ETS Dr.Genz Taiwan PS Co., LTD

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679

Accredited Testing Laboratory

A2LA Cert.No.: 2300.01

PCTRB Accredited Type Certification Test House

FCC

TEST - REPORT

FCC RULES PART 15 / SUBPART C

FCC ID: CWTUGPZ8

Test report no.: W6M20605-6907-P-15

ETS DR.GENZ TAIWAN PS CO., LTD.
6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU, TAIPEI 114, TAIWAN, R.O.C.
PHONE 886-2-66068877 FAX 886-2-66068879

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification.
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
Reproduction or publication of extracts from the report requires the prior written approval of the ETS DR. GENZ TAIWAN PS CO., LTD.

Tester:

Date	ETS-Lab.	Name	Signature
June 05, 2006		Jay Chaing	Jay Chaing

Technical responsibility for area of testing:

Date	ETS	Name	Signature
June 05, 2006		Steven Chuang	Steven Chuang

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FCC ID : CWTUGPZ8

1.2 Testing laboratory

1.2.1 Location

OATS
No.5-1, Shuang Sing Village,
LiShuei Rd., Wanli Township,
Taipei County 207, Taiwan (R.O.C.)

Company
ETS DR. GENZ TAIWAN PS CO., LTD.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA-registration number: 2300.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679

PCTRB Accredited Type Certification Test House

1.3 Details of approval holder

Name	: ALPS Electric Co.,Ltd.
Street	: 1-7, Yukigaya Otsuka-cho, Ohta-ku, 145-8501
Town	: Tokyo
Country	: Japan
Telephone	: 81-3-3726-1211
Fax	: 81-3-3728-1741

Registration number: W6M20605-6907-P-15
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1.4 Application details

Date of receipt of application : May 08, 2006
Date of receipt of test item : May 10, 2006
Date of test : from May 10, 2006 to June 02, 2006

1.5 General information of Test item

Type of test item : BT module
Model Number : UGPZ8
Hardware : V1.0
Software : V19.2
Serial number : without
Photos : see Annex

Technical data

Frequency band : 2.4 GHz – 2.4835 GHz
Frequency (ch A) : 2.402 GHz
Frequency (ch B) : 2.441 GHz
Frequency (ch C) : 2.480 GHz

Transmitter **Unom**

Normal Mode
Power (ch A or ch 0) : Conducted: 1.81 dBm
Power (ch B or ch 39) : Conducted: 1.81 dBm
Power (ch C or ch 78) : Conducted: 1.37 dBm

EDR Mode
Power (ch A or ch 0) : Conducted: 2.65 dBm
Power (ch B or ch 39) : Conducted: 2.32 dBm
Power (ch C or ch 78) : Conducted: 1.68 dBm

Power supply : 3.3 VDC

Operation modes : simplex

Modulation Type : GFSK BpT=0.5 π/4-DQPSK 8DPSK

Antenna Type : 1/4PIFA Antenna

Antenna gain : 4 dBi

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Host device : none

Classification :

Fixed Device	☐
Mobile Device (Human Body distance ＞ 20cm)	☐
Portable Device (Human Body distance ＜ 20cm)	☒

Manufacturer: (if different from applicant)

Name : ./.
Street : ./.
Town : ./.
Country : ./.

Additional information : The test sample is designed as UGPZ8 device. Its pseudorandom hopping scheme, authentication, receiver parameters, synchronization procedure and other parameters are determined by UGPZ8 Specification.

1.6 Test standards $

Technical standard : FCC RULES PART 15 Subpart B / SUBPART C § 15.247

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2 Technical test

2.1 Summary of test results

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

or

The deviations as specified in 2.5 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature : 23 °C
Relative humidity content : 20 ... 75 %
Air pressure : 86 ... 103 kPa

Details of power supply : 3.3 VDC

Extreme conditions parameters : test voltage : -- extreme
min :-- V
max :-- V

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2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2005/10/27	2006/10/26
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None			
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW		
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2005/10/25	2006/10/24
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2005/10/21	2006/10/20
ETSTW-CE 006	IMPULS-BEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2004/11/11	2006/11/10
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	ABSORPTIONS-MESSWANDLER-ZANGE	2005/10/24	2007/10/23
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2005/8/18	2006/8/17
ETSTW-CE 012	Dual-Phase-V-Network	NNB-2/16Z	03/10201	Telemeter		
ETSTW-CS 001	SIGNAL GENERATOR	SMX	849254/003	R&S	2005/10/14	2006/10/13
ETSTW-CS 002	COUPLING AND DECOUPLING NETWORK	CDN S751	19263	SCHAFFNER	2005/10/14	2006/10/13
ETSTW-CS 003	COUPLING AND DECOUPLING NETWORK	CDN T400	19820	SCHAFFNER	2005/10/14	2006/10/13
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	SCHAFFNER	2005/10/27	2006/10/26
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	2005/10/14	2006/10/13
ETSTW-CS 004	6 dB Attenautor	HFP-5100-3/06 N M/F	2010876106			
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2005/10/14	2007/10/13
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2005/10/24	2006/10/23
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2005/10/29	2006/10/30
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2005/10/16	2006/10/15
ETSTW-RE 018	ANTENNA	AT4560	27212	AR	2004/11/8	2007/11/7
ETSTW-RE 019	ANTENNA , HORN	22240-25	121074	FM		
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR		
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2005/10/14	2006/10/13
ETSTW-RE 022	AMPLIFIER	8447D	2944A09837	Agilent	2005/10/14	2006/10/13
ETSTW-RE 027	Passive Loop Antenna	6512	34563	EMCO	2004/6/30	2007/6/29
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2004/6/15	2006/6/14

ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2004/6/17	2006/6/16
ETSTW-RE 030	Double-Ridged Waveguide Horm Antenna	3117	35224	EMCO	2006/5/4	2008/5/3
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2005/10/17	2006/10/16
ETSTW-RE 033	4CH 1GHz 5GS/s DSO	WAVERUNNER 6100A	LCRY0604P145 08	LeCory	2005/8/11	2006/8/10
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2005/10/17	2006/10/16
ETSTW-RE 037	Log-Periodic DipoleArray Antenna	3148	00034546	EMCO	2004/11/18	2006/11/17
ETSTW-RE 038	Log-Periodic DipoleArray Antenna	3148	00034547	EMCO	2004/11/18	2006/11/17
ETSTW-RE 039	Biconical Antenna	3110B	41760	EMCO	2004/11/18	2006/11/17
ETSTW-RE 040	Biconical Antenna	3110B	41761	EMCO	2004/11/18	2006/11/17
ETSTW-RE 042	ANTENNA	HK116	100172	R&S	2005/1/14	2007/1/13
ETSTW-RE 043	ANTENNA	HL223	100166	R&S		
ETSTW-RE 044	ANTENNA	HL050	100094	R&S		
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2008/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2005/5/19	2007/5/18
ETSTW-RE 004	Attenuator 6dB	50HF-006	None	JFW		
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2005/9/6	2006/9/5
ETSTW-EMI 001	HARMONICS 1000	HAR1000-1P	93	EMC-PARTNER	2005/9/12	2006/9/11
ETSTW-EMS 001	Clamp BASELSTRASSE 160 CH-4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	2004/11/2	2006/11/1
ETSTW-EMS 002	Frequency Converter	YF-6020	0308014			
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2005/10/27	2006/10/26
ETSTW-EMS 004	ESD generator minizap	ESD2000	016	EMC-PARTNER	2005/10/27	2006/10/26
ETSTW-EMS 008	Safety Test Solutions	ELT-400	E-0039	Narda	2005/5/4	2007/5/3
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	2004/12/3	2007/12/2
ETSTW-EMS 010	Coupling De-coupling Network	CDN-UTP8	014	EMC-PARTNER	2005/9/1	2008/8/31
ETSTW-EMS 011	Calibration Ficture	F-2031-CF-23MM	451	FCC	2005/8/11	2007/8/11
ETSTW-EMS 012	EM Injection Clamp	F-2031-23MM	476	FCC	2005/8/11	2007/8/10
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR		
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	2005/10/21	2006/10/20
ETSTW-RS 005	Electric Field Probe Type 8.3	EMR-20	BN 2244/20	Narda	2005/9/7	2007/9/6
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2005/10/21	2006/10/20
ETSTW-GSM 01	SIM Simulator	IT3	B2004-50106	ORGA	2005/9/15	2006/9/14
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	103489	R&S	2005/11/15	2006/11/14

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ETSTW-GSM 03	Agilent 8960 Test Set 1	E5515C	GB44052675	Agilent	2004/7/14	2006/7/13
ETSTW-GSM 04	Agilent 8960 Test Set 2	E5515C	GB44052665	Agilent	2004/7/14	2006/7/13
ETSTW-GSM 05	Agilent 8960 Test Set 3	E5515C	GB44052652	Agilent	2004/7/17	2006/7/16
ETSTW-GSM 06	Agilent 8960 Test Set 4	E5515C	GB44052684	Agilent	2004/7/16	2006/7/15
ETSTW-GSM 07	Agilent 8960 Test Set 5	E5515C	GB44052658	Agilent	2004/7/14	2006/7/13
ETSTW-GSM 08	Agilent 8960 Test Set 6	E5515C	GB44052666	Agilent	2004/7/16	2006/7/15
ETSTW-GSM 10	Combiner Wessex / Anite	B4605/100	053	Wessex / Anite	2004/7/14	2006/7/13
ETSTW-GSM 11	GSM 850,900,1800,1900 Test system	TS8950G		R&S	2005/11/1	2006/10/31
ETSTW-GSM 12	Acoustical Calibrator	4231	2463874	Brüel&Kjær	2005/10/31	2006/10/30
ETSTW-GSM 13	Conditioning Amplifier	2690--0S2	2437856	Brüel&Kjær		
ETSTW-GSM 14	Telephone Test Head	4602B	2465324	Brüel&Kjær		
ETSTW-GSM 15	Mouth Simulator	4227	2462516	Brüel&Kjær		
ETSTW-GSM 16	TEMP.&HUMIDITY CHAMBER	GTH-120-40-1P-U	MAA0501002	GIANT FORCE	2005/12/29	2006/12/28
ETSTW-GSM 17	ANTENNT COPLER	CMU-Z10	100988	R&S		
ETSTW-GSM 18	AUDIO ANALYZER	UPL16	100173	R&S	2005/10/29	2006/10/28
ETSTW-GSM 23	SPLITTER	4901.19.A	None	SUHNER		
ETSTW-GSM 24	Vibration Testing System	VS-100V	5494	Vibration	2005/12/20	2006/12/19

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 using a 50μH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient. temperature of the UUT was 23°C with a humidity of 40 %.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBμV + 10.36 dB + 6 dB = 36.36 dBμV/m @3m

The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2003 Section 13.1.2. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
(4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.
Measurements were made by ETS Dr. Genz Taiwan PS Co., Ltd. at the registered open field test site located No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.). The Registration Number: 930600.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

The formula is as follows:
Average = Peak + Duty Factor
Duty Factor = 20 log (dwell time/T)
T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

ANTENNA & GROUND:
This unit uses 1/4PIFA Antenna.

3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)	☒	☒	☐
Equivalent radiated Power	15.247(b)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.247(c)	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.247	☐	☐	☐
Carrier Frequency Separation	15.247(a) (1)	☒	☒	☐
Number of Hopping Frequencies	15.247(a) (1)(i)	☒	☒	☐
Time of Occupancy (Dwell Time)	15.247(a) (1)(i)	☒	☒	☐
20 dB Bandwidth	15.247(a) (1)(i)	☒	☒	☐
Band-edge Compliance of RF Emission	15.247(c)	☒	☒	☐
Radiated Emission from Digital Part And Receiver L.O.	15.109	☒	☒	☐
Power Line Conducted Emission	15.207(a)	☒	☒	☐

The follows is intended to leave blank.

3.1 Peak Output Power (transmitter)

FCC Rule: 15.247

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).

(Normal Mode)

Test conditions		Conducted Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23°C	V_{nom} = 3.3 V	1.81	1.81	1.37
Measurement uncertainty		< 3 dB		

(EDR Mode)

Test conditions		Conducted Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23°C	V_{nom} = 3.3 V	2.65	2.32	1.68
Measurement uncertainty		< 3 dB		

Test conditions		Radiated Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23°C	V_{nom} = 3.3 V	--	--	--
Measurement uncertainty		< 3 dB		

Test conditions T_{nom}= 23°C, V_{nom}= 3.3 V Frequency[MHz]	Signal Field strength TX highest power mode dBµV/m
2.402	91.73
Measurement uncertainty	< 3 dB

The diagrams for the field strength measurements are included in Appendix.

Maximum Peak Output Power

Limits:

Frequency MHz	Number of hopping channels			
	≥ 75	≥ 50	49 ≥ 25	74 ≥ 15
902-928		30 dBm	24 dBm	
2400-2483.5 MHz	30 dBm	-		21 dbm
5725-5850 MHz	30 dBm	-		

In case of employing transmitter antennas having antenna gain >dBi and using fixed poin-to point operation consider §15.247 (b)(4).

Test equipment used: ETSTW-RE 003, ETSTW-RE 012, ETSTW-RE 017, ETSTW-RE 024

3.2 Equivalent isotropic radiated power

FCC Rule: 15.239(b), 15.35

Because using an internal antenna there are no deviations from the radiated test results according 3.1.

3.2.1 Transmitter

Integral Antenna:

At the transmitter the measurement was transacted with the modulation declared by the manufactrer and the maximum available output power of the EUT.
In this arrangement the EUT fulfils the requirements of the FCC rules § 15.247, subpart C, section b.
This unit uses an internal antenna. There is no provision for an external antenna (see photo).

3.3 RF Exposure Compliance Requirements

According to Supplement C, Edition 01-01 to OET Bulletin 65, Edition 97-01 this spread spectrum transmitter is categorically excluded from routine environmental evaluation because of the low power level, where there is a high likelihood of compliance with RF exposure standards.
The antenna used for this Bluetooth transceiver module must not be co-located or operating in conjunction with any other antenna or transmitter.

3.4 Out of Band Radiated Emissions

FCC Rule: 15.247(c) , 15.35
For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.
Limits:
For frequencies below 1GHz :
Max. reading – 20 dB

91.73dBµV/m- 20 dB= 71.73dBµV/m
Guidance on Measurement of FHSS Systems:
"If the emission is pulsed, modify the unit for continuous operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation." Here the correction was added to the limit instead subtracted from the reading.

Duty Cycle correction = 20 log (dwell time/100ms)
For frequencies above 1GHz (Peak measurements).
Limit = max. aver. reading-20dB +20dB(because Peak detector is used)
71.73 dBµV/m
For frequencies above 1GHz (Average measurements).
Max. reading – 20 dB - duty cycle correction:

No duty cycle correction was added to the reading

91.73dBµV/m- 20 dB= 71.73dBµV/m

Remarks: See attached diagrams.
Test equipment used: Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 017, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 042, ETSTW-RE 043

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3.5 Transmitter Radiated Emissions in restricted Bands

FCC Rules: 15.247 (c), 15.205, 15.209, 15.35
Radiated emission measurements were performed from 30 MHz to 26000 MHz.
For radiated emission tests, the analyzer setting was as followings:
RES BW VID BW
Frequency <1 GHz 100 kHz 100 kHz (Peak measurements)
Frequency >1 GHz 1 MHz 1 MHz (Peak measurements)
1 MHz 1 MHz (Average measurements)
Limits:

For frequencies below 1GHz :

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

For frequencies above 1GHz (Average measurements).
Guidance on Measurement of FHSS Systems:
"If the emission is pulsed, modify the unit for continues operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation." Here the correction was added to the limit instead subtracted from the reading.

Duty cycle correction = 20 log (dwell time/100ms)

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dBμV/m

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

54.0dBμV/m + 20 dB= 74 dBμV/m

Remarks: See attached diagrams.

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 017, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 042, ETSTW-RE 043

3.6 Spurious emissions (tx)

Spurious emission was measured with modulation (declared by manufacturer).
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 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))

SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance to point 2.3.
Calculation of test results:
Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

The peak and average spurious emission plots was measured with the average limits.
In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

If in the column‘s correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the “Marker-Delta-Method“ or the „Duty-Cycle Correction Factor“.

Summary table with radiated data of the test plots

Low Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
H	1601.202	59.03	56.14	-7.03	52	49.11	74	54	22	4.89	162	327
	4801.603	46.43	--	4.43	50.86	--	--	54	--	3.14	182	366
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	113.188	22.7	--	12.44	35.14	--	--	43.5	--	8.36	77	124
	879.994	23.08	--	25.89	48.97	--	--	71.73	--	22.76	166	135

	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1603.206	55.79	--	-7.02	48.77	--	--	54	--	5.23	165	243
	4801.603	48.49	--	4.43	52.92	49.28	74	54	21.1	4.72	192	184
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	113.728	23.92	--	12.44	36.36	--	--	43.5	--	7.14	94	123
	130.814	24.73	--	14.09	38.82	--	--	43.5	--	4.68	111	118
	256.675	22.96	--	13.87	36.83	--	--	46	--	9.17	198	133
	879.861	20.03	--	25.89	45.92	--	--	71.73	--	25.81	156	137

Middle Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1629.258	60.53	--	-6.9	53.63	--	--	71.73	--	18.1	157	311
	4881.763	45.19	--	5.53	50.72	--	--	54	--	3.28	187	362
H	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	113.349	24.28	--	12.44	36.72	--	--	43.5	--	6.8	82	121
	880.017	24.02	--	25.91	49.93	--	--	71.73	--	21.8	162	133
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1627.254	56.84	--	-6.91	49.93	--	--	54	--	4.1	149	225
	4881.763	47.35	43.69	5.53	52.88	49.22	74	54	21.1	4.8	191	180
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	113.216	25.7	--	12.44	38.14	--	--	43.5	--	5.36	85	120
	130.808	25.12	--	14.09	39.21	--	--	43.5	--	4.29	106	125
	258.183	22.51	--	13.91	36.42	--	--	46	--	9.58	211	231
	879.996	21.03	--	25.89	46.92	--	--	71.73	--	24.81	155	139

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High Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
H	1655.31	58.86	--	-6.78	52.08	49.98	--	71.73	21.75	21.75	156	356
	4961.923	47.28	--	4.34	51.62	--	--	54	--	2.38	189	317
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	133.382	24.01	--	12.44	36.45	--	--	43.45	--	7.05	82	122
	879.234	26	--	24.45	50.45	--	--	71.73	--	21.3	163	134
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1653.306	56.17	--	-6.77	49.4	--	71.73	--	22.3	--	167	218
	4953.907	49.36	--	4.42	53.78	49.26	74	54	20.2	4.74	188	176
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	113.493	25.81	--	12.44	38.25	--	--	43.5	--	5.25	104	117
	130.692	25.06	--	14.09	39.15	--	--	43.5	--	4.35	114	115
	256.793	22.18	--	13.87	36.05	--	--	46	--	9.95	185	135
	880.013	21.04	--	25.91	46.95	--	--	71.73	--	24.78	151	140

Note : 1. Correction Factor = Antenna Factor + Cable Loss – Preamplifier.
2. The formula of measured value as : Test Result = Corrected Reading + Correction Factor.
3. Detector function in the form : P = Peak, QP = Quasi Peak, AV=Average.

All other not noted test plots do not contain significant test results in relation to the limits.

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.
Comment: see attached diagrams
Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 017, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 042, ETSTW-RE 043

3.7 Carrier Frequency Separation

Carrier Frequency Separation was measured with modulation (declared by manufacturer).

According to FCC rules part 15 subpart C §15.247 frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Test conditions		Channel Separation	
		Channel B	Channel B+1
T_{nom}= 23°C	V_{nom} = 3.3 V	1.000000000 MHz	
Measurement uncertainty		< 10 Hz	

Limits:

Frequency Range MHz	Limits	
	20 dB bandwidth < 25 kHz	20 dB bandwidth > 25 kHz
902-928	25 kHz	20 dB bandwidth
2400-2483.5 5725-5850.0	25 kHz	20 dB bandwidth

Test equipment used: ETSTW-CE 003, ETSTW-RE 004, ETSTW-RE 055

Comment: see attached diagram

3.8 Number of Hopping Frequencies

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

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20dB bandwidth of the hopping channel 250 kHz or greater, the system shall use at least 25 hopping frequencies.

Test conditions		Operating Mode	Number of Channels
T_{nom}= 23°C	Vnom= 3.3 V	normal transmitting	79
T_{nom}= 23°C	Vnom= 3.3 V	Inquiry mode	32

Limits:

Frequency Range MHz	Limit			
	20dB Bandwidth		20dB Bandwidth < 250 kHz	20dB Bandwidth ≥ 250 kHz
	≤ 1MHz			
902-928 MHz			≥ 50	≥ 25
2400-2483.5	≥ 15	≥ 15		
5725-5850.0 MHz	≥ 75			

Test equipment used: ETSTW-CE 003 , ETSTW-RE 004, ETSTW-RE 055

Comment: see attached diagrams

3.8.1 Pseudorandom Frequency Hopping Sequence

The generation of the hopping sequence is determined by the Bluethooth cord specification and complies with the FCC requirements.

3.8.2 Coordination of hopping sequences to other transmitters

According to the Bluetooth core specification V1.1 such a coordination is not possible. During scatternet function only one of the two hopping sequences will be used at a definite moment.

3.8.3 System Receiver Hopping Capability

According to the Bluetooth core specification. The system receivers shift frequencies in synchronization with the transmitted signals.

3.9 Time of Occupancy (Dwell Time)

Frequency hopping systems operating in the 5725-5850 MHz band shall use an average time of occupancy on any frequency not greater than 0.4 seconds within a 30 second period.

In 2400-2483,5 MHz band the average time of occupancy on any channel shall not be greater than 0,4 seconds multiplied by the number of hopping channels employed.

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test conditions	**Operating mode**	**Measurement periode**	**Time of Occupancy**
T_{nom}= 23°C V_{nom} = 3.3 V Channel B	normal transmitting		315.64 ms
	inquiry mode		87.22 ms
Measurement uncertainty	< 1 µs		

Limits and measurement periods:

Frequency MHz	Number of channels	Measurement Periode	Limit
902 – 928	≥50	20 s	0,4 s
	49 ≥ 25	10 s	0,4 s
2400 – 2483,5	≥ 15	0,4 s * number of used channels	0,4 s
5725- 5850	≥ 75	30 s	0,4s

Test equipment used: ETSTW-CE 003 , ETSTW-RE 004, ETSTW-RE 055

Comment: See attached diagram, which show the On-time and the number of counted events during the measurement period

3.10 20dB Bandwidth

Frequency hopping systems operating in the 5725-5850 MHz bands shall use a maximum 20dB bandwidth of 1 MHz.
The 20dB bandwidth is measured on the lowest, middle and highest hopping channel.

For frequency hopping systems operating in the 902-928 MHz band the maximum 20dB bandwidth of the hopping channel is 500 kHz.

(Normal Mode)

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 3.3 V	751.50300601 kHz	787.57515030 kHz	793.58717435 kHz
Measurement uncertainty		< 10 Hz		

(EDR Mode)

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 3.3 V	1.2745491 MHz	1.26252505 MHz	1.27454910 MHz
Measurement uncertainty		< 10 Hz		

Limits:

Frequency Range / MHz	Number of channels	Limit
902-928	< 50	< 250 kHz
	49 ≥ 25	500 kHz ≥ 250 kHz
2400-2483.5	≥ 15	not determined
5725-5850	75	≤ 1 MHz

Test equipment used: ETSTW-CE 003 , ETSTW-RE 004, ETSTW-RE 055

Comment: see attached diagram

3.10.1 System Receiver Input Bandwidth

It is determined in the Bluetooth core specification. The value matches to the bandwidth of transmitter signal.

3.11 Band-edge Compliance of RF Emissions

According to FCC rules part 15 subpart C §15.247(c) 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 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 emission which fall in the restricted bands, as defined in section 15.205(a), must also with the radiated emission limits.

(Normal Mode)

Test conditions		Attenuation at or outside band-edges **Single Frequency**	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 3.3 V	41.15 dB	40.50 dB
Measurement uncertainty		< 100 Hz	

Test conditions		Attenuation at or outside band-edges **Hopping Fequency**	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 3.3 V	41.10 dB	40.28 dB
Measurement uncertainty		< 100 Hz	

(EDR Mode)

Test conditions		Attenuation at or outside band-edges **Hopping Fequency**	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 3.3 V	41.15 dB	40.50 dB
Measurement uncertainty		< 100 Hz	

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Limits:

Frequency Range / MHz	Limit
902 –928 2400 – 2483.5 5725 - 5850	- 20 dB

Test equipment used: ETSTW-CE 003 , ETSTW-RE 004, ETSTW-RE 055

Comment: see attached diagrams

3.12 Radiated Emissions from Receiver Section of Transceiver

FCC Rule: 15.109

Summary table with radiated data of the test plots

RX

Low Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
H	1601.202	58.63	--	-7.03	51.6	--	--	54	--	2.4	166	341
	2400.801	46.57	--	2.06	48.63	--	--	54	--	5.37	217	382
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	879.988	14.51	--	25.89	40.4	--	--	46	--	5.6	159	138
	499.933	18.38	--	19.79	38.17	--	--	46	--	7.83	182	156
	73.626	22.93	--	11.75	34.68	--	--	40	--	5.32	45	133
	113.926	25.11	--	12.44	37.55	--	--	43.5	--	5.95	93	126
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1601.202	56.95	--	-7.03	49.92	--	--	54	--	4.08	159	244
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	432.464	17.67	--	18.45	36.12	--	--	46	--	9.88	282	166
	879.996	14.8	--	25.89	40.69	--	--	46	--	3.31	155	141
	30.813	23.42	--	13.03	36.45	--	--	40	--	3.55	69	107
	113.699	24.77	--	12.44	37.21	--	--	43.5	--	6.29	87	114

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Middle Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
H	1625.25	59.37	--	-6.92	52.45	49.48	--	54	--	4.52	168	331
	2436.873	49.91	--	0.69	50.6	--	--	54	--	3.4	205	391
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	275.35	22.17	--	14.61	36.78	--	--	46	--	9.22	214	166
	879.973	14.58	--	25.89	40.47	--	--	46	--	5.03	185	158
	71.779	22.75	--	11.87	34.62	--	--	40	--	5.08	42	133
	115.677	23.44	--	12.51	35.95	--	--	43.5	--	7.55	79	116
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1625.25	57.11	--	-6.92	50.19	--	--	54	--	3.81	170	241
	2436	48.91	--	0.69	49.6	--	--	54	--	4.4	208	185
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	432.694	20.42	--	18.45	38.87	--	--	46	--	7.13	301	154
	879.699	16.45	--	25.89	42.34	--	--	46	--	3.66	161	143
	30.892	23.49	--	13.03	36.52	--	--	40	--	3.48	70	110
	113.462	23.5	--	12.44	35.94	--	--	43.5	--	7.56	90	119

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High Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
H	1649.298	58.41	--	-6.8	51.61	--	--	54	--	2.39	158	331
	2478.957	51.85	--	-0.9	50.95	--	--	54	--	3.05	211	382
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	528.657	18.08	--	18.57	36.65	--	--	46	--	9.35	105	192
	879.929	13.88	--	25.89	39.77	--	--	46	--	6.23	177	153
	73.642	23.07	--	11.75	34.82	--	--	46	--	5.18	46	136
	113.925	23.69	--	12.44	36.13	--	--	43.5	--	7.37	82	114
V	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	AV		PK	AV	PK	AV	PK	AV		
	1649.298	57.14	--	-6.8	50.34	--	--	54	--	3.66	155	209
	2478.957	51.57	--	-0.9	50.67	--	--	54	--	3.33	206	182
	Frequency Marker (MHz)	Corrected Reading (dBuV)		Correction Factor (dB)	Test Result (dBuV/m)		Compliance Limit (dBuV/m)		Margin (dB)		Table Azimuth (degree)	Antenna Height (cm)
		PK	QP		PK	QP	PK	QP	PK	QP		
	432.844	19.78	--	18.46	38.24	--	--	46	--	7.76	305	160
	879.938	14.28	--	25.89	40.17	--	--	46	--	5.83	164	139
	30.383	24.13	--	13.03	37.16	--	--	40	--	2.84	72	111
	113.253	23.45	--	12.44	35.89	--	--	43.5	--	7.61	88	121

Note : 1. Correction Factor = Antenna Factor + Cable Loss – Preamplifier.
2. The formula of measured value as : Test Result = Corrected Reading + Correction Factor.
3. Detector function in the form : P = Peak, QP = Quasi Peak, AV=Average.

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Summary table with radiated data of the test plots

(Digital)

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Table Azimuth (degree)	Antenna Height (cm)
H	71.556	23	11.87	P	34.87	40	5.13	38	135
	115.511	24.45	12.21	P	36.66	43.5	6.84	89	128
	167.957	17.38	15.31	P	32.69	43.5	10.81	125	139
	336.275	17.08	16.21	P	33.29	46	12.71	46	151
	672.892	14.61	22.88	P	37.49	46	8.51	139	162
	879.954	13.06	25.89	P	38.95	46	7.05	154	141

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Table Azimuth (degree)	Antenna Height (cm)
V	432.694	19.97	18.46	P	38.43	46	7.57	303	162
	660.703	14.73	22.83	P	37.56	46	8.44	142	188
	879.977	14.08	25.84	P	39.92	46	6.08	149	144
	30.681	23.12	13.03	P	36.15	40	3.85	66	109
	113.394	23.33	12.44	P	35.77	43.5	7.73	84	118
	168.034	18.82	15.07	P	33.89	43.5	9.61	133	125

Note : 1. Correction Factor = Antenna Factor + Cable Loss – Preamplifier.
2. The formula of measured value as : Test Result = Corrected Reading + Correction Factor.
3. Detector function in the form : P = Peak, QP = Quasi Peak, AV=Average.

