

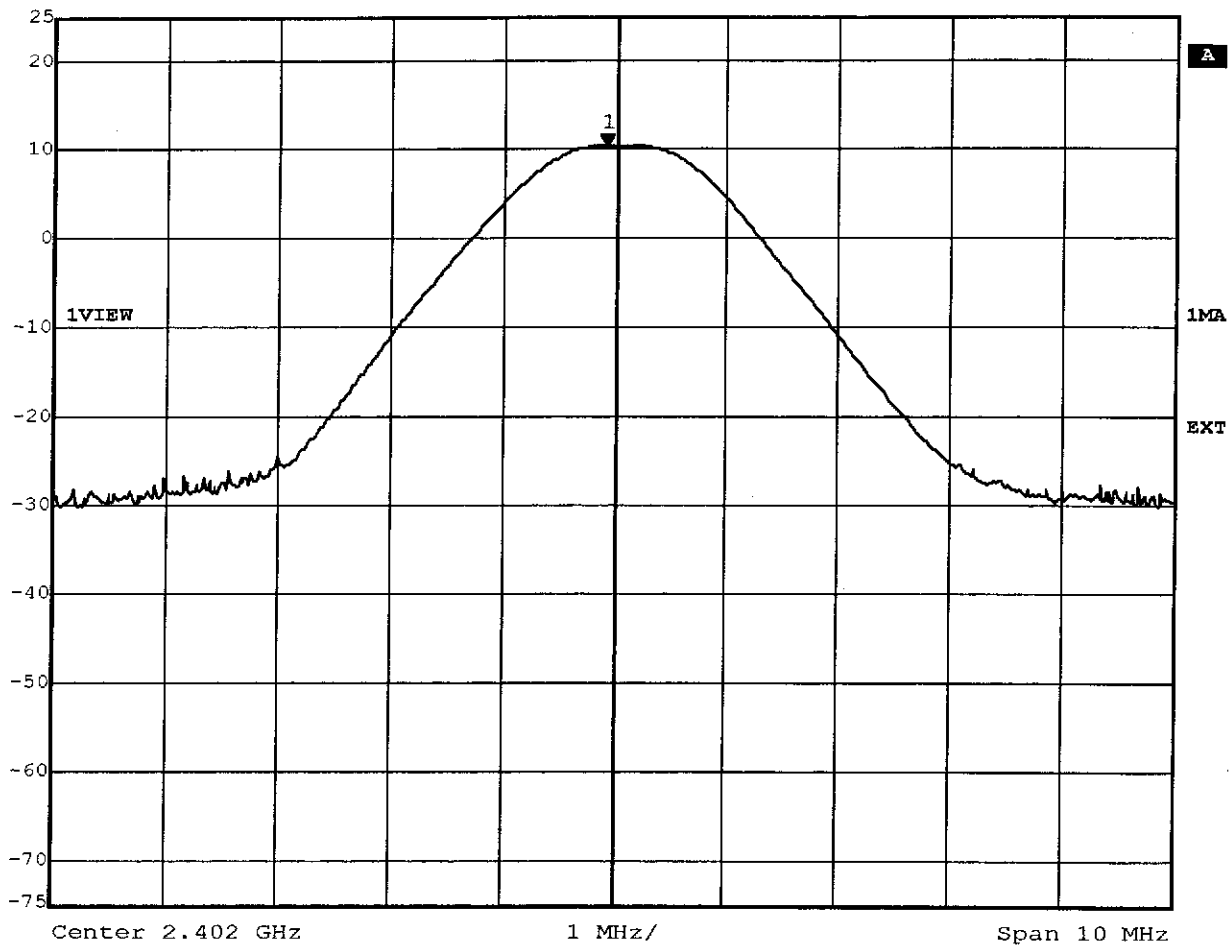


## **Appendix B**

Peak Output Power



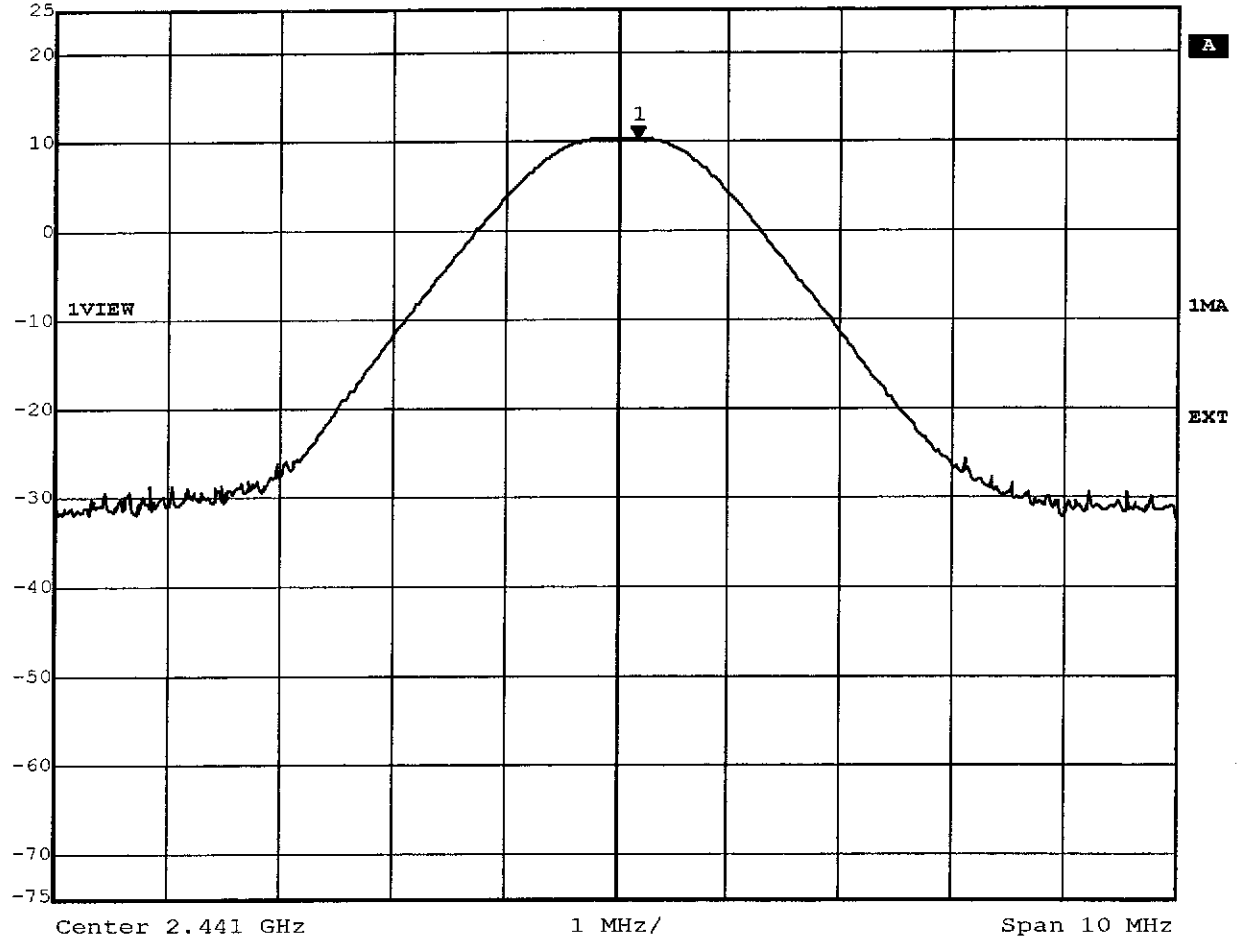
Marker 1 [T1] RBW 1 MHz RF Att 50 dB  
Ref Lvl 10.12 dBm VBW 1 MHz  
25 dBm 2.40192986 GHz SWT 5 ms Unit dBm



Title: Peak Output Power conducted Ch.: 0  
Comment A: Alps Bluetooth Module UGP21  
Date: 11.JUN.2002 07:45:41



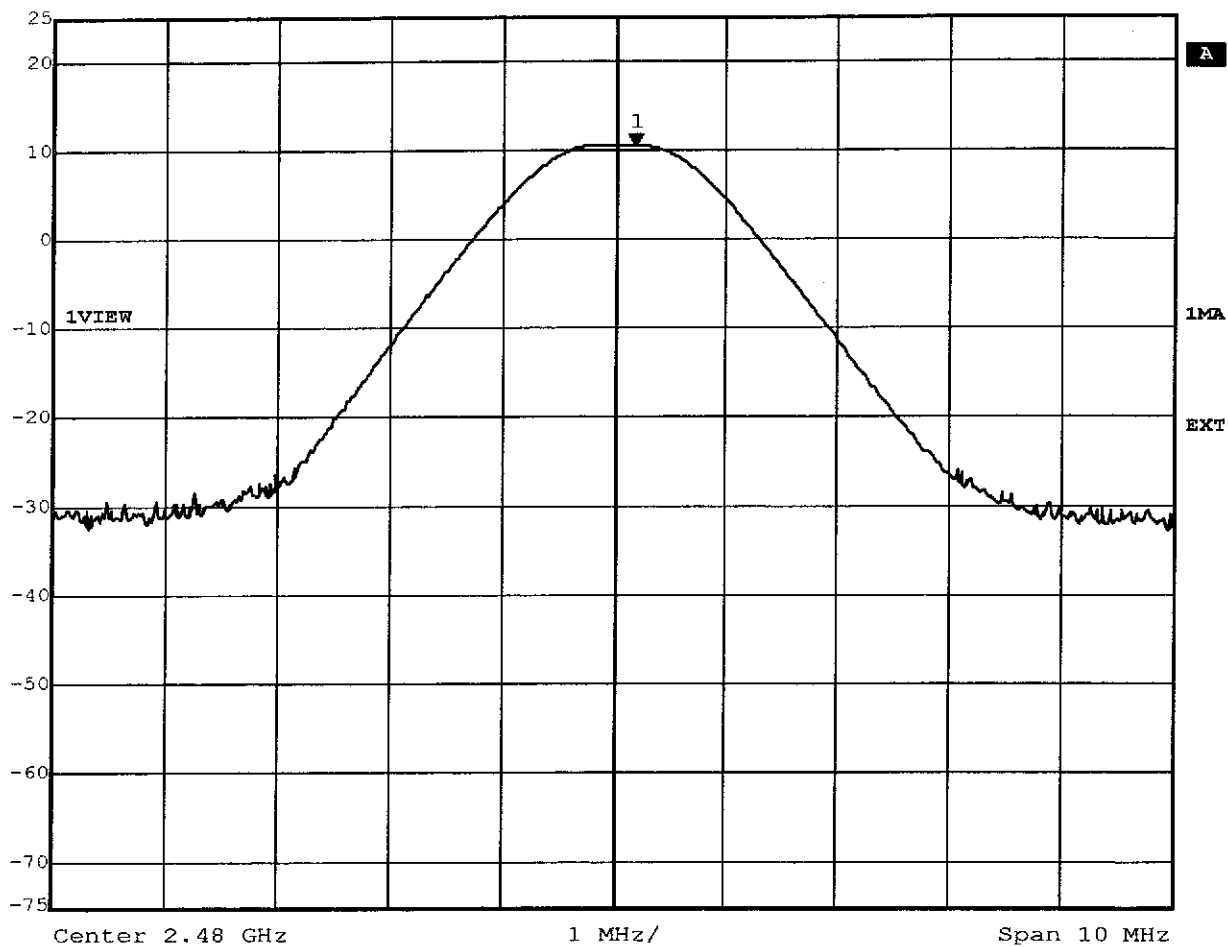
|         |                |     |       |        |       |
|---------|----------------|-----|-------|--------|-------|
| Ref Lvl | Marker 1 [T1]  | RBW | 1 MHz | RF Att | 50 dB |
| 25 dBm  | 10.14 dBm      | VBW | 1 MHz |        |       |
|         | 2.44119038 GHz | SWT | 5 ms  | Unit   | dBm   |



Title: Peak Output Power conducted Ch.: 39  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 11.JUN.2002 07:47:33



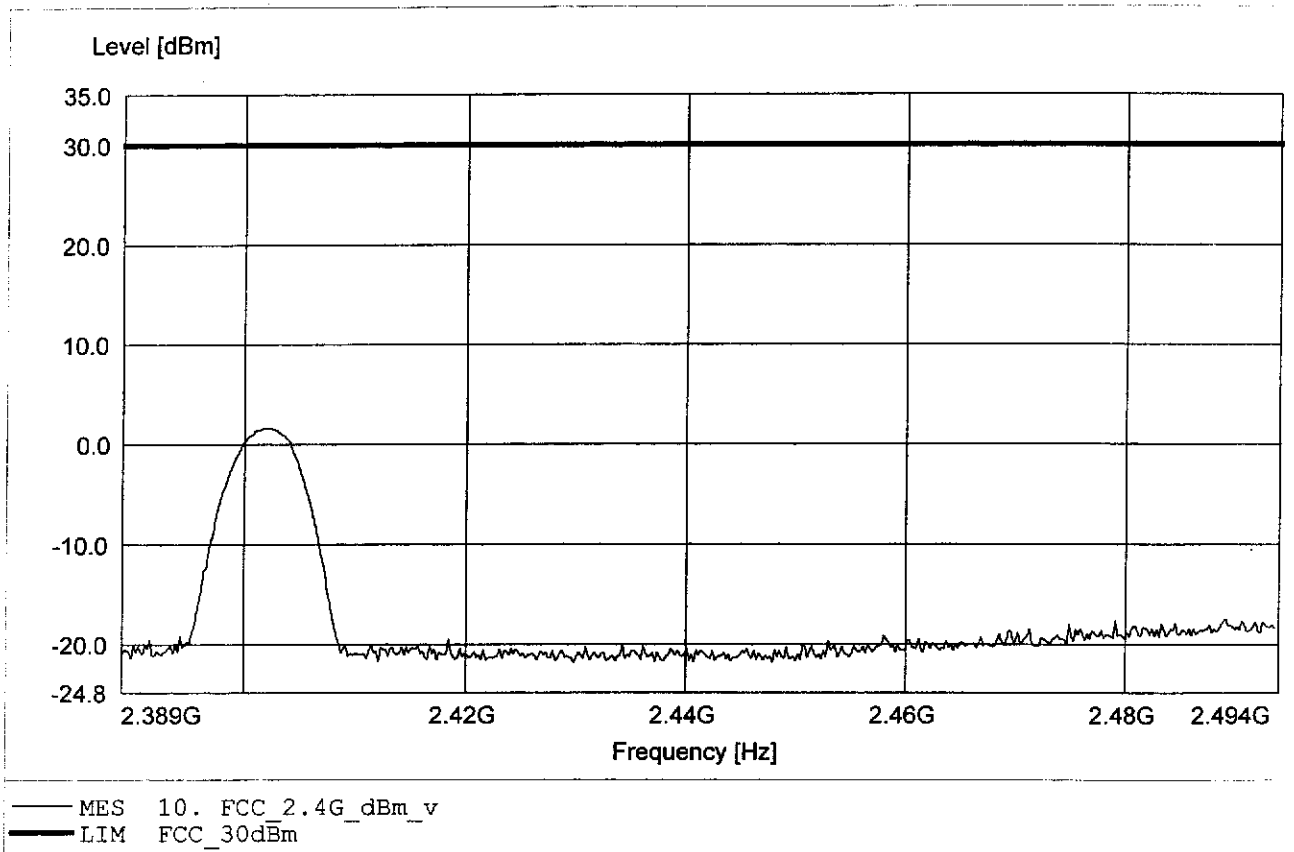
Marker 1 [T1] RBW 1 MHz RF Att 50 dB  
Ref Lvl 10.44 dBm VBW 1 MHz  
25 dBm 2.48019038 GHz SWT 5 ms Unit dBm



Title: Peak Output Power conducted Ch.: 78  
Comment A: Alps Bluetooth Module UGP21  
Date: 11.JUN.2002 07:48:53

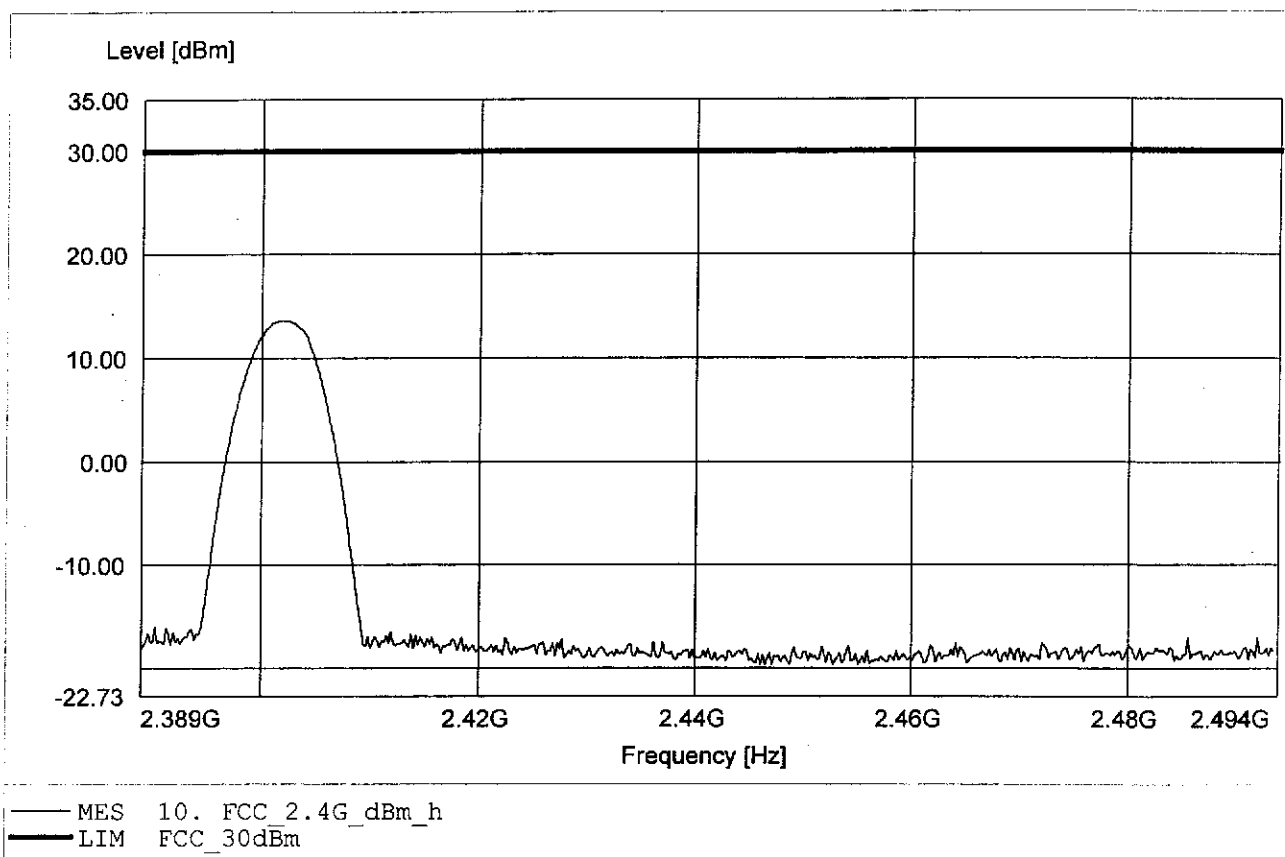
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.402GHz, Pmax: 1.63dBm, RBW: 5MHz



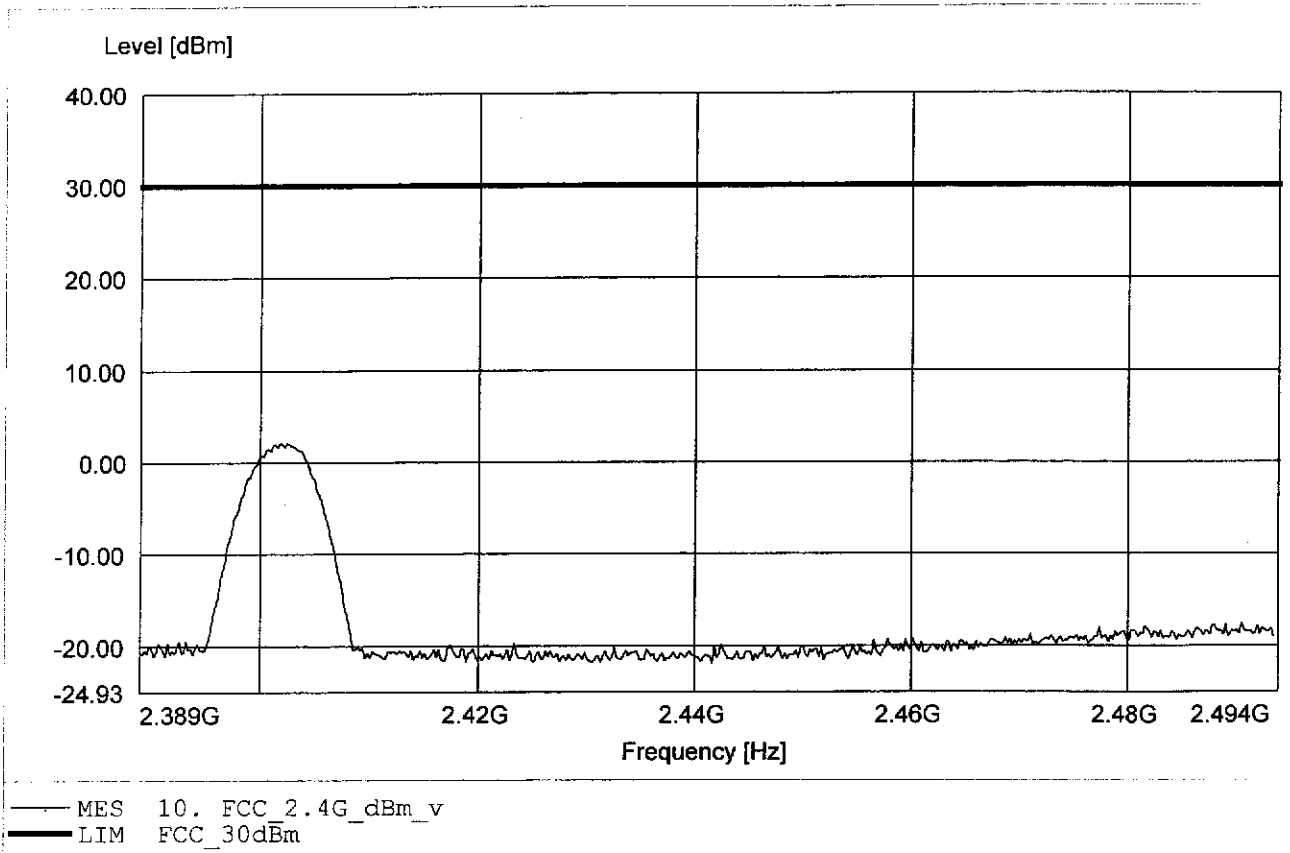
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.402GHz, Pmax: 13.59dBm, RBW: 5MHz



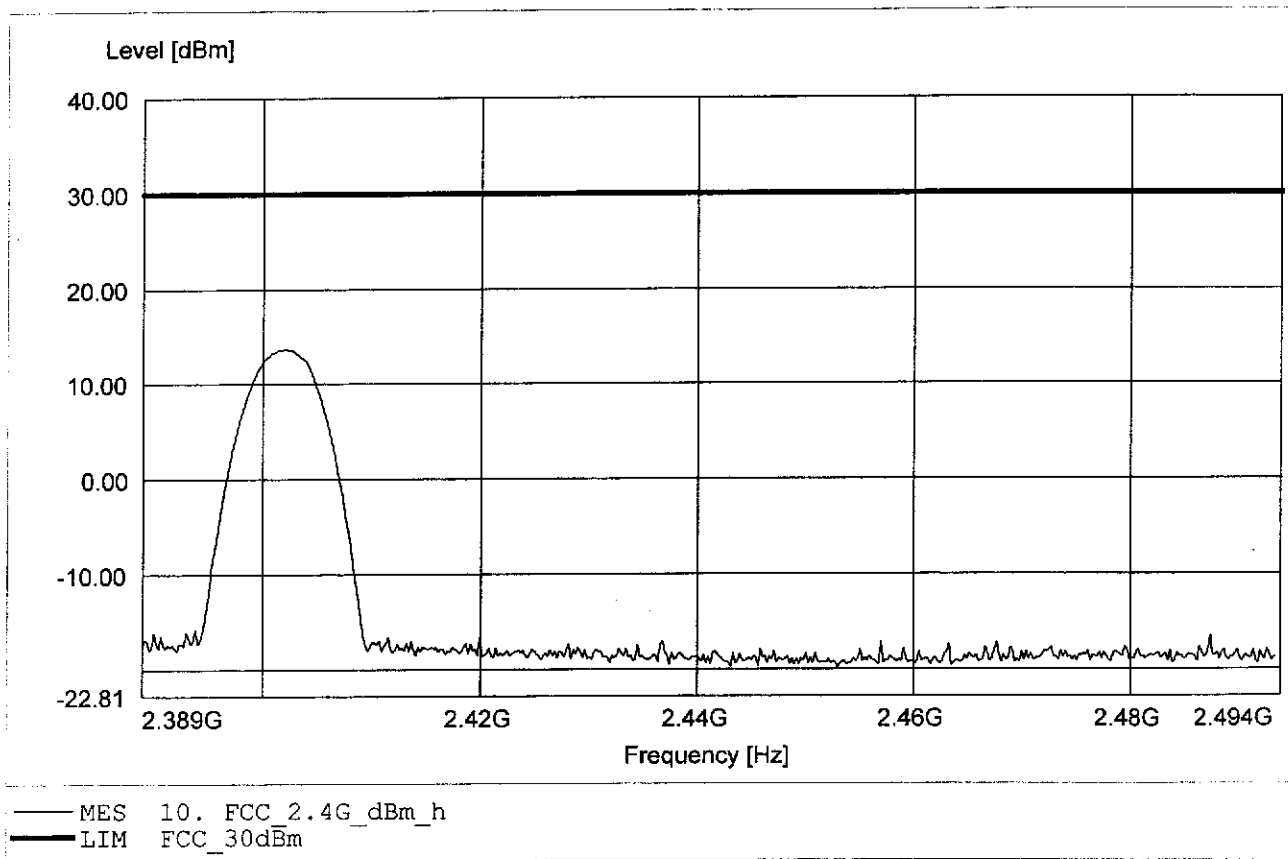
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.402GHz, Pmax: 2.07dBm, RBW: 5MHz



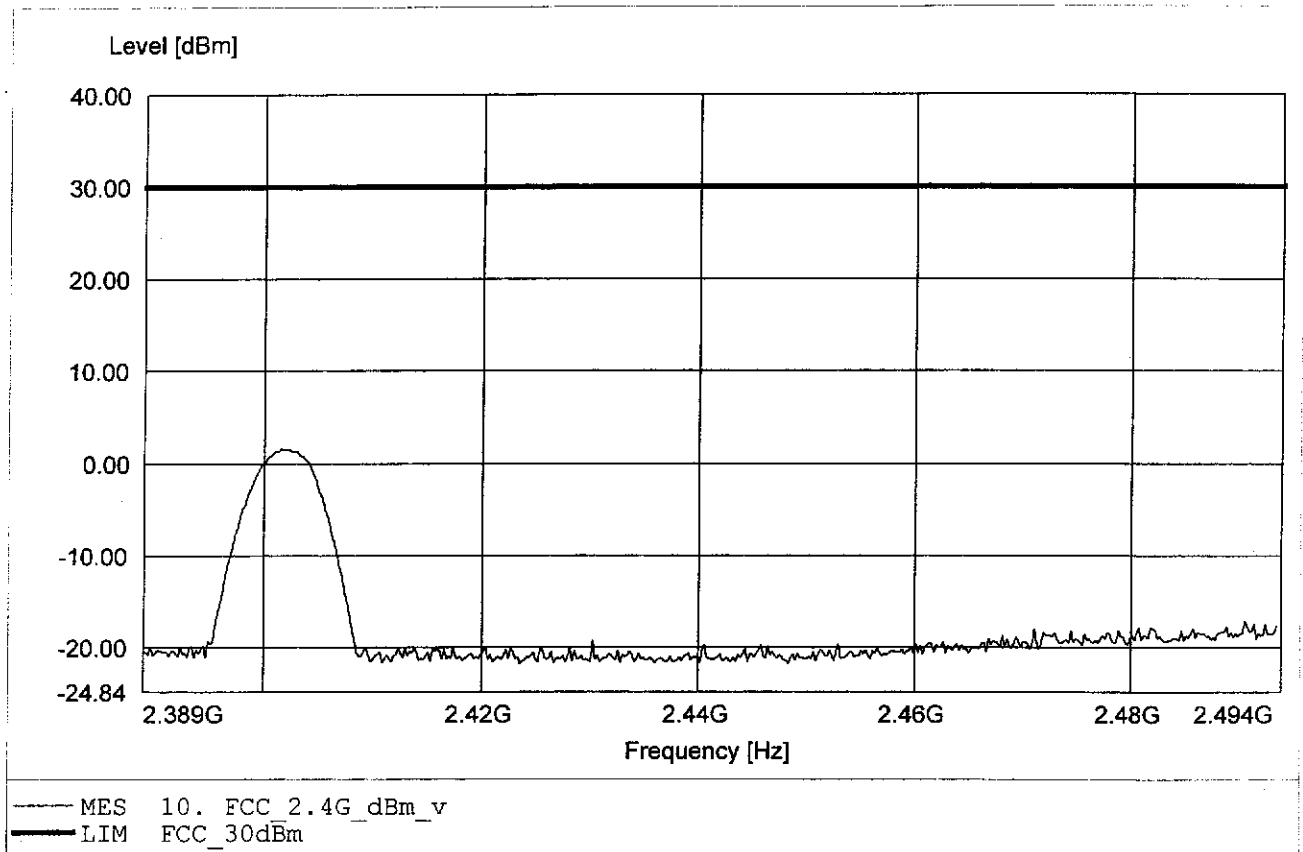
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.402GHz, Pmax: 13.70dBm, RBW: 5MHz



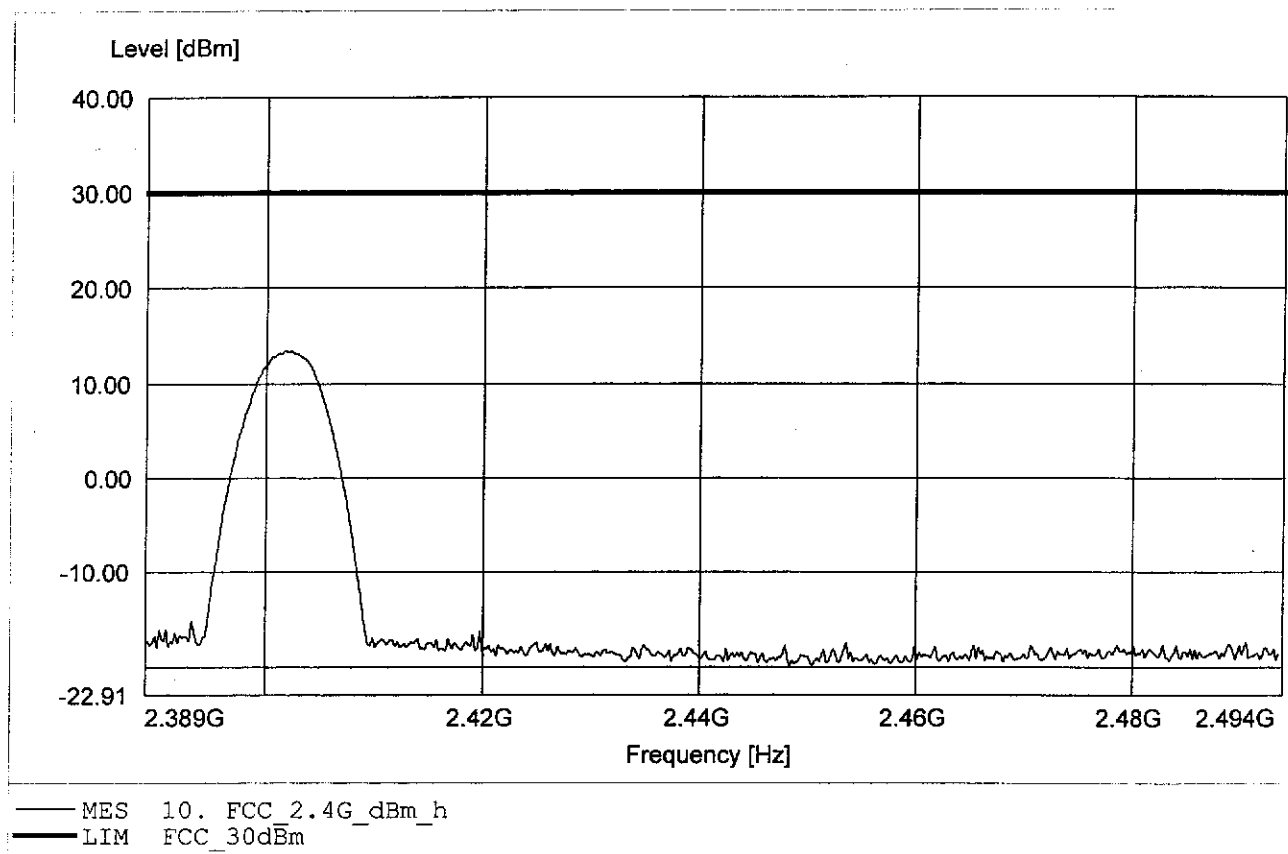
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umax: 5.2 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.402GHz, Pmax: 1.63dBm, RBW: 5MHz



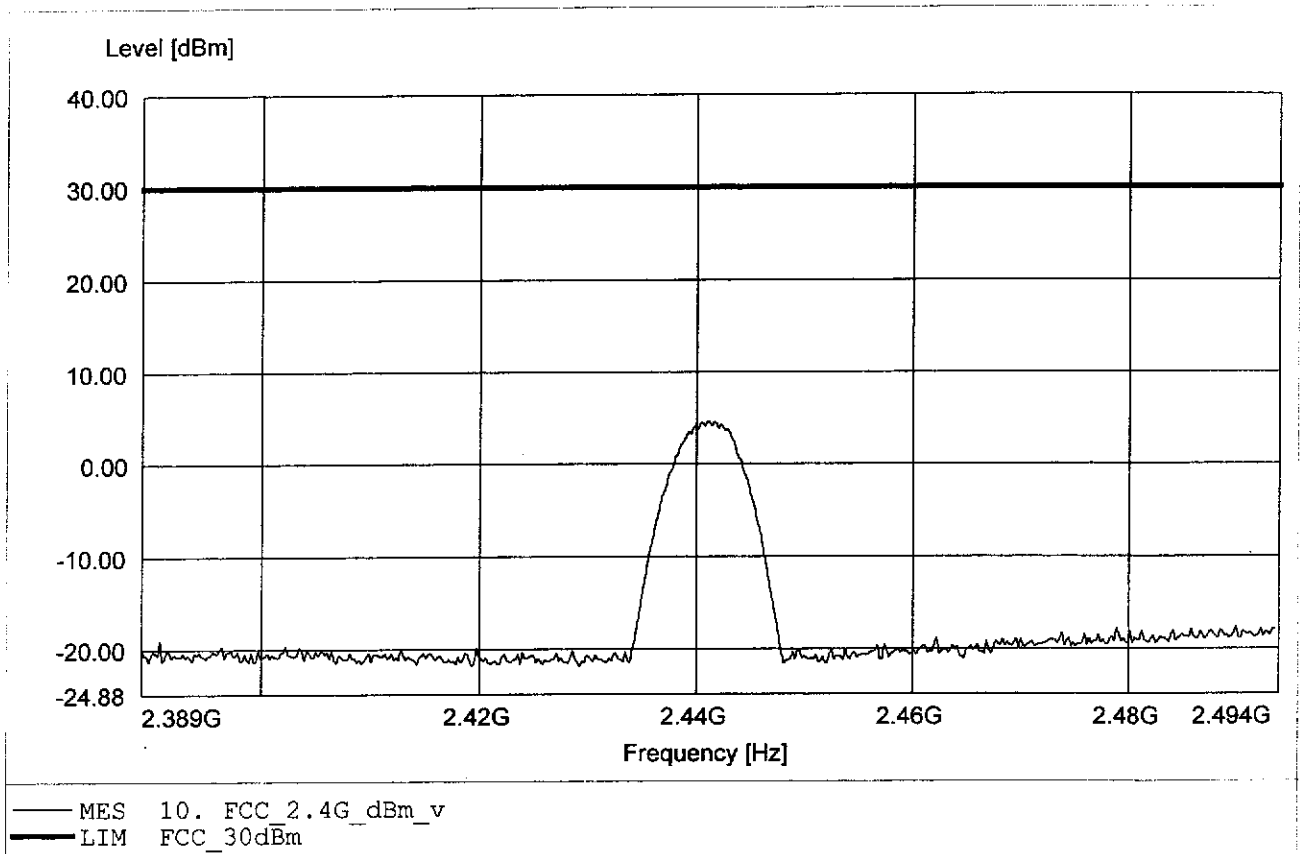
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
 Model: UGPZ1  
 Approval Holder: Alps Electric Co., Ltd.  
 Operating Condition: Tnom:23°C / Umax: 5.2 V DC  
 Test Site / Operator: ETS / Mr. Hoppe  
 Test Specification: according to S15.247  
 Comment 1: Dist.: 3m, Ant.: BBHA9120D  
 Comment 2: Freq: 2.402GHz, Pmax: 13.44dBm, RBW: 5MHz



