FCC LISTED,
REGISTRATION
NUMBER: 905266

IC LISTED,
REGISTRATION
NUMBER: IC 4621

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TEST REPORT

Report No.: 20183RET.102

TEST NAME: FCC PART 15.247 TESTING FOR BLUETOOTH RADIO DEVICE

Product	:	Media Pad (Bluetooth remote controller)
Trade Mark	:	Logitech
Model/type Ref.	:	Y-RAA43
Manufacturer	:	SUZHOU LOGITECH ELECTRONIC Co., LTD
Requested by	:	LOGITECH INC.
Other identification of the product	:	FCC ID: DZL201678A Unique Product Number (UPN): 1807B-201678A Serial number: LZA34850021 and LZA34850040
Standard(s)	:	USA FCC Part 15.247, 15.205, 15.209, 15.109 CANADA RSS-210

This test report includes 2 annexes and therefore the total number of pages is 60.

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1. COMPETENCE AND GUARANTEES

Centro de Tecnología de las Comunicaciones (CETECOM), S.A. is a laboratory with a measurement facility in compliance with the requirements of Section 2.948 of the FCC rules and has been added to the list of facilities whose measurements data will be accepted in conjuction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Registration Number: 905266.

Centro de Tecnología de las Comunicaciones (CETECOM), S.A. is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: IC 4621.

In order to assure the traceability to other national and international laboratories, CETECOM has a calibration and maintenance programme for its measuring equipment.

CETECOM 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 CETECOM at the time of execution of the test.

CETECOM 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. GENERAL CONDITIONS

1. This report only refers to the item that has undergone the test.
2. This report does not constitute or imply by its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without written approval of CETECOM.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of CETECOM and the Accreditation Bodies.

3. CHARACTERISTICS OF THE TEST

3.1 TEST REQUESTED

Measurements for frequency hopping spread spectrum equipment (Bluetooth) operating in the 2400 MHz -2483.5 MHz band and using, according to FCC Part 15.247.

3.2 REQUIREMENTS AND METHOD

The test has been carried out according to FCC parts 15.33, 15.35, 15.109, 15.205, 15.209, 15.247 and the document DA 00-705:"Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems".

The testing was performed according to the procedure in ANSI C63.4. Radiated testing was performed in Cetecom's semi-anechoic chamber. This site has been fully described in a report submitted to the FCC and was accepted in a letter dated July 25, 2002.

The instrumentation used to perform the testing is listed below:

1. Semianechoic Absorber Lined Chamber IR 11. BS.
2. Control Chamber IR 12.BC.
3. Spectrum Analyzer HP 8566 B.
4. RF Preselector HP 85685A.
5. Quasi-peak adaptor HP 85650A.
6. RF linear amplifier HP 8447.F
7. Antenna mast EM 1072 NMT.
8. Rotating table EM 1084-4. ON.
9. Mast controller EM 1053-22.
10. Rotating table controller EM 1064-4023.
11. Process controller HP 98581C.
12. Harddisk HP 9153.
13. Peripheral unit HP 9153 C.
14. Measurement software HP 85879A.
15. 3 dB attenuator HP 8491A.
16. Bilog antenna CHASE CBL6111.
17. Bilog antenna CHASE CBL6111.
18. Antenna tripod EMCO 11968C.
19. Double-ridge Guide Horn antenna 1-18 GHz HP 11966E.
20. Double-ridge Guide Horn antenna 18-40 GHz Agilent 119665J.
21. Switch Unit with RF pre-amplifiers R&S TS8930SU.
22. RF pre-amplifier Miteq JS4-12002600-30-5A.
23. EMI Test Receiver R&S ESIB26.

4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data in this section has been supplied by the client.

4.1 APPLICANT

Name or Company: Logitech INC

V.A.T.: -----

Address: 6505 kaiser Drive **City:** Fremont (California)

Postal code: 94555 **Country:** USA

Telephone: +1 510 7958500 **Fax:** +1 510 7928901

4.2 REPRESENTATIVE

Name: Bharat Shah

4.3 TEST SAMPLES SUPPLIER

Name or Company: Logitech Europe, S.A.

V.A.T.: -----

Address: ZI Moulin du Choc **City:** Romanel Sur Morges

Postal code: 1122 **Country:** Switzerland

Telephone: +41 (0)21 863 50 67 **Fax:** +41 (0)21 863 53 33

Samples undergoing test have been selected by: **the client.**

4.4 IDENTIFICATION OF ITEM/ITEMS TESTED

Product: Media Pad (Bluetooth remote controller)

Trade mark: Logitech **Model:** Y-RAA43

Manufacturer: SUZHOU LOGITECH ELECTRONIC Co., LTD

Country of manufacture: P.R.C.

Manufacture site: No. 168, Bin He Rd, Standard Plant, 215011 SUZHOU City

Description: Cordless Numpad for PCs and using Bluetooth technology

5. USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS

5.1 USAGE OF SAMPLES

Sample M/01 is formed by the following elements:

Control No.	Description	Model	Serial No.	Date of reception
20183/11	Media Pad (Bluetooth remote controller)	Y-RAA43	LZA34850021	08/06/04

Sample M/02 is formed by the following elements:

Control No.	Description	Model	Serial No.	Date of reception
20183/12	Media Pad (Bluetooth remote controller) with connector	Y-RAA43	LZA34850040	08/06/04

1. Sample M/01 has undergone following test(s).

   Radiated measurements indicated in annex A.

2. Sample M/02 has undergone following test(s).

   Conducted measurements indicated in annex A.

5.2 PERIOD OF TESTING

The performed test started on 2004-06-10 and finished on 2004-06-18.

The tests as detailed in this report have been performed at CETECOM.

5.3 ENVIROMENTAL CONDITIONS

In the control chamber the following limits were not exceeded during the test:

Temperature	Min. = 24 ºC Max. = 25 ºC
Relative humidity	Min. = 63 % Max. = 64 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters) the following limits were no exceeded during the test.

Temperature	Min. = 26 ºC Max. = 26 ºC
Relative humidity	Min. = 58 % Max. = 58 %
Air pressure	Min. = 1012 mbar Max. = 1015 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogenousity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

In the chamber for conducted measurements the following limits were no exceeded during the test:

Temperature	Min. = 24 ºC Max. = 25 ºC
Relative humidity	Min. = 56 % Max. = 57 %
Air pressure	Min. = 1013 mbar Max. = 1015 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

6. TEST RESULTS

Abbreviations used in the VERDICT column of the following tables are:

P Pass

F Fail

NA not applicable

NM not measured

FCC PART 15 PARAGRAPH	VERDICT			
	NA	**P**	**F**	**NM**
15.247 Subclause (a) (1). 20 dB Bandwidth and Carrier frequency separation		P		
15.247 Subclause (a) (1) (iii). Number of hopping channels		P		
15.247 Subclause (a) (1) (iii). Time of occupancy (Dwell Time)		P		
15.247 Subclause (b). Maximum peak output power and antenna gain		P		
15.247 Subclause (c). Band-edge of conducted emissions (Transmitter)		P		
15.247 Subclause (c). Emission limitations conducted (Transmitter)		P		
15.247 Subclause (c). Emission limitations radiated (Transmitter)		P		
15.207. Conducted limits	NA			
15.109. Receiver spurious radiation		P		

7. REMARKS AND COMMENTS

None.

8. SUMMARY

Based on the results of the performed test, stated in annex A the item under test is **IN COMPLIANCE** with the specifications listed in section 3.1 “TEST REQUESTED”.

NOTE: The results presented in this Test Report apply only to the particular item under test declared in section 4.4 “IDENTIFICATION OF ITEM/ITEMS TESTED” of this document, as presented for test on the date(s) declared in section 5, “USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS”.

ANNEX A

TEST RESULTS

Report No: 20183RET.102

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TEST CONDITIONS

Power supply (V):

$V_{nominal}$ = 3 Vdc

Type of power supply = DC Voltage from batteries

Type of antenna = Integral antenna

Maximum Declared Gain for antenna= -4 dBi

Operating Temperature Range (ºC):

T_n = -15 to + 55

TEST FREQUENCIES:

Lowest channel: 2402 MHz

Middle channel: 2441 MHz

Highest channel: 2480 MHz

The test set-up was made in accordance to the general provisions of ANSI C63.4.

CONDUCTED MEASUREMENTS

The equipment under test was set up in a shielded room and it is directly connected to the spectrum analyser via the antenna connector (sma type) provided with the test sample. No coaxial low-loss connecting cable was necessary for such connection so no cable attenuation correction was made.

RADIATED MEASUREMENTS

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-25 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-25 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive (wooden) platform one meter above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

Section 15.247 Subclause (a) (1). 20 dB Bandwidth and Carrier frequency separation

SPECIFICATION

Frequency hopping system shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

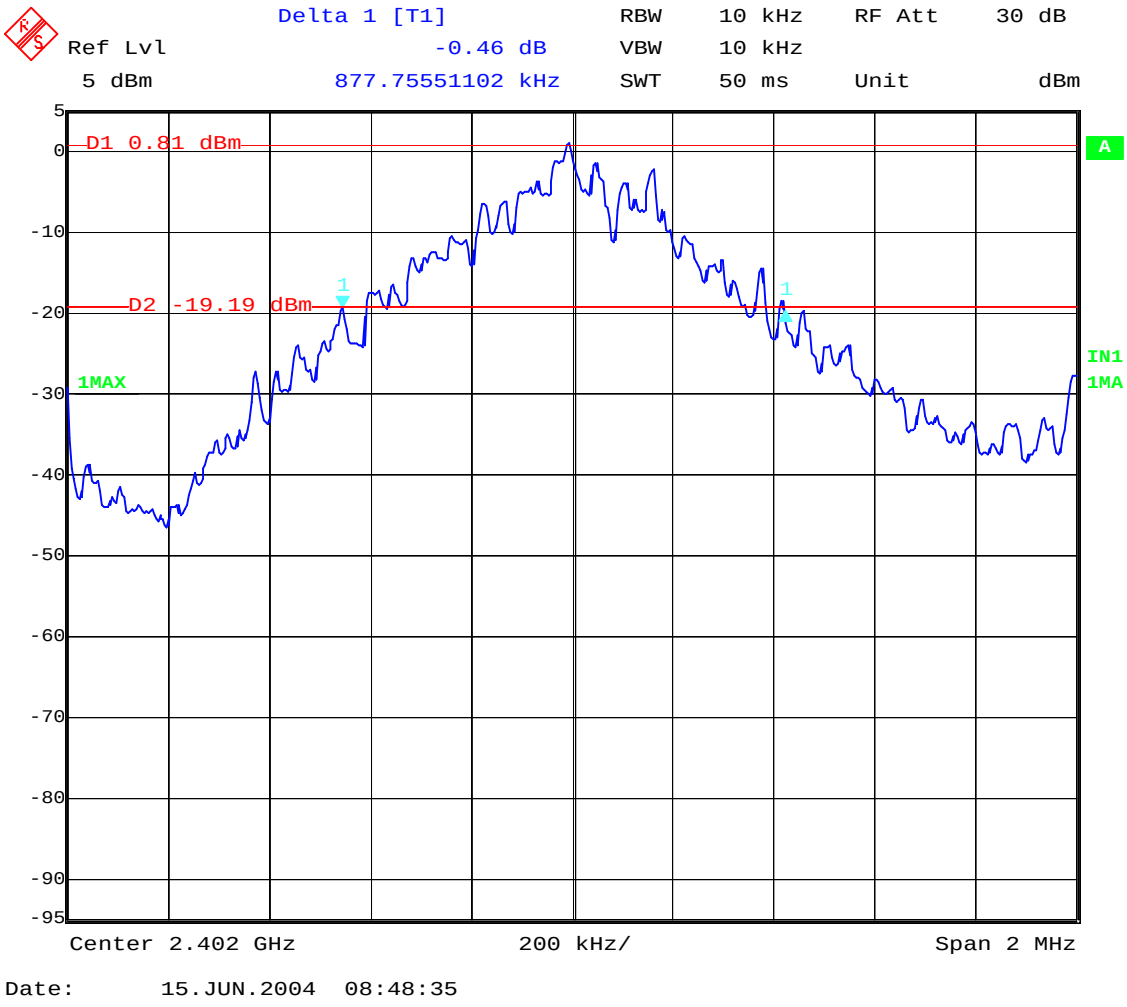
RESULTS

20 dB Bandwidth (see next 3 plots).

	Lowest frequency 2402 MHz	Middle frequency 2441 MHz	Highest frequency 2480 MHz
20 dB Spectrum bandwidth (kHz)	877.75	913.83	917.83
Measurement uncertainty (kHz)	±11		

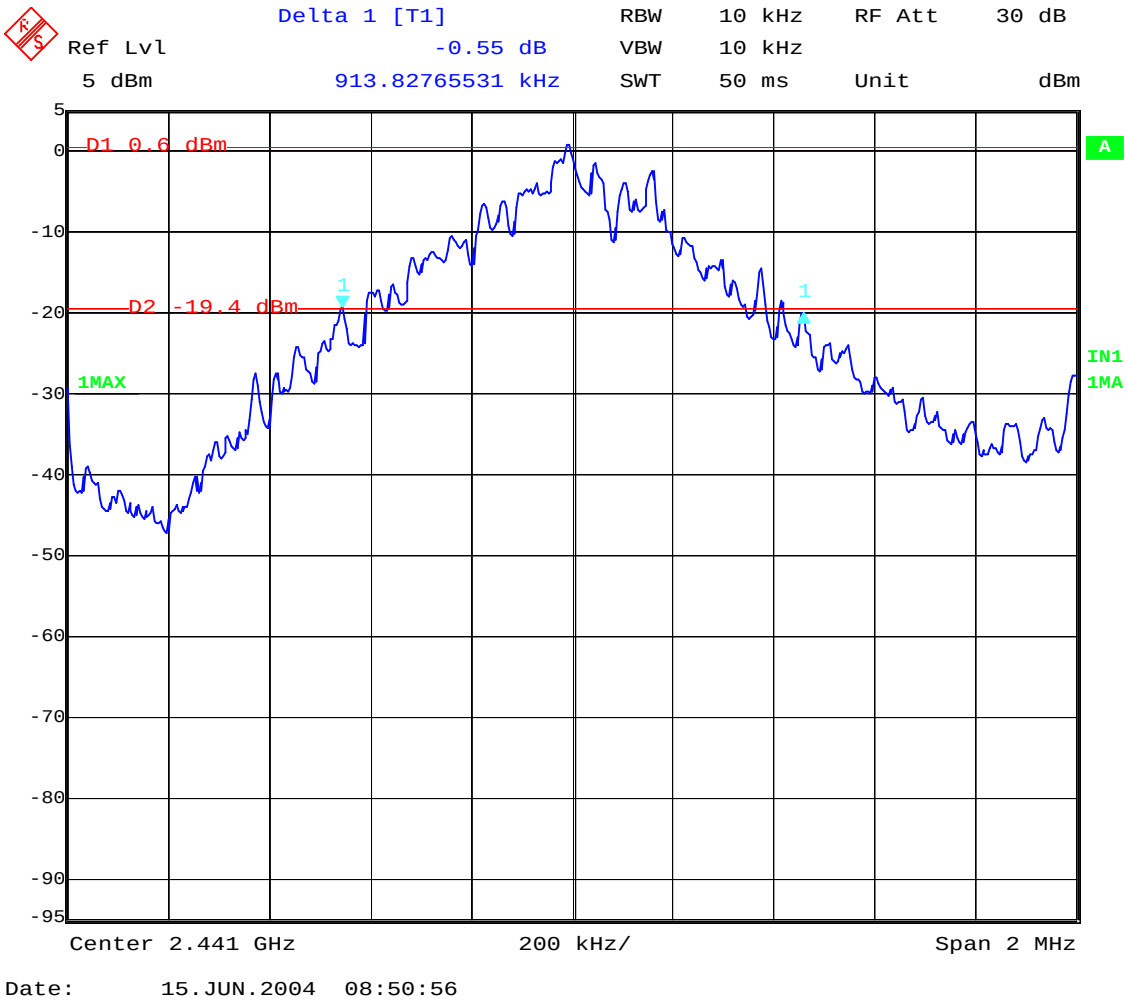
20 dB BANDWIDTH.

Lowest Channel: 2402 MHz.



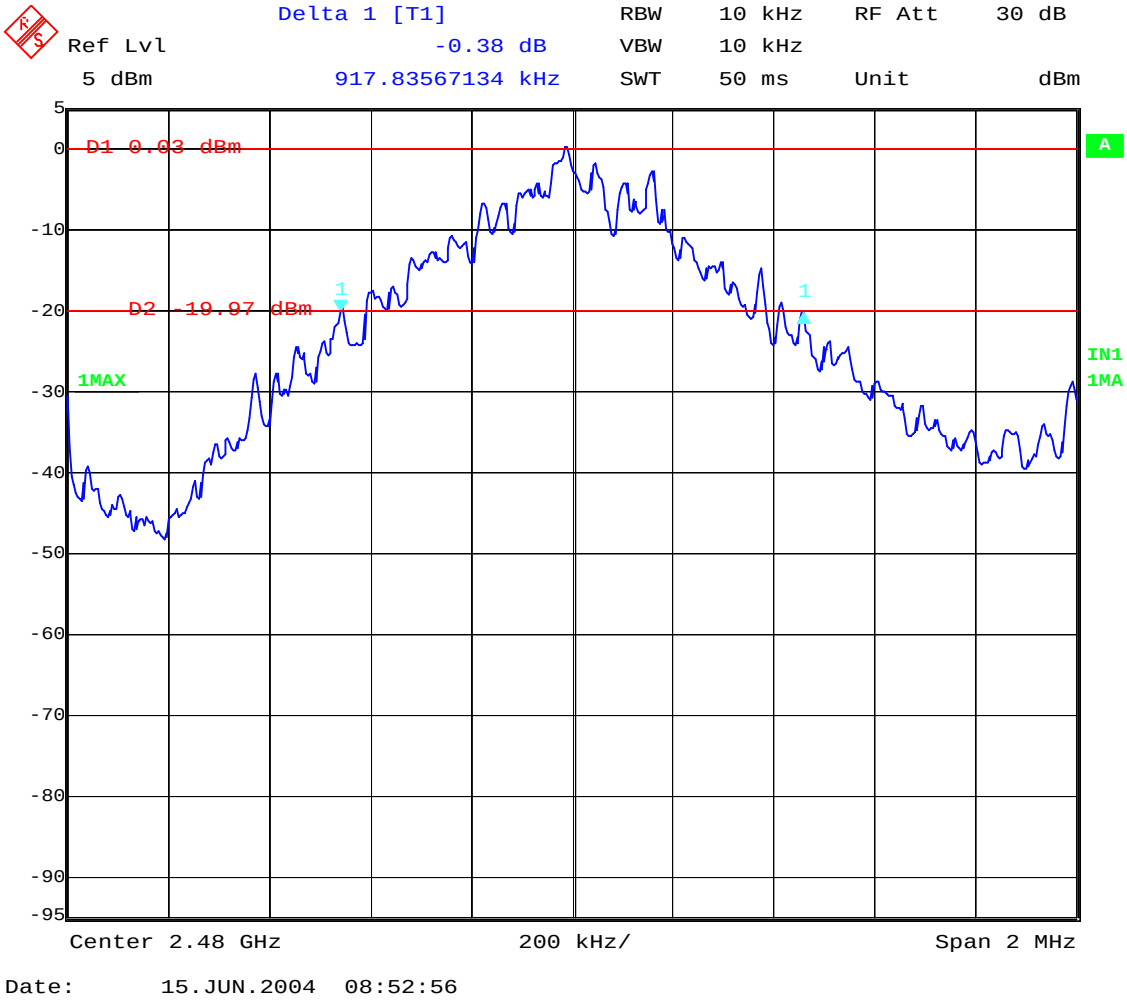
20 dB BANDWIDTH.