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)	Field Strength (dBmicrovolts/meter)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 042, ETSTW-RE 043

Comment: see attached diagram

3.13 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Frequency	Level (dBμV)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
N	0.15	49.89	34.39	10.1	59.99	44.49	66	56	6.01	11.51
	0.59	39.9	32.3	10.1	50	42.4	56	46	6	3.6
	4.65	44.2	33.5	10.1	54.3	43.6	56	46	1.7	2.4
	8.13	38.02	27.49	10.1	48.12	37.59	60	50	11.88	12.41

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
L1	0.15	48.5	36.24	10.1	58.6	46.34	66	56	7.4	9.66
	0.51	40.63	29.92	10.1	50.73	40.02	56	46	5.27	5.98
	0.66	39.55	25.58	10.1	49.65	35.68	56	46	6.35	10.32
	4.68	45.28	34.12	10.1	55.38	44.22	56	46	0.62	1.78
	5.42	40.59	32.78	10.1	50.69	42.88	60	50	9.31	7.12
	27.77	36.97	24.39	10.1	47.07	34.49	60	50	12.93	15.51

Registration number: W6M20605-6907-P-15
FCC ID : CWTUGPZ8

Limits:

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test equipment used: ETSTW-CE 001, ETSTW-CE 003, ETSTW-CE 004, ETSTW-CE 006

Comment: see attached diagram

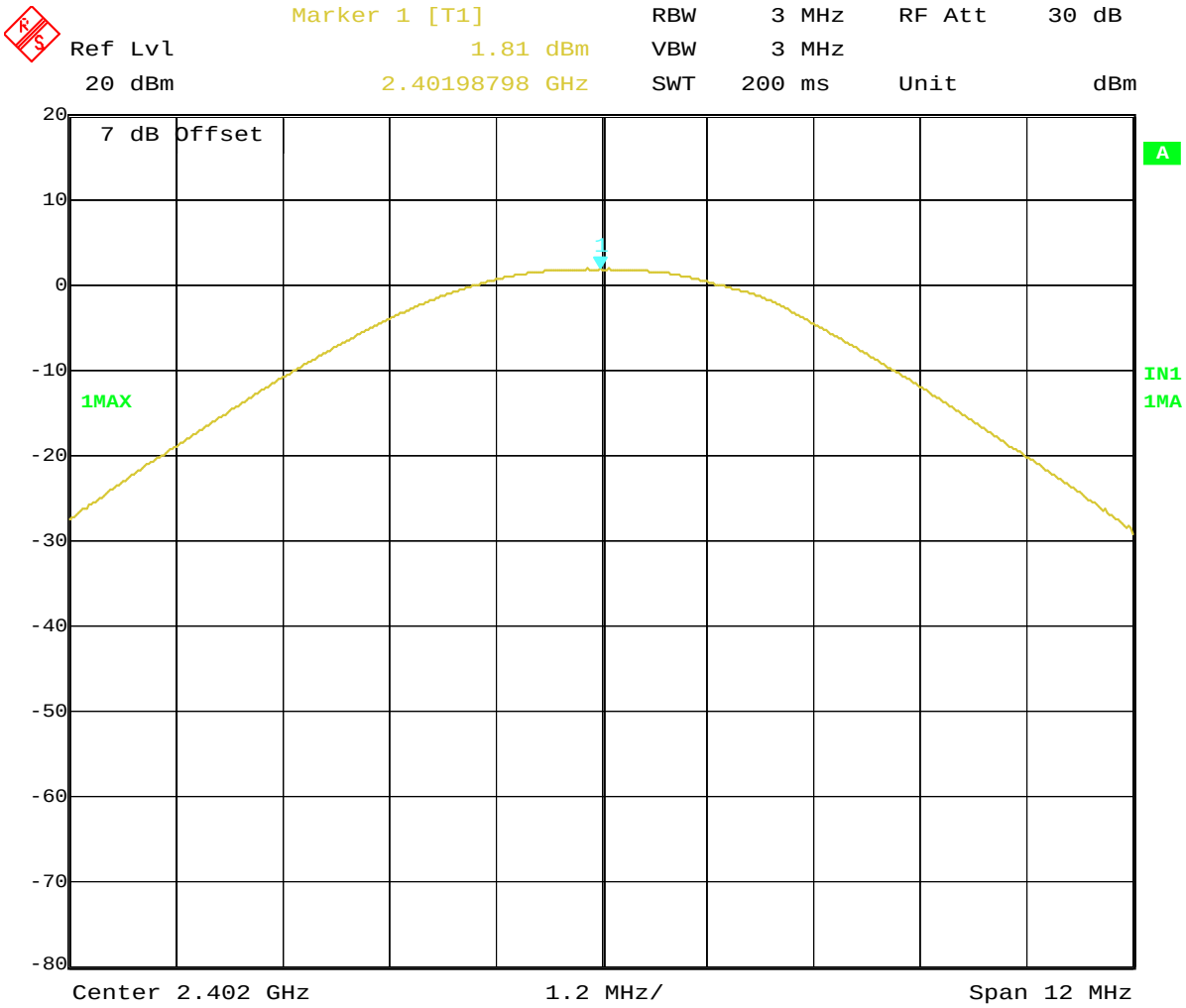
Appendix

A Peak Output Power
B Spurious Emissions radiated
C Carrier Frequency Separation
D Number of Hopping Frequencies
E Time of Occupancy (Dwell Time)
F 20dB Bandwidth
G Band-edge Compliance of RF Conducted Emissions
H Radiated Emissions from Receiver Section of Transceiver
I Power Line Conducted Emission
J Pictures

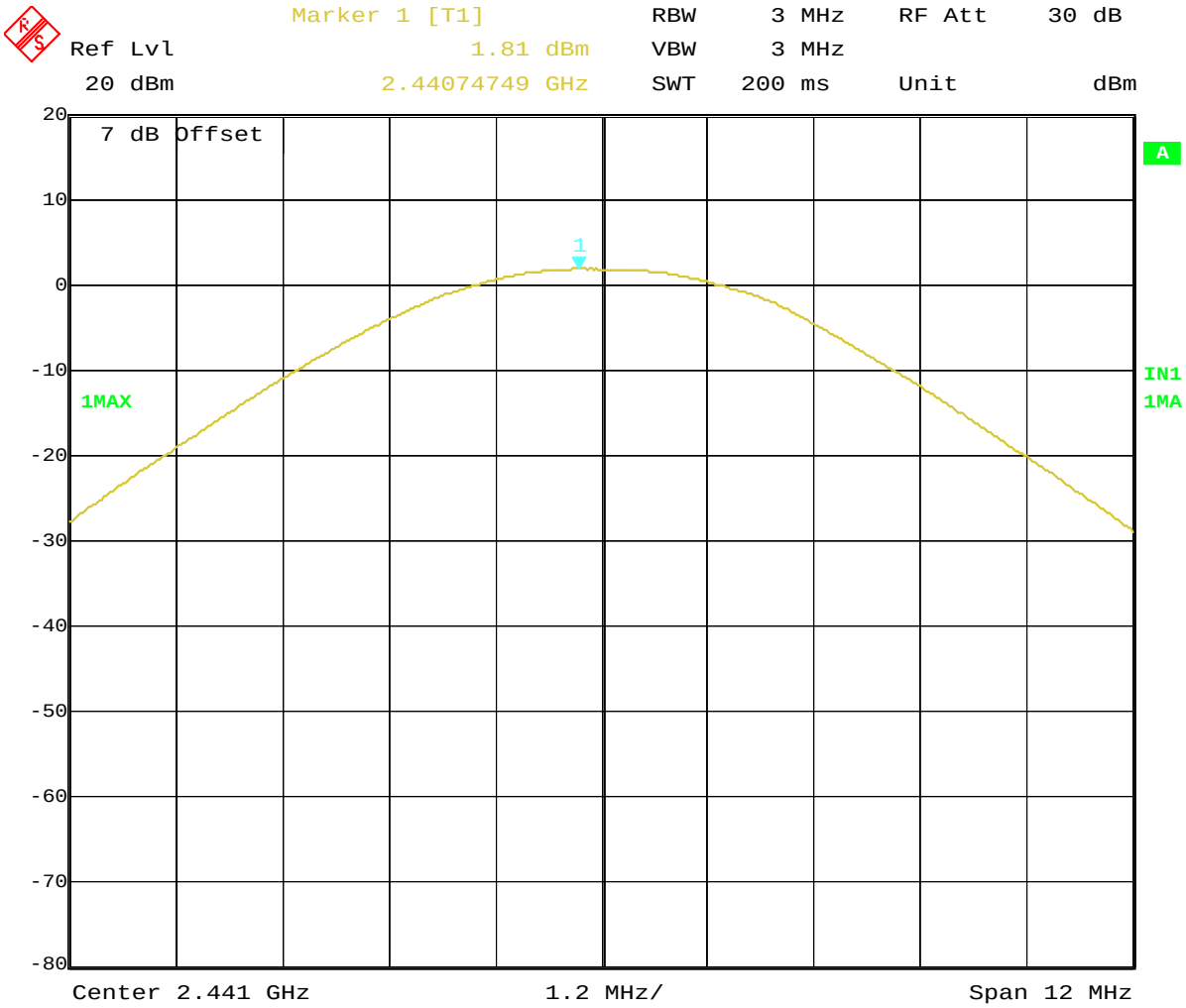
Appendix A

Peak Output Power

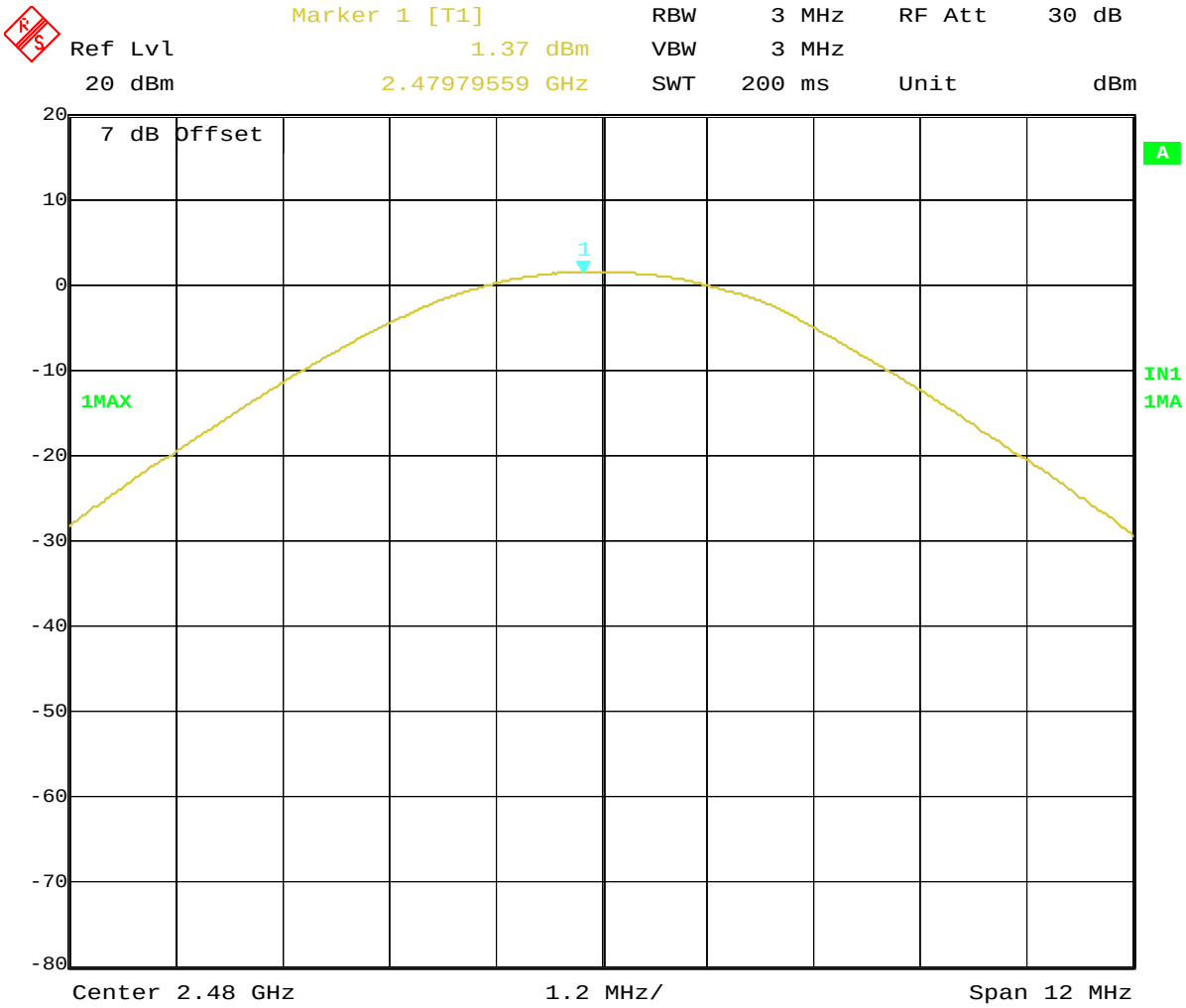
The measurement diagram are wideband pre-scan results; only for reference.



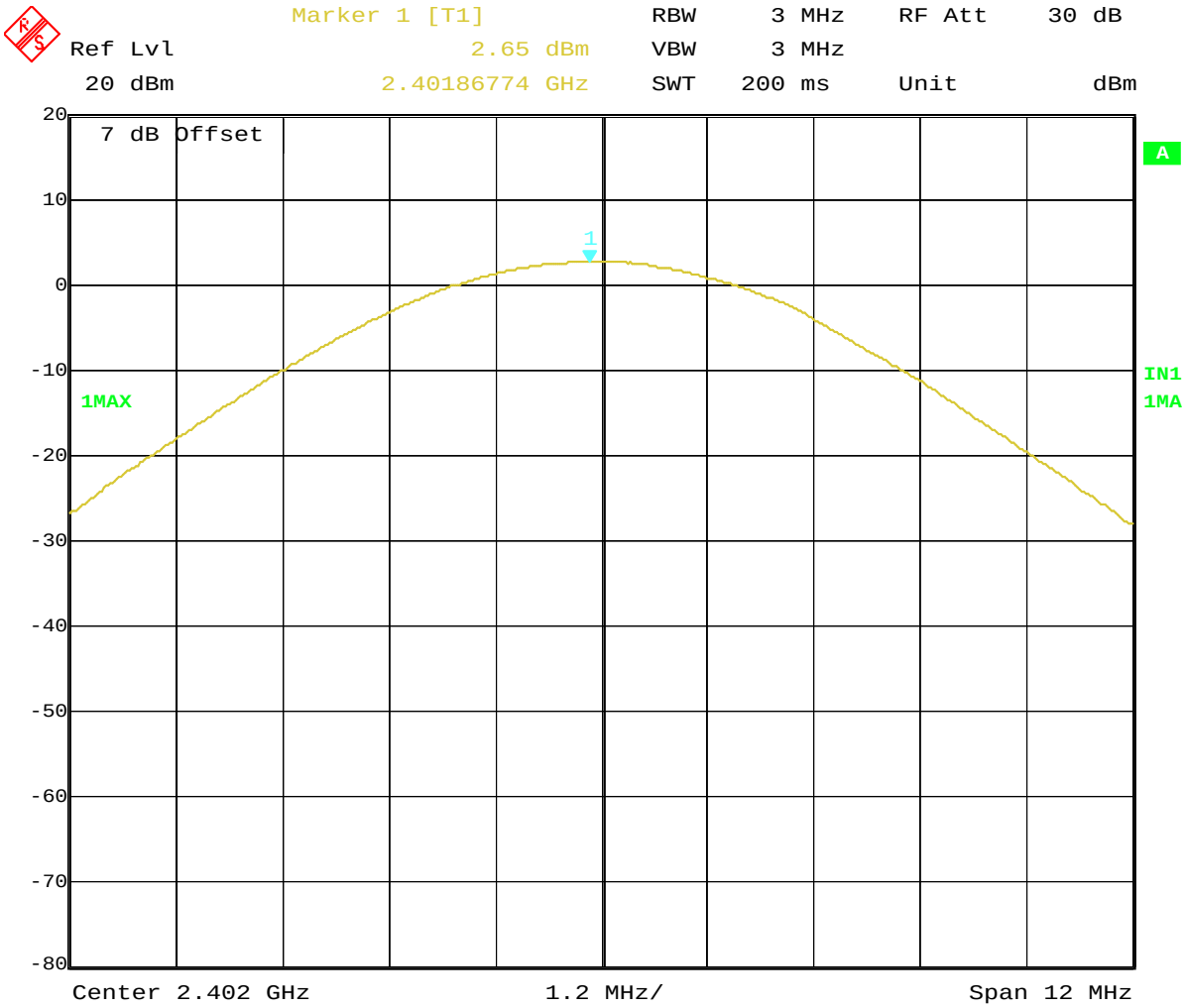
Title: Output Power Conducted Ch.0
Date: 30.MAY.2006 14:01:02



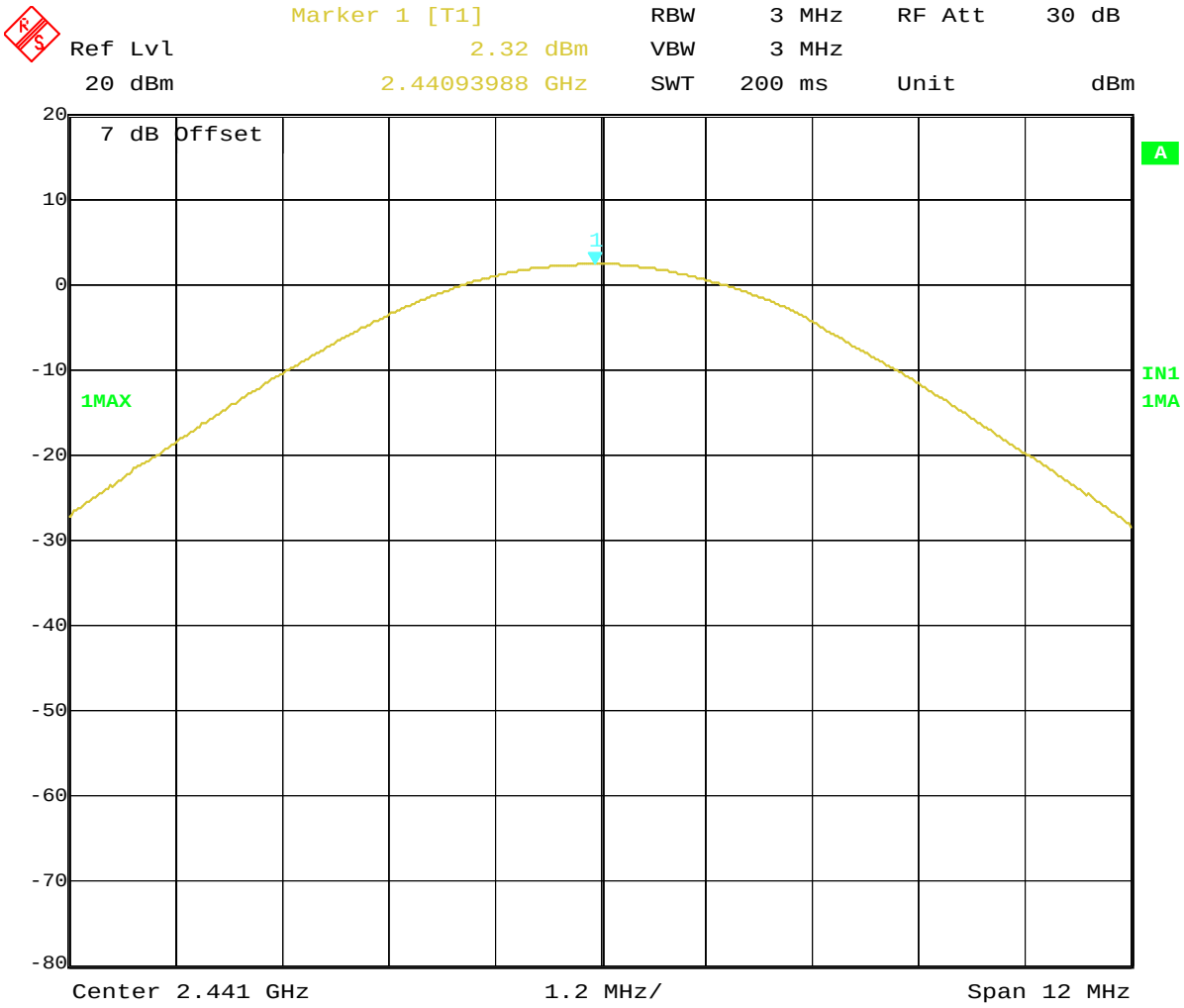
Title: Output Power Conducted Ch.39
Date: 30.MAY.2006 14:01:34



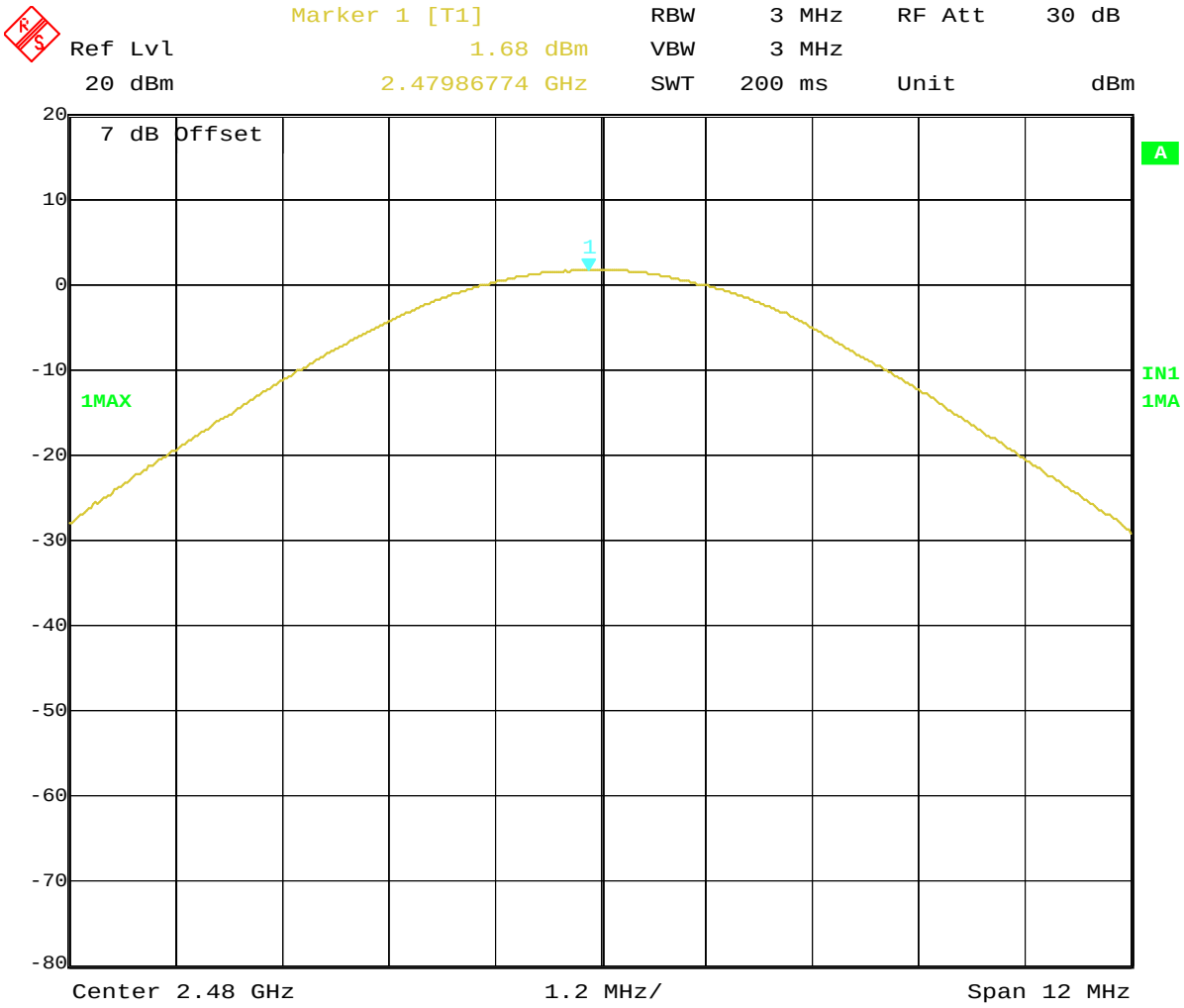
Title: Output Power Conducted Ch.78
Date: 30.MAY.2006 14:02:07



Title: Output Power Conducted Ch.0 (EDR mode)
Date: 30.MAY.2006 14:08:18



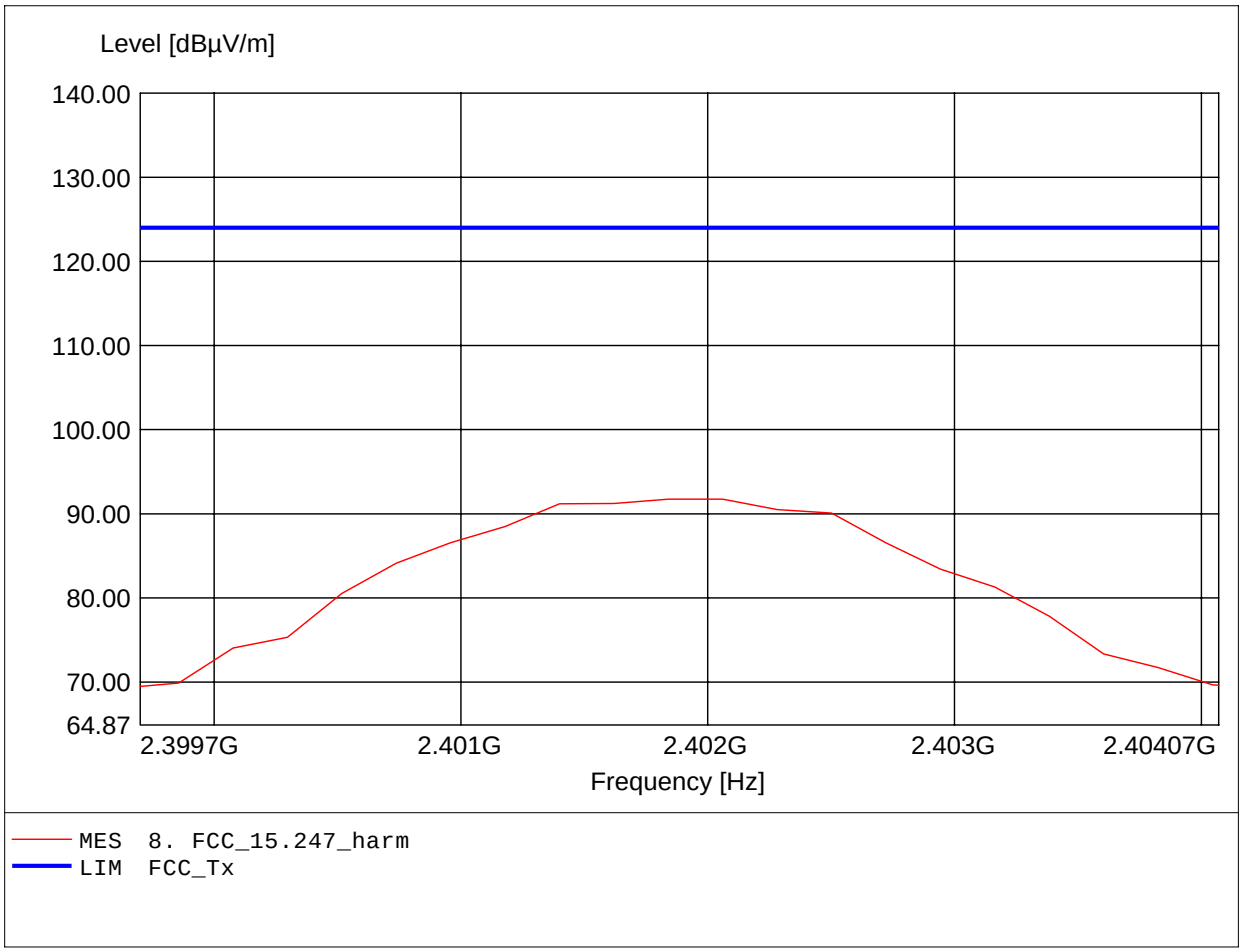
Title: Output Power Conducted Ch.39 (EDR mode)
Date: 30.MAY.2006 14:07:54



Title: Output Power Conducted Ch.78 (EDR mode)
Date: 30.MAY.2006 14:05:09

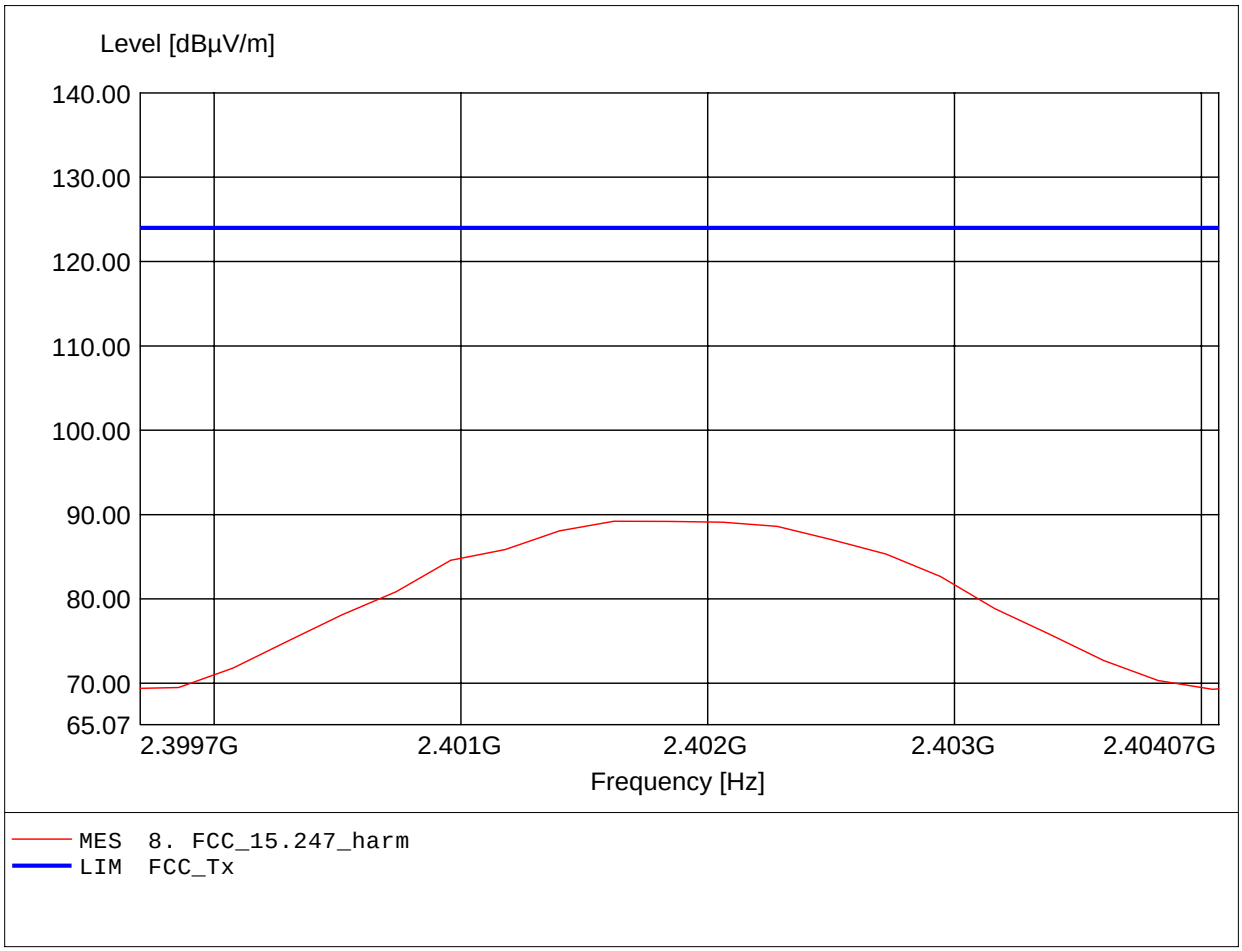
Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.402GHz, Emax: 91.73dBµV/m, RBW: 1MHz