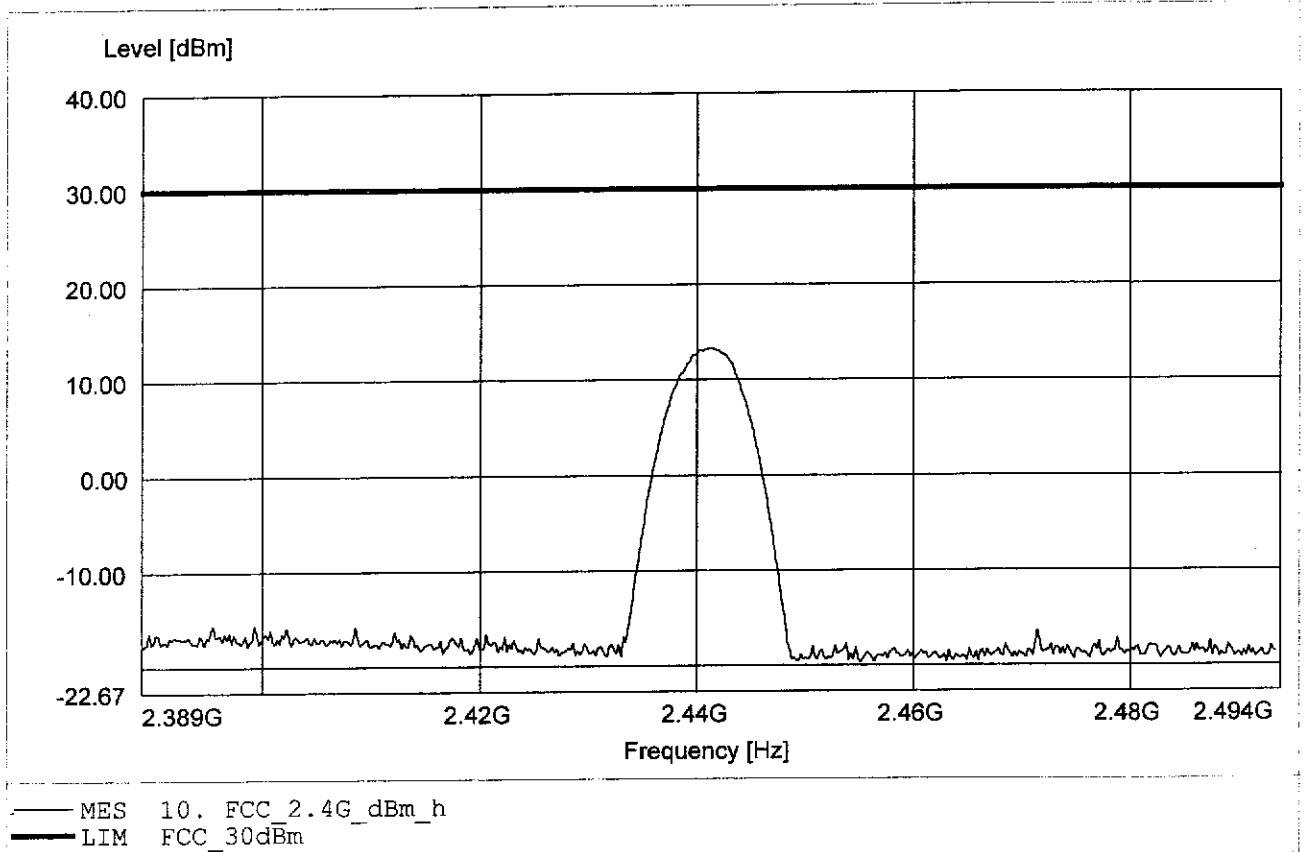
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 4.62dBm, RBW: 5MHz



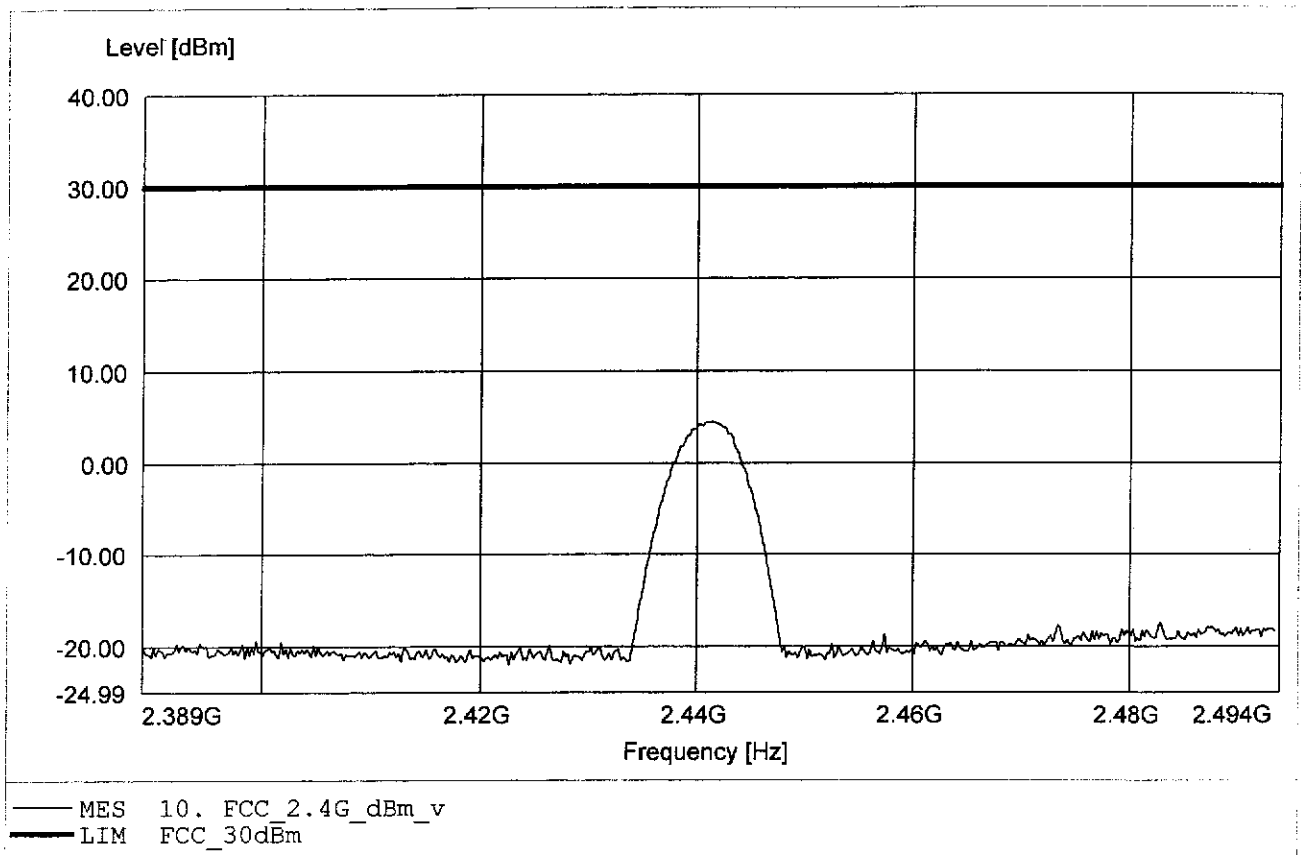
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Thom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 13.23dBm, RBW: 5MHz



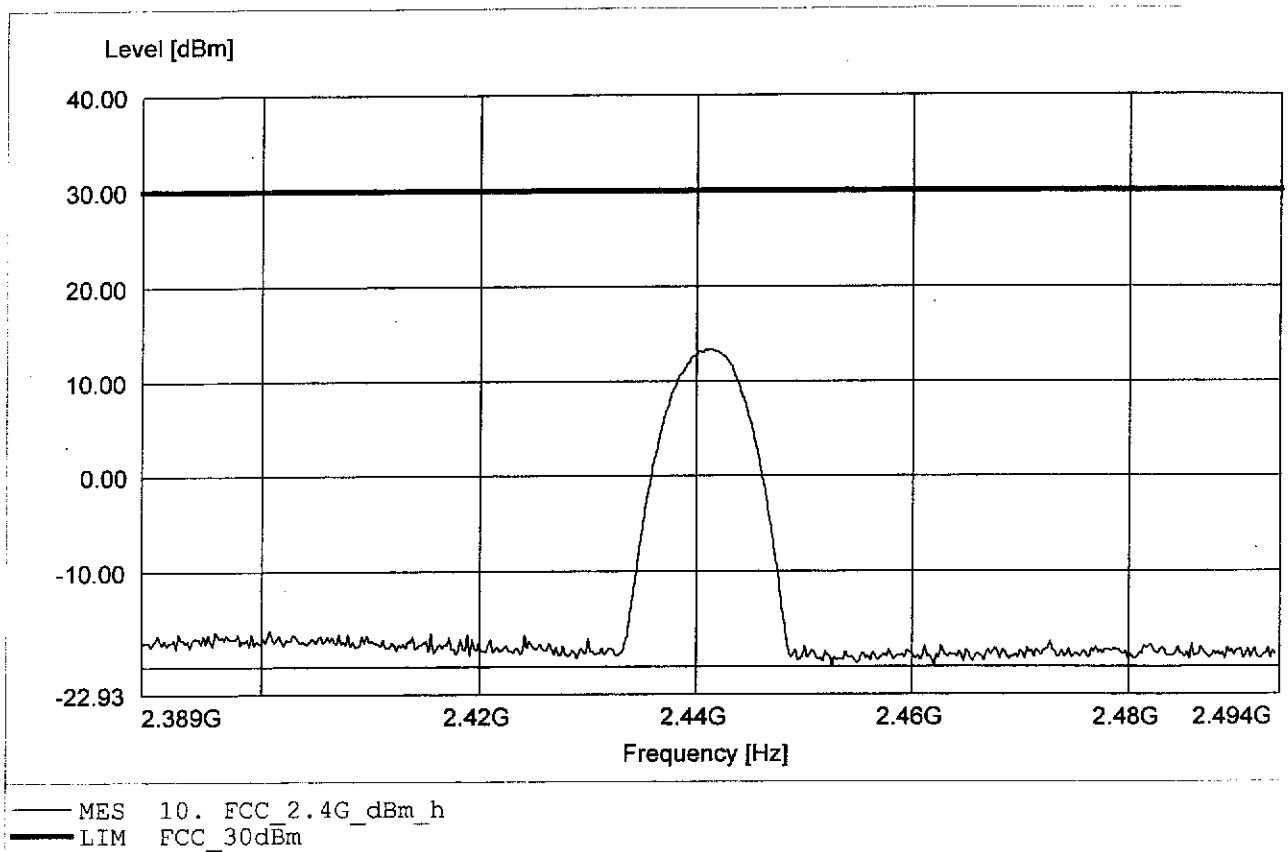
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 4.50dBm, RBW: 5MHz



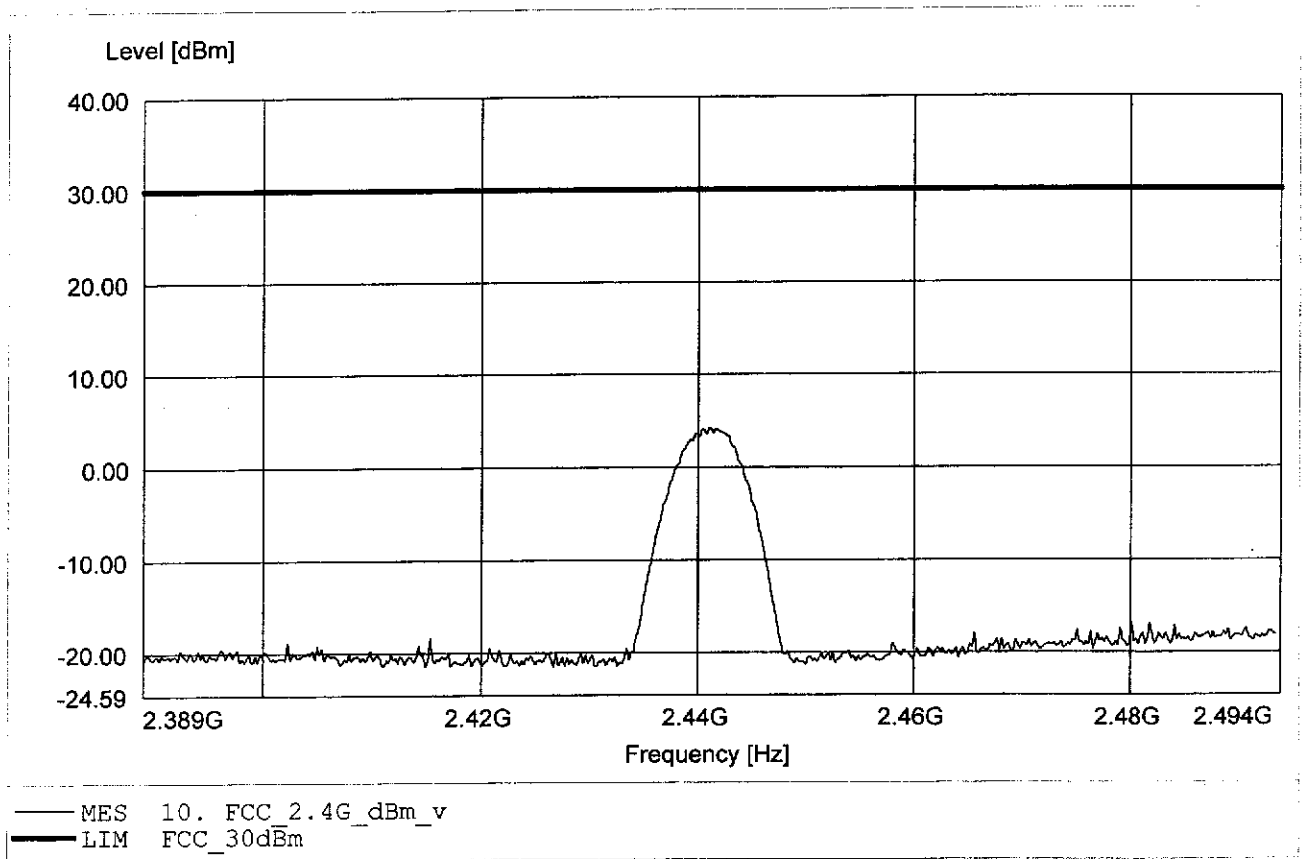
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 13.37dBm, RBW: 5MHz



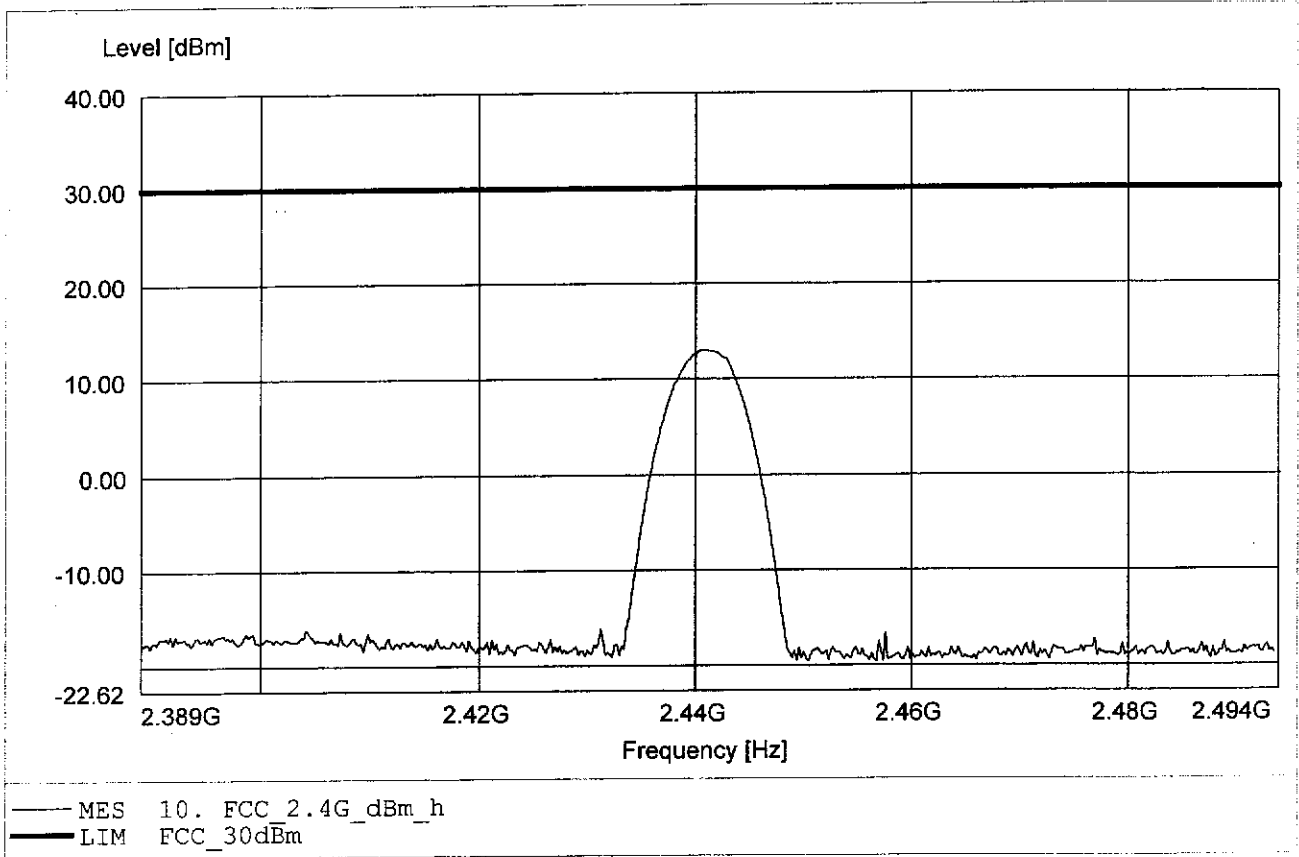
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT: Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umax: 5.2 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 4.20dBm, RBW: 5MHz



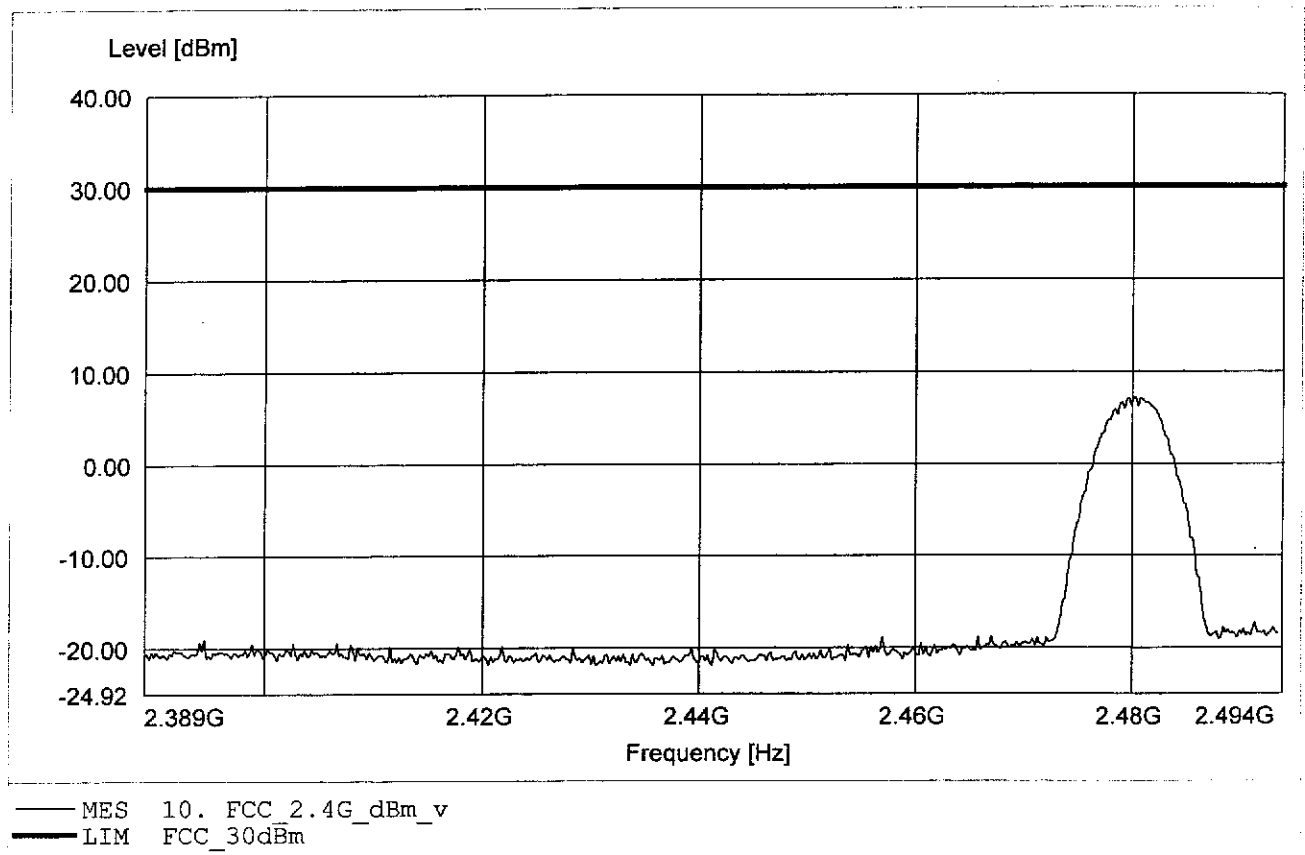
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umax: 5.2 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.441GHz, Pmax: 12.98dBm, RBW: 5MHz



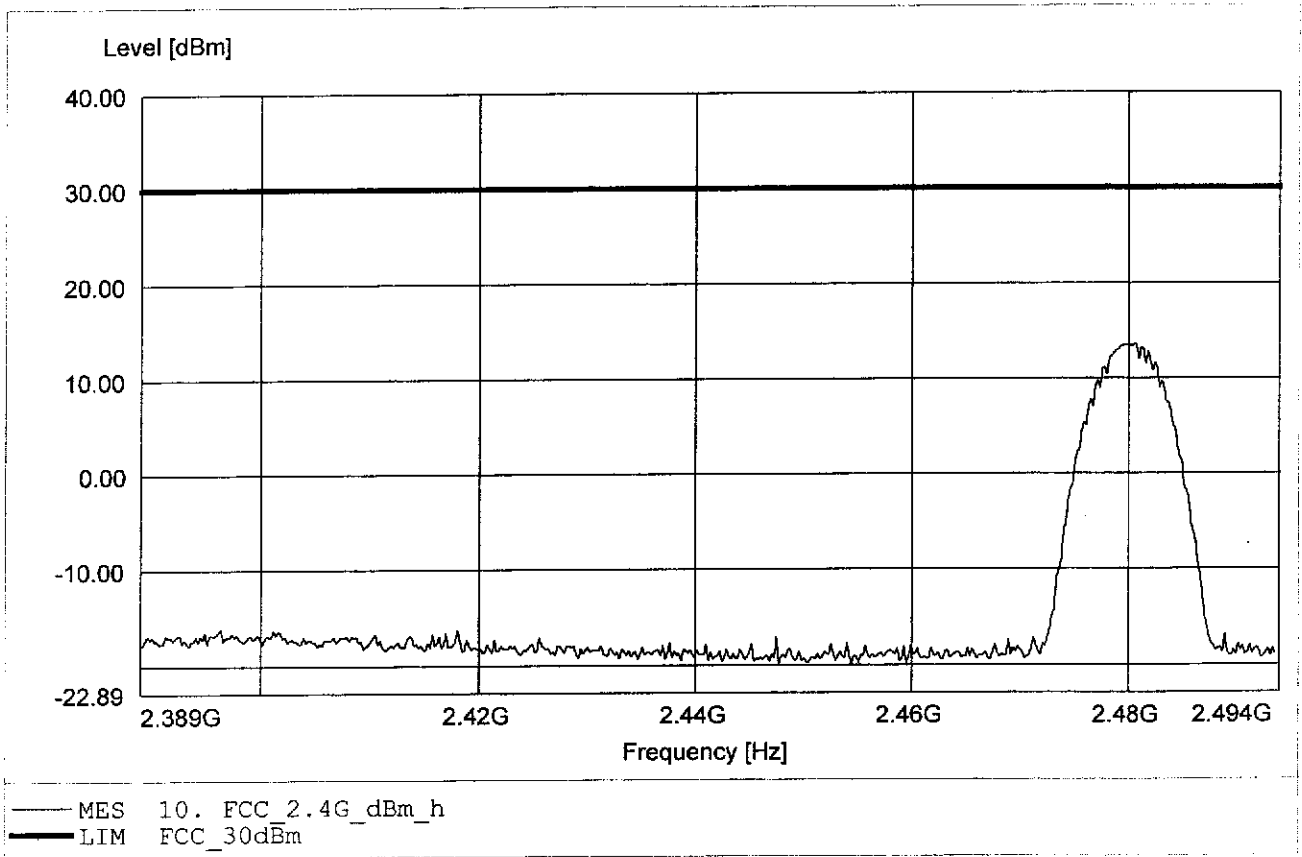
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.480GHz, Pmax: 7.20dBm, RBW: 5MHz



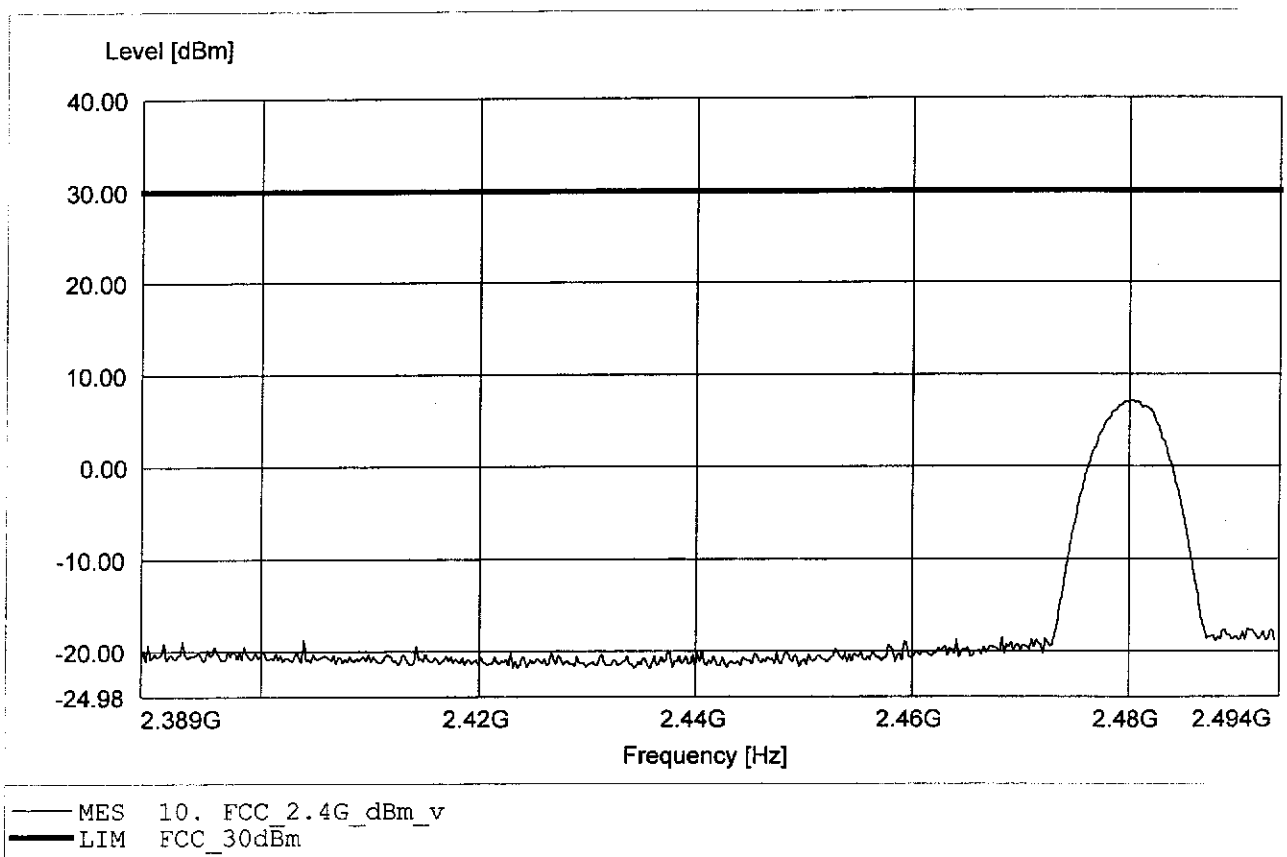
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.481GHz, Pmax: 13.56dBm, RBW: 5MHz



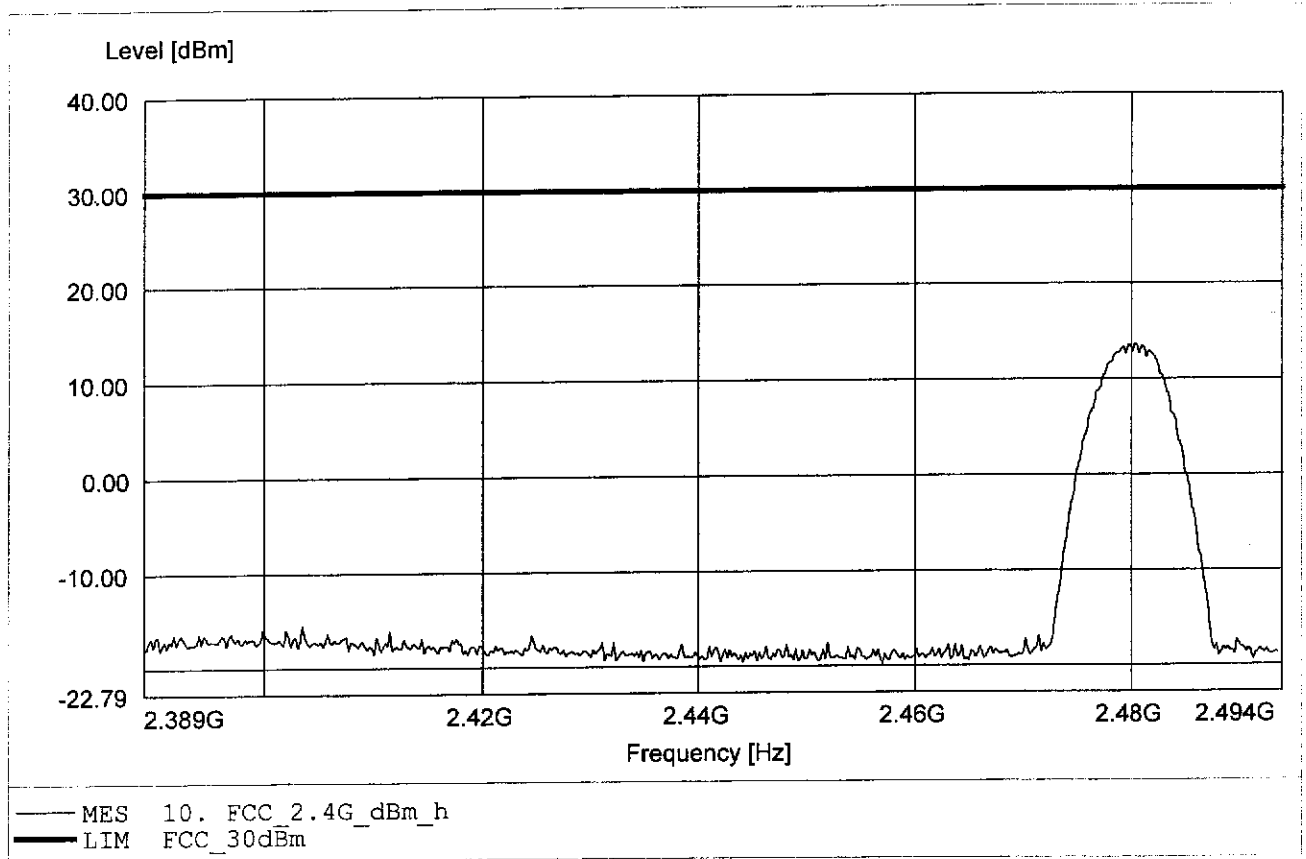
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.480GHz, Pmax: 7.14dBm, RBW: 5MHz



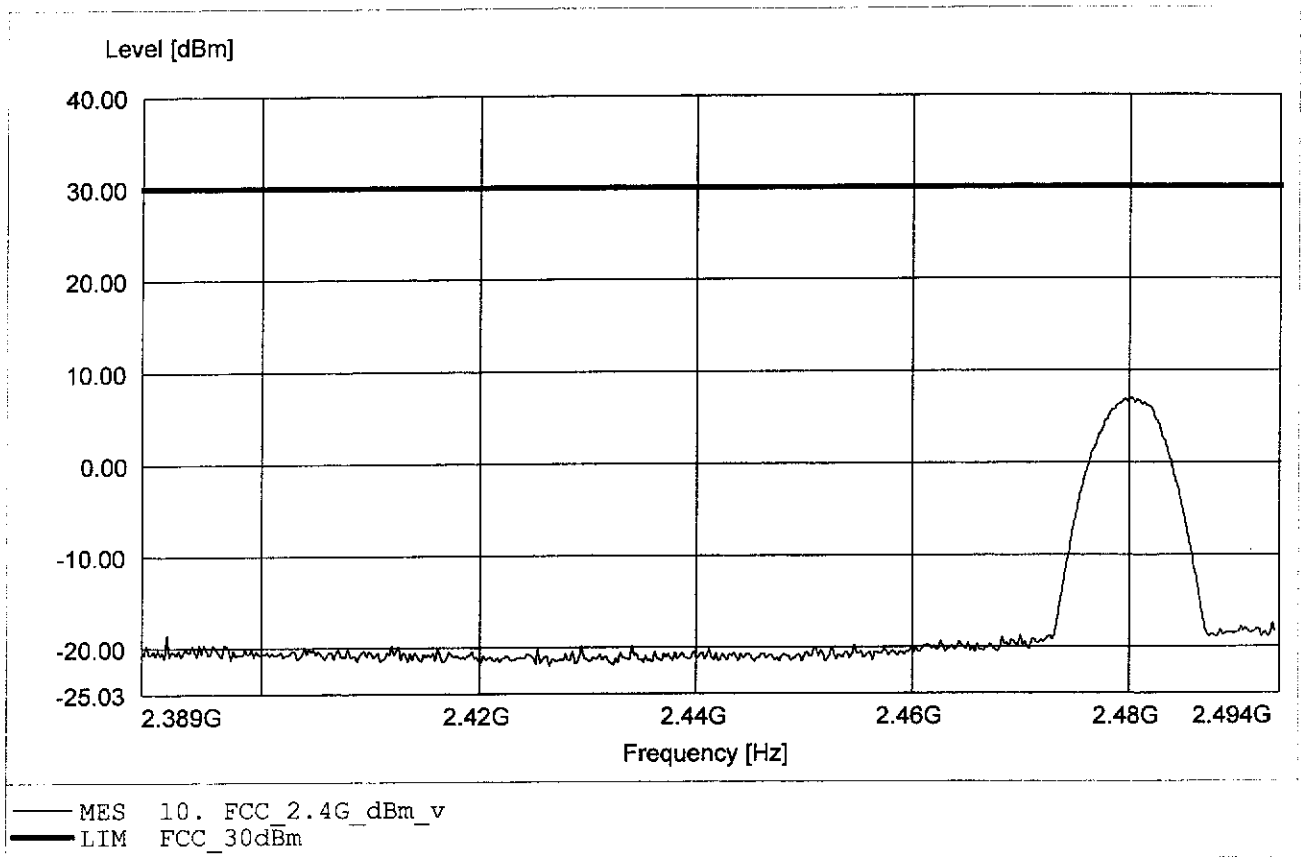
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umin: 3.6 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.480GHz, Pmax: 13.63dBm, RBW: 5MHz



