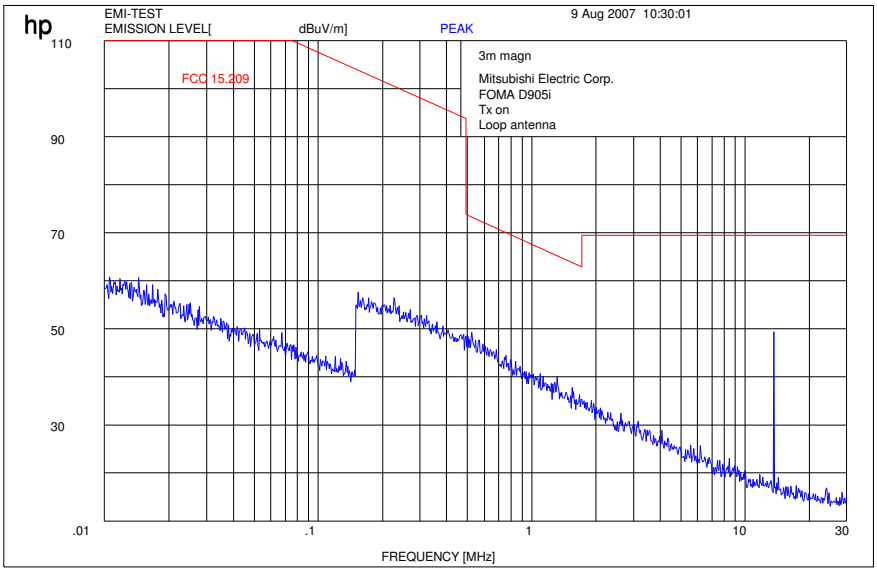
RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

Limits **SUBCLAUSE § 15.209 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (µV/m)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30 (29.5 dBµV/m)	30
30.0 – 88.0	100 (40 dBµv/m)	3
88 – 216	150 (43.5 dBµV/m)	3
216 – 960	200 (46 dBµV/m)	3

Plots of measurements

Plot 1:
Part 15.209 Magnetics



RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

(to convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 60 dB to recalculate from 10m to 300m)

Measurement distance 10 m
This measurement was done in 3 planes, the plot shows the worst case

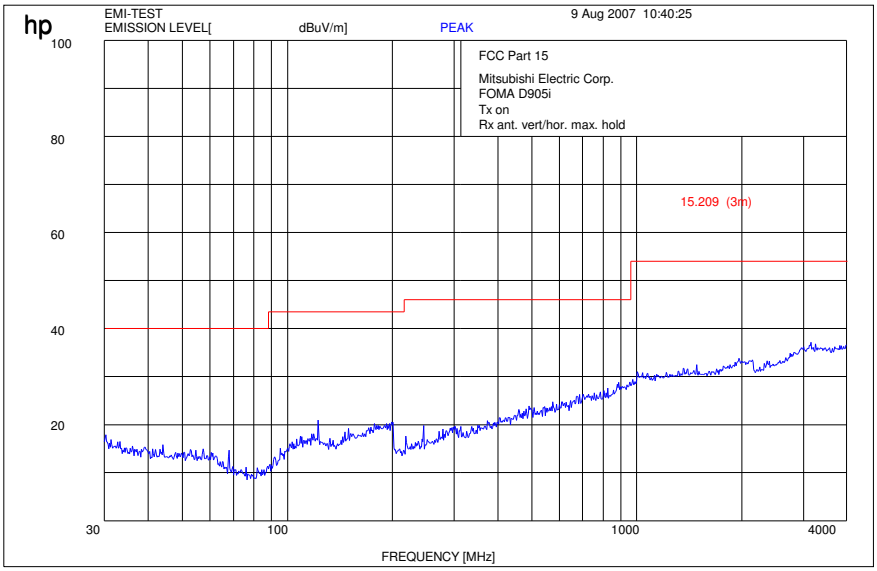
Limits **SUBCLAUSE § 15.209**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.0009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 - 30	30 (29.5 dBµV/m)	30
30 - 88	100 (40 dBµv/m)	3
88 - 216	150 (43.5 dBµV/m)	3
216 - 960	200 (46 dBµV/m)	3