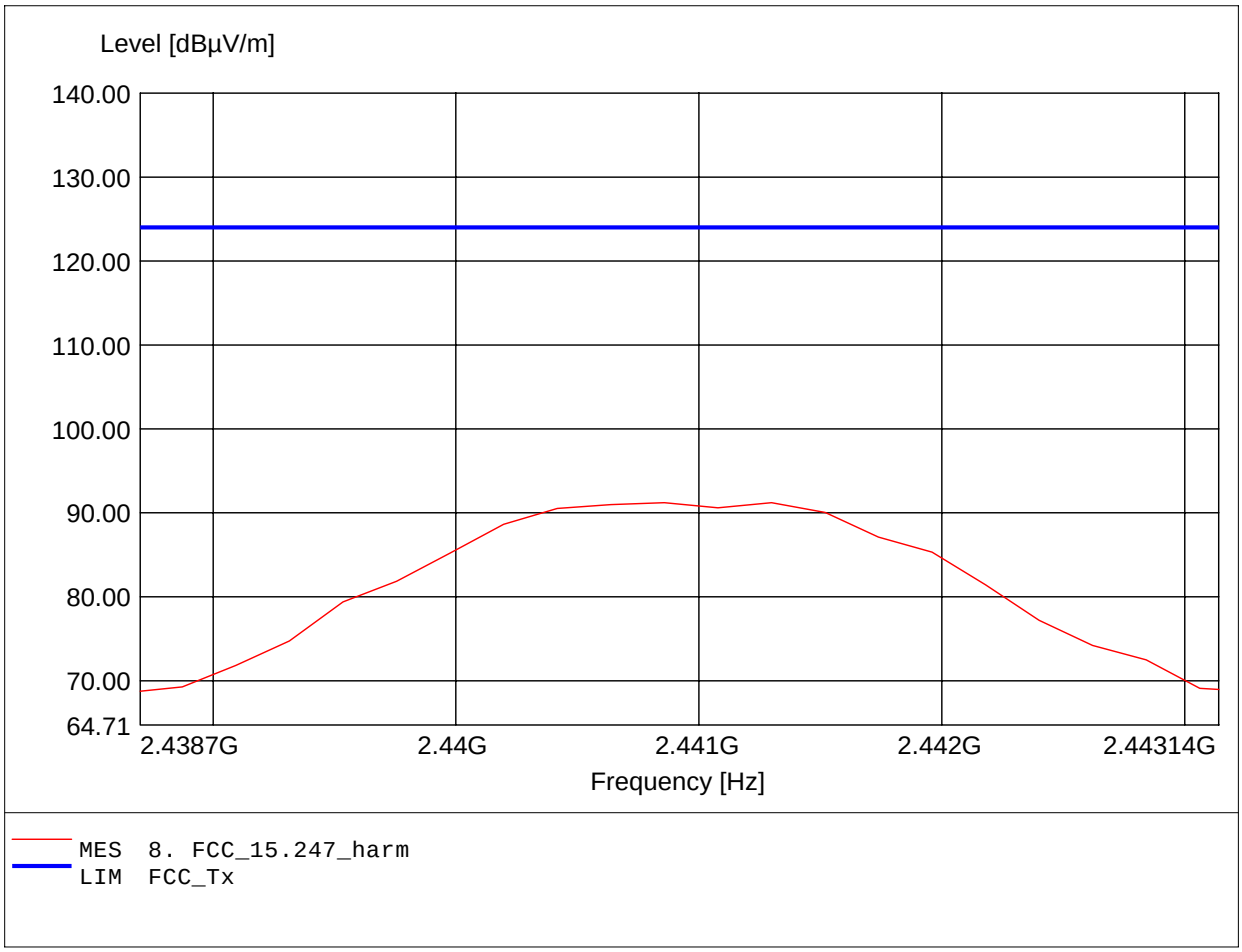
Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.402GHz, Emax: 89.20dBµV/m, RBW: 1MHz



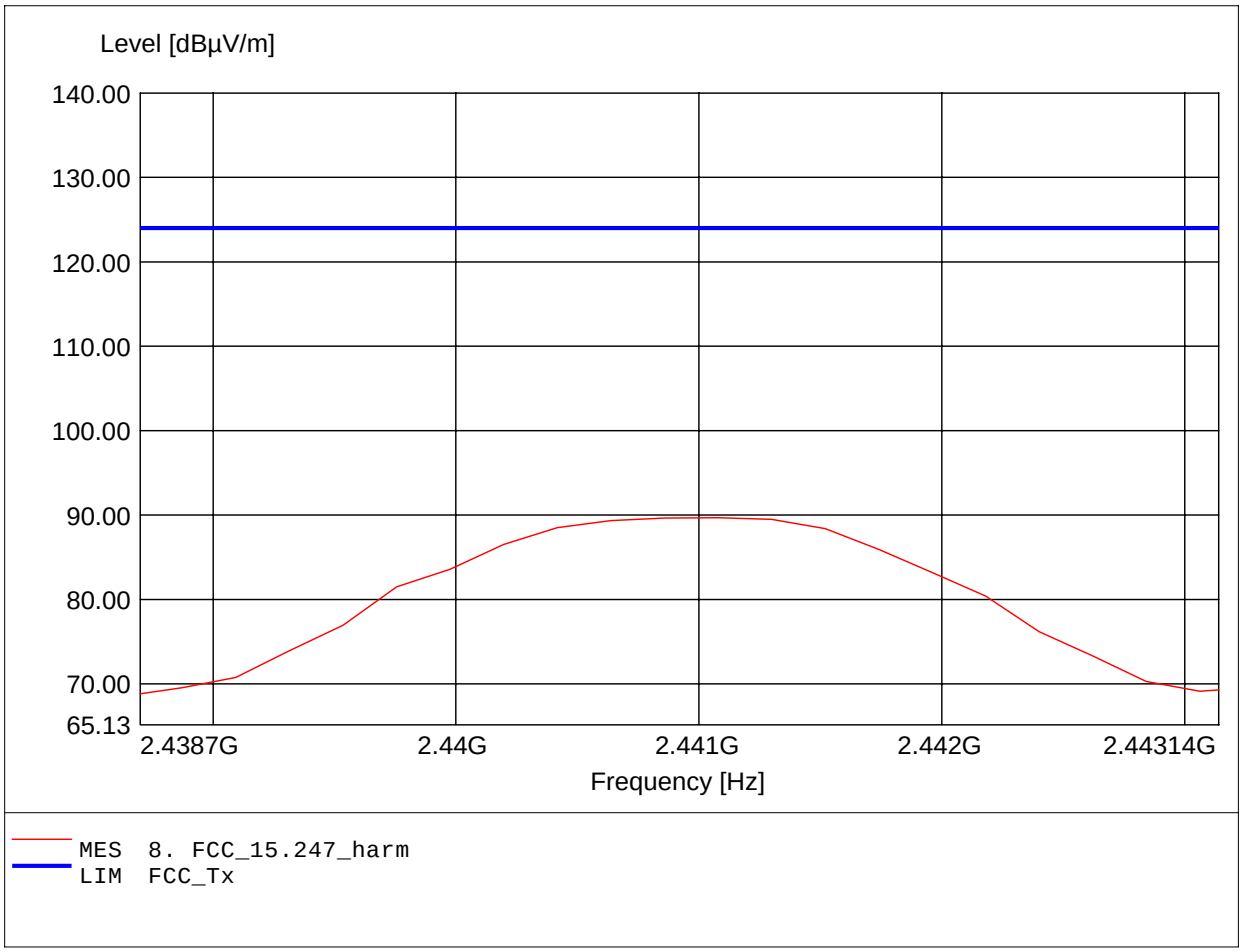
Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS Electric Co.,Ltd.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.441GHz, Emax: 91.21dBµV/m, RBW: 1MHz



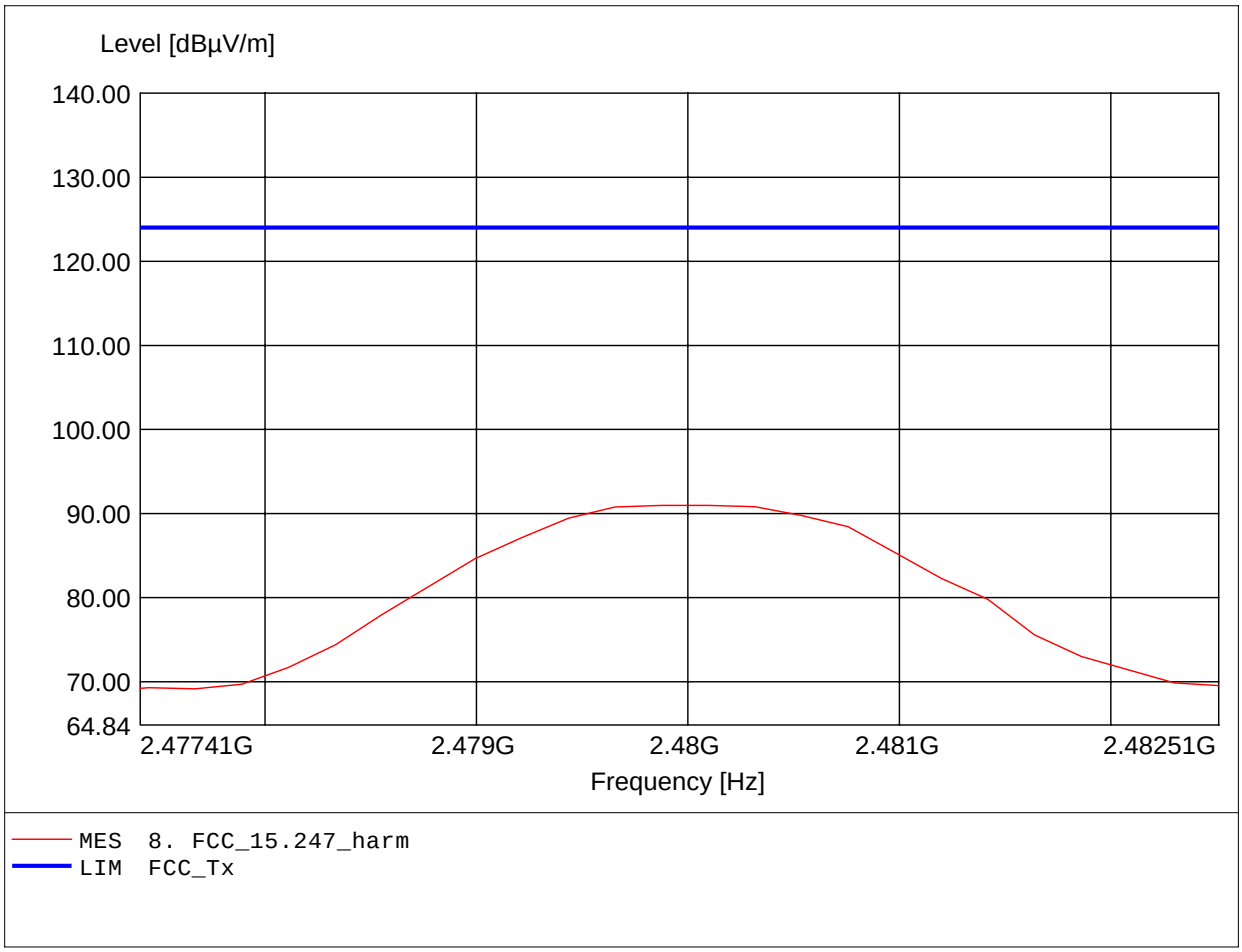
Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS Electric Co.,Ltd.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.441GHz, Emax: 89.68dBµV/m, RBW: 1MHz



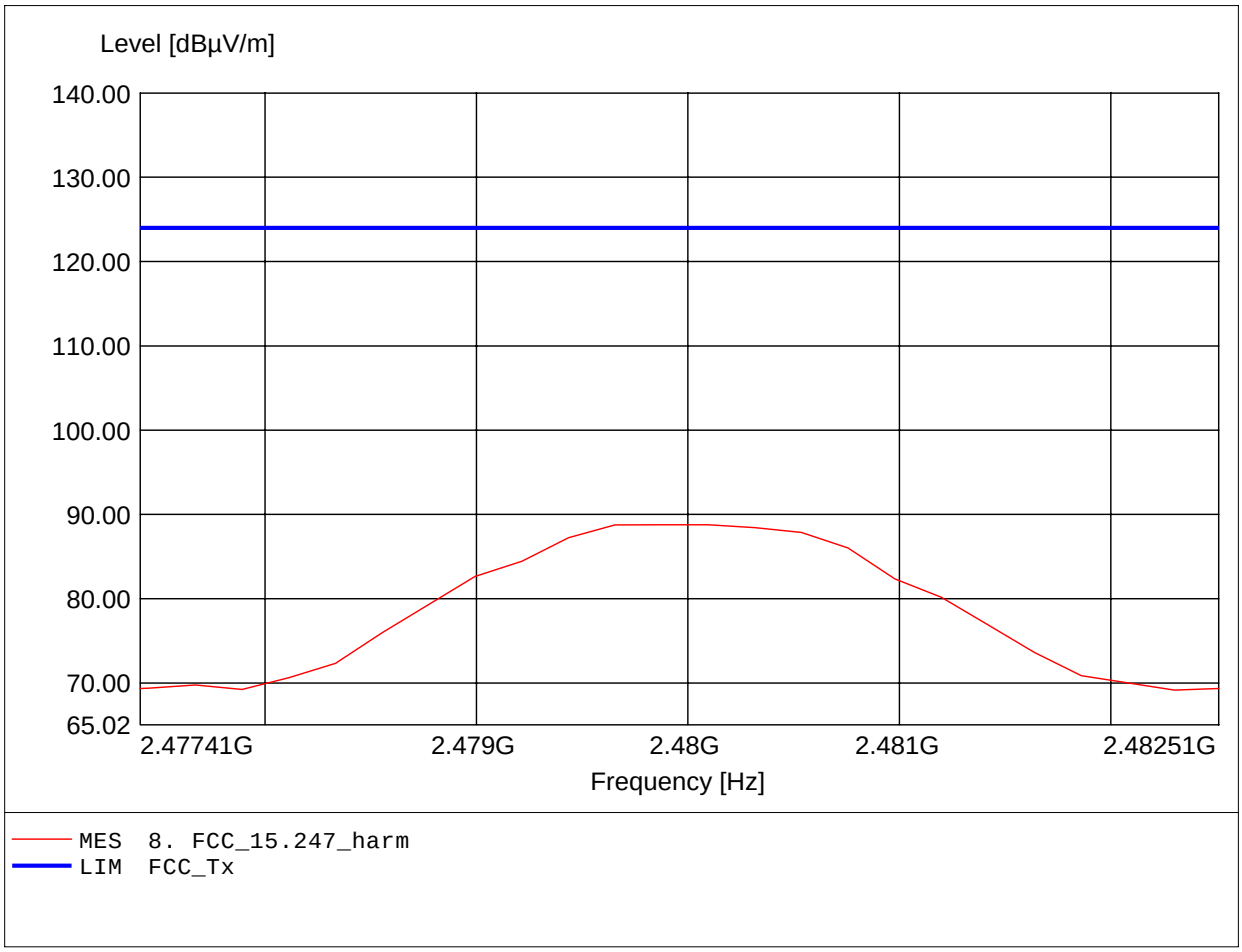
Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.480GHz, Emax: 90.97dBµV/m, RBW: 1MHz



Carrier power (Field Strength)
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL025
	Freq: 2.480GHz, Emax: 88.77dBµV/m, RBW: 1MHz



Appendix B

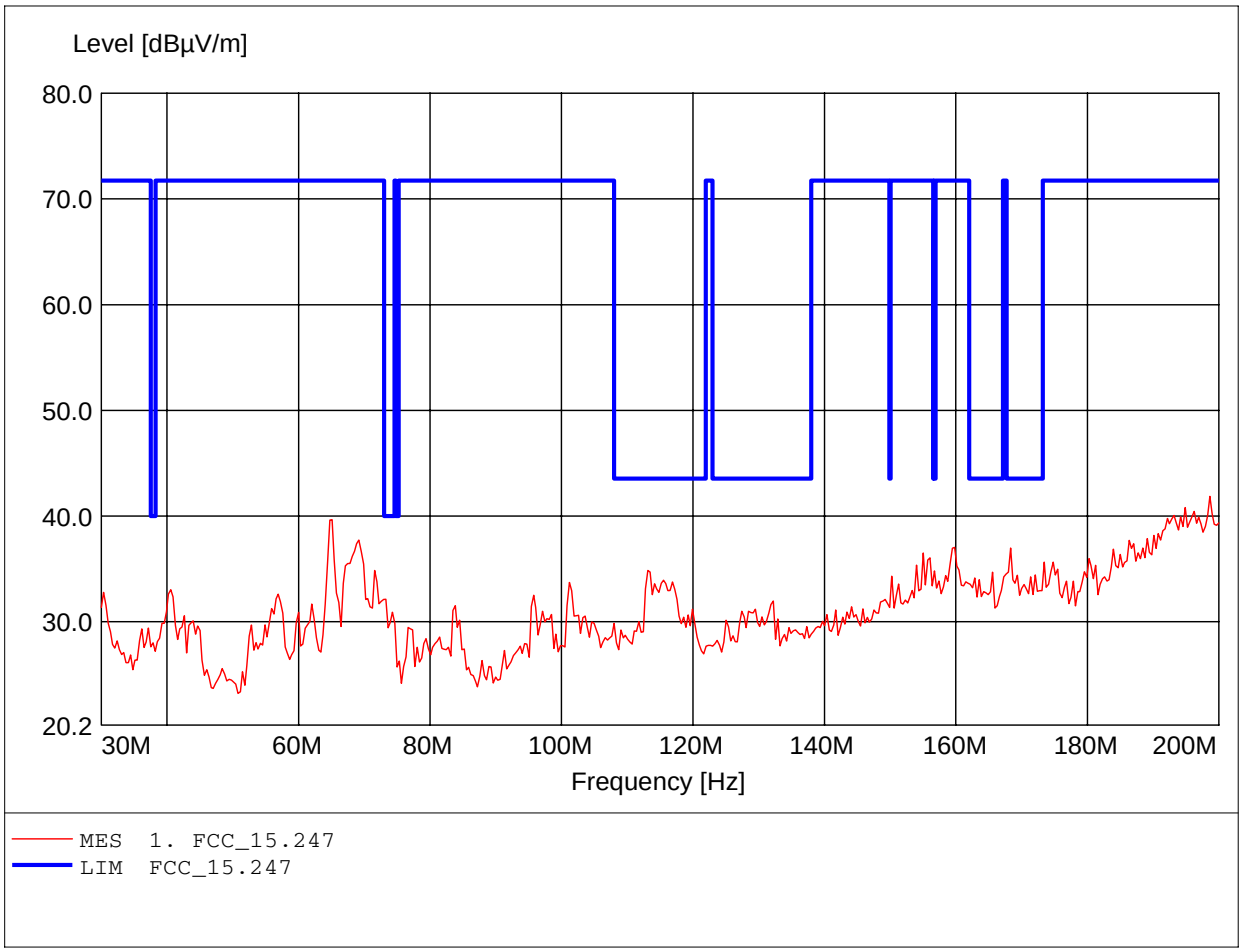
Spurious Emissions radiated

The measurement diagram are wideband pre-scan results; only for reference.

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

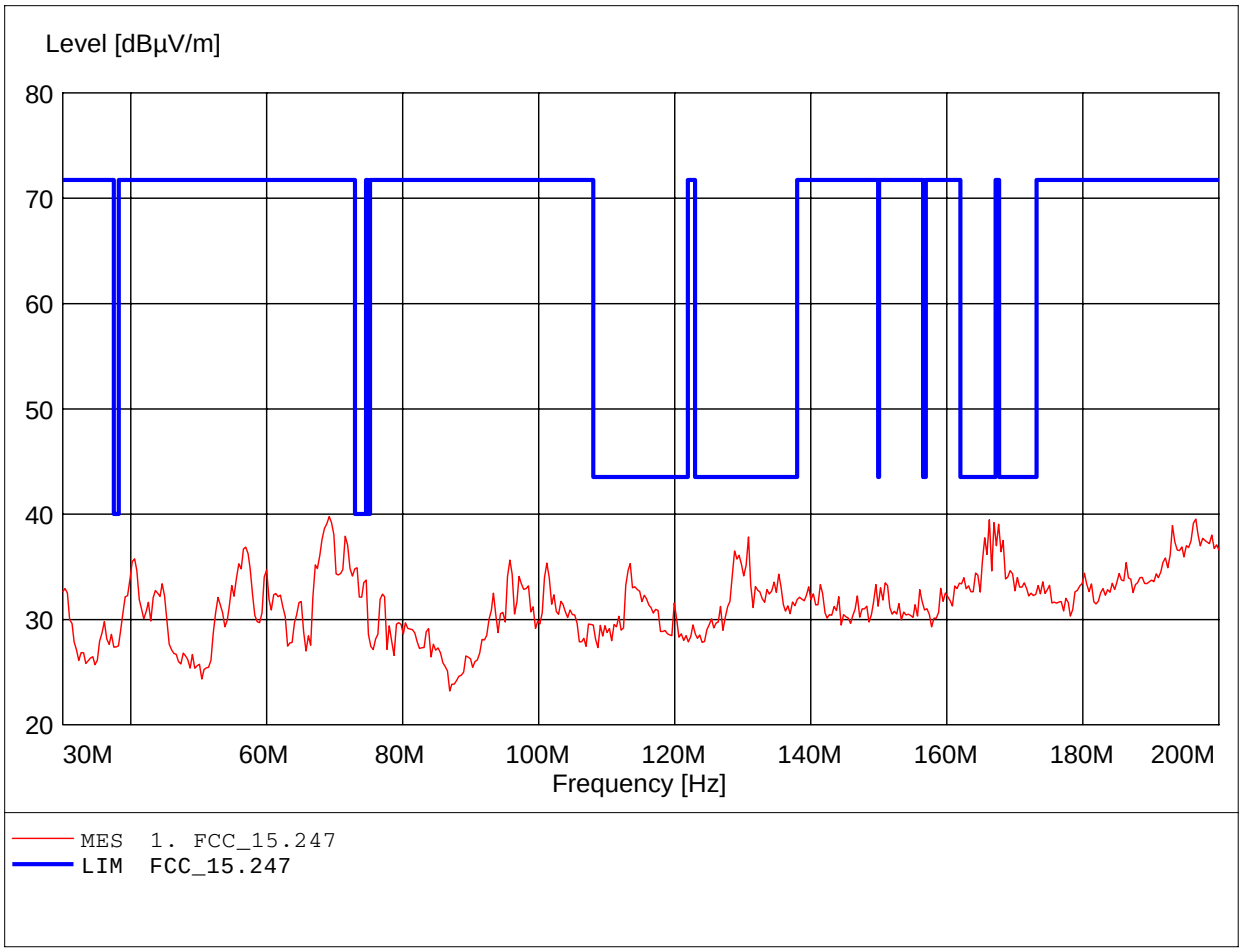
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 198.637MHz, Emax: 41.86dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

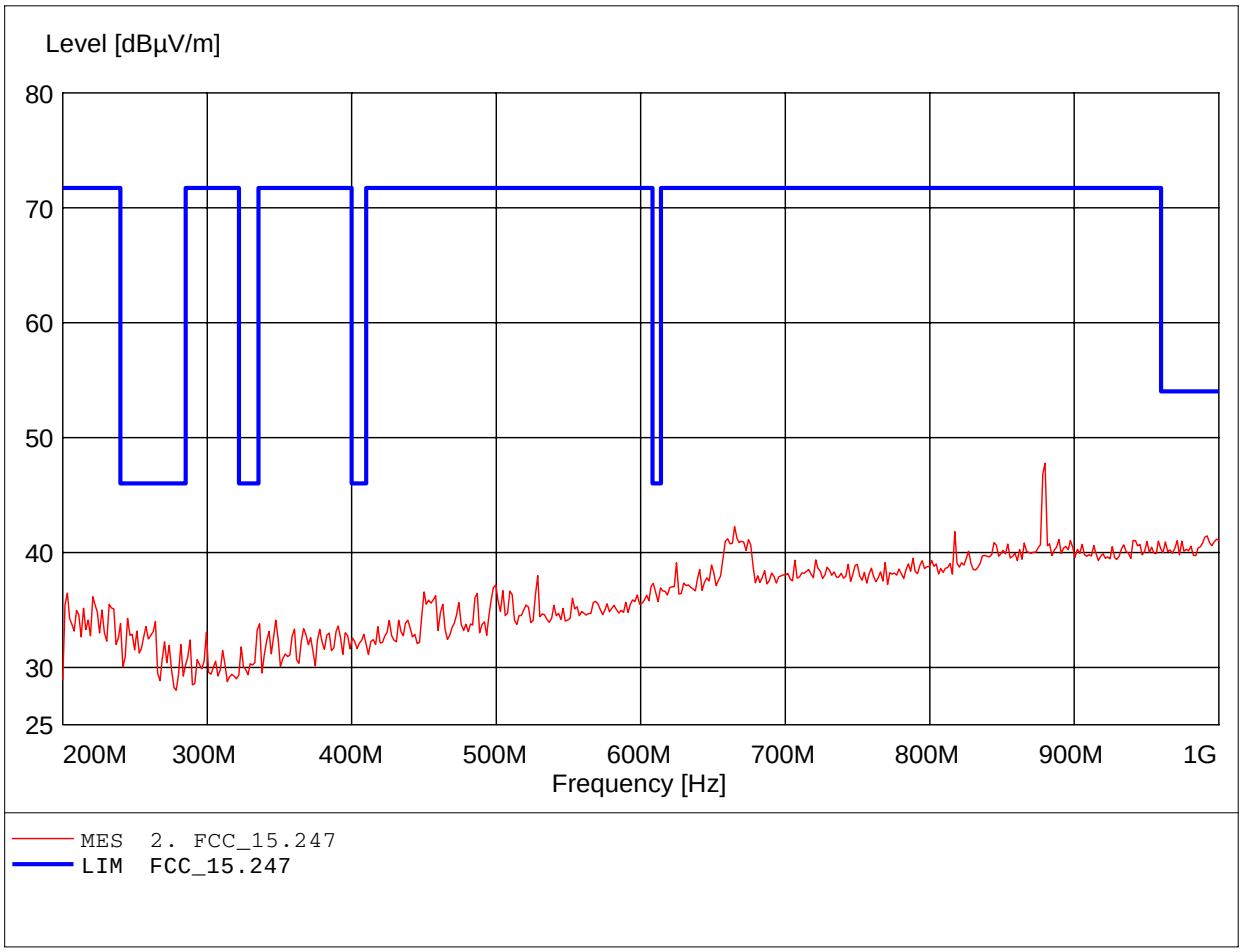
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 69.178MHz, Emax: 39.78dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

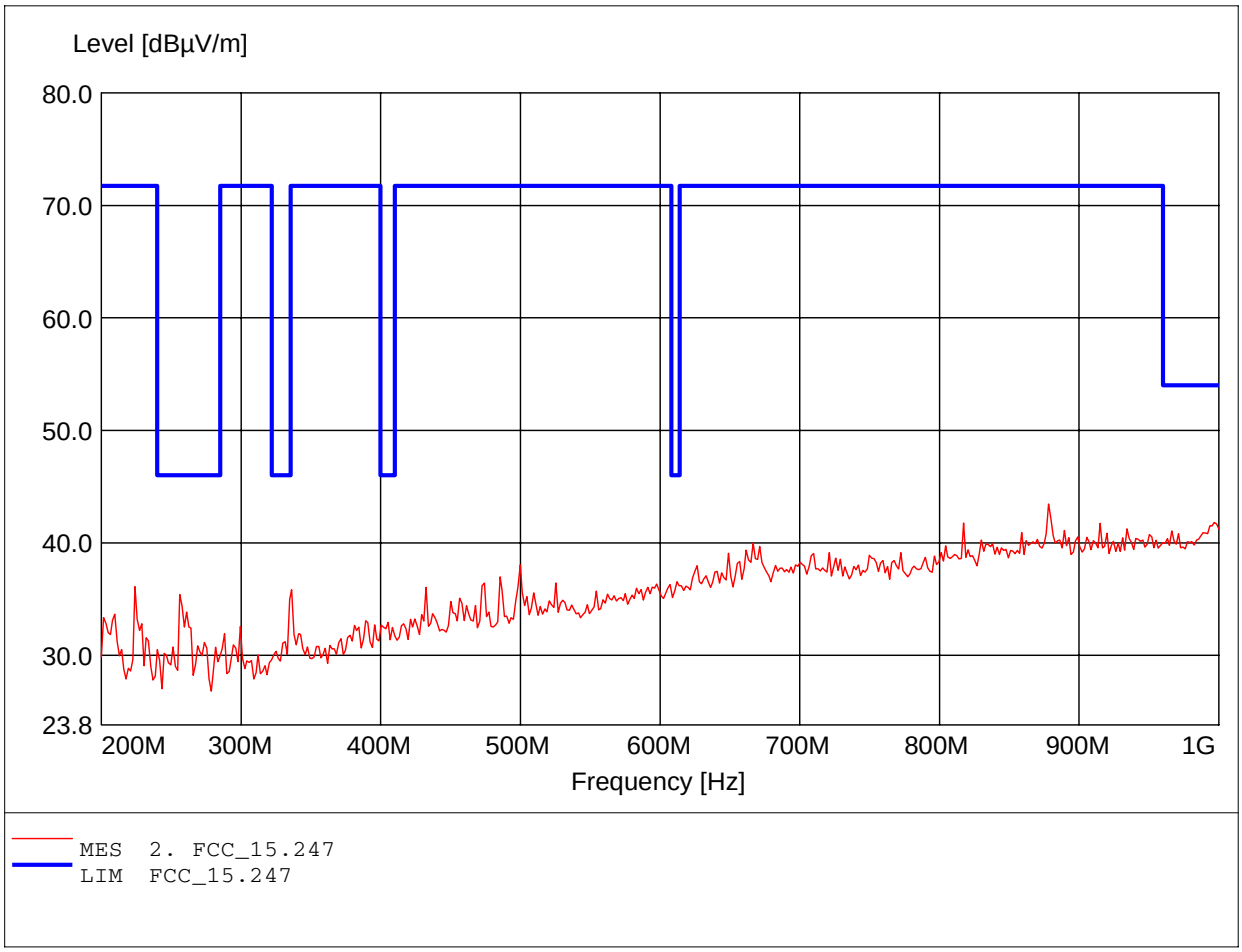
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL 223, amplif.
	Freq: 879.760MHz, Emax: 47.77dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

