



No. DAT-P-114/01-01

TEST REPORT

No. 2006BT004

Product	GSM/GPRS Mobile Station with BT function
Model	CT0598
Client	CEC Wireless R&D Ltd

**Telecommunication Metrology Center
of Ministry of Information Industry**

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Product	GSM/GPRS Mobile Station with BT function	Model	CT0598
		Trade mark	
Client	CEC Wireless R&D Ltd		
Manufacturer	CEC Wireless R&D Ltd		
Arrival Date of sample	October 27, 2006	Carrier of the samples	Jane Wang
Quantity of the samples	2	Date of product	/
Series number	EUT1: 352556010000185 EUT2: 352556010000243		
Standard(s)	FCC Part 15 (10-1-05 Edition)		
Conclusion	Final Judgement: Pass <p align="right">Date of issue: 2006-11-27</p>		
Comment	The test result relates only to the tested samples.		

Approved by Lu Bingsong
(Lu Bingsong)

Reviewed by Song Chongwen
(Song Chongwen)

Tested by Sun Xiangqian
(Sun Xiangqian)

(Lu Bingsong- Deputy Director of the laboratory)

1 COMPETENCE AND WARRANTIES

Telecommunication Metrology Center of Ministry of Information Industry(hereinafter TMC) is a test laboratory accredited by DAR (DATEch) – Deutschen Akkreditierungs Rat (Deutsche Akkreditierungsstelle Technik), for the tests indicated in the Certificate No. **DAT-P-114/01-01**.

TMC is a test laboratory accredited by CNAL – Accreditation Certificate of China National Accreditation Board for Laboratories, for the tests indicated in the Certificate No. **L0442**.

TMC is FCC listed lab. FCC listed number is **733176**.

The test site in **TMC** is registered in Industry Canada. The IC registration number is **6629**.

TMC is a testing laboratory competent to carry out the tests described in this report.

TMC guarantees the reliability of the data presented in this report, which is the result of measurements and tests performed to the item under test on the date and under the conditions stated on the report and is based on the knowledge and technical facilities available at TMC at the time of execution of the test.

TMC is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the item under test and the results of the test.

2. Testing Laboratory

2.1 Testing Location

Company Name:	Telecommunication Metrology Center of Ministry of Information Industry
Address:	No 52, Huayuan beilu, Haidian District, Beijing,P.R.China
Postal Code:	100083
Telephone:	00861062303288
Fax:	00861062304793

2.2 Testing Environment

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

Temperature	Min. = 15 °C, Max. = 30 °C
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 26 to 1000 MHz

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

Temperature	Min. = 15 °C, Max. = 35 °C
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 °C, Max. = 30 °C
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 °C, Max. = 30 °C
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 26 to 1000 MHz

2.3 Testing Period

Testing Start Date:	Oct 27,2006
Testing End Date:	Nov 13,2006

3 Applicant Information

3.1 Client Information

Name or Company	CEC Wireless R&D Ltd
Address/Post	P.O.Box 707-27 West M5 Building ,No.1 East Road Jiuxianqiao ChaoYang District,Beijing,China
City	Beijing,CHINA
Postal Code	100016
Country	China
Telephone	010-58270302
Fax	010-84568718

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3.2 Manufacture Information

Name or Company	CEC Wireless R&D Ltd
Address/Post	P.O.Box 707-27 West M5 Building ,No.1 East Road Jiuxianqiao ChaoYang District,Beijing,China
City	Beijing,CHINA
Postal Code	100016
Country	China
Telephone	010-58270302
Fax	010-84568718

4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

4.1 About EUT

Model	CT0598
Description	GSM/GPRS Mobile Station with BT function
FCC ID	RXSCT0598
IMEI or SN	EUT1: 352556010000185; EUT2: 352556010000243
Hardware status	PR2
Software status	C6113-PR2-DV6-T016
Frequency	2400.0MHz – 2483.5MHz for Bluetooth
Type of modulation	FHSS for Bluetooth
Number of channels	79 for Bluetooth
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Output power	-1.29dBm maximum output power

4.2 Internal Identification of EUT used during the test

EUT ID	SN or IMEI	HW Version	SW Version
EUT1	352556010000185	PR2	C6113-PR2-DV6-T016
EUT2	352556010000243	PR2	C6113-PR2-DV6-T016

4.3 Photographs of EUT

Photographs of MS Hand Telephone Set and Charger are respectively shown in ANNEX B of this test report.

5 SUMMARY OF TEST RESULTS

The construction of the mobile phone ensures that no antenna other than that furnished by the responsible party shall be used with the device.

In addition, the radiated emissions which fall in the restricted bands, as defined in § 15.205(a), is also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

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Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Clause	List	Clause in FCC rules	Verdict
1	POWER OUTPUT	15.247(b)	P
2	OCCUPIED BANDWIDTH	15.247(a)	P
3	BAND EDGE COMPLIANCE	15.247(d)	P
4	CONDUCTED SPURIOUS EMISSIONS	15.247(d)	P
5	CONDUCTED EMISSIONS	15.107/207	P
6	TIME OF OCCUPANCY(DWELL TIME)	15.247(a)	P
7	NUMBER OF HOPPING FREQUENCIES	15.247(a)	P
8	CARRIER FREQUENCY SEPARATION	15.247(a)	P
9	RADIATED SUPRIOUS EMISSIONS	15.247(d)	P

6 MAIN TEST INSTRUMENTS

NO.	Description	TYPE	SERIES NUMBER	MANUFACTUR E	CAL DUE DATE
1	Test Receiver	ESS	847151/015	R&S	2007-10-30
2	Test Receiver	ESI40	831564/002	R&S	2007-2-11
3	BiLog Antenna	3142B	9908-1403	EMCO	2007-1-16
4	BiLog Antenna	VUL9163	9163 175	Schwarzbeck	2009-9-19
5	Signal Generator	SMT06	831285/005	R&S	2006-12-26
6	Signal Generator	SMP04	100070	R&S	2007-4-20
7	LISN	ESH2-Z5	829991/012	R&S	2007-8-13
8	Spectrum Analyzer	E4440A	MY41000262	Agilent	2007-4-18
9	Universal Radio Communication Tester	CMU200	100680	R&S	2007-8-23
10	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2008-3
11	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2008-3
12	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2008-3

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13	Climatic chamber	SH-241	92003546	ESPEC	2007-5-15
14	Spectrum Analyzer	FSU26	200030	R&S	2007-6-19
15	Bluetooth Tester	MT8852A	6K0002698	Anritsu	2009-3-19

ANNEX A MEASUREMENT RESULTS

A.1 OUTPUT POWER –Bluetooth (§15.247(b))

A.1.1 conducted

A.1.1.1 Method of measurement

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Limits

Frequency band	FCC
5725-5850MHz	1 Watt(30 dBm)for systems with>75 hopping channels
2400-2483.5MHz	1 Watt(30 dBm)for systems with>75 non-overlapping hopping channels 0.125 Watt(21 dBm)for all other hopping systems, but at least 15 hopping channels
902-928MHz	1 Watt(30 dBm)for systems with>50 hopping channels 0.25 Watt(24 dBm)for all other hopping systems, but at least 25 hopping channels

A.1.1.2 Measurement result

Test conditions	Channel 0		Channel 39		Channel 78	
	[dBm]	W	[dBm]	W	[dBm]	W
T nom=25°C V nom=3.7V	-1.83	6.56x10 ⁻⁴	-1.29	7.43x10 ⁻⁴	-3.23	4.75x10 ⁻⁴

A.2 20dB bandwidth-Bluetooth (§15.247(a))

A.2.1 Method of measurement

The 20dB bandwidth is measured on the lowest, middle and highest hopping channel.

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Limits

Frequency band	FCC and IC
5725-5850MHz	≤1MHz
2400-2483.5MHz	≤carrier frequencies separation for hopping systems with max cond. power of 1 Watt ≤1.5 of the carrier frequencies separation for hopping systems with max cond. power of 0.125 Watt

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902-928MHz	<250kHz for systems with ≥ 50 hopping channels 250kHz \leq 500kHz for all other hopping systems
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A.2.2 Test results

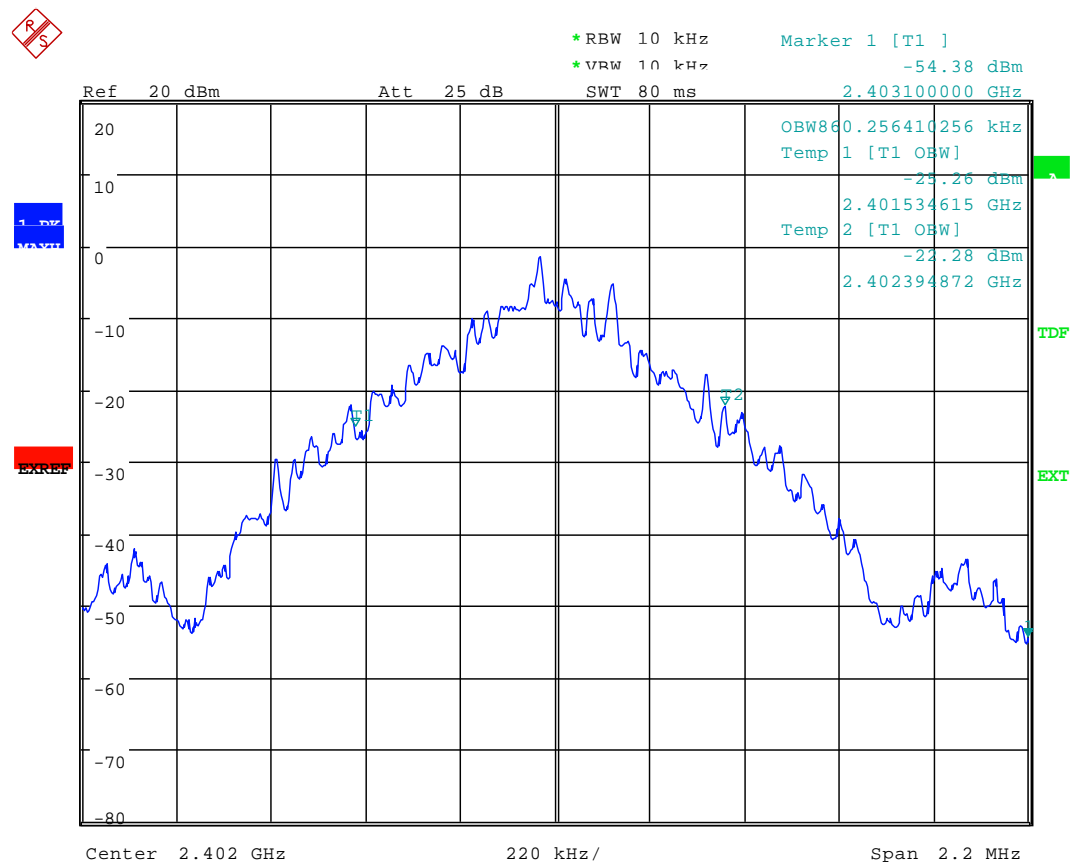
Test conditions	Channel 0	Channel 39	Channel 78
	kHz	kHz	kHz
T nom=25°C V nom=3.7V	860.256	863.782	860.256

System receiver input bandwidth:

The manufacturer declares that the receiver input bandwidth matches to the bandwidth of the transmitter signal.