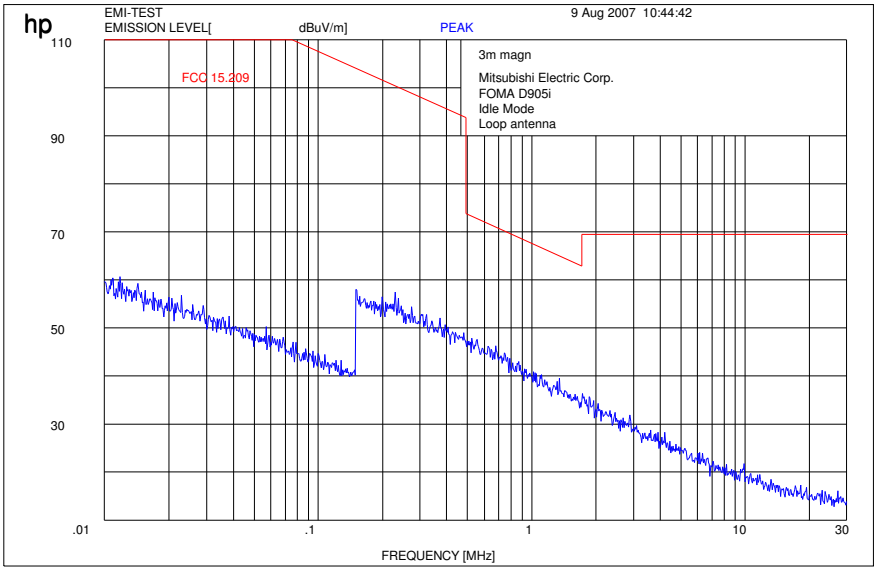
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

Plot 2:

TX (30 MHz to 4 GHz)