Middle Channel: 2441 MHz.

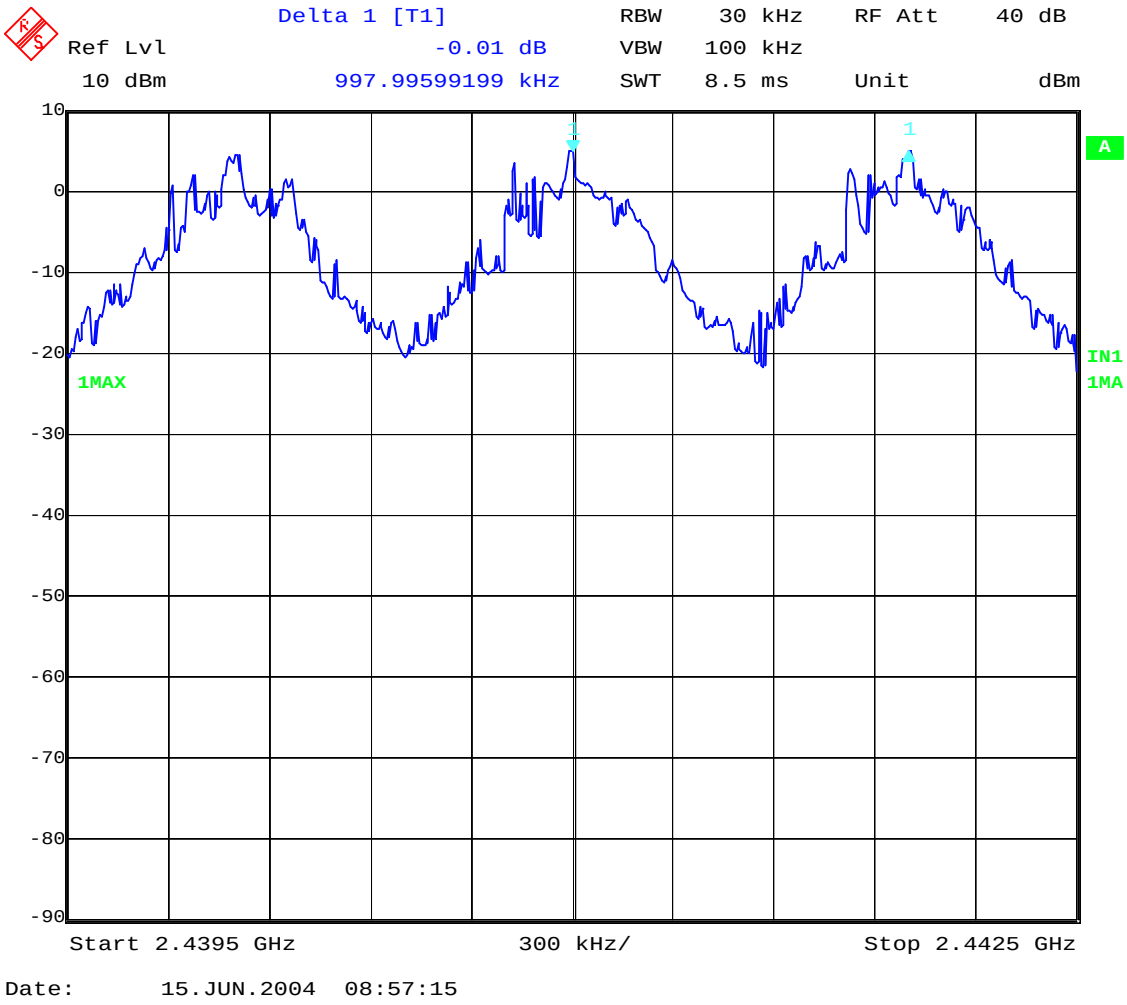


20 dB BANDWIDTH.

Highest Channel: 2480 MHz.



Carrier frequency separation (see next plot).



The hopping channel carrier frequencies are separated by a minimum of the 20 dB bandwidth of the hopping channel.

Verdict: PASS

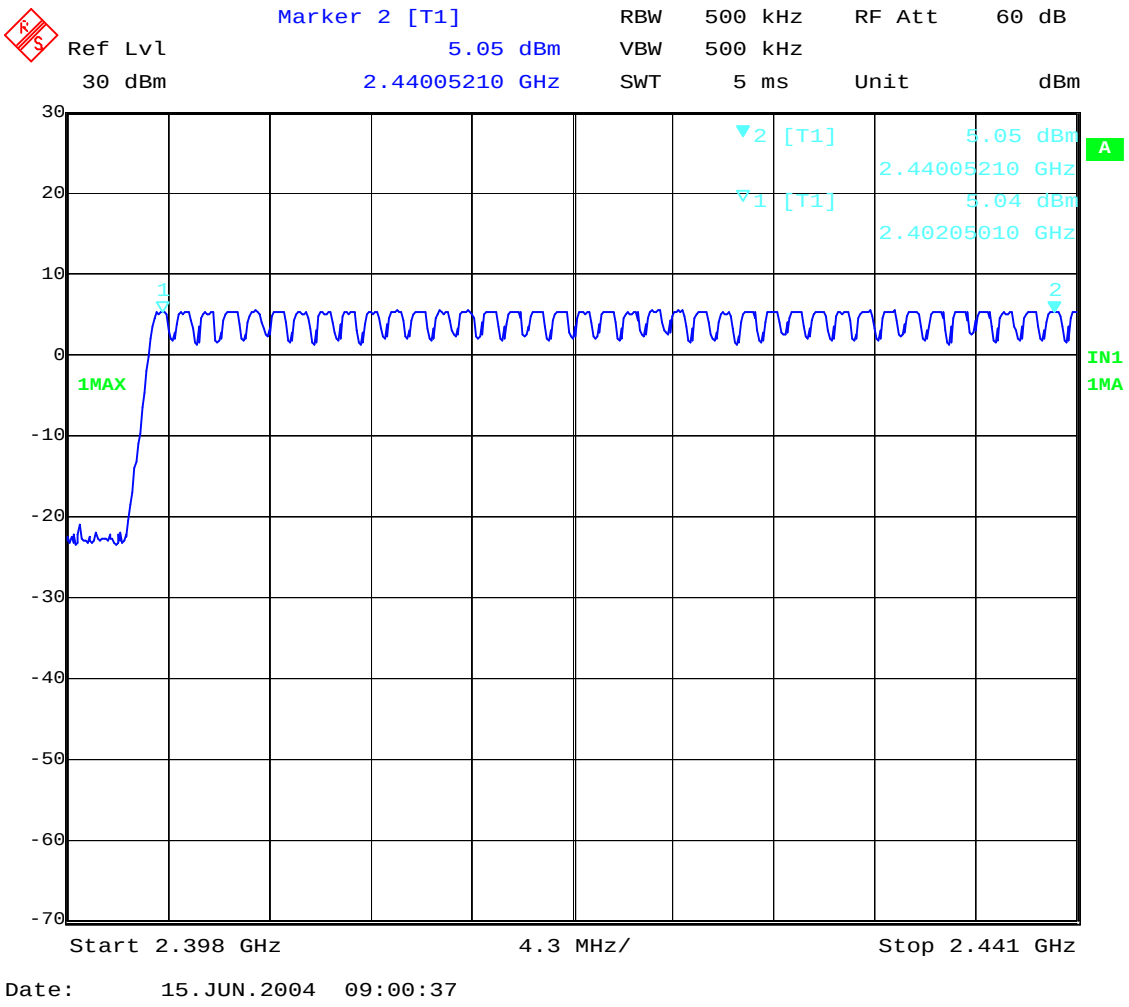
Section 15.247 Subclause (a) (1) (iii). Number of hopping channels

SPECIFICATION

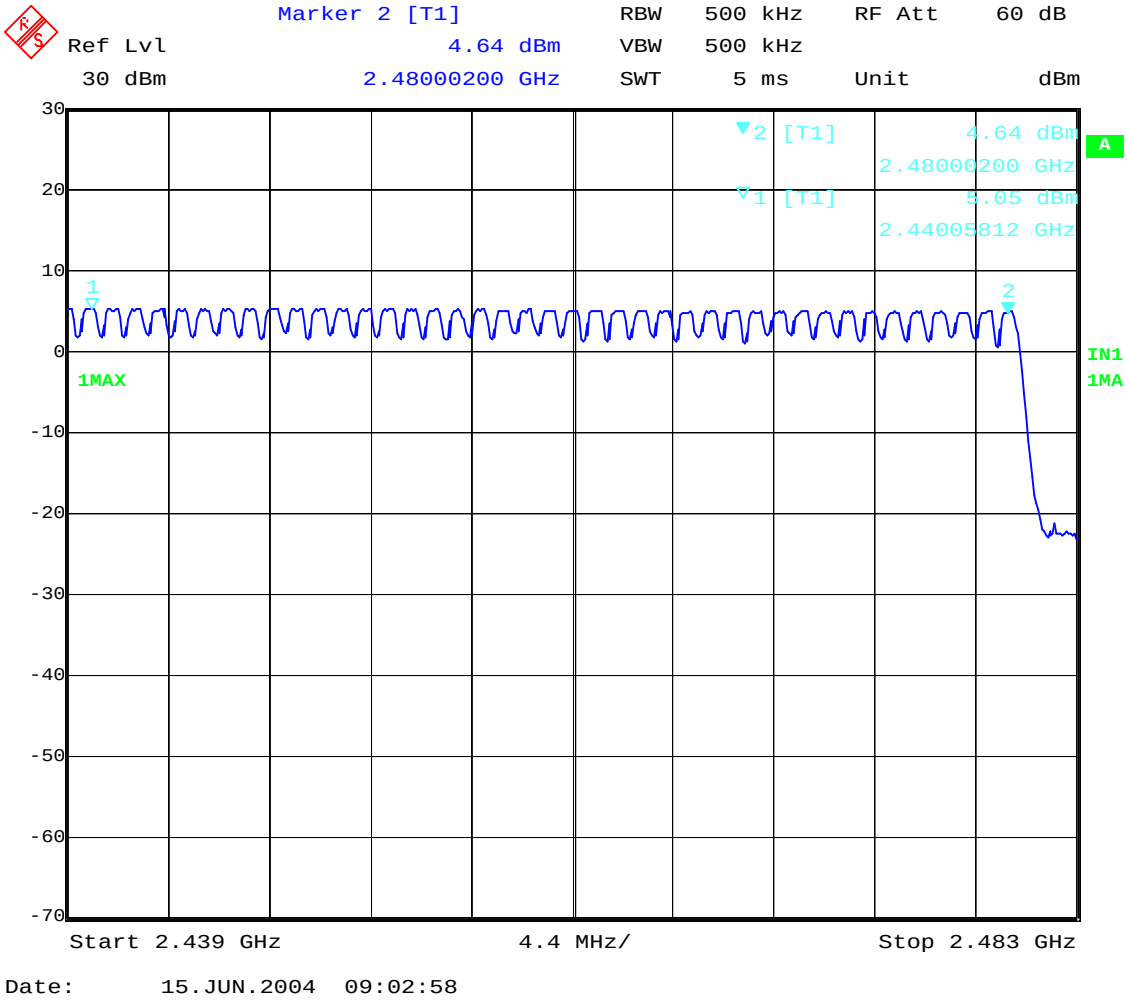
Frequency hopping system in the 2400-2483.5 MHz band shall use at least 15 non-overlapping channels.

RESULTS

The number of hopping channels is 79 (see next two plots).



Number of hopping frequencies: 39



Number of hopping frequencies: 40

Total number of hopping frequencies: 79

Verdict: PASS

Section 15.247 Subclause (a) (1) (iii). Time of occupancy (Dwell Time)

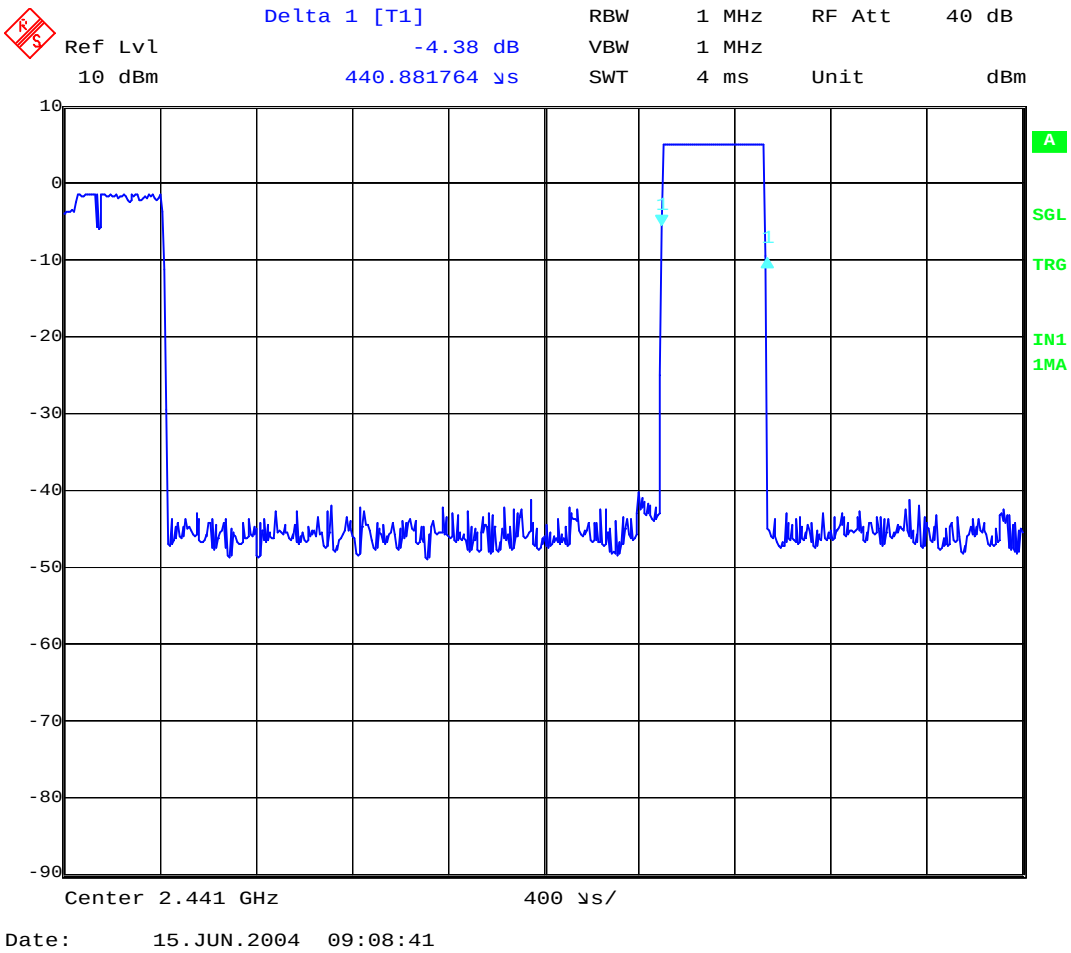
SPECIFICATION

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400 ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed = 0.4 x 79= 31.6 seconds.

RESULTS

1. TIME OF OCCUPANCY (DWELL TIME) FOR PACKET TYPE DH1.

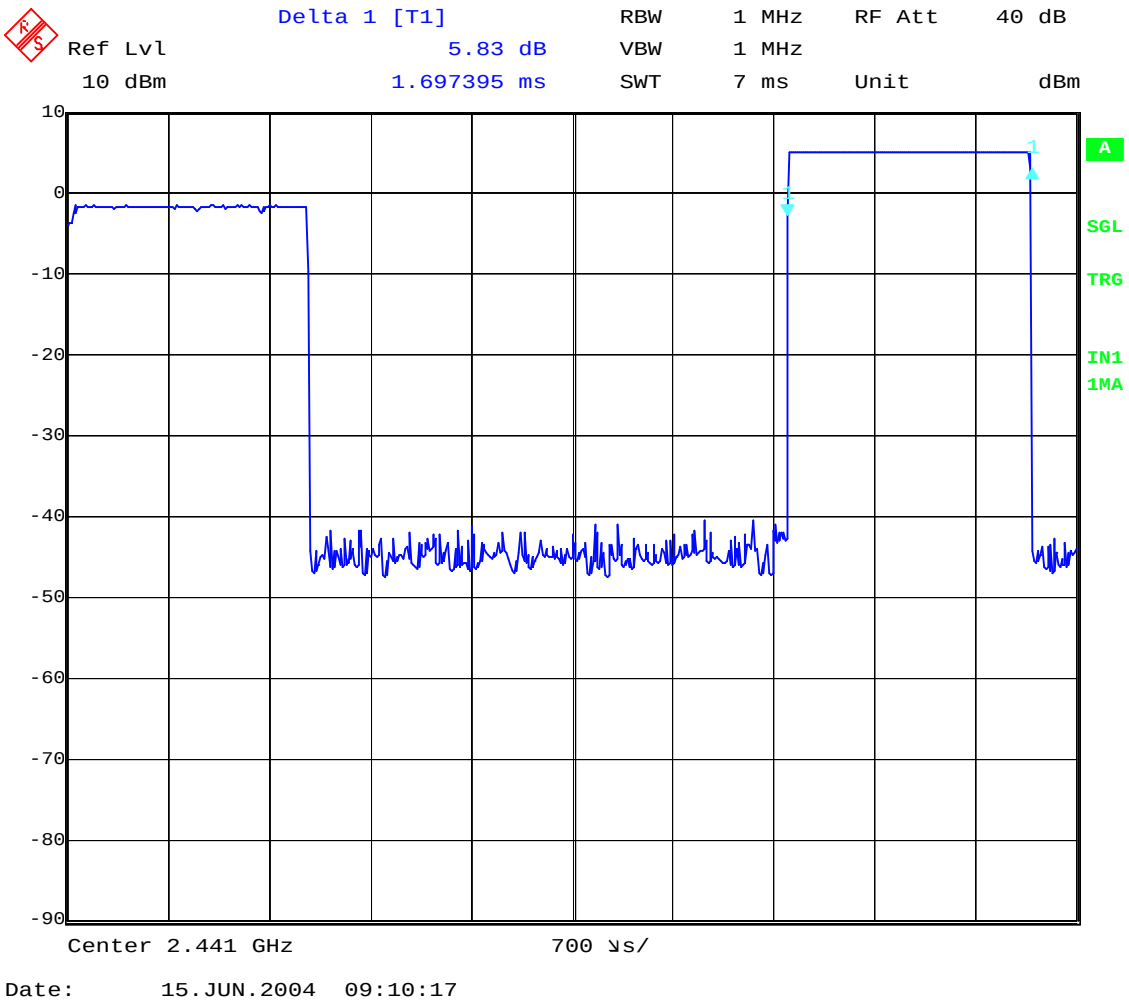
The system makes worst case 1600 hops per second or 1 time slot has a length of 625µs with 79 channels. A DH1 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/2 = 800 hops per second with 79 channels. So you have each channel 800/79 = 10.13 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 10.13 x 31.6 = 320.11 times of appearance .
Each Tx-time per appearance is 440.9 µs (see next plot).
So we have 320.11 x 440.9 µs = 141.14 ms per 31.6 seconds.