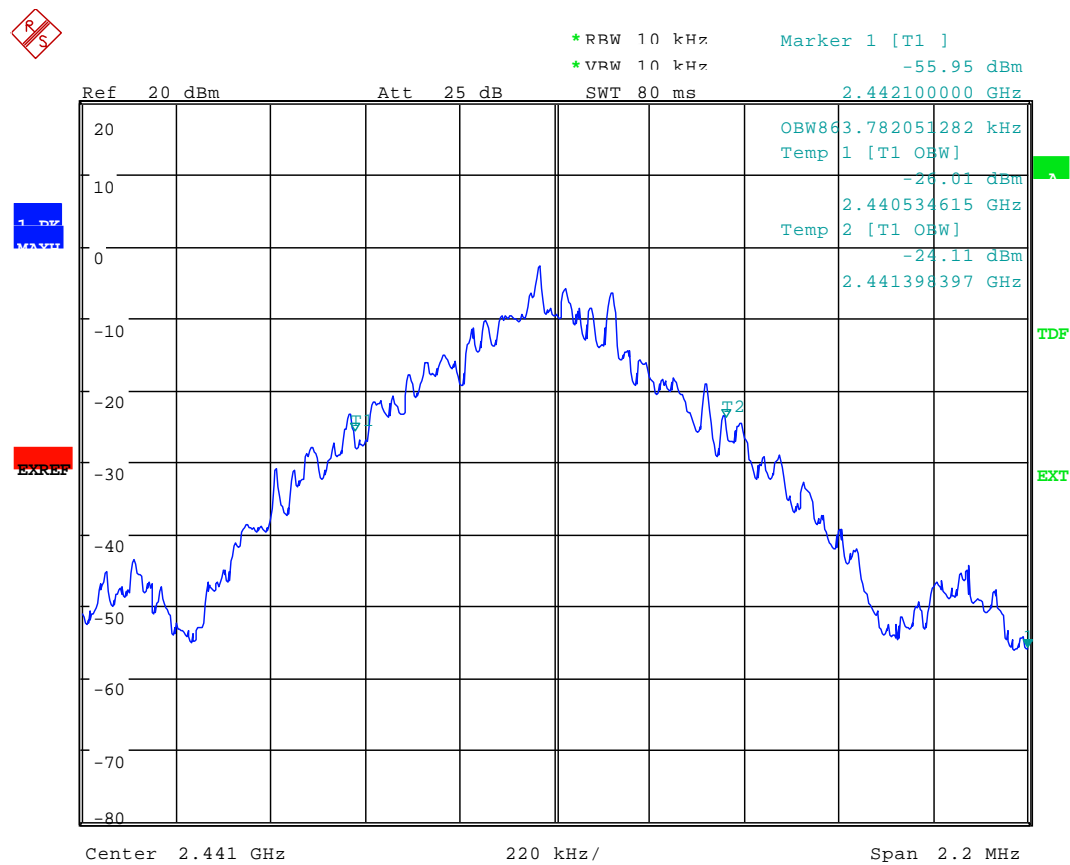
See attached diagrams

Channel 0, 2402MHz-Occupied Bandwidth (-20dBc BW)



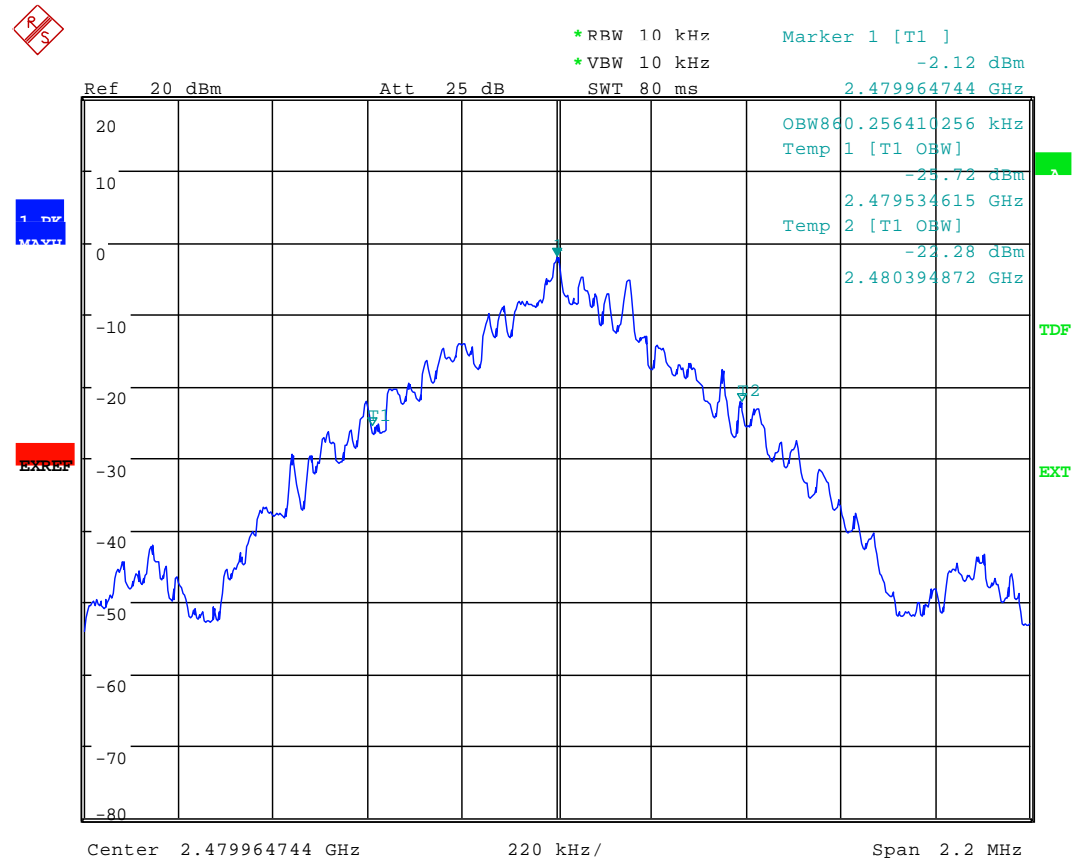
Date: 9.NOV.2006 06:47:01

Channel 39, 2441MHz-Occupied Bandwidth (-20dBc BW)



Date: 9.NOV.2006 06:45:54

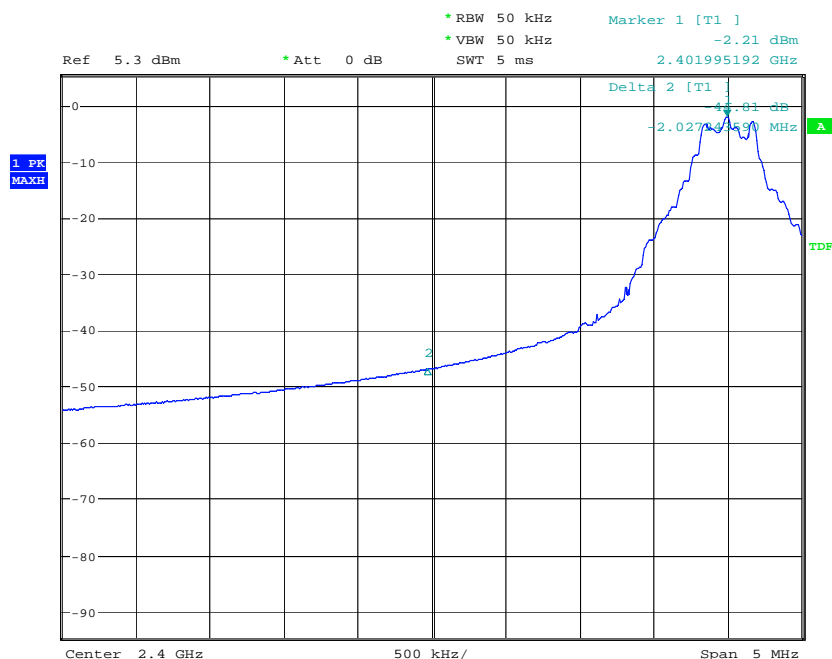
Channel 78, 2480MHz-Occupied Bandwidth (-20dBc BW)



Date: 9.NOV.2006 06:44:36

A.3 BAND EDGE COMPLIANCE-Bluetooth (§15.247(c))

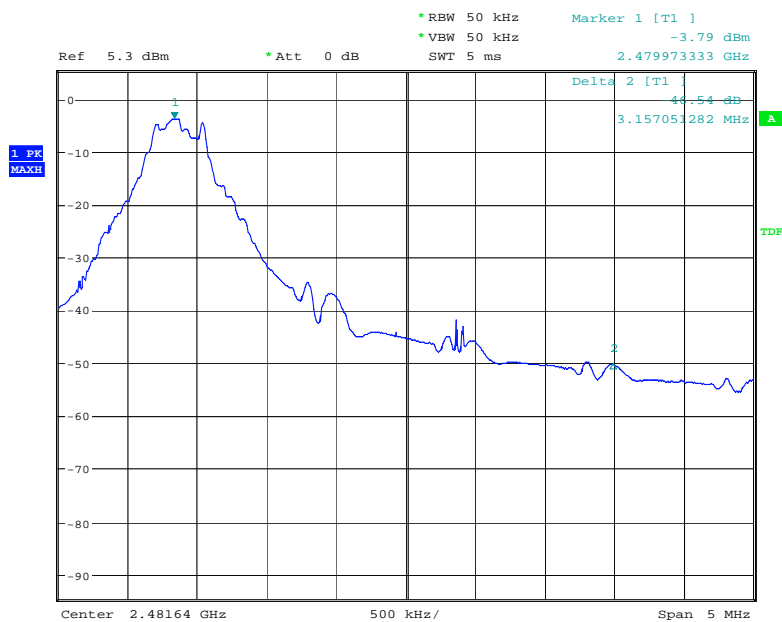
A.3.1 Channel 0 / 2402MHz Single frequency mode



Date: 9.NOV.2006 11:40:40

A.3.2 Channel 78 / 2480MHz

Single frequency mode

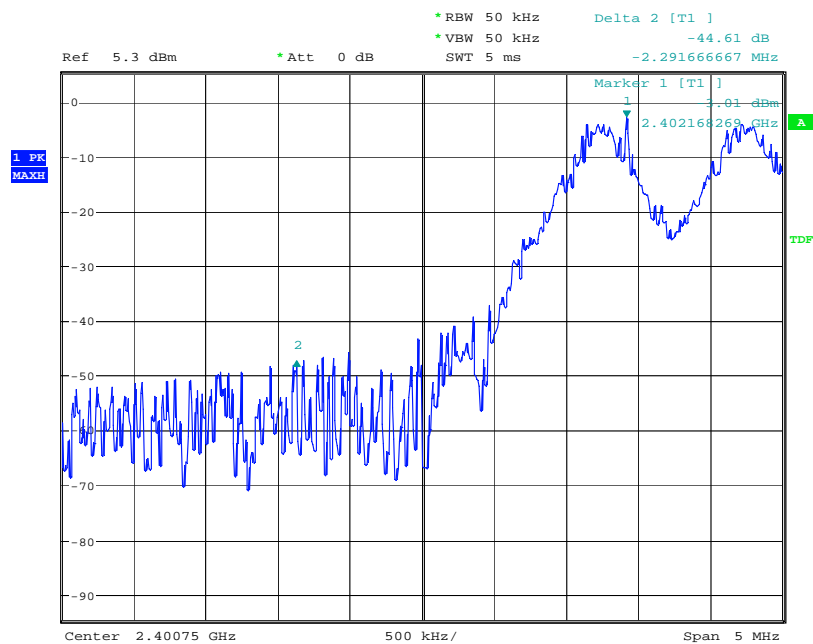


Date: 9.NOV.2006 11:44:57

A.3.3 Band-edge compliance of RF conducted emissions

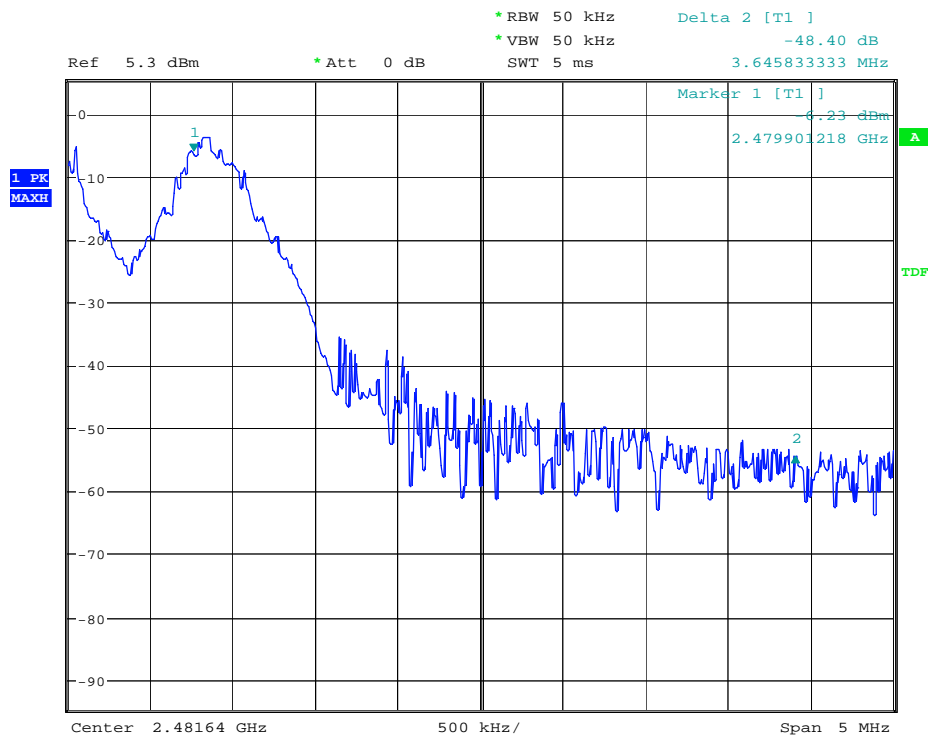
Channel 0 /2402MHz

Hopping mode



Date: 9.NOV.2006 11:54:15

A.3.4 Band-edge compliance of RF conducted emissions- Channel 78/2480MHz Hopping mode



Date: 9.NOV.2006 11:52:34

A.4 CONDUCTED SPURIOUS EMISSION-Bluetooth (§15.247(d))

A.4.1 Method of measurement

The EUT is connected to the spectrum analyzer via a low loss cable. If the EUT is not equipped with an antenna connector, a temporary antenna connector has to be installed. The EUT is switched on, the hopping function is disabled.