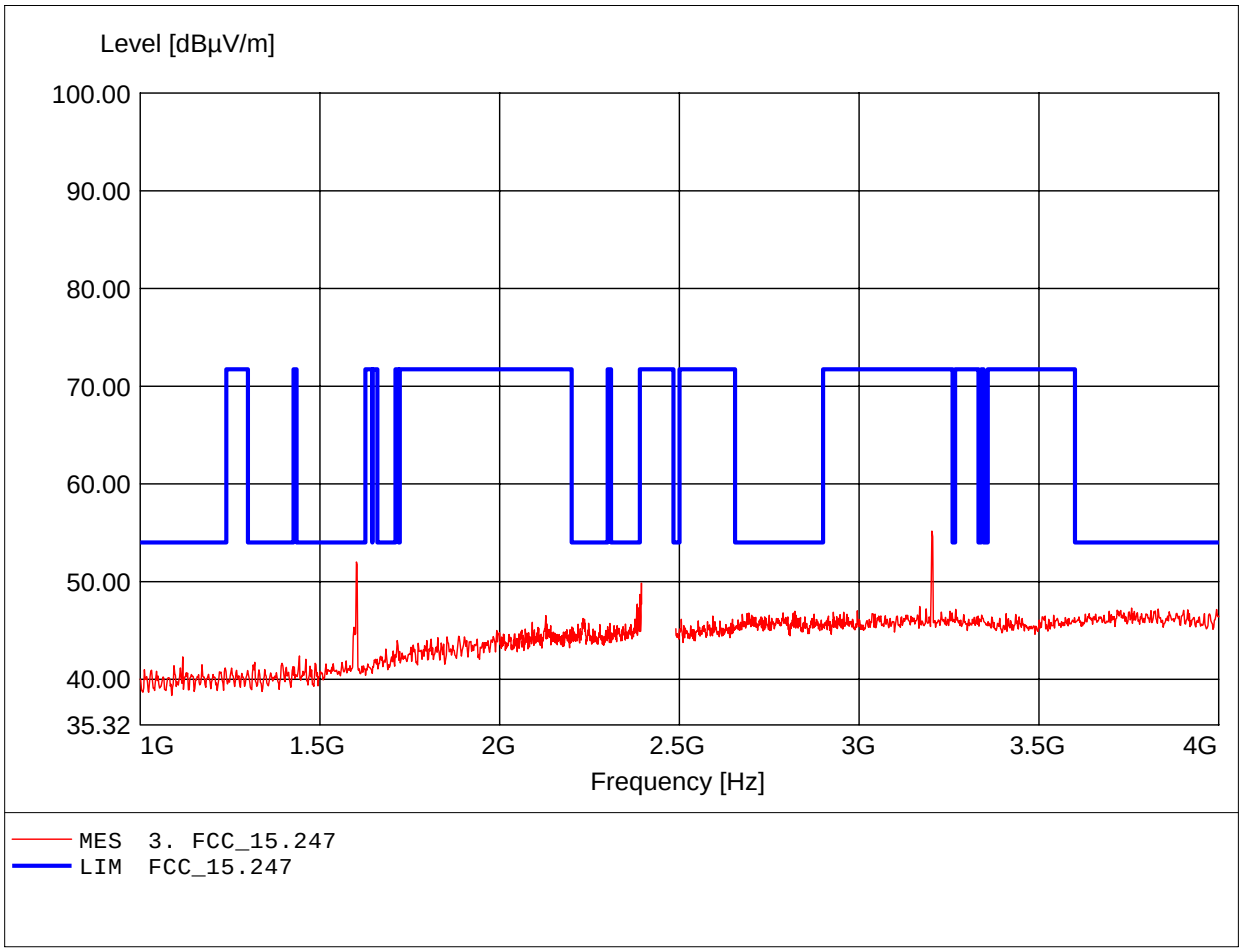
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL 223, amplif.
	Freq: 878.156MHz, Emax: 43.45dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

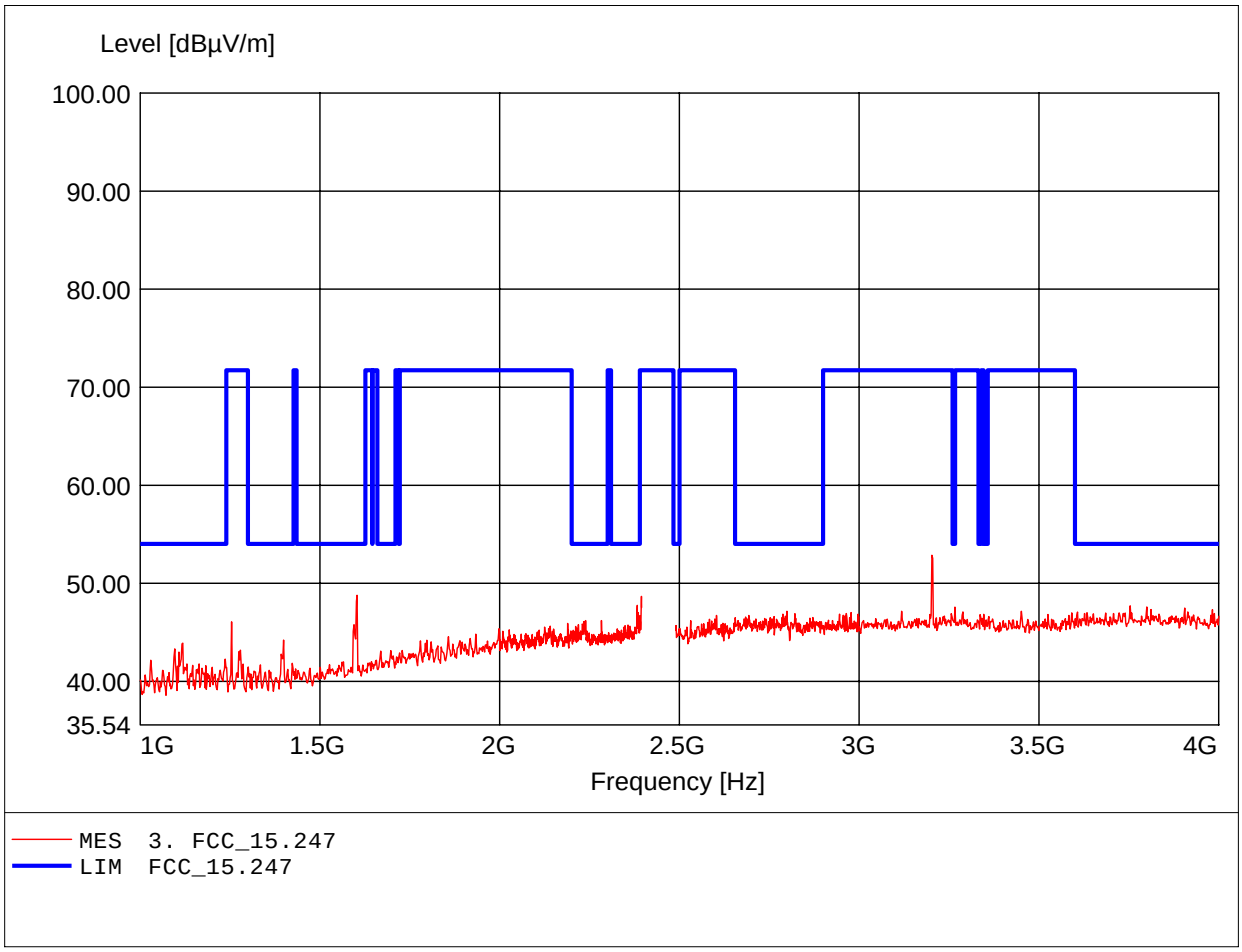
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 3.202GHz, Emax: 55.17dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

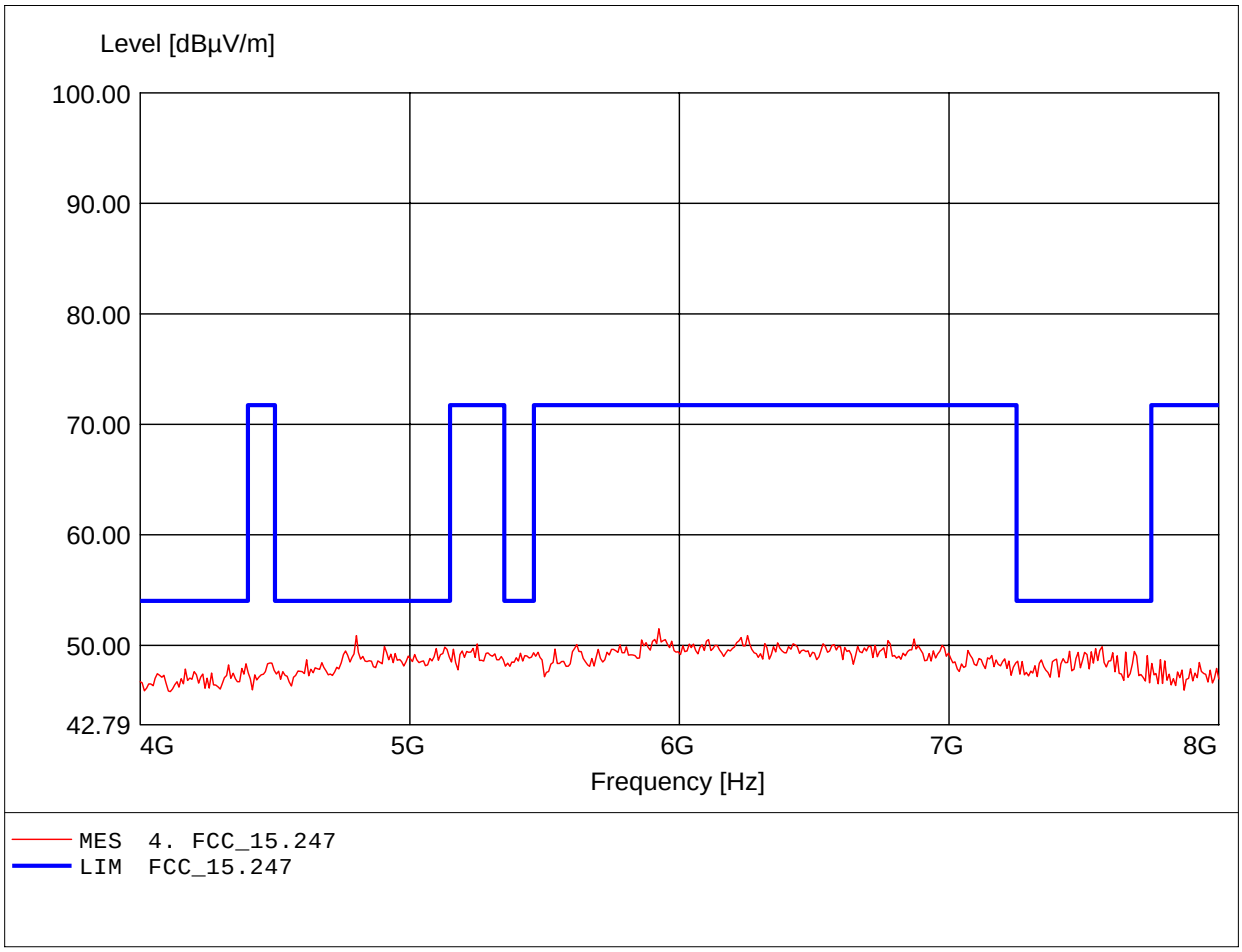
EUT: BT module
MODEL NO: UGPZ8 low channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, amplif.
Freq: 3.202GHz, Emax: 52.85dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

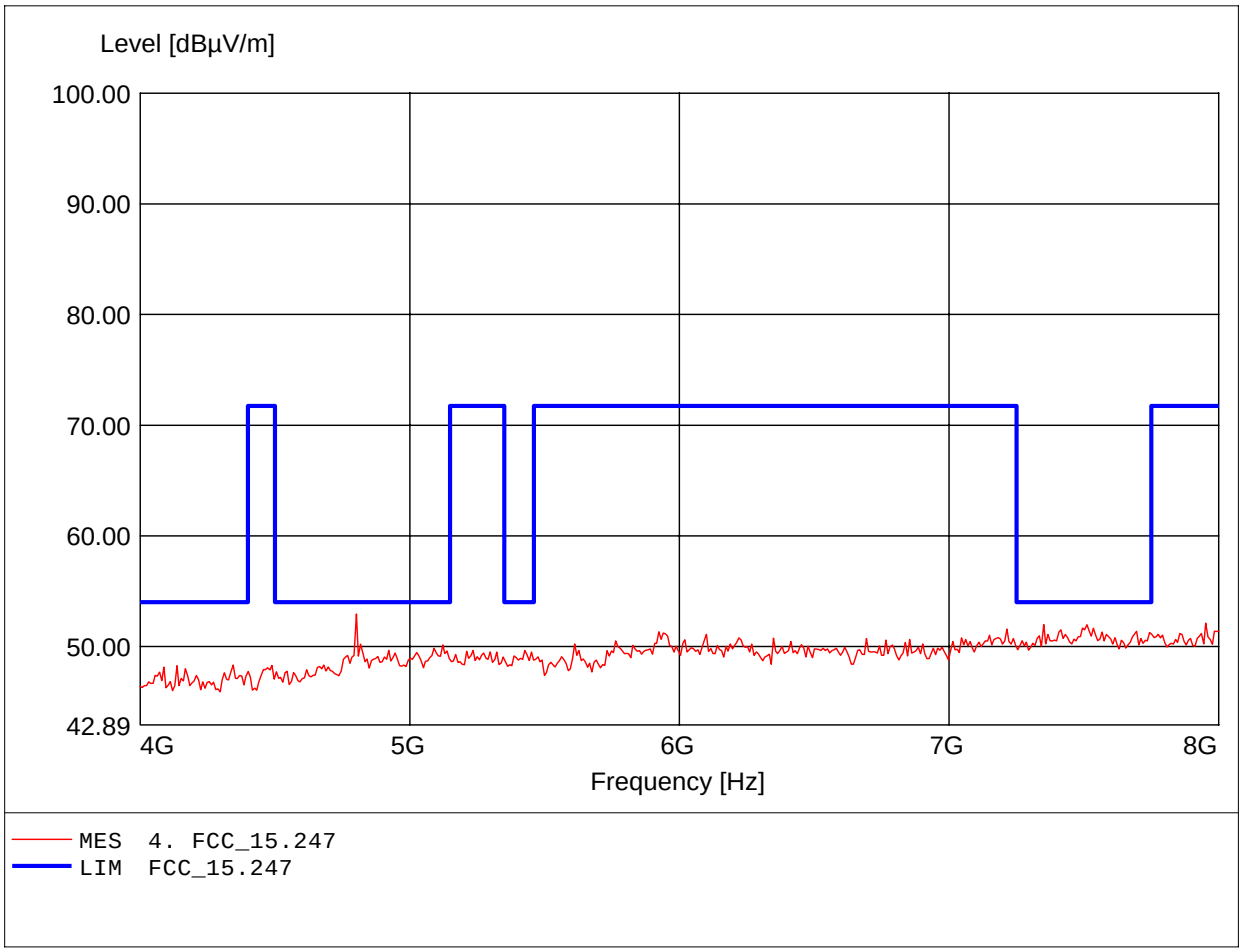
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 5.924GHz, Emax: 51.49dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

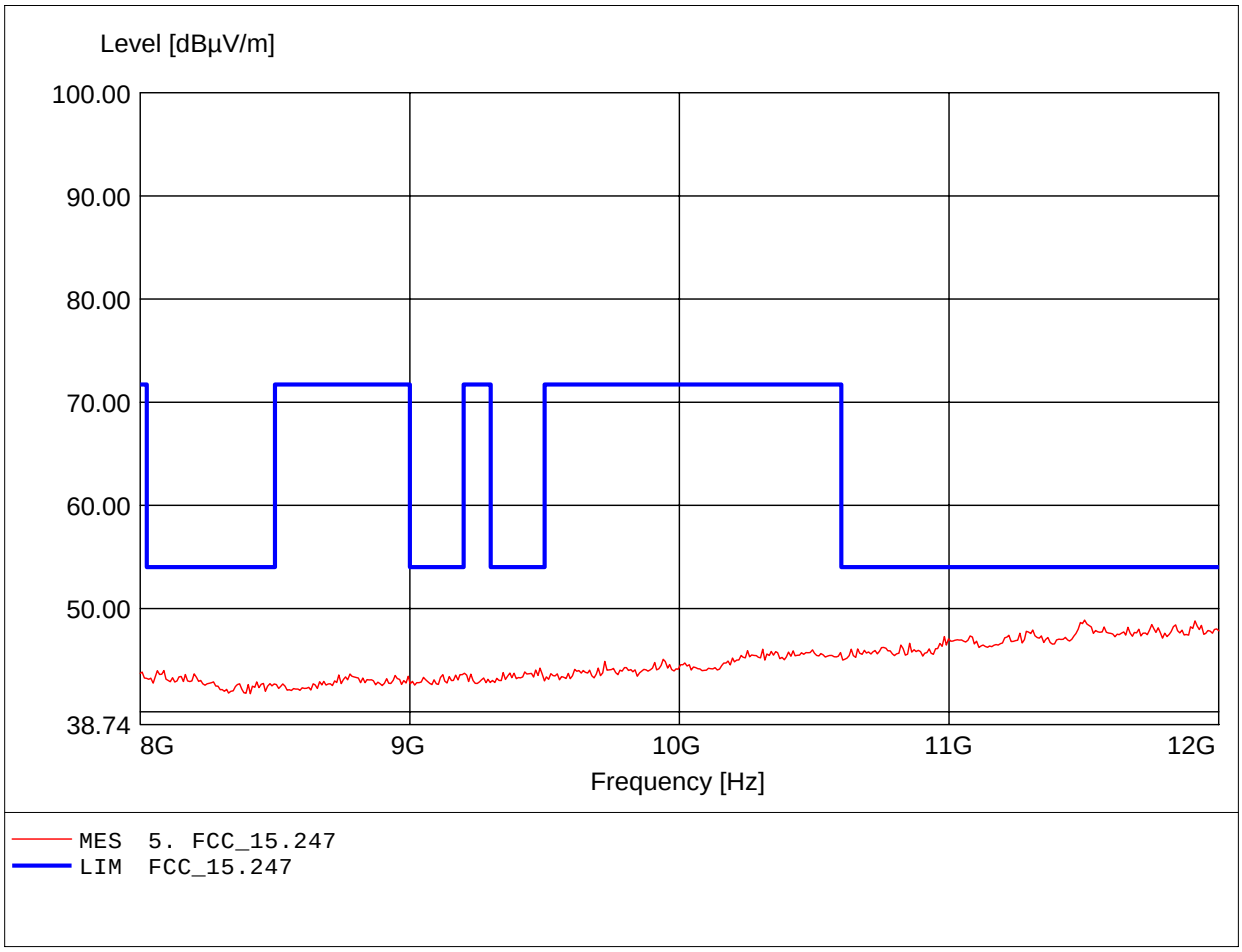
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 4.802GHz, Emax: 52.92dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

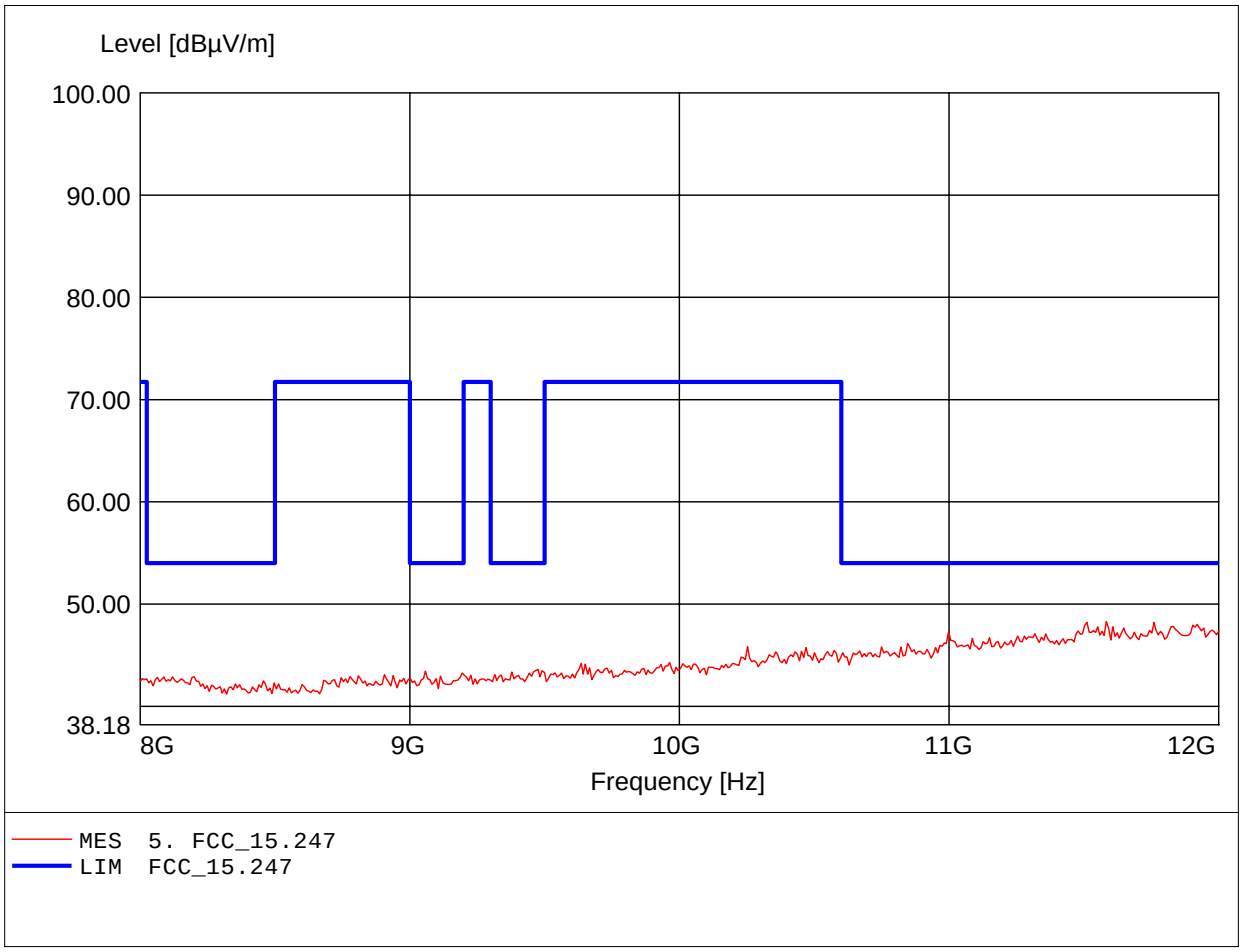
EUT: BT module
MODEL NO: UGPZ8 low channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 11.503GHz, Emax: 48.88dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

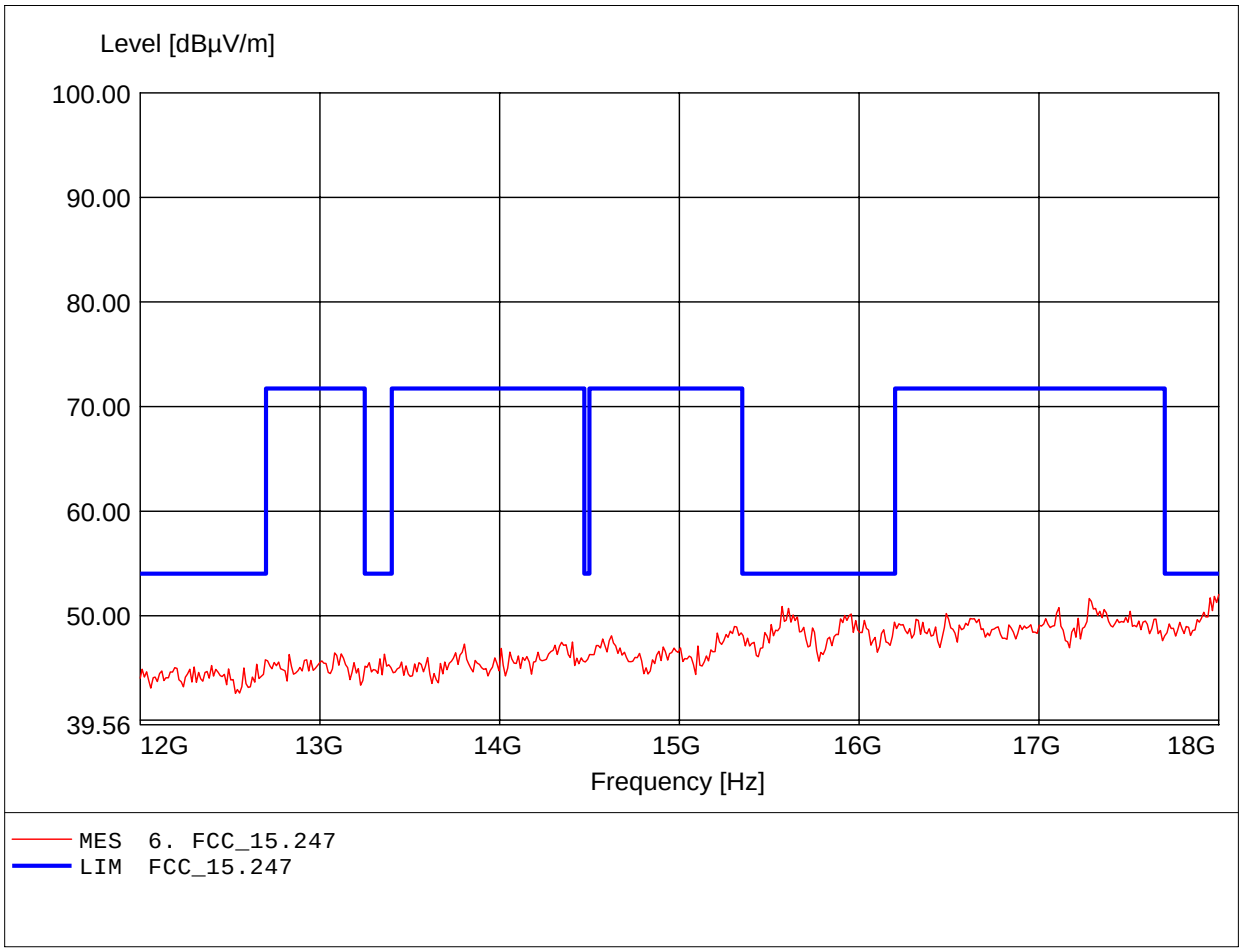
EUT: BT module
MODEL NO: UGPZ8 low channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 11.583GHz, Emax: 48.29dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

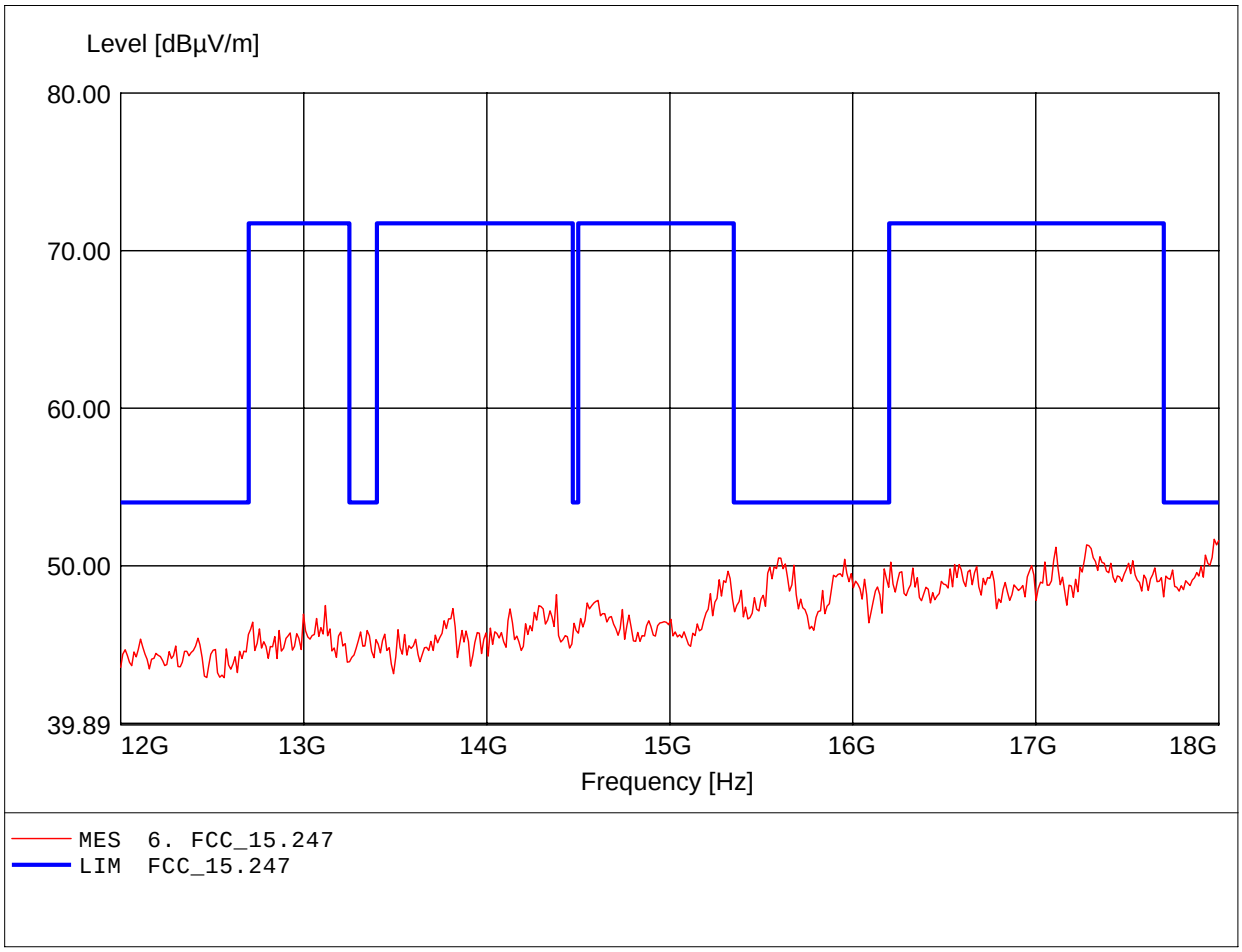
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 18.000GHz, Emax: 52.03dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