Verdict: PASS

2. TIME OF OCCUPANCY (DWELL TIME) FOR PACKET TYPE DH3.

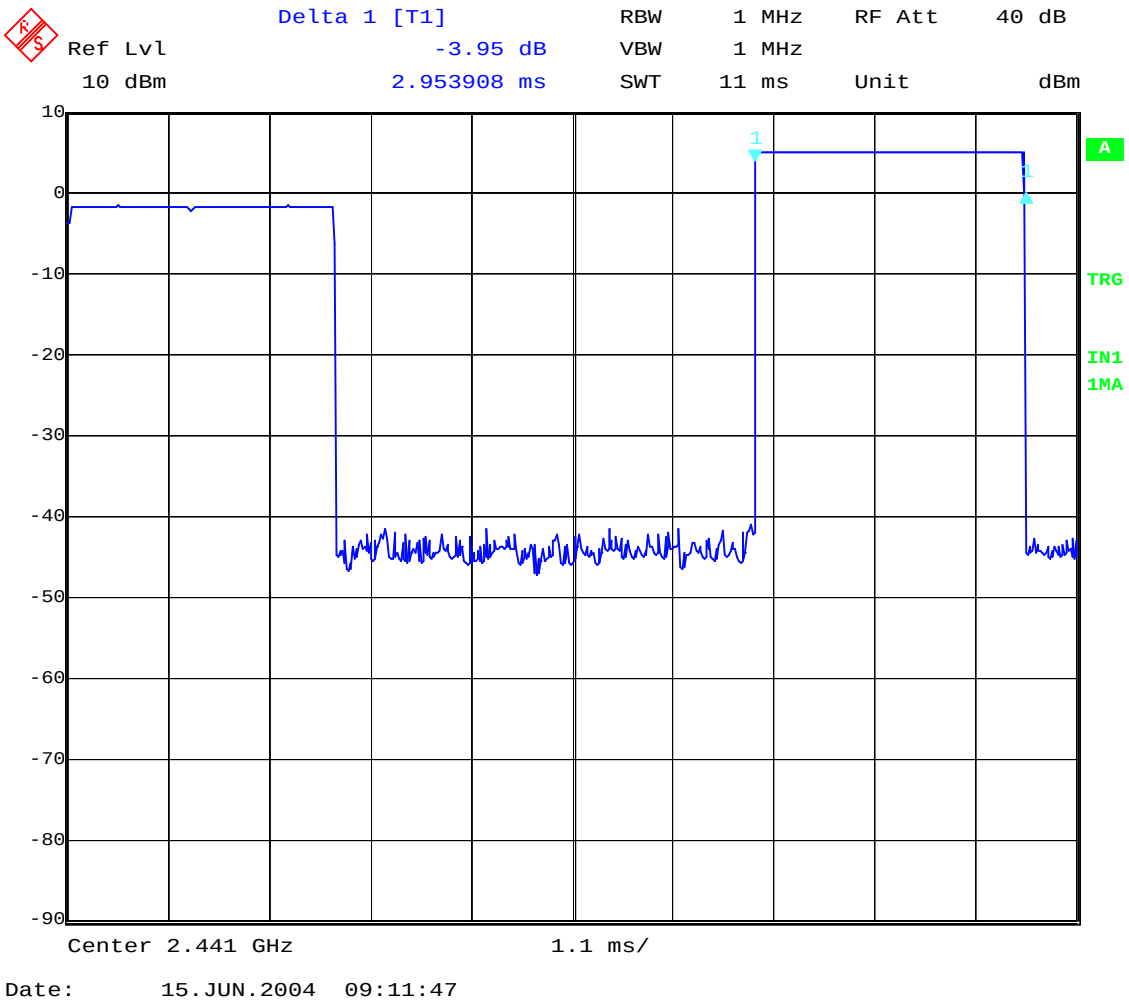
A DH3 Packet need 3 time slots for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/4 = 400 hops per second with 79 channels. So you have each channel 400/79 = 5.1 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 5.1 x 31.6 = 161.16 times of appearance .
Each Tx-time per appearance is 1.70 ms (see next plot).
So we have 161.16 x 1.70 ms = 273.97 ms per 31.6 seconds.



Verdict: PASS

3. TIME OF OCCUPANCY (DWELL TIME) FOR PACKET TYPE DH5.

A DH5 Packet need 5 time slots for transmitting and 1 time slot for receiving. Then the system makes worst case 1600/6 = 266.67 hops per second with 79 channels. So you have each channel 266.67/79 = 3.37 times per second and so for a period of 0.4 x 79 = 31.6 seconds you have 3.37 x 31.6 = 106.49 times of appearance .
Each Tx-time per appearance is 2.95 ms (see next plot).
So we have 106.49 x 2.95 ms = 314.14 ms per 31.6 seconds.



Verdict: PASS

Section 15.247 Subclause (b). Maximum peak output power and antenna gain

SPECIFICATION

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 watt (30 dBm).

RESULTS

MAXIMUM PEAK OUTPUT POWER (CONDUCTED). See next plots.

	Lowest frequency 2402 MHz	Middle frequency 2441 MHz	Highest frequency 2480 MHz
Maximum peak power (dBm)	5.12	5.11	4.79
Measurement uncertainty (dB)	±1.5		

The maximum declared antenna gain for this device is -4 dBi, therefore the maximum theoretical peak radiated power (EIRP) in the three measurement channels for this device is 1.12 dBm or 1.29 mW.

The actual peak radiated power (EIRP) was measured for the lowest, middle and highest frequency (see next plots):

MAXIMUM PEAK OUTPUT POWER (RADIATED).

	Lowest frequency 2402 MHz	Middle frequency 2441 MHz	Highest frequency 2480 MHz
Instrument reading (dBm)	-31.24	-29.31	-31.71
Correction Factor (dB)	34.96	35.10	35.24
Maximum EIRP peak power (dBm)	3.72	5.79	3.53
Measurement uncertainty (dB)	±4.0		

The antenna is integral type.

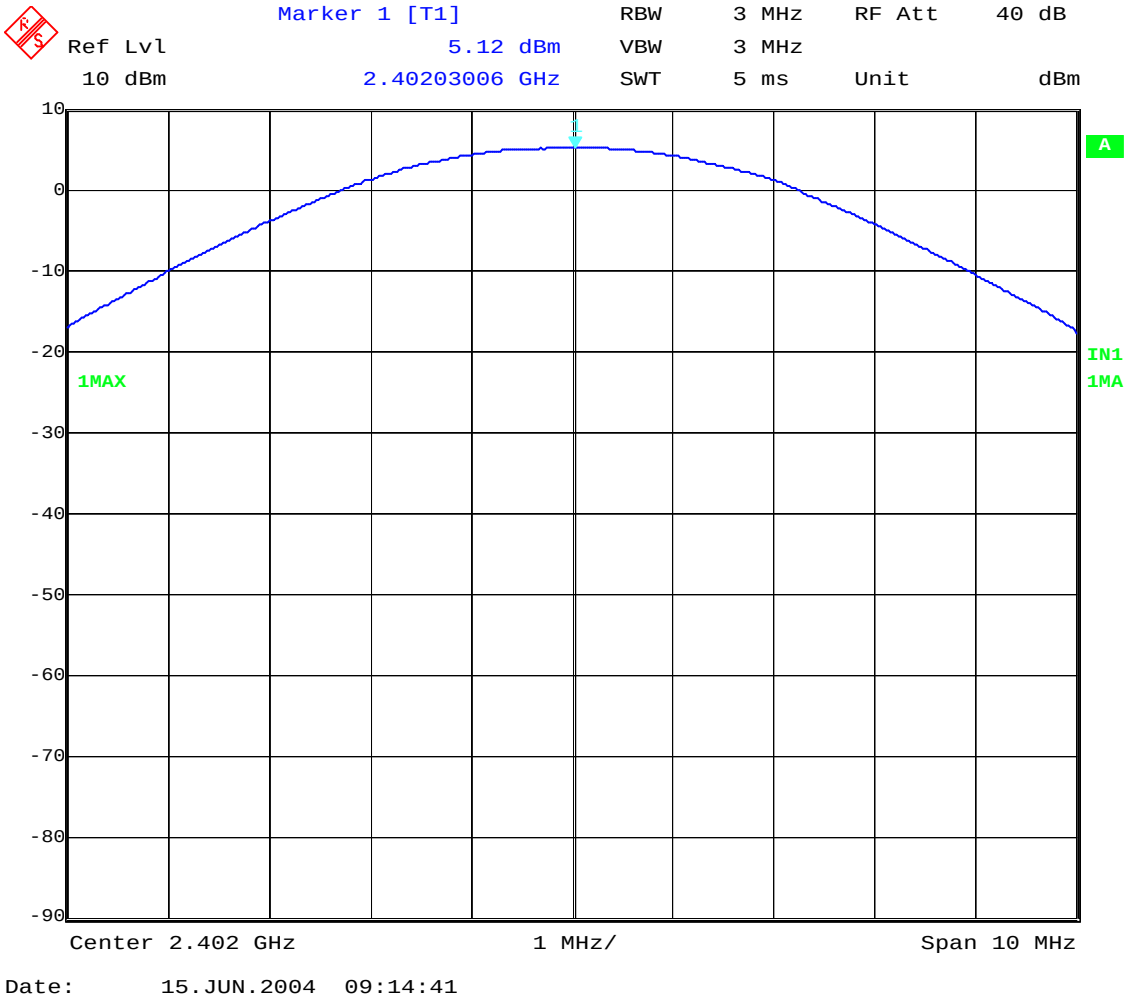
Declared peak gain: -4 dBi

The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

Verdict: PASS

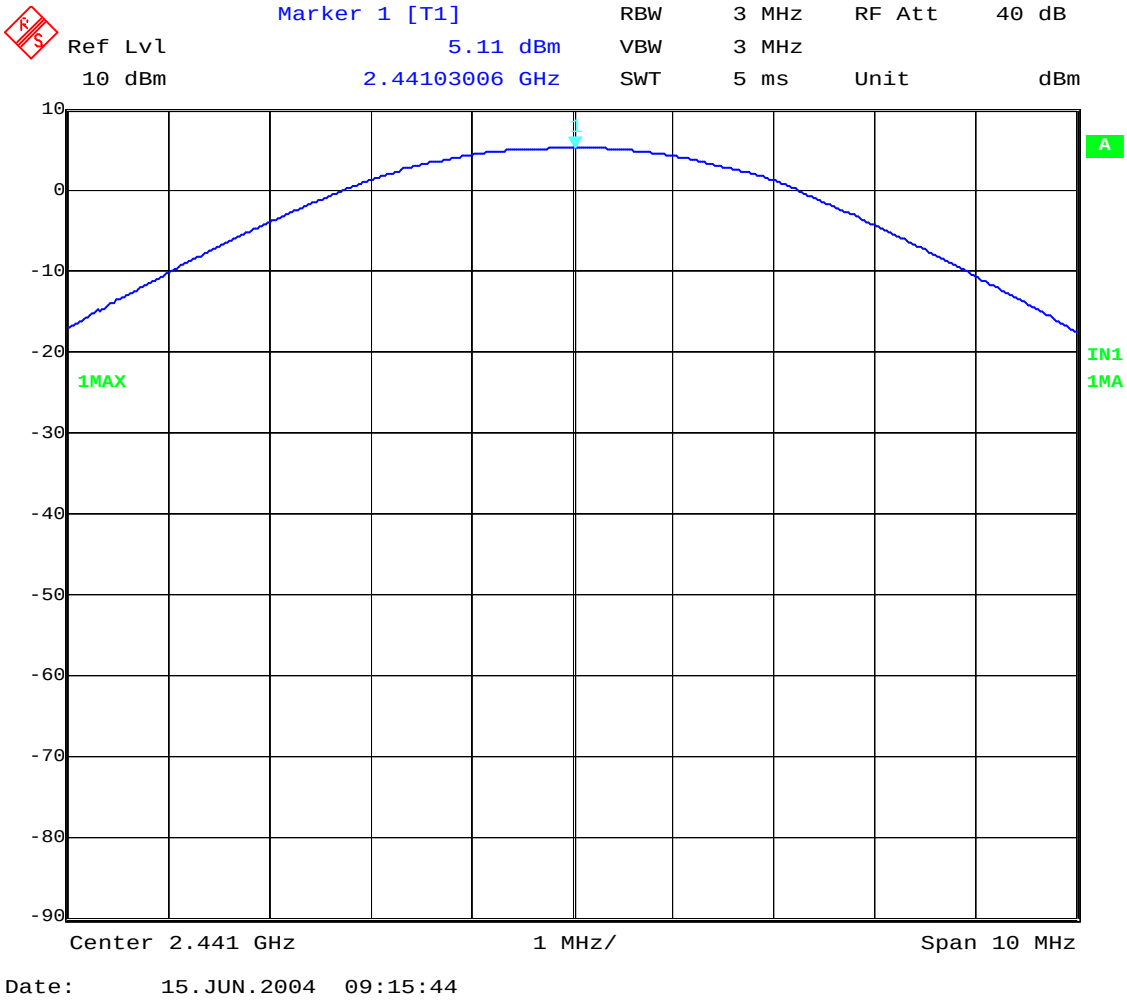
PEAK OUTPUT POWER (CONDUCTED).

Lowest Channel: 2402 MHz.



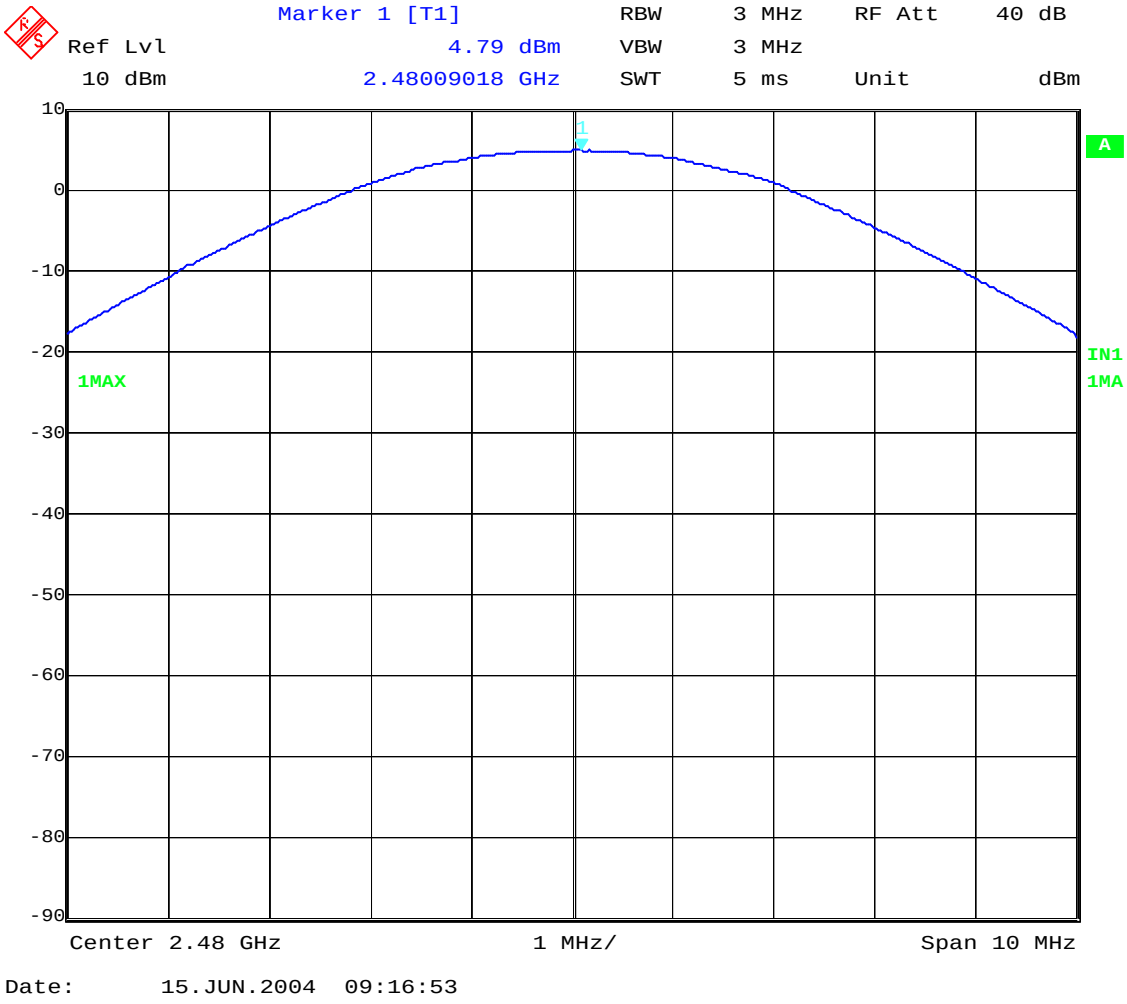
PEAK OUTPUT POWER (CONDUCTED).

Middle Channel: 2441 MHz.



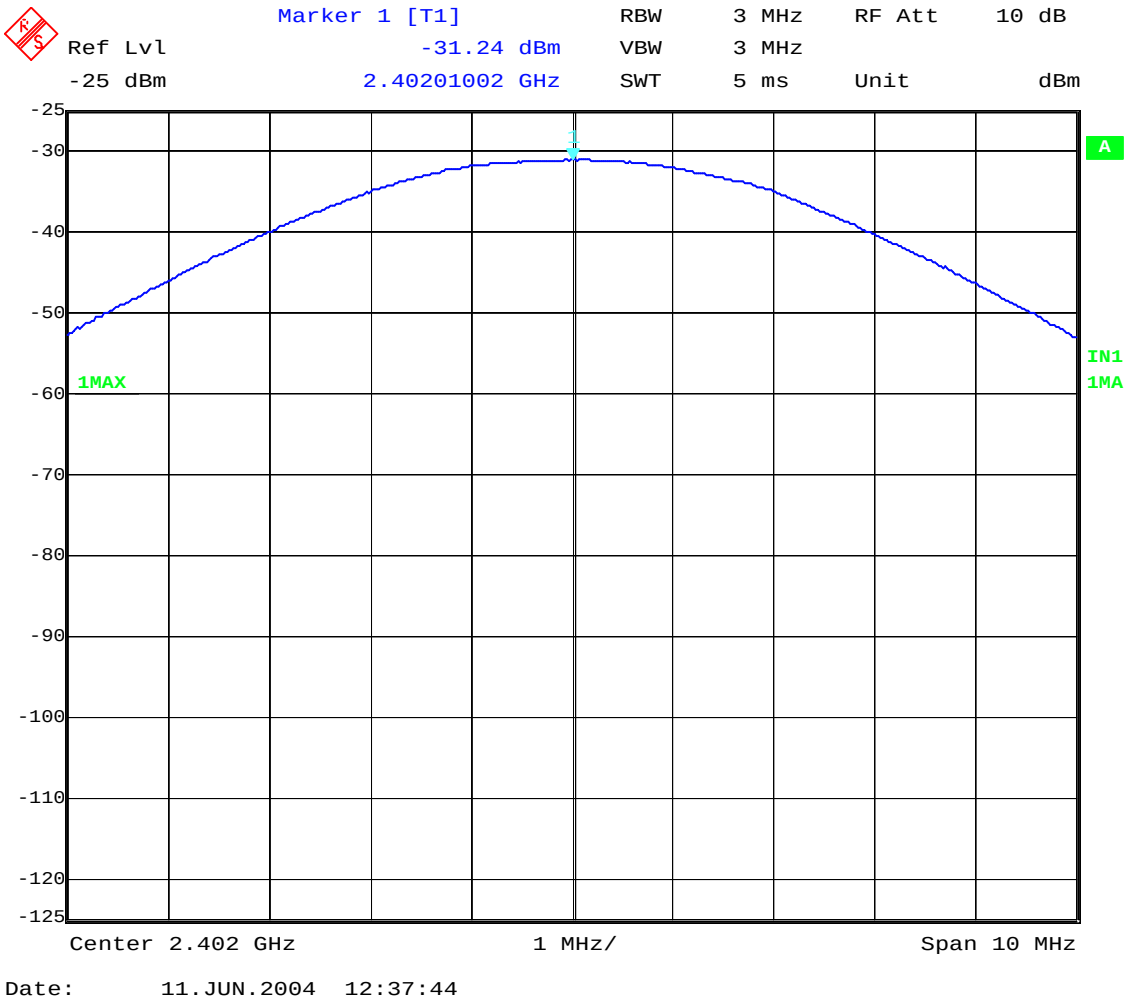
PEAK OUTPUT POWER (CONDUCTED).