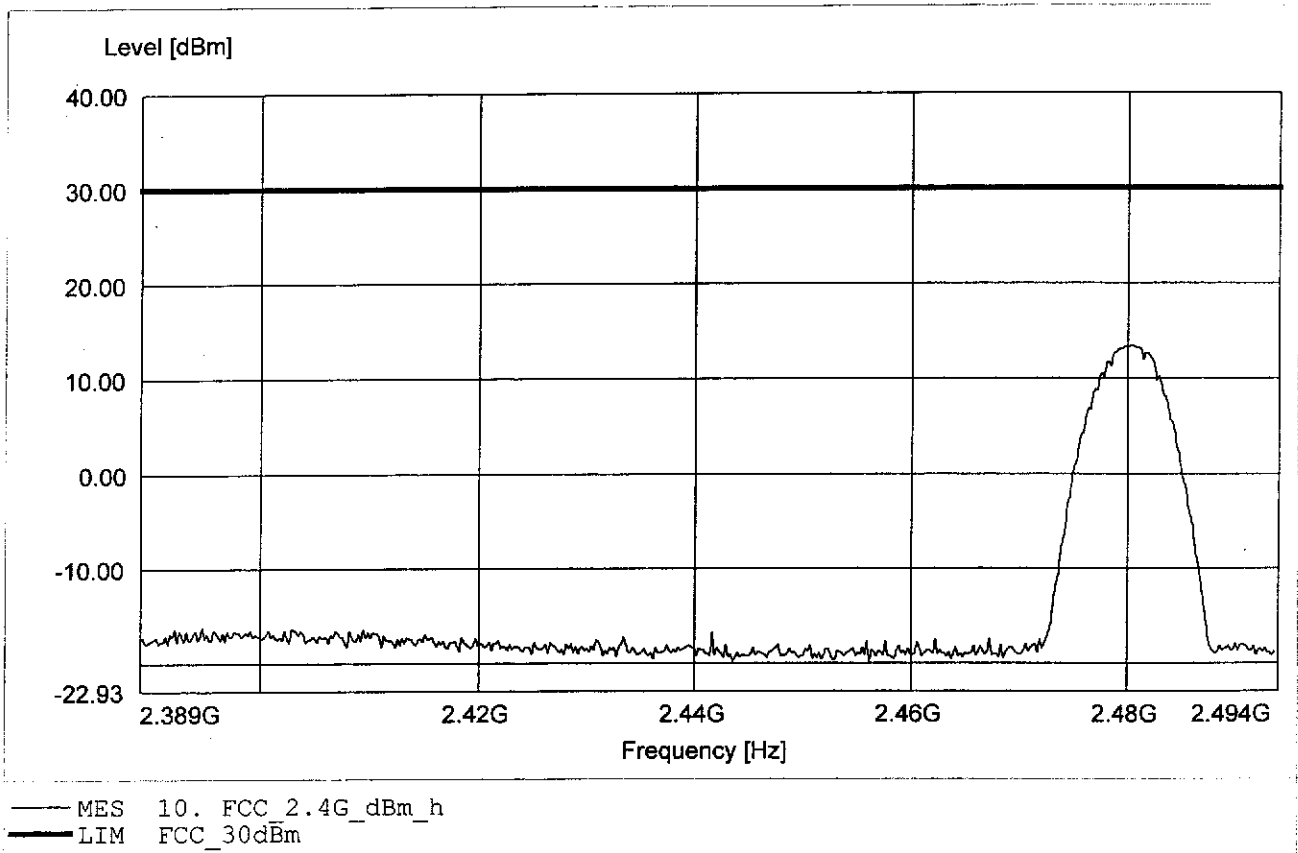
**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Umax: 5.2 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.480GHz, Pmax: 7.01dBm, RBW: 5MHz



**Carrier power (dBm)**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Thom:23°C / Umax: 5.2 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.480GHz, Pmax: 13.39dBm, RBW: 5MHz

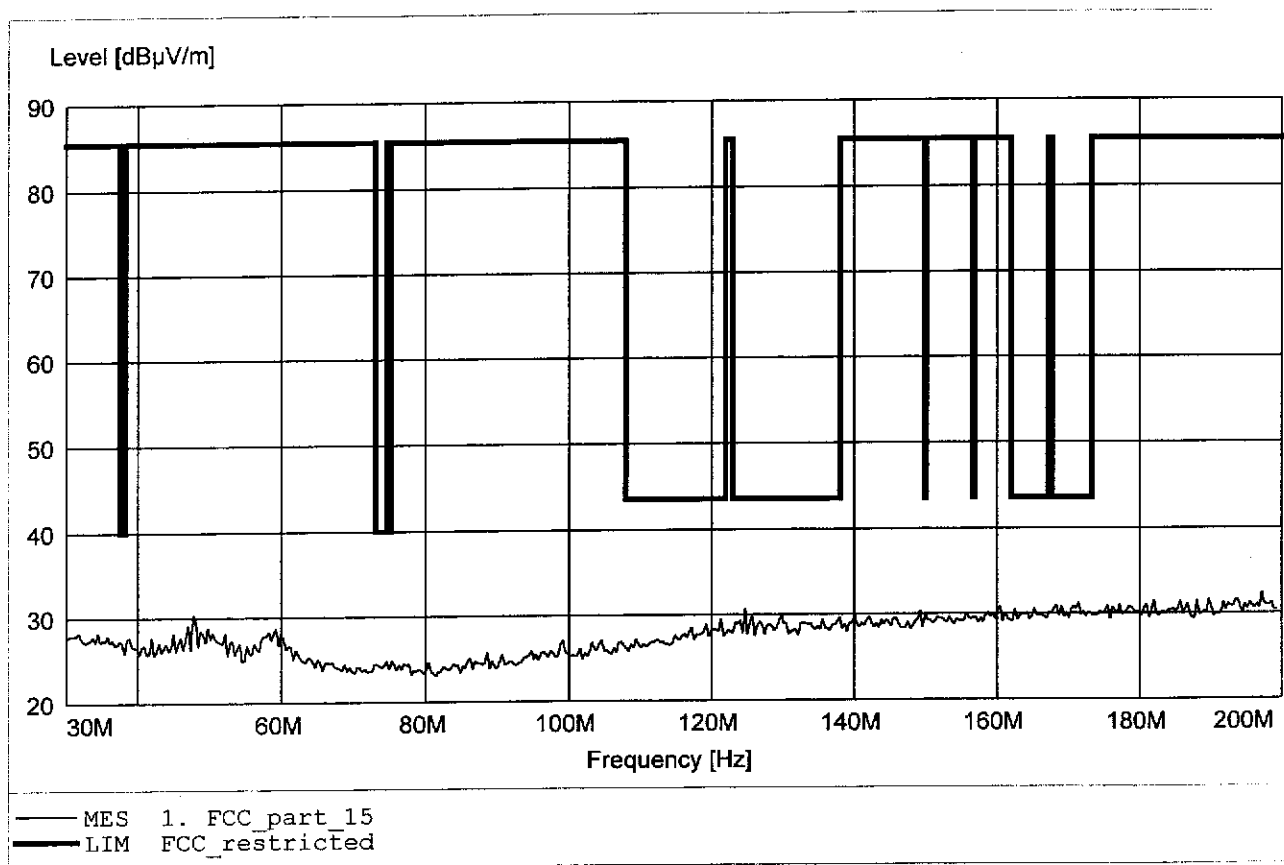


## **Appendix C**

Spurious Emissions radiated - Transmitter operating

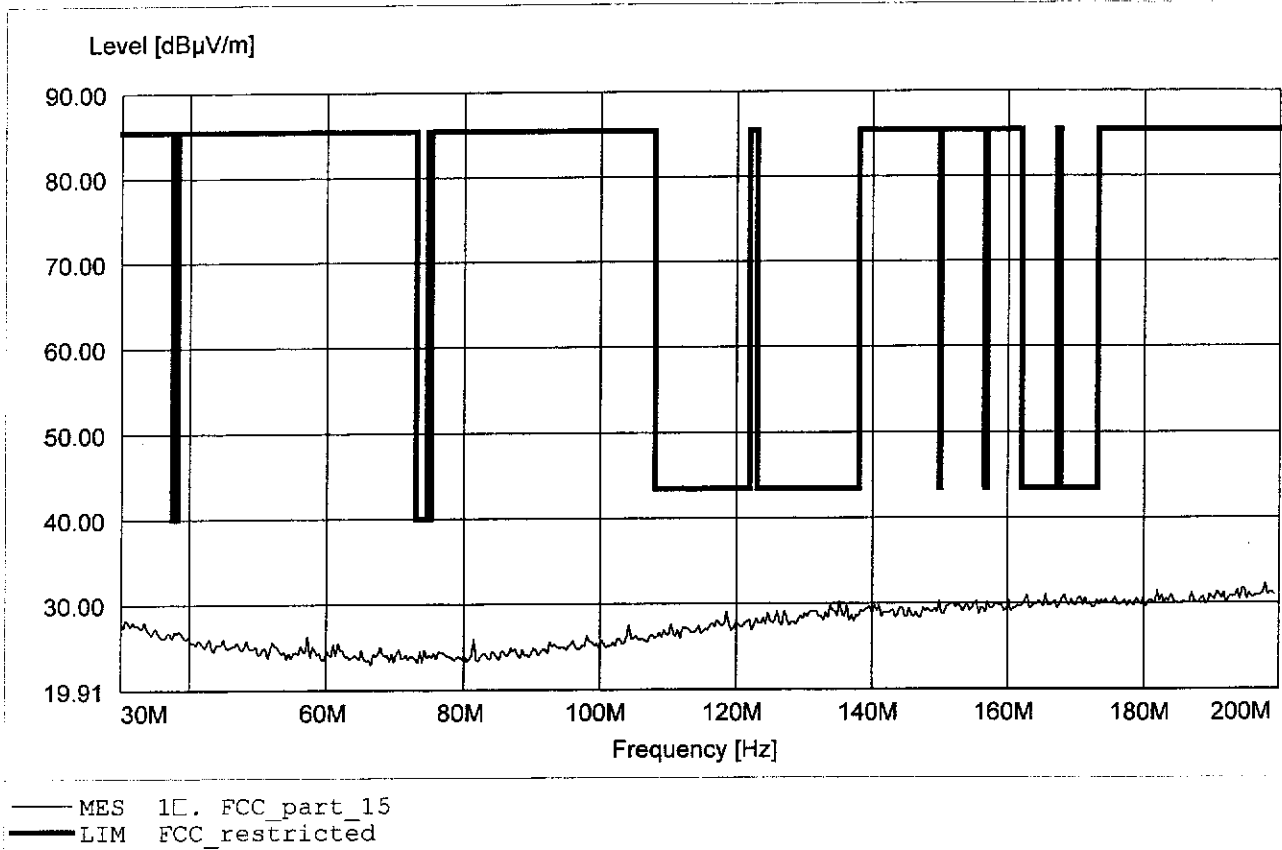
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 197.275MHz, Emax: 32.41dBμV/m, RBW: 100kHz



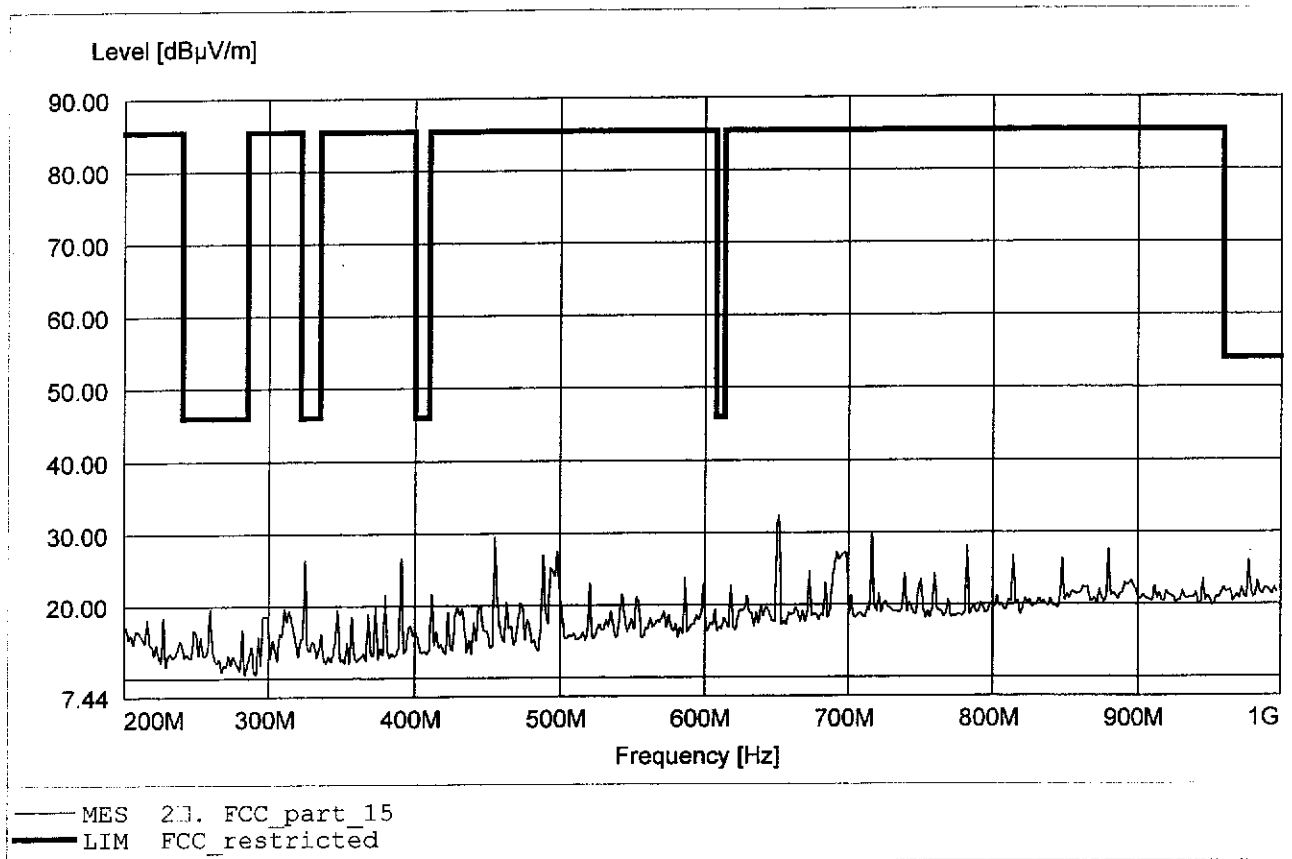
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 197.956MHz, Emax: 32.34dBµV/m, RBW: 100kHz



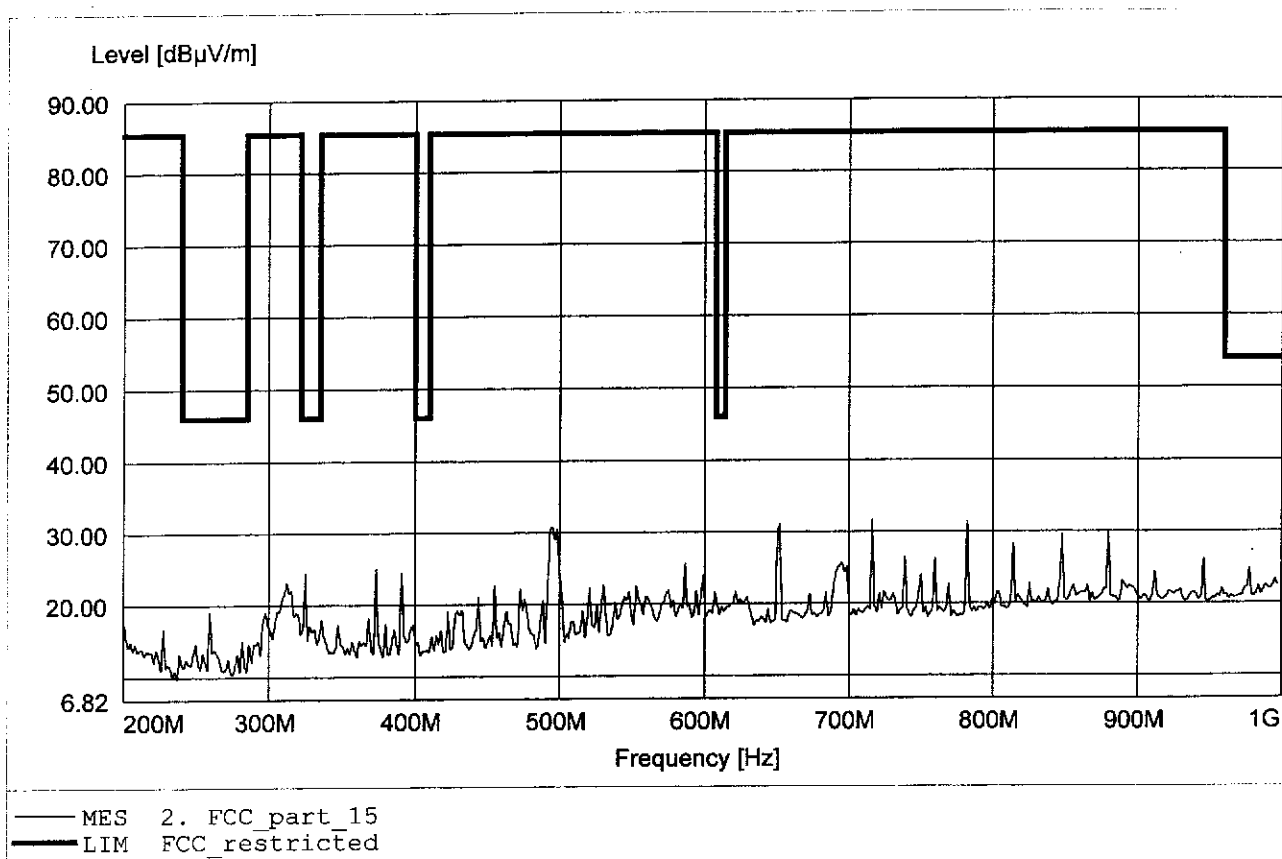
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 652.104MHz, Emax: 32.39dBµV/m, RBW: 100kHz



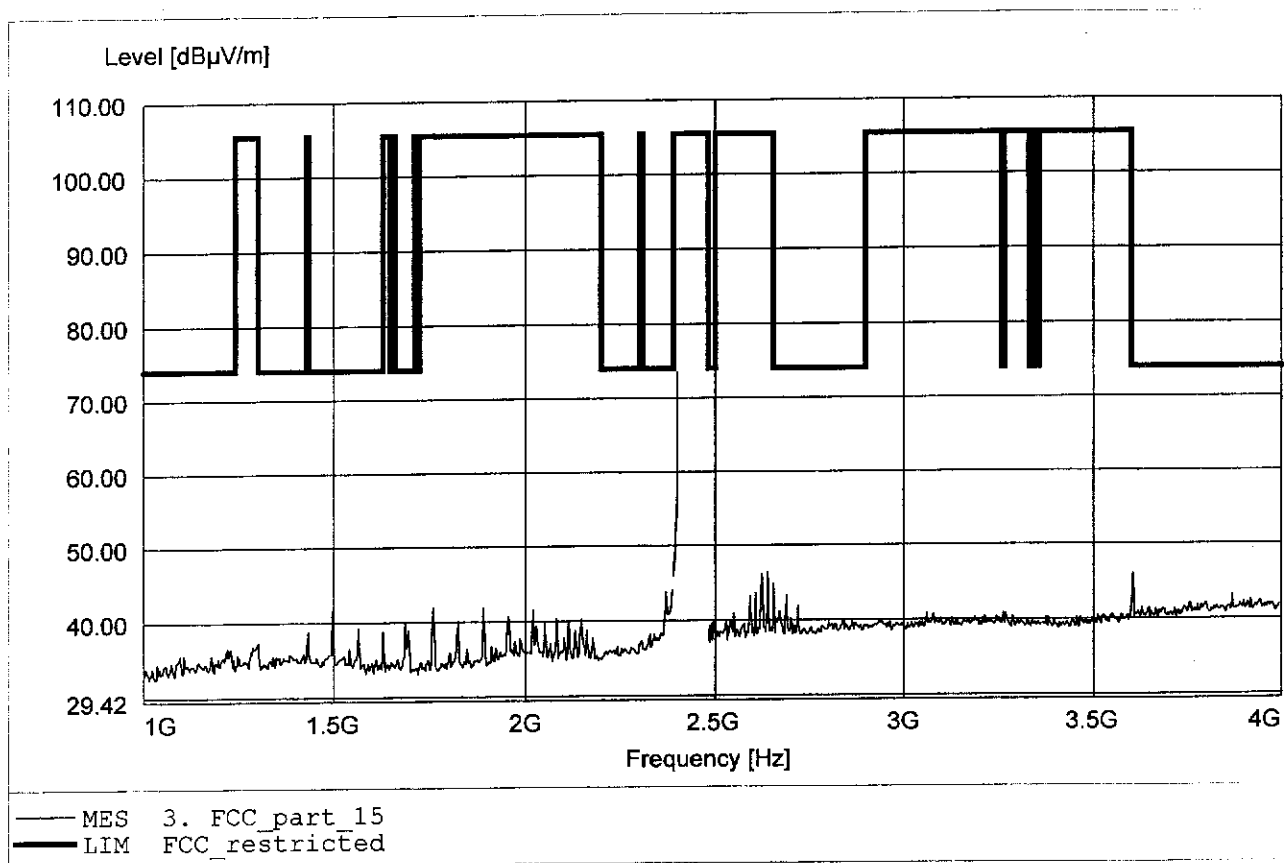
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 716.232MHz, Emax: 31.66dBuV/m, RBW: 100kHz



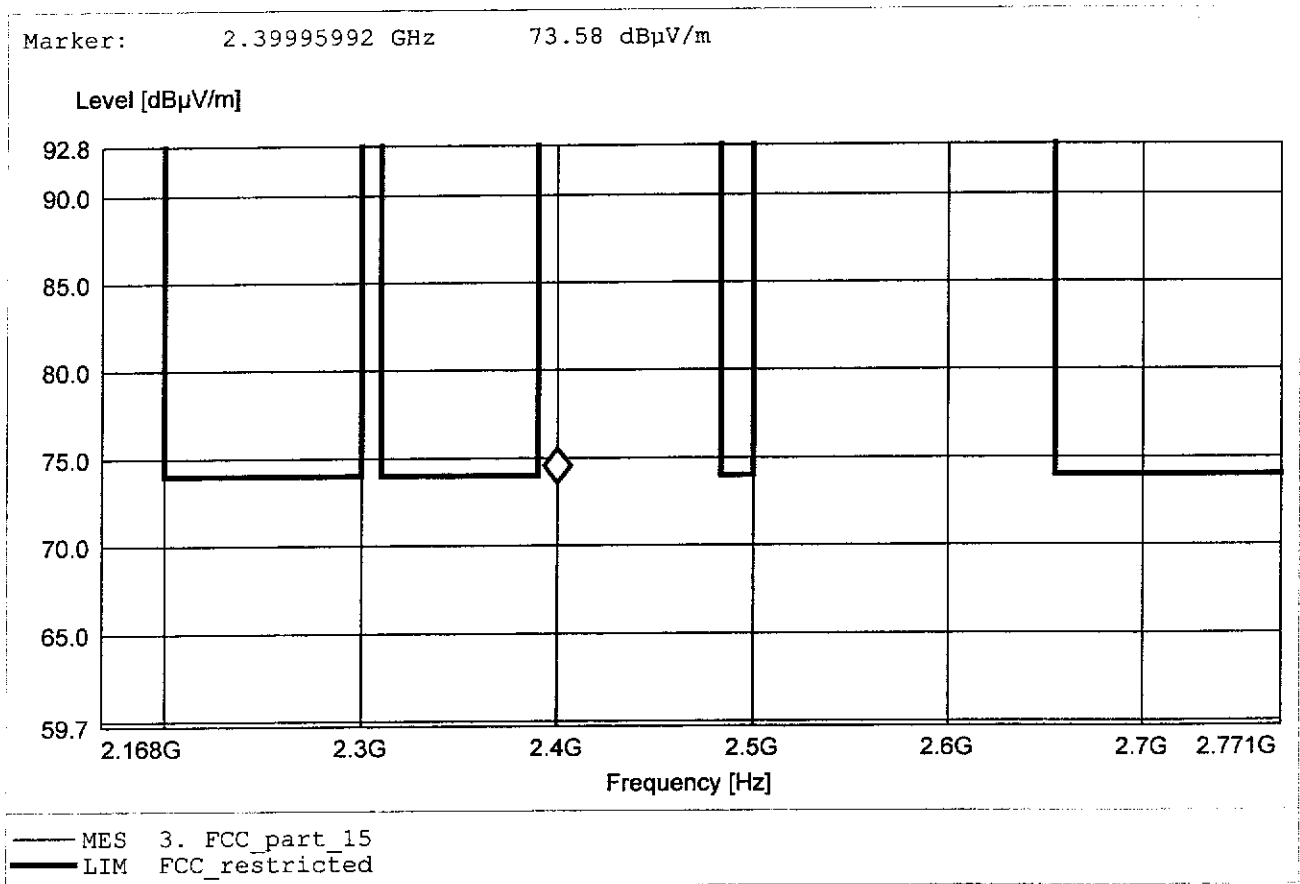
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 73.58dBuV/m, RBW: 1MHz



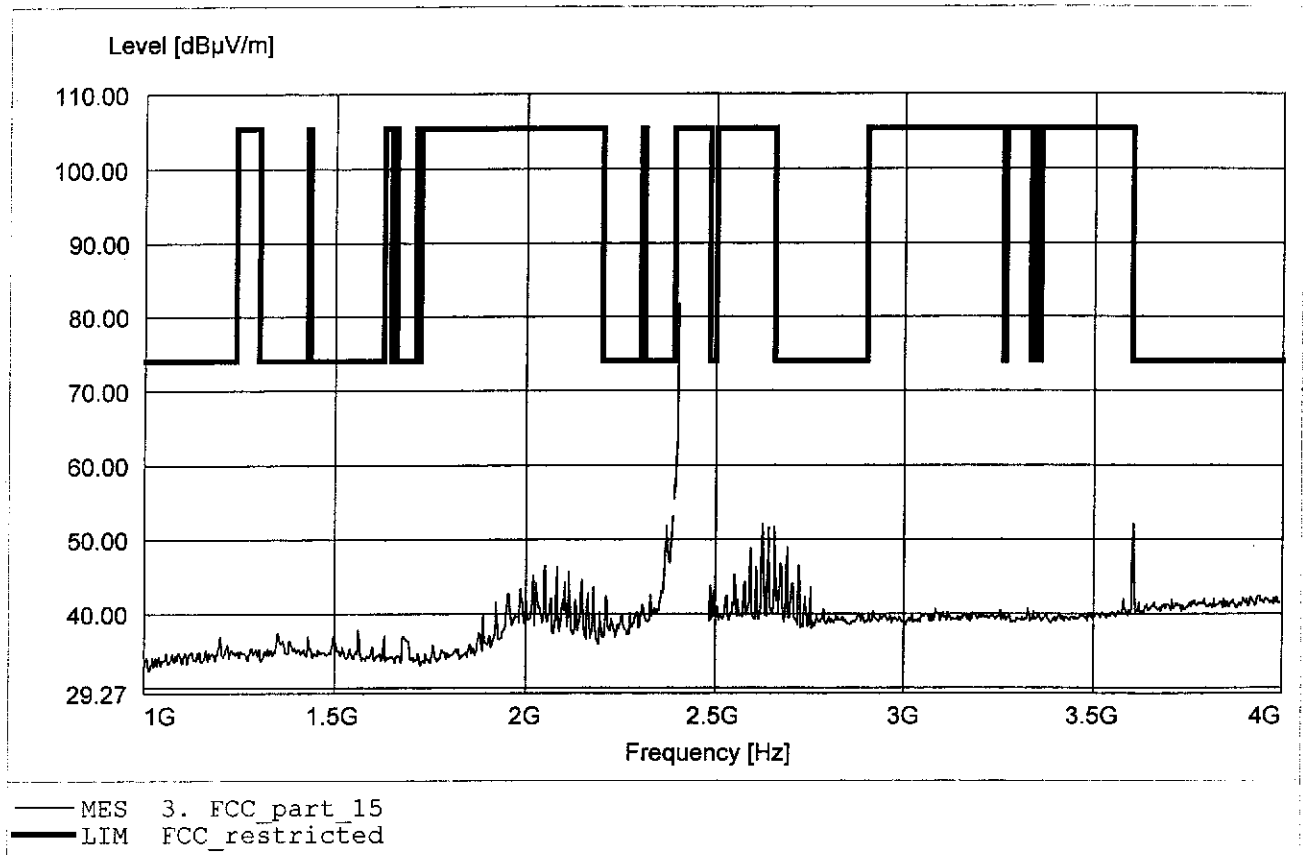
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 73.58dBμV/m, RBW: 1MHz



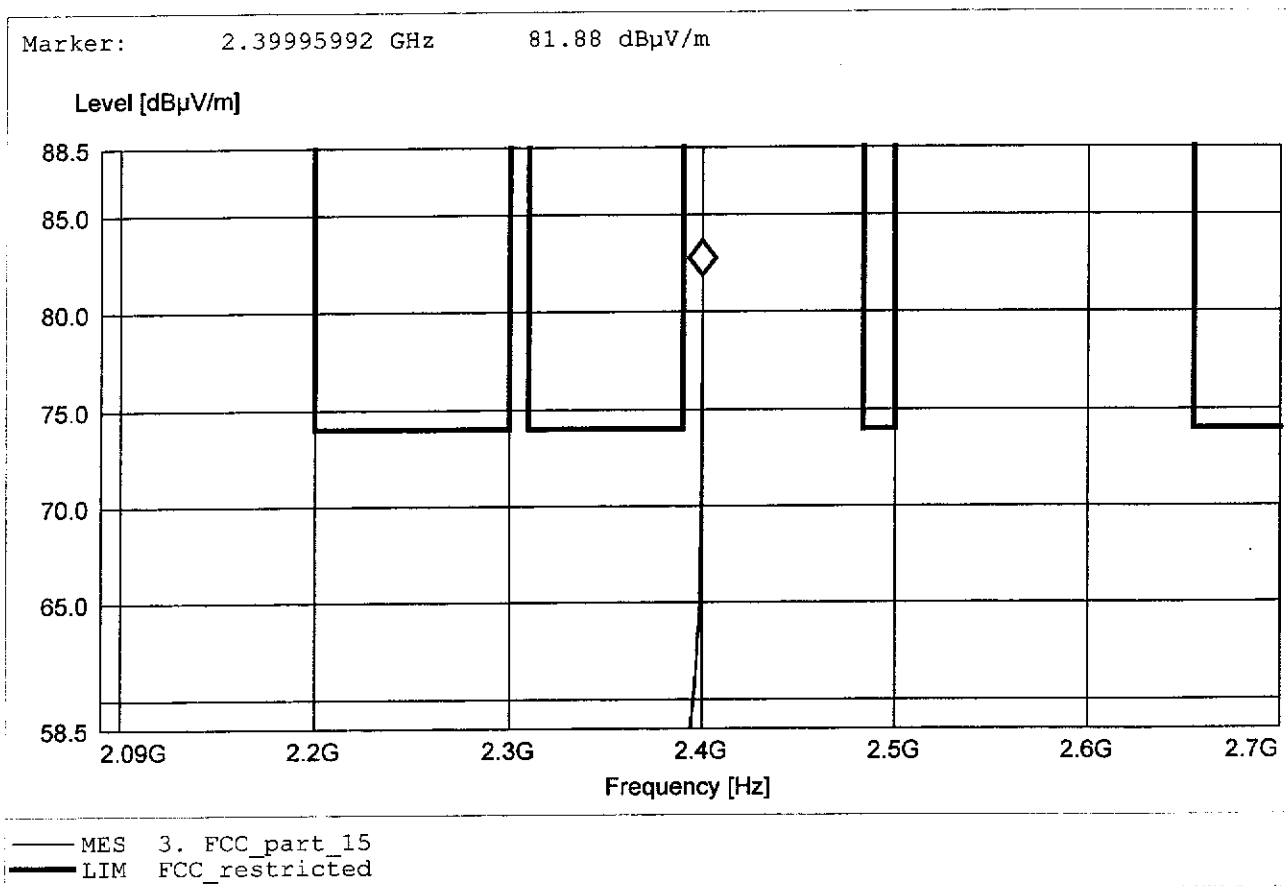
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 81.88dBuV/m, RBW: 1MHz



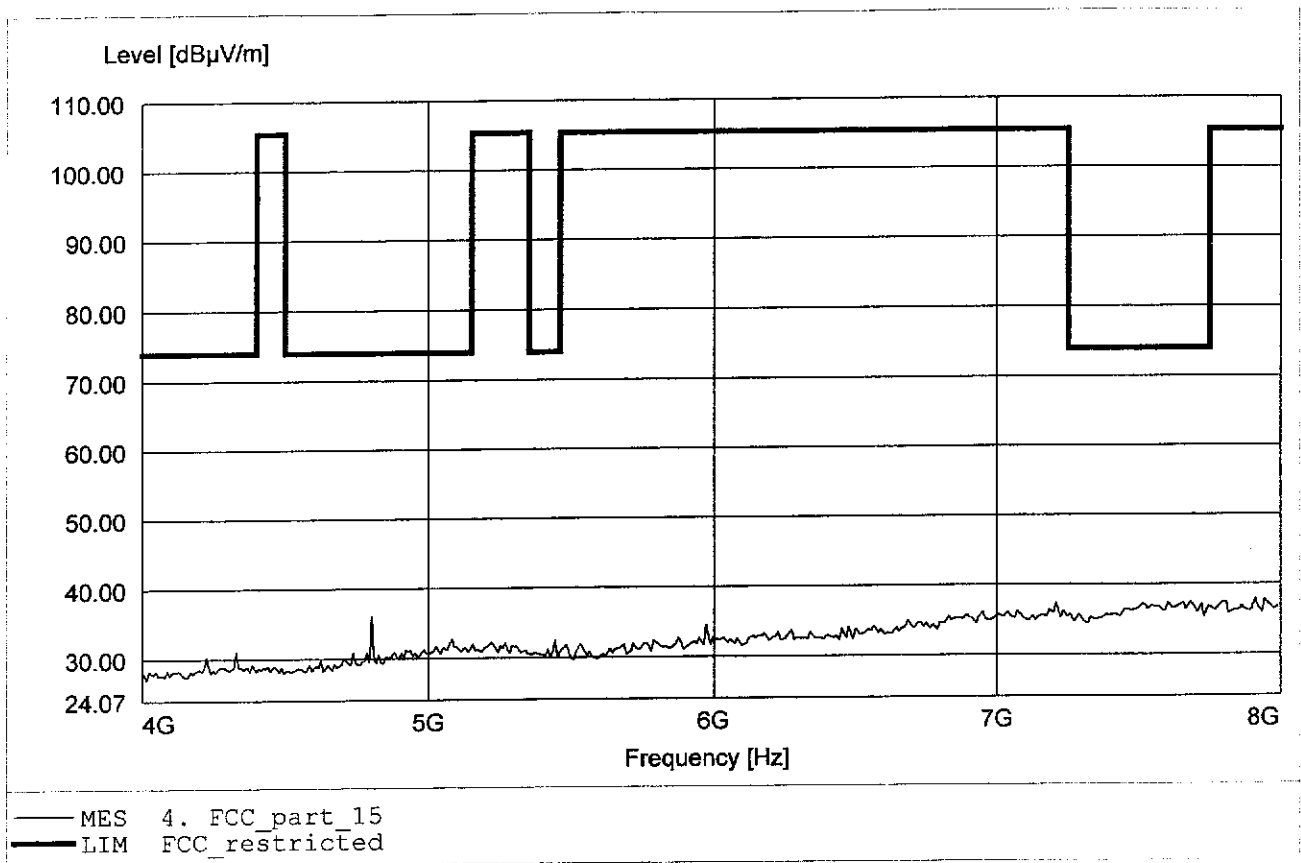
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 81.88dBµV/m, RBW: 1MHz



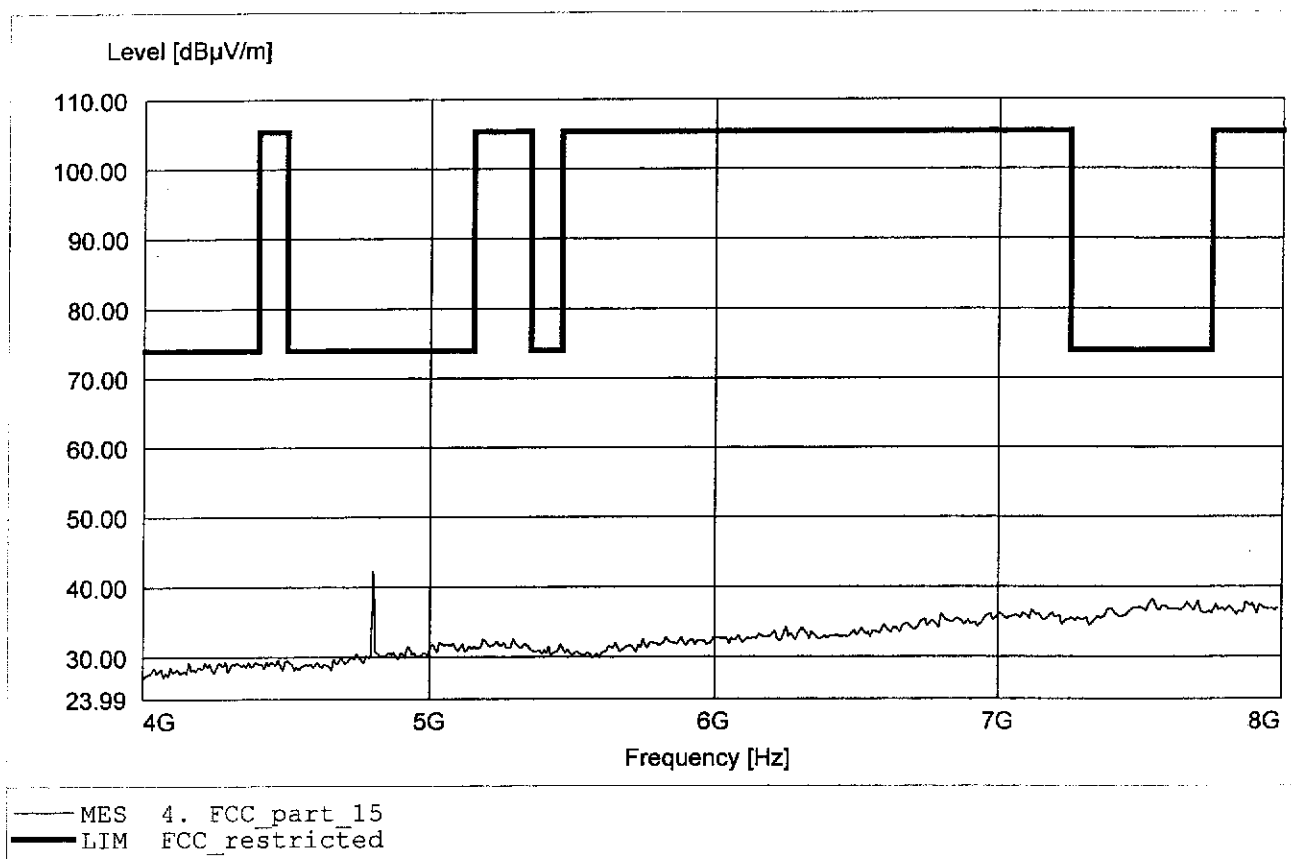
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 7.912GHz, Emax: 37.83dBµV/m, RBW: 1MHz