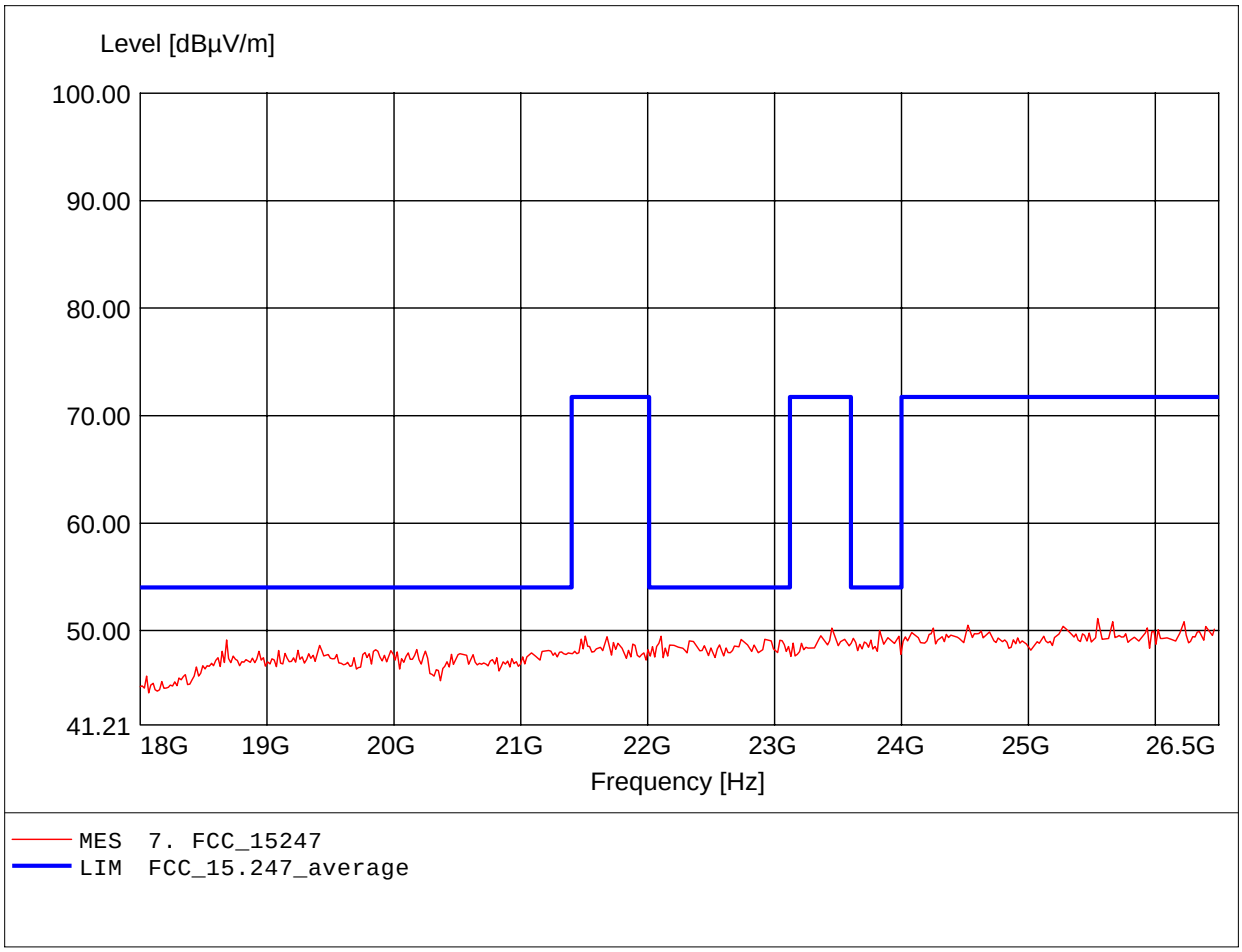
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 17.976GHz, Emax: 51.69dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

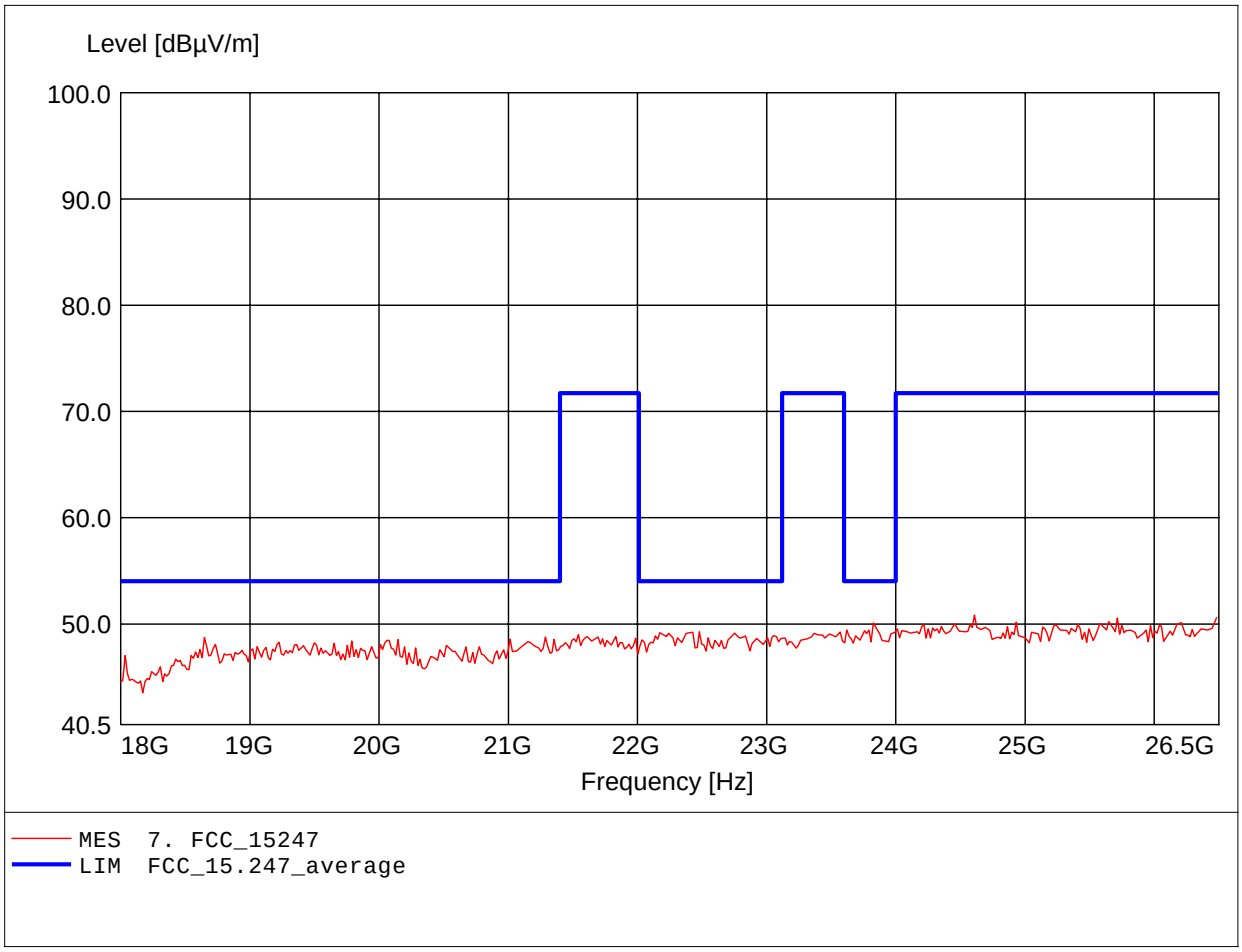
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.546GHz, Emax: 51.13dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

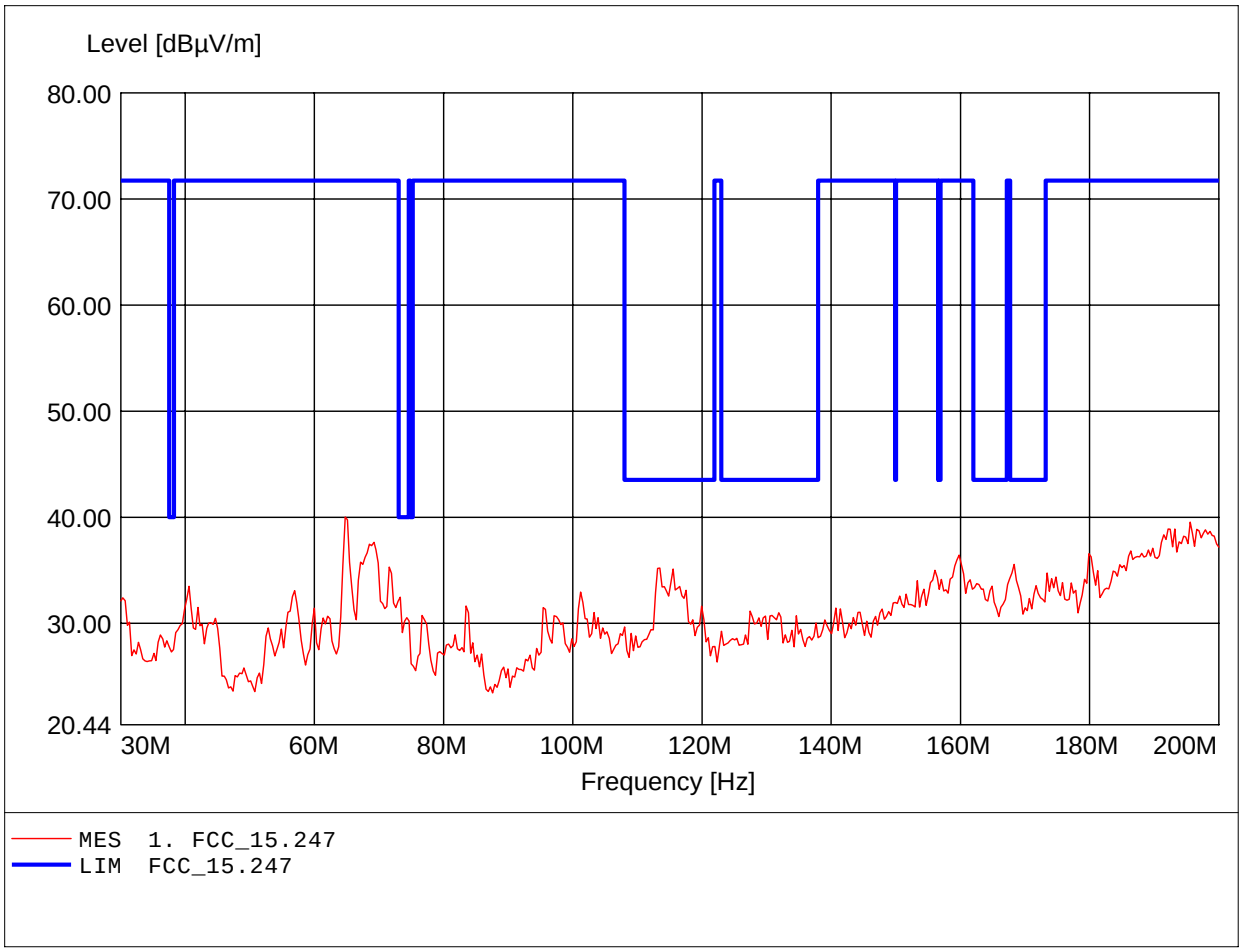
EUT:	BT module
MODEL NO:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 24.609GHz, Emax: 50.81dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

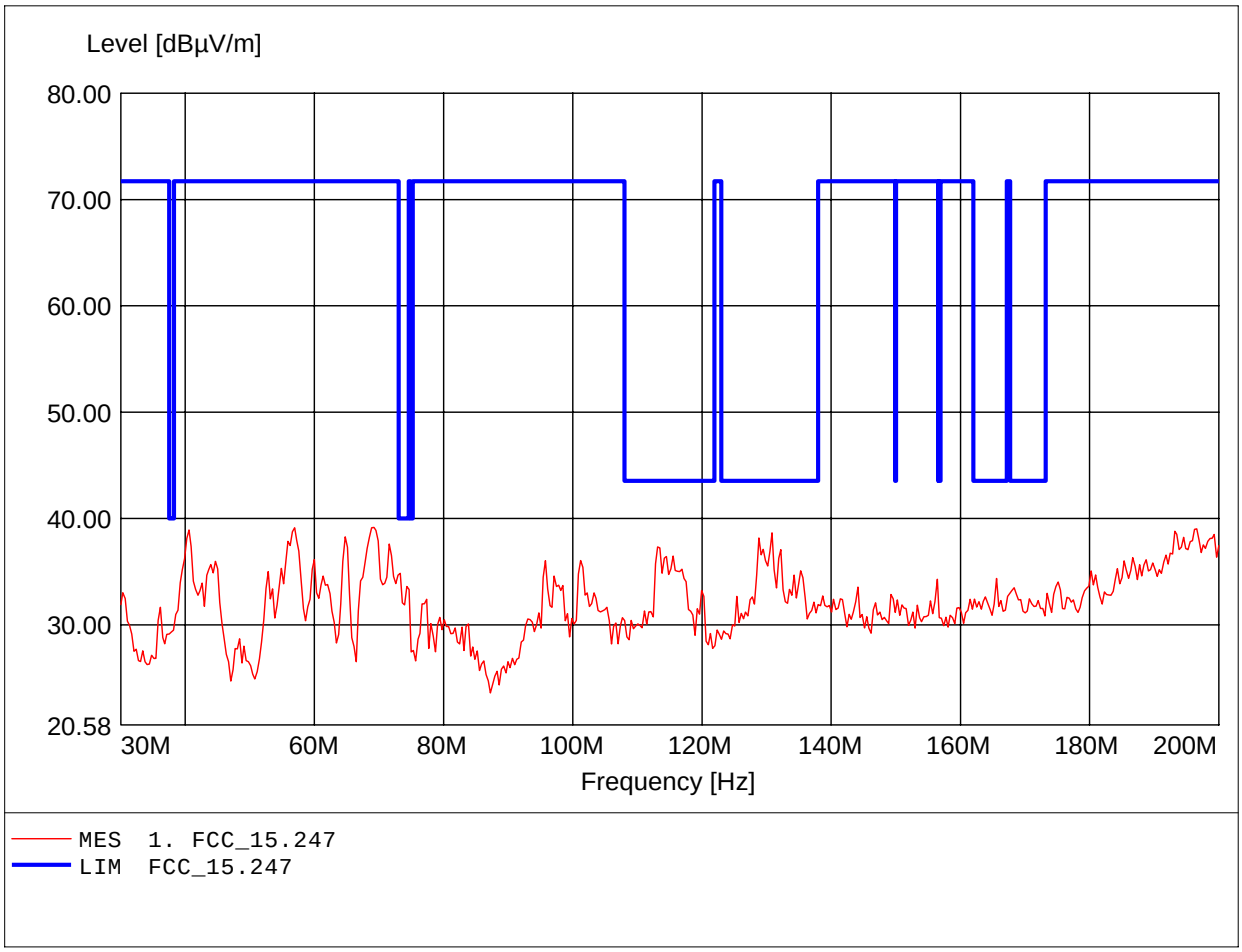
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 64.749MHz, Emax: 40.03dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

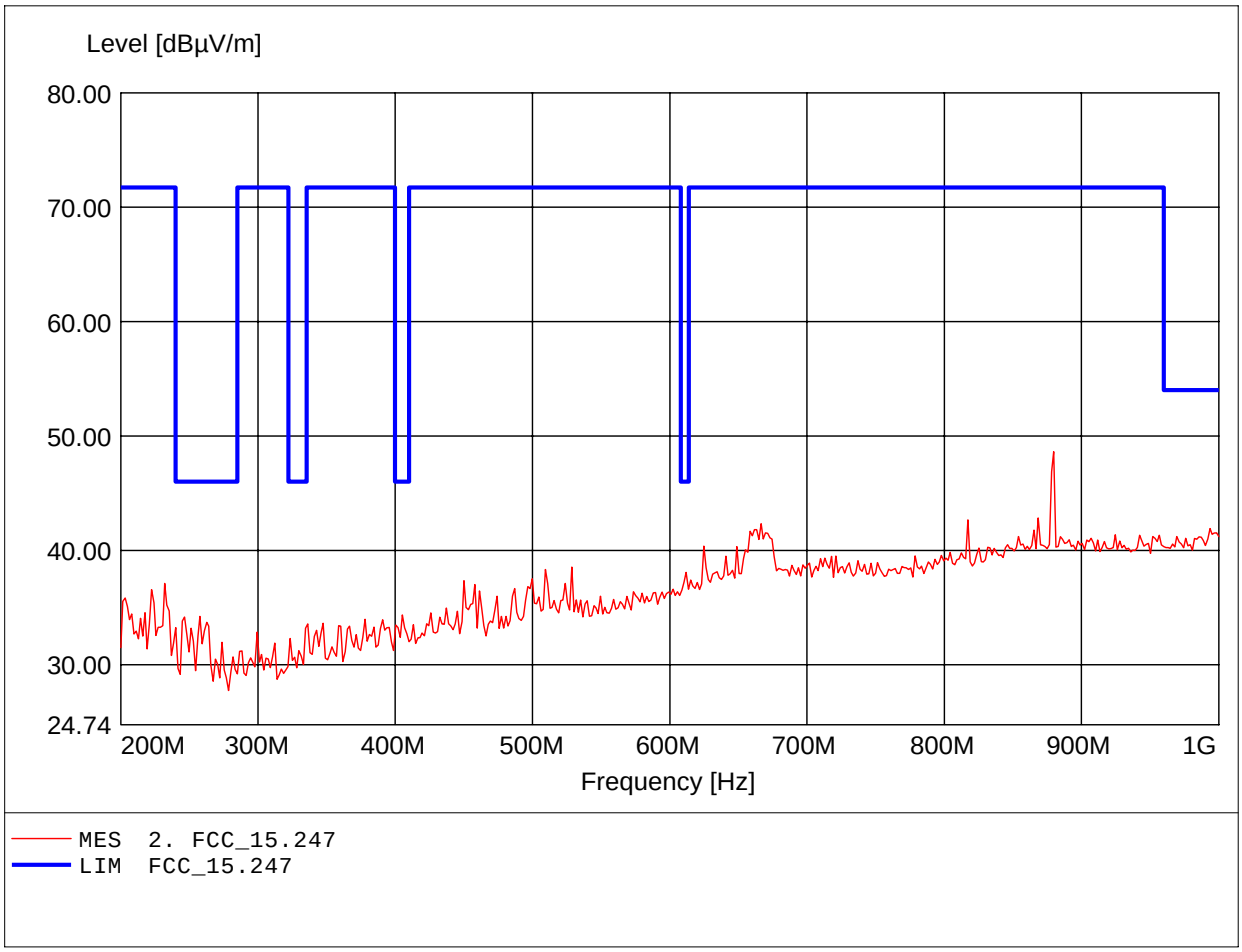
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 69.178MHz, Emax: 39.17dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

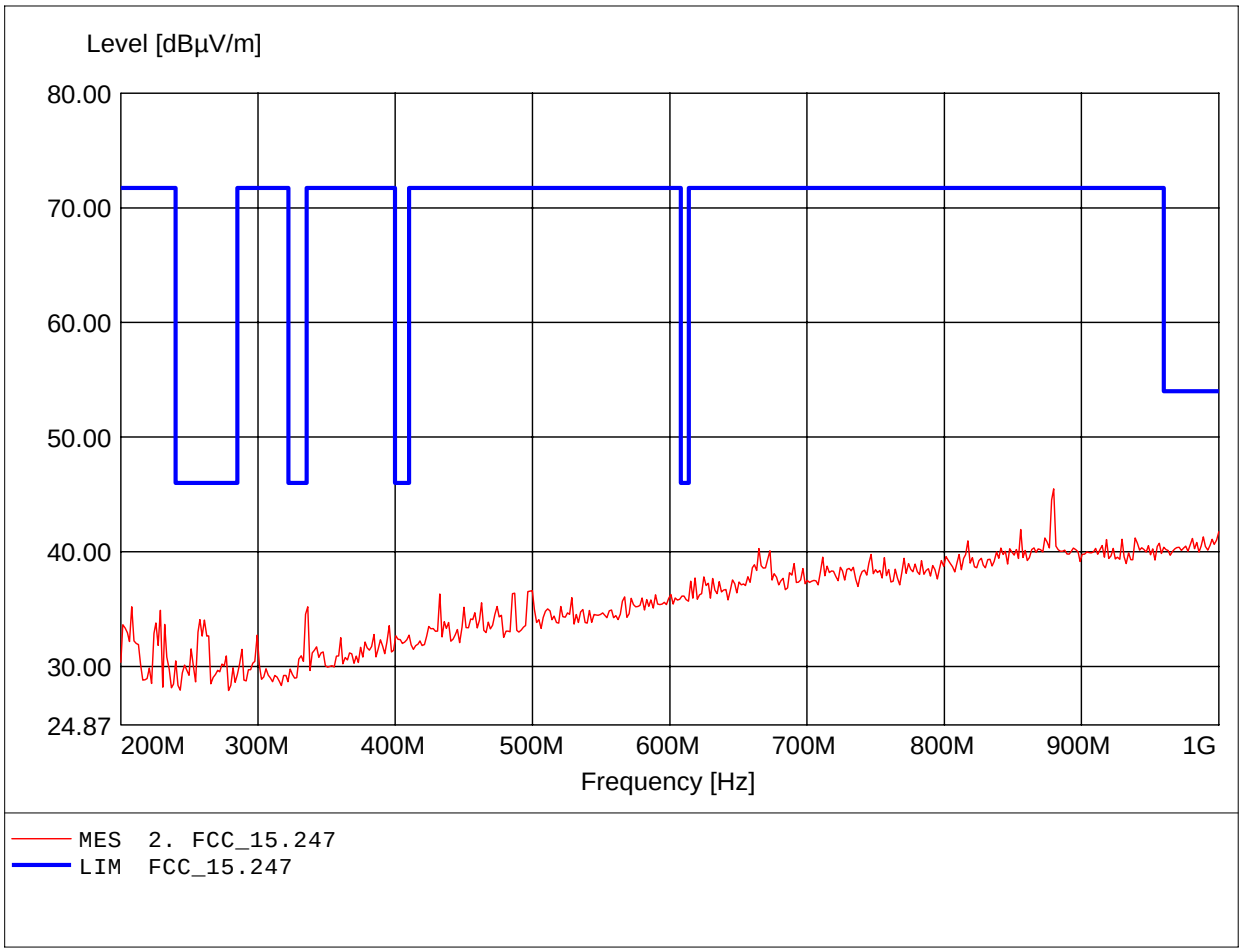
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL 223, amplif.
	Freq: 879.760MHz, Emax: 48.63dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

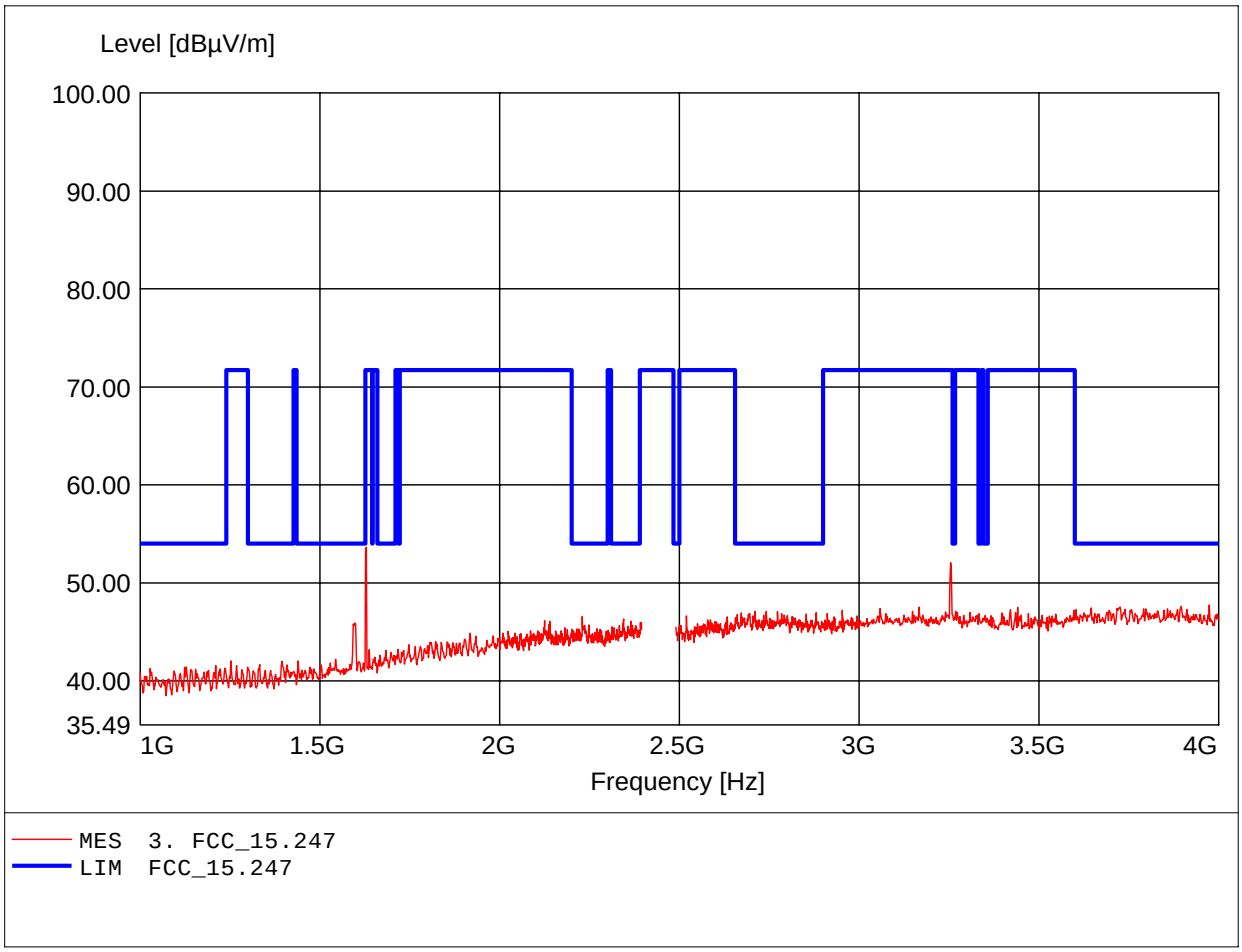
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247
Comment 2: Dist.: 3m, Ant.: HL 223, amplif.
Freq: 879.760MHz, Emax: 45.46dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

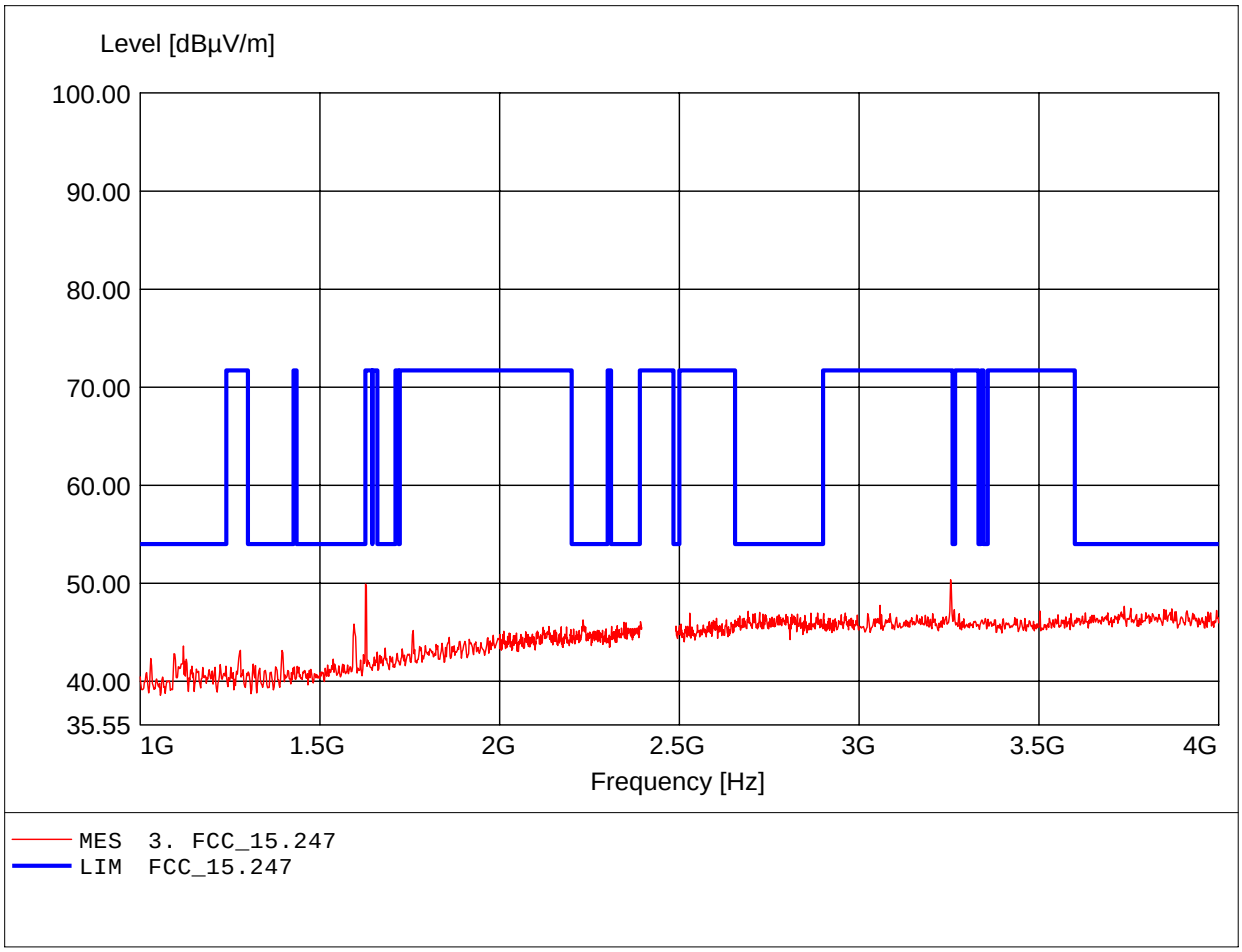
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 1.629GHz, Emax: 53.63dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