The analyzer setting was as following:

Frequency range	RES bandwidth		Video bandwidth	
	Pk	Avg	Pk	Avg
f<1GHz	100kHz	100kHz	100kHz	100kHz
f>1GHz	1MHz	1MHz	1MHz	1MHz

A.4.2 Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

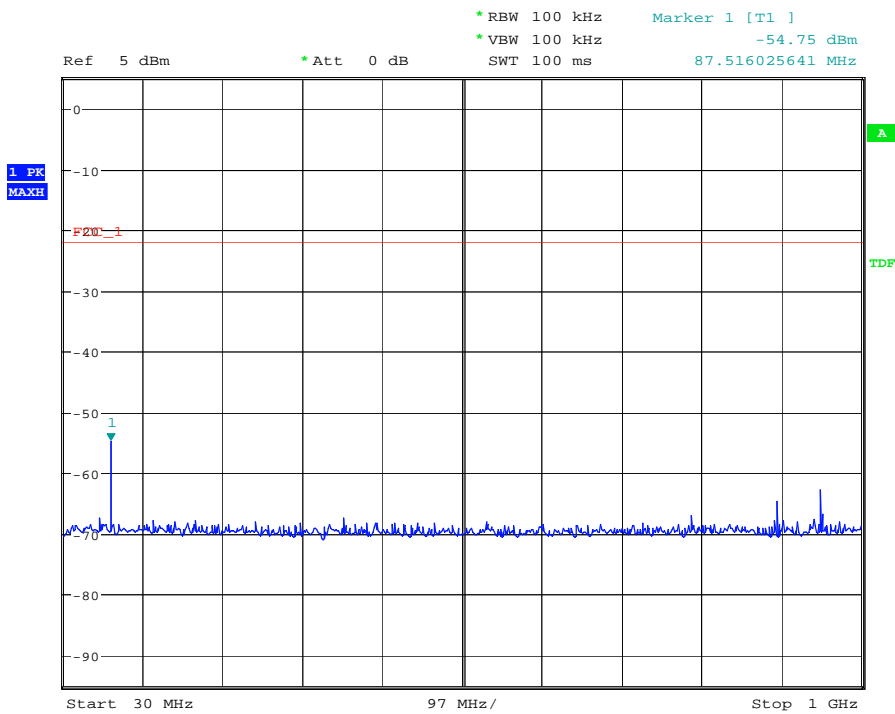
A.4.3 Measurement result

A.4.3.1 Channel 0/2402MHz: 30MHz - 1GHz

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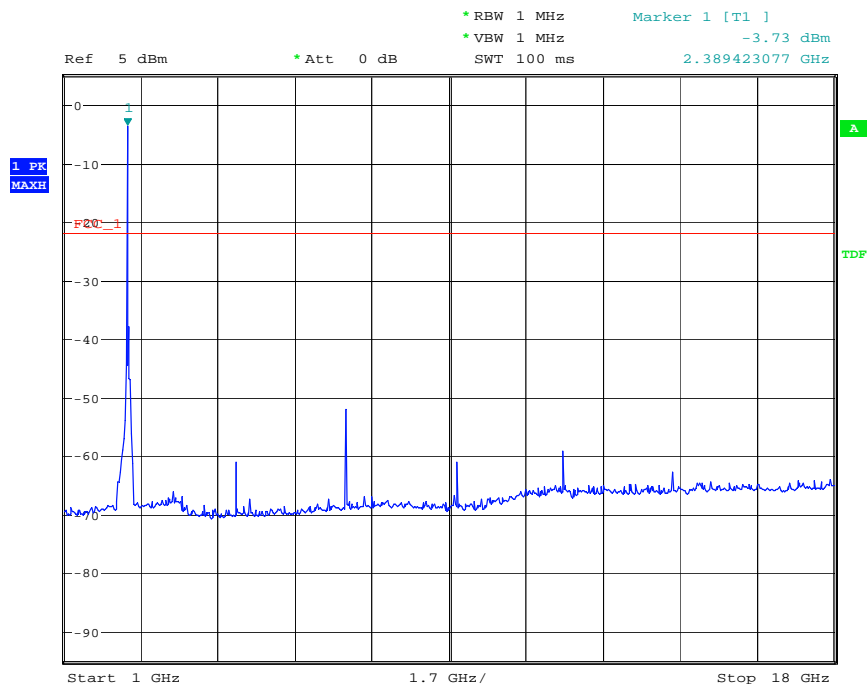
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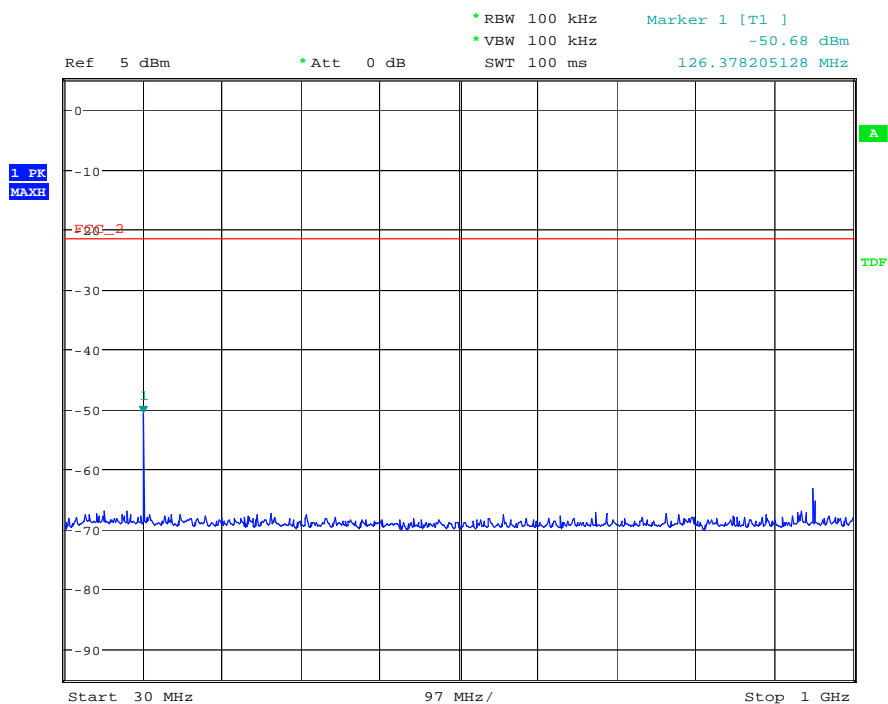
Date: 13.NOV.2006 09:51:21