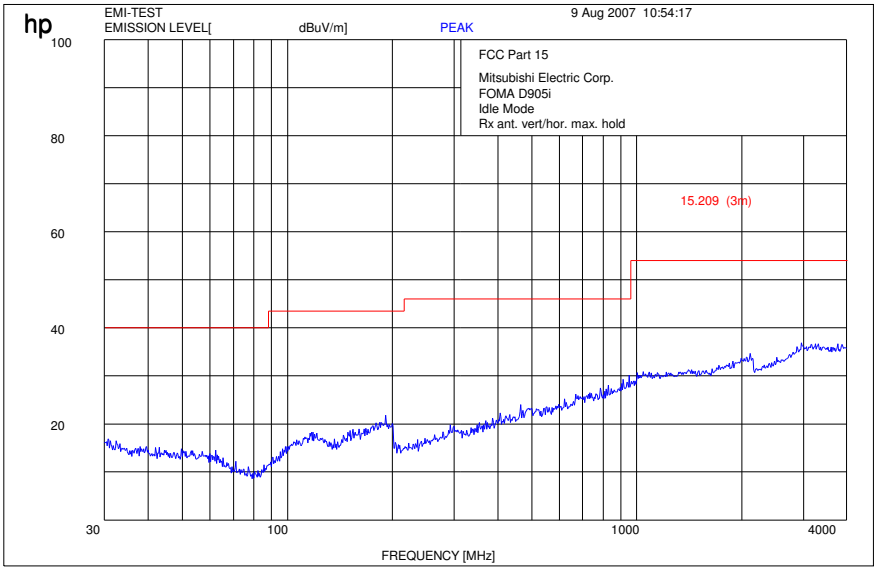


Plot 3: RX
Part 15.209 Magnetics



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

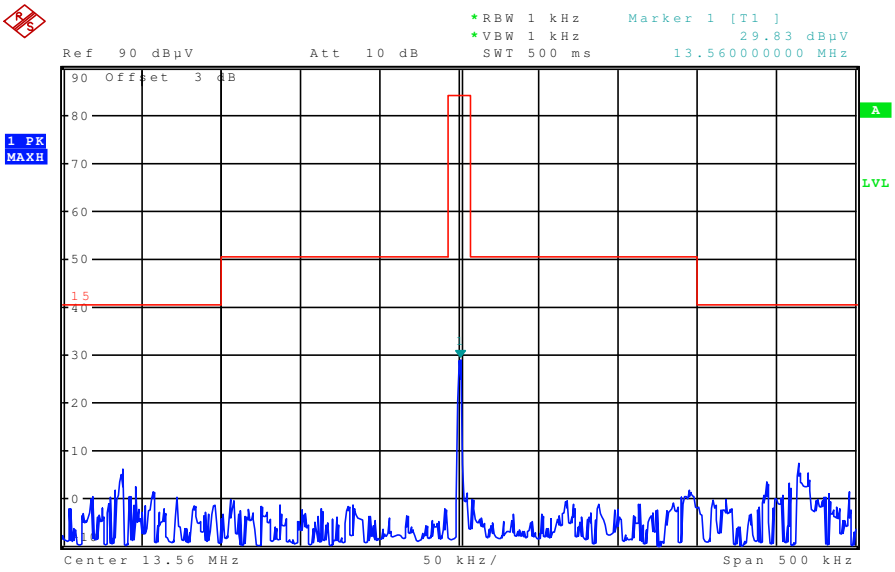
Plot 4:
TX (30 MHz to 4 GHz)



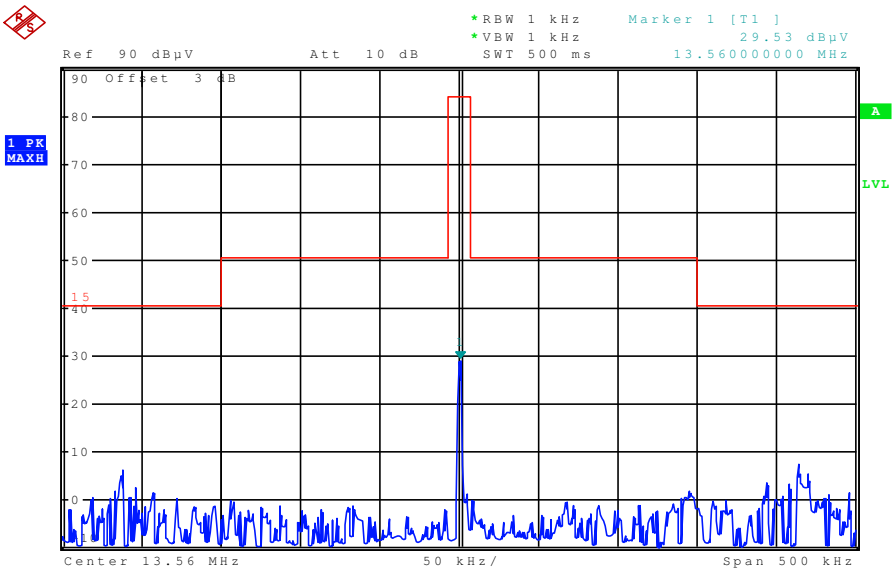
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

Plot 5
Spectrum mask part15.225 (a,b,c,d)

Normal conditions

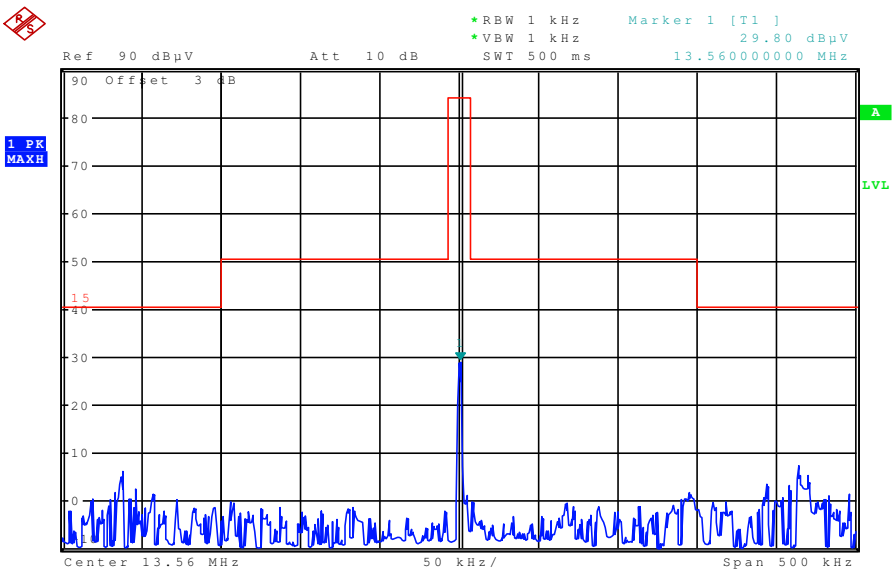


Extreme conditions (T_{high} and V_{high})