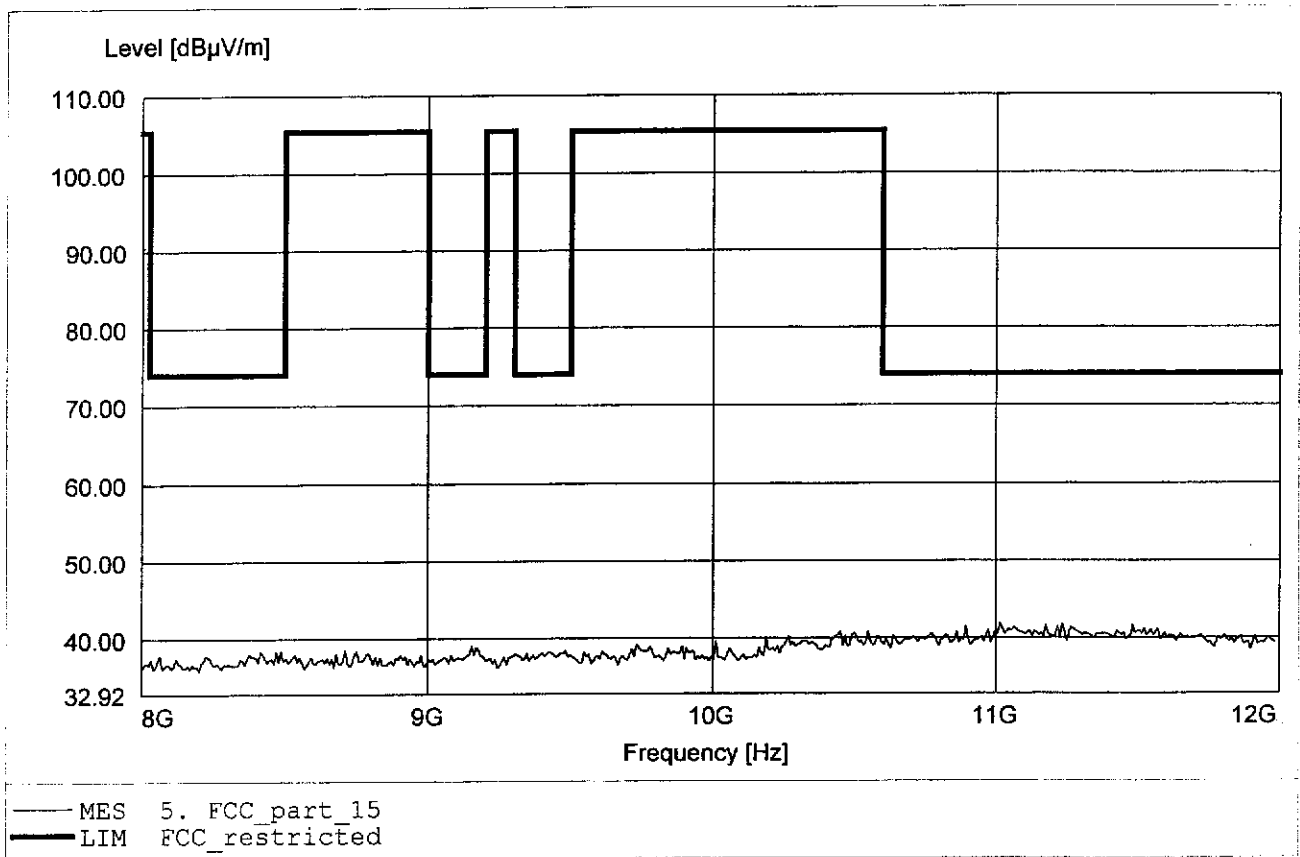
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 4.802GHz, Emax: 42.29dBuV/m, RBW: 1MHz



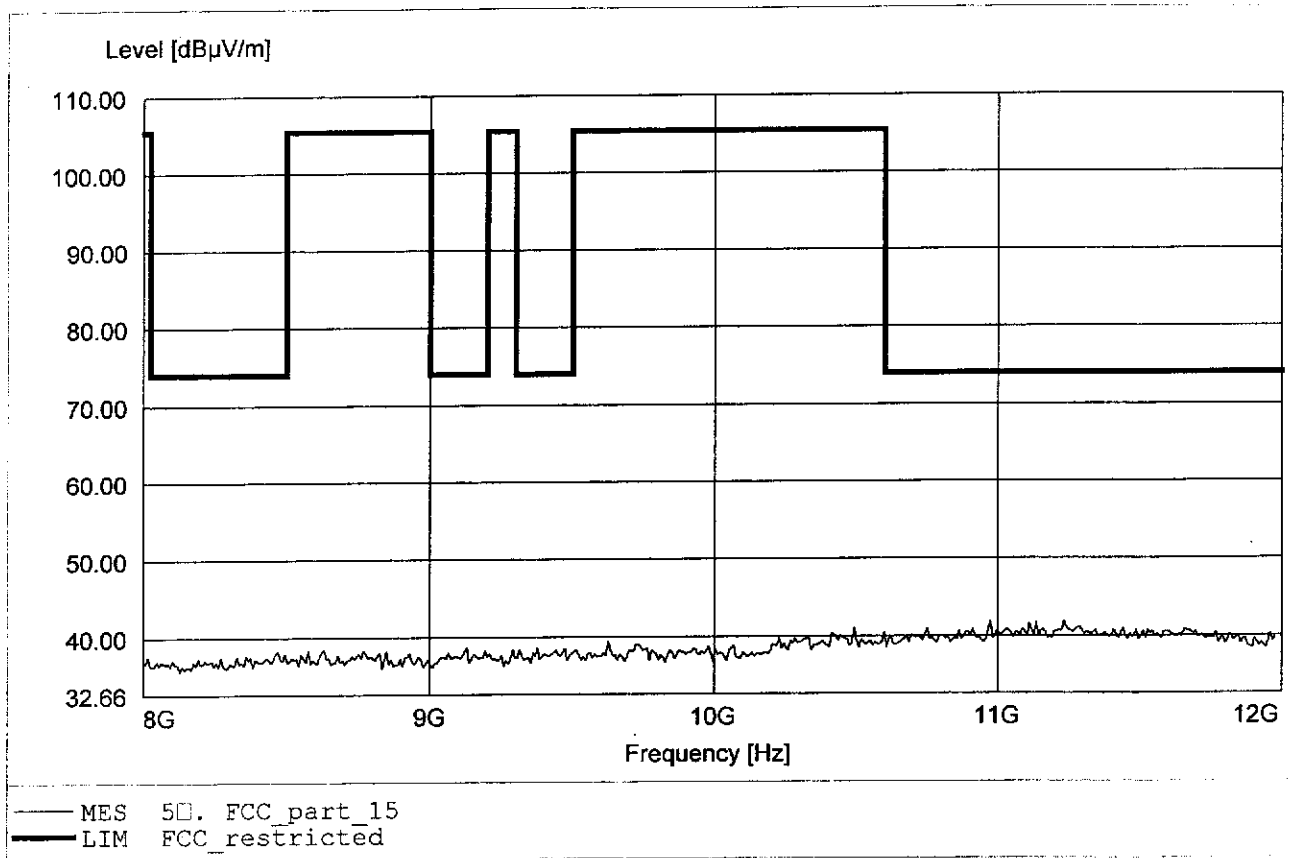
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 11.014GHz, Emax: 41.90dBμV/m, RBW: 1MHz



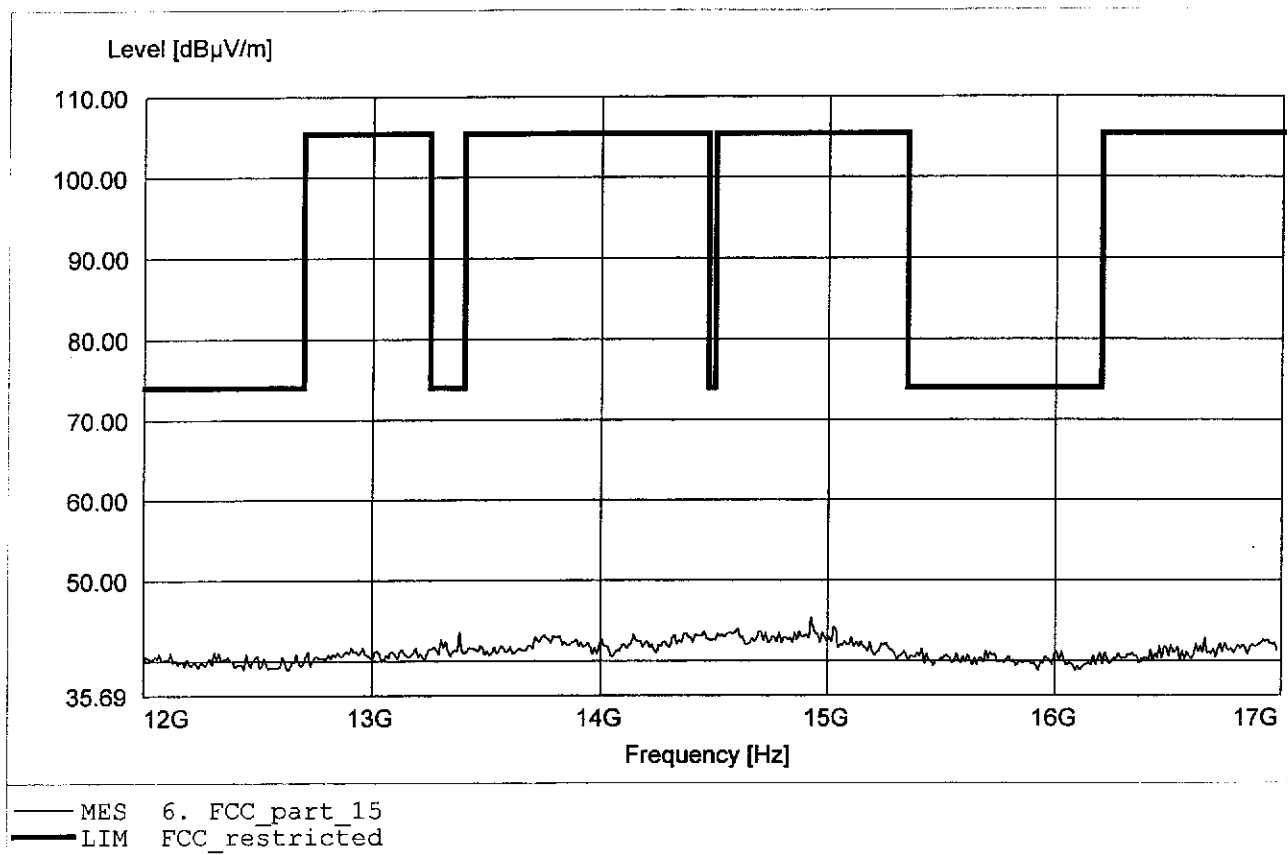
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 10.974GHz, Emax: 41.86dBµV/m, RBW: 1MHz



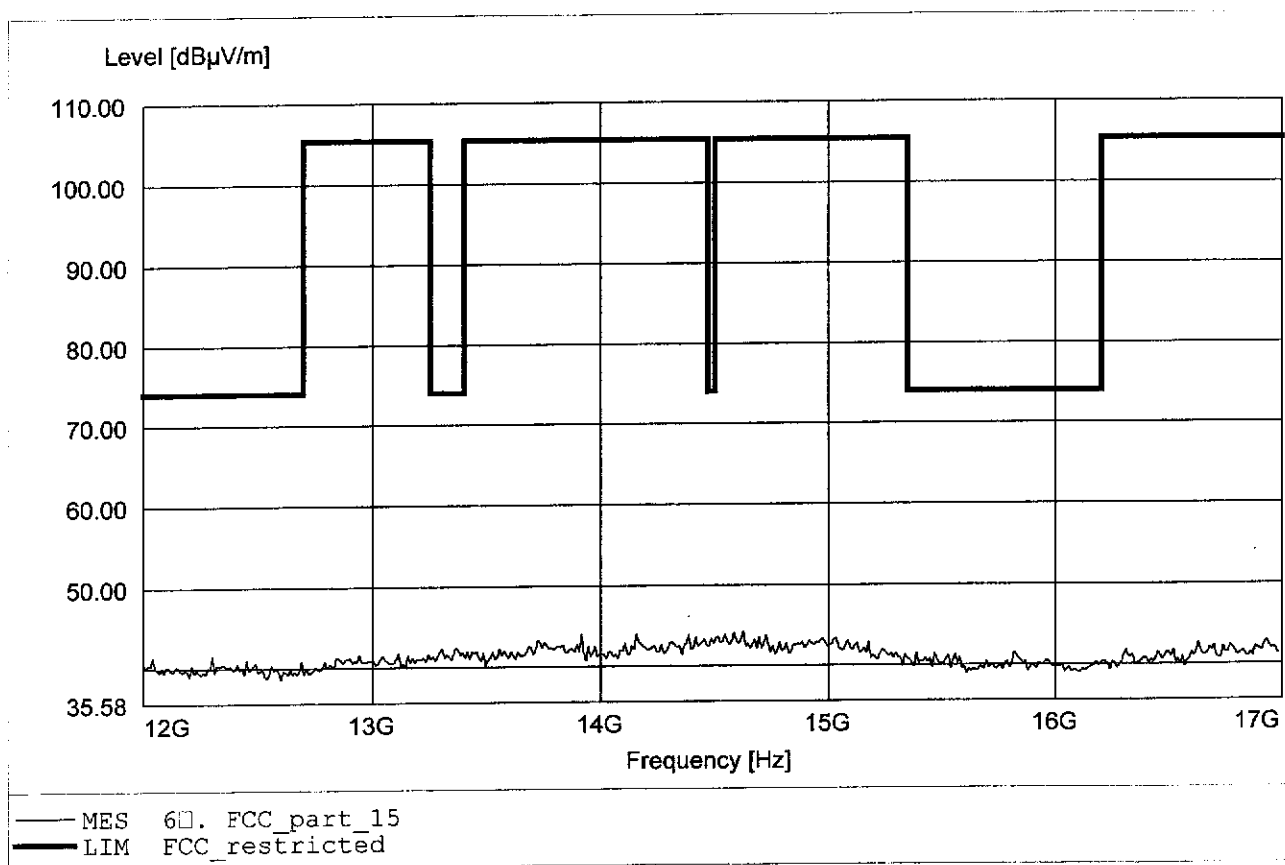
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 14.926GHz, Emax: 45.41dBuV/m, RBW: 1MHz



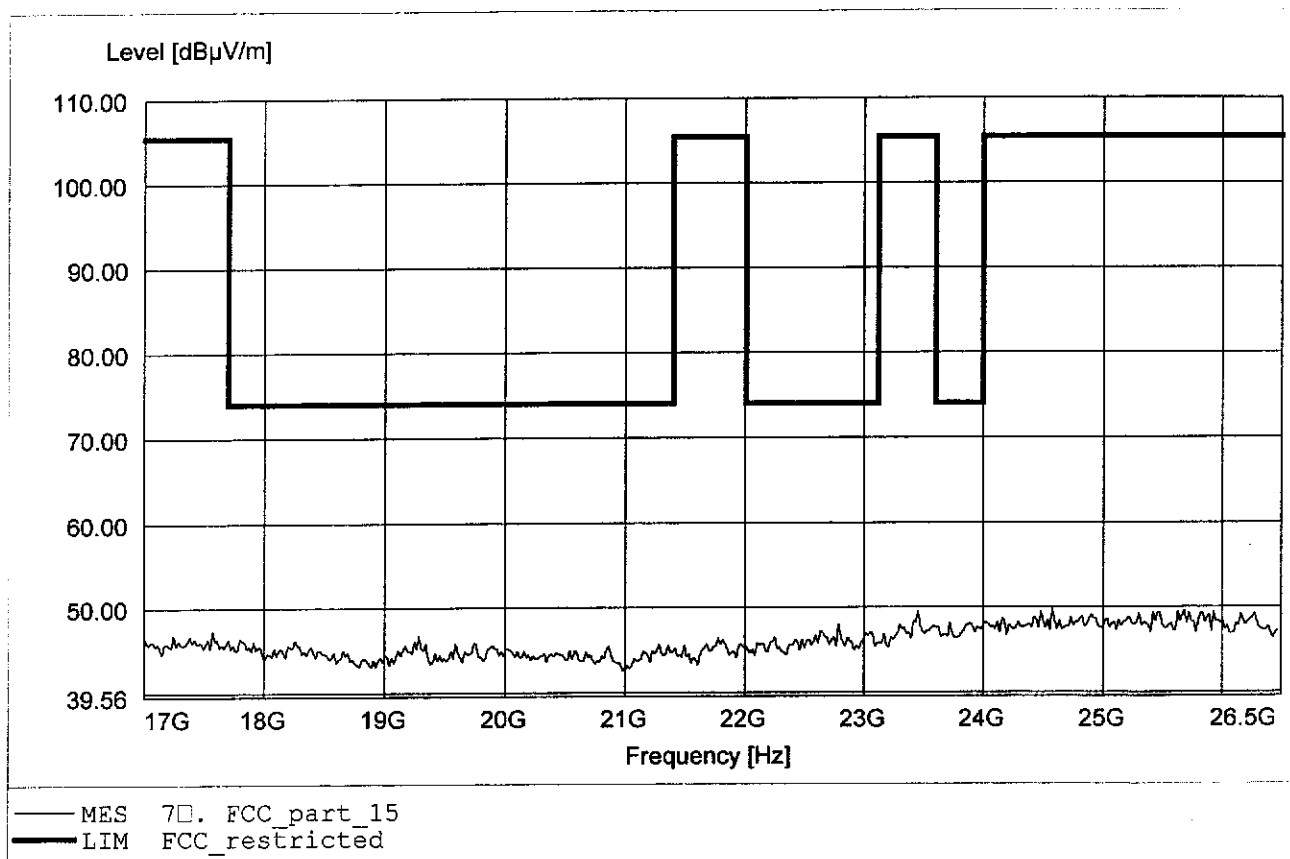
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 14.625GHz, Emax: 44.26dBμV/m, RBW: 1MHz



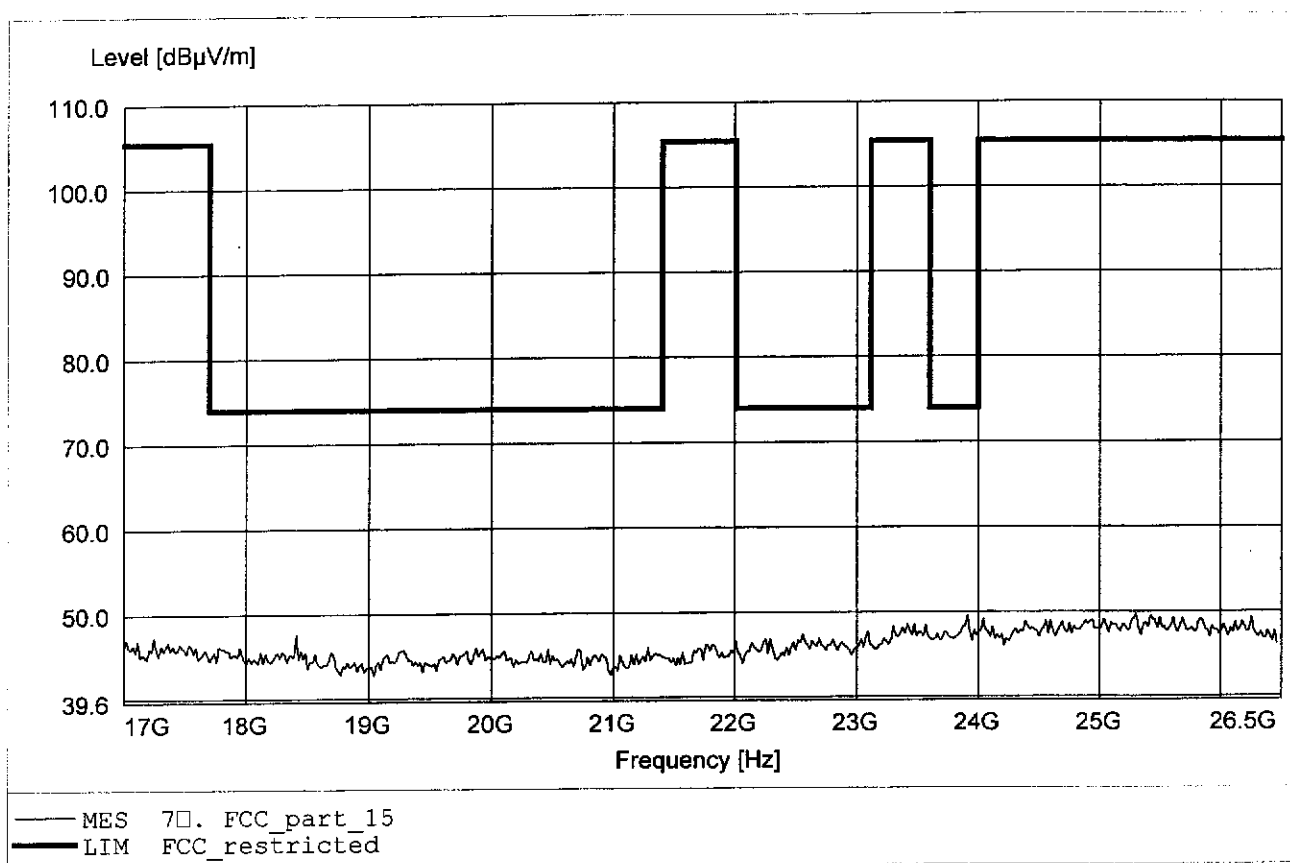
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 24.577GHz, Emax: 49.95dBμV/m, RBW: 1MHz



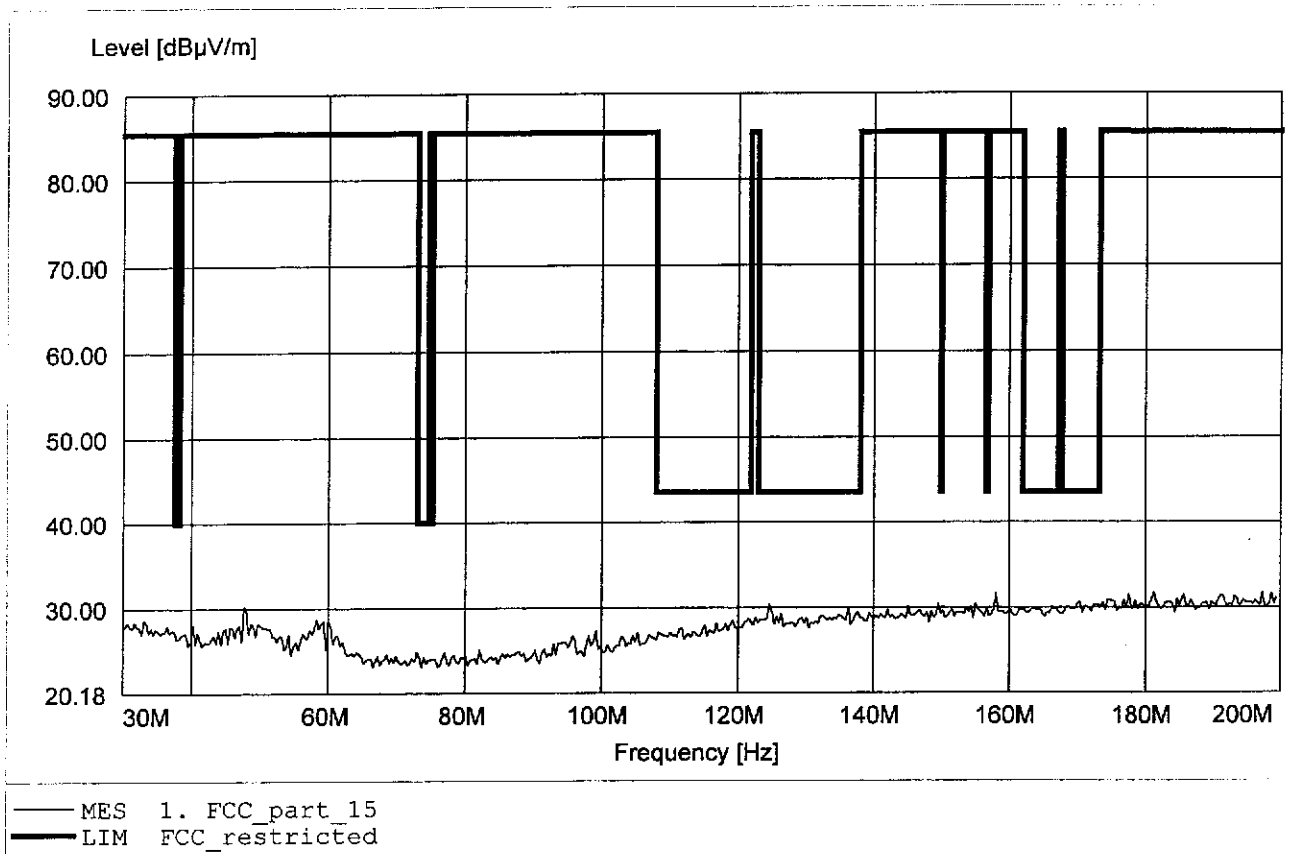
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**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2402MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 25.301GHz, Emax: 49.70dBμV/m, RBW: 1MHz



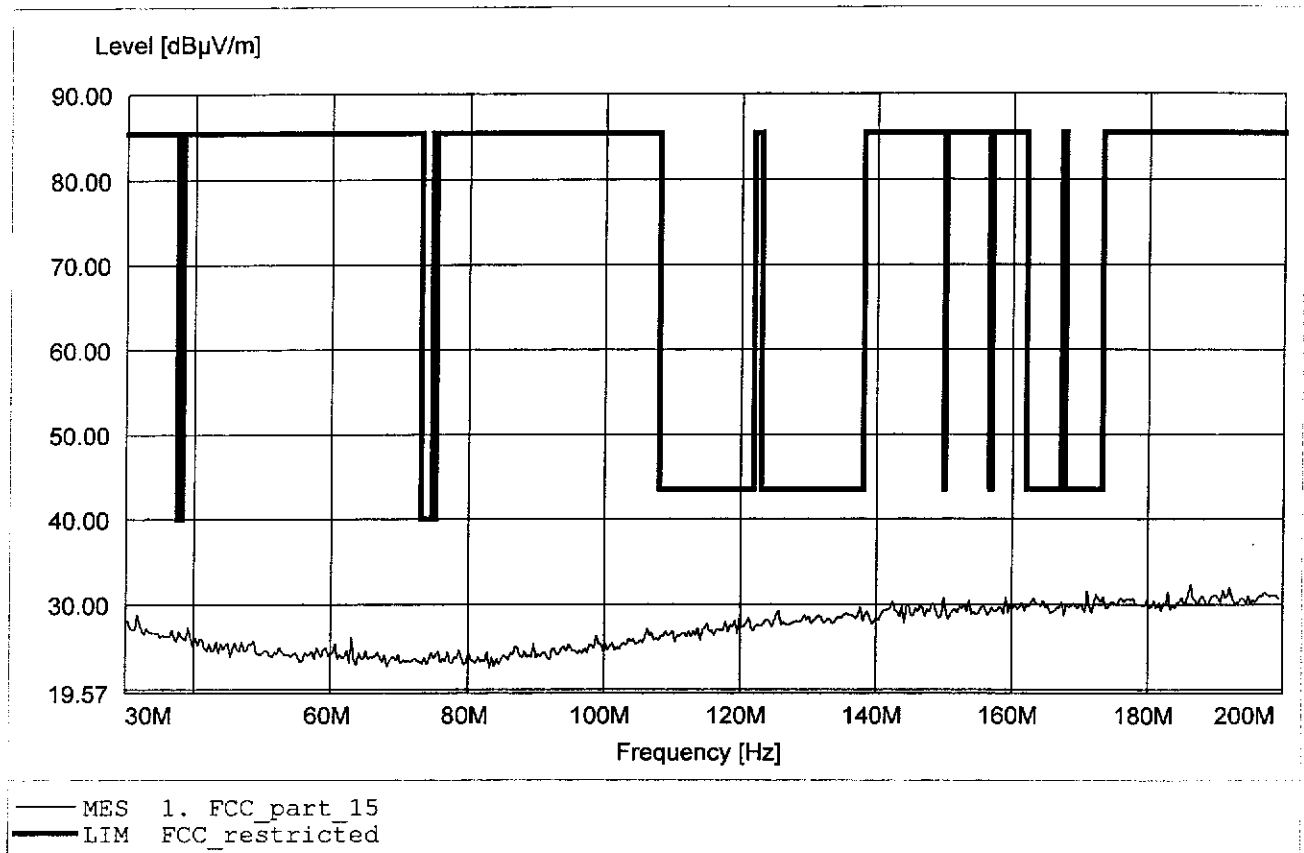
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 181.263MHz, Emax: 31.77dBµV/m, RBW: 100kHz



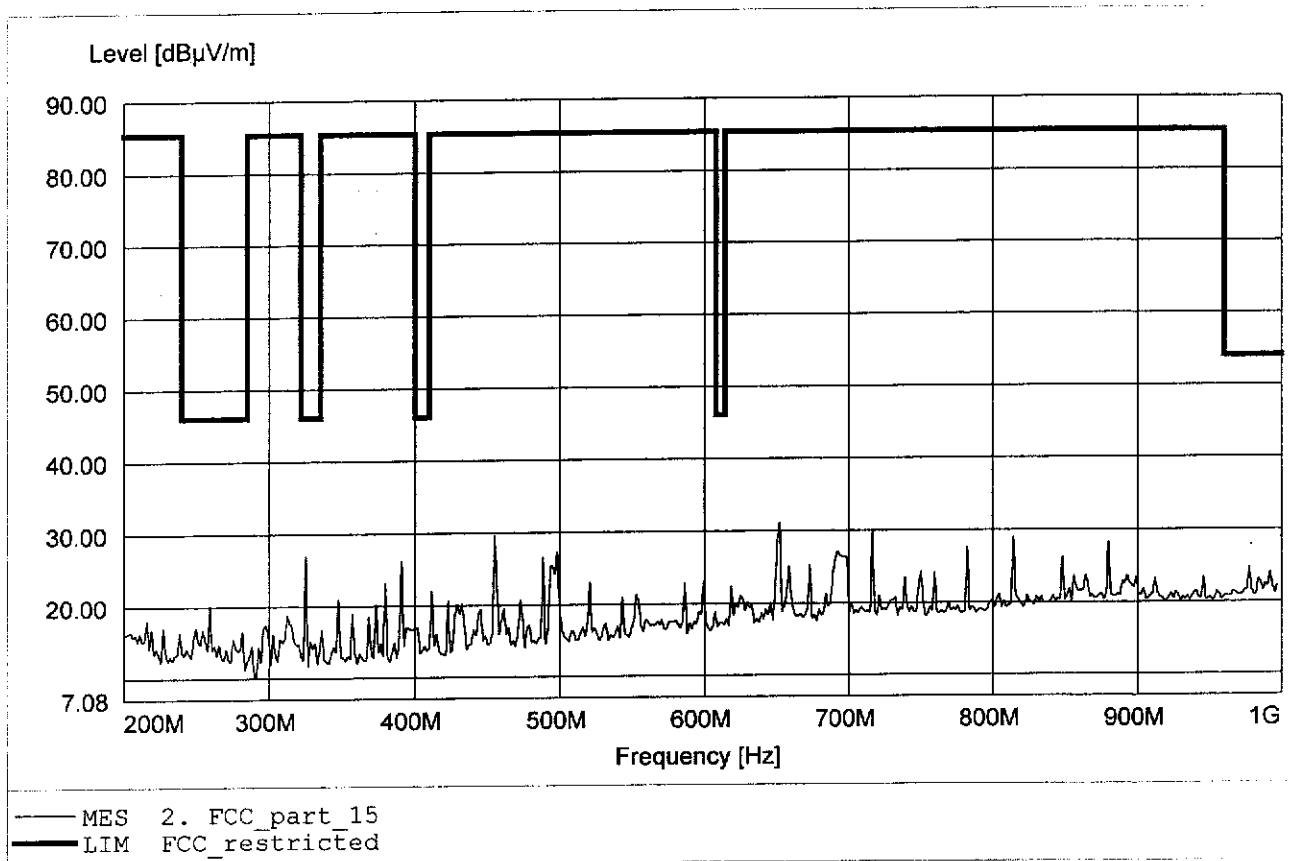
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EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 186.373MHz, Emax: 32.38dBµV/m, RBW: 100kHz



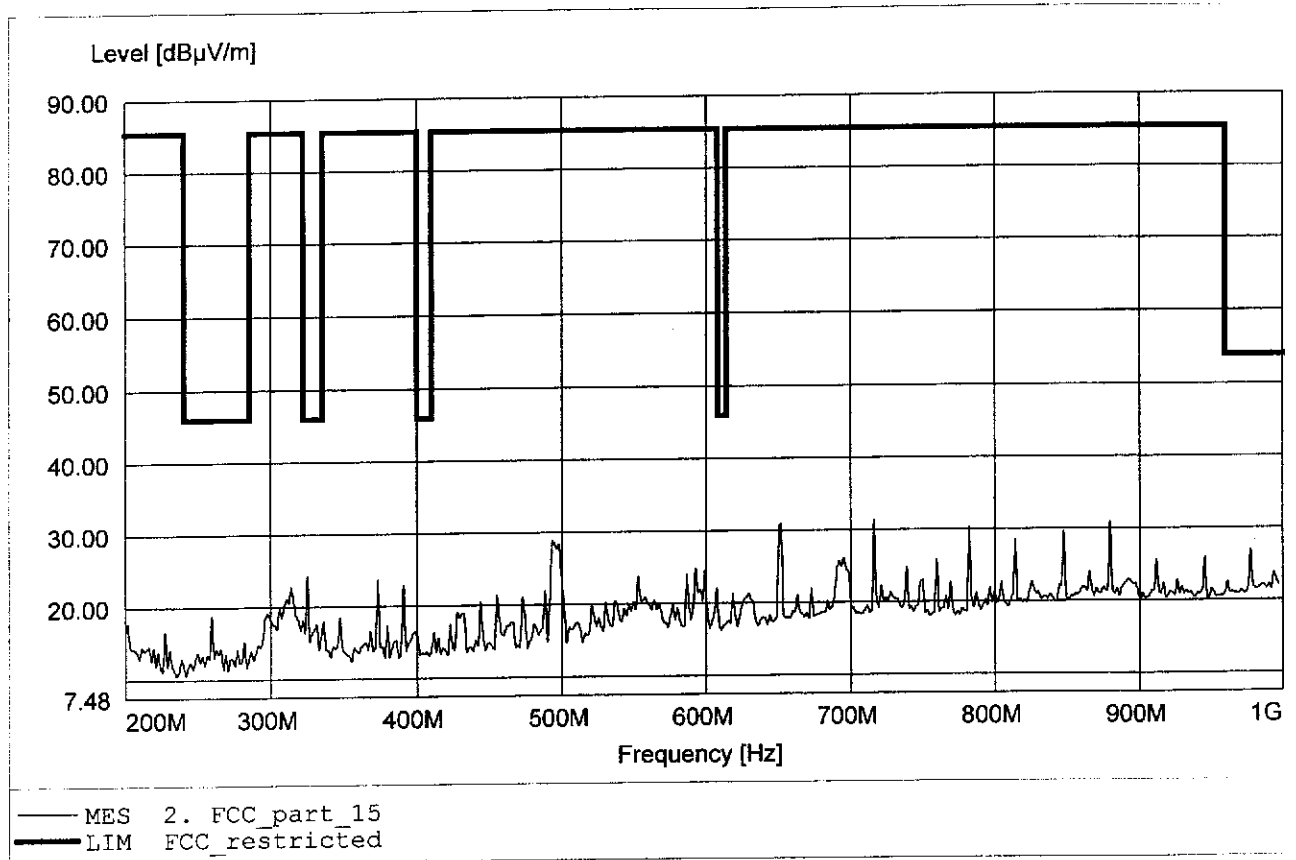
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Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 652.104MHz, Emax: 31.13dBµV/m, RBW: 100kHz