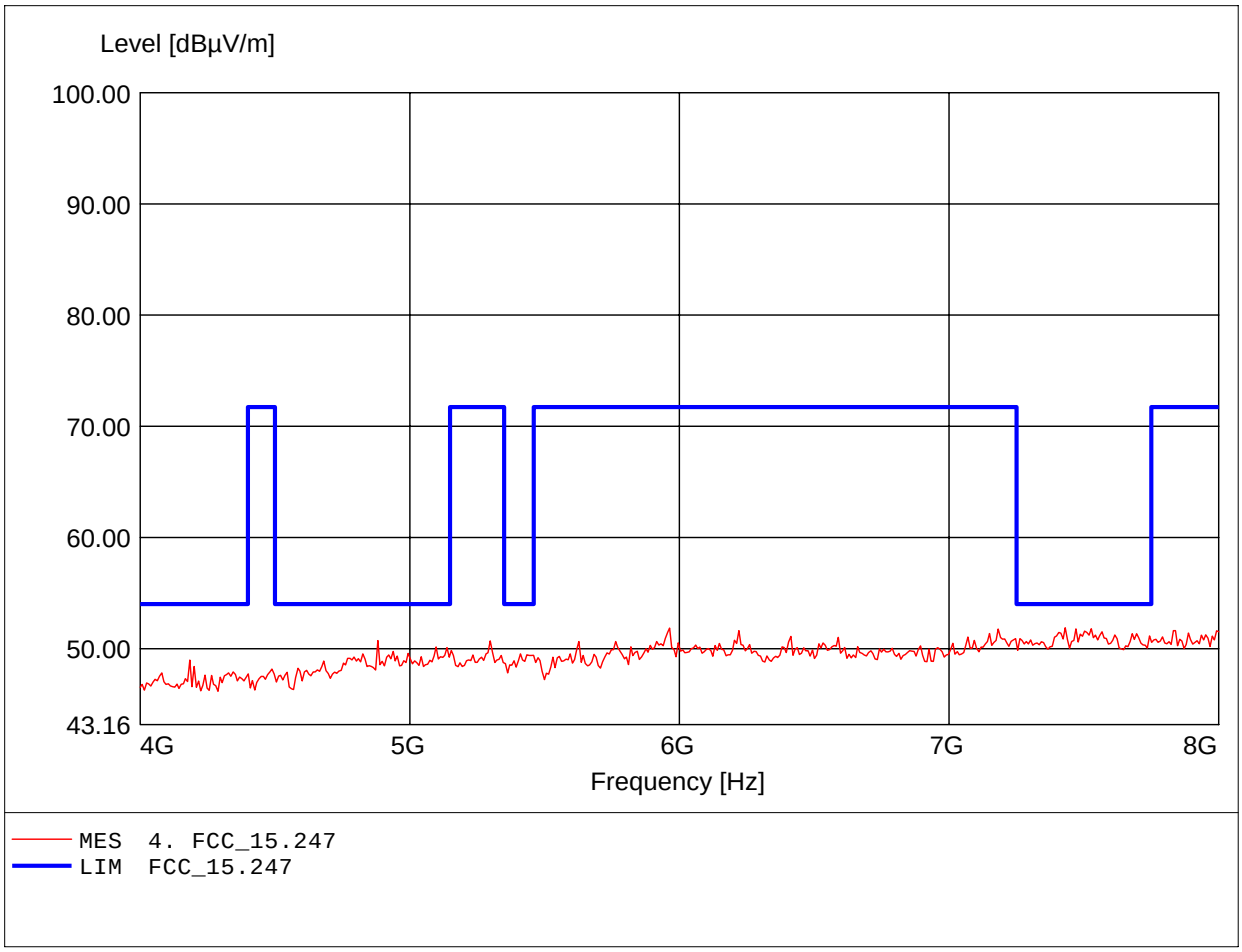
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 3.255GHz, Emax: 50.37dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

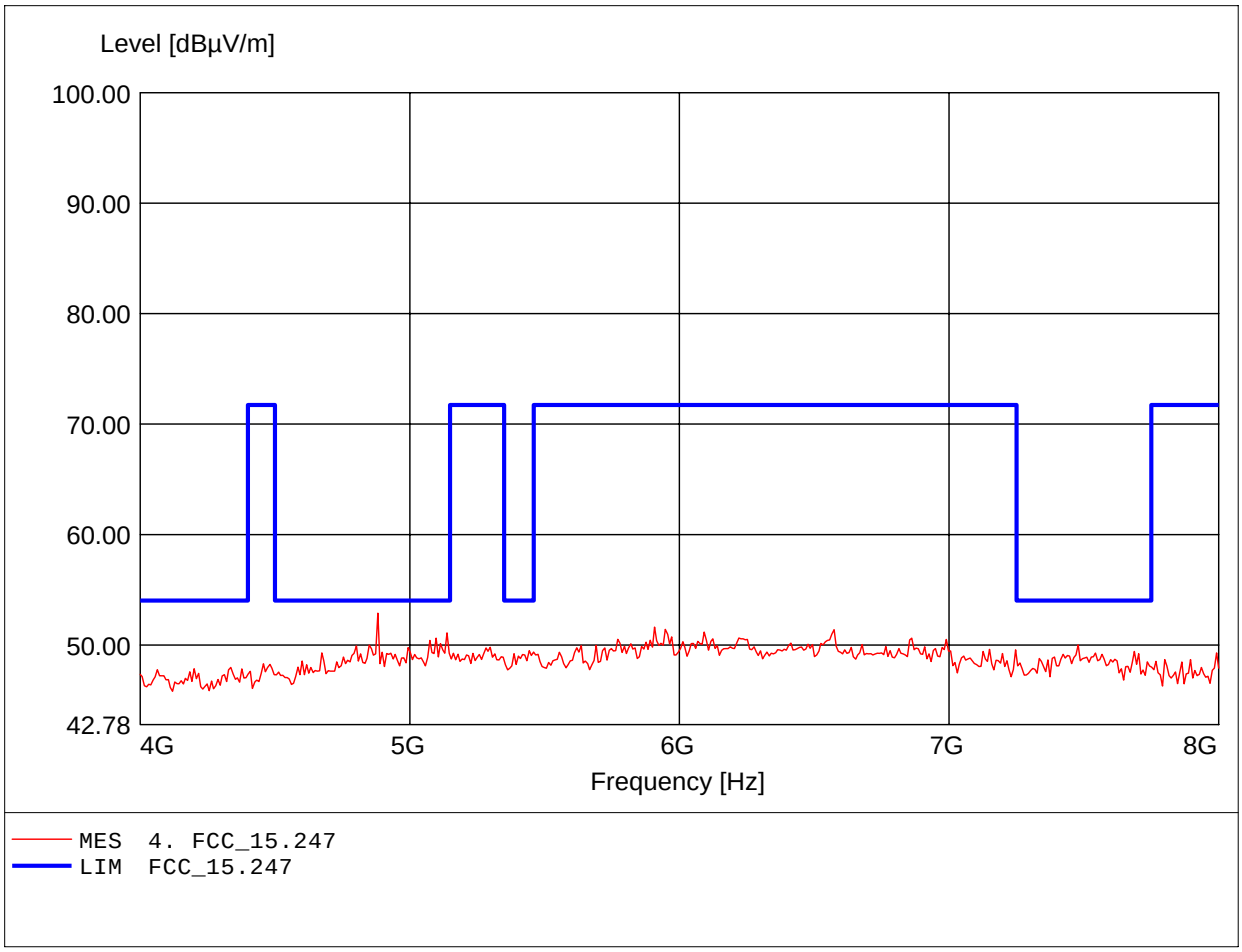
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 7.431GHz, Emax: 51.89dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

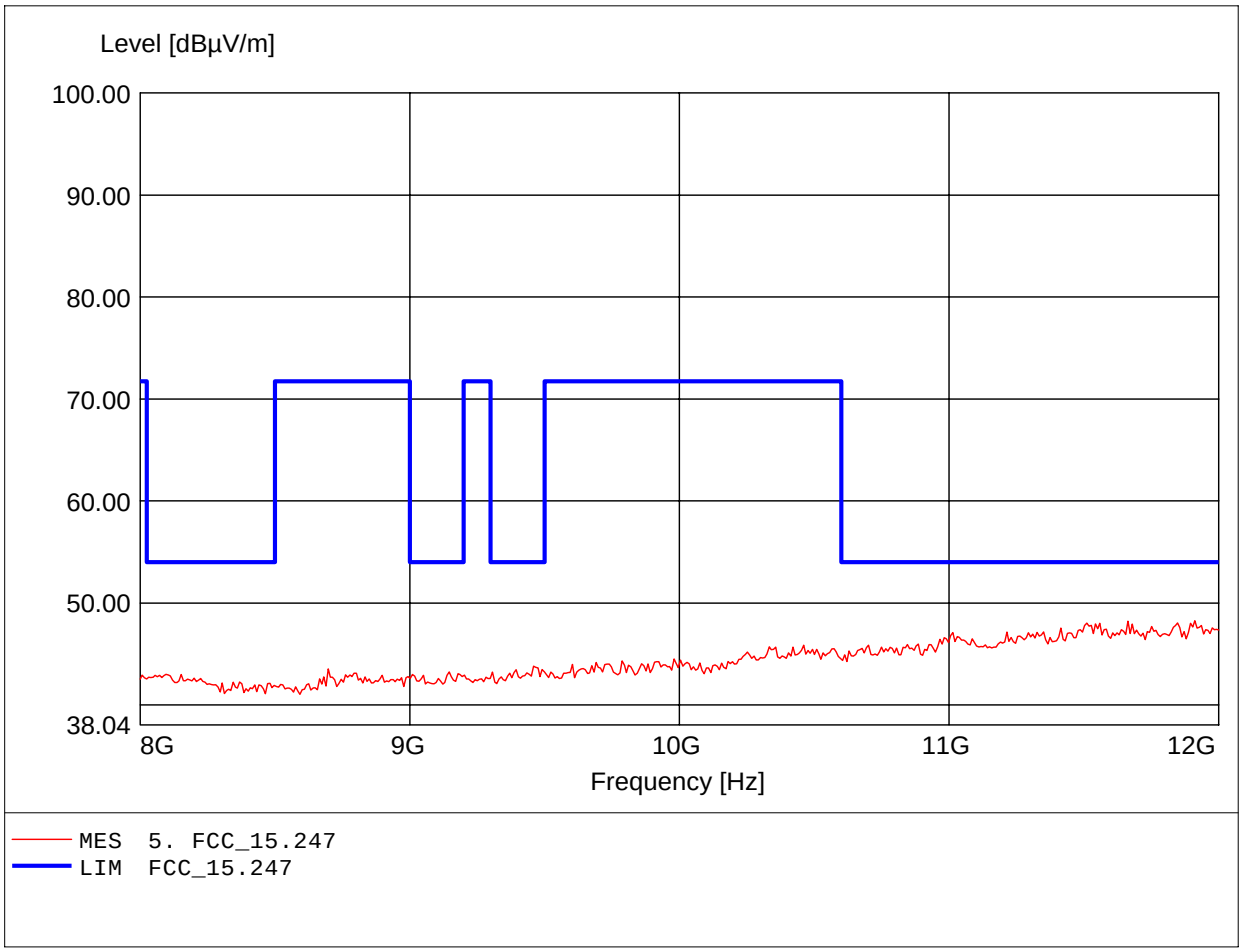
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 4.882GHz, Emax: 52.88dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

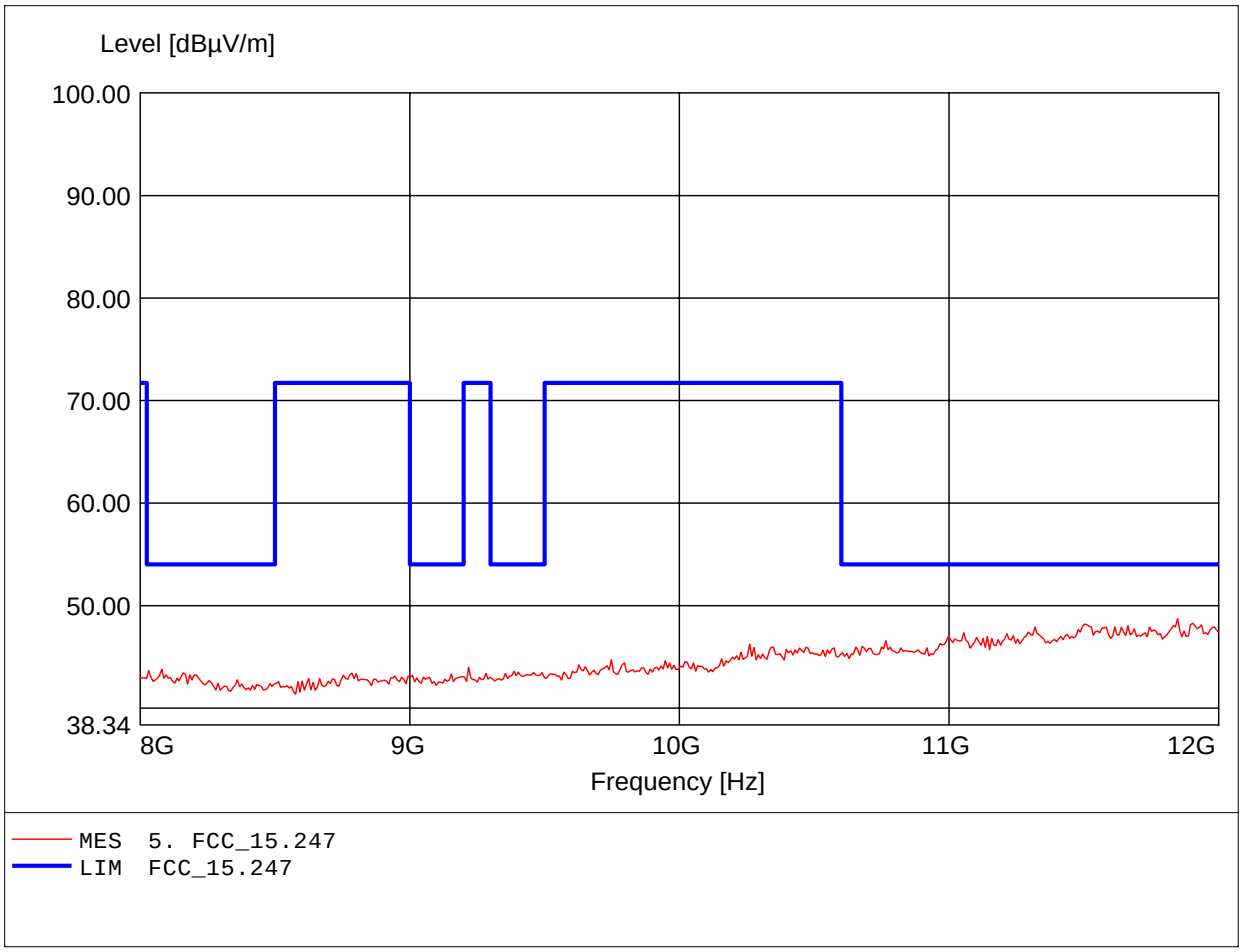
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 11.912GHz, Emax: 48.27dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

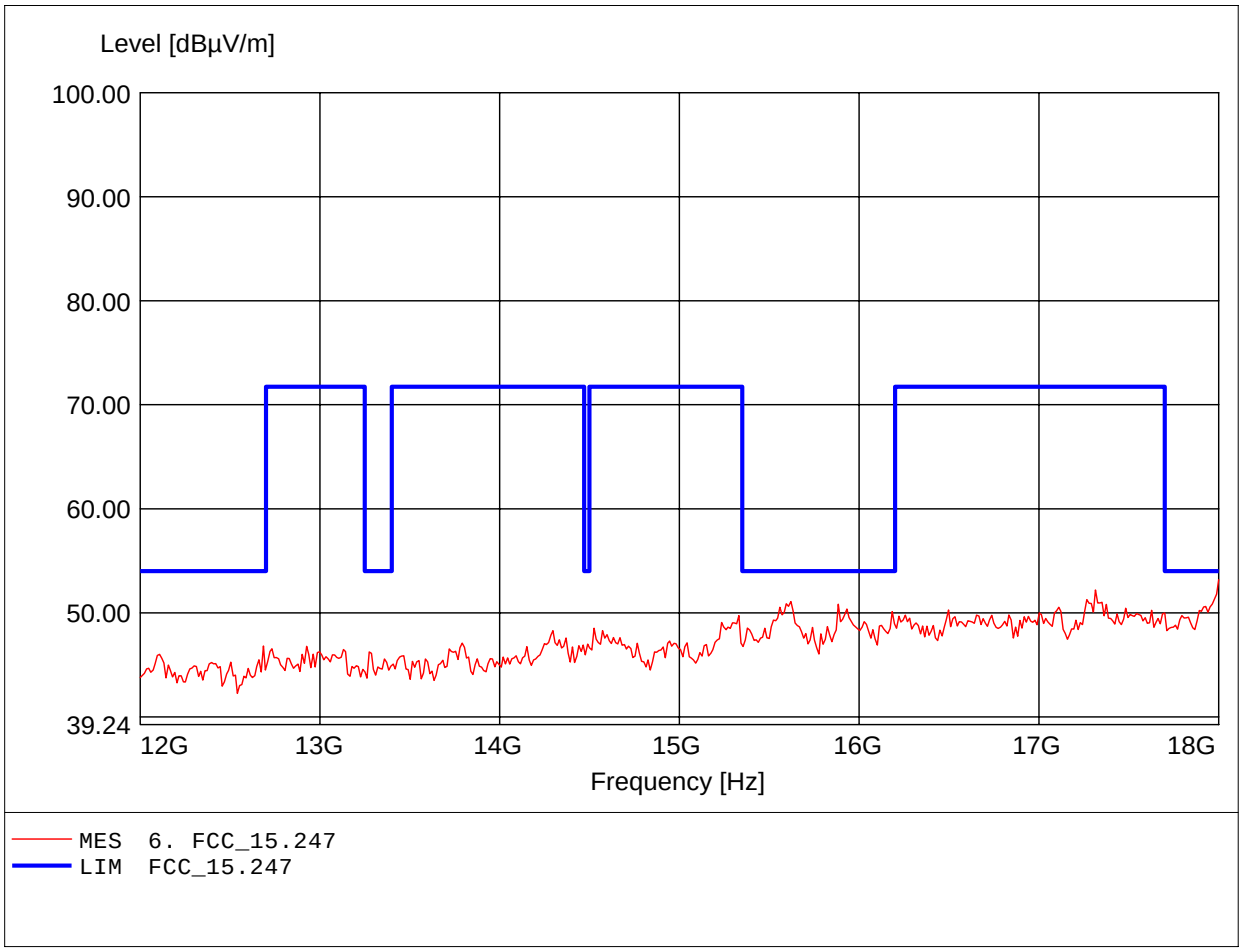
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 11.848GHz, Emax: 48.72dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

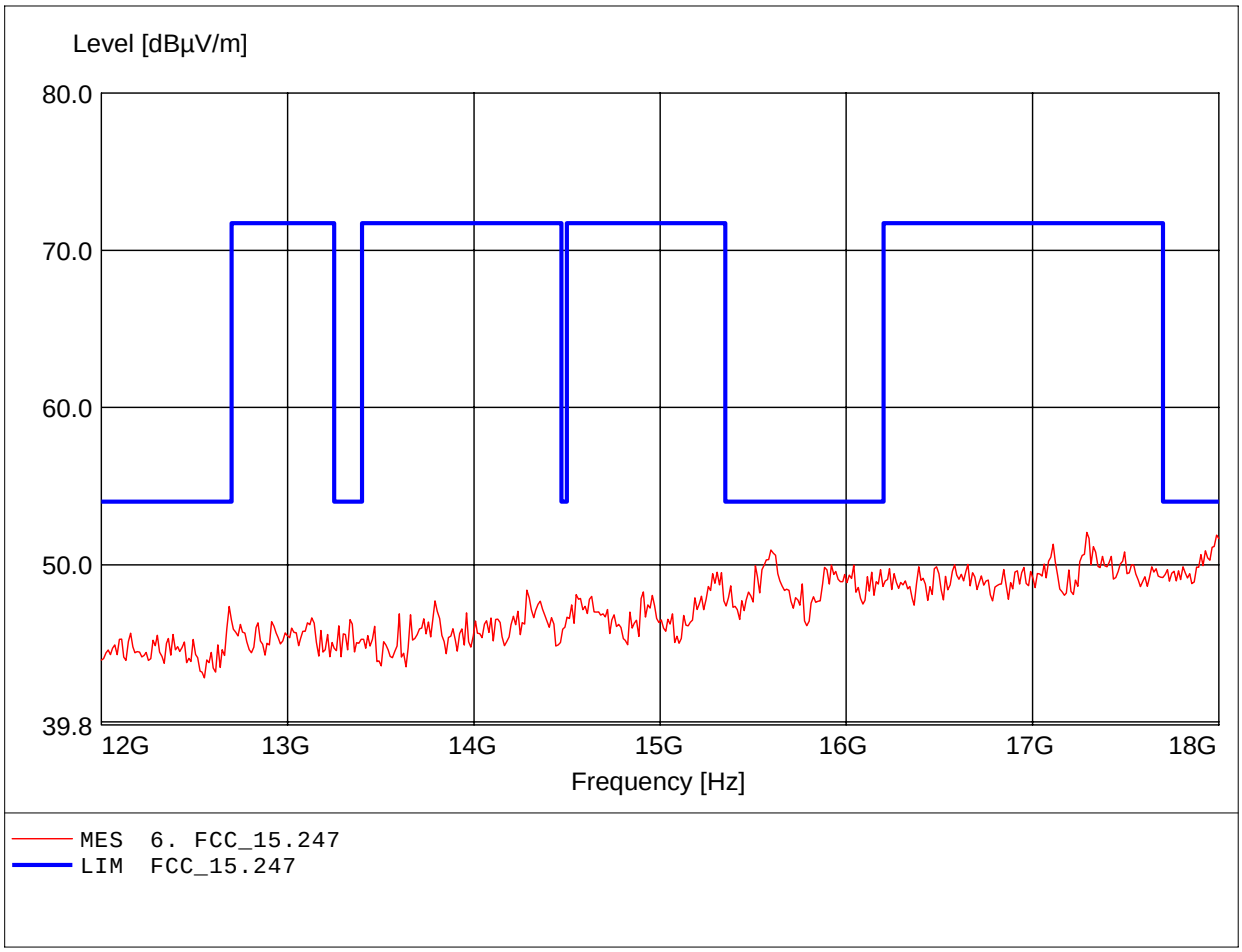
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 18.000GHz, Emax: 53.19dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

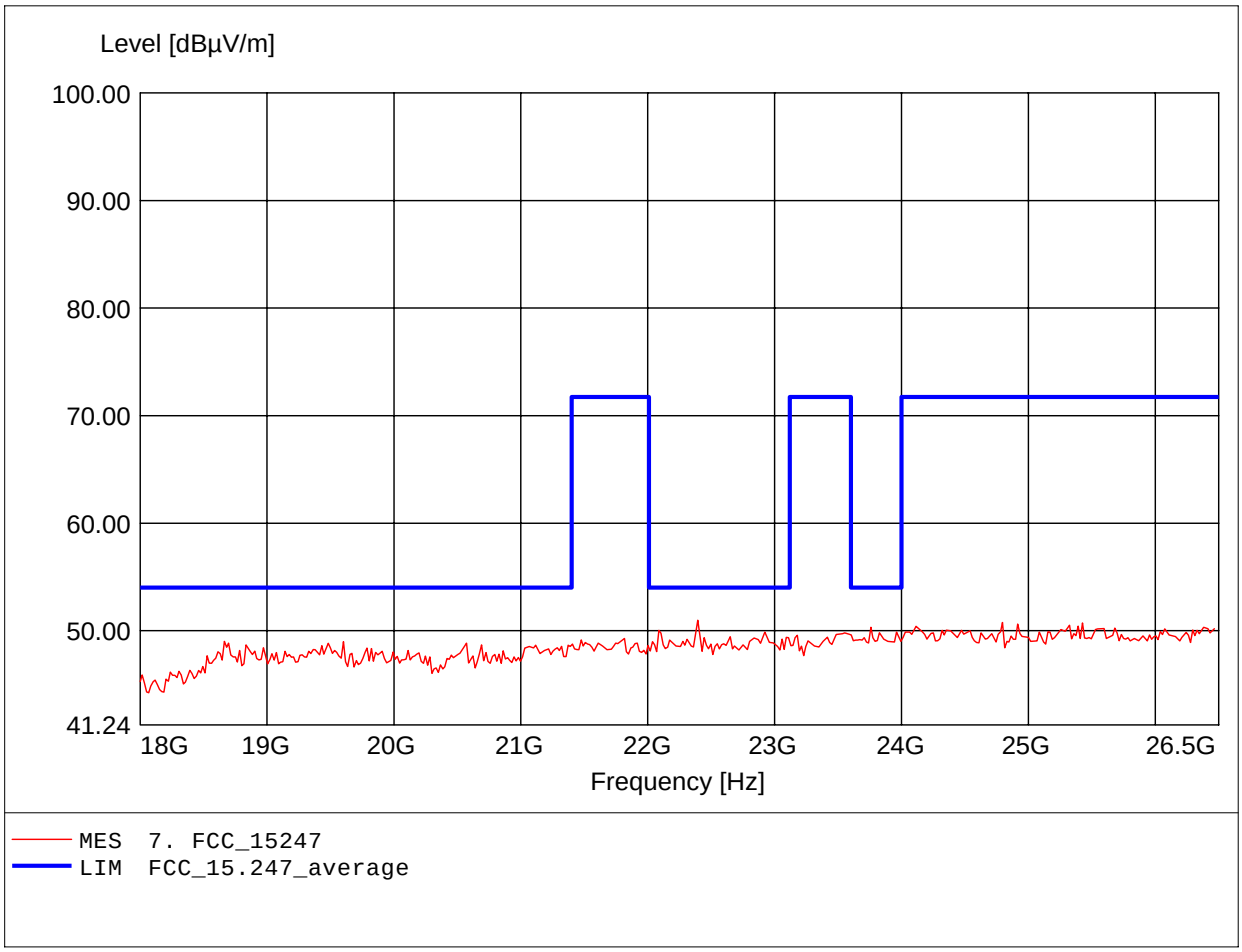
EUT: BT module
MODEL NO.: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 17.291GHz, Emax: 52.05dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

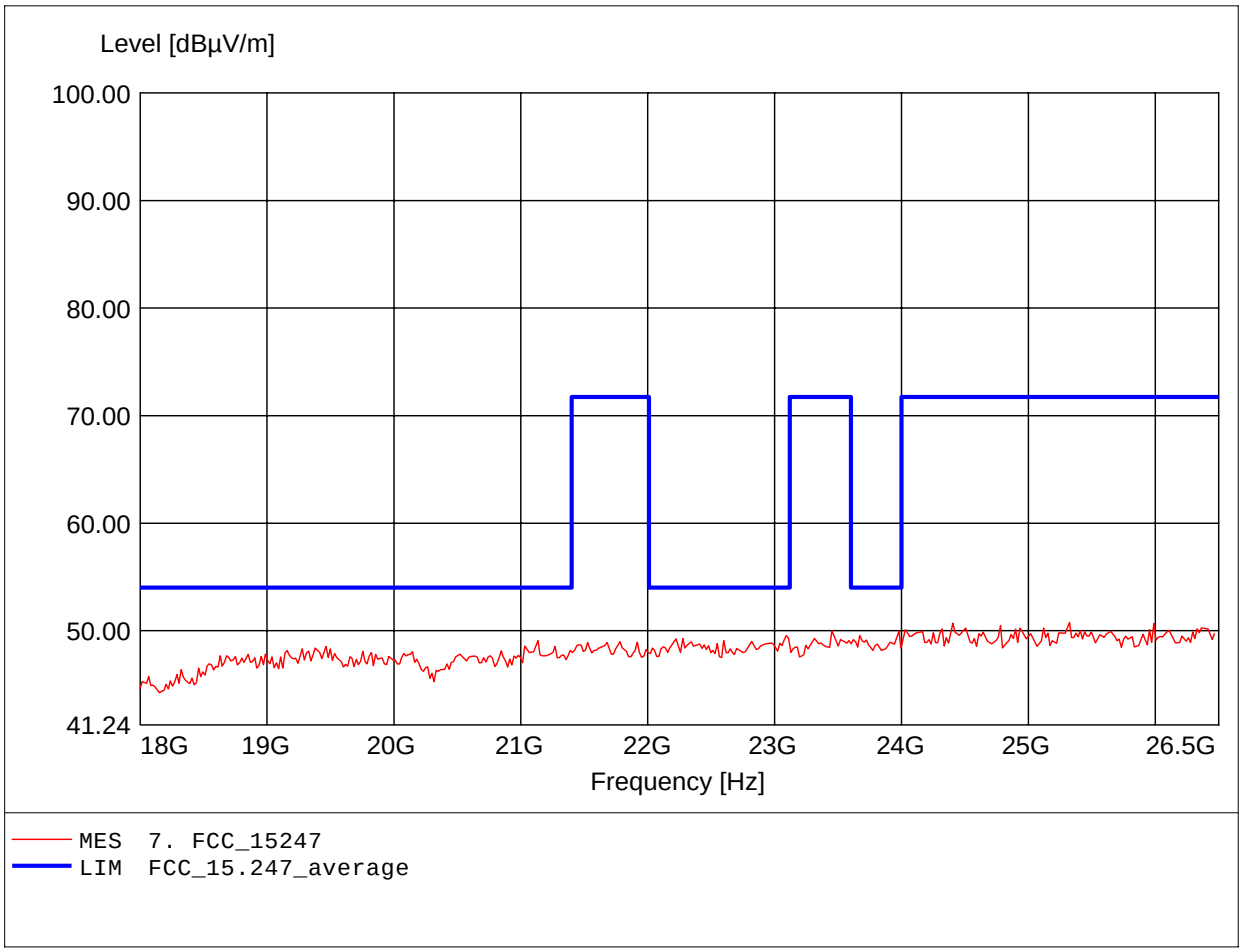
EUT: BT module
MODEL NO.:: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Freq: 22.395GHz, Emax: 50.97dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

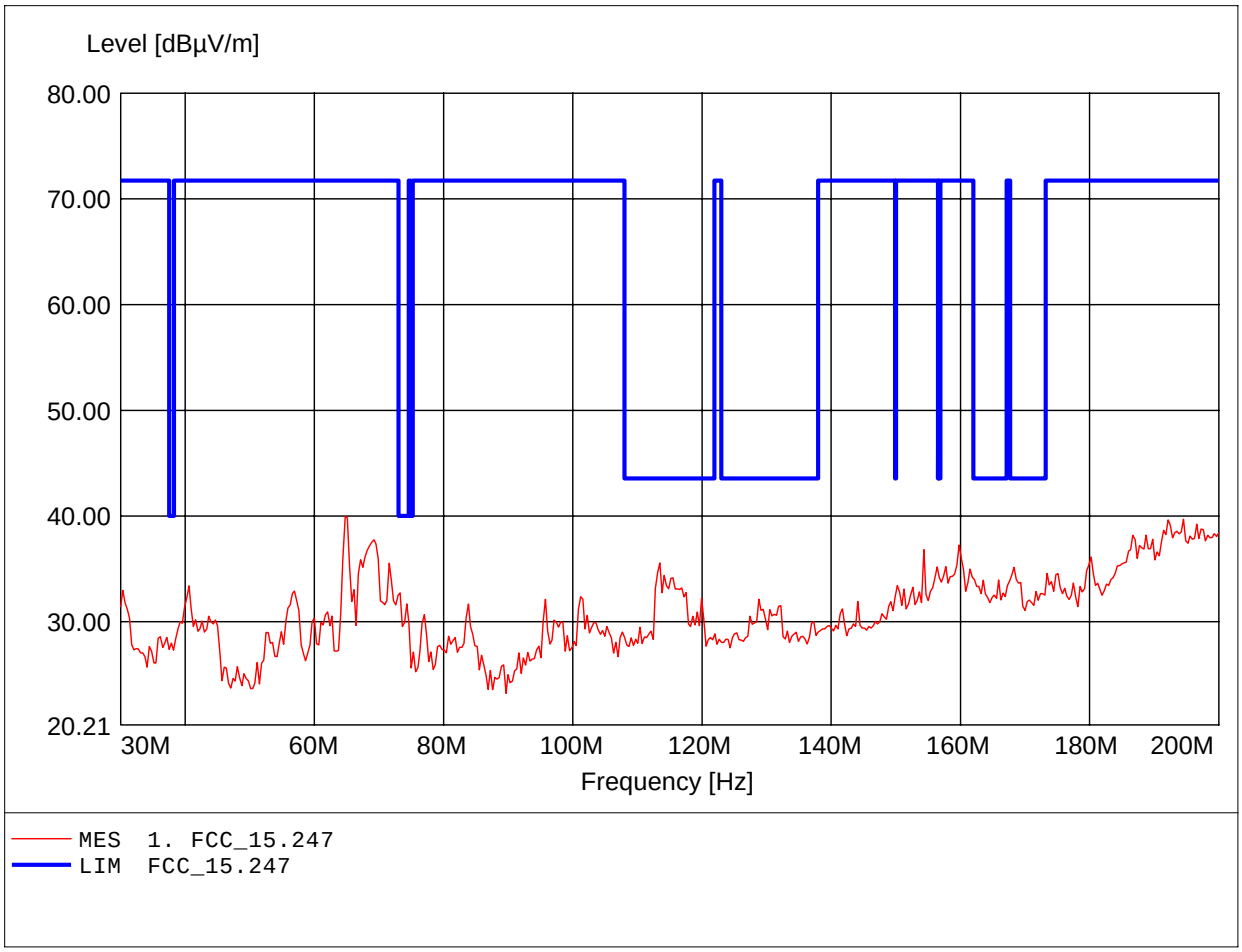
EUT: BT module
MODEL NO.:: UGPZ8 middle channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Freq: 25.325GHz, Emax: 50.76dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