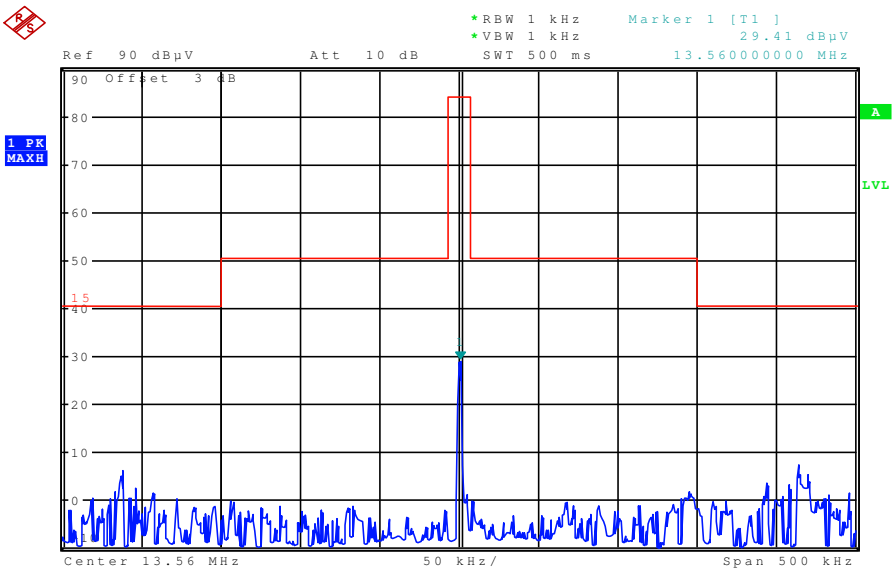


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

Extreme conditions (T_{high} and V_{low})

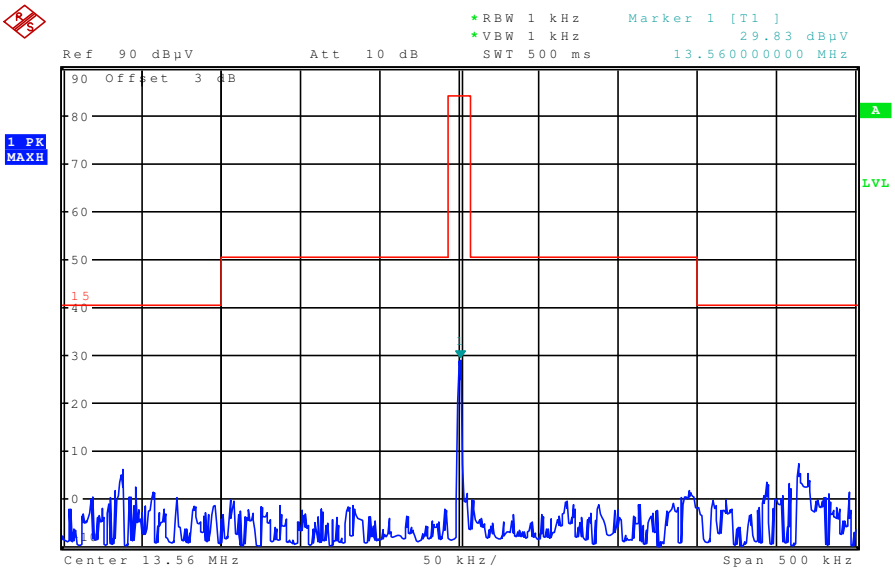


Extreme conditions (T_{low} and V_{high})



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

Extreme conditions (T_{low} and V_{low})



RBW /VBW 1 kHz

The transmitter holds the requirements of FCC 15.225 (a,b,c and d)