A.4.3.2 Channel 0/2402MHz: 1GHz – 18GHz



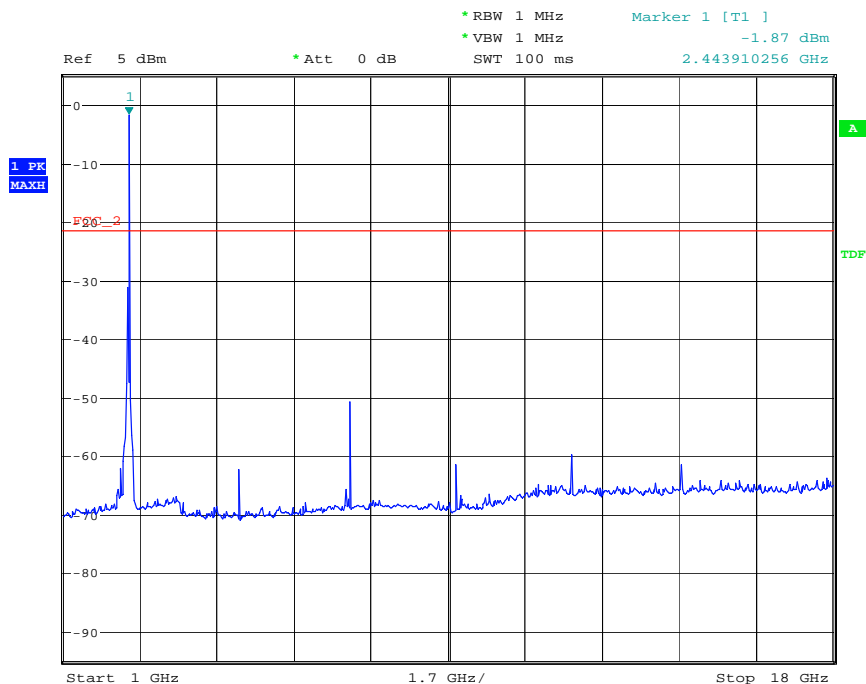
Date: 13.NOV.2006 09:59:44

A.4.3.3 Channel 39/2441MHz: 30MHz - 1GHz



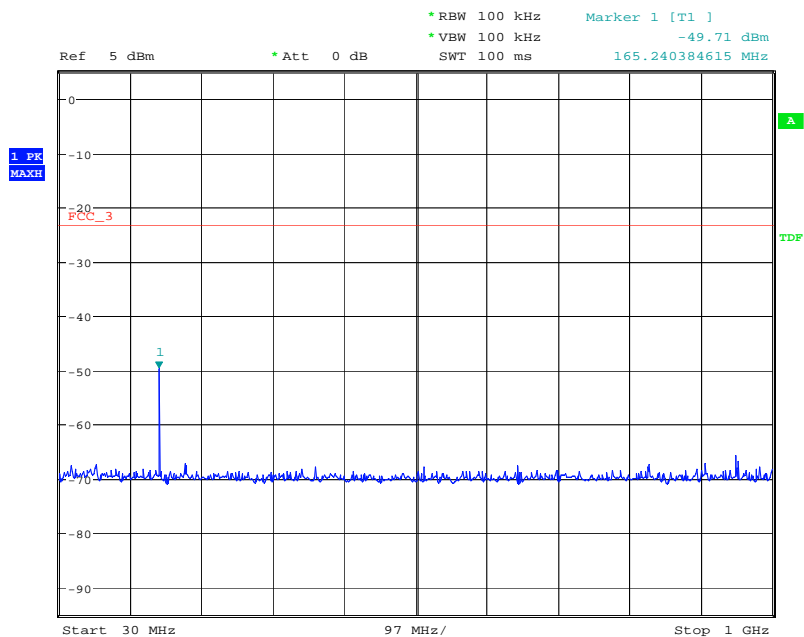
Date: 13.NOV.2006 09:53:22

A.4.3.4 Channel 39/2441MHz: 1GHz - 18GHz



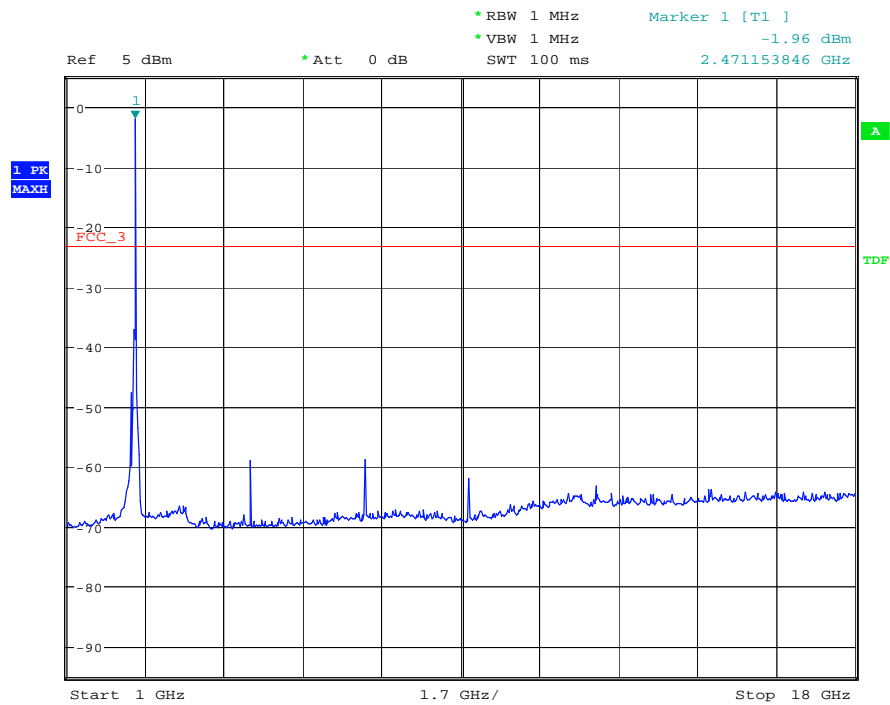
Date: 13.NOV.2006 10:00:39

A.4.3.5 Channel 78/2480MHz: 30MHz - 1GHz



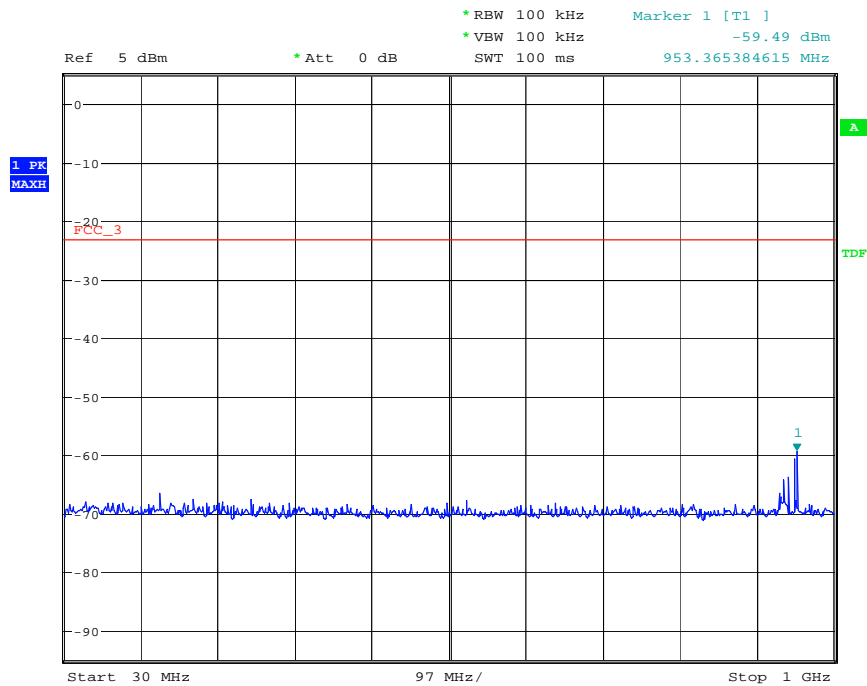
Date: 13.NOV.2006 09:55:04

A.4.3.6 Channel 78/2480MHz: 1GHz - 18GHz



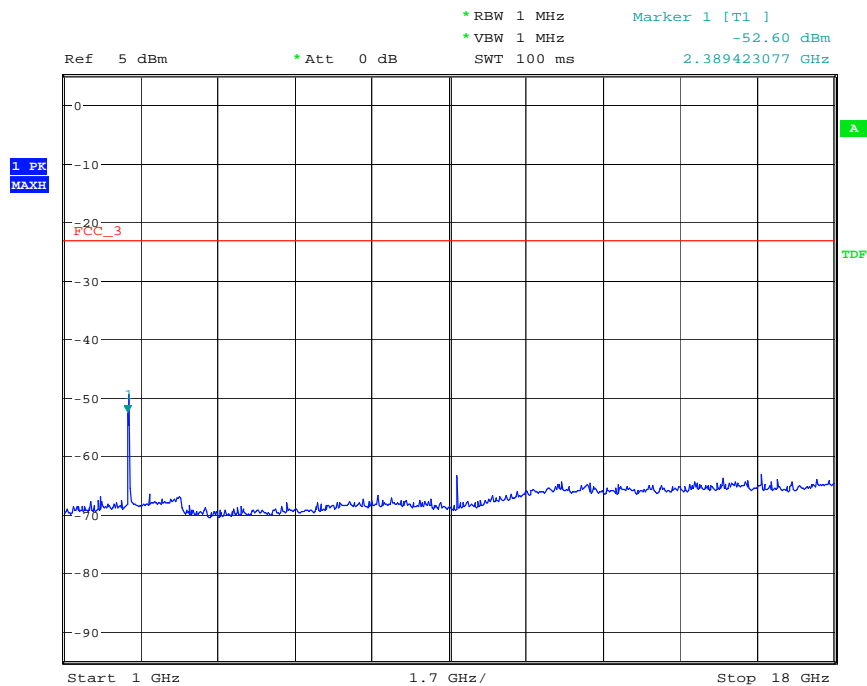
Date: 13.NOV.2006 09:58:38

A.4.3.7 Idle mode: 30MHz - 1GHz



Date: 13.NOV.2006 10:04:45

A.4.3.8 Idle mode: 1GHz - 18GHz



Date: 13.NOV.2006 10:06:10

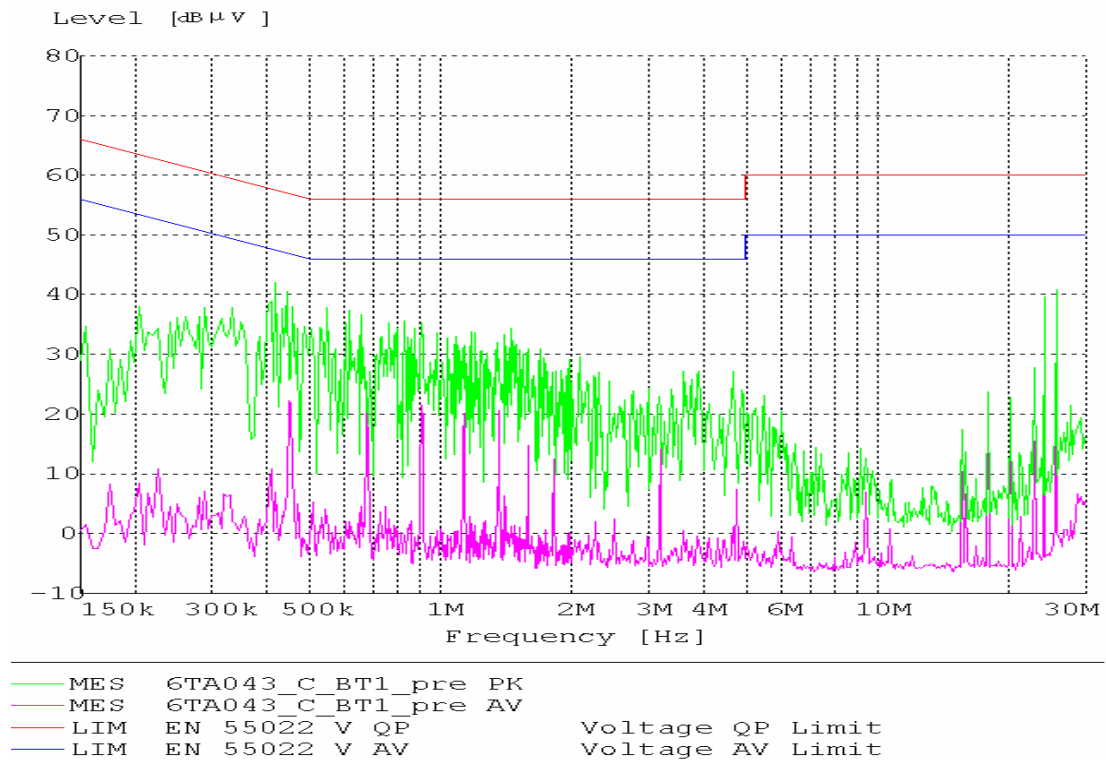
A.5 CONDUCTED EMISSION (§15.107/§207)

A.5.1 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.5.2 Measurement result



A.6 Time of occupancy (dwell time) (§15.247(a))

A6.1 Method of measurement

The EUT has its hopping function enabled.

Spectrum analyzer settings:

Span: zero span, centered on hopping channel

RBW: 1MHz

VBW: >RBW

Sweep: as necessary to capture the entire dwell time per hopping channel

Detector: peak

Trace: max hold

Limits

Frequency band	FCC
5725-5850MHz	≤0.4s at measurement period of 30 seconds
2400-2483.5MHz	≤0.4s multiplied by the number of hopping channels employed
902-928MHz	≤0.4s at measurement period of 20 seconds for max 250kHz 20dB BW allowed ≤0.4s at measurement period of 10 seconds for max 500kHz 20dB BW allowed

A.6.2 Test results

Test conditions	Operating mode	Measurement period	Time of occupancy
		[s]	[ms]
T nom=25°C	normal transmitting	31.9	185.28

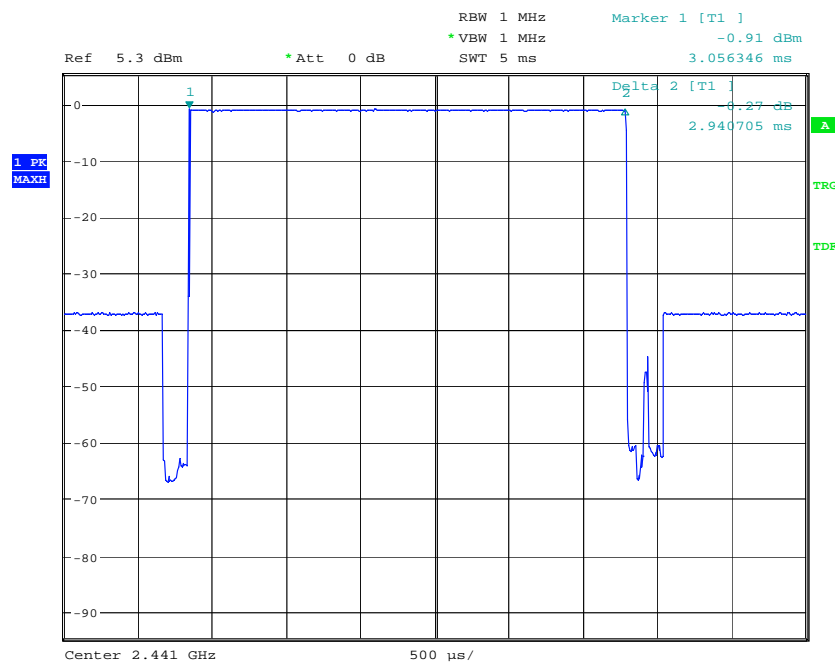
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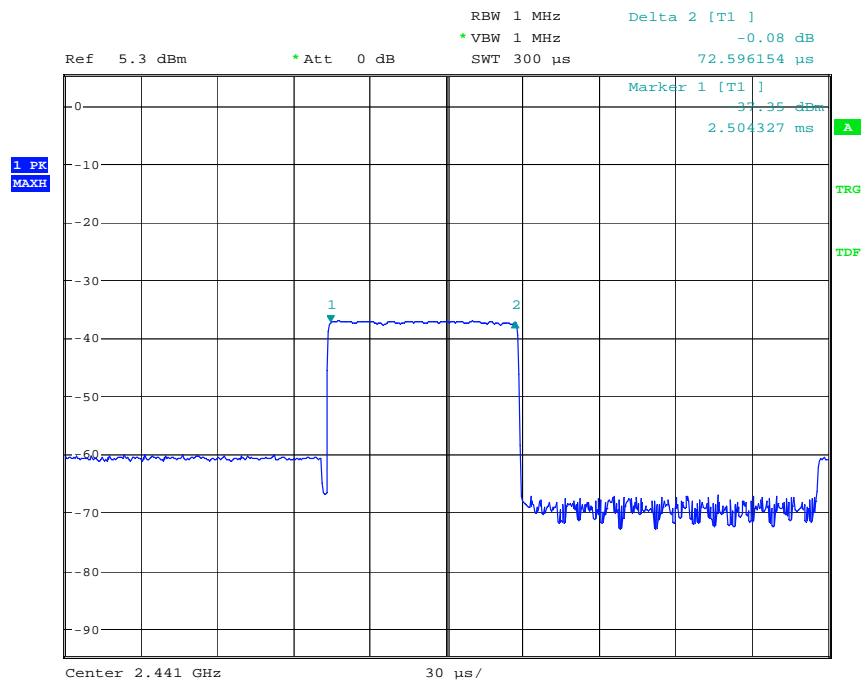
V nom=3.7V	inquiry mode	13.2	24.68
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A.6.2.1 Time of occupancy (dwell time)



Date: 9.NOV.2006 12:00:34

A.6.2.2 Time of occupancy inquiry



Date: 9.NOV.2006 12:06:26

A.7 Number of hopping channels (§15.247(a))

A.7.1 Method of measurement

According to FCC rules part 15 subpart C 15.247 frequency hopping systems operating in the 2400-2483.5MHz and 5725-5850MHz bands shall use at least 75 hopping frequencies.