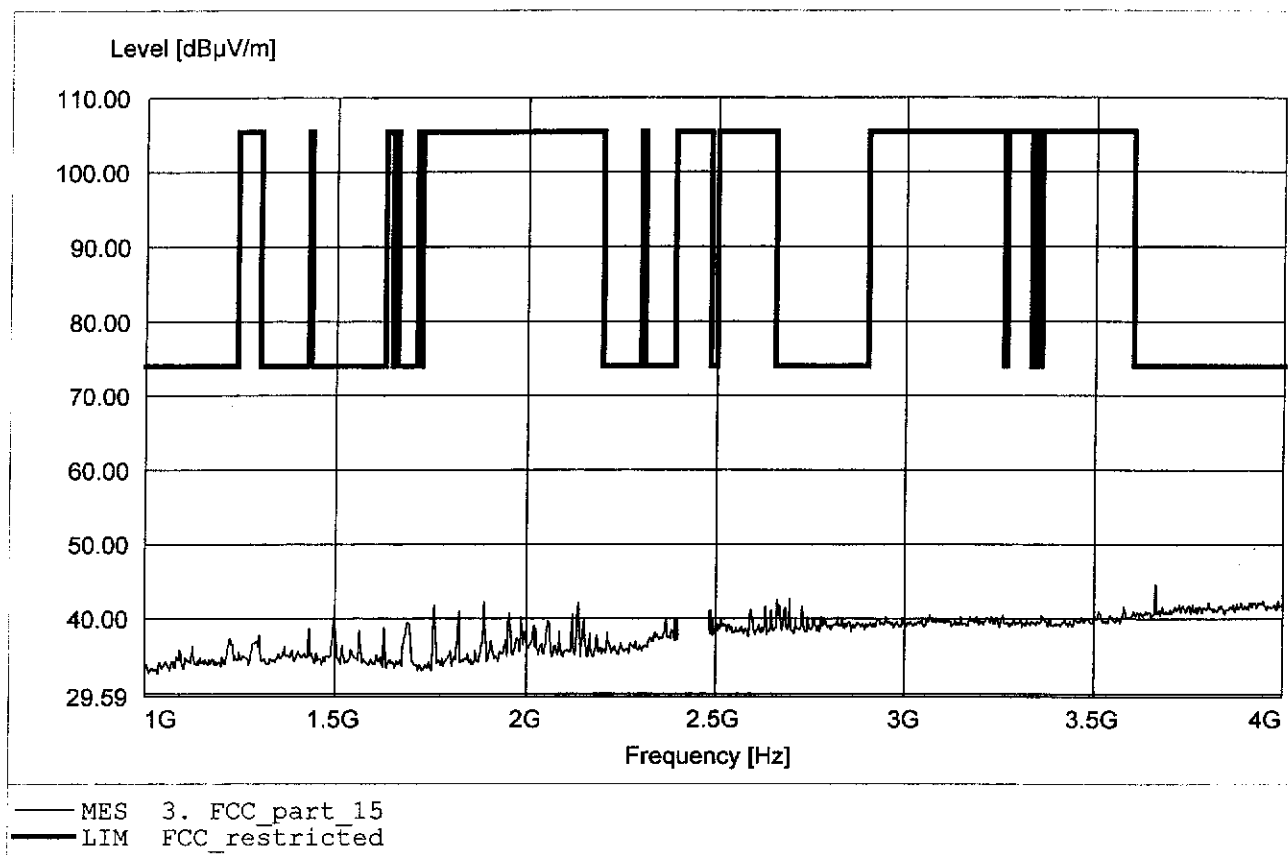
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**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 716.232MHz, Emax: 31.44dBµV/m, RBW: 100kHz



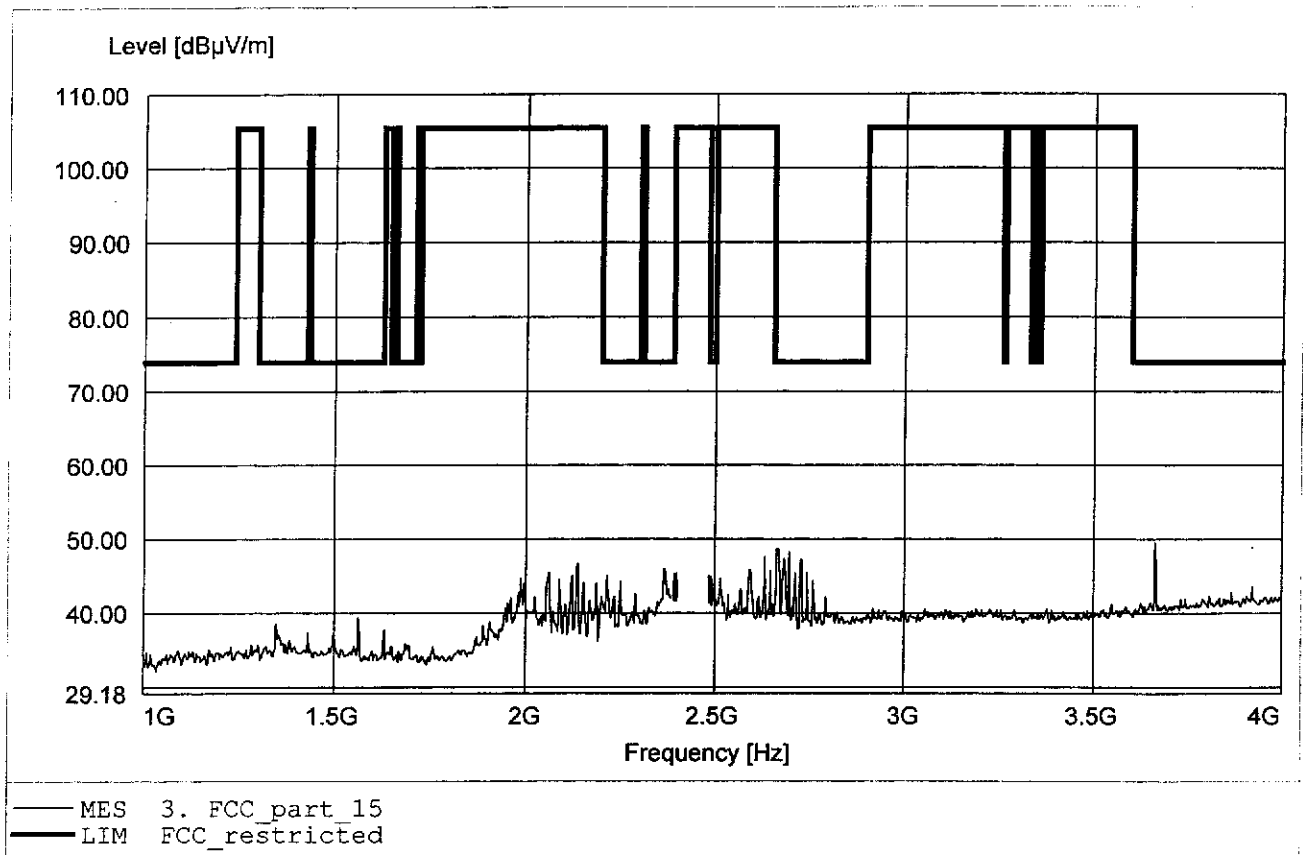
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**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 3.662GHz, Emax: 44.65dBuV/m, RBW: 1MHz



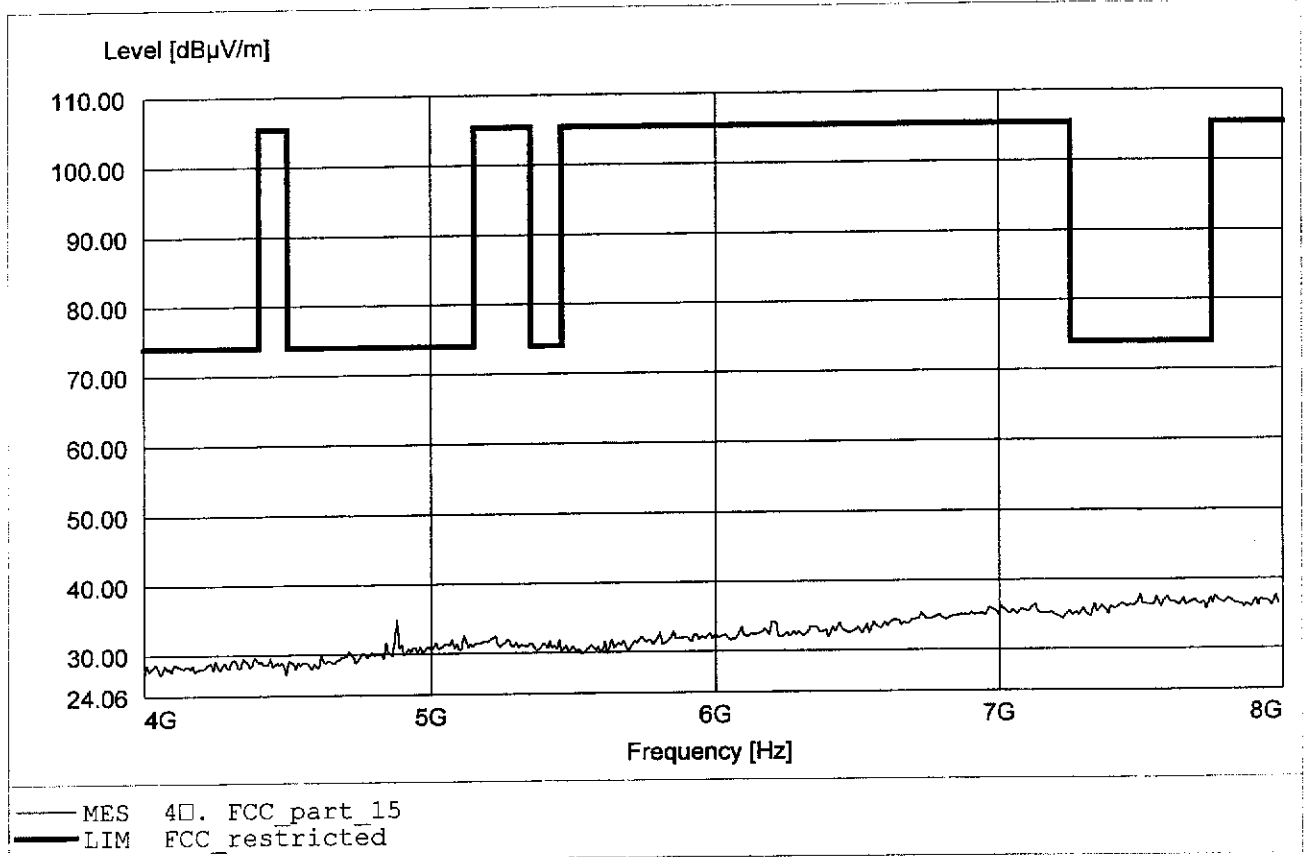
**Spurious emissions Field Strength  
FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGP21  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 3.662GHz, Emax: 49.57dBμV/m, RBW: 1MHz



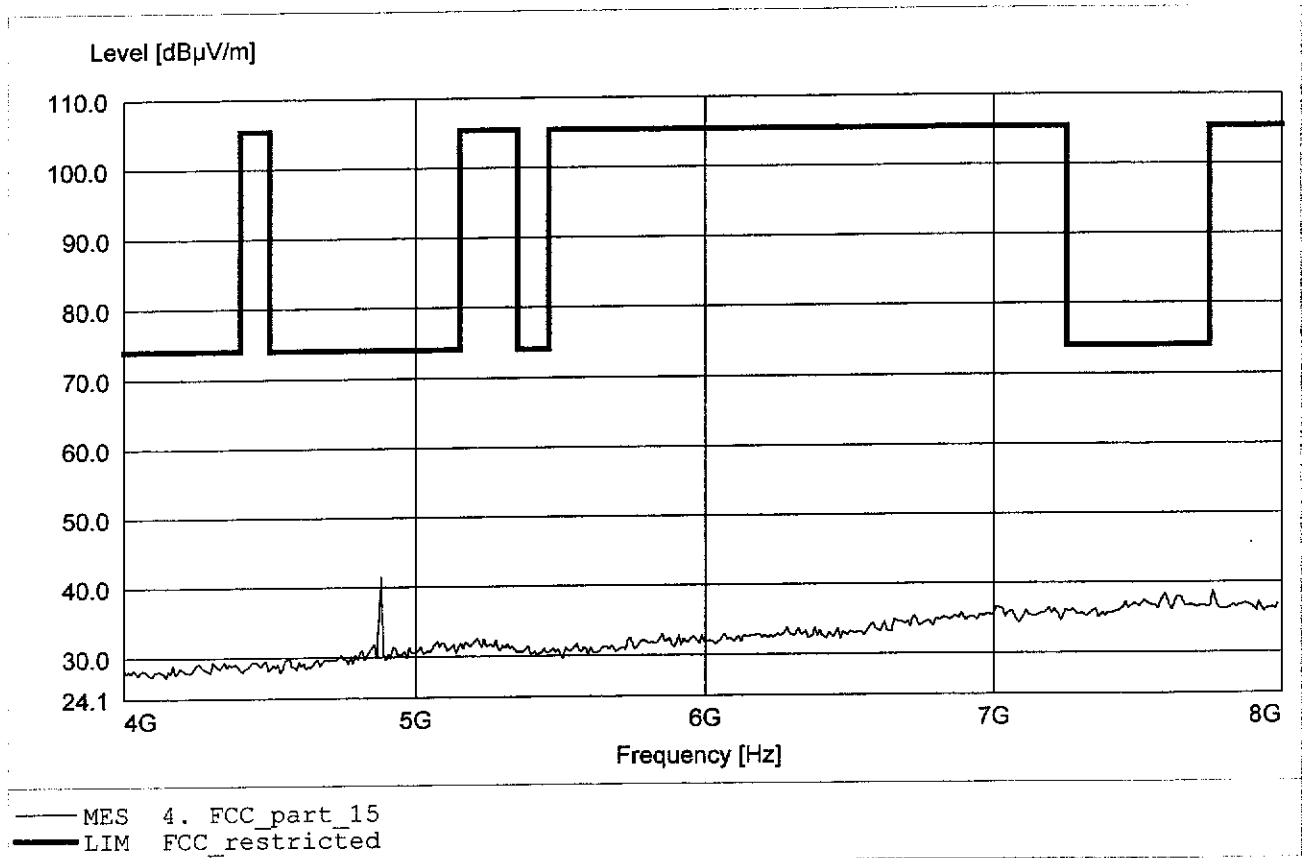
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**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 7.495GHz, Emax: 37.87dBuV/m, RBW: 1MHz



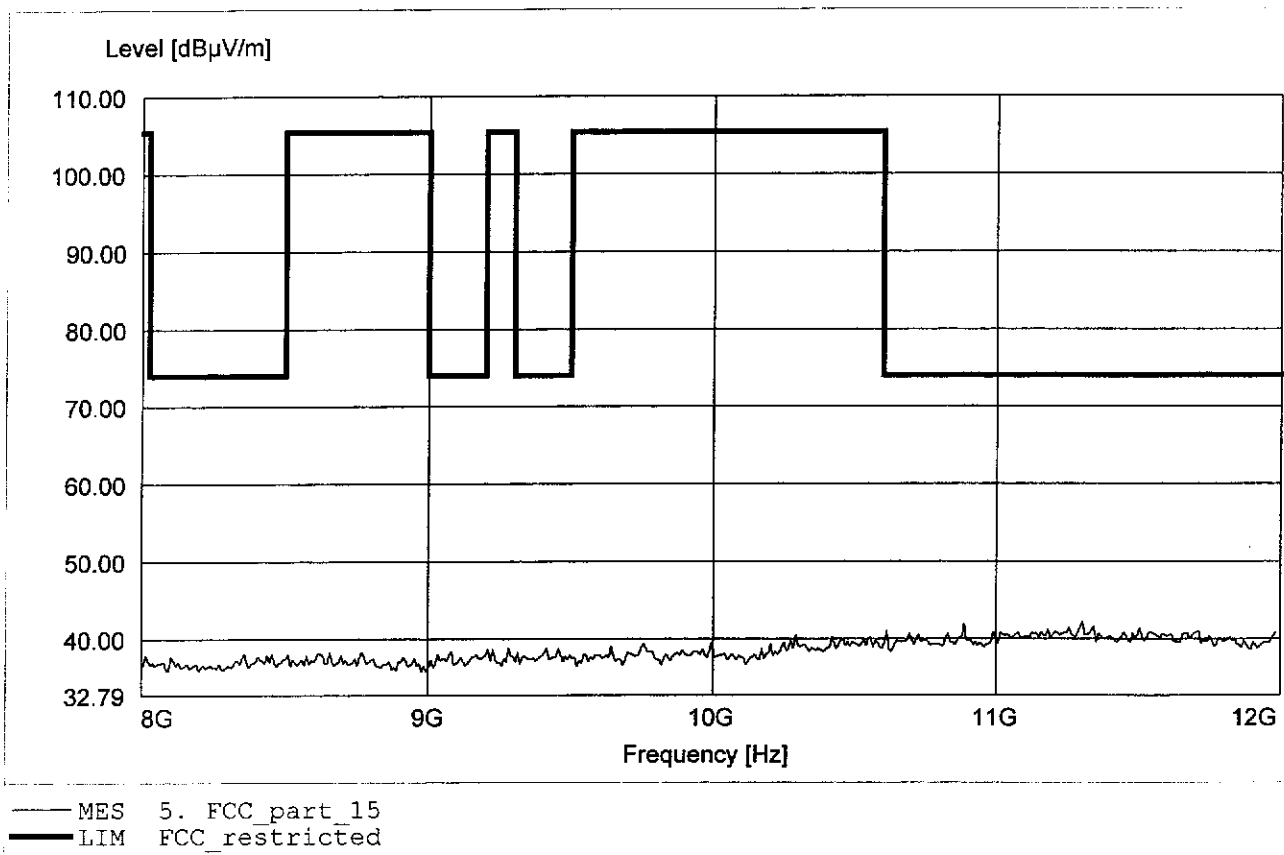
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

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Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 4.882GHz, Emax: 41.48dBμV/m, RBW: 1MHz



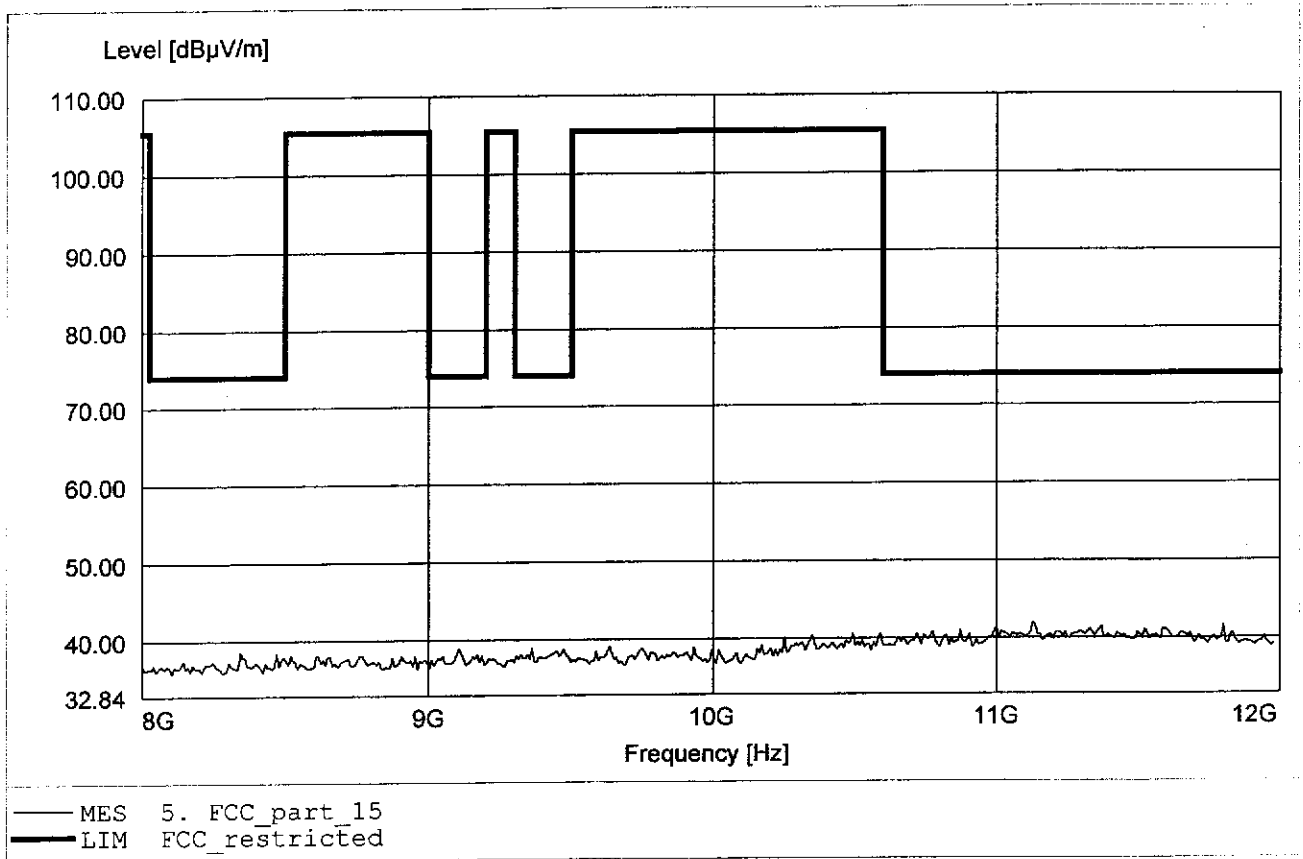
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**FCC RULES PART 15, SUBPART C**

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Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 11.303GHz, Emax: 42.18dBμV/m, RBW: 1MHz



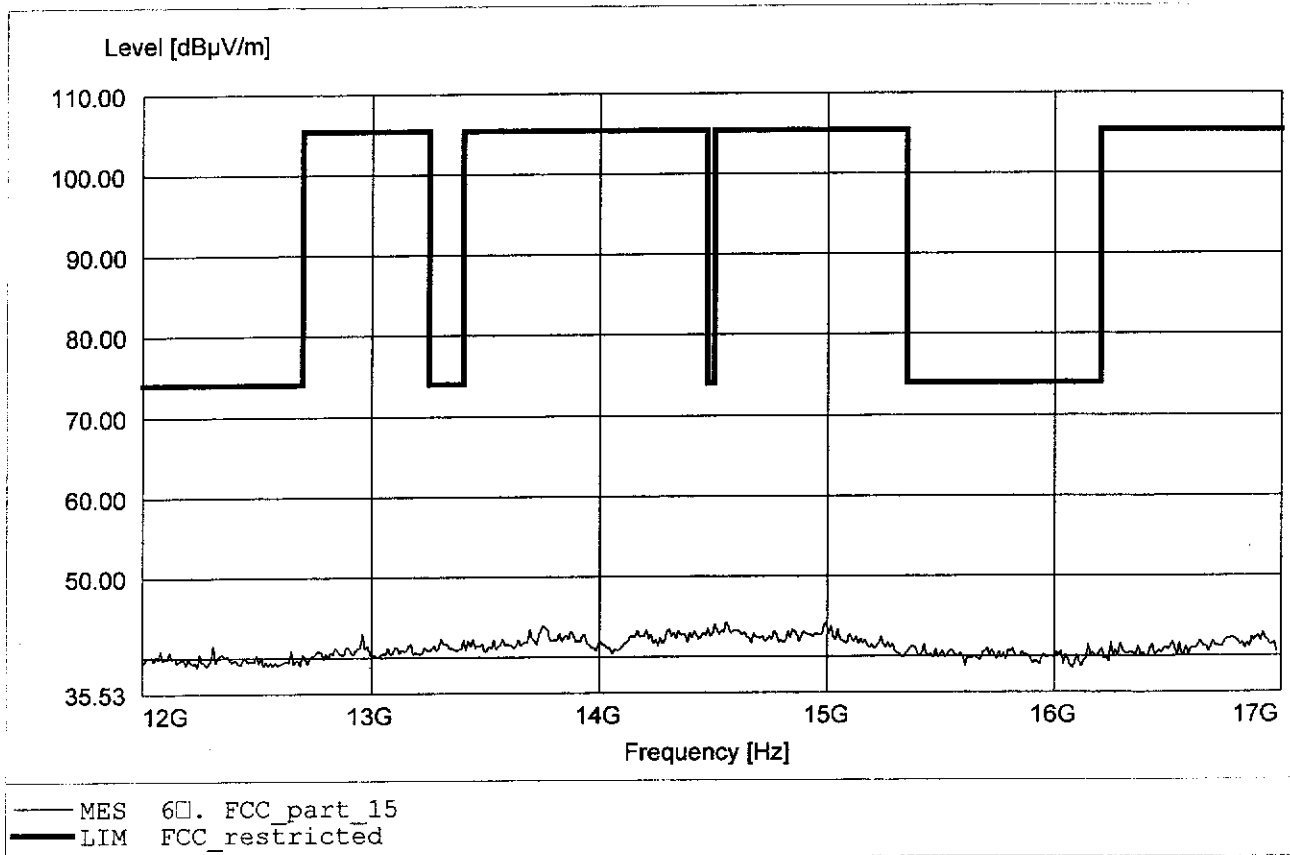
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 11.126GHz, Emax: 41.92dBμV/m, RBW: 1MHz



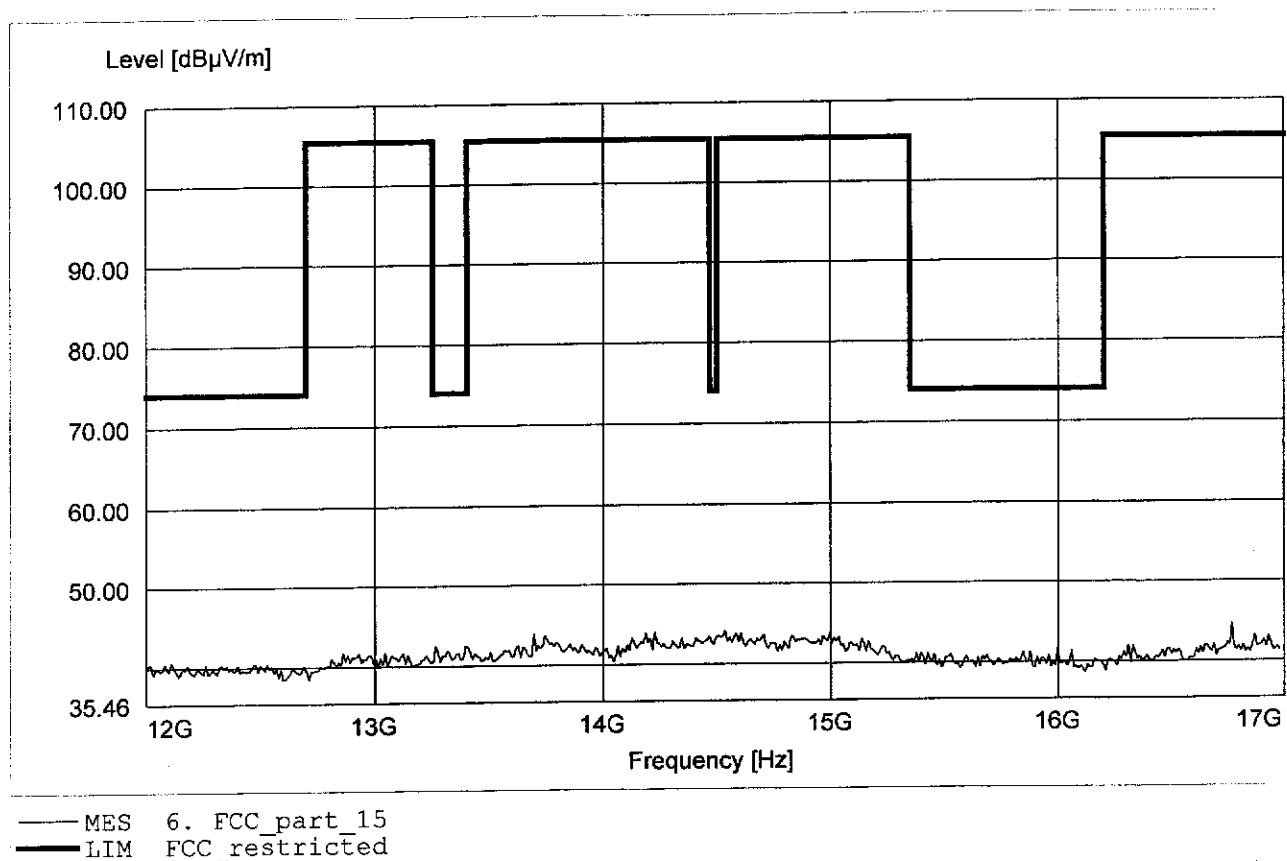
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EUT : Bluetooth Module / Pmax / 2441MHz  
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Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 14.555GHz, Emax: 44.26dBuV/m, RBW: 1MHz



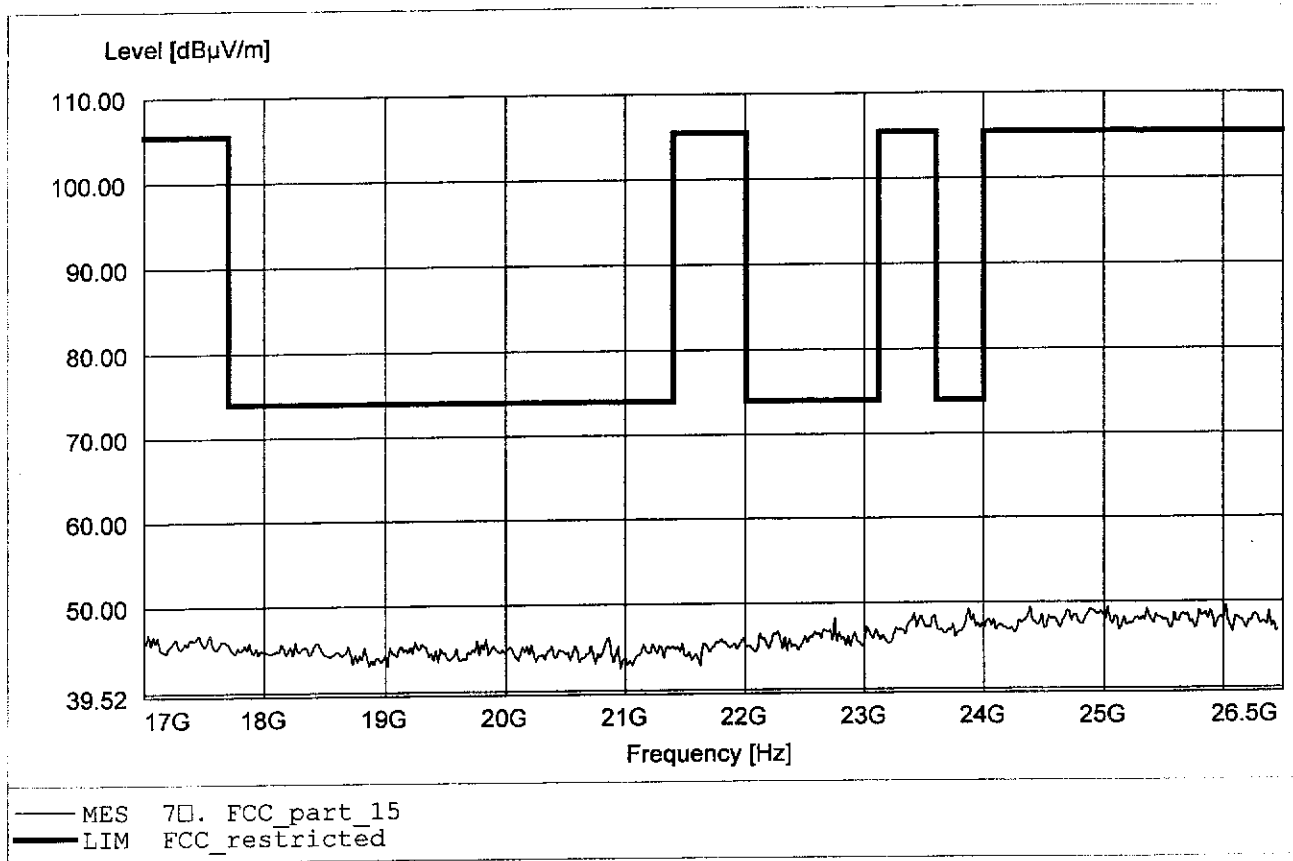
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 16.770GHz, Emax: 44.66dBuV/m, RBW: 1MHz



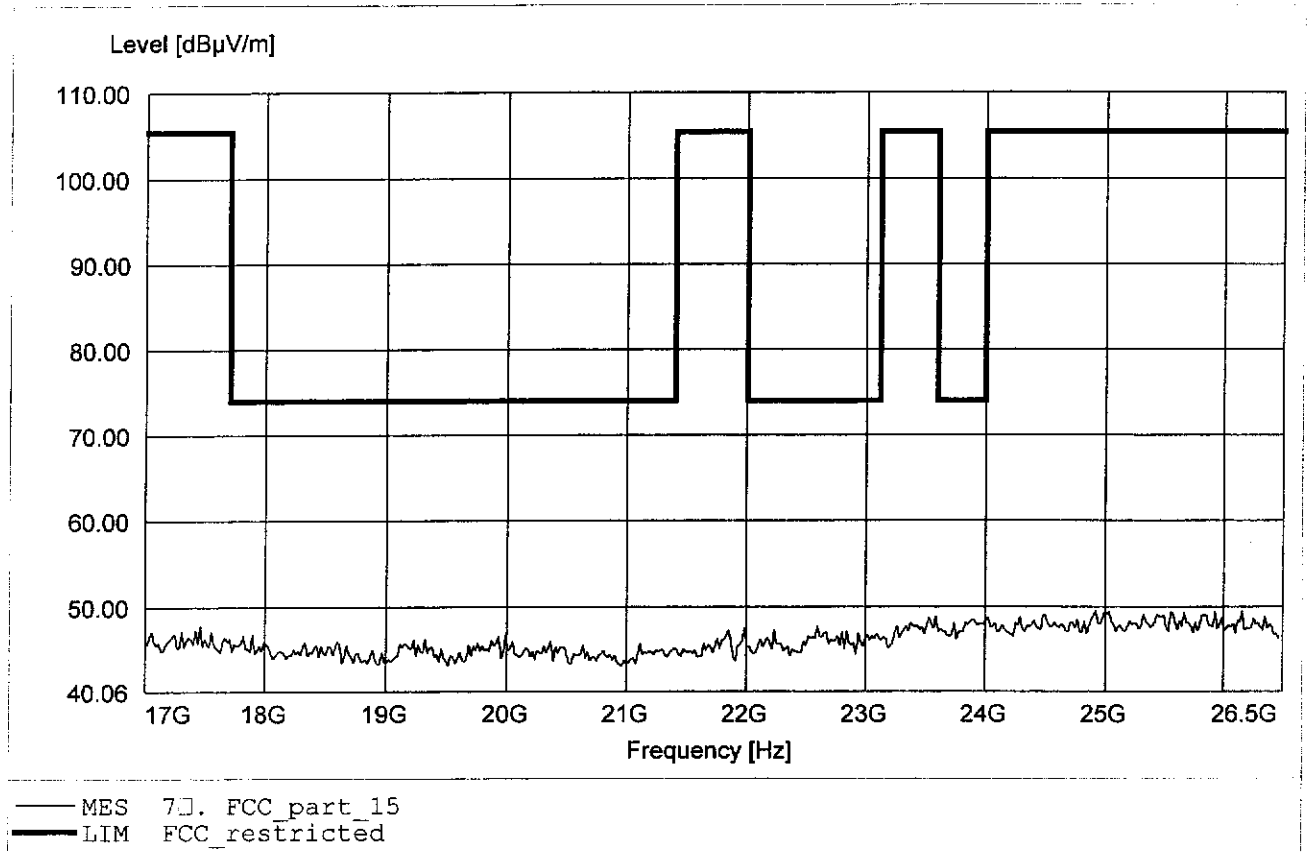
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
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Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 26.024GHz, Emax: 49.57dBuV/m, RBW: 1MHz