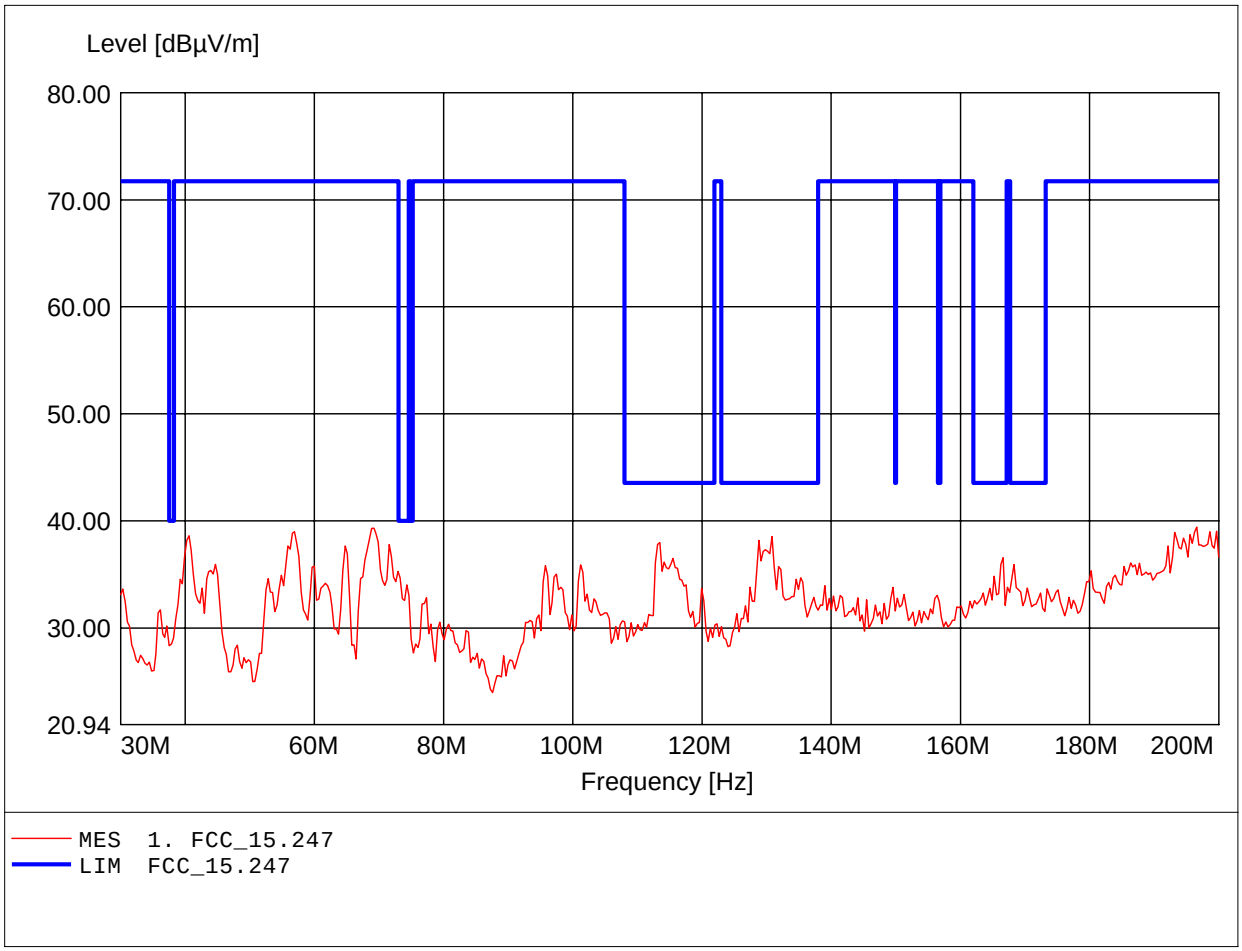
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 64.749MHz, Emax: 39.95dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

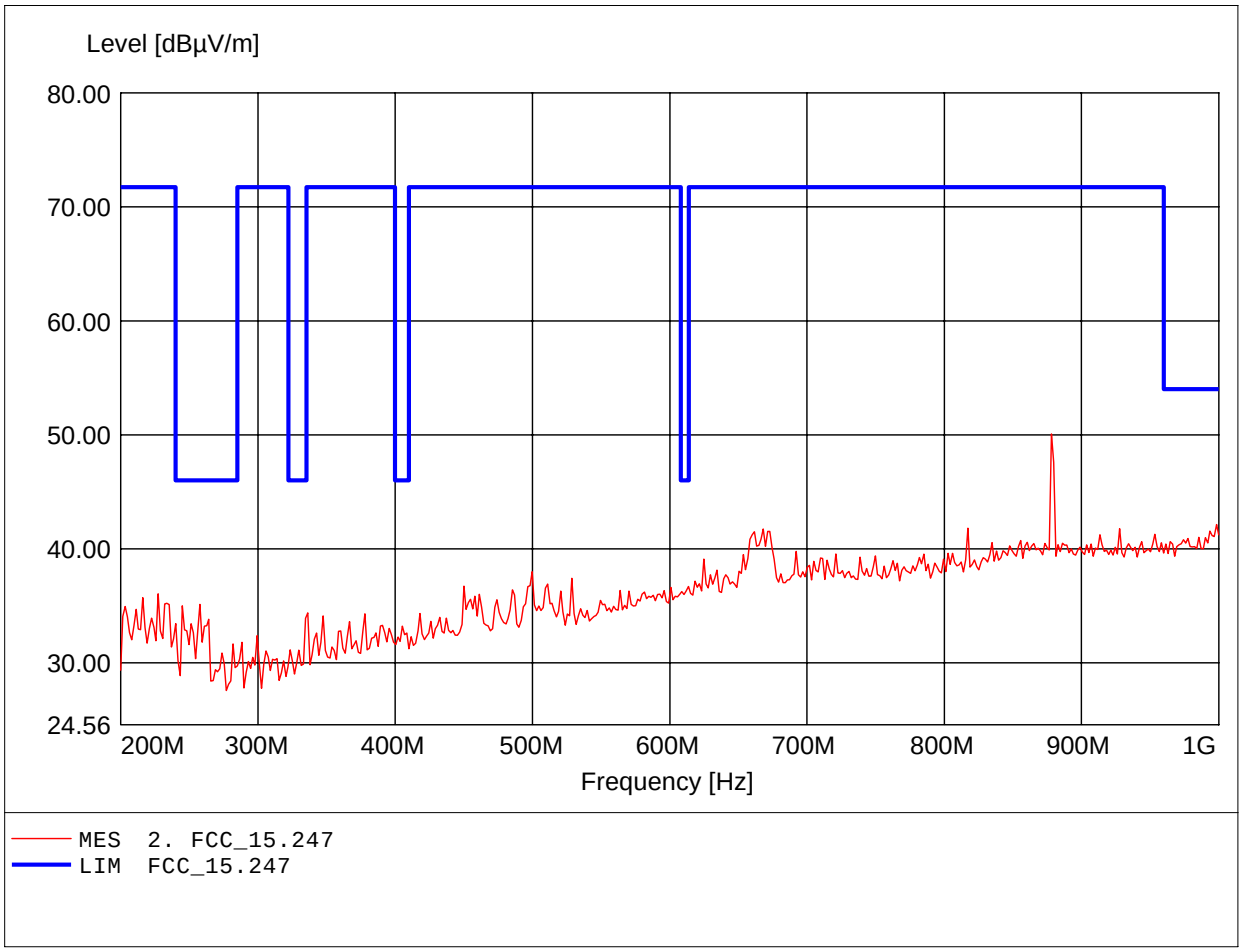
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq: 196.593MHz, Emax: 39.41dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

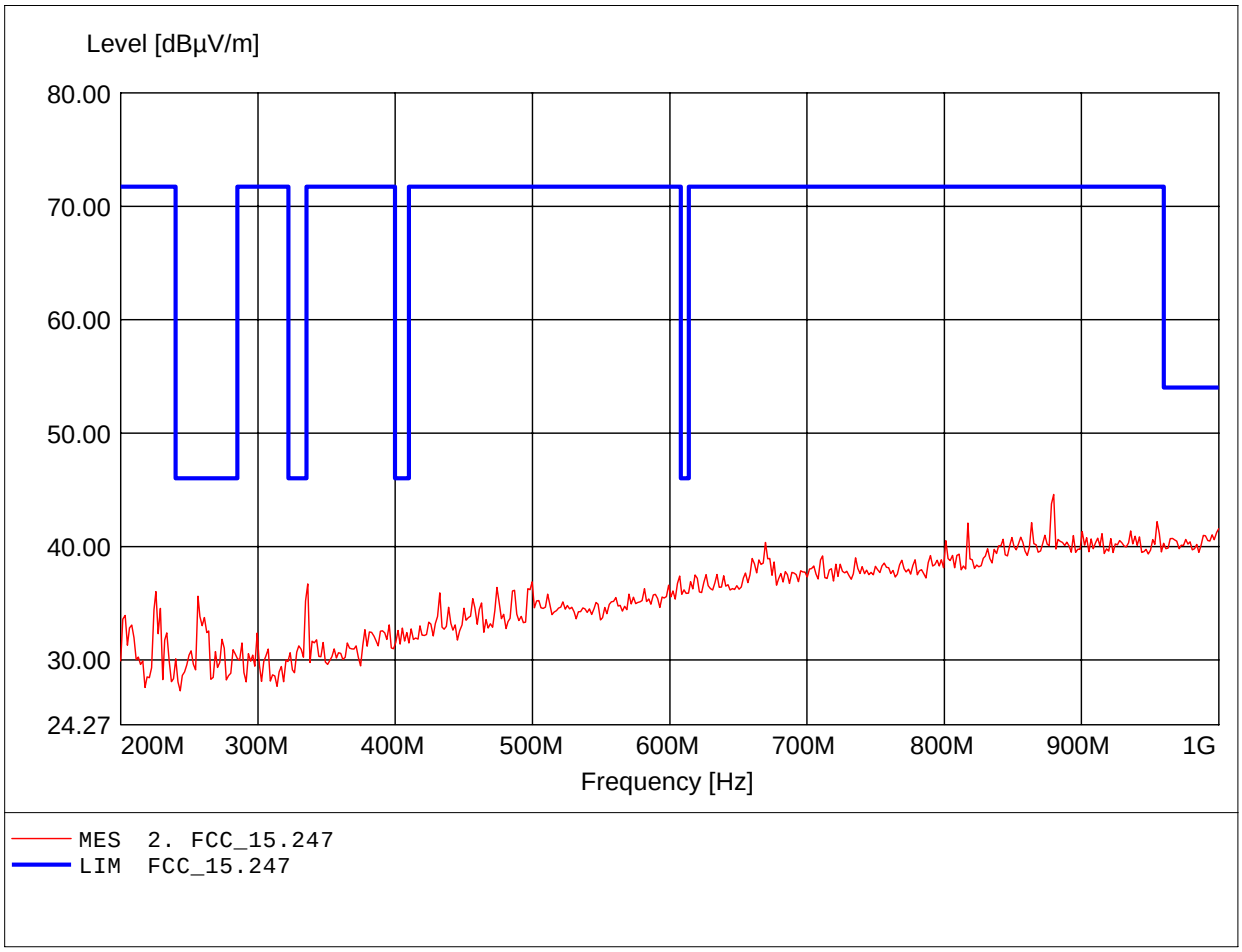
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL 223, amplif.
	Freq: 878.156MHz, Emax: 50.08dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

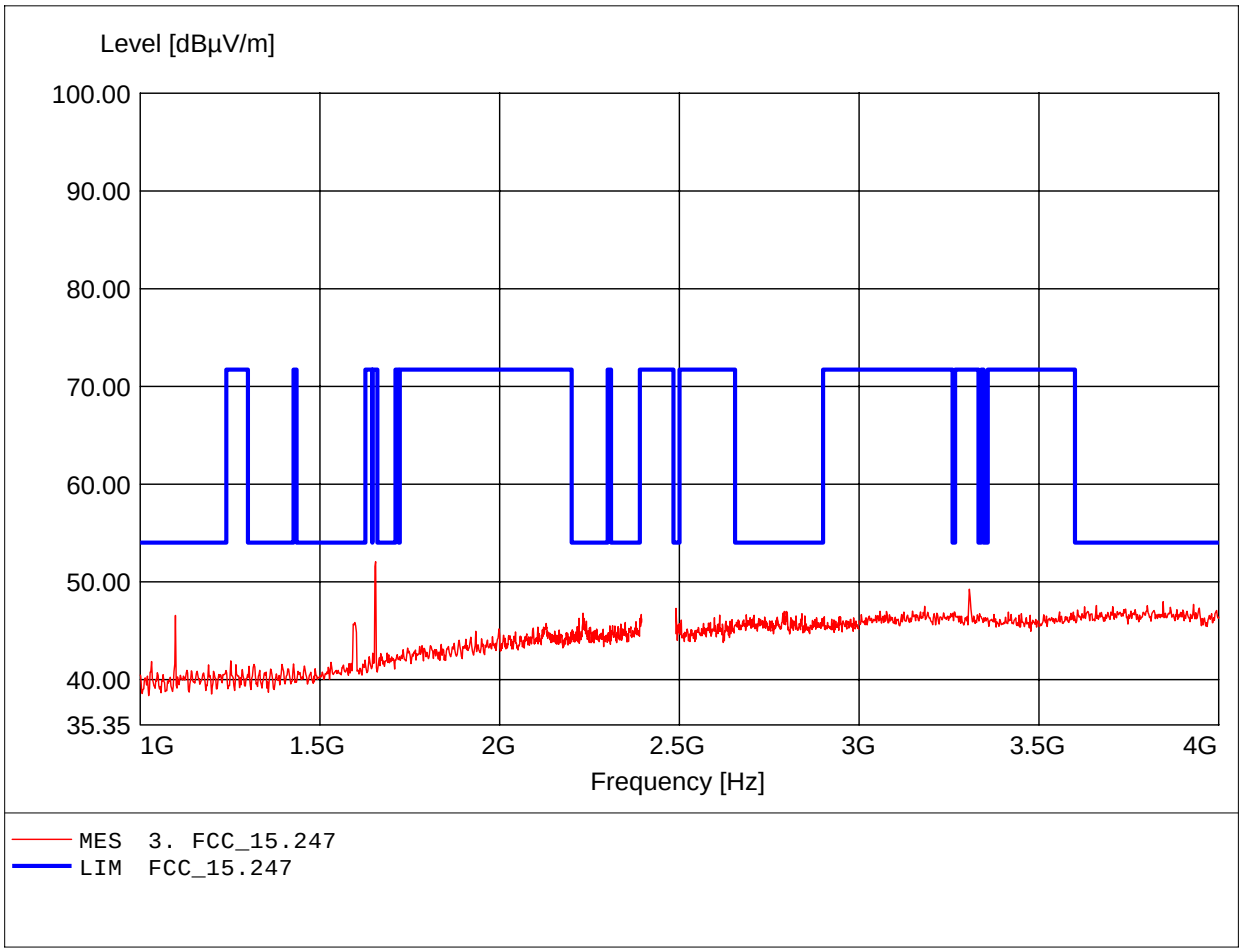
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247
Comment 2:	Dist.: 3m, Ant.: HL 223, amplif.
	Freq: 879.760MHz, Emax: 44.59dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

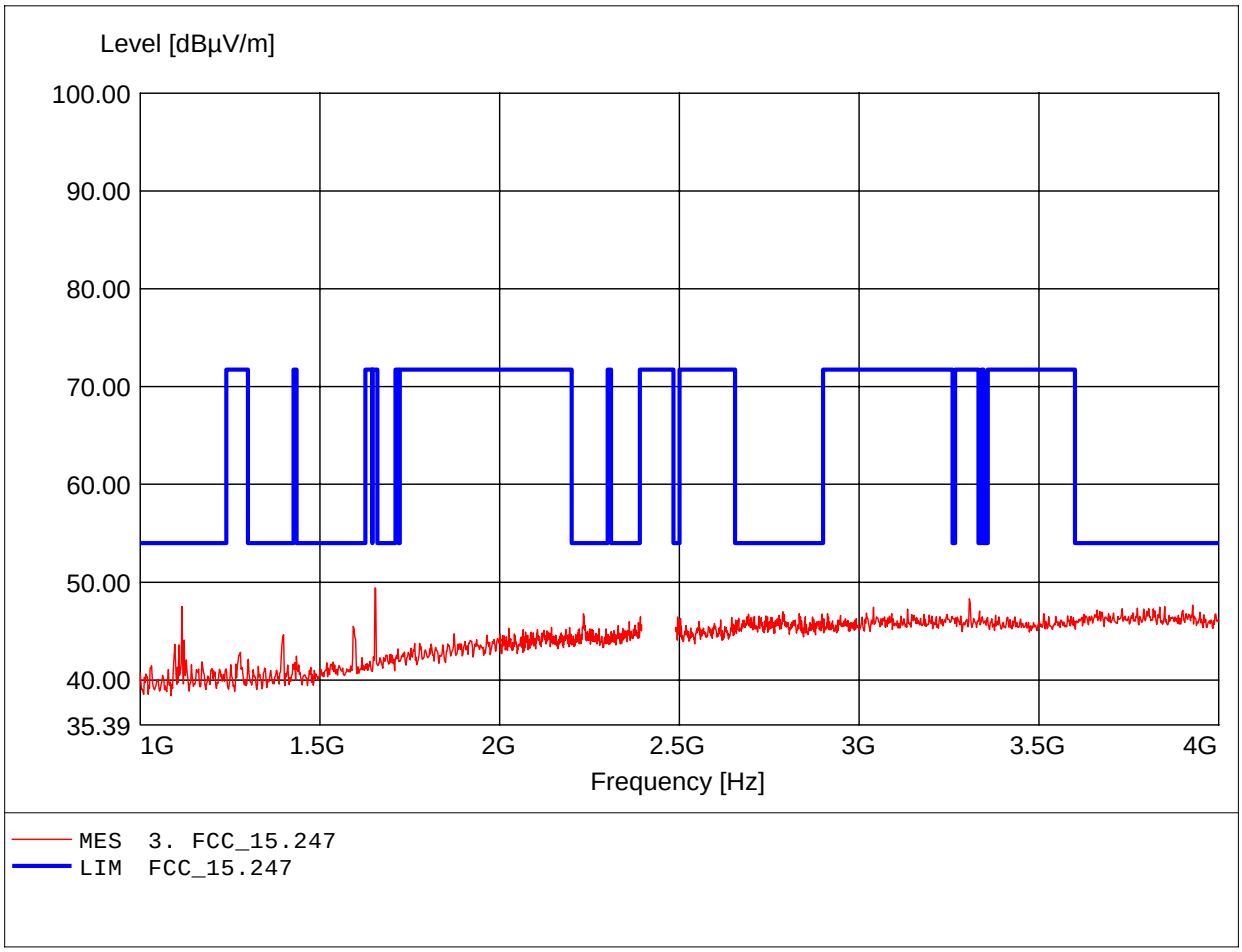
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 1.655GHz, Emax: 52.08dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

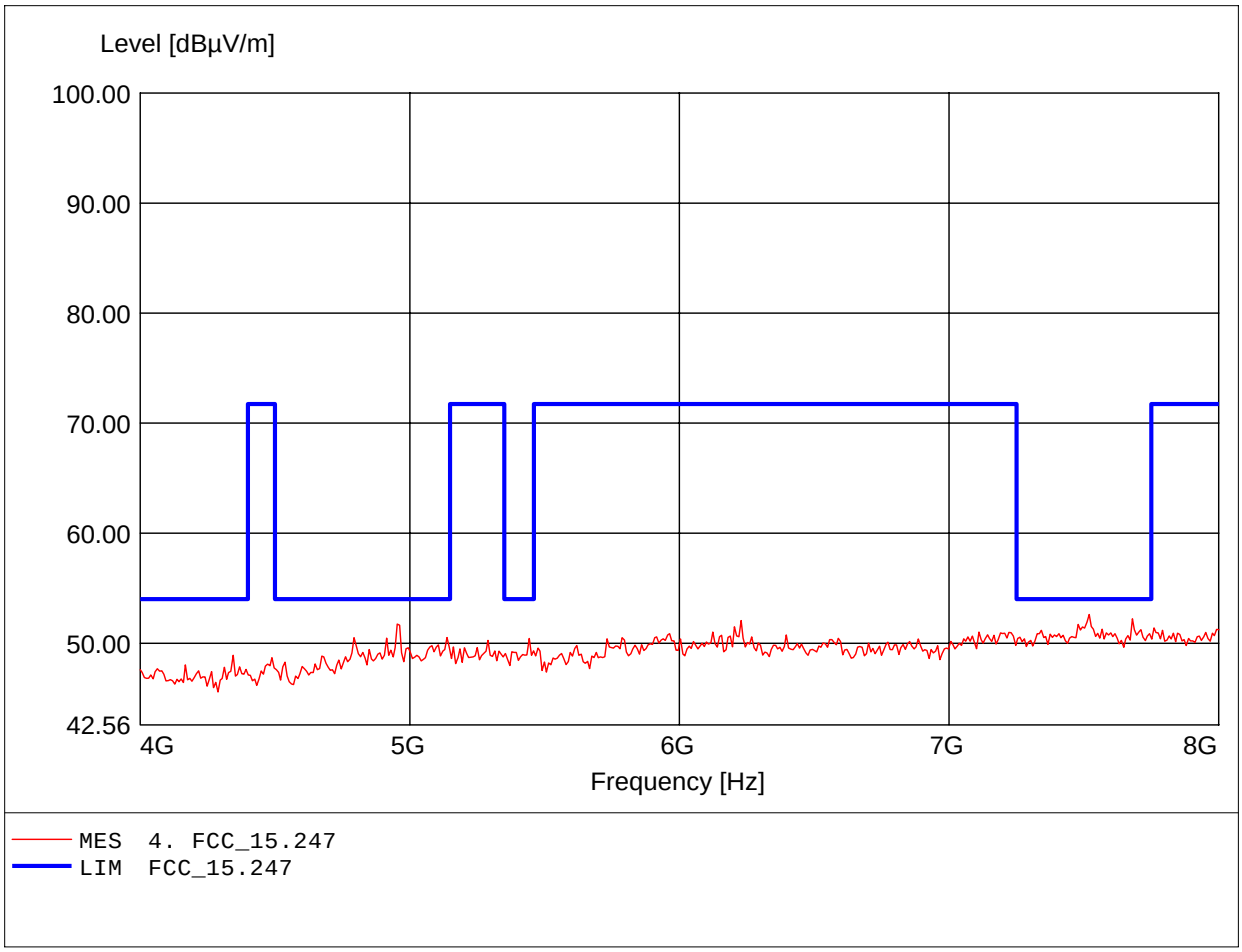
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 1.653GHz, Emax: 49.40dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

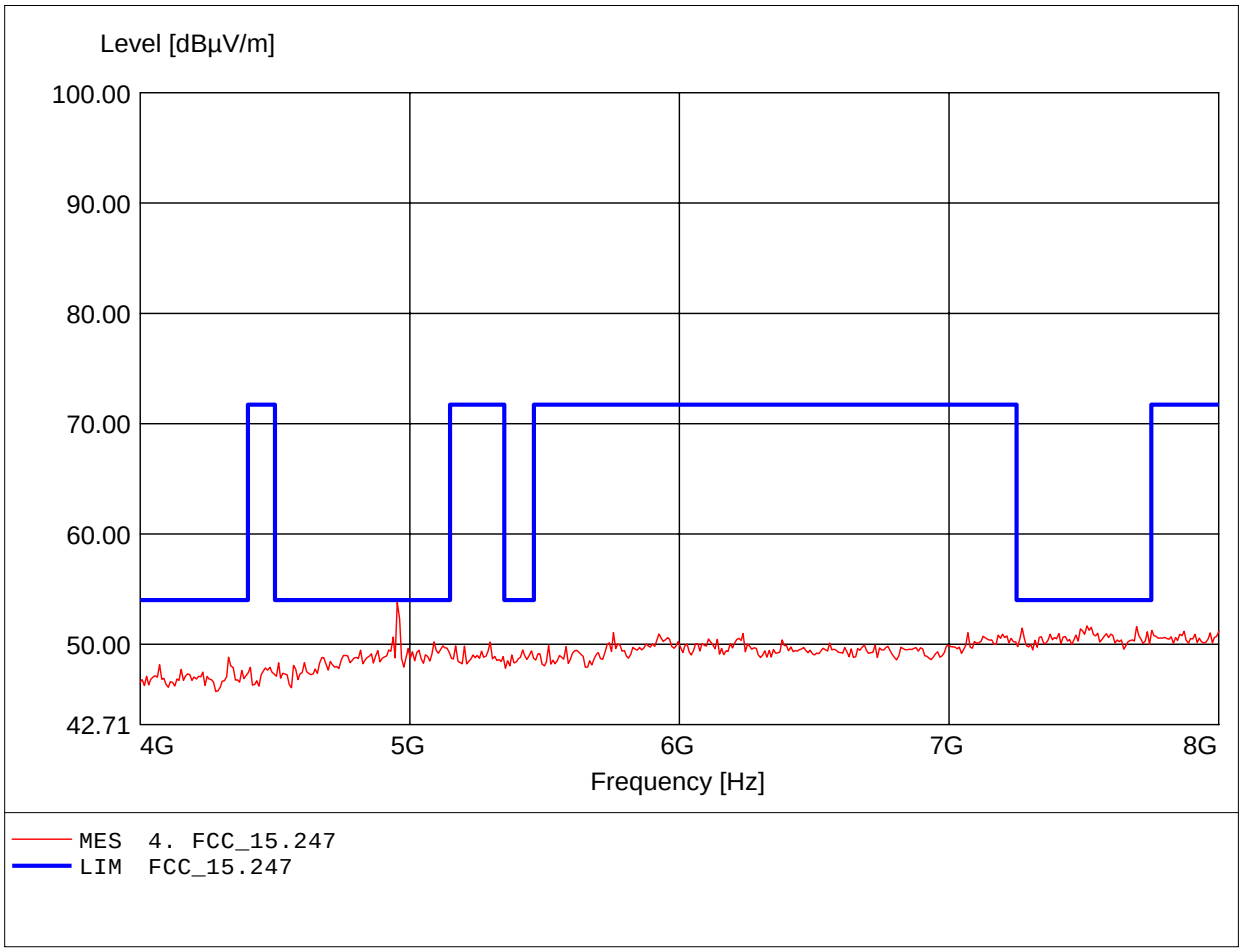
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 7.519GHz, Emax: 52.60dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

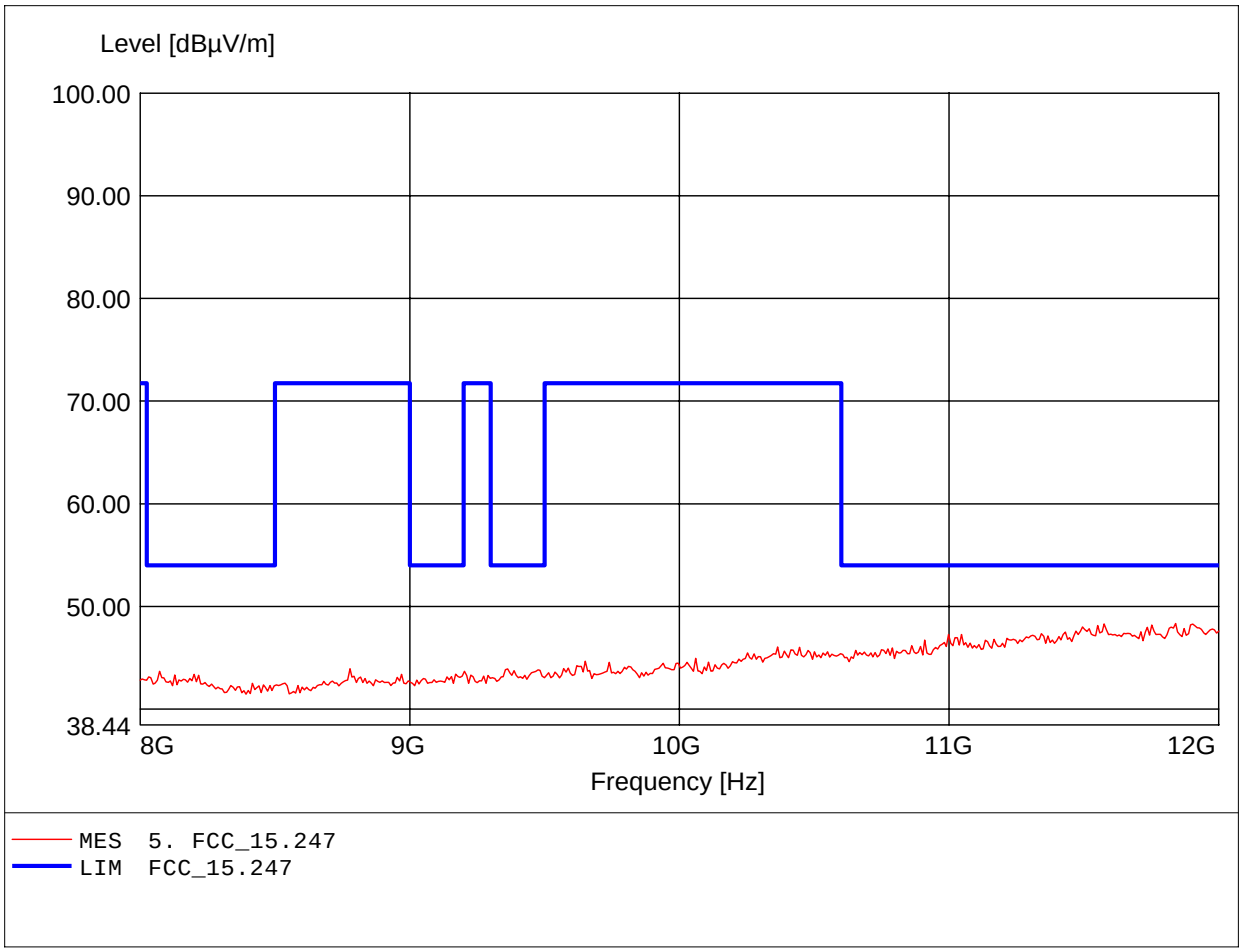
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 4.954GHz, Emax: 53.78dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