According to FCC 00-312 appendix B systems in the 2400-2483.5MHz band may utilize hopping channels whose 20dB bandwidth is greater than 1MHz provide the systems use at least 15 non-overlapping channels.

A.7.2 Limits

Frequency band	FCC
5725-5850MHz	≥ 75 hopping channels
2400-2483.5MHz	≥ 75 hopping channels for >0.125 Watt ≥ 15 hopping channels for ≤ 0.125 Watt
902-928MHz	≥ 50 hopping channels for >0.25 Watt ≥ 25 hopping channels for ≤ 0.25 Watt

A.7.3 Test results

Test conditions	Operating mode	Number of channel
T nom=25°C V nom=3.7V	Normal transmitting	79
	Inquiry mode	32

A.8 Carrier frequency separation (§15.247(a))

A.8.1 Method of measurement

Carrier frequency separation was measured with modulation (declared by manufacturer)

A.8.2 Limits

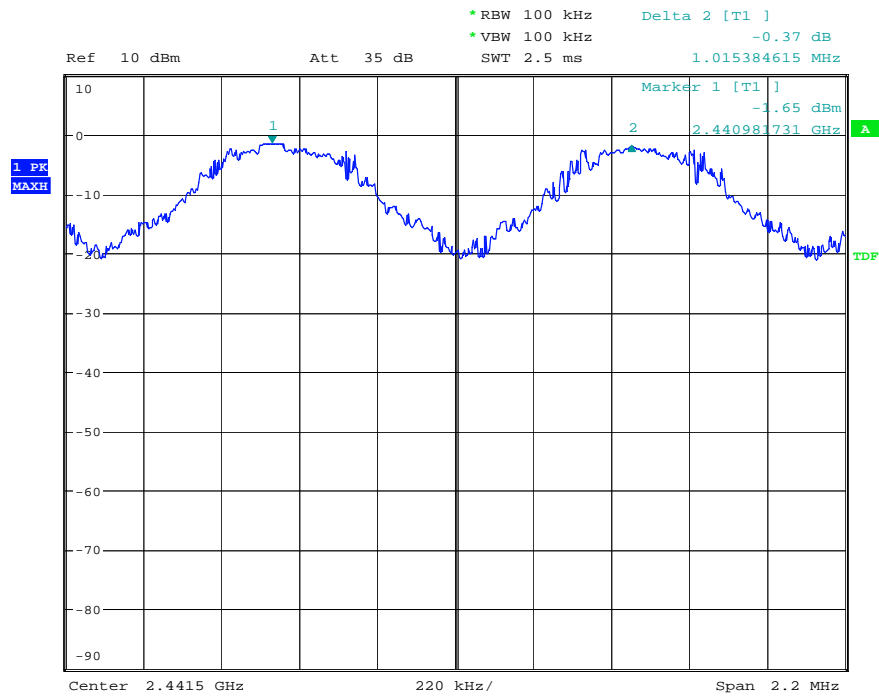
Frequency band	FCC
5725-5850MHz	Minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater, but ≤ 1 MHz
2400-2483.5MHz	Minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater Minimum of 25kHz or 2/3 of the 20dB bandwidth of the hopping channel, whichever is greater, for $P_{out} \leq 0.125W$
902-928MHz	Minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater

A.8.3 Test results

Test conditions	Channel 39	Channel Separation
	[GHz]	[kHz]
T nom=25°C V nom=3.7V	2.441	1015

See attached diagrams

A.8.3.1 Carrier frequency separation -Channel.:39/40/2441/2442MHz



Date: 9.NOV.2006 12:35:20

A.9 Radiated Spurious Emission-Bluetooth (&15.247,&15.205,&15.209,&15.35)

A.9.1 method of measurement

The radiated spurious emission in Bluetooth operating mode was measured using peak detector with modulation (declared by the applicant).

A.9.2 limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band

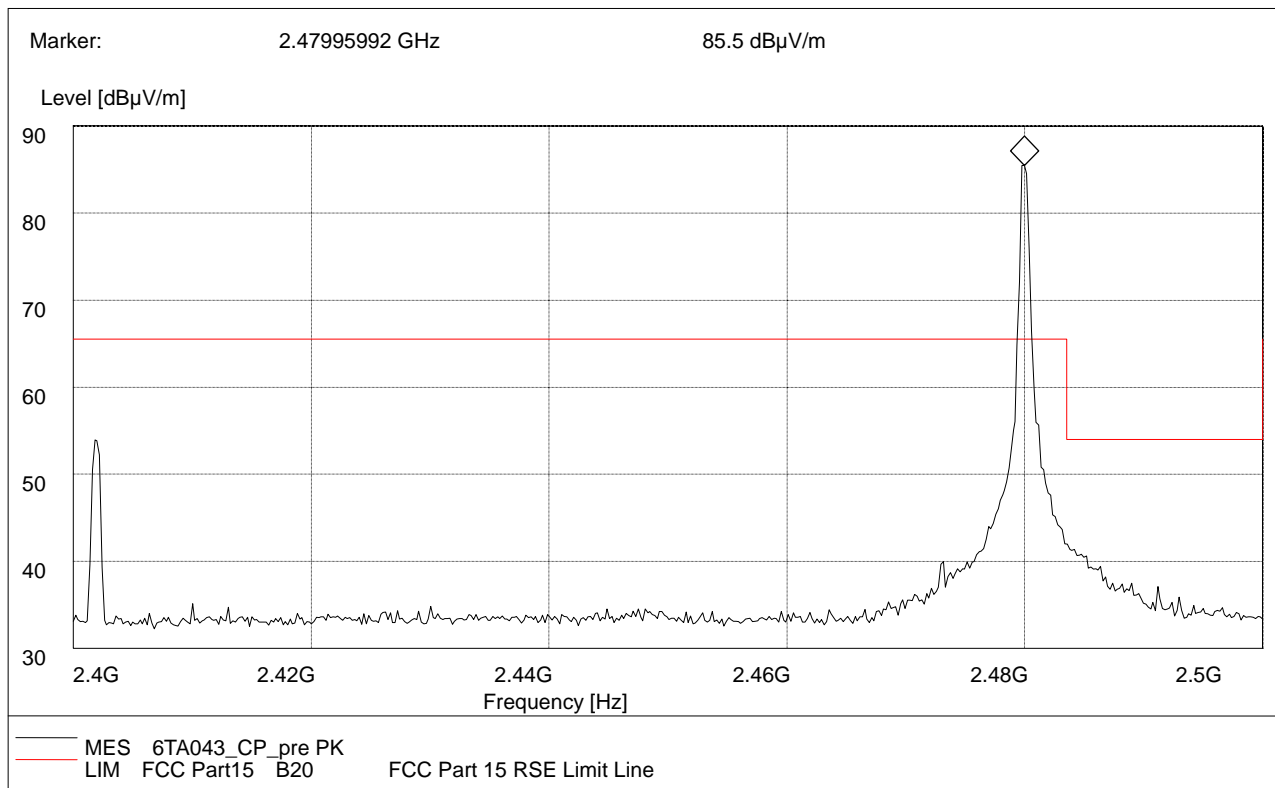
Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Calculation of limit

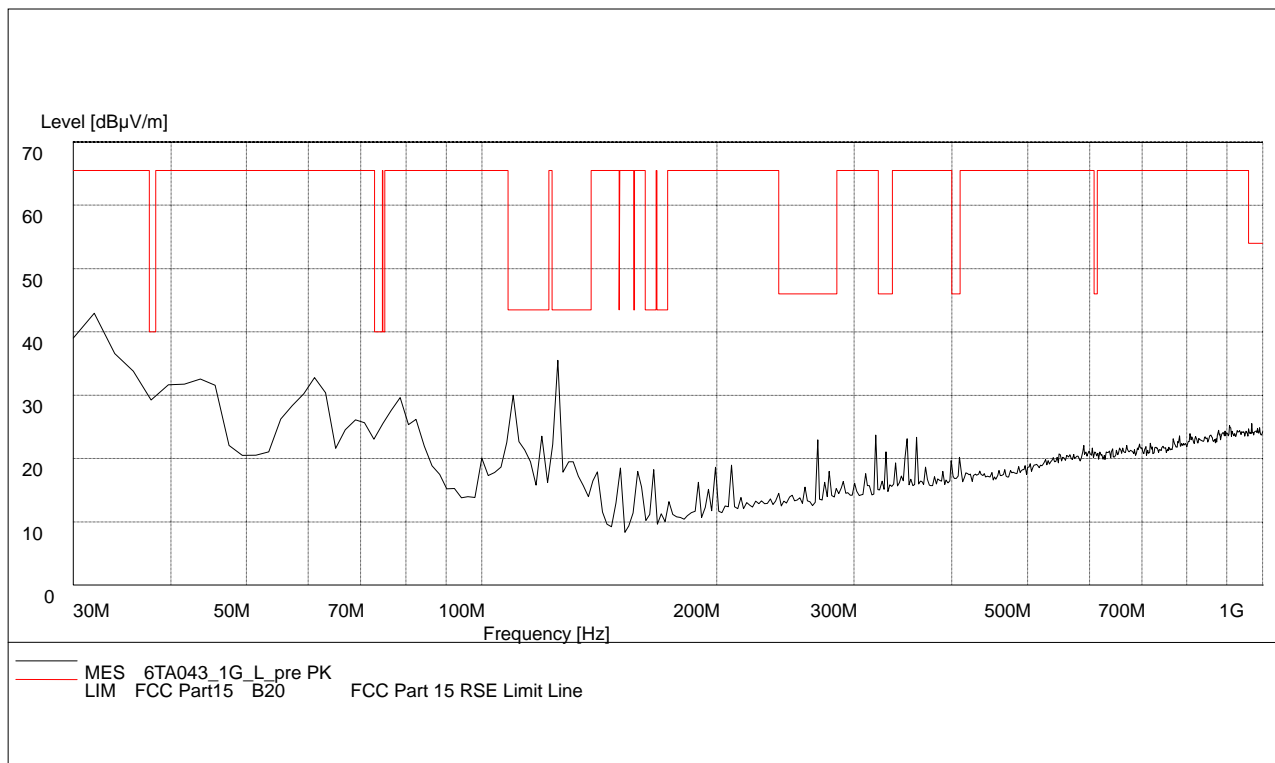
Limit=85.5dBuV/m-20dB=65.5dBuV/m.