Highest Channel: 2480 MHz.



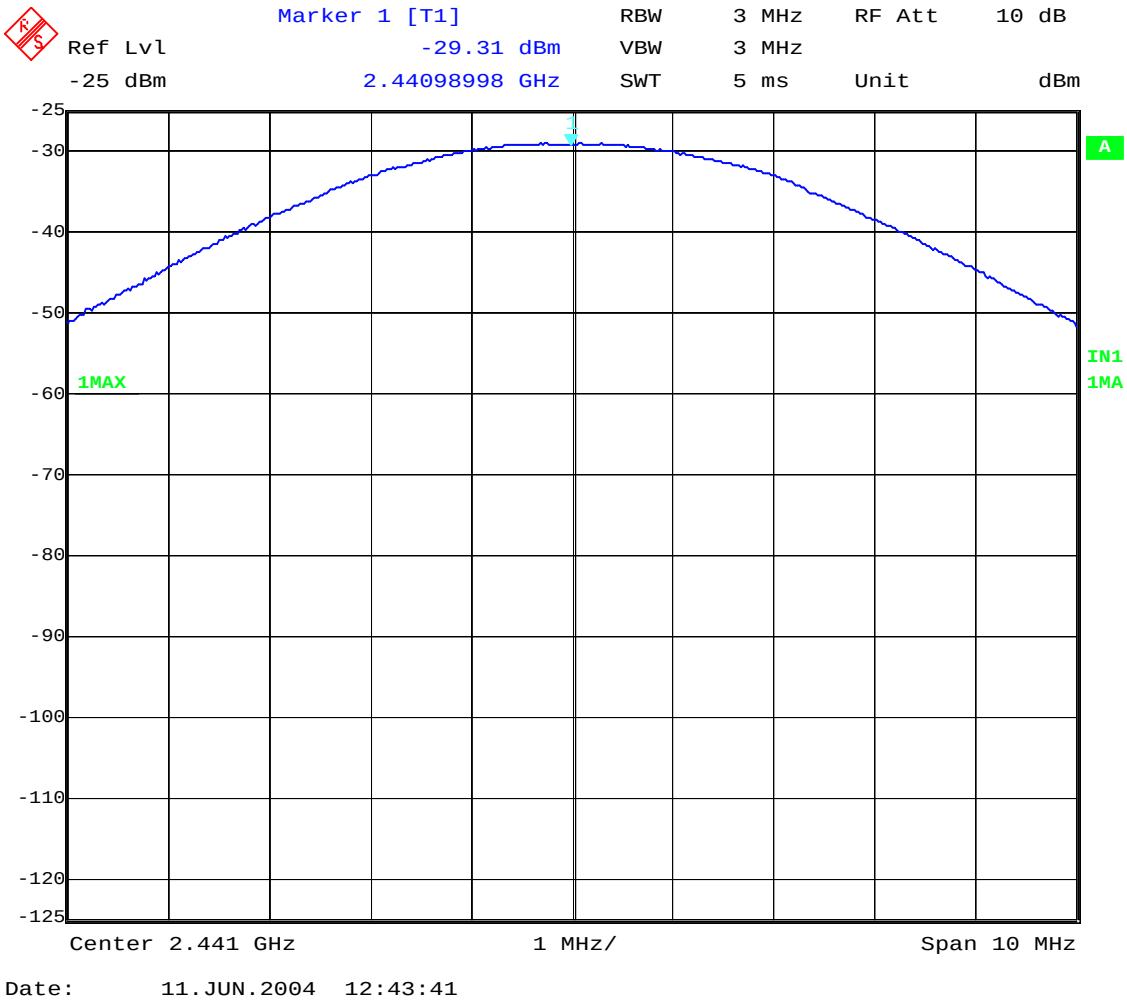
PEAK OUTPUT POWER (RADIATED).

Lowest Channel: 2402 MHz.



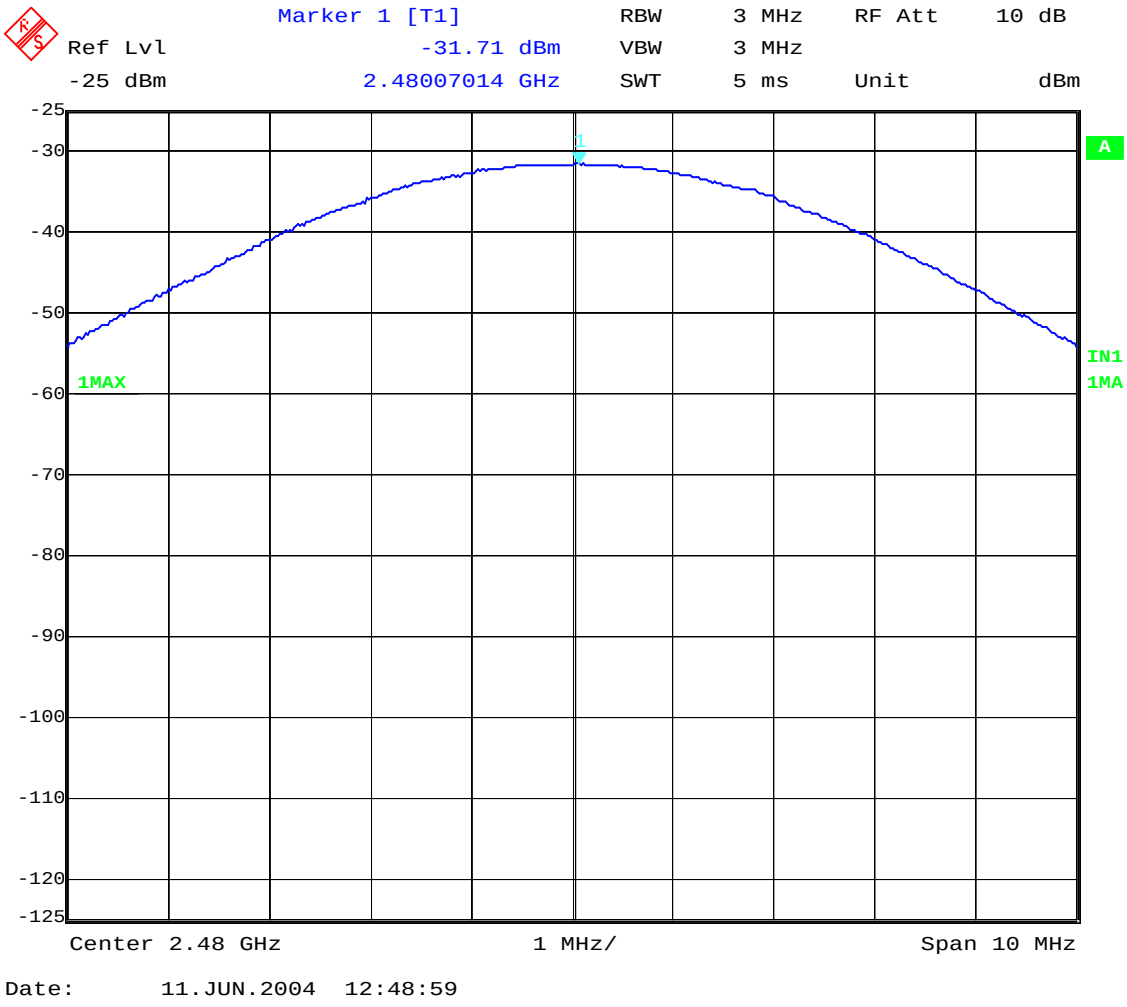
PEAK OUTPUT POWER (RADIATED).

Middle Channel: 2441 MHz.



PEAK OUTPUT POWER (RADIATED).

Highest Channel: 2480 MHz.



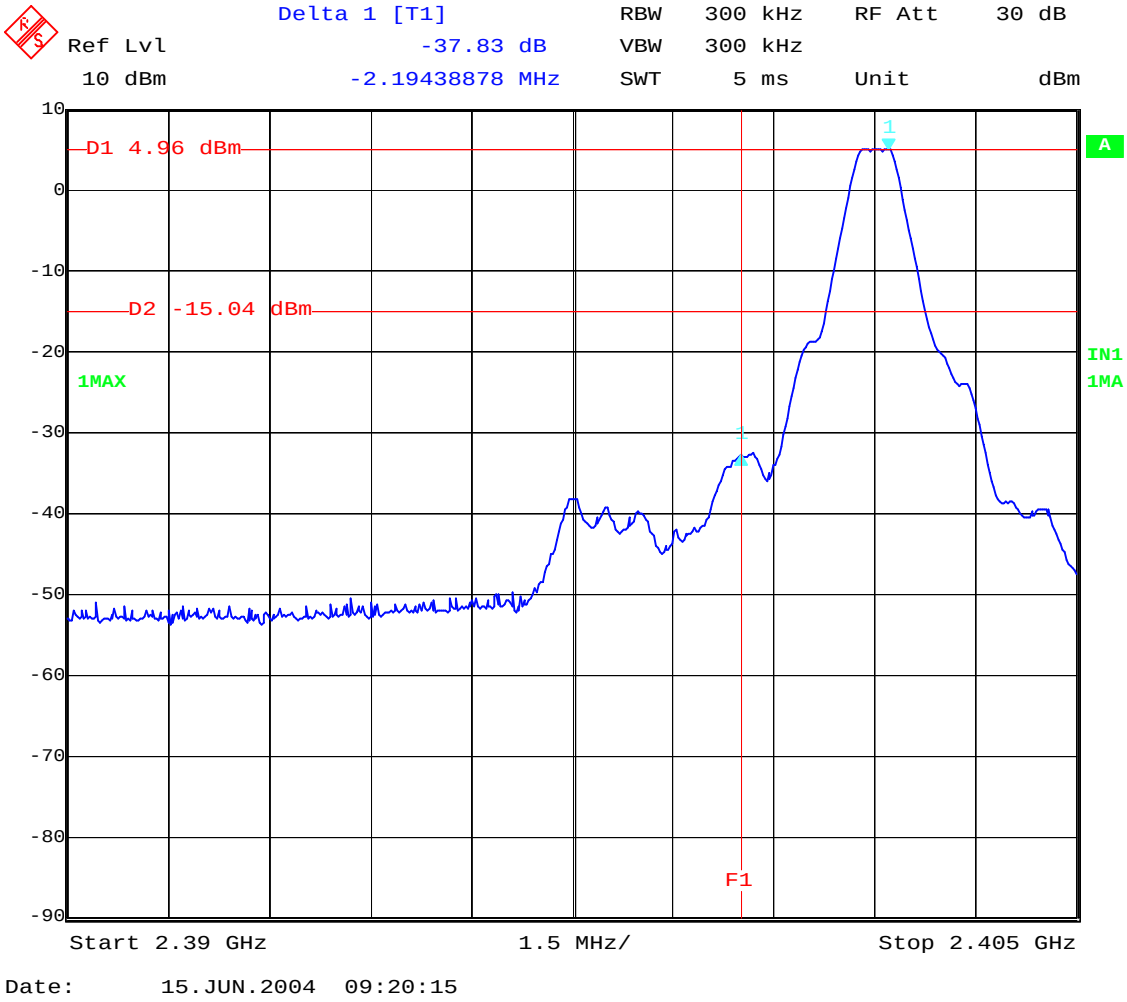
Section 15.247 Subclause (c). Band-edge of conducted emissions (Transmitter)

SPECIFICATION

Emissions outside the frequency band in which the intentional radiator is operating shall be at least 20dB below the highest level of the desired power.

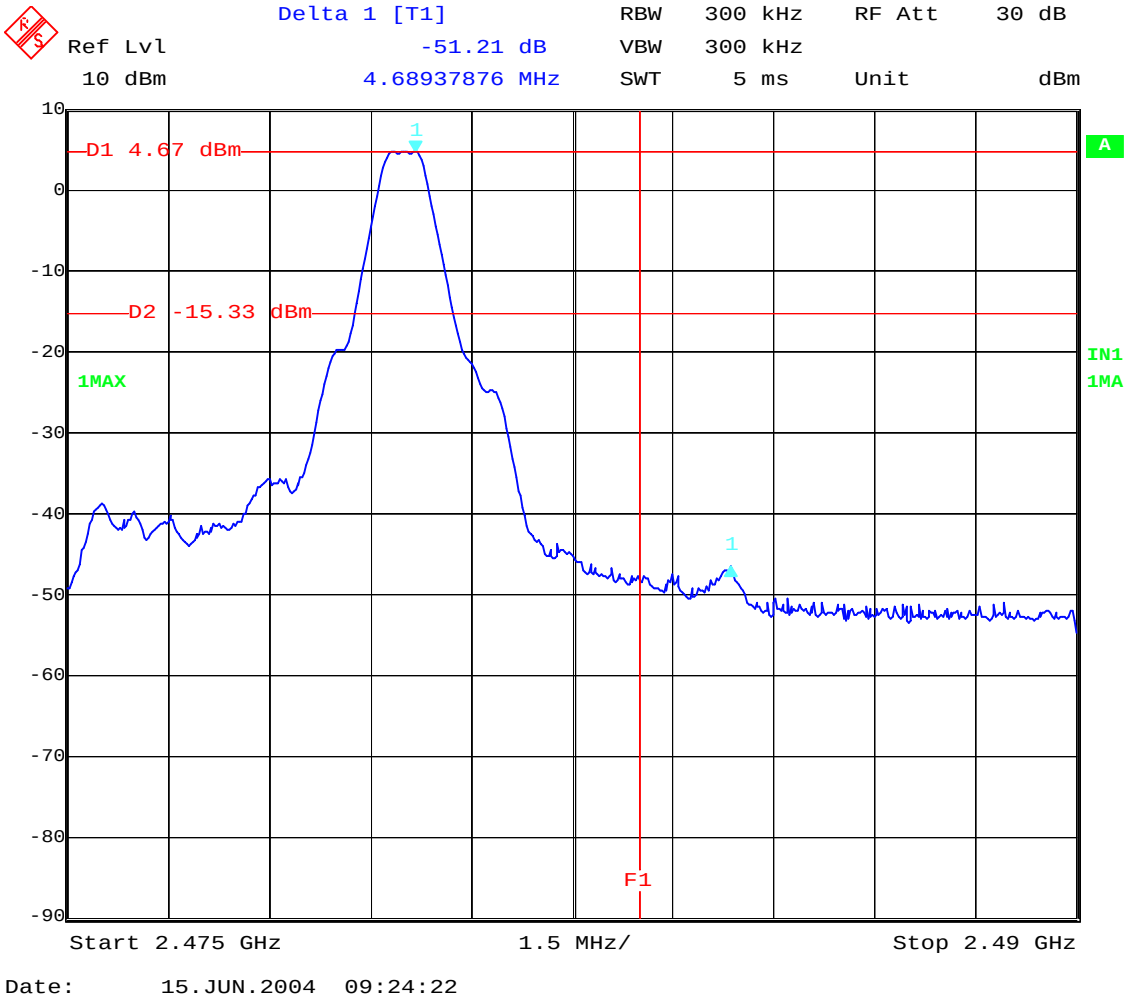
RESULTS:

1. LOW FREQUENCY SECTION 2402 MHz (HOPPING OFF). See next plot.



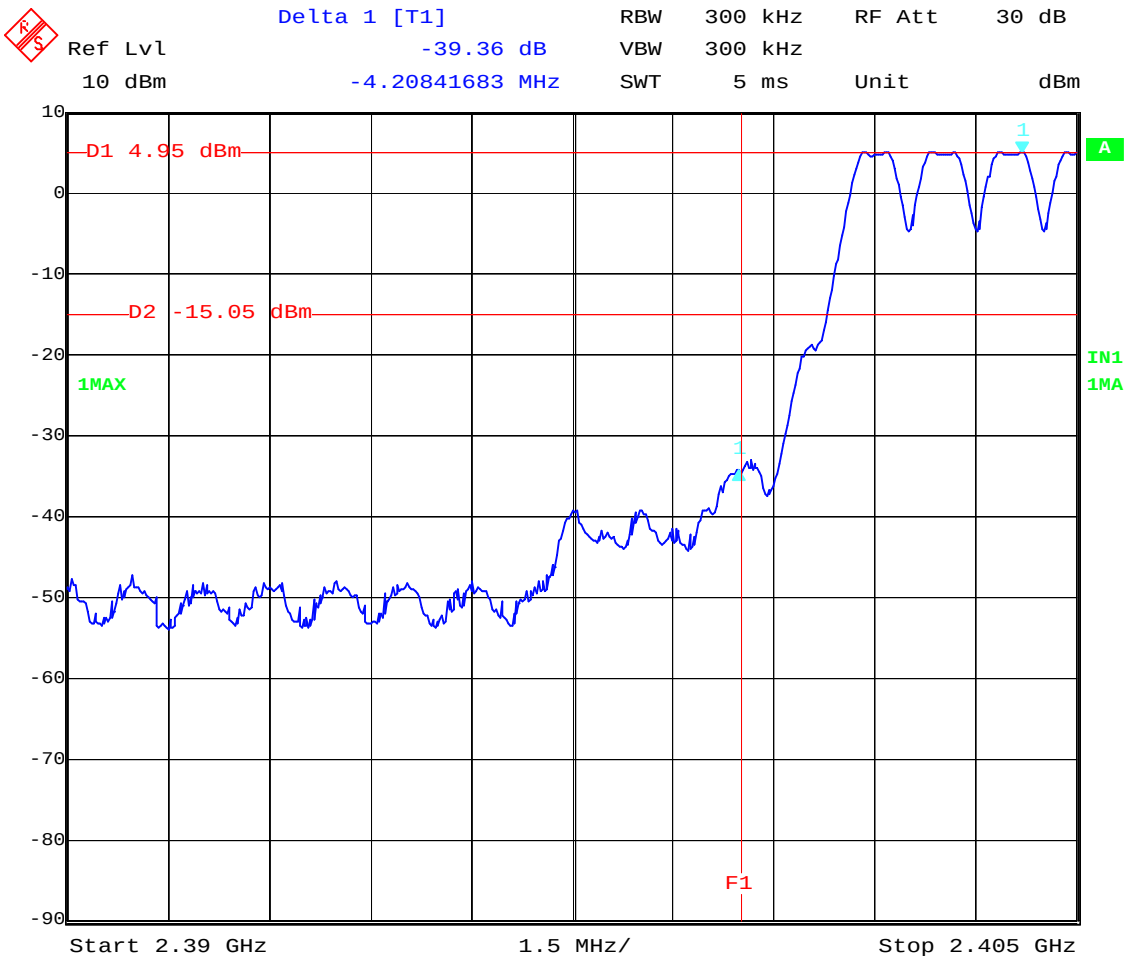
Verdict: PASS

2. HIGH FREQUENCY SECTION 2480 MHz (HOPPING OFF). See next plot.



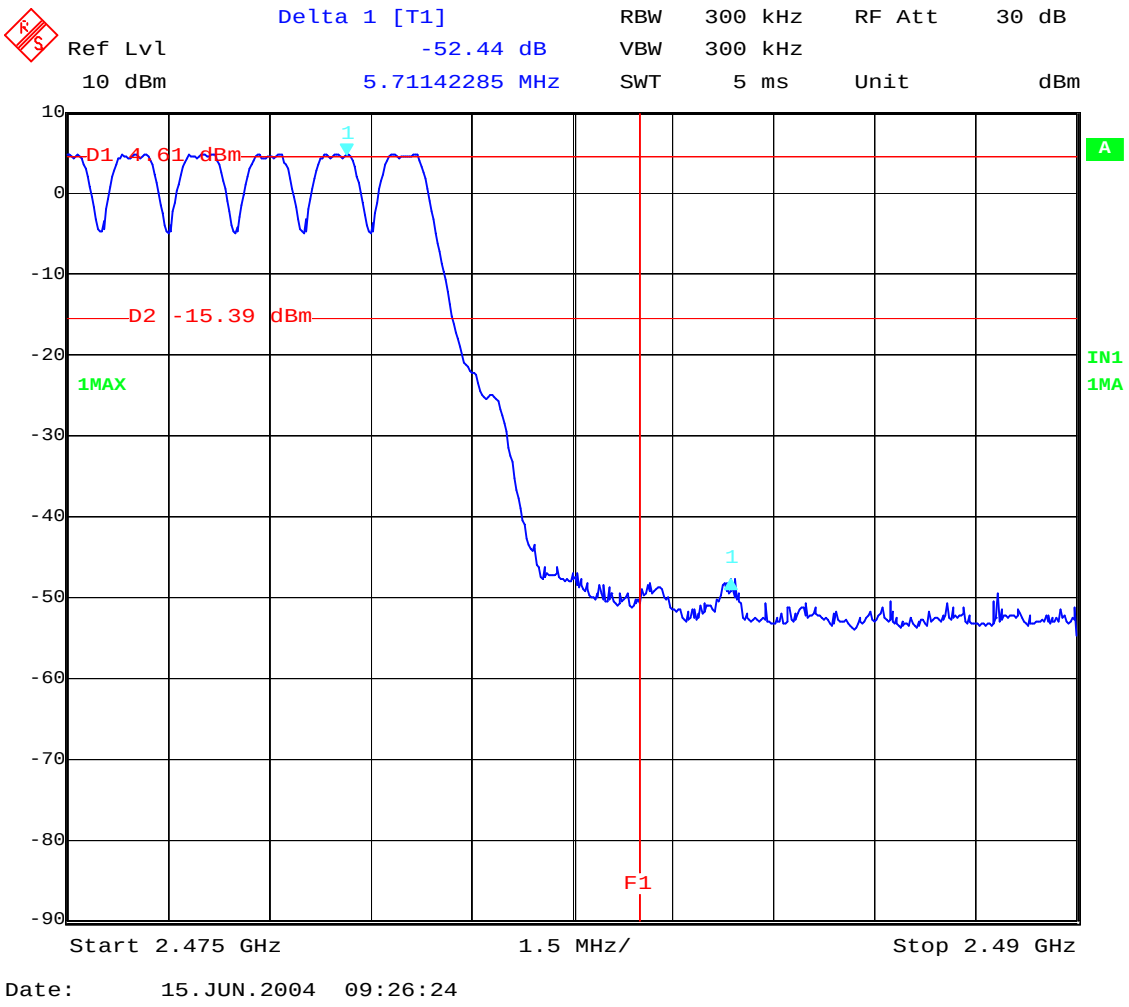
Verdict: PASS

3. LOW FREQUENCY SECTION (HOPPING ON). See next plot.



Verdict: PASS

4. HIGH FREQUENCY SECTION (HOPPING ON). See next plot.



Verdict: PASS

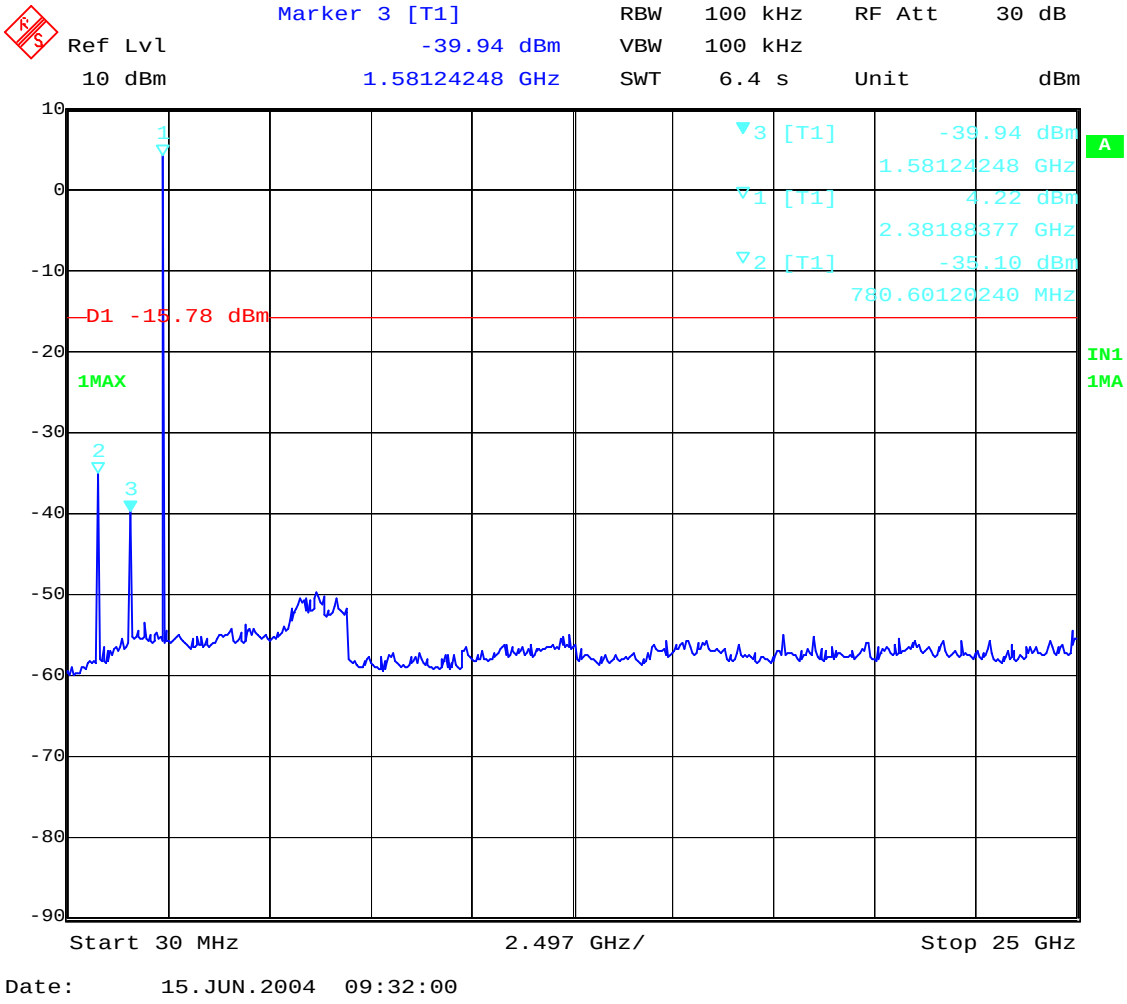
Section 15.247 Subclause (c). Emission limitations conducted (Transmitter)

SPECIFICATION

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

RESULTS:

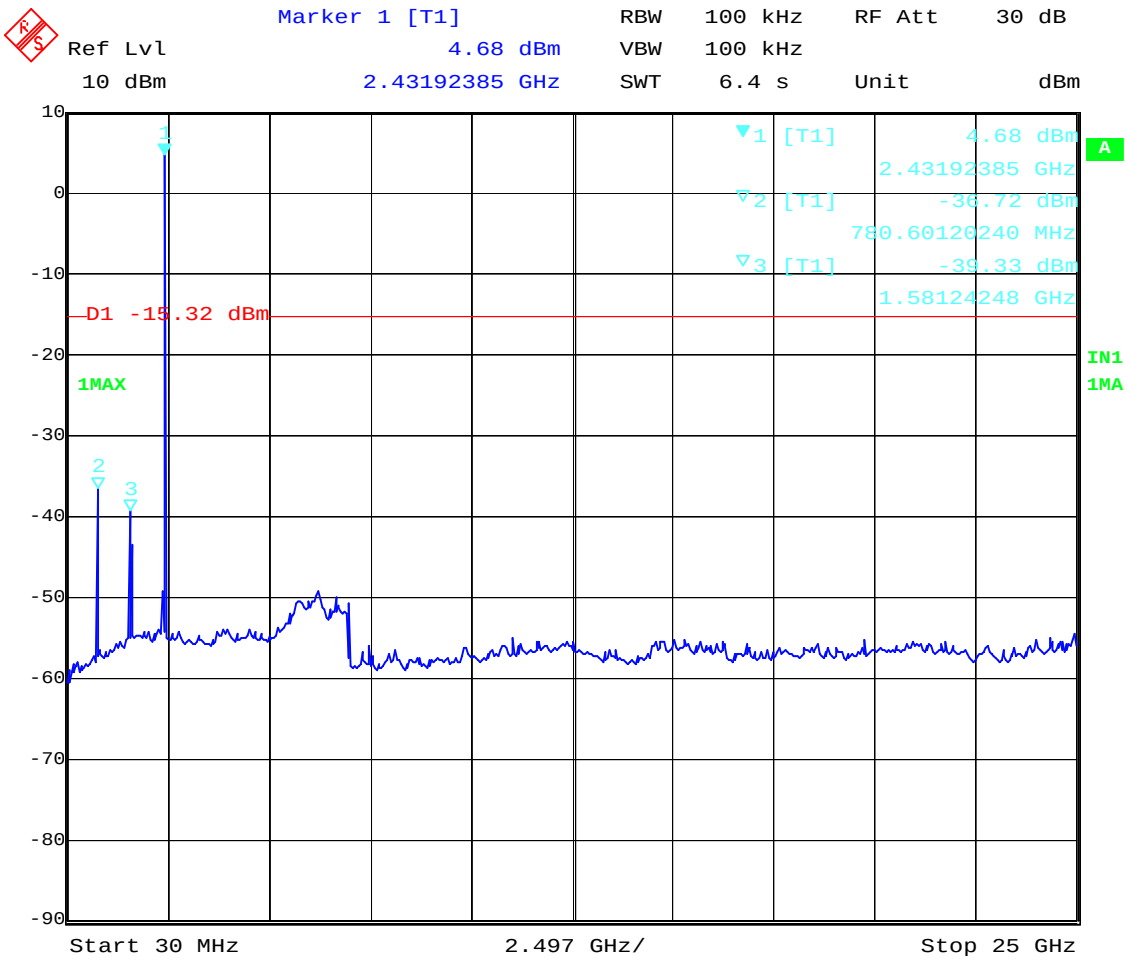
1. LOWEST CHANNEL (2402 MHz): 30 MHz-25 GHz (see next plot).



Note: The peak above the limit is the carrier frequency.

Verdict: PASS

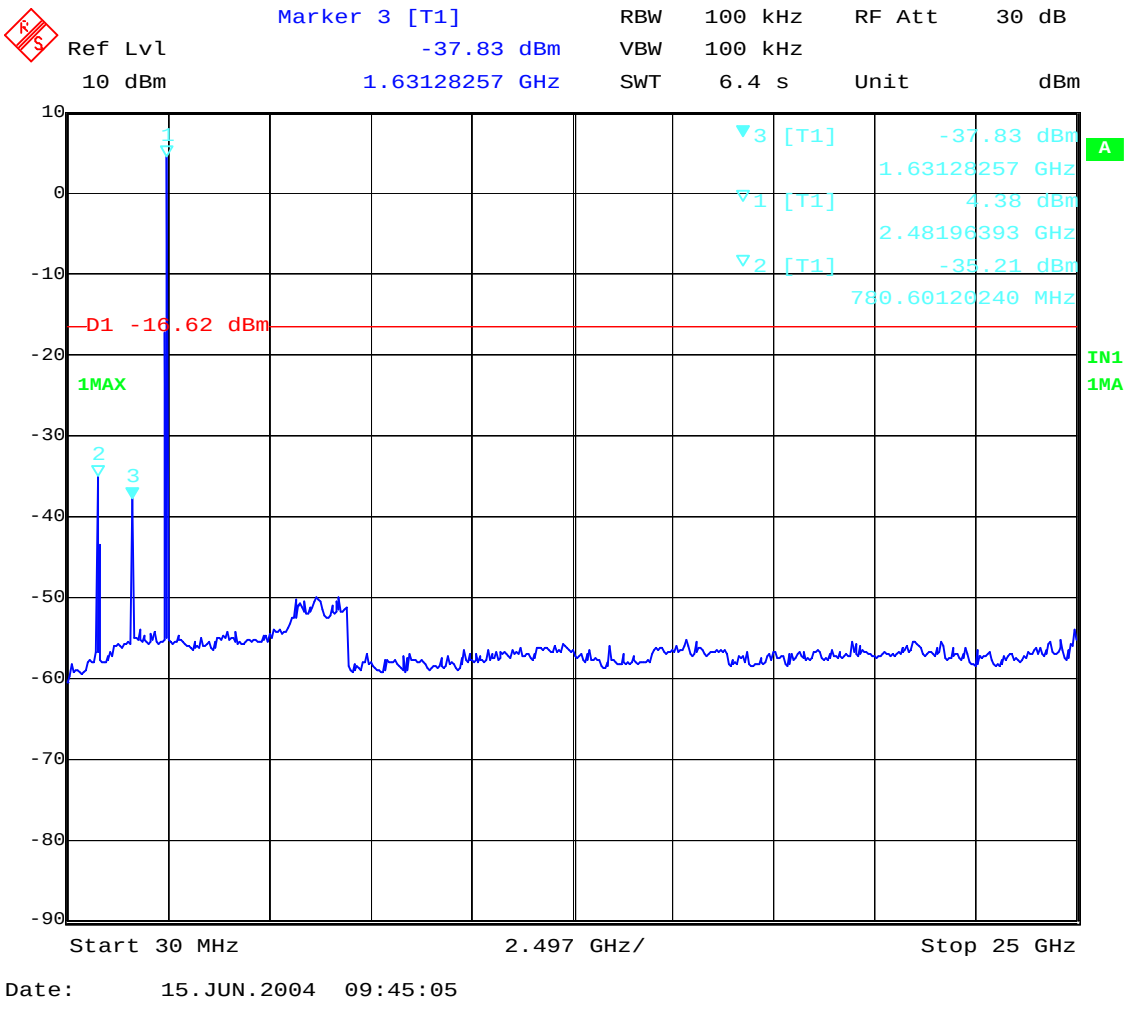
2. MIDDLE CHANNEL (2441 MHz): 30 MHz-25 GHz (see next plot).



Note: The peak above the limit is the carrier frequency.

Verdict: PASS

3. HIGH CHANNEL (2480 MHz): 30 MHz-25 GHz (see next plot).



Note: The peak above the limit is the carrier frequency.

Verdict: PASS

Section 15.247 Subclause (c). Emission limitations radiated (Transmitter)

SPECIFICATION

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)):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

The equipment transmits continuously in the selected channel so it is not necessary a duty cycle correction factor.

1. TRANSMITTER OPERATING IN CHANNEL: LOWEST (2402 MHz).

Frequency range 30 MHz-1000 MHz.

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
799.349	Horizontal	Quasi-peak	39.6	±3.8
801.350	Horizontal	Quasi-peak	36.0	±3.8

Frequency range 1 GHz-25 GHz.

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
1600.14560	Horizontal	Peak	43.03	±4.0
1600.14560	Horizontal	Average	33.63	±4.0

No spurious signals found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz and at the harmonic frequencies.

Verdict: PASS.

2. TRANSMITTER OPERATING IN CHANNEL: MIDDLE (2441 MHz).

Frequency range 30 MHz-1000 MHz.

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
812.341	Horizontal	Quasi-peak	34.7	±3.8
814.354	Horizontal	Quasi-peak	34.3	±3.8

Frequency range 1 GHz-25 GHz.

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
1626.79891	Horizontal	Peak	45.49	±4.0
1626.79891	Horizontal	Average	34.53	±4.0

No spurious signals found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz and at the harmonic frequencies.

Verdict: PASS.

3. TRANSMITTER OPERATING IN CHANNEL: HIGHEST (2480 MHz).

Frequency range 30 MHz-1000 MHz.

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
825.348	Horizontal	Quasi-peak	36.3	±3.8
827.359	Horizontal	Quasi-peak	35.2	±3.8

Frequency range 1 GHz-25 GHz.

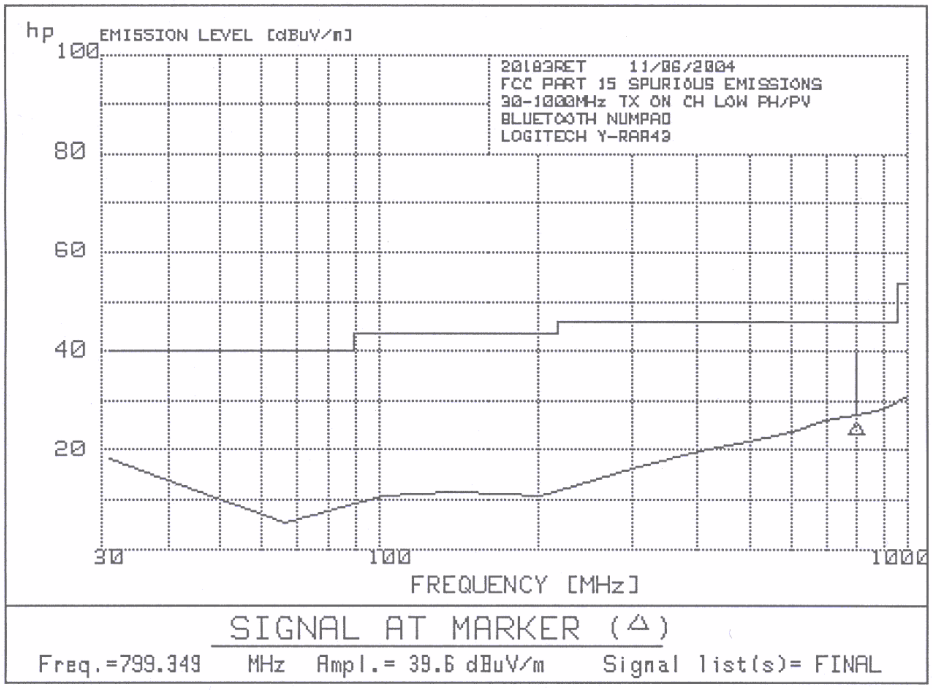
Spurious frequency (MHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
1649.64460	Horizontal	Peak	47.01	±4.0
1649.64460	Horizontal	Average	37.61	±4.0

No spurious signals found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz and at the harmonic frequencies.