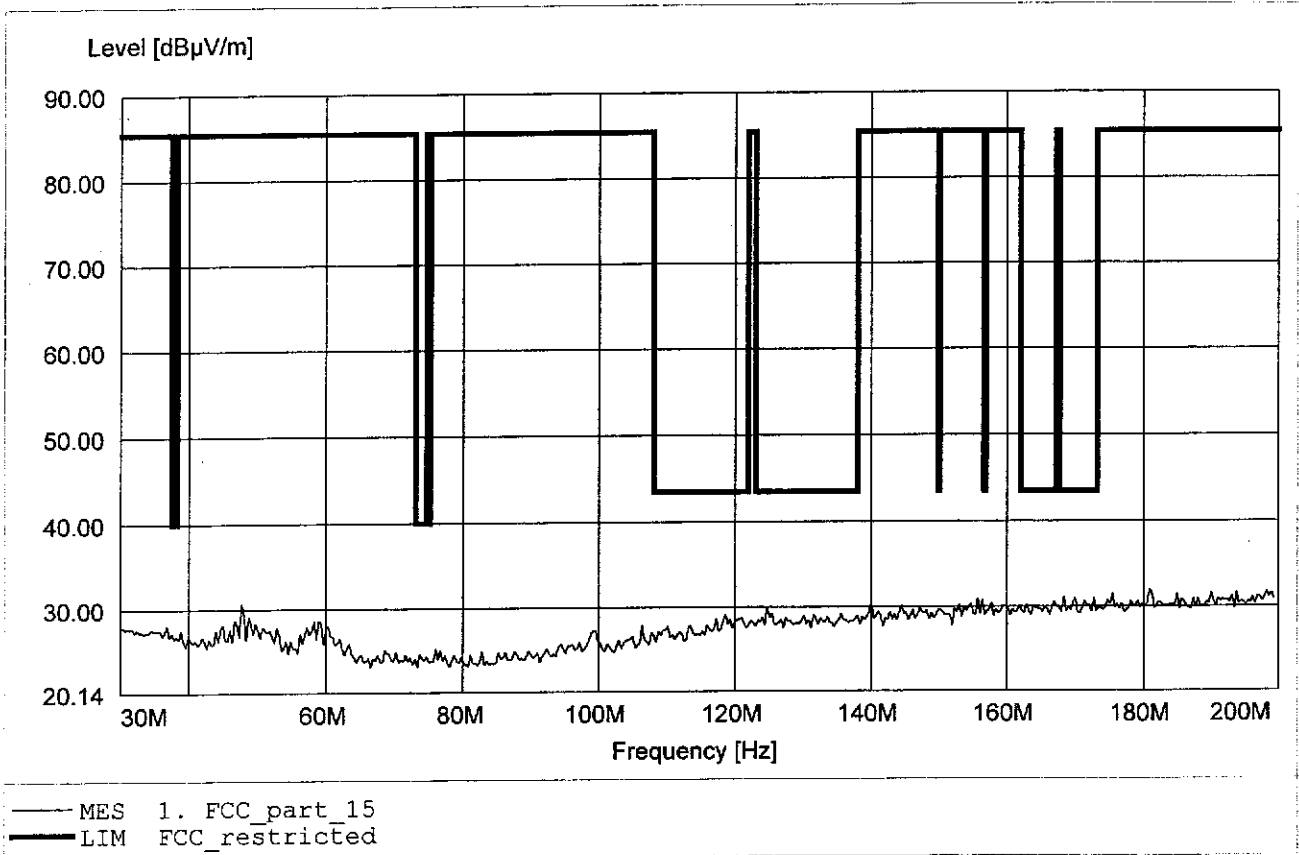
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2441MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 24.920GHz, Emax: 49.56dBμV/m, RBW: 1MHz



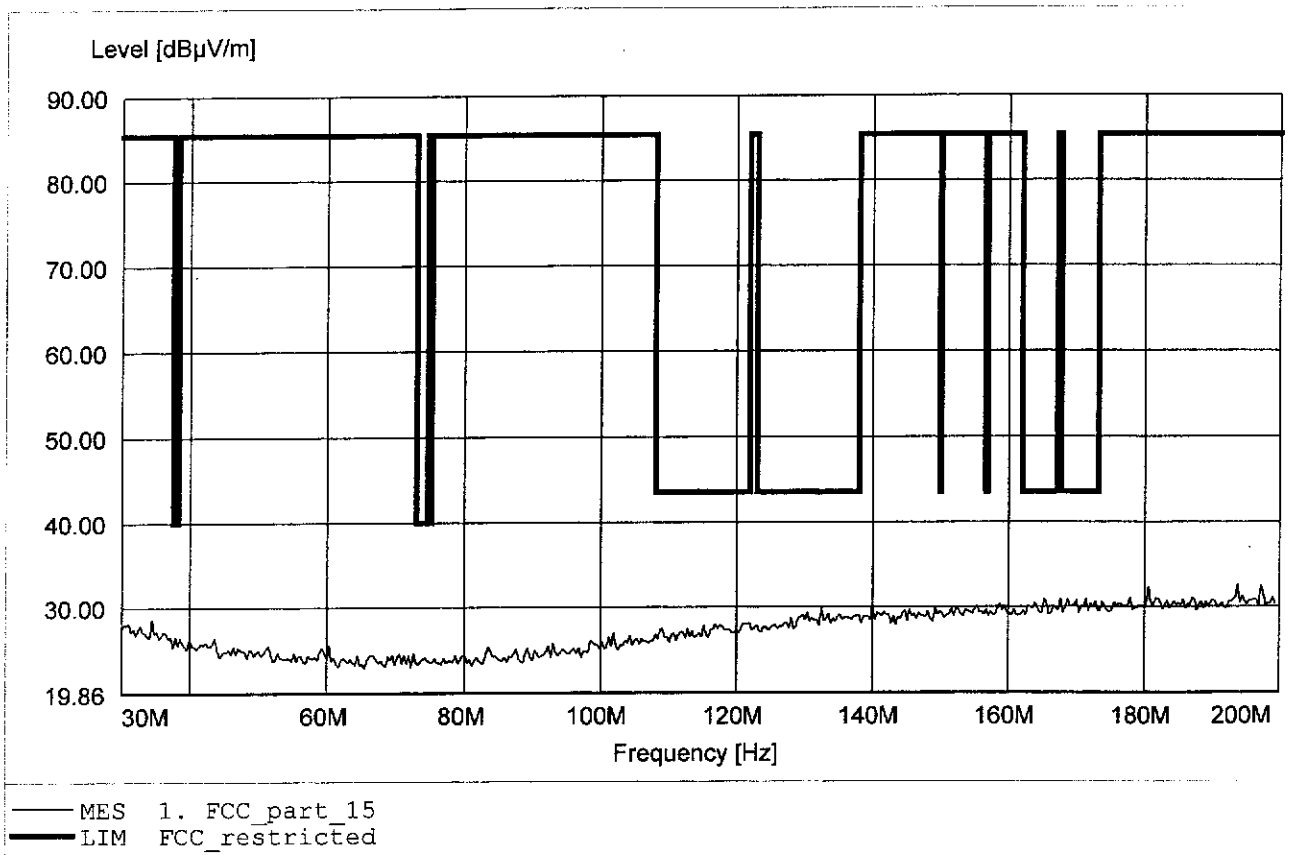
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 180.922MHz, Emax: 32.00dBμV/m, RBW: 100kHz



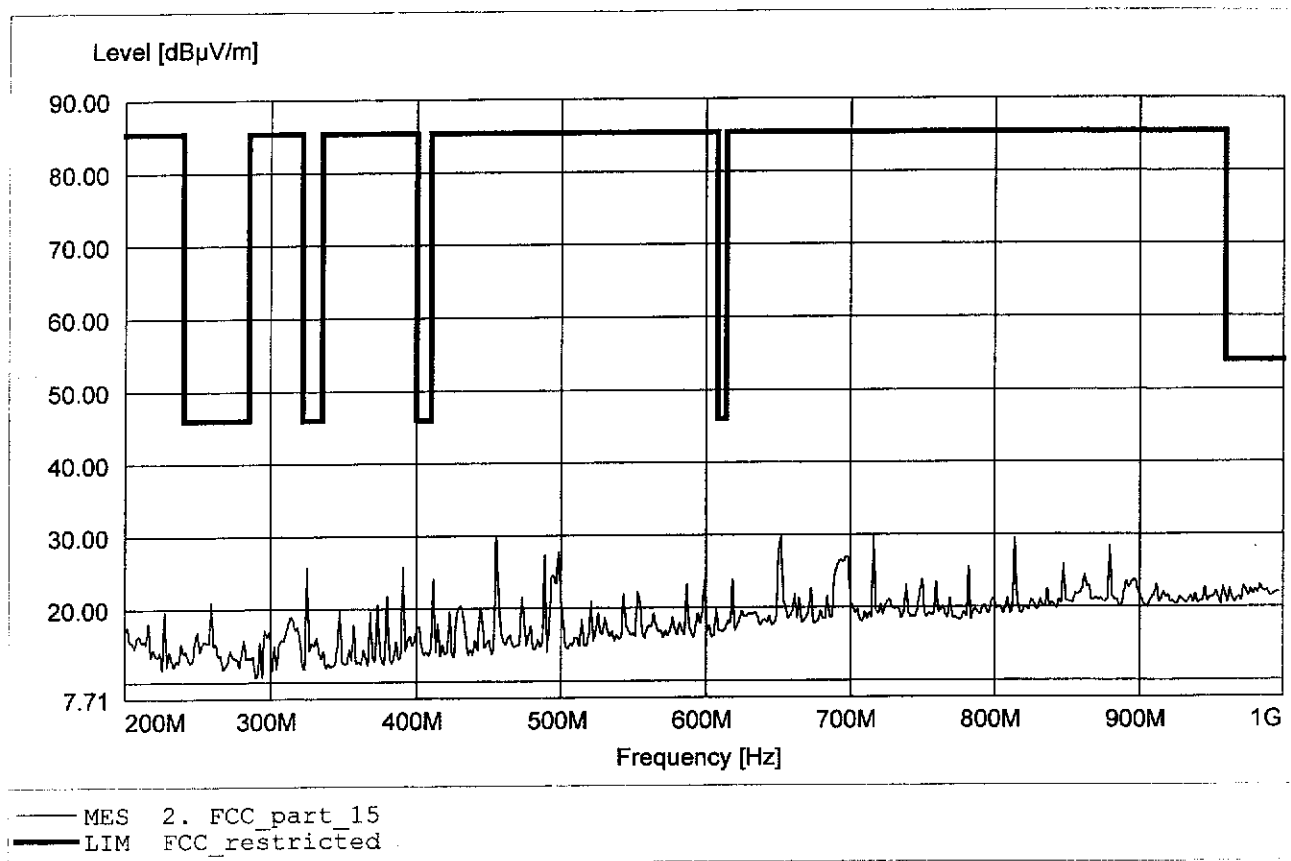
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EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 193.868MHz, Emax: 32.68dBμV/m, RBW: 100kHz



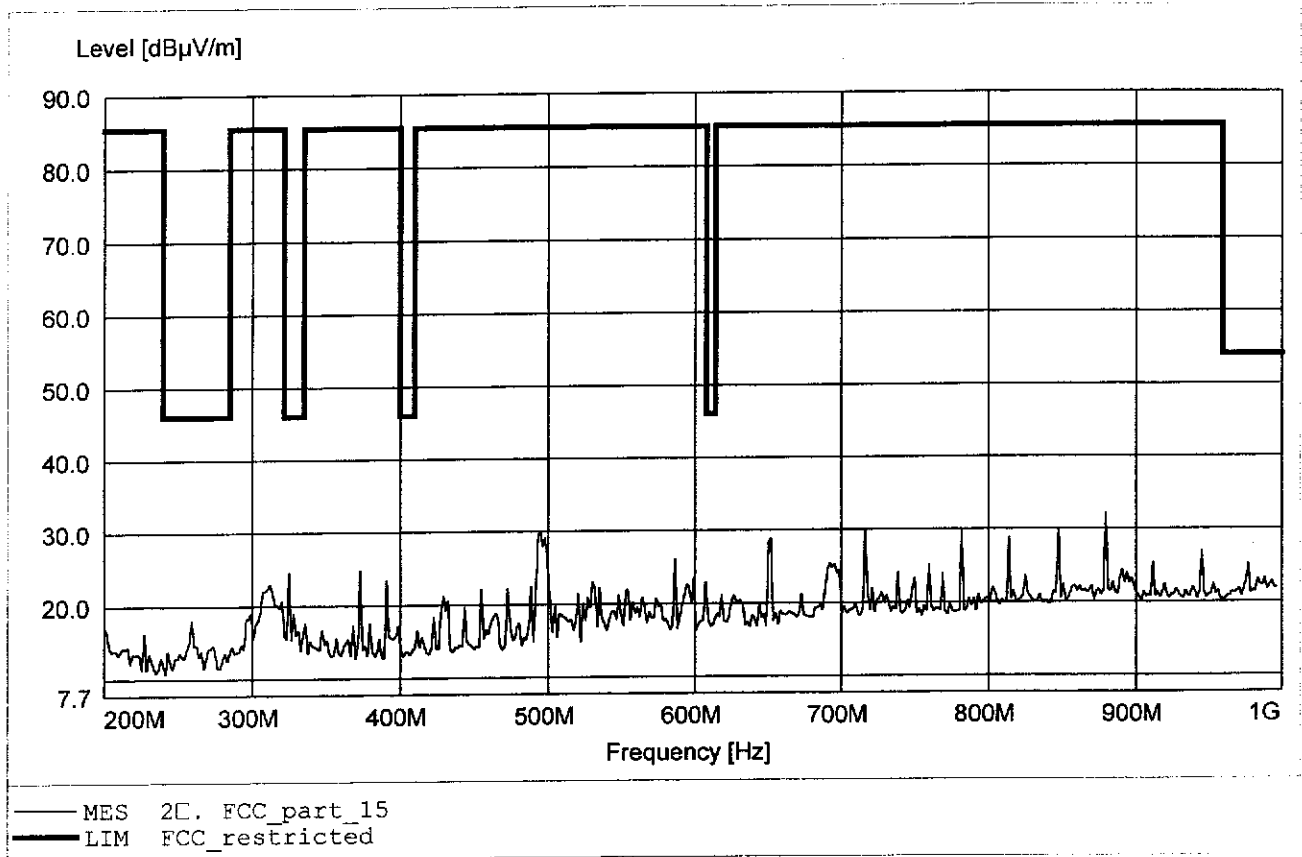
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**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 716.232MHz, Emax: 29.90dBµV/m, RBW: 100kHz



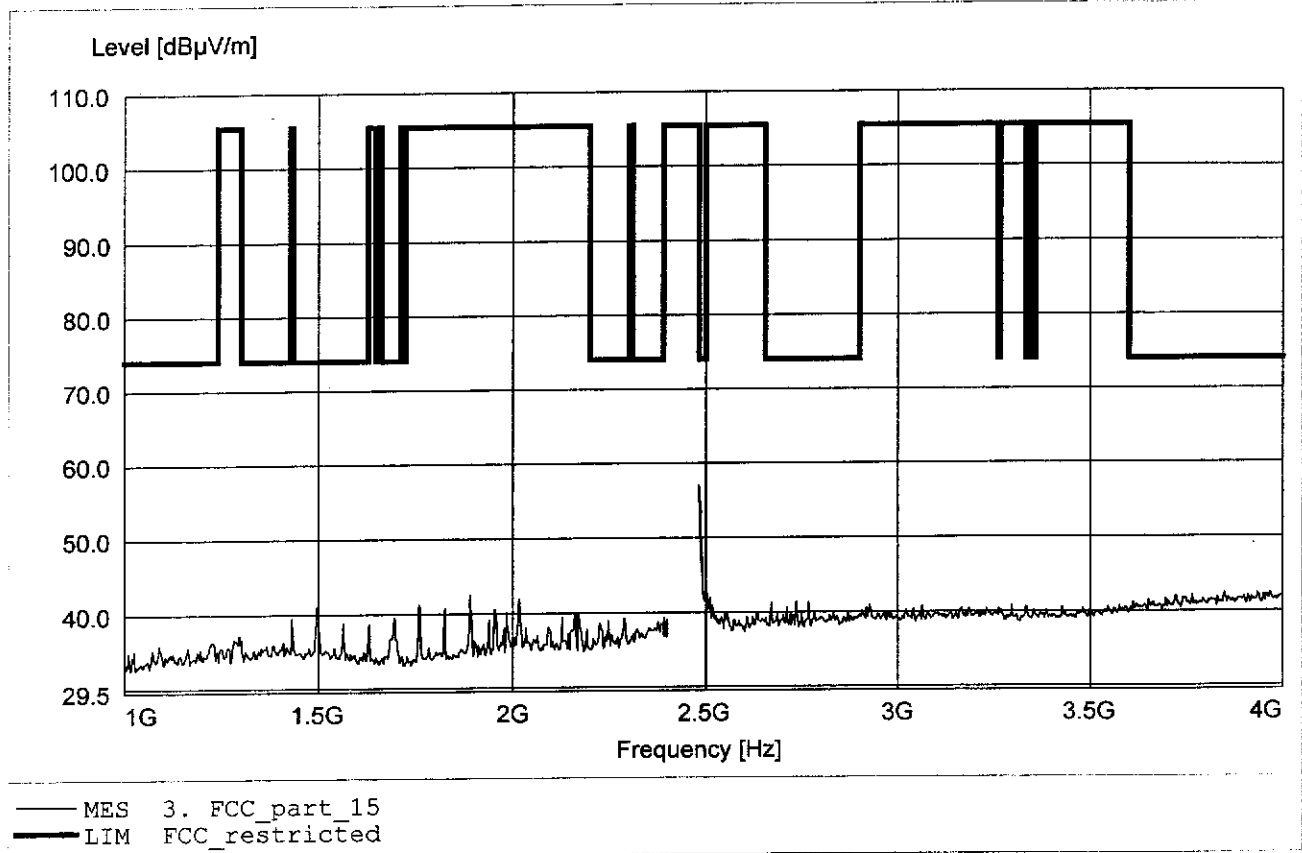
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EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 879.760MHz, Emax: 32.03dBμV/m, RBW: 100kHz



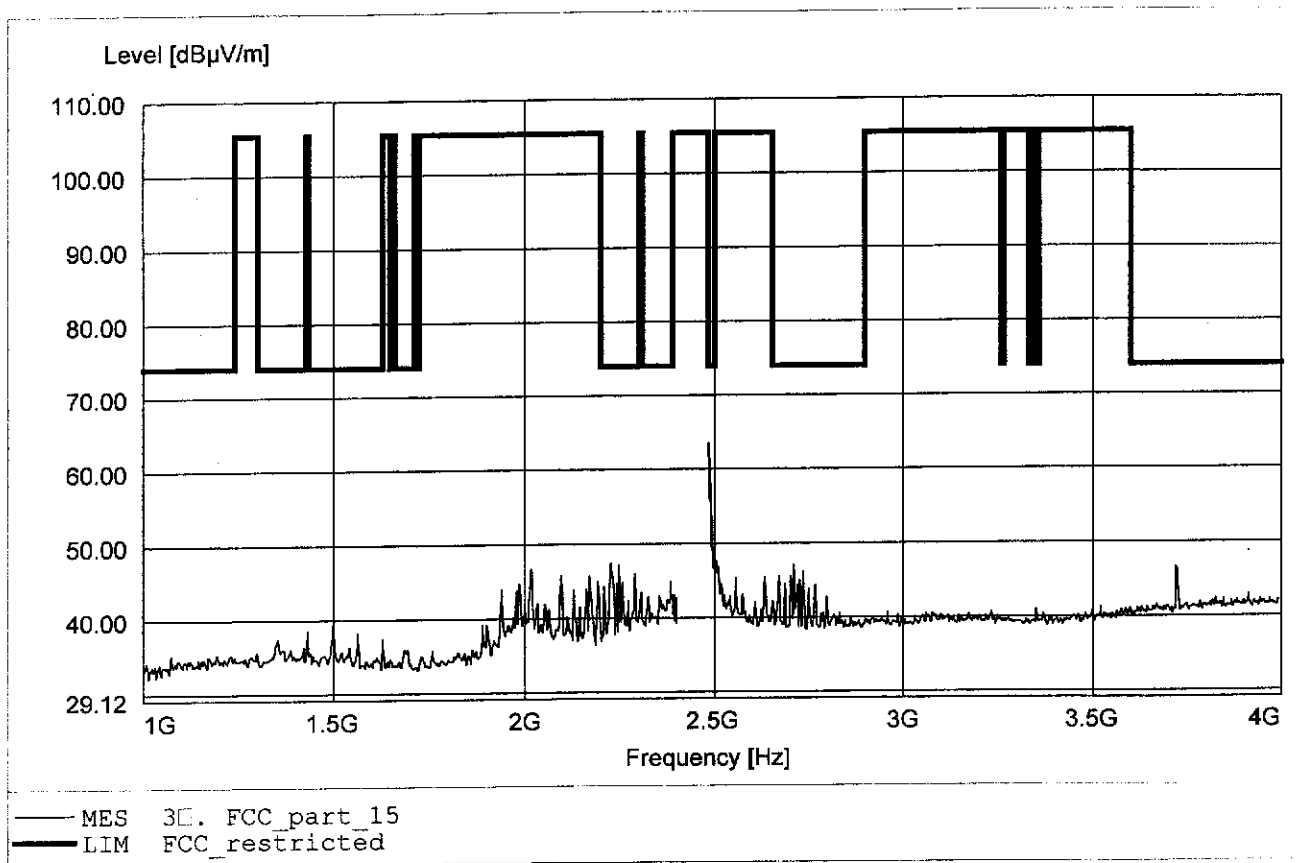
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EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.484GHz, Emax: 57.06dBuV/m, RBW: 1MHz



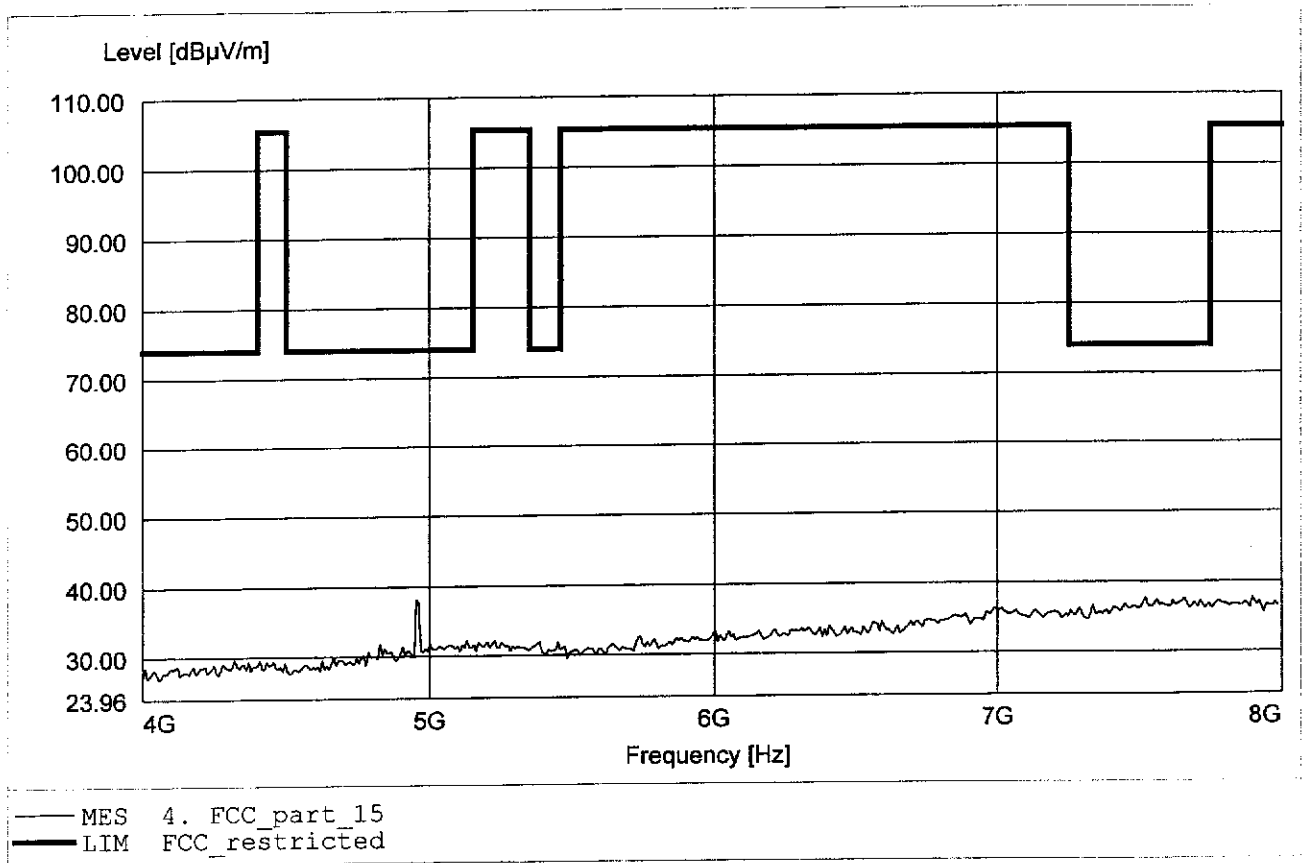
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, amplif.  
Comment 2: Freq: 2.484GHz, Emax: 63.53dBµV/m, RBW: 1MHz



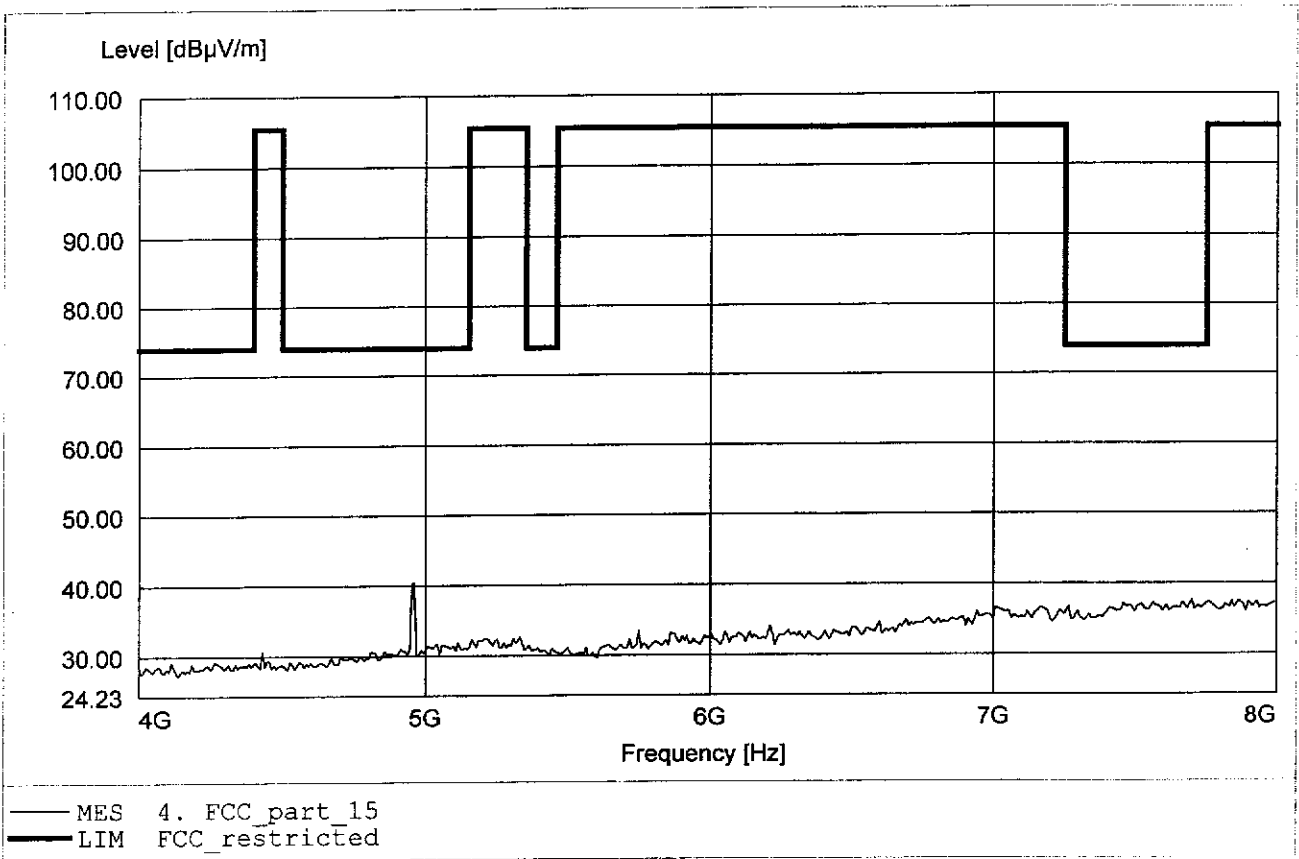
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 4.954GHz, Emax: 38.16dBµV/m, RBW: 1MHz



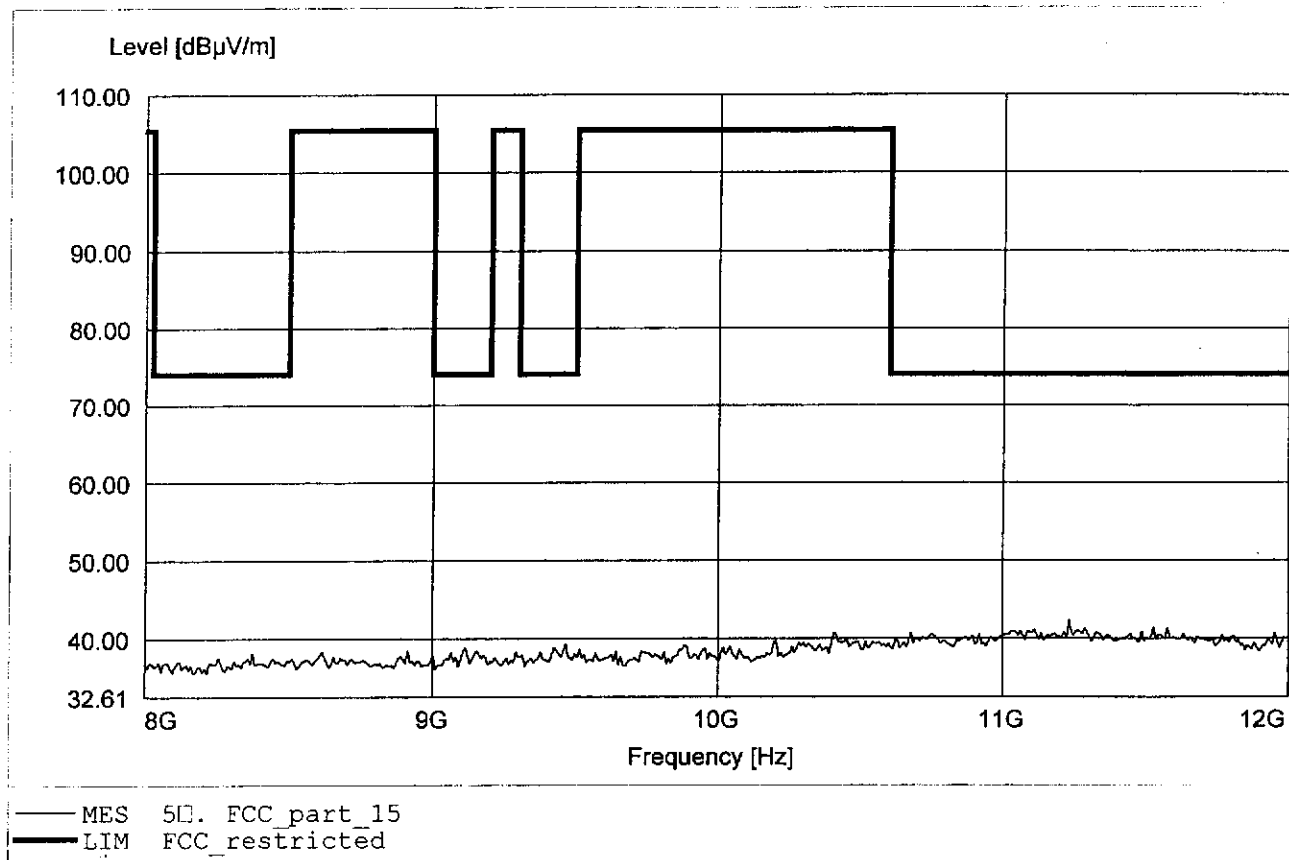
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EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 4.962GHz, Emax: 40.43dBuV/m, RBW: 1MHz



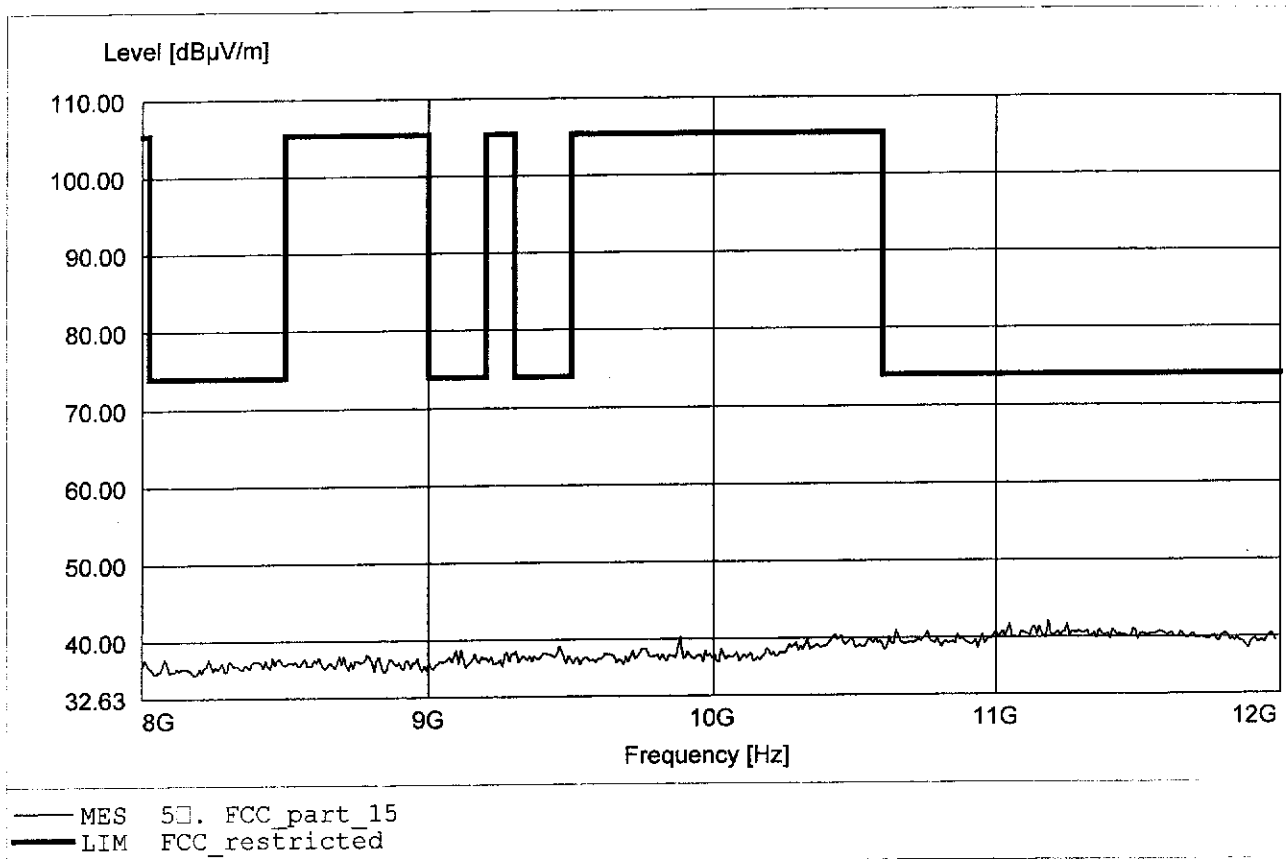
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**FCC RULES PART 15, SUBPART C**

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Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 11.230GHz, Emax: 42.40dBuV/m, RBW: 1MHz



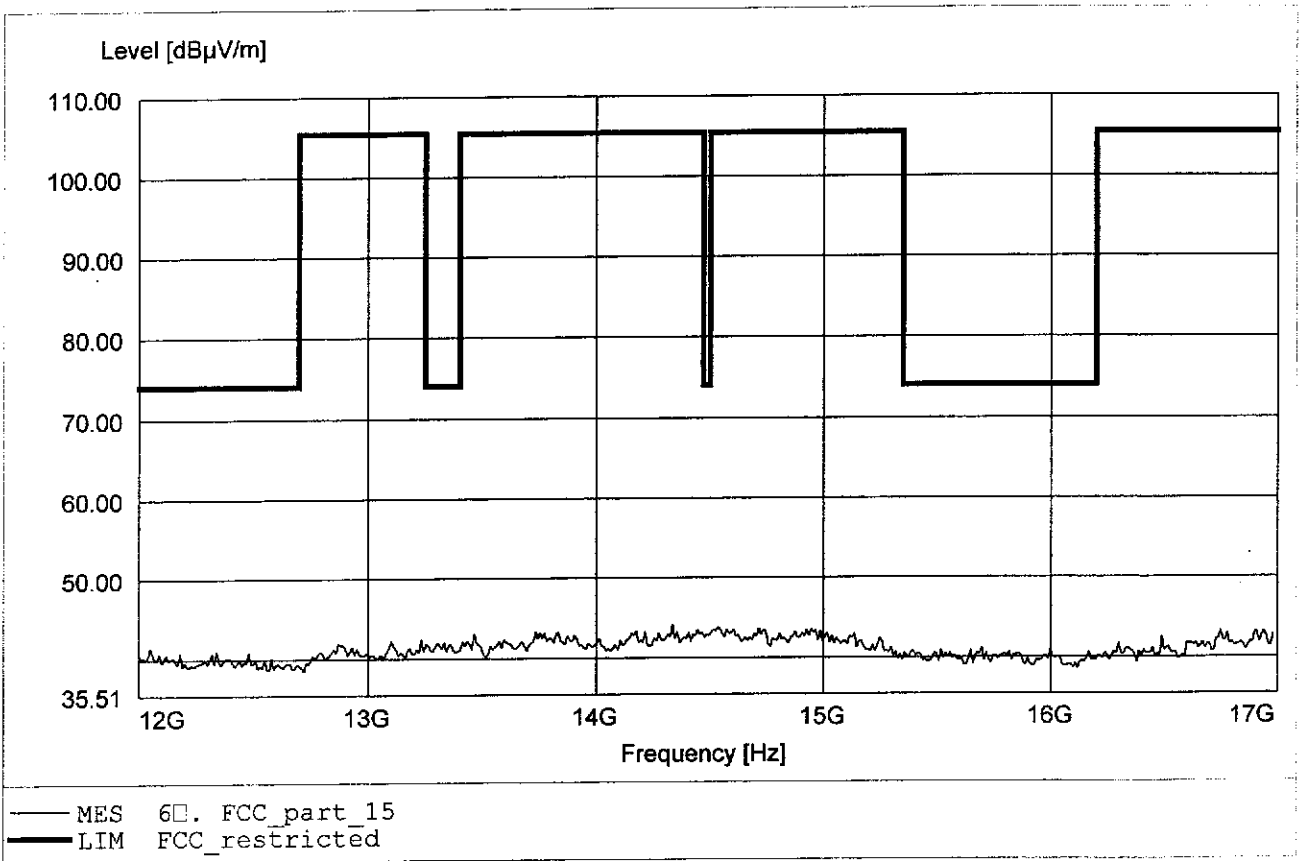
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 11.182GHz, Emax: 42.08dBuV/m, RBW: 1MHz