A.9.3 Measurement result

A.9.3.1 carrier power

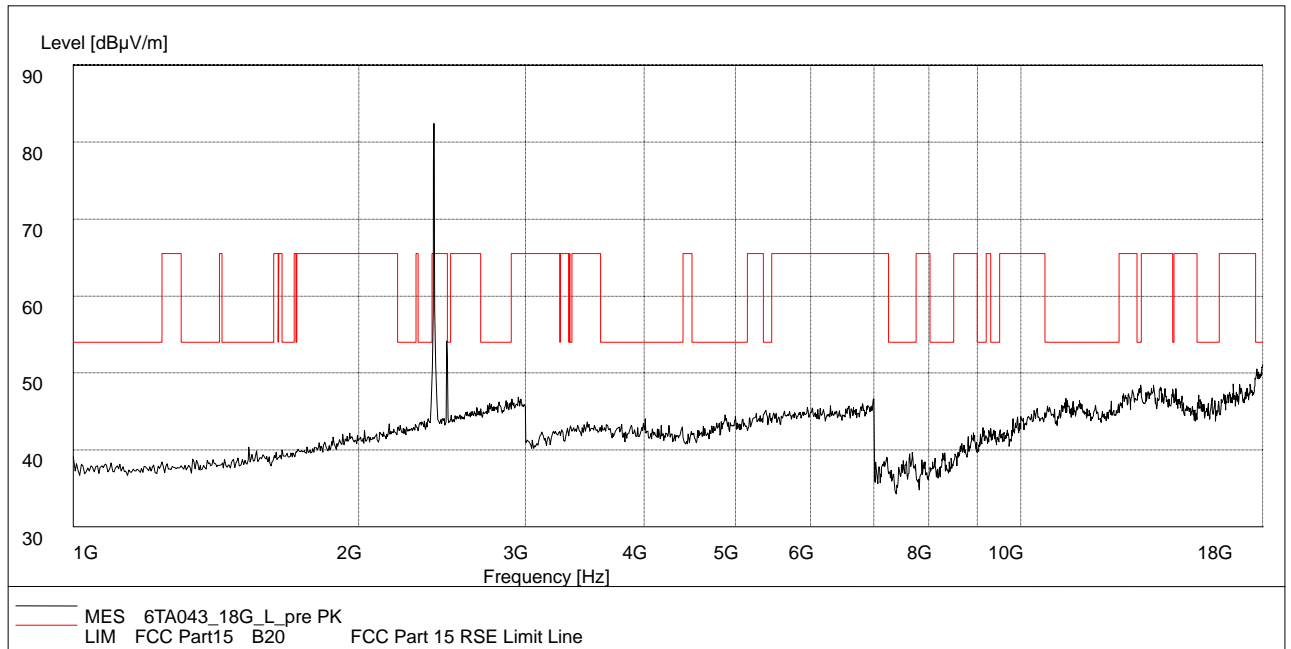


A.9.3.2 30MHz-1GHz - Channel 2402MHz

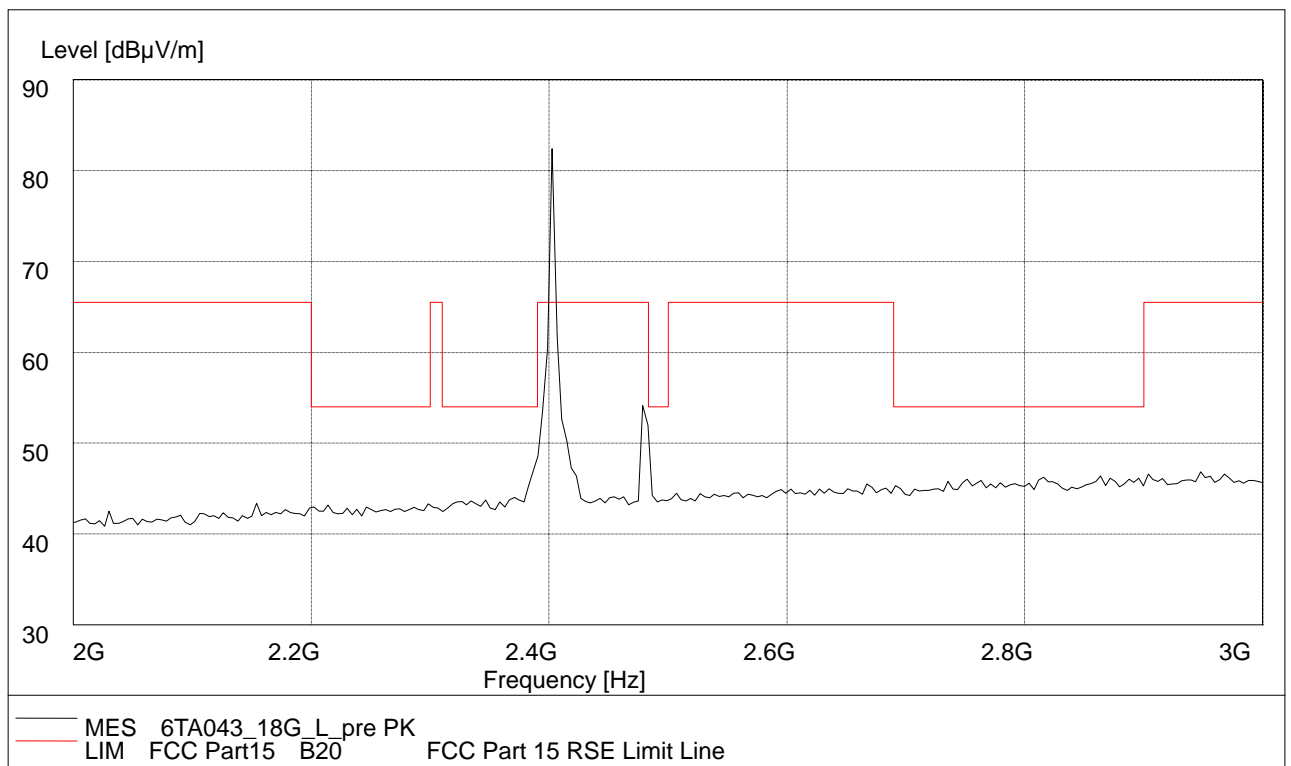


A.9.3.3 1GHz-18GHz - Channel 2402MHz

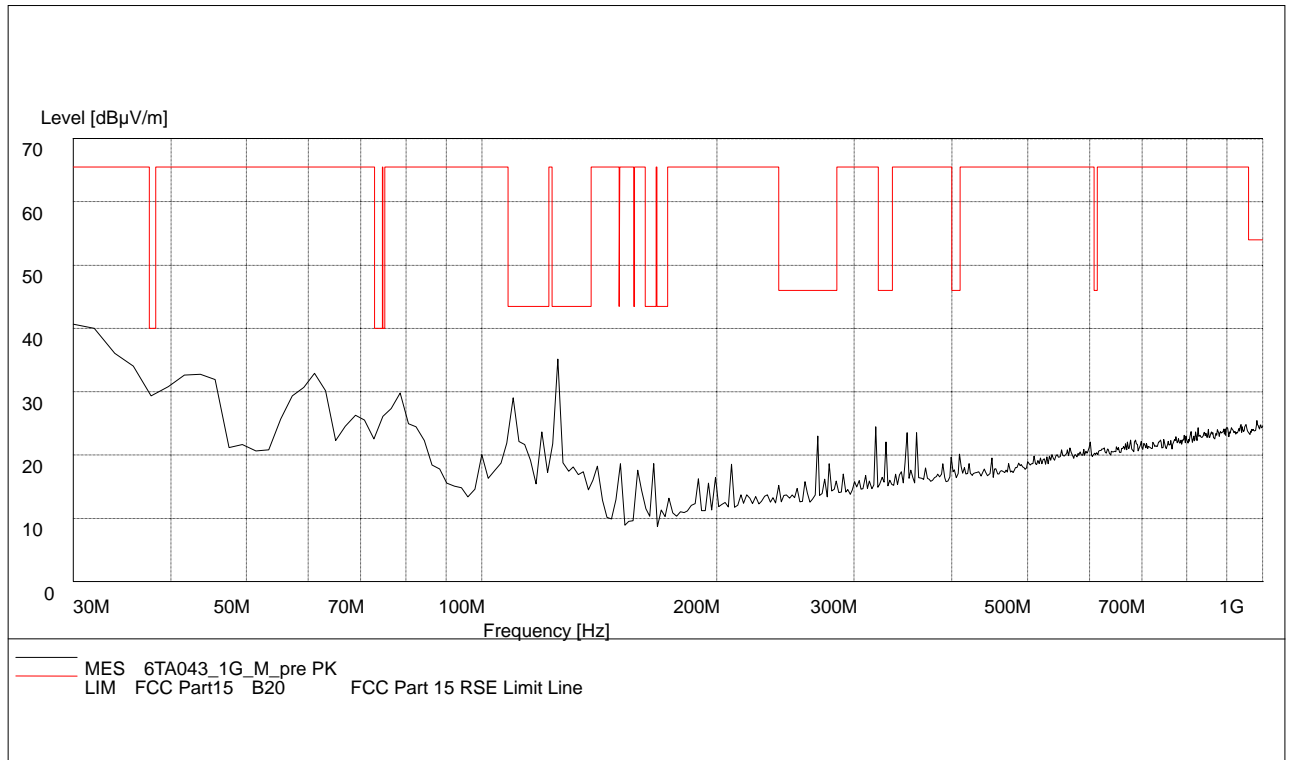
Note: the peak above the limit is carrier power.