Verdict: PASS.

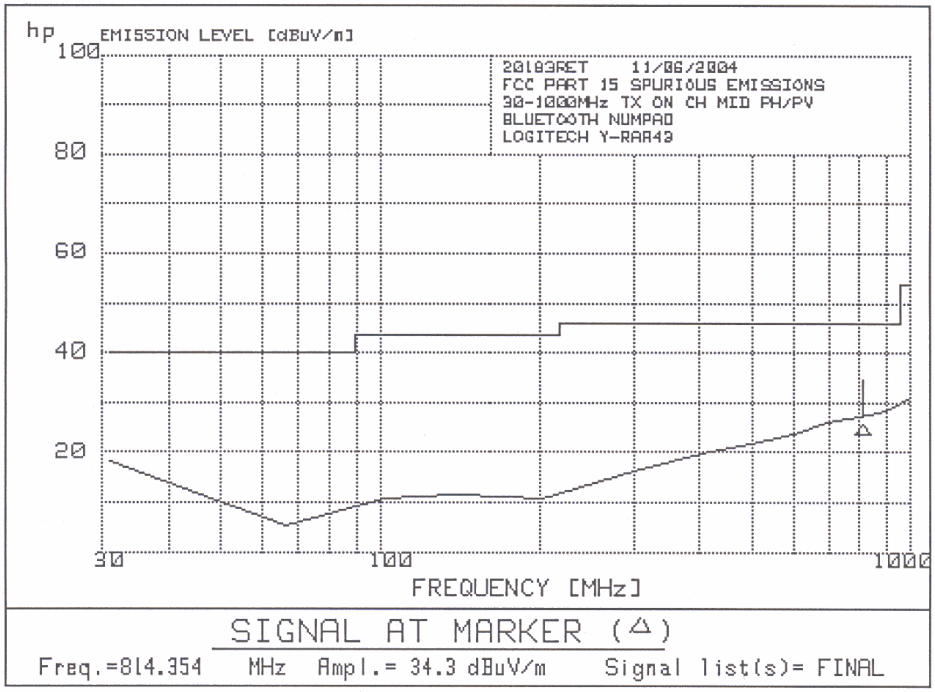
FREQUENCY RANGE 30 MHz-1000 MHz.

CHANNEL: Lowest (2402 MHz).



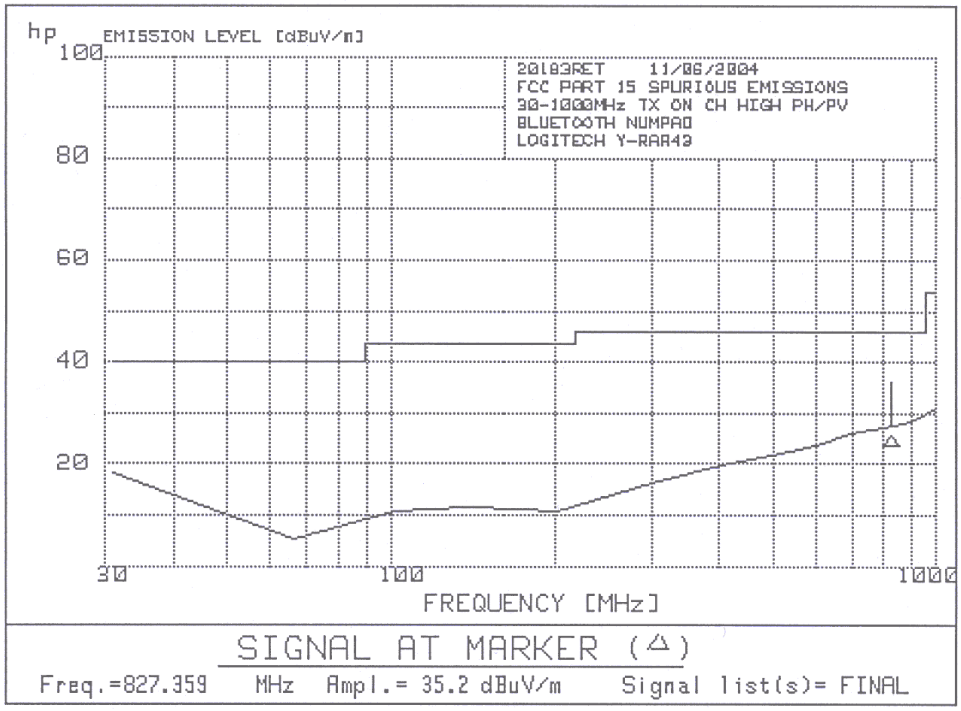
Resolution bandwidth = 100 kHz.
Video bandwidth = 100 kHz.

CHANNEL: Middle (2441 MHz).



Resolution bandwidth = 100 kHz.
Video bandwidth = 100 kHz.

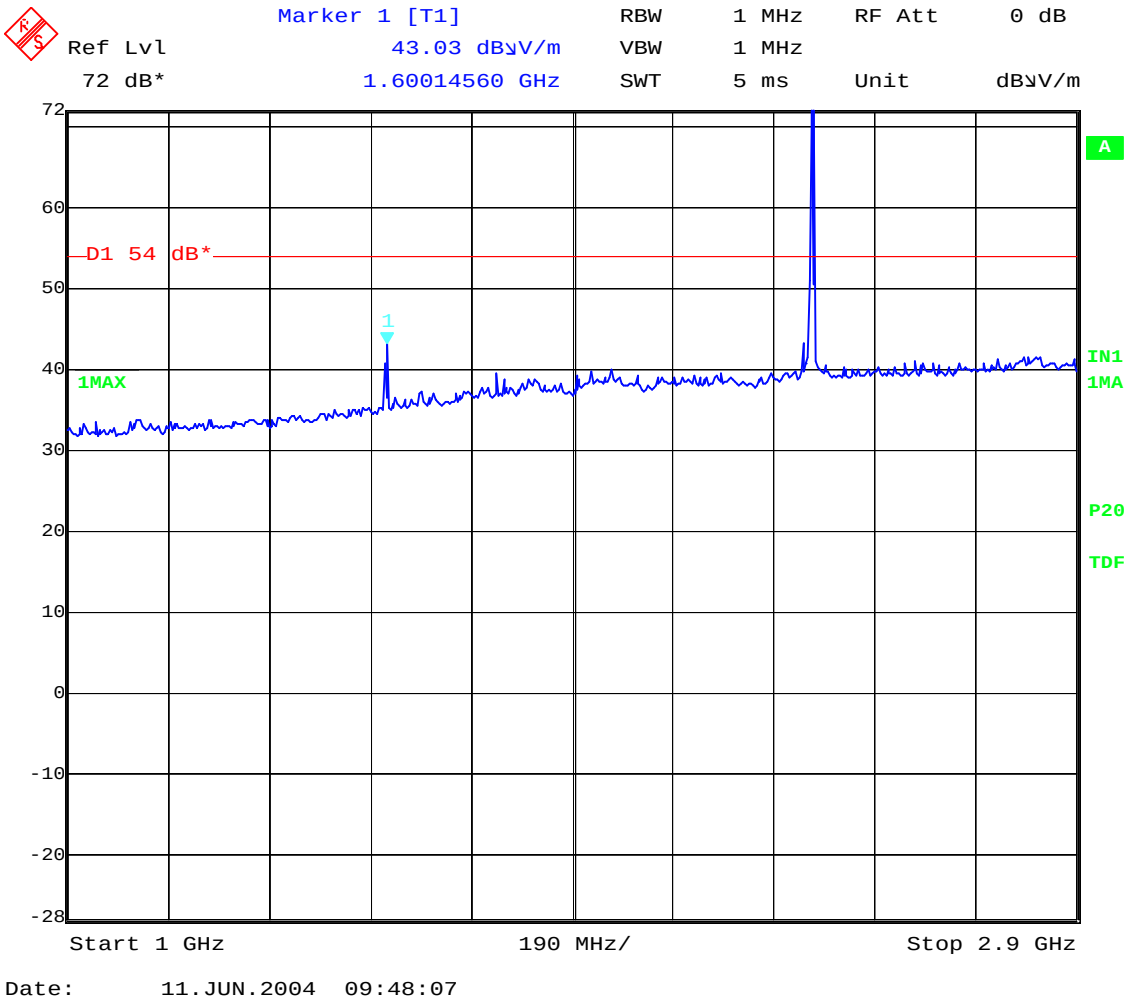
CHANNEL: Highest (2480 MHz).



Resolution bandwidth = 100 kHz.
Video bandwidth = 100 kHz.

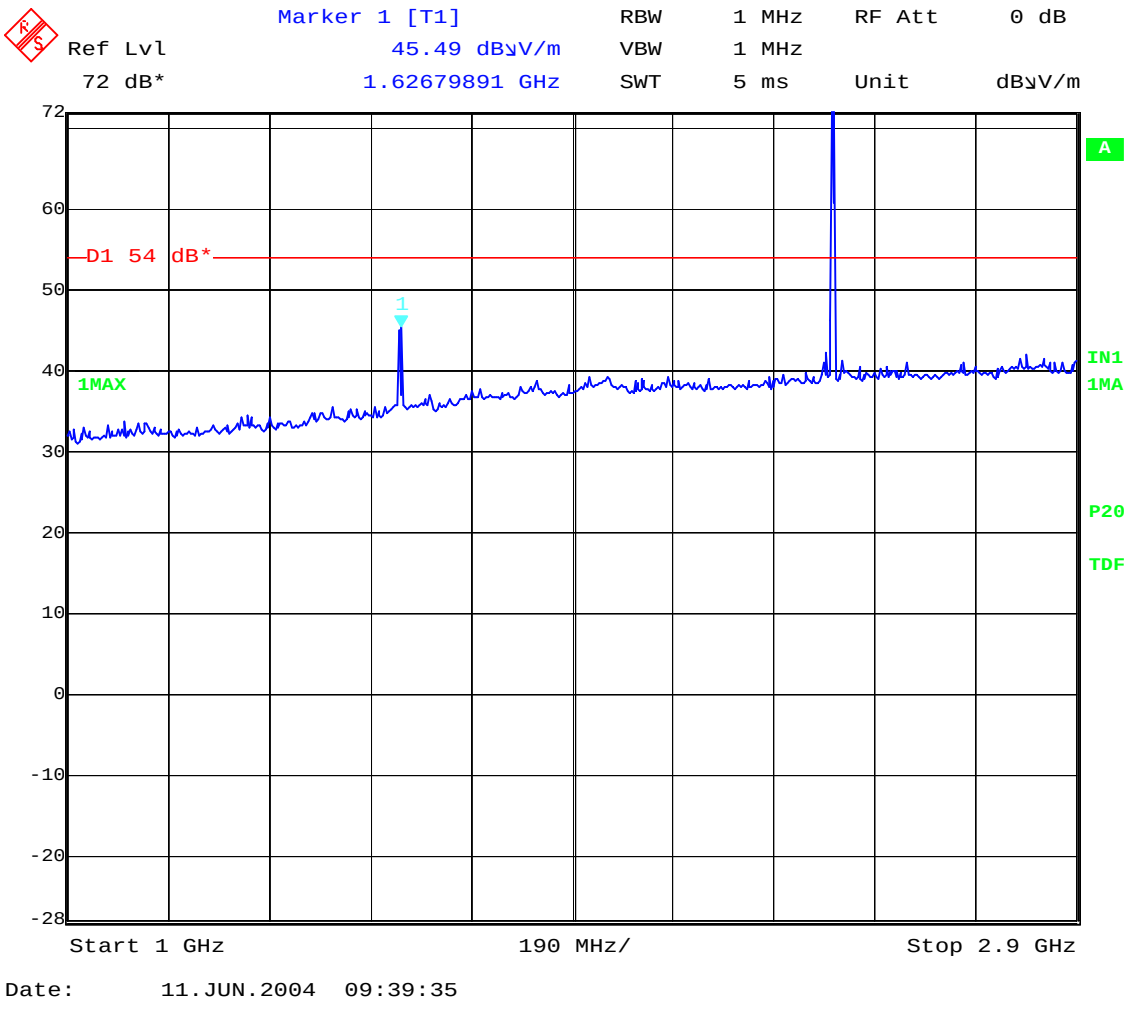
FREQUENCY RANGE 1 GHz to 2.9 GHz.

CHANNEL: Lowest (2402 MHz).



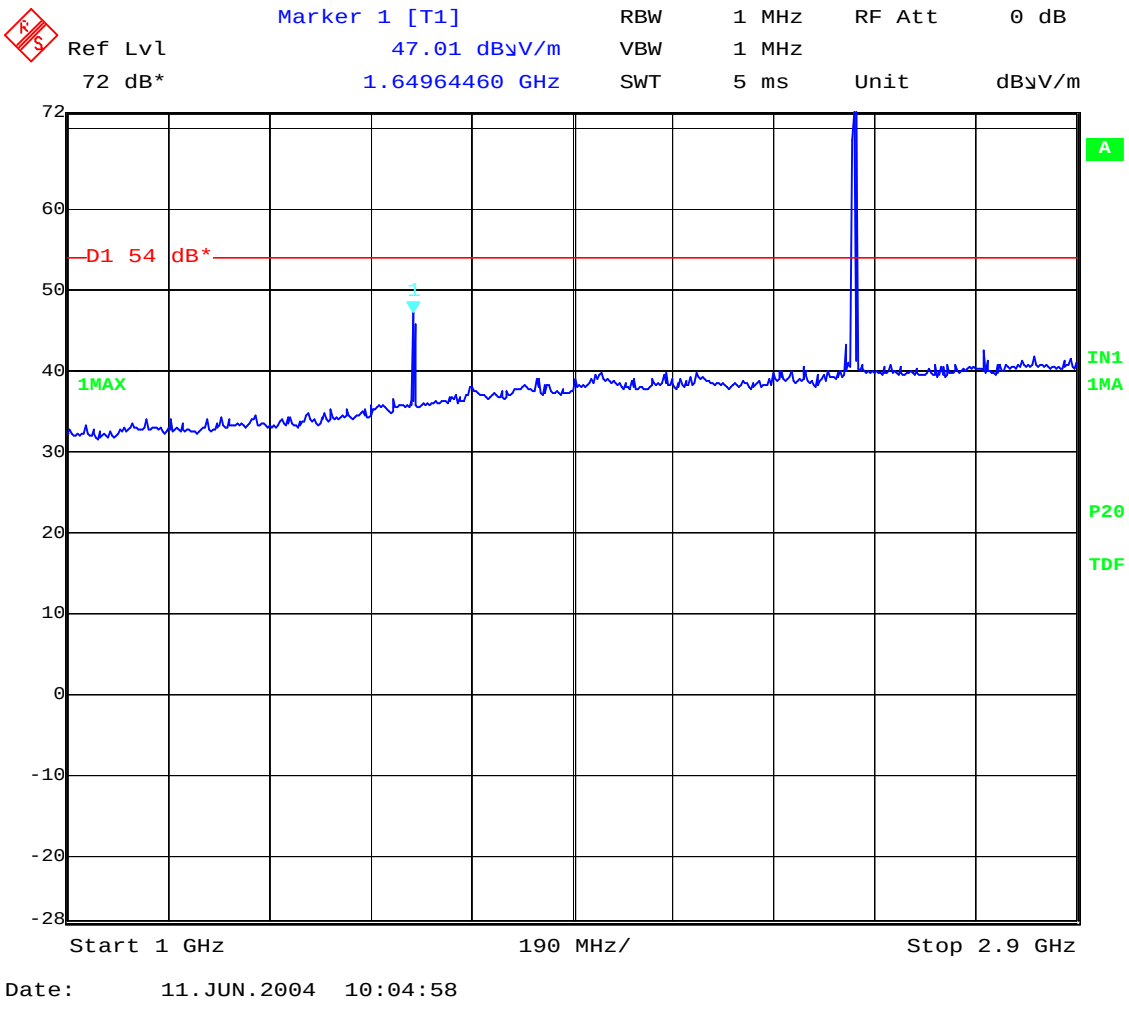
Note: The peak above the limit is the carrier frequency.

CHANNEL: Middle (2441 MHz).



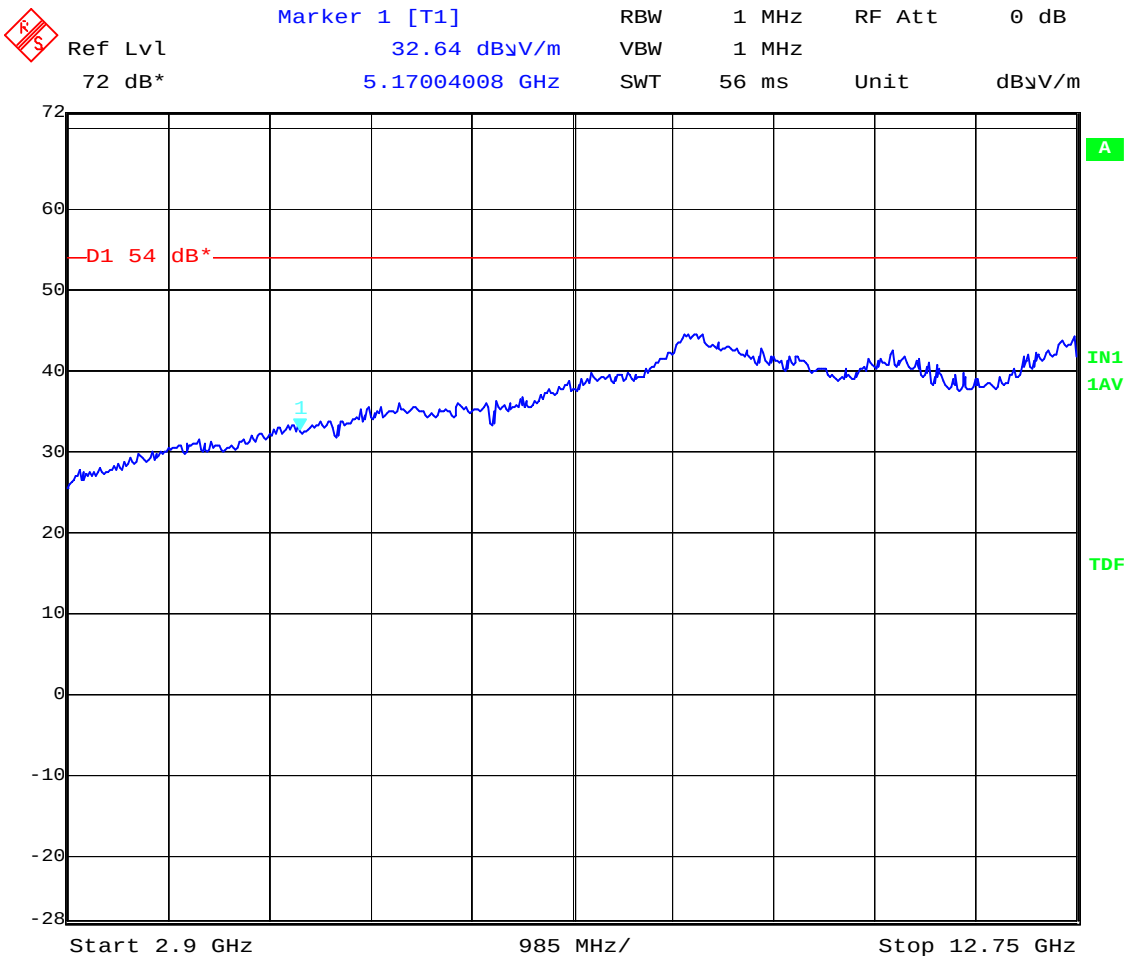
Note: The peak above the limit is the carrier frequency.