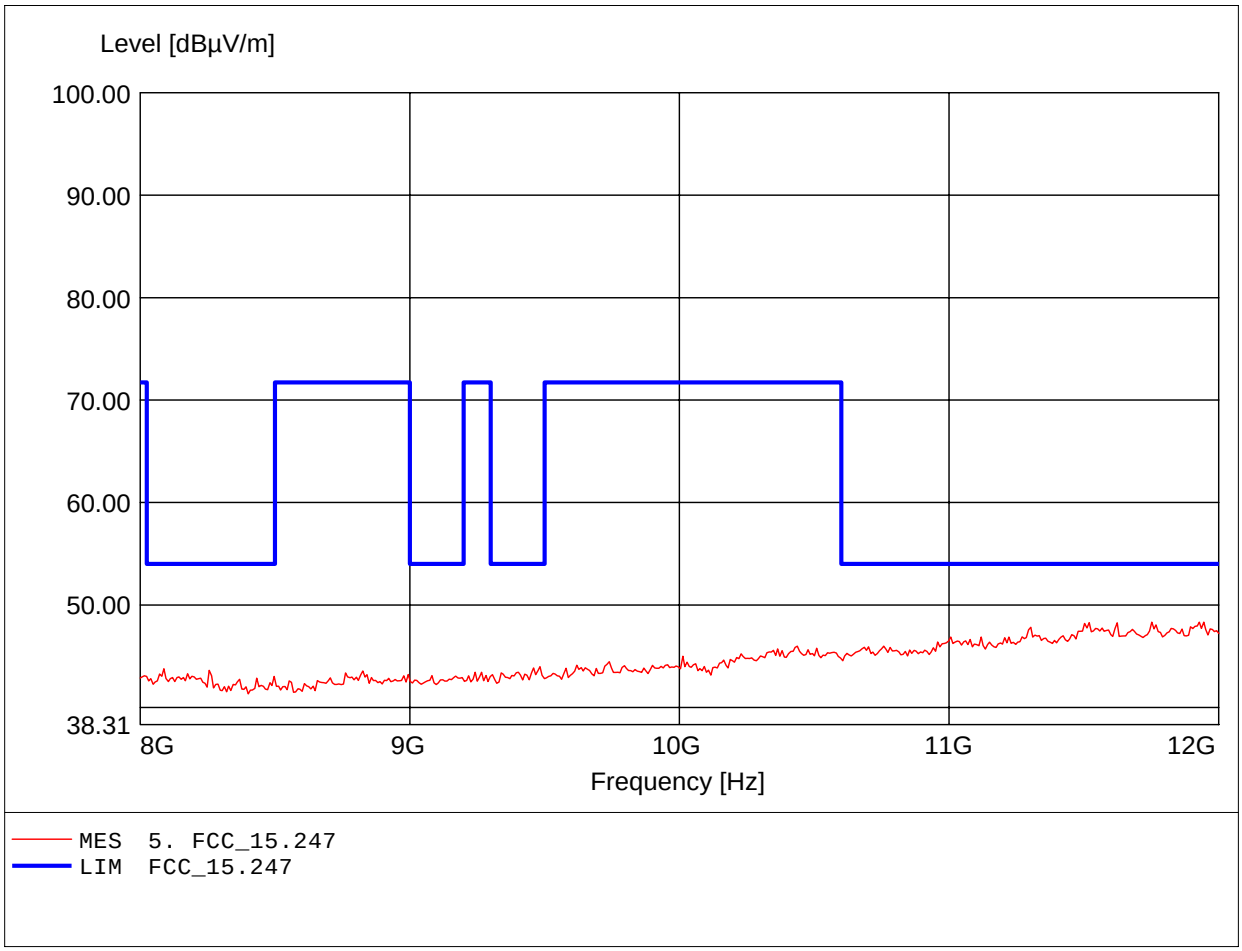
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 11.840GHz, Emax: 48.34dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

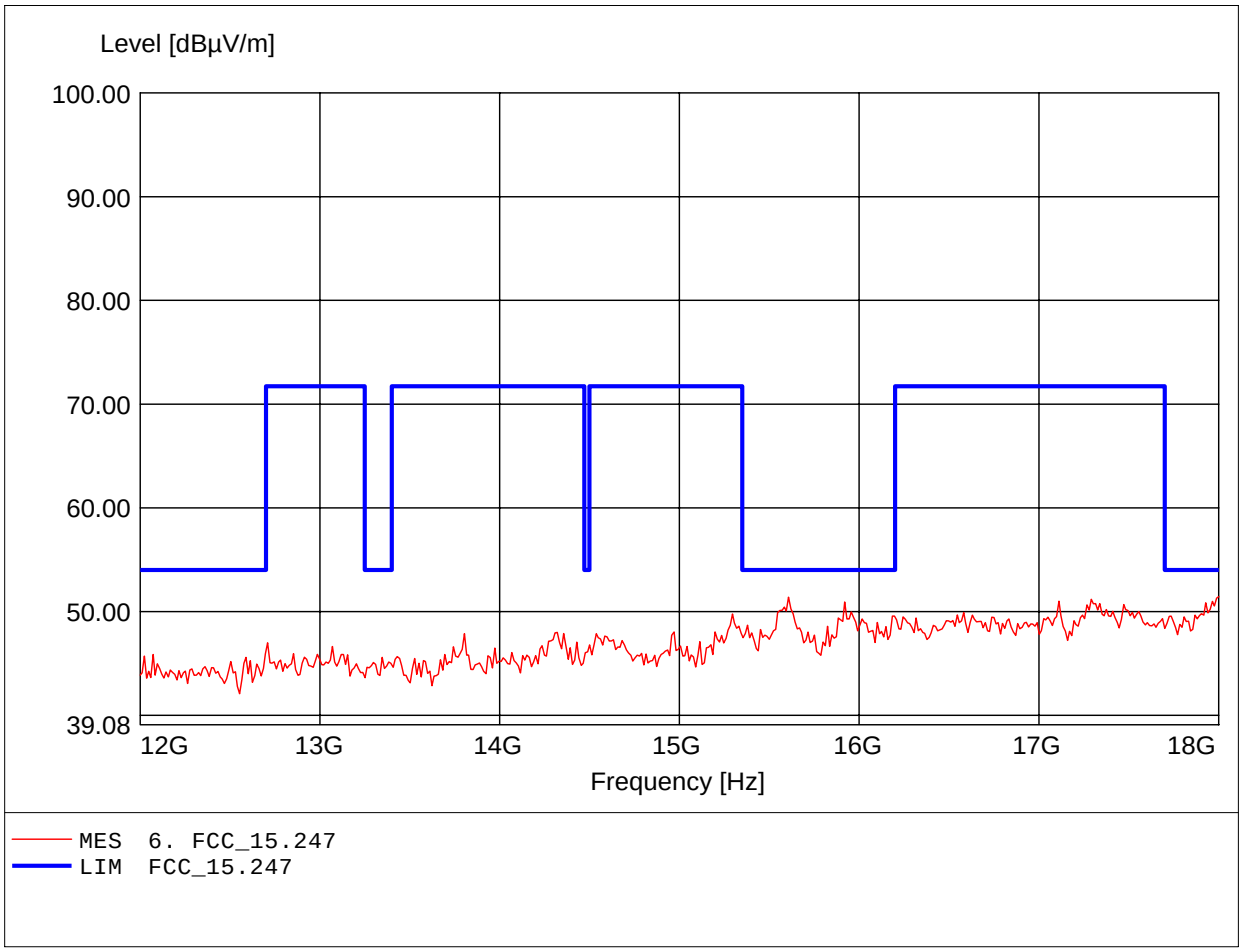
EUT: BT module
MODEL NO: UGPZ8 high channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 11.752GHz, Emax: 48.33dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

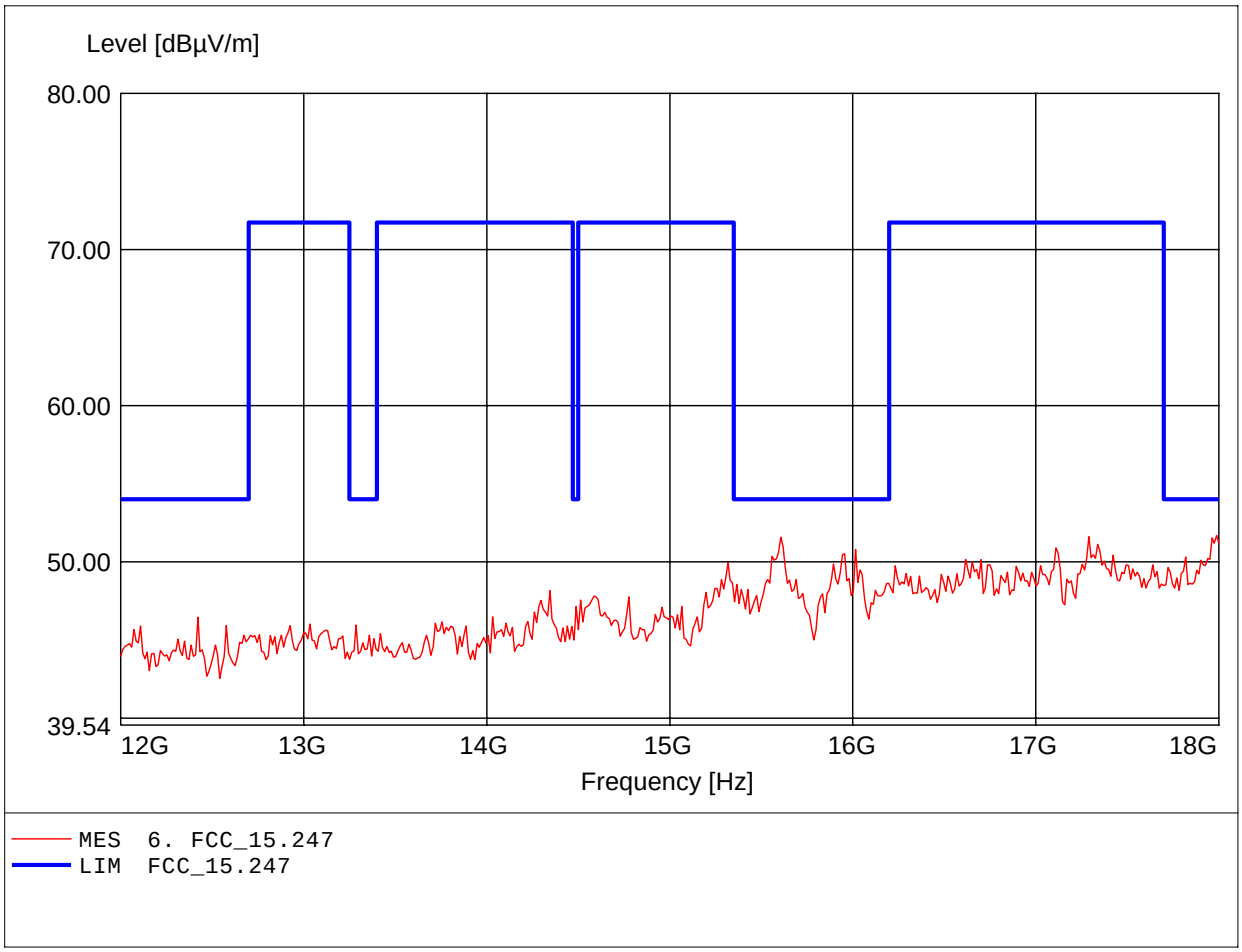
EUT: BT module
MODEL NO: UGPZ8 high channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 2: Dist.: 3m, Ant.: HL025, ampl.+HP.
Freq: 18.000GHz, Emax: 51.45dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

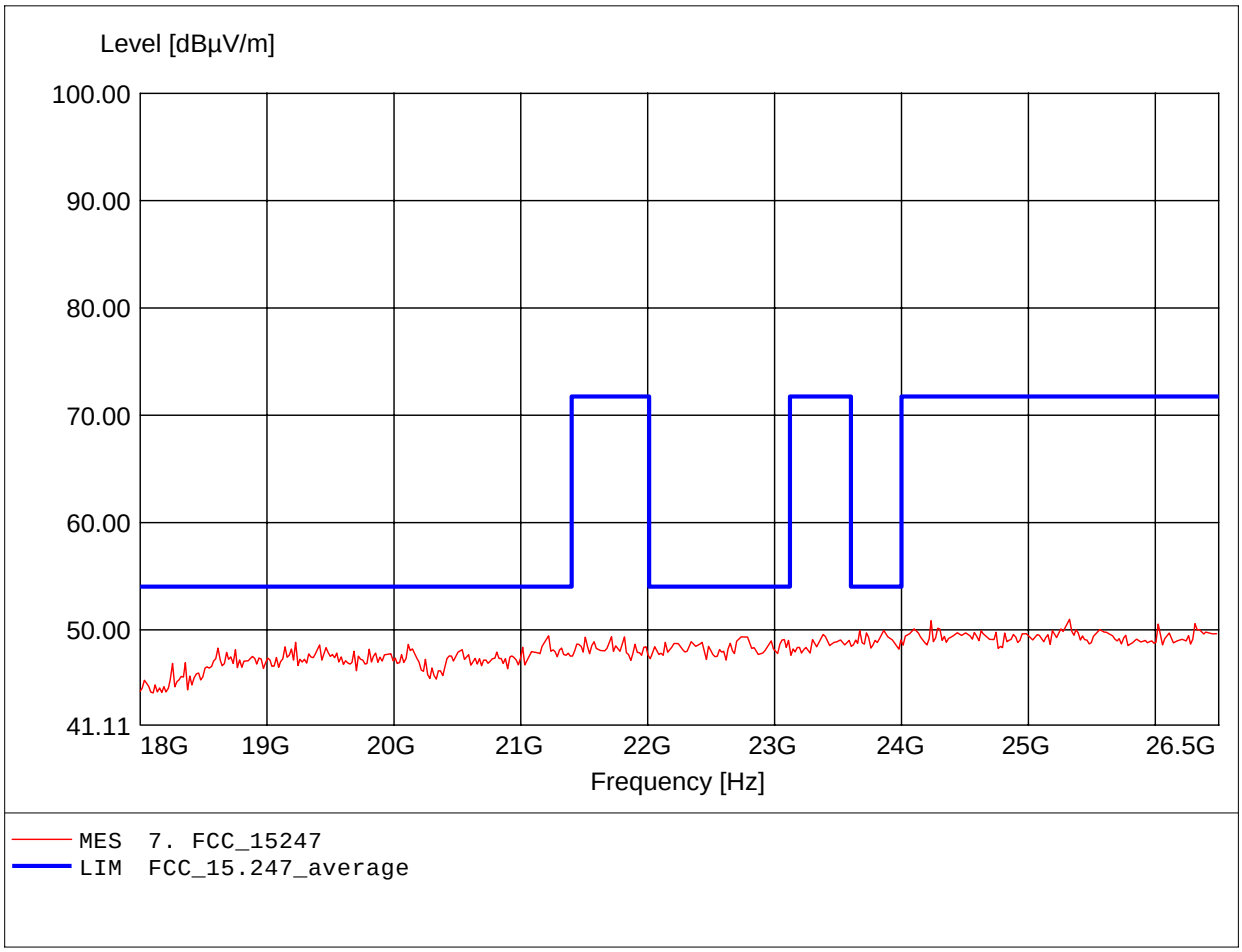
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 2:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 17.988GHz, Emax: 51.69dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

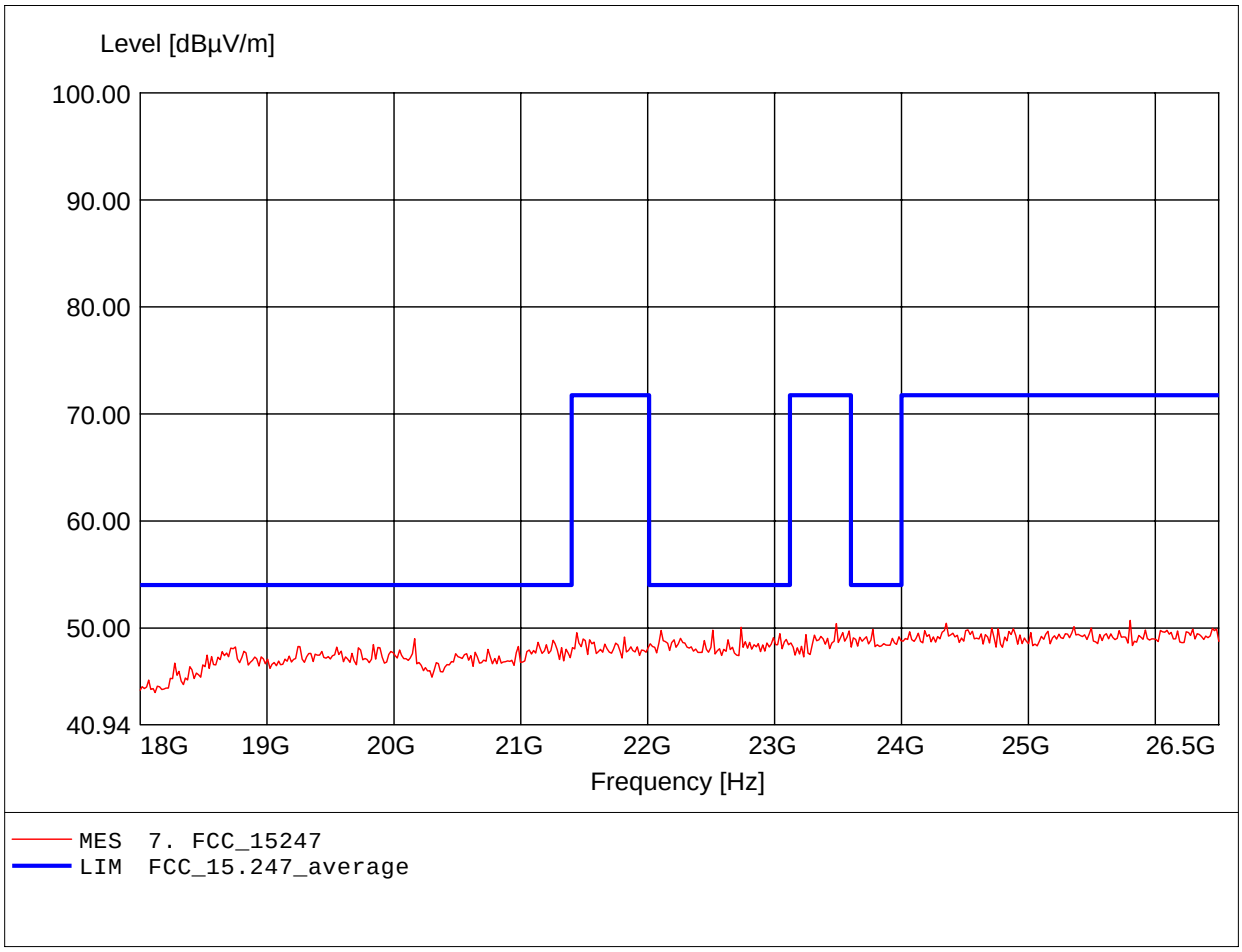
EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.325GHz, Emax: 50.98dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

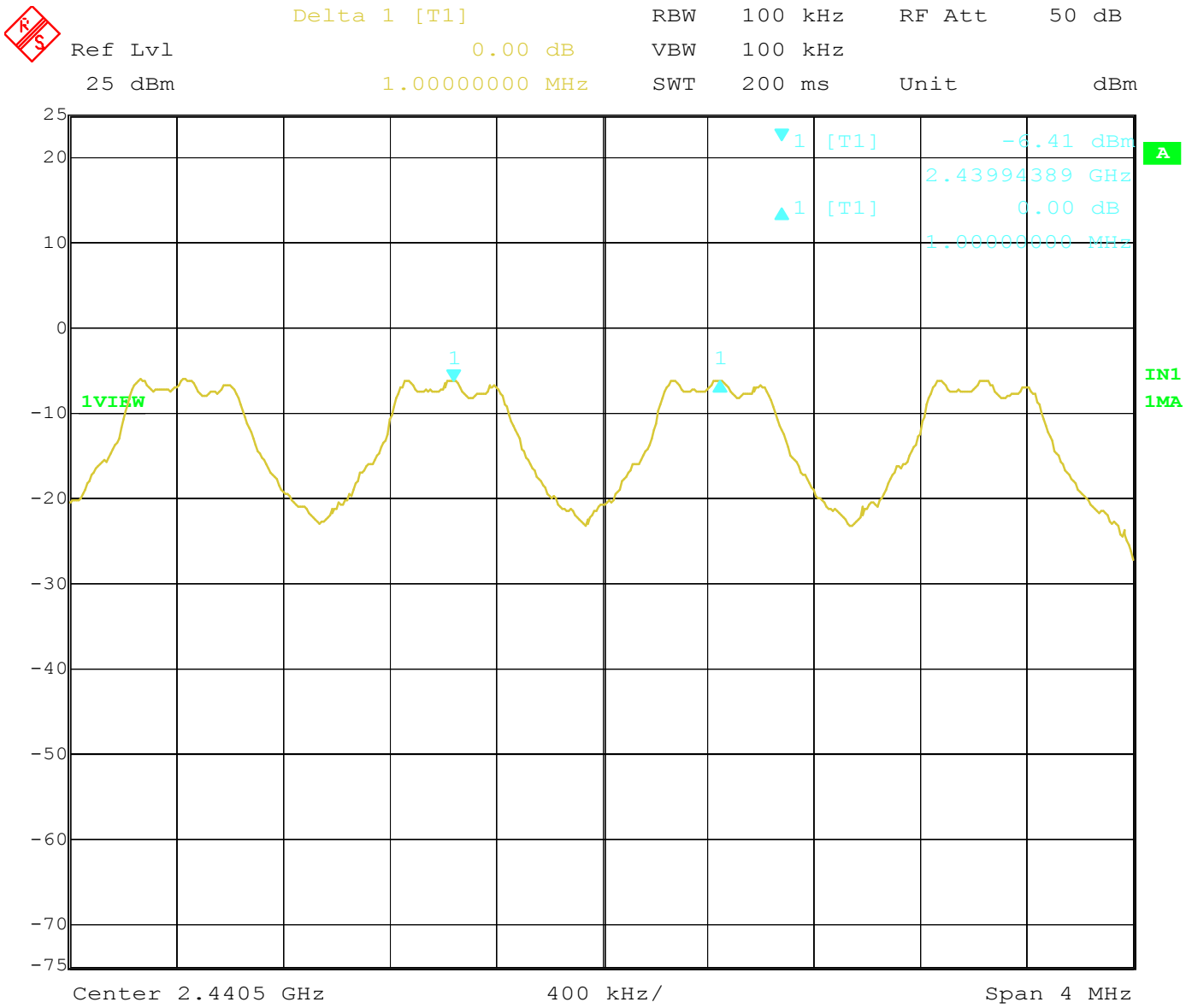
FCC RULES PART 15, SUBPART C

EUT:	BT module
MODEL NO:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.802GHz, Emax: 50.71dBµV/m, RBW: 1MHz



Appendix C

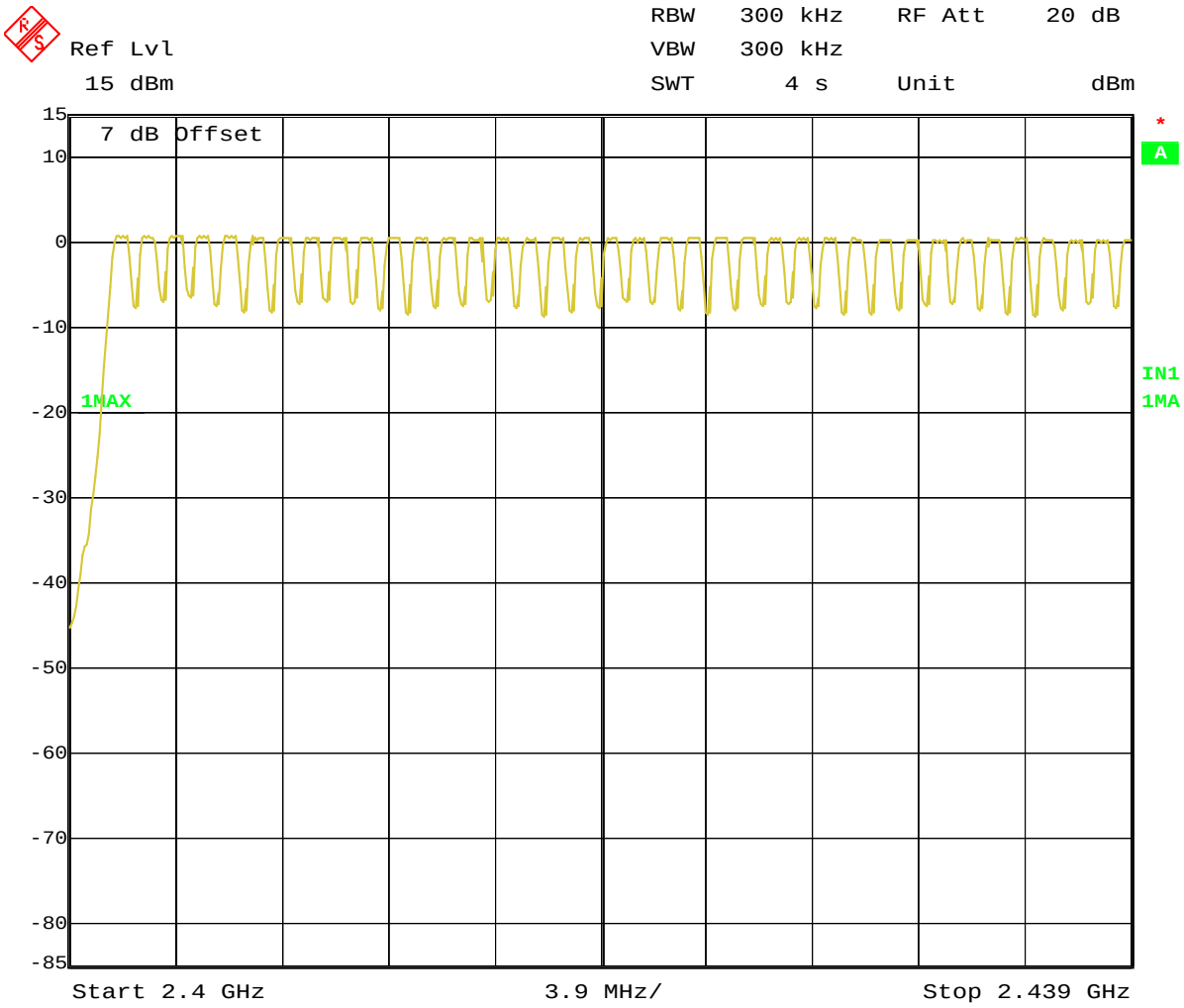
Carrier Frequency Separation



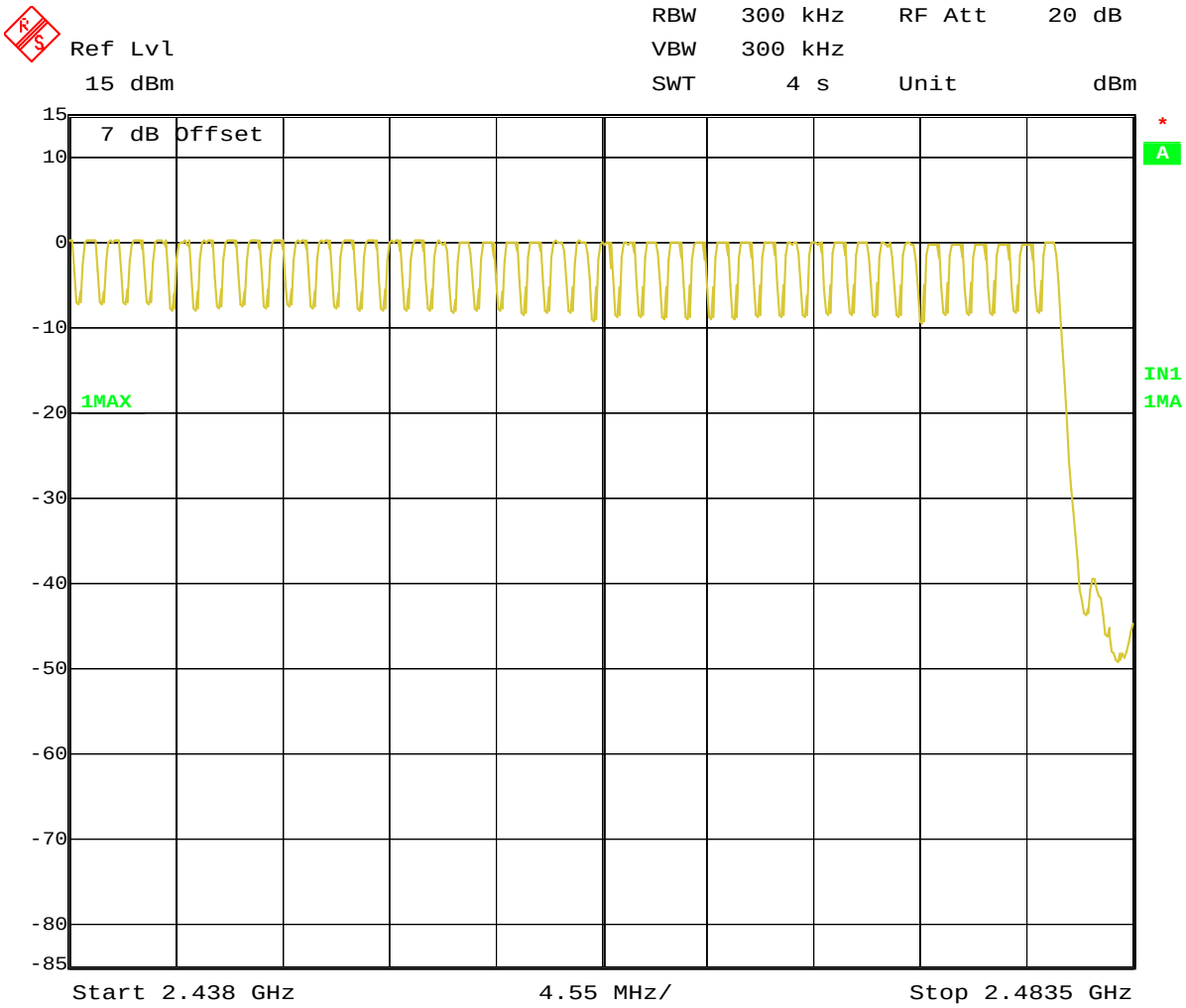
Title: Frequency sparation CH 38 & CH 39
Date: 17.MAY.2006 16:11:07

Appendix D

Number of Hopping Frequencies