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

4.4 Frequency tolerance

Reference

FCC:	CFR Part SUBCLAUSE § 15.225 (e)
IC:	RSS 210, Annex 2.6

Frequency tolerance								
Over temperature variation			Over voltage variation					
Limit is +/- 1.356 kHz			Limit is +/- 1.356 kHz			MHz		
T (°C)]	Frequency	result	Power voltage	Frequency	result	F [MHz]	Detector	Level [µV/m]
-20°	13.560 100	Pass	3.4V	13.560 018	Pass			
-10°	13.560 104	Pass	3.5V	13.560 032	Pass			
0°	13.560 098	Pass	3.6V	13.560 050	Pass			
10°	13.560 080	Pass	3.7V	13.560 064	Pass			
20°	13.560 064	Pass	3.8V	13.560 070	Pass			
30°	13.560 052	Pass	3.9V	13.560 068	Pass			
40°	13.560 040	Pass	4.0V	13.560 060	Pass			
50°	13.560 028	Pass	4.1V	13.560 052	Pass			
			4.2V	13.560 080	Pass			
			4.3V	13.560 069	Pass			
			4.4V	13.560 094	Pass			
Measurement uncertainty			±100 Hz					

Limits **SUBCLAUSE § 15.225**

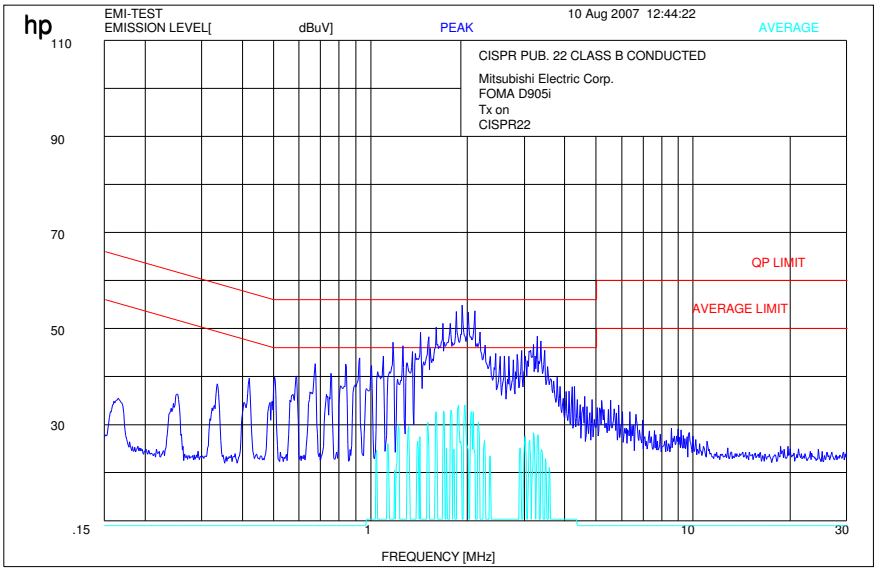
The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

4.5 Conducted Limits

Reference

FCC:	CFR Part 15.207, 15.107
IC:	RSS 210, Issue 7, Section 6.6 , 7.4



Limits: § 15.107 / 15.207

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 the logarithm of the frequency

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

Used Testequipment

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	Spektrum Analyzer 8566B	HP	2747A05306	300001000	05.10.2006	24	05.10.2008
5	Spektrum Analyzer Display 85662A	HP	2816A16541	300002297	05.10.2006	24	05.10.2008
6	Quasi-Peak-Adapter 85650A	HP	2811A01131	300000999	05.10.2006	24	05.10.2008
7	RF-Preselector 85685A	HP	2837A00779	300000218	08.11.2006	24	08.11.2008
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100623	ICT 300003464	26.10.2006	12	26.10.2007
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

Bluetooth Rack:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S		300003575	02.04.2007	24	02.04.2009
2	CBT	R&S	100313	300003516	24.10.2006	24	24.10.2008
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)

5 Annex A: Photographs of Test setup and EUT

For photos of the EUT please see Annex "4-2496-01_07_07_Annex" which belongs to this Testreport with the No. 4-2496-01-07/07.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED :
(see test equipment listing)