CHANNEL: Highest (2480 MHz).



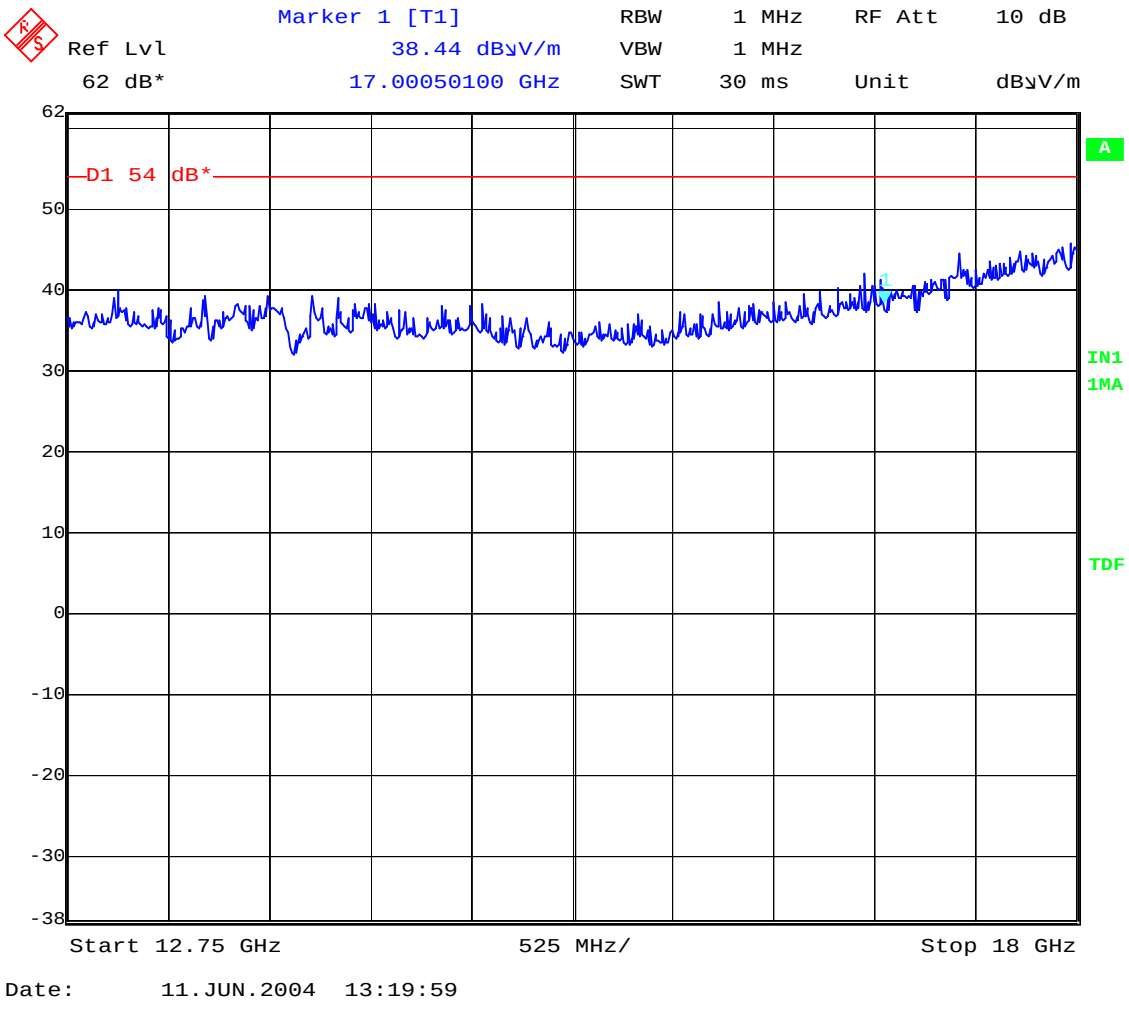
Note: The peak above the limit is the carrier frequency.

FREQUENCY RANGE 2.9 GHz to 12.75 GHz.



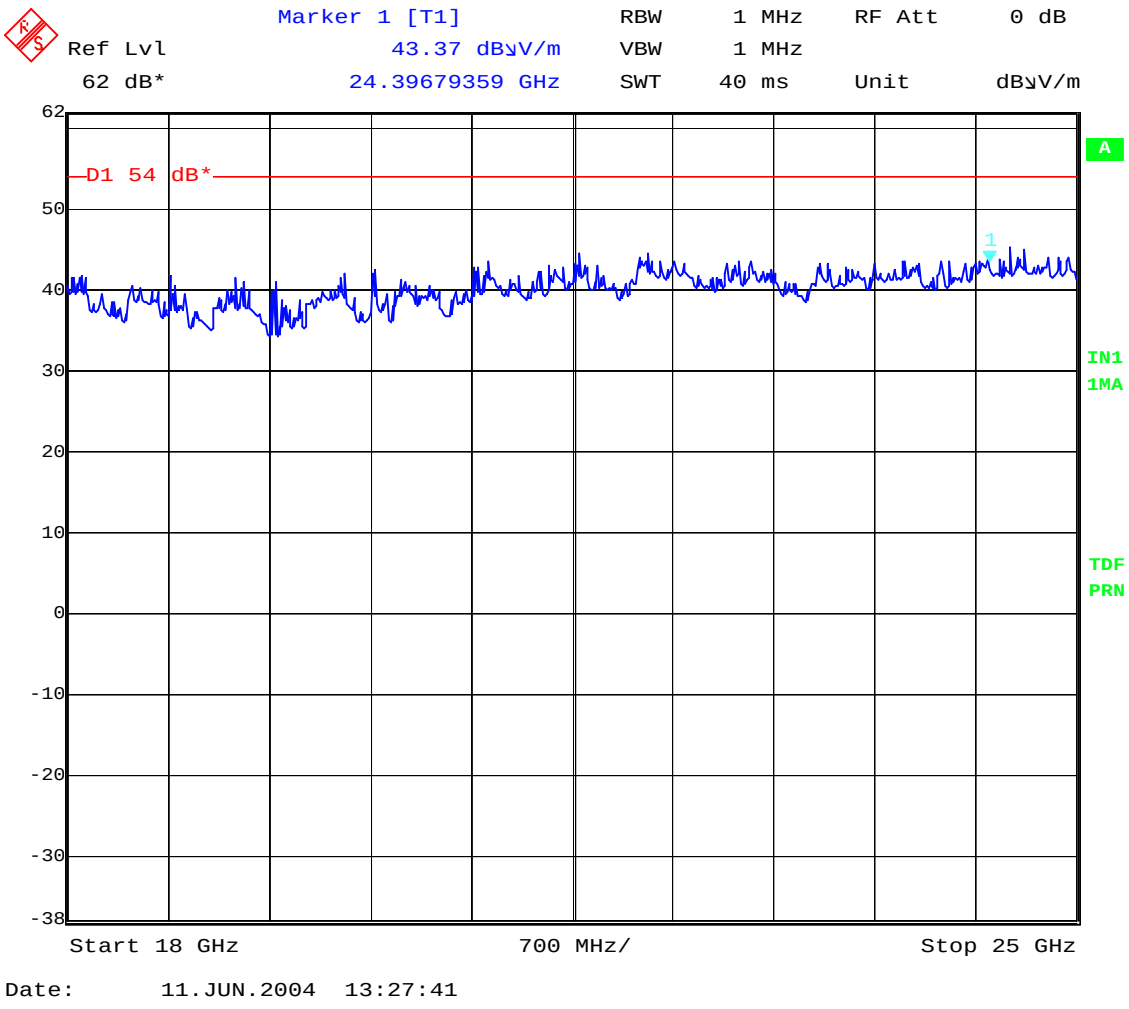
(This plot is valid for all three channels).

FREQUENCY RANGE 12.75 GHz to 18 GHz.



(This plot is valid for all three channels).

FREQUENCY RANGE 18 GHz to 25 GHz.



(This plot is valid for all three channels).

Section 15.109. Receiver spurious radiation

SPECIFICATION

The field strength shall not exceed the following values:

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

1. CHANNEL: LOWEST (2402 MHz).

Frequency range 30 MHz-1000 MHz.
No spurious signals were found in all the range.

Frequency range 1 GHz-25 GHz.
No spurious signals were found in all the range.

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

2. CHANNEL: MIDDLE (2441 MHz).

Frequency range 30 MHz-1000 MHz.
No spurious signals were found in all the range.

Frequency range 1 GHz-25 GHz.
No spurious signals were found in all the range.

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

3. CHANNEL: HIGHEST (2480 MHz).

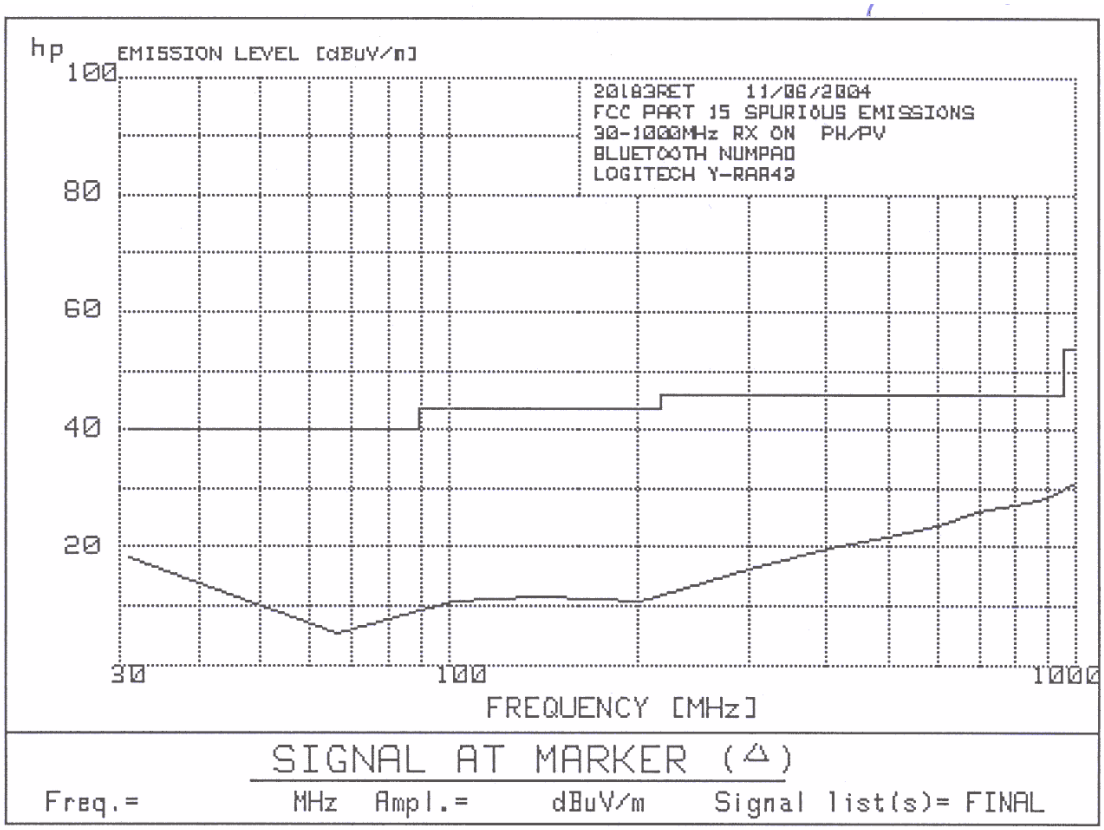
Frequency range 30 MHz-1000 MHz.
No spurious signals were found in all the range.

Frequency range 1 GHz-25 GHz.
No spurious signals were found in all the range.

Additionally, no spurious signals were found inside the restricted bands 2310-2390 MHz and 2483.5-2500 MHz.

Verdict: PASS

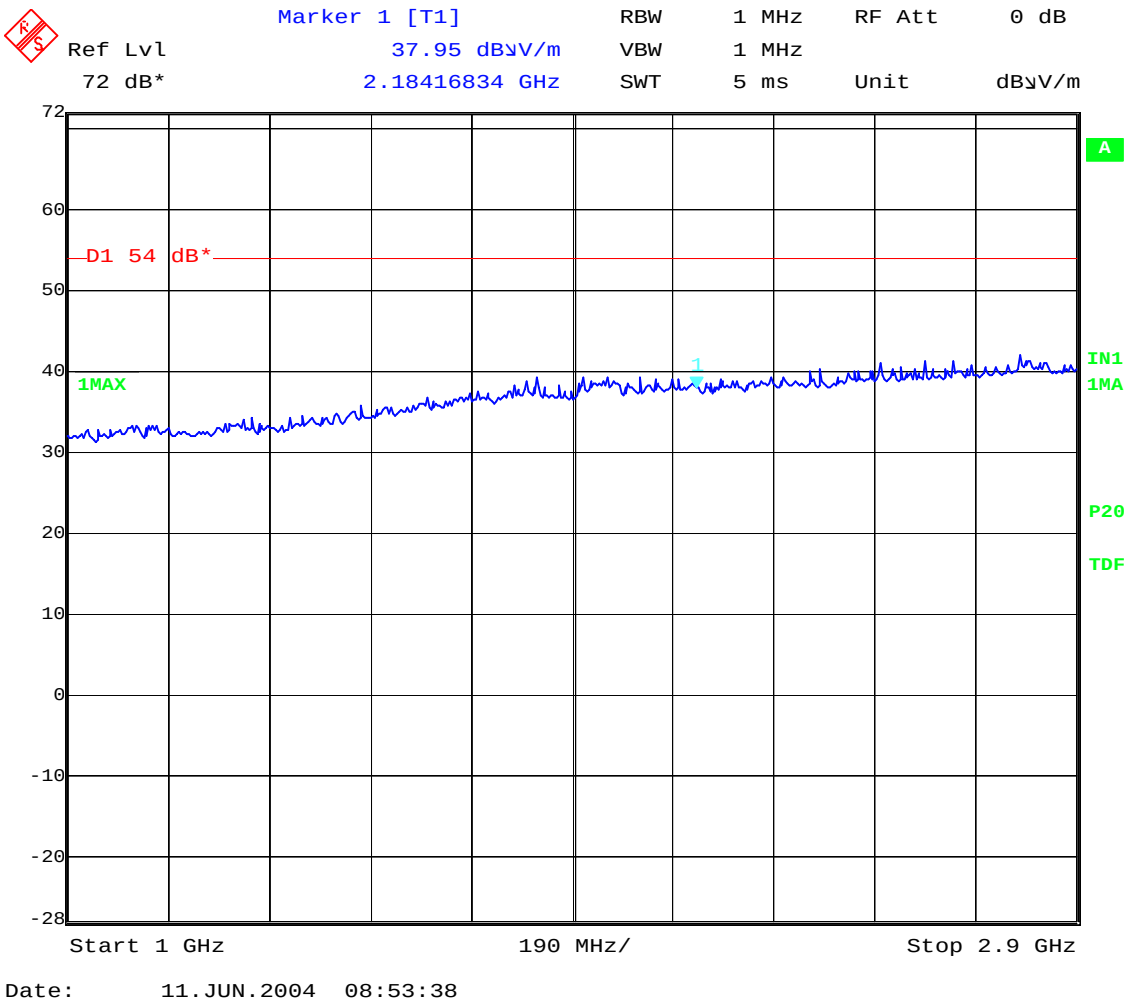
FREQUENCY RANGE 30 MHz-1000 MHz.



Resolution bandwidth = 100 kHz.
Video bandwidth = 100 kHz.

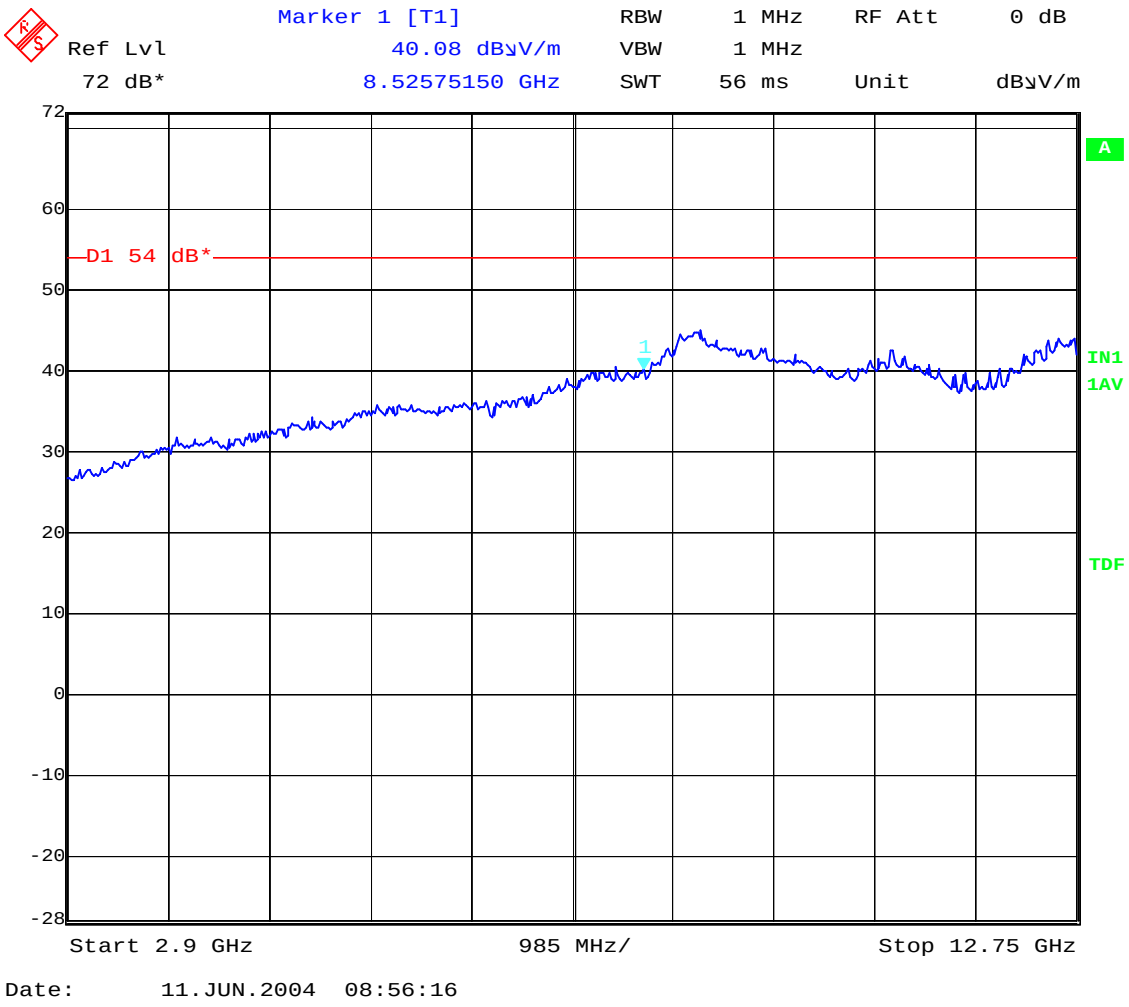
(This plot is valid for all three channels).

FREQUENCY RANGE 1 GHz-2.9 GHz.



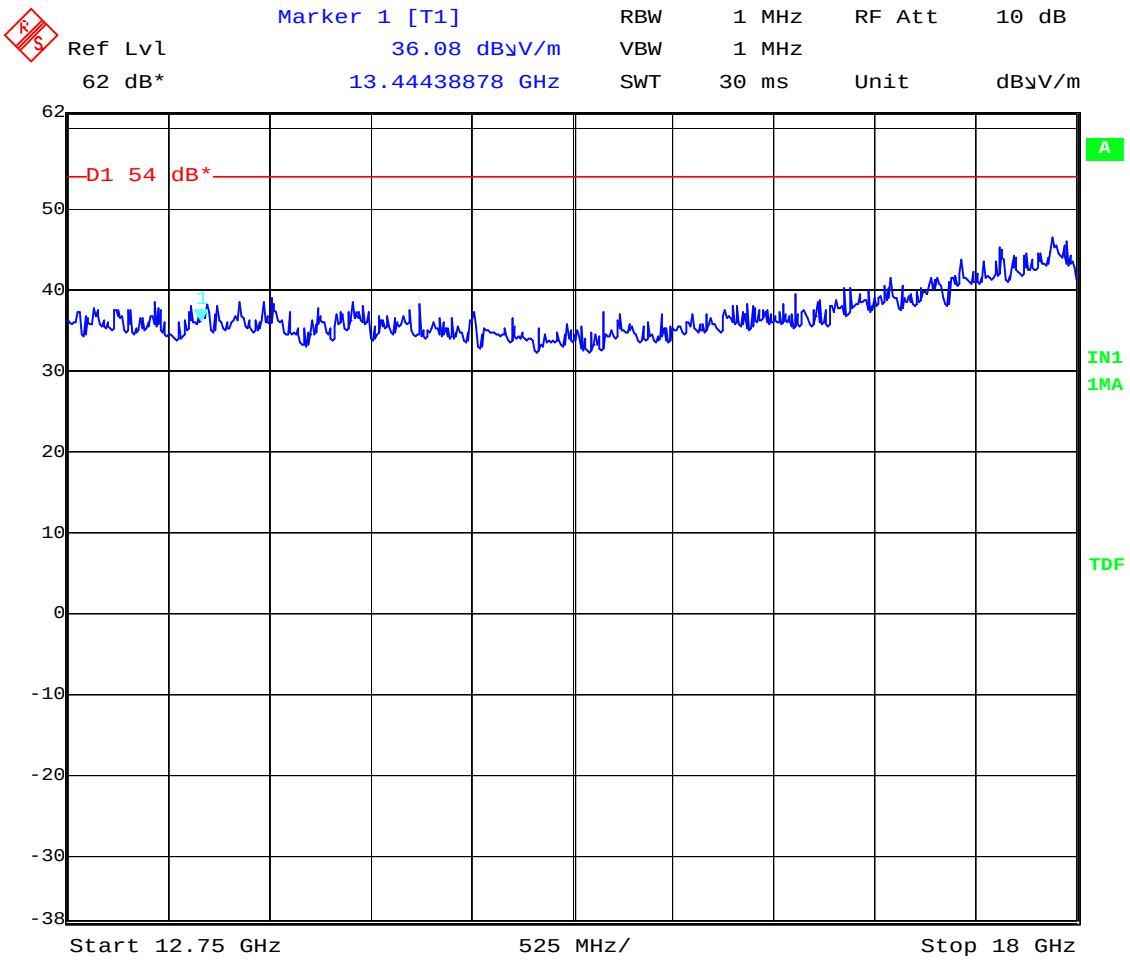
(This plot is valid for all three channels).

FREQUENCY RANGE 2.9 GHz-12.75 GHz.



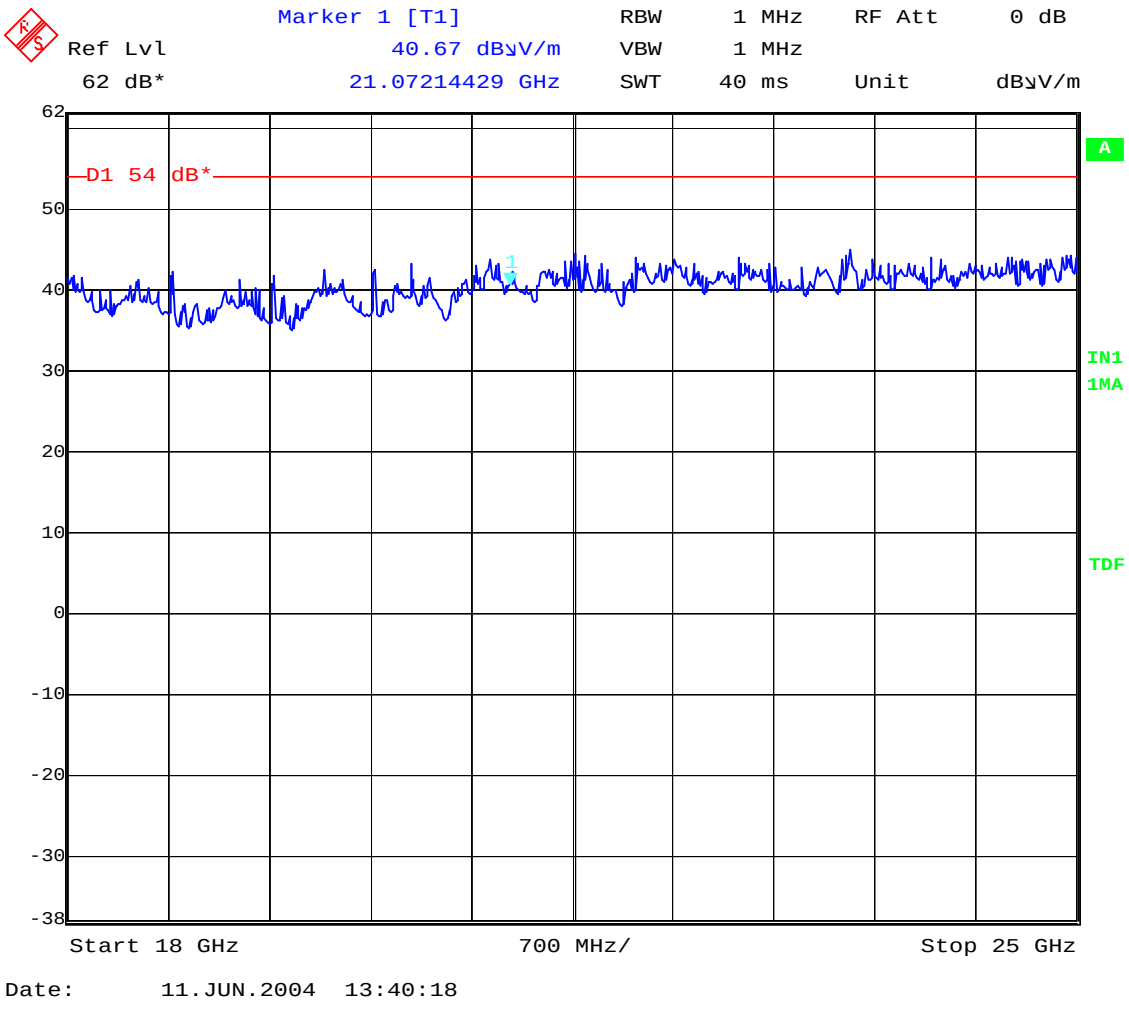
(This plot is valid for all three channels).

FREQUENCY RANGE 12.75 GHz-18 GHz.



(This plot is valid for all three channels).

FREQUENCY RANGE 18 GHz-25 GHz.



(This plot is valid for all three channels).

ANNEX B

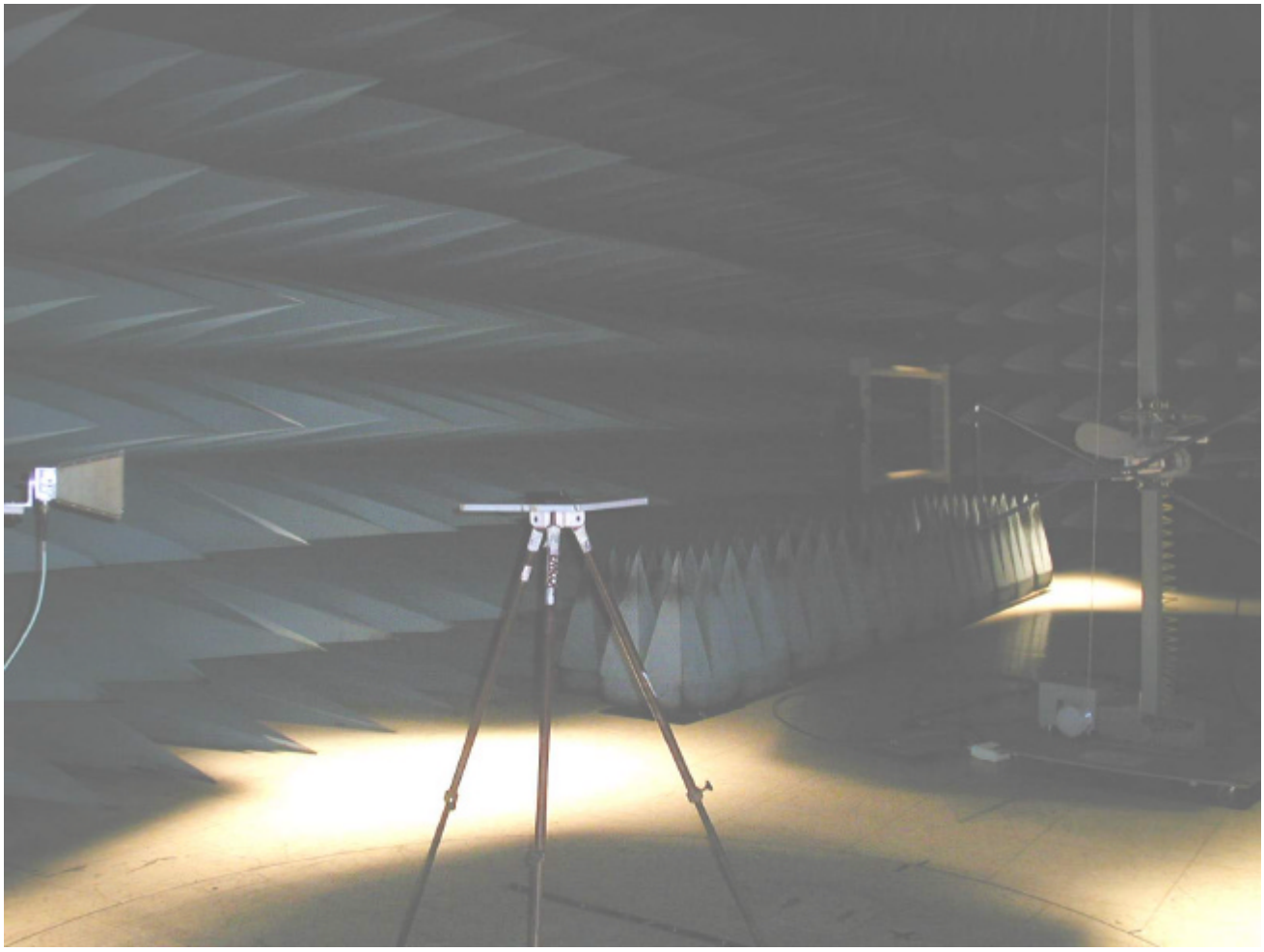
PHOTOGRAPHS
(Number of photographs: 6)

Report No.: 20183RET.102

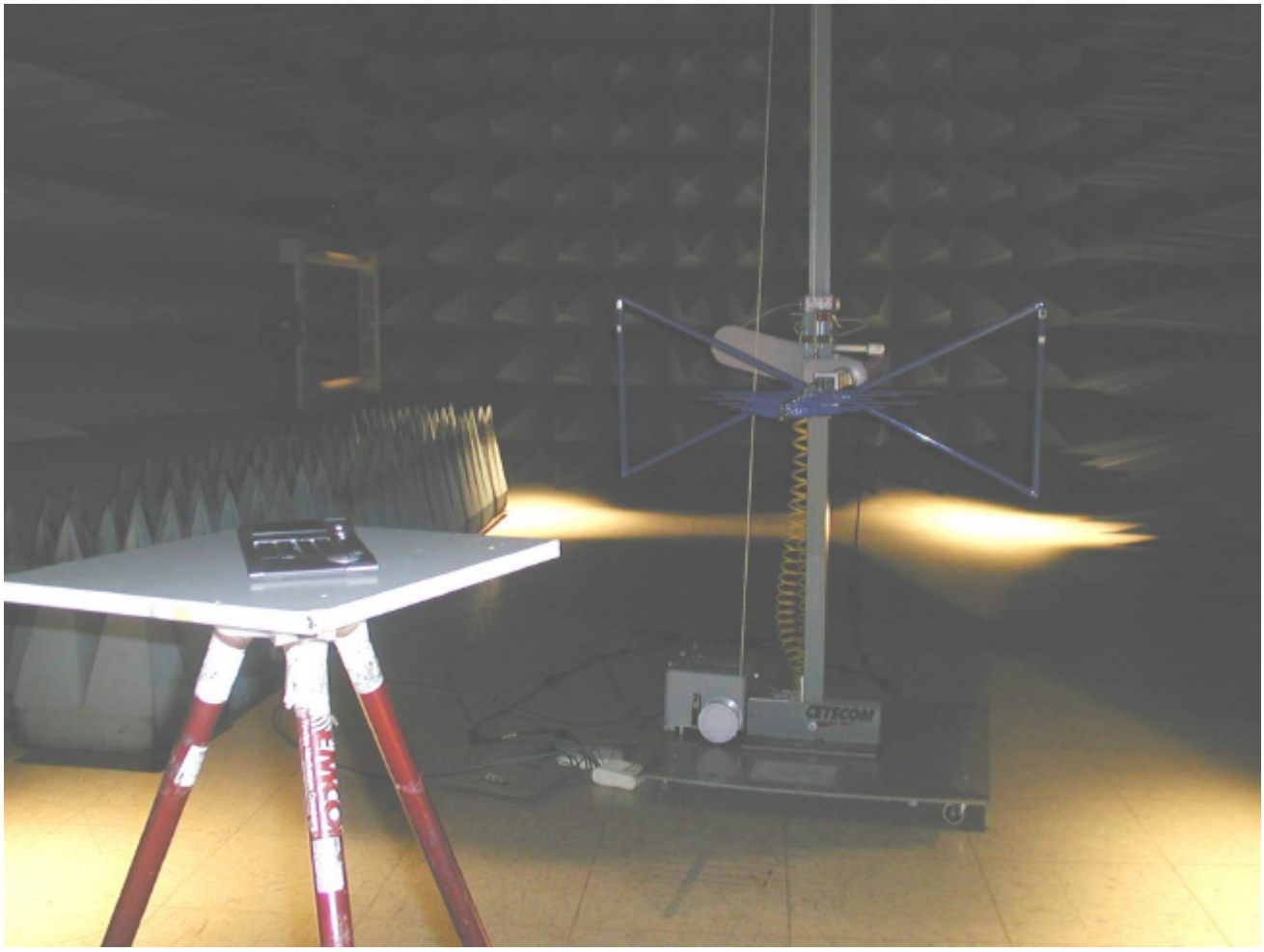
1. Equipment (front view)

2. Equipment (back view).

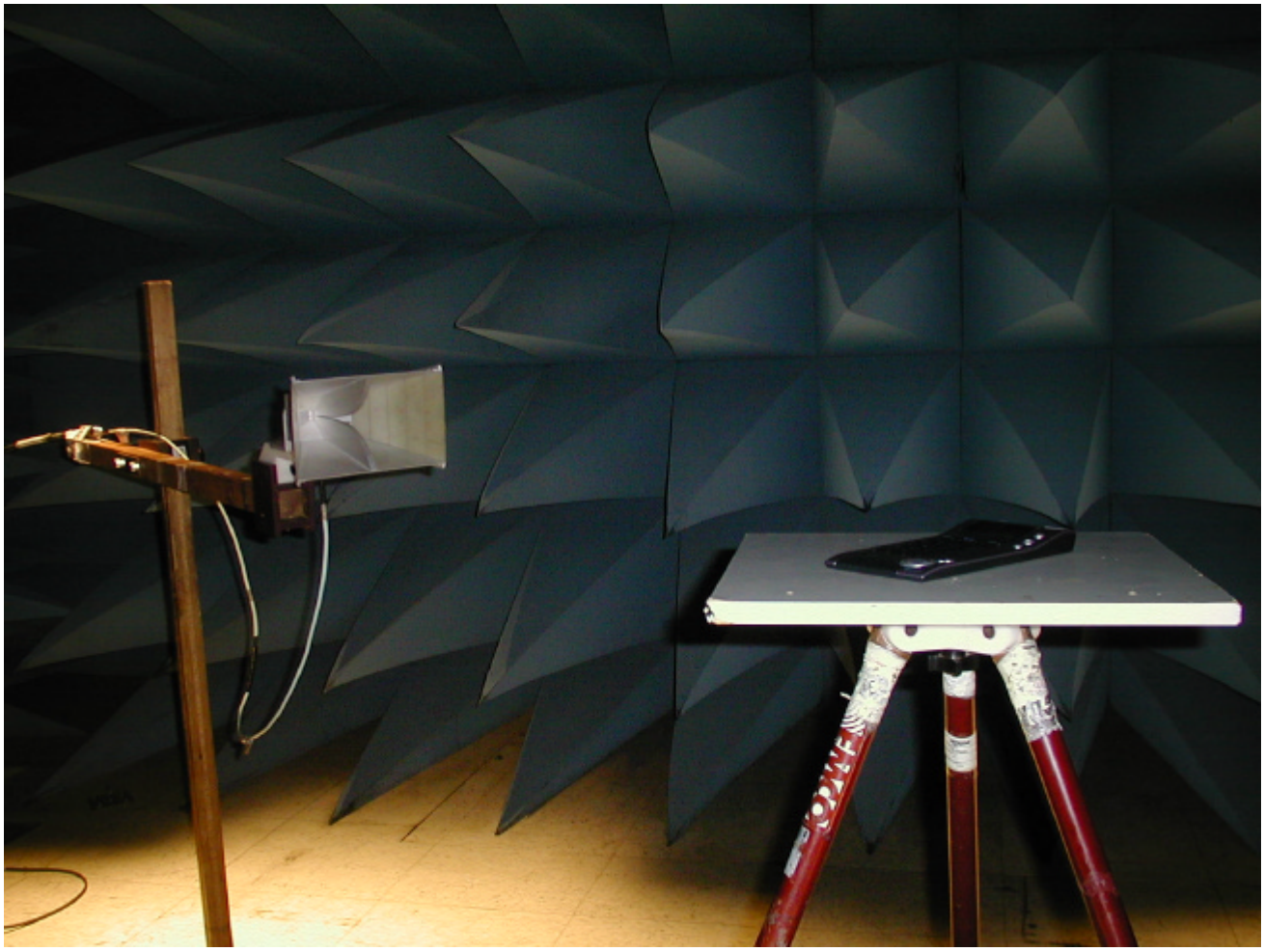
3. General test set-up for radiated measurements.



4. Test set-up for radiated measurements below 1 GHz.



5. Test set-up for radiated measurements above 1 GHz.



6. Test set-up for RF conducted measurements.