A.9.3.4 2GHz-3GHz - Channel 2402MHz

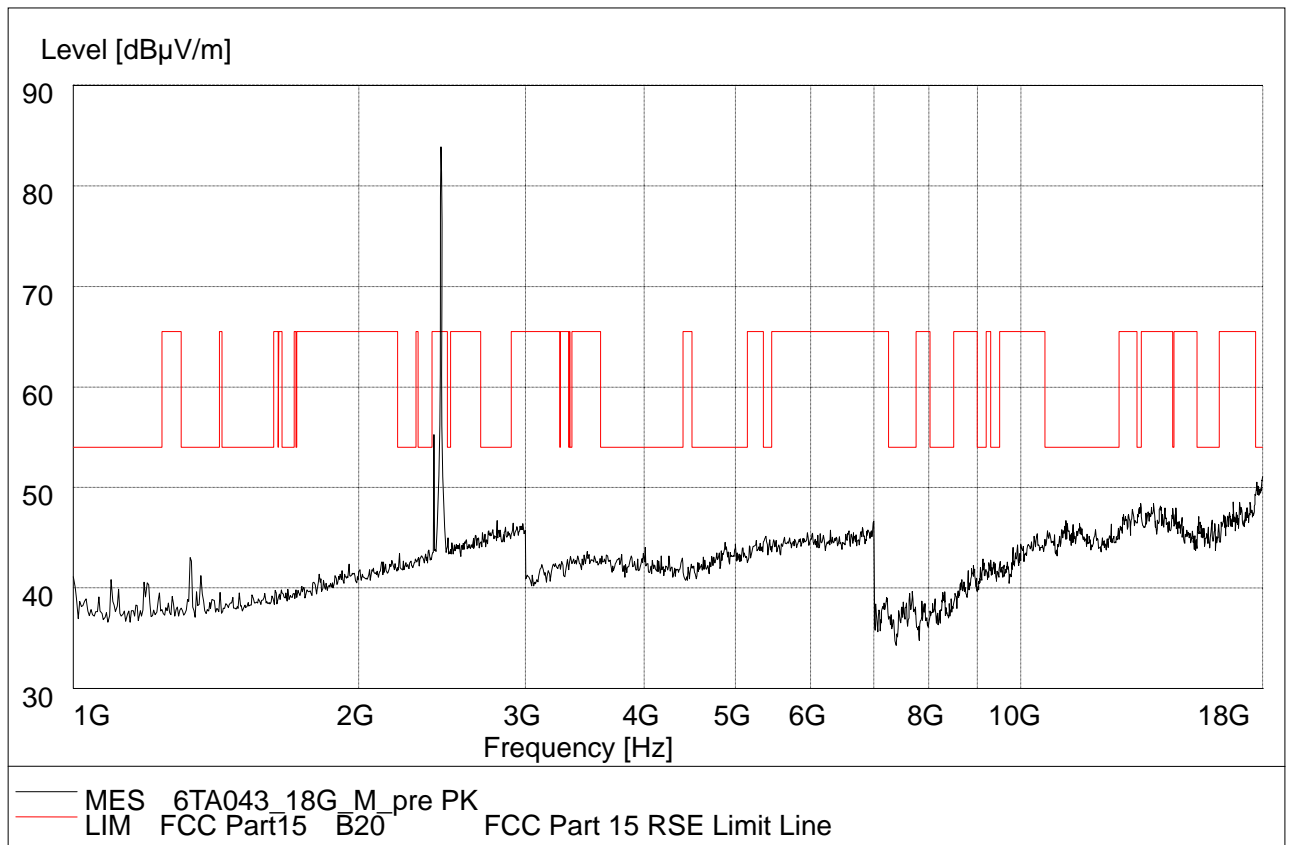


A.9.3.5 30MHz-1GHz - Channel 2441MHz

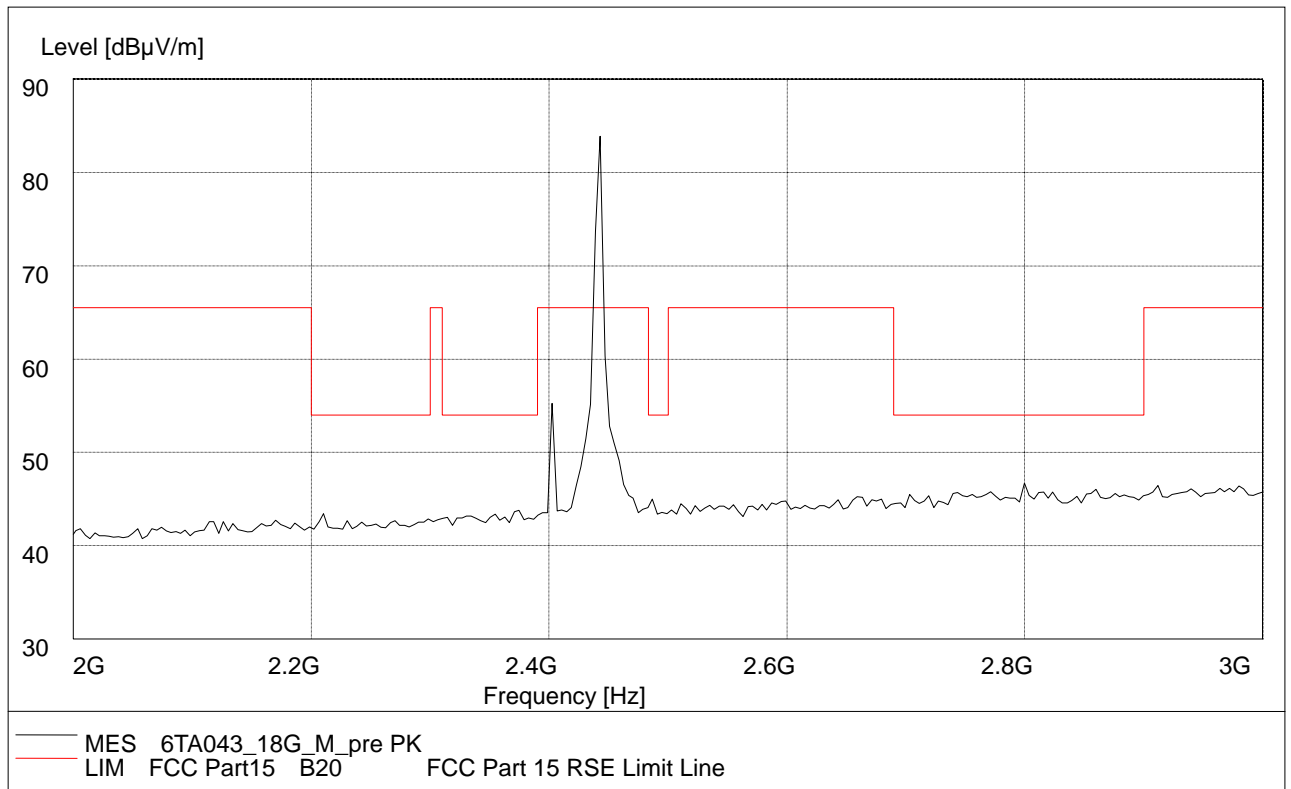


A.9.3.6 1GHz-18GHz - Channel 2441MHz

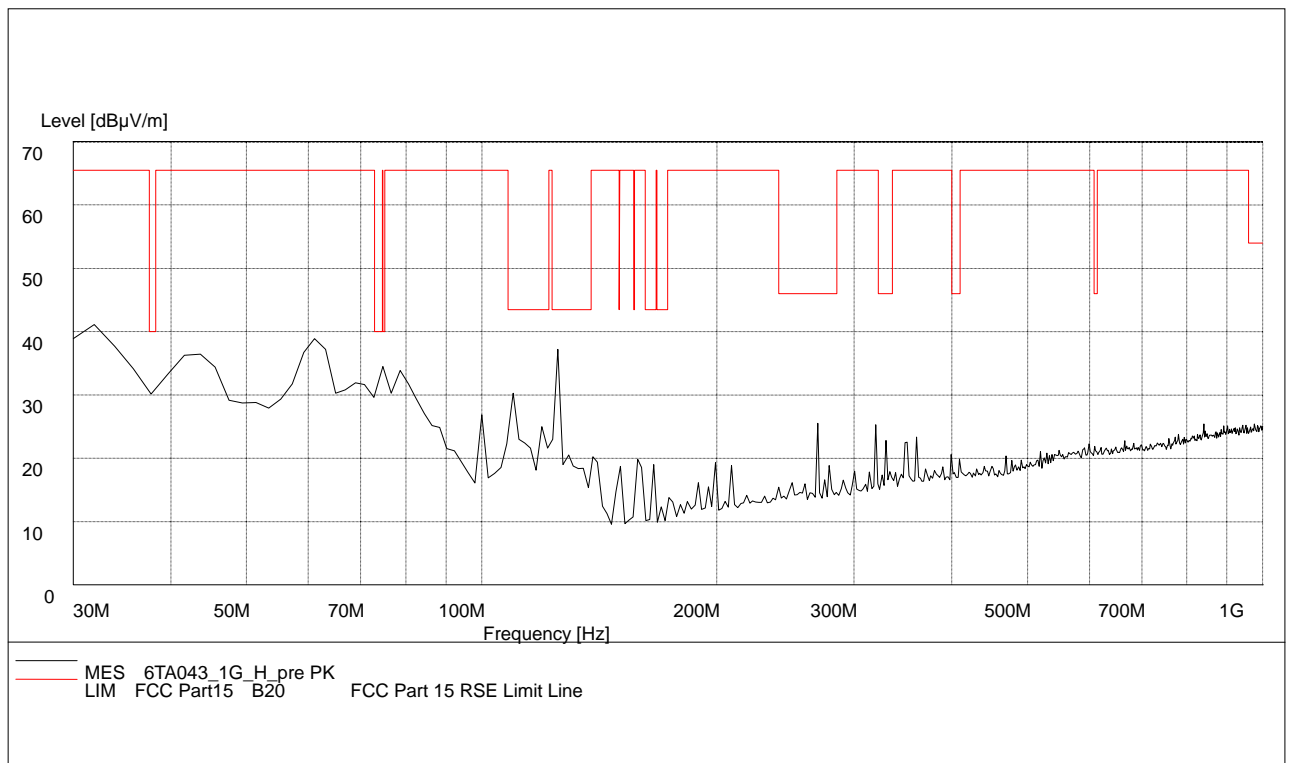
Note: the peak above the limit is carrier power