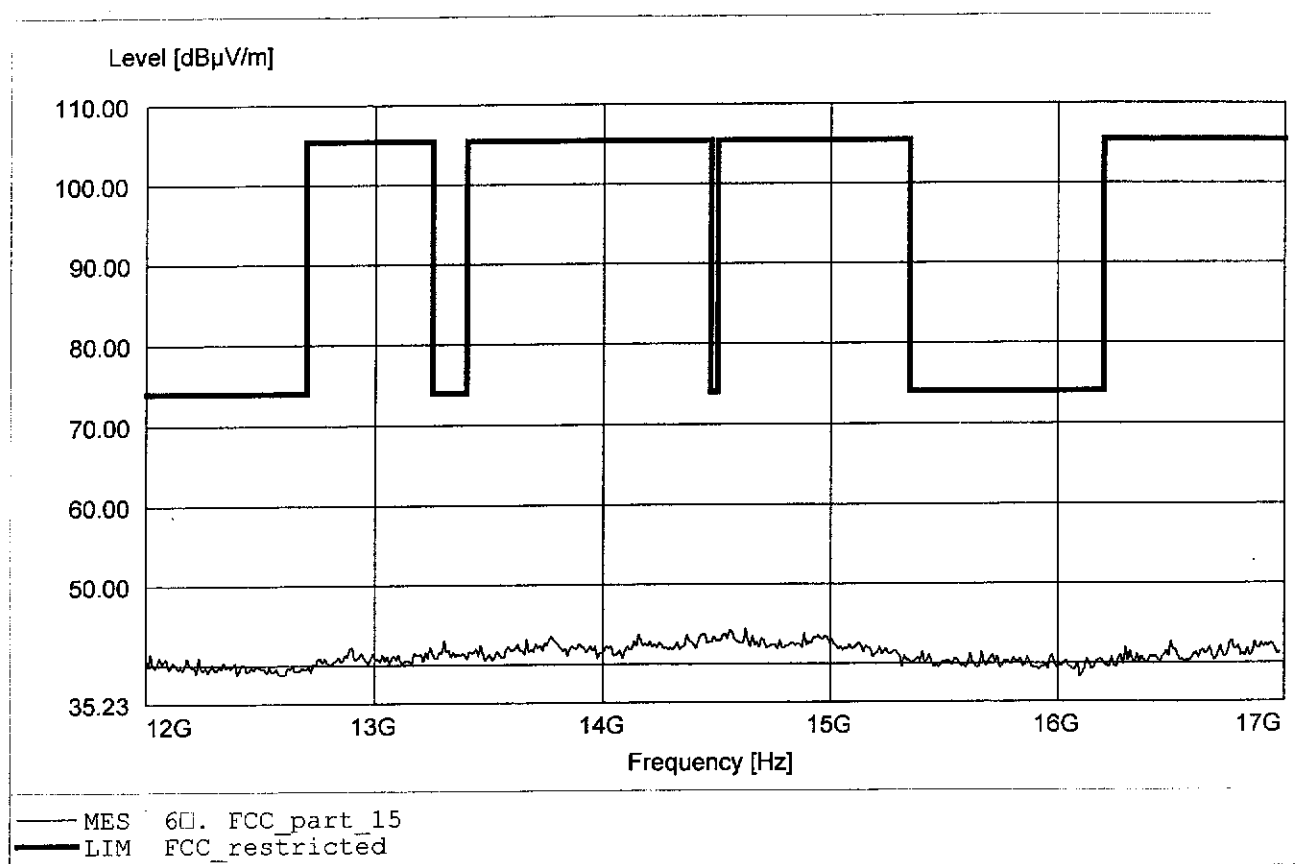
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to §15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 14.335GHz, Emax: 44.11dBµV/m, RBW: 1MHz



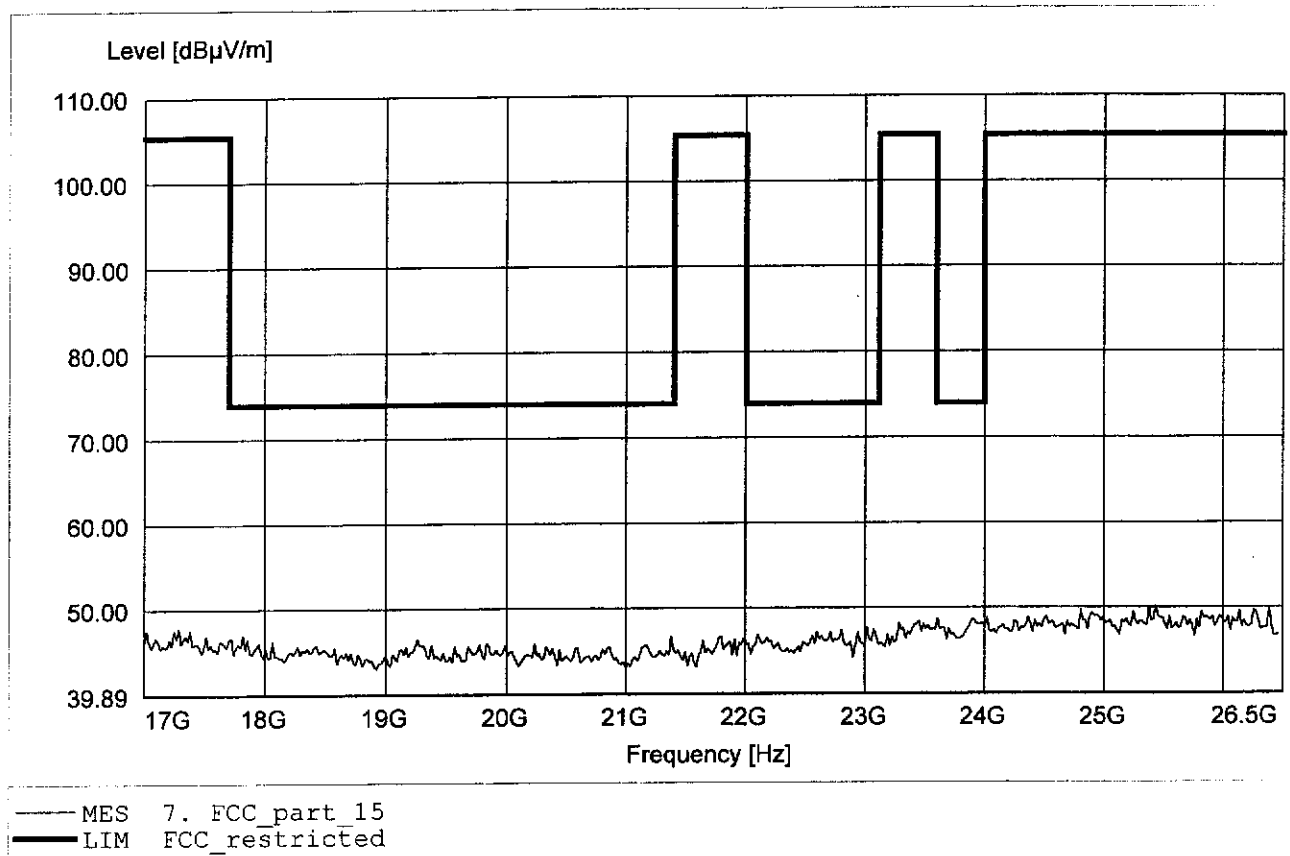
**Spurious emissions Field Strength  
FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA2190D, ampl.+HP.  
Comment 2: Freq: 14.625GHz, Emax: 44.39dBμV/m, RBW: 1MHz



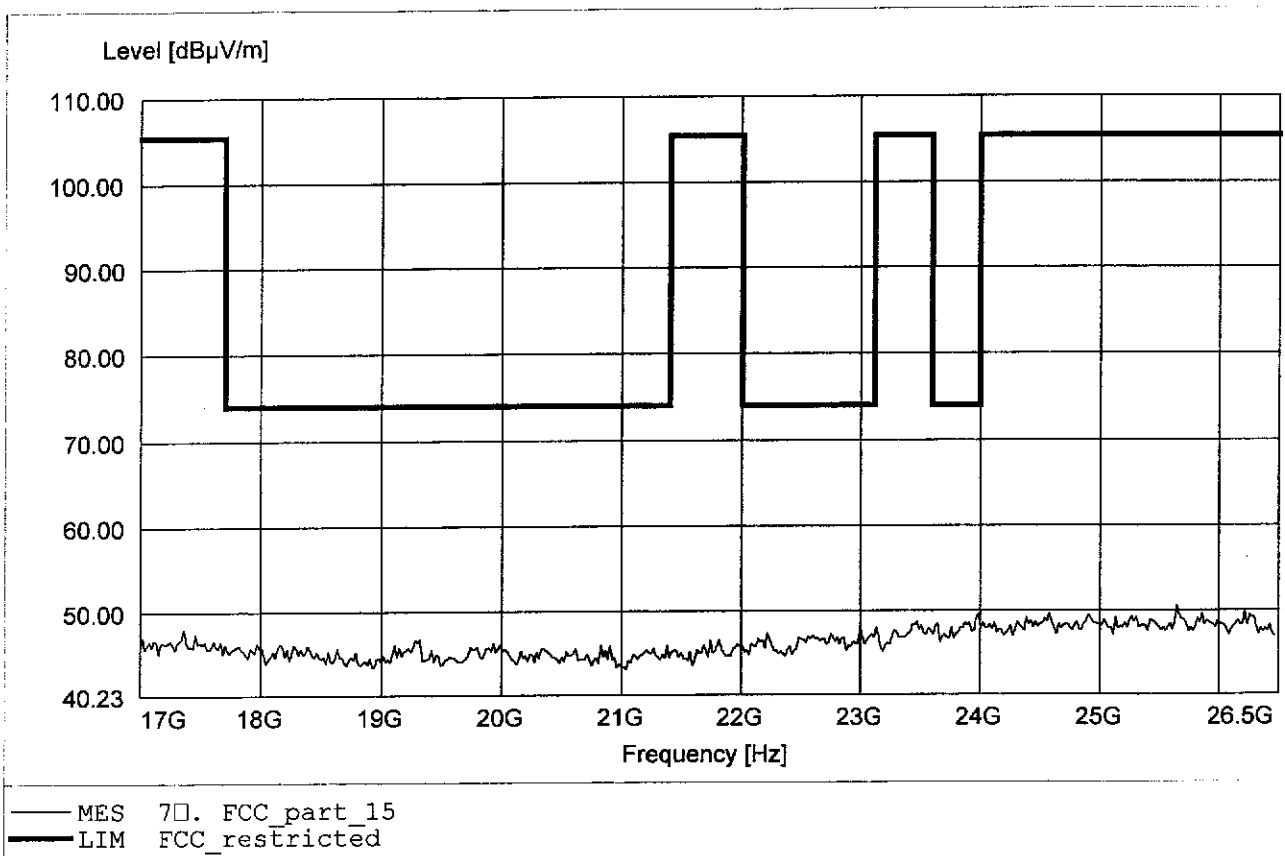
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 25.434GHz, Emax: 50.15dBμV/m, RBW: 1MHz



**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C**

EUT : Bluetooth Module / Pmax / 2480MHz  
Model: UGPZ1  
Approval Holder: Alps Electric Co., Ltd.  
Operating Condition: Tnom:23°C / Unom: 4.4 V DC  
Test Site / Operator: ETS / Mr. Hoppe  
Test Specification: according to S15247, Limit 20 dB up peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 25.643GHz, Emax: 50.57dBuV/m, RBW: 1MHz





## Appendix D

Spurious Emissions conducted - Transmitter operating

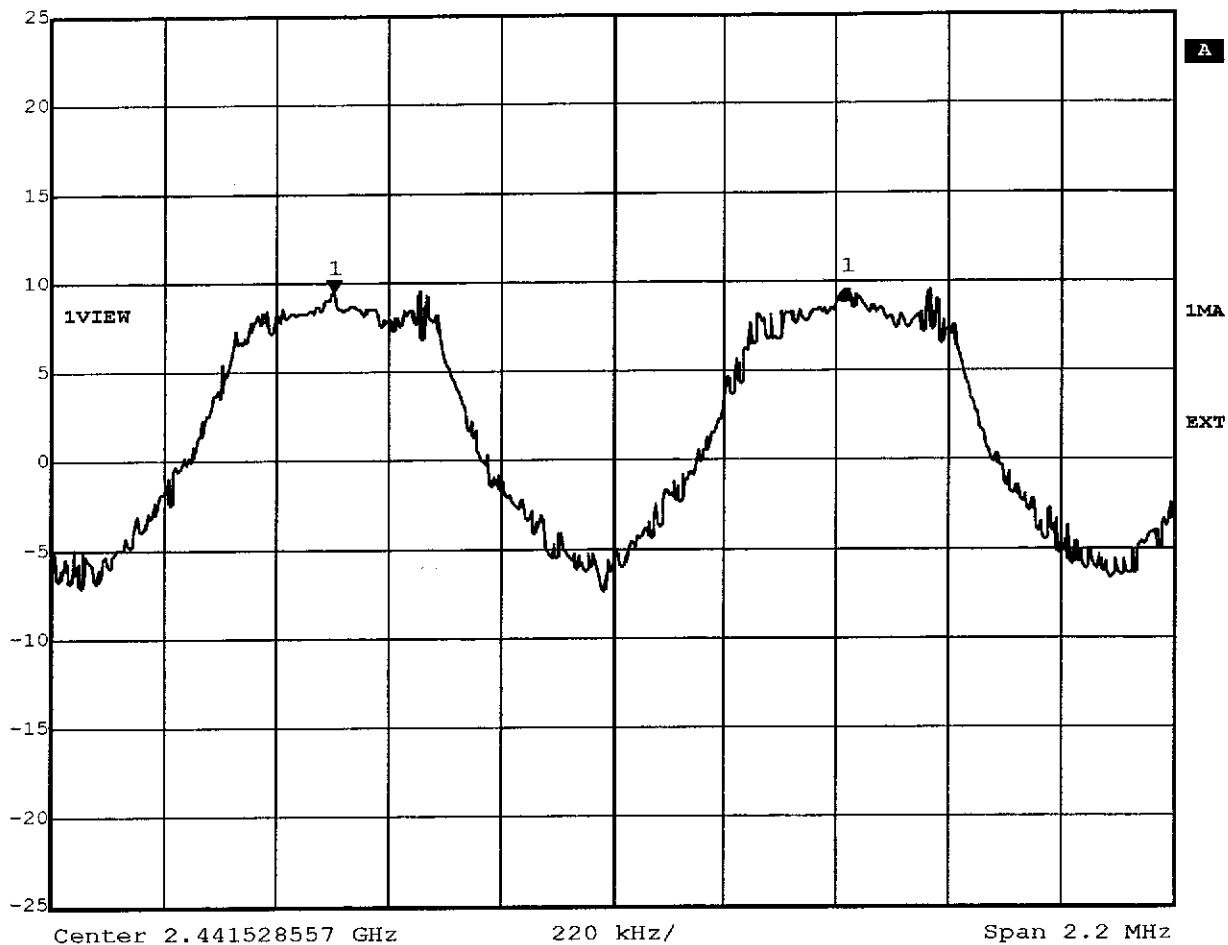


## **Appendix E**

Carrier Frequency Separation



Delta 1 [T1] RBW 100 kHz RF Att 50 dB  
Ref Lvl 0.01 dB VBW 100 kHz  
25 dBm 1.00521042 MHz SWT 5 ms Unit dBm



Title: Carrier Frequency Separation  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:12:29

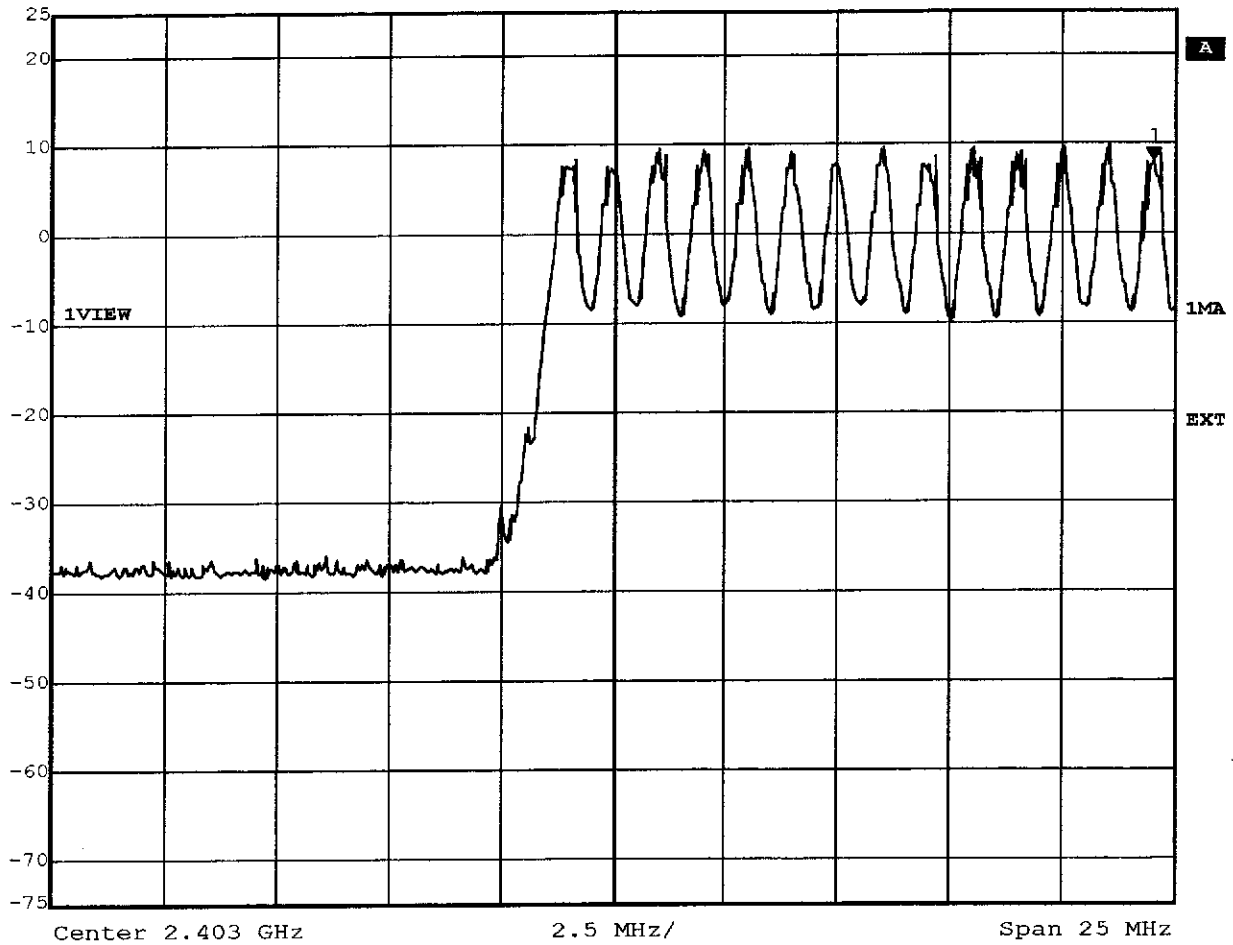


## Appendix F

Number of Hopping Frequencies



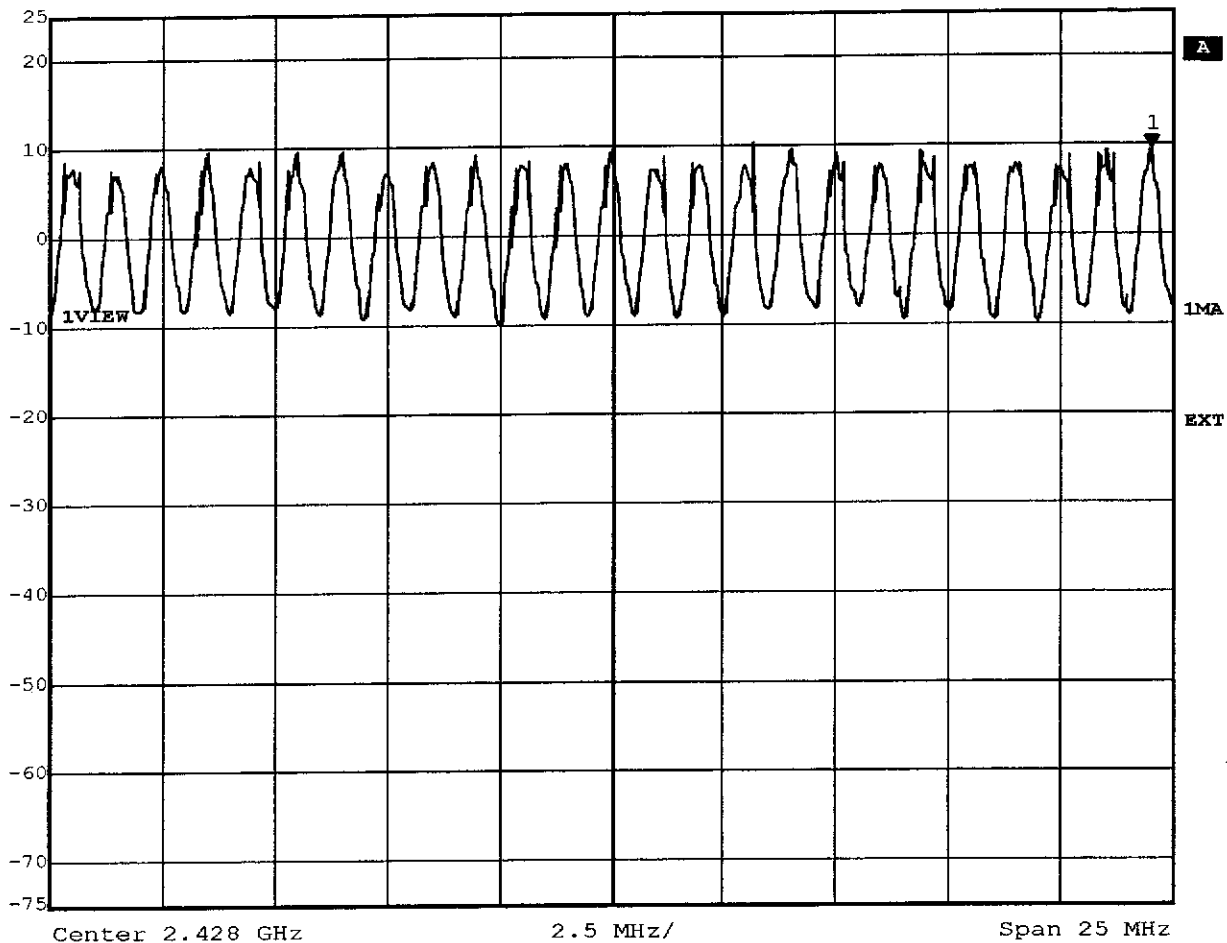
Marker 1 [T1] RBW 50 kHz RF Att 50 dB  
Ref Lvl 7.81 dBm VBW 50 kHz  
25 dBm 2.41504910 GHz SWT 25 ms Unit dBm



Title: Number of Hopping Frequencies Ch.: 0-13  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:18:40



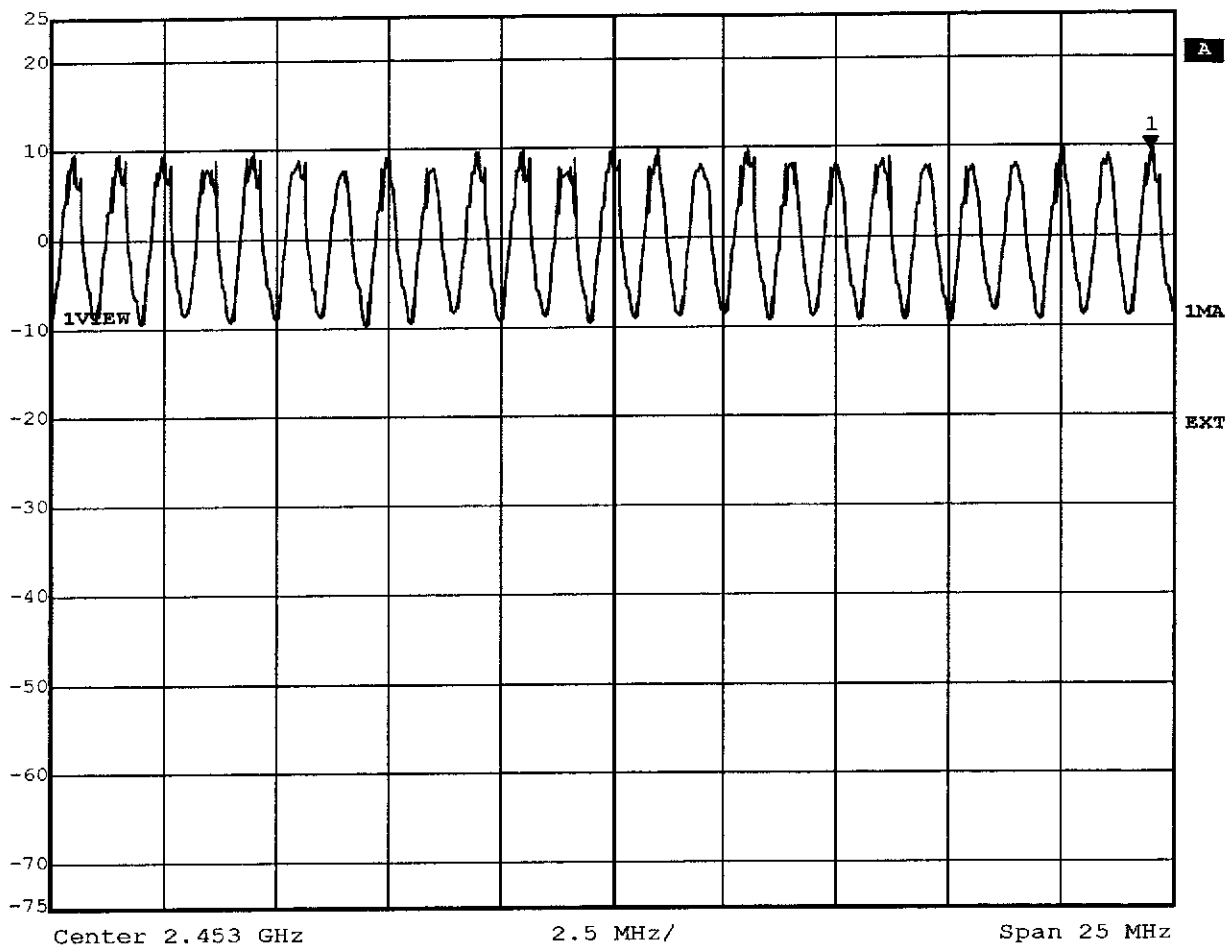
Marker 1 [T1] RBW 50 kHz RF Att 50 dB  
Ref Lvl 9.35 dBm VBW 50 kHz  
25 dBm 2.44004910 GHz SWT 25 ms Unit dBm



Title: Number of Hopping Frequencies Ch.: 14-38  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:24:54



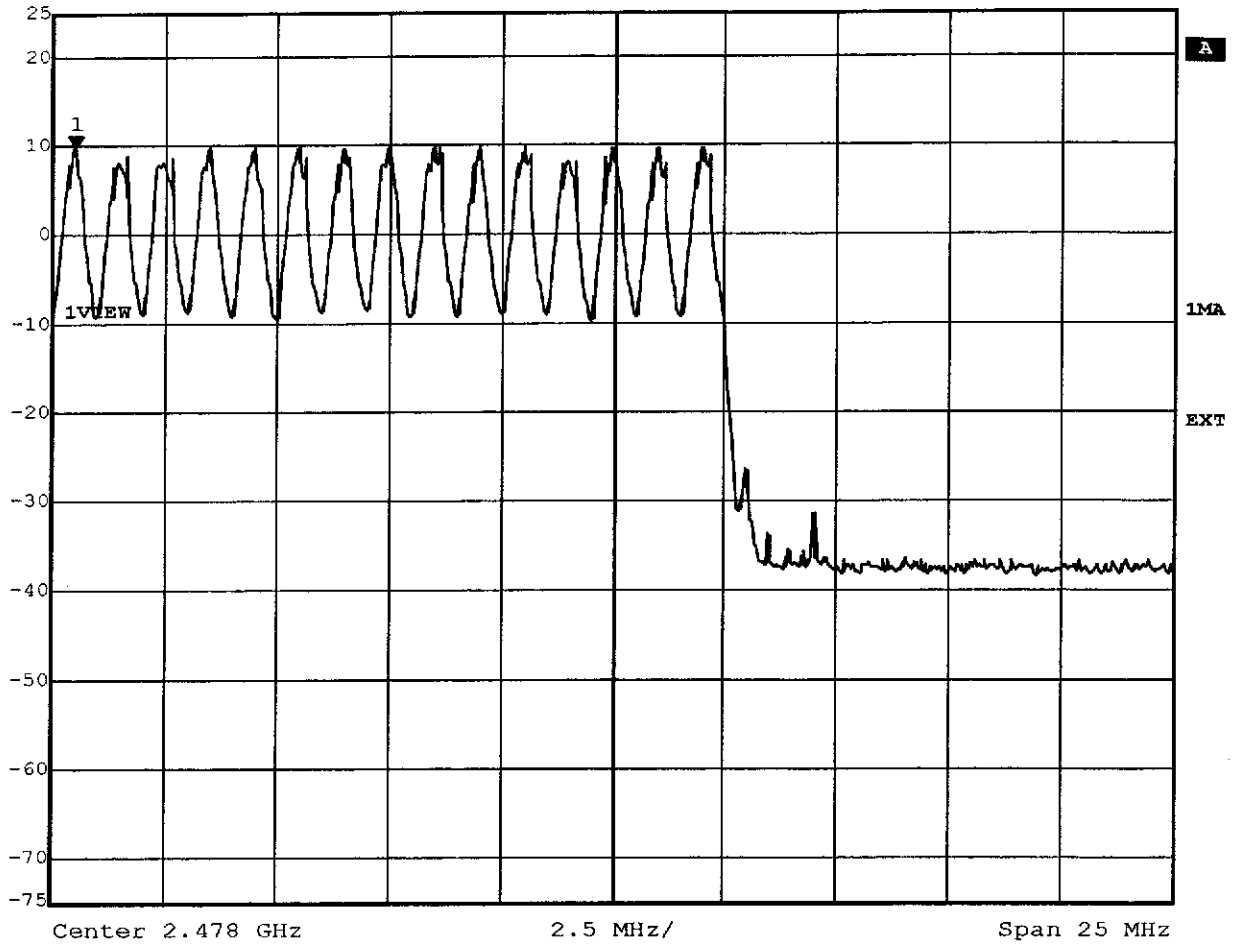
Marker 1 [T1] RBW 50 kHz RF Att 50 dB  
Ref Lvl 9.45 dBm VBW 50 kHz  
25 dBm 2.46499900 GHz SWT 25 ms Unit dBm



Title: Number of Hopping Frequencies Ch.: 39-63  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:32:47



Marker 1 [T1] RBW 50 kHz RF Att 50 dB  
Ref Lvl 9.51 dBm VBW 50 kHz  
25 dBm 2.46600100 GHz SWT 25 ms Unit dBm



Title: Number of Hopping Frequencies Ch.: 64-78  
Comment A: Alps Bluetooth Module UGP21  
Date: 13.JUN.2002 10:47:30

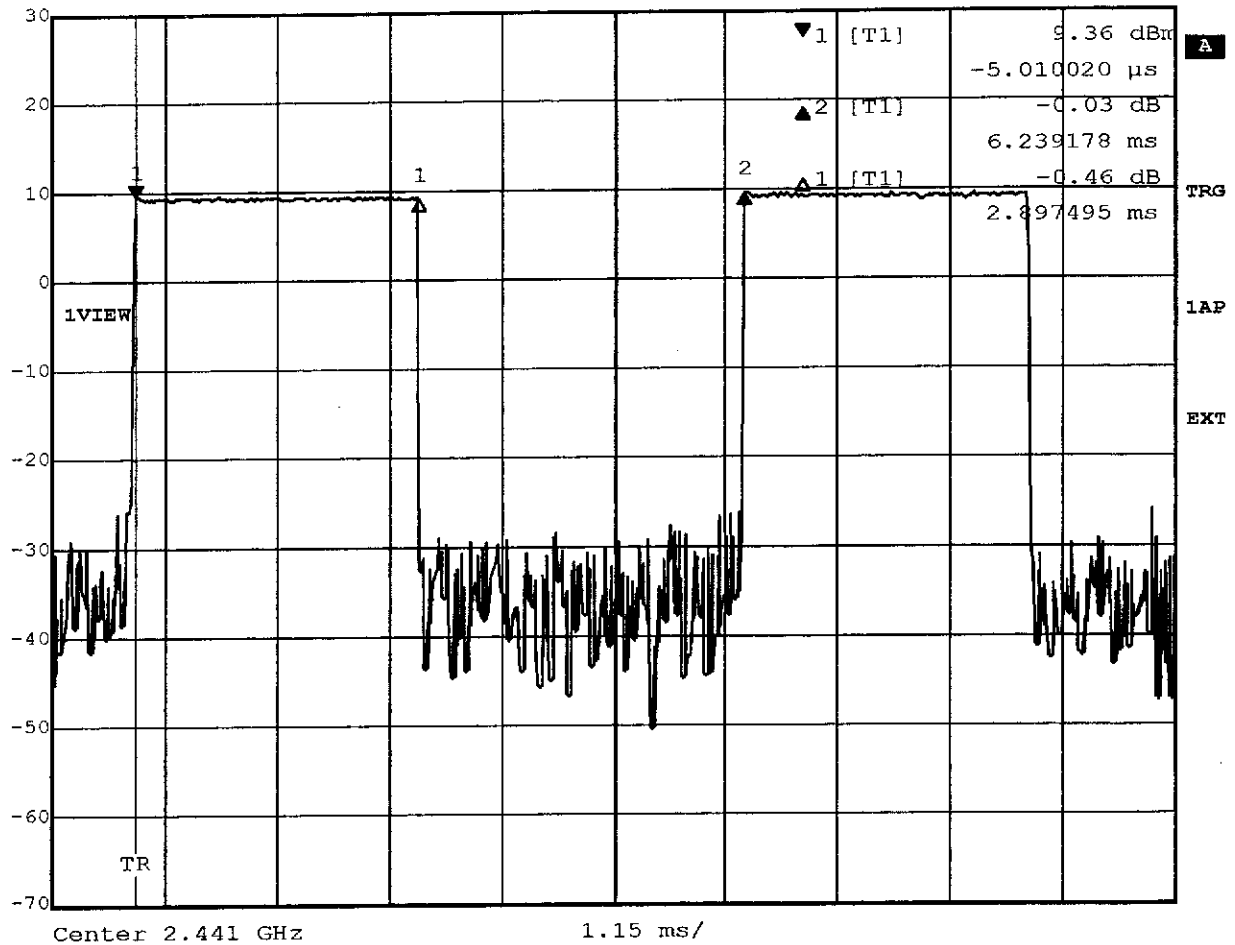


## Appendix G

Time of Occupancy (Dwell Time)



Delta 2 [T1] RBW 1 MHz RF Att 60 dB  
Ref Lvl -0.03 dB VBW 1 MHz  
30 dBm 6.239178 ms SWT 11.5 ms Unit dBm



Title: Dwell Time  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:01:49

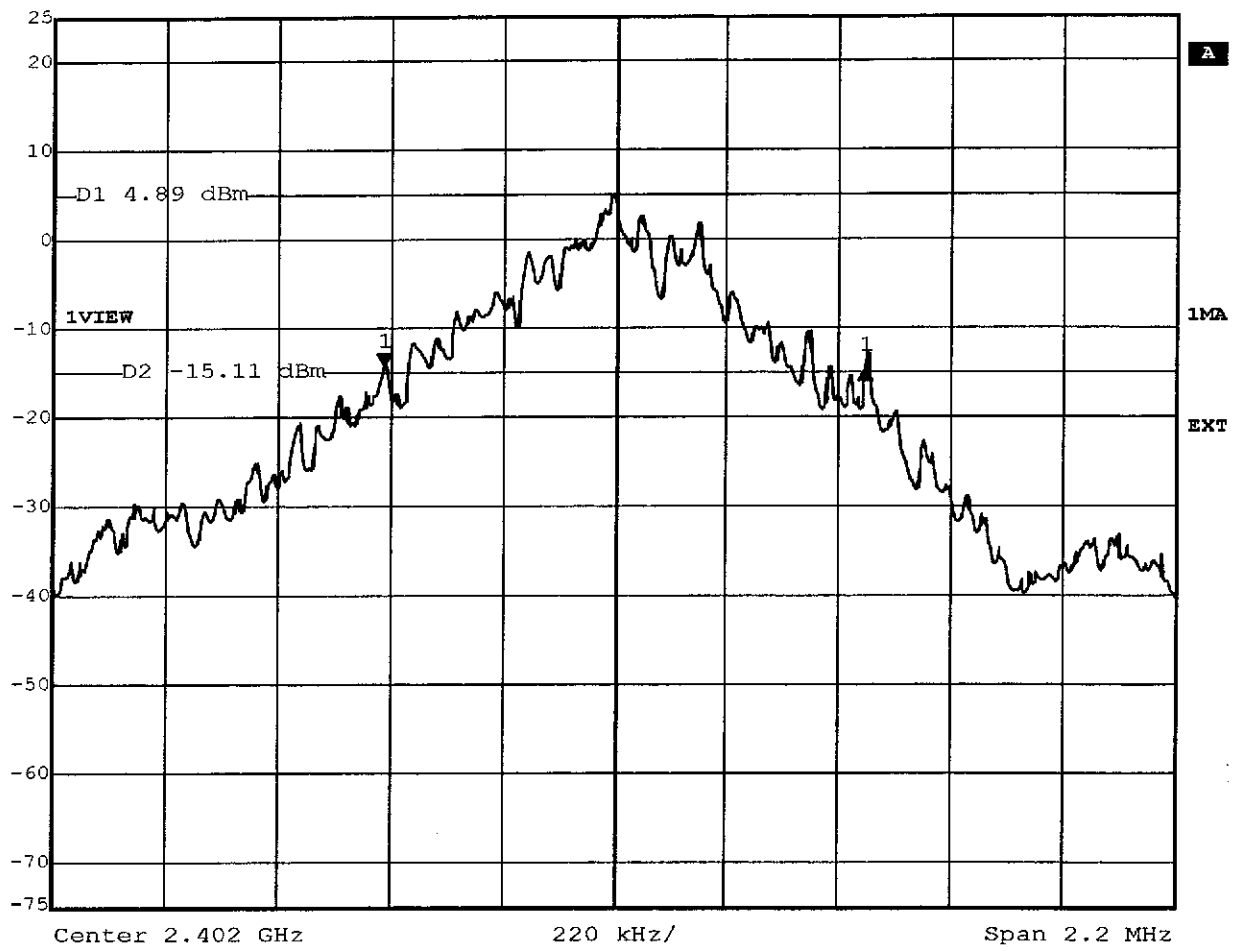


## Appendix H

20dB Bandwidth



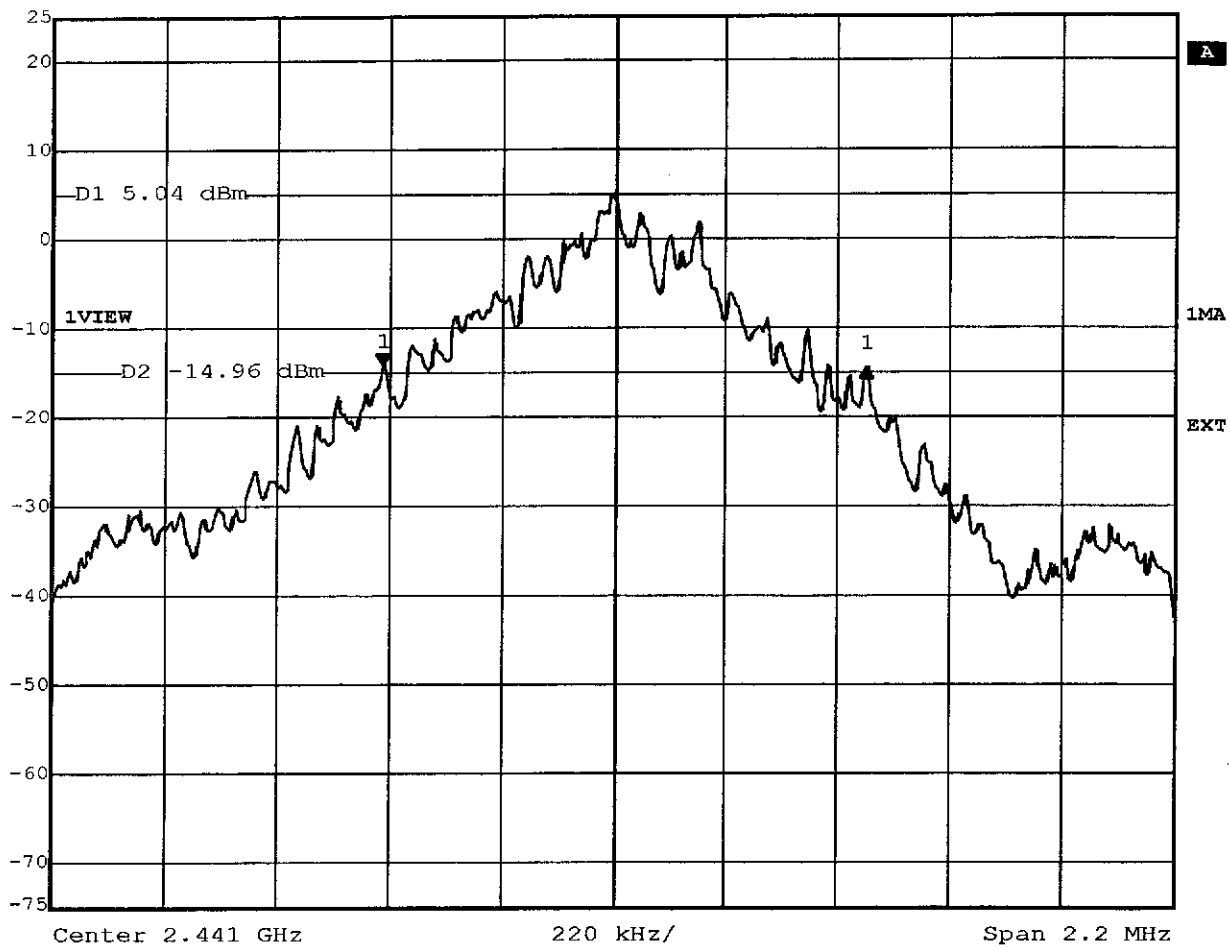
|         |                  |     |        |        |       |
|---------|------------------|-----|--------|--------|-------|
| Ref Lvl | Delta 1 [T1]     | RBW | 10 kHz | RF Att | 50 dB |
| 25 dBm  | -0.39 dB         | VBW | 10 kHz |        |       |
|         | 943.48697395 kHz | SWT | 56 ms  | Unit   | dBm   |



Title: 20 dB Bandwidth Ch.: 0  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 09:53:17



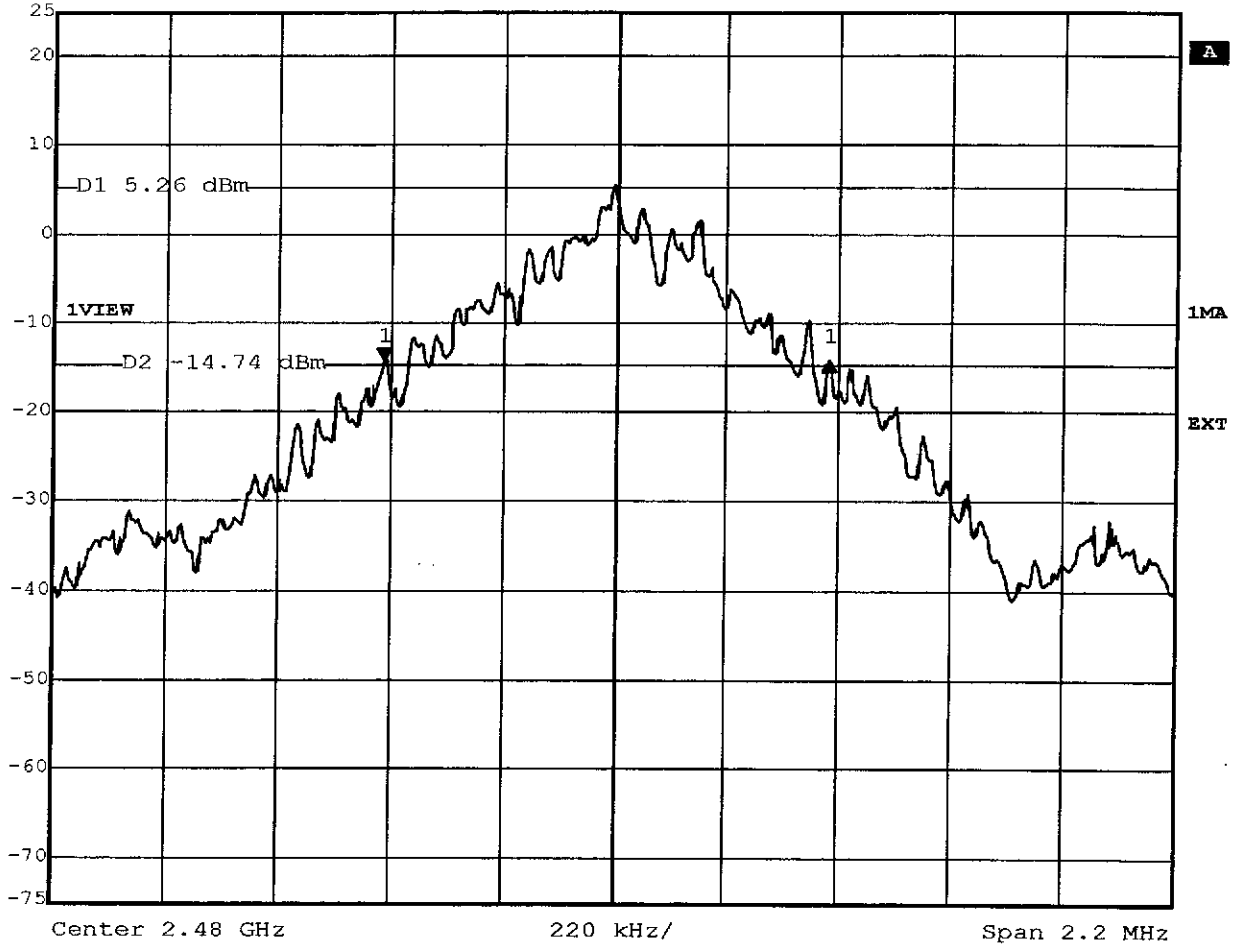
|              |                  |        |        |          |
|--------------|------------------|--------|--------|----------|
| Delta 1 [T1] | RBW              | 10 kHz | RF Att | 50 dB    |
| Ref Lvl      | -0.13 dB         | VBW    | 10 kHz |          |
| 25 dBm       | 947.89579158 kHz | SWT    | 56 ms  | Unit dBm |



Title: 20 dB Bandwidth Ch.: 39  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 09:49:36



|         |                  |     |        |        |       |
|---------|------------------|-----|--------|--------|-------|
| Ref Lvl | Delta 1 [T1]     | RBW | 10 kHz | RF Att | 50 dB |
| 25 dBm  | -0.15 dB         | VBW | 10 kHz |        |       |
|         | 872.94589178 kHz | SWT | 56 ms  | Unit   | dBm   |



Title: 20 dB Bandwidth Ch.: 78  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 09:55:28

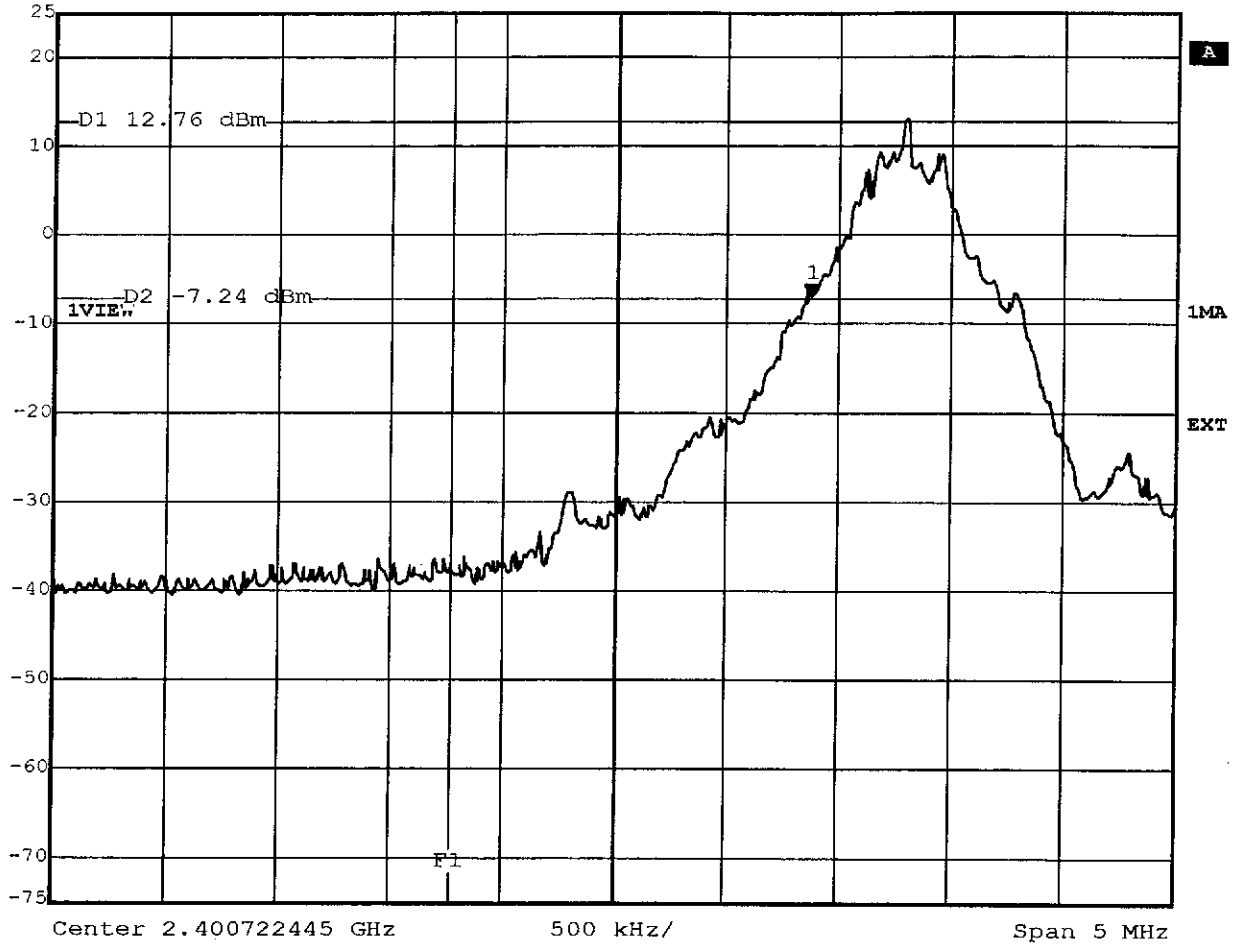


## Appendix I

Band-edge Compliance of RF Emissions



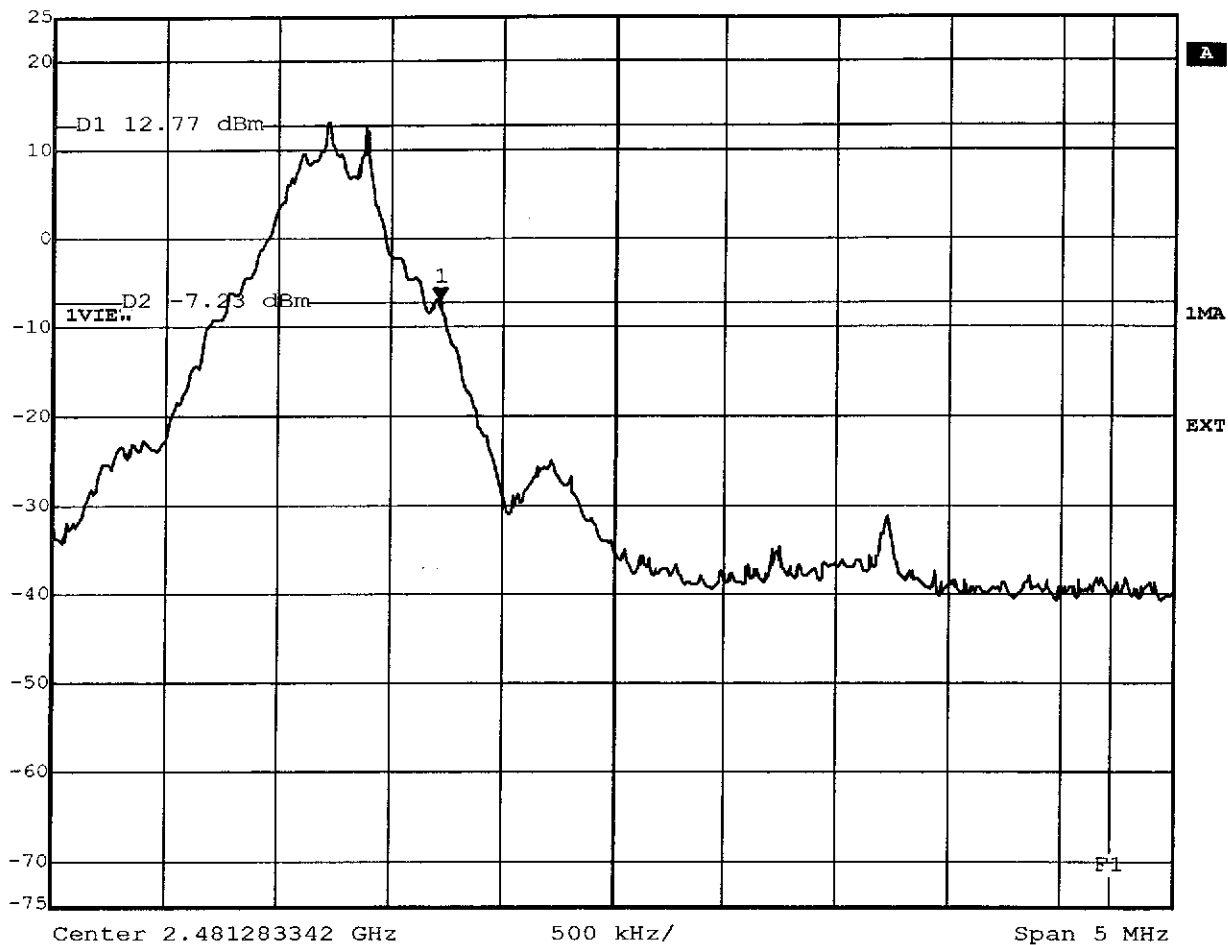
|         |                |     |        |        |       |
|---------|----------------|-----|--------|--------|-------|
| Ref Lvl | Marker 1 [T1]  | RBW | 50 kHz | RF Att | 50 dB |
| 25 dBm  | -7.04 dBm      | VBW | 50 kHz |        |       |
|         | 2.40159920 GHz | SWT | 5 ms   | Unit   | dBm   |



Title:      Band-edge Compliance of RF Conducted Emissions    Ch.: 0  
Comment A: Alps    Bluetooth Module    UGPZ1  
Date:      11.JUN.2002    07:56:07



Marker 1 [T1] RBW 50 kHz RF Att 50 dB  
Ref Lvl -7.21 dBm VBW 50 kHz  
25 dBm 2.48050679 GHz SWT 5 ms Unit dBm



Title: Band-edge Compliance of RF Conducted Emissions Ch.: 78  
Comment A: Alps Bluetooth Module UGP21  
Date: 11.JUN.2002 07:53:27



## Appendix J

Conducted Measurement at (AC) Power Line

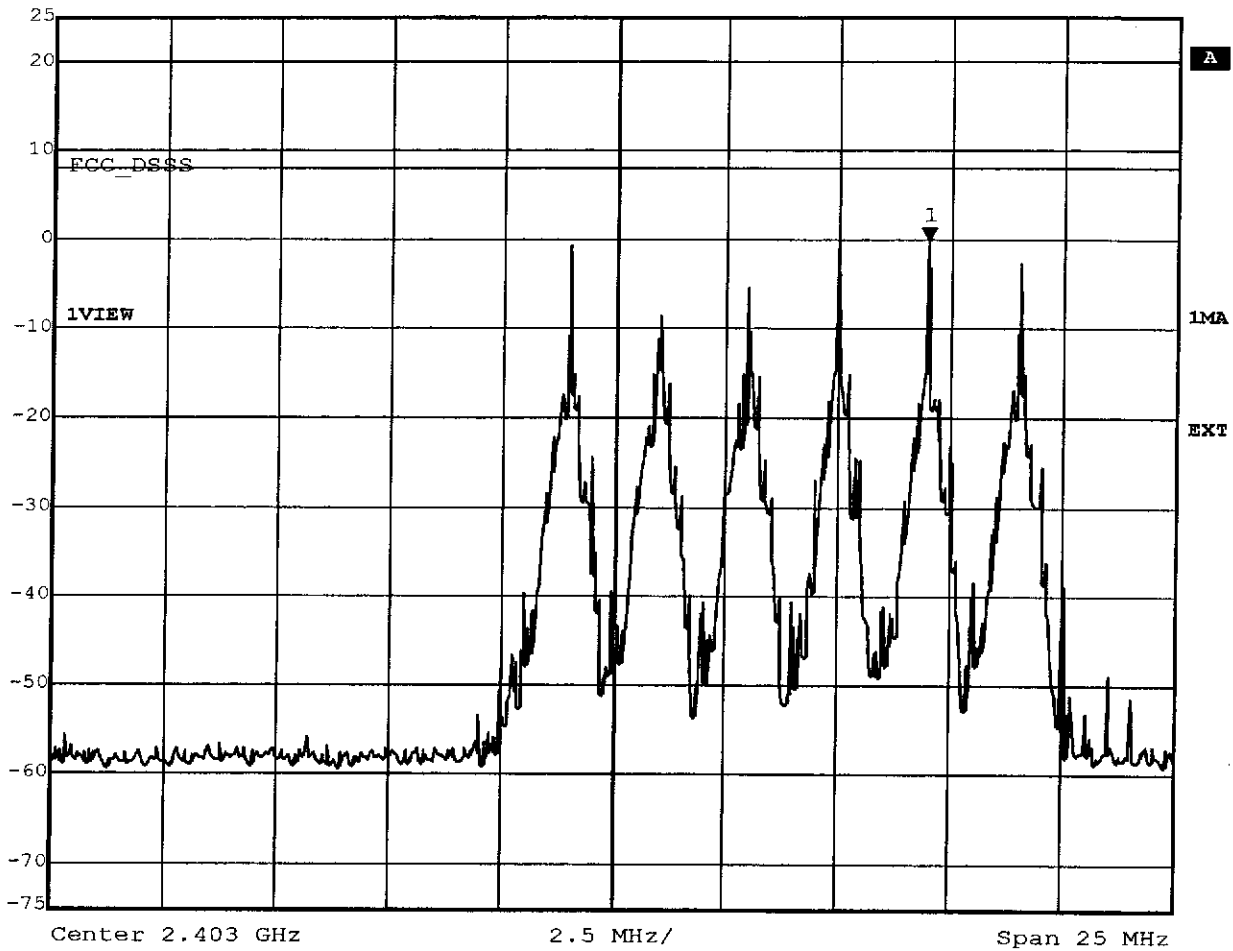


## Appendix K

Peak Power Spectral Density (Master Inquiry Mode)



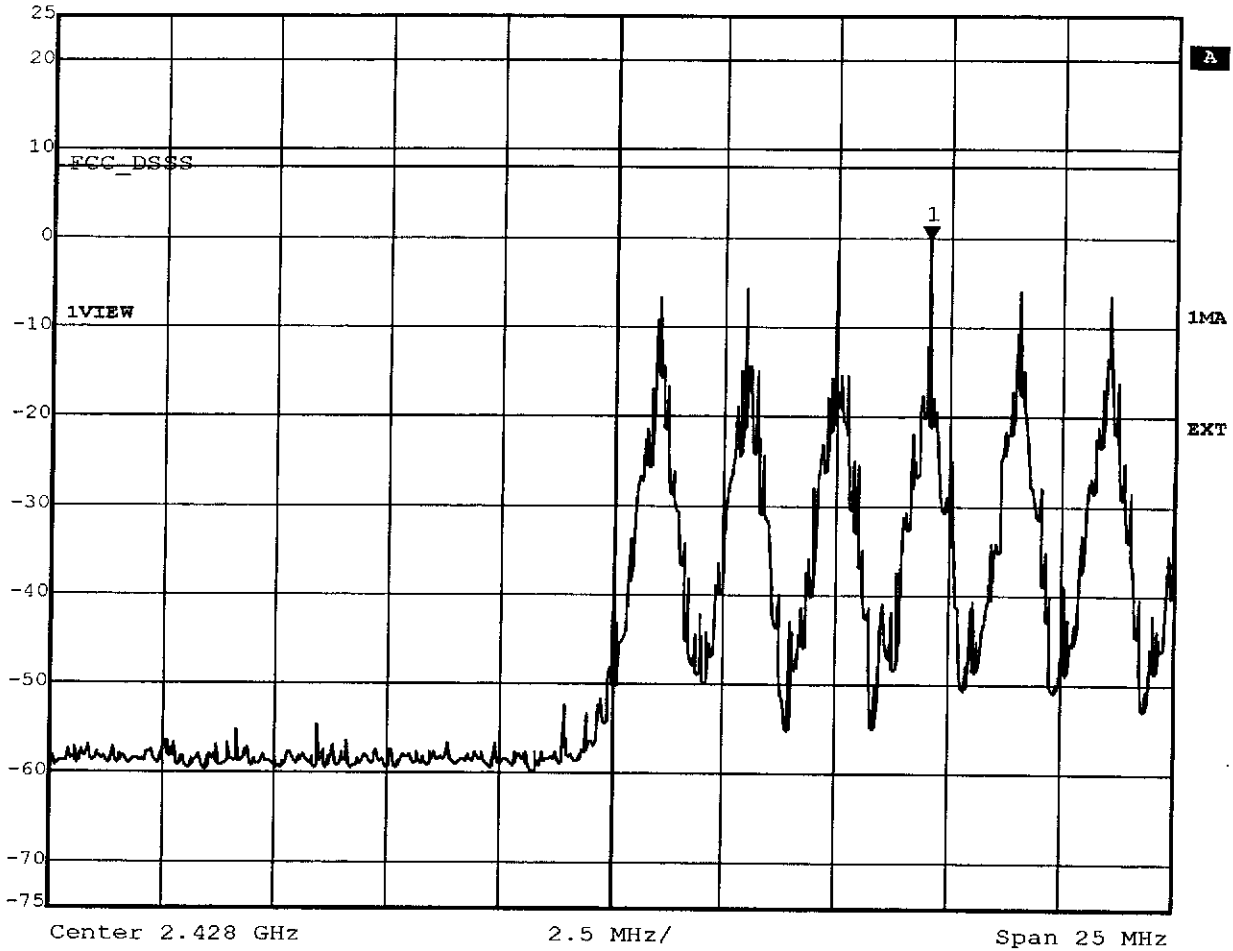
|         |                |     |       |        |       |
|---------|----------------|-----|-------|--------|-------|
| Ref Lvl | Marker 1 [T1]  | RBW | 3 kHz | RF Att | 50 dB |
| 25 dBm  | -0.02 dBm      | VBW | 3 kHz |        |       |
|         | 2.40998898 GHz | SWT | 10 s  | Unit   | dBm   |



Title: Peak Power Spectral Density (Master Inquiry Mode)  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:54:32



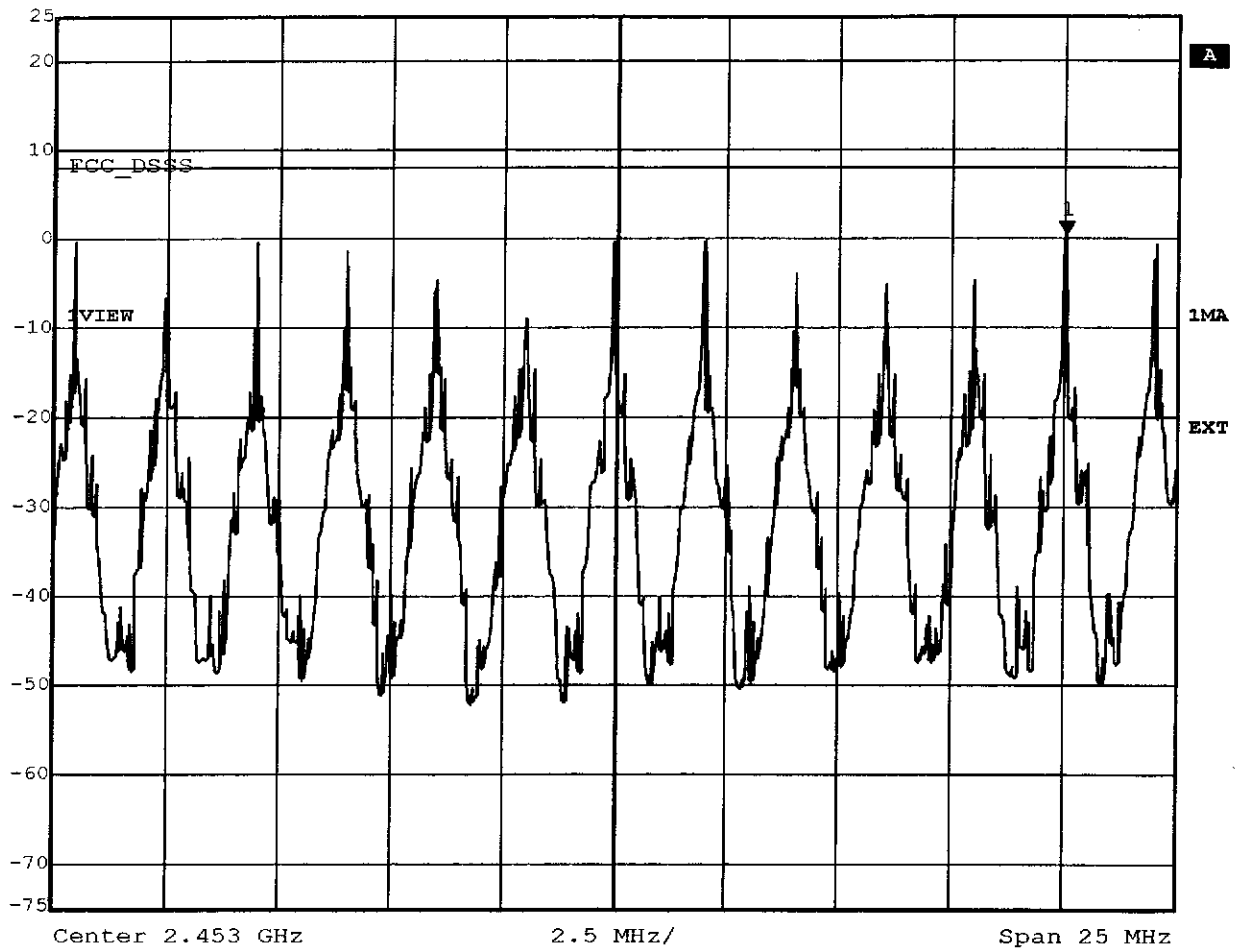
|         |                |     |       |        |       |
|---------|----------------|-----|-------|--------|-------|
| Ref Lvl | Marker 1 [T1]  | RBW | 3 kHz | RF Att | 50 dB |
| 25 dBm  | -0.23 dBm      | VBW | 3 kHz |        |       |
|         | 2.43503908 GHz | SWT | 10 s  | Unit   | dBm   |



Title: Peak Power Spectral Density (Master Inquiry Mode)  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 10:56:53



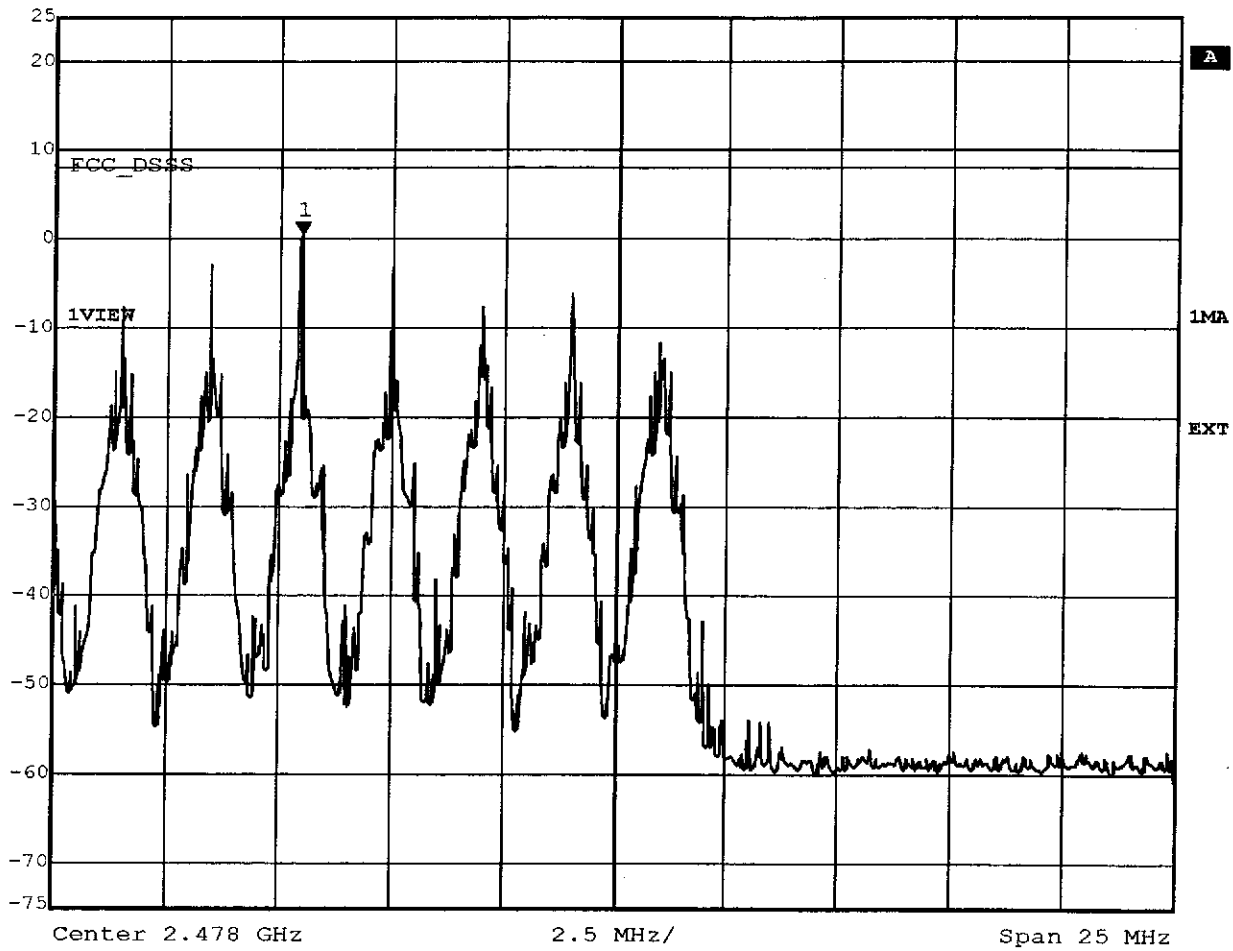
Marker 1 [T1] RBW 3 kHz RF Att 50 dB  
Ref Lvl 0.49 dBm VBW 3 kHz  
25 dBm 2.46304509 GHz SWT 10 s Unit dBm



Title: Peak Power Spectral Density (Master Inquiry Mode)  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 11:00:25



|         |                |     |       |        |       |
|---------|----------------|-----|-------|--------|-------|
| Ref Lvl | Marker 1 [T1]  | RBW | 3 kHz | RF Att | 50 dB |
| 25 dBm  | 0.27 dBm       | VBW | 3 kHz |        |       |
|         | 2.47101102 GHz | SWT | 10 s  | Unit   | dBm   |



Title: Peak Power Spectral Density (Master Inquiry Mode)  
Comment A: Alps Bluetooth Module UGPZ1  
Date: 13.JUN.2002 11:03:22