A.9.3.7 2GHz-3GHz - Channel 2441MHz

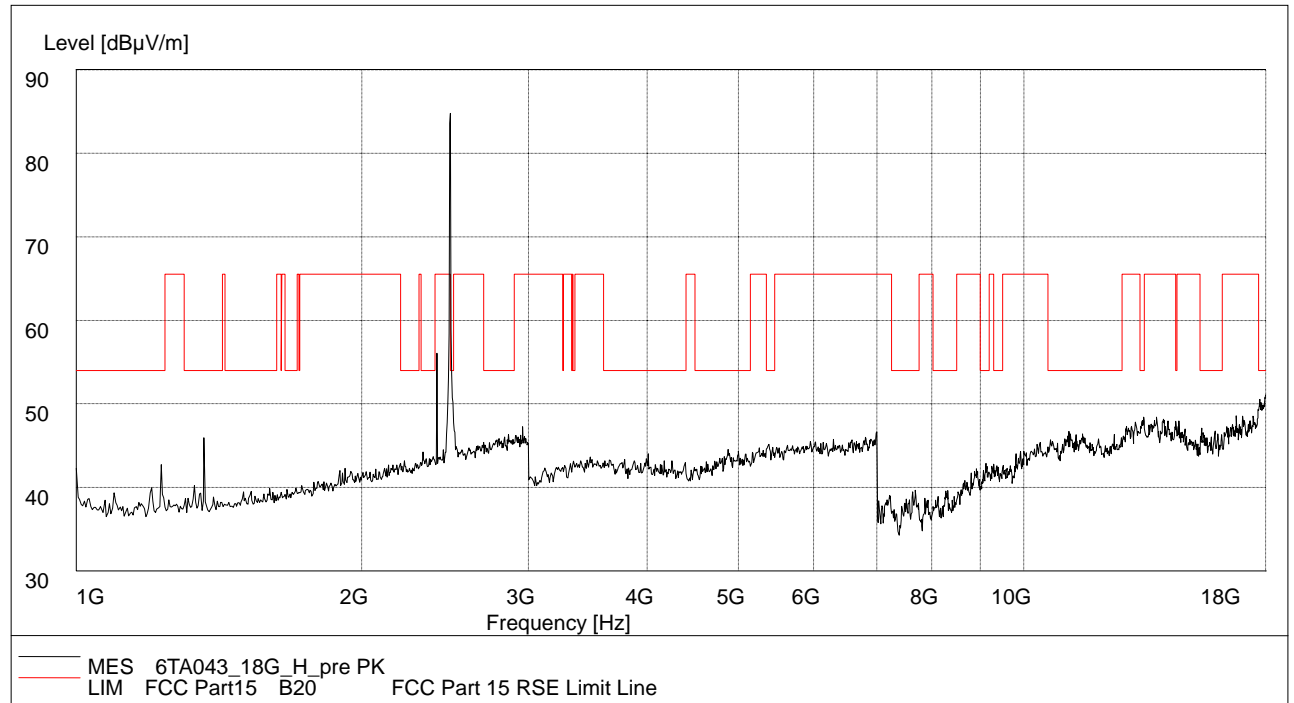


A.9.3.8 30MHz-1GHz - Channel 2480MHz

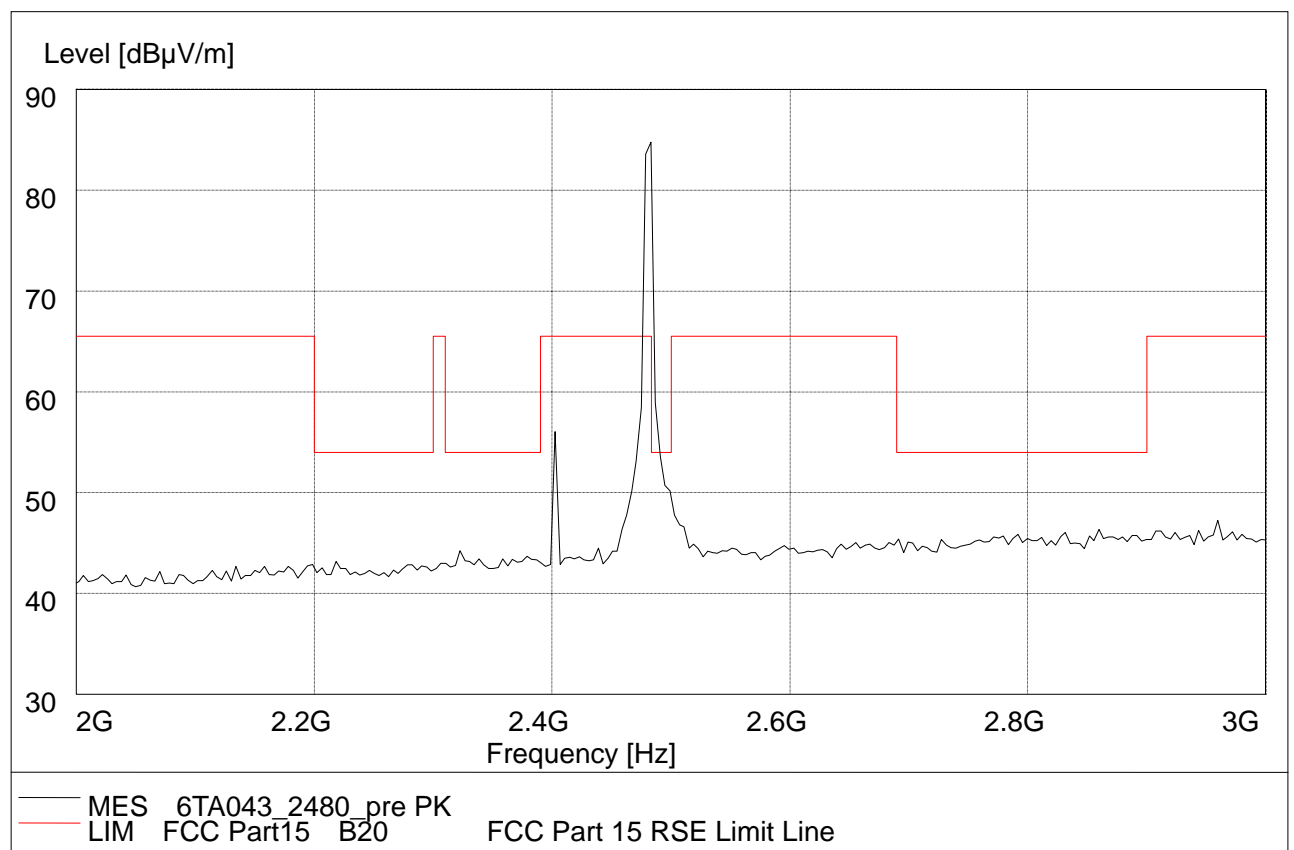


A.9.3.9 1GHz-18GHz - Channel 2480MHz

Note: the peak above the limit is carrier power

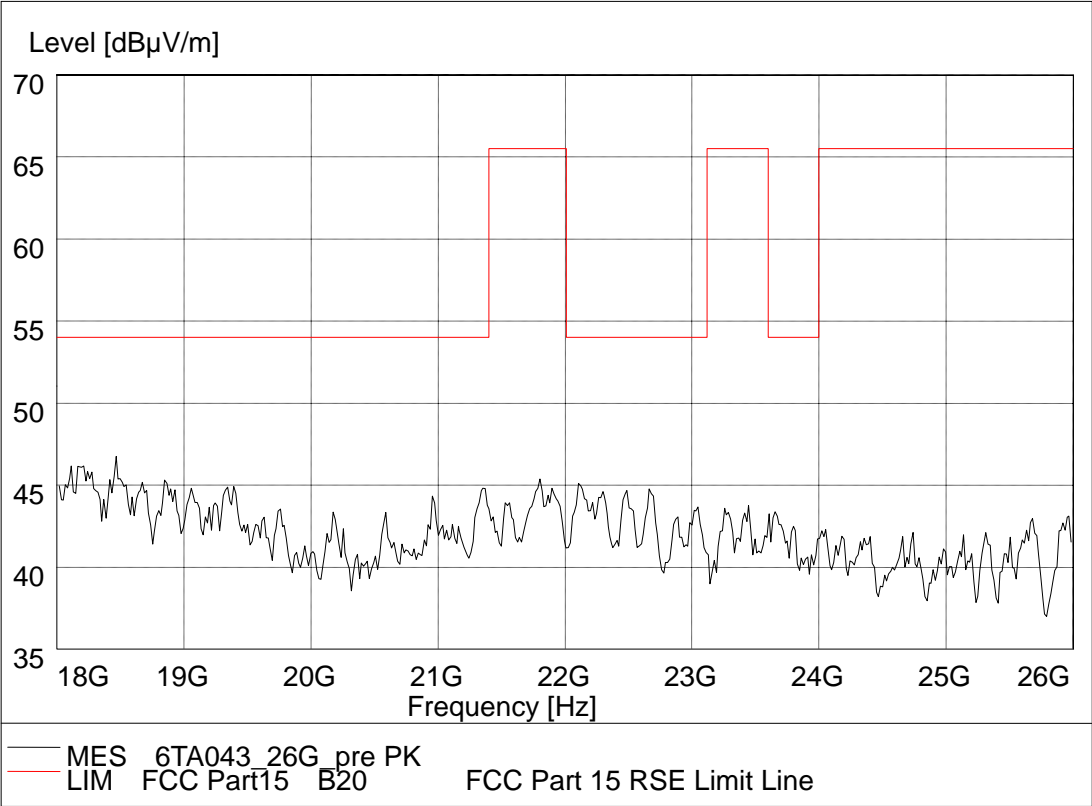


A.9.3.10 2GHz-3GHz - Channel 2480MHz



A.15.3.11 18GHz-26.5GHz

This plot is the worst case of Low, Middle, High channel. It is same as the noise floor.



ANNEX B PHOTOGRAPH OF EUT

External Photo



Mobile Phone



Mobile Phone



Mobile Phone



Mobile Phone



Mobile phone



Charger (AC/DC Adapter)

Internal Photo



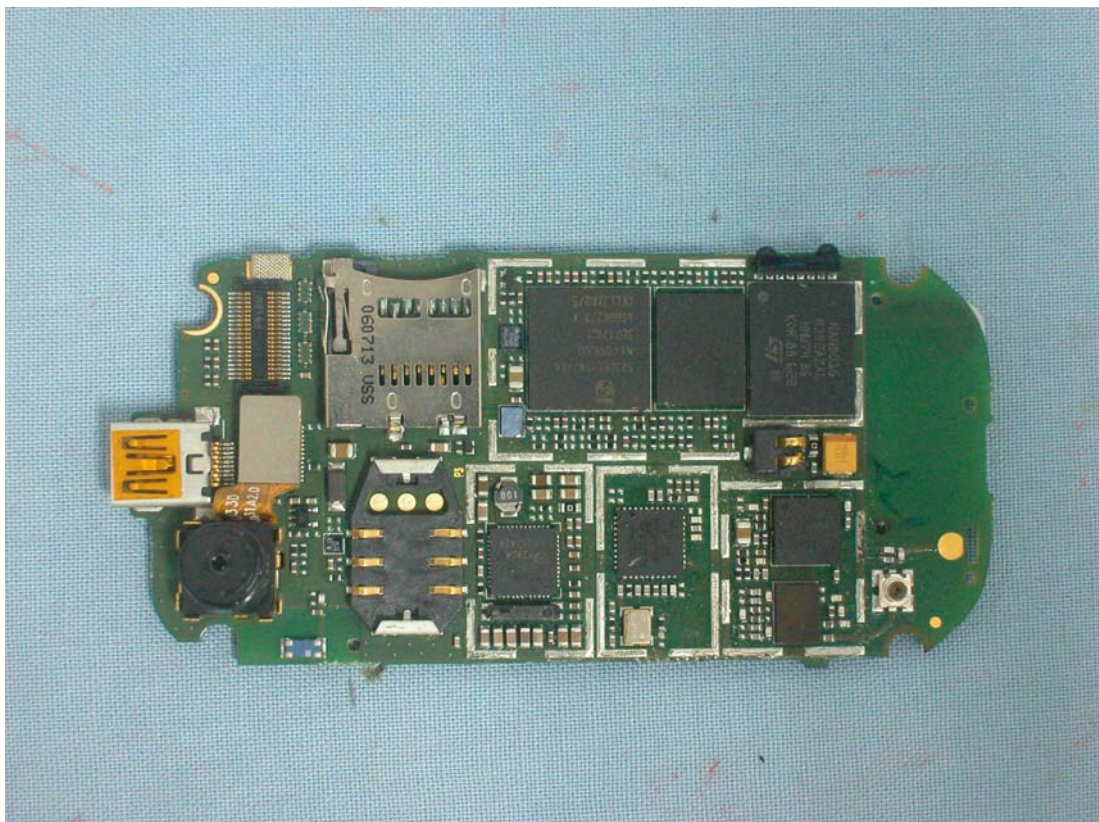
Mobile phone Disassembly



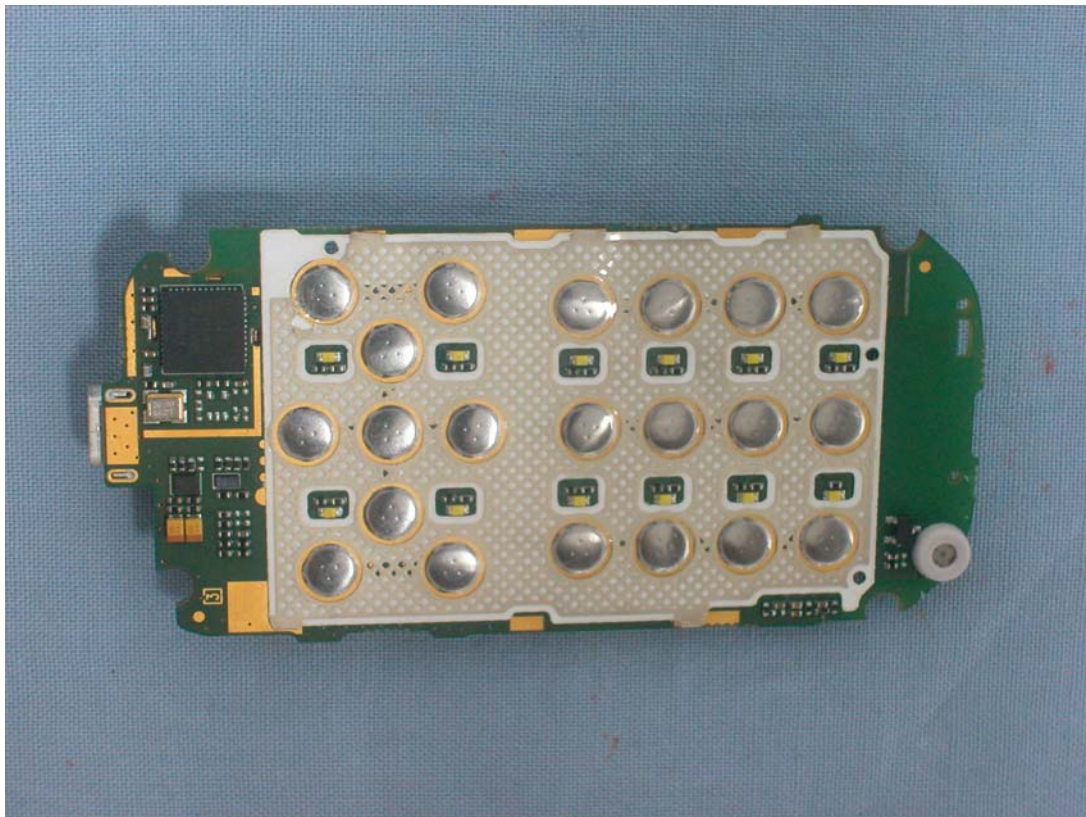
Mobile phone Disassembly



Mobile phone Disassembly

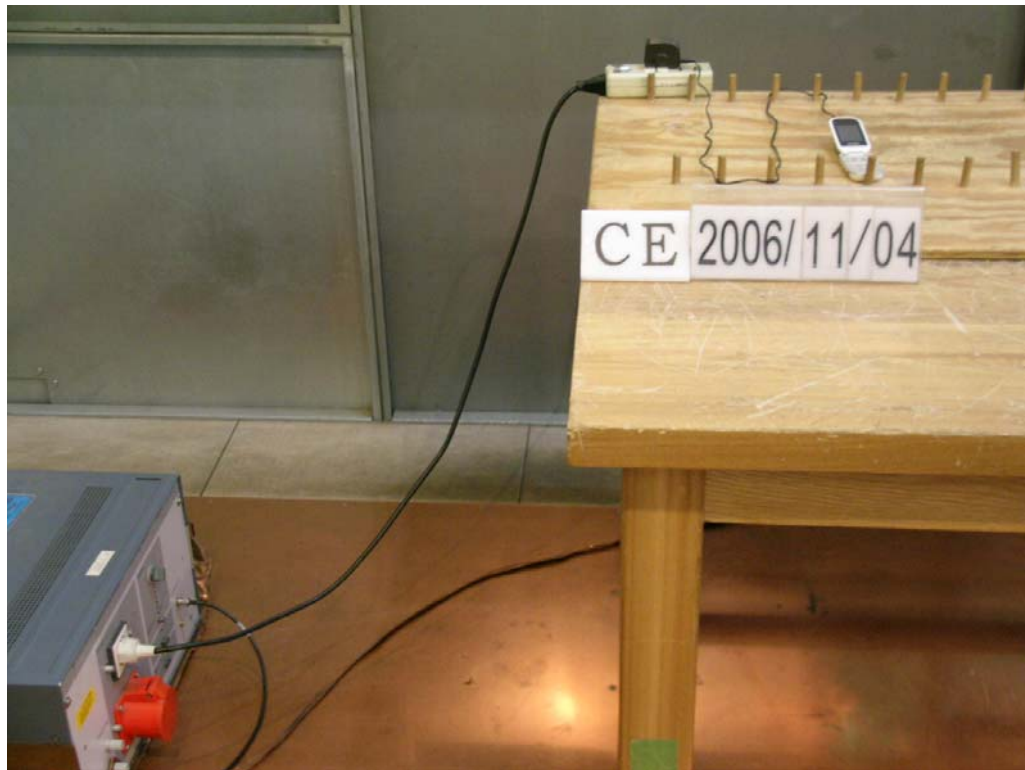


mobile phone PCB back view



mobile phone PCB front view

ANNEX C TEST LAYOUT



Pic C.1 Conducted Emission



Pic C.2 Radiated Spurious Emission

END OF REPORT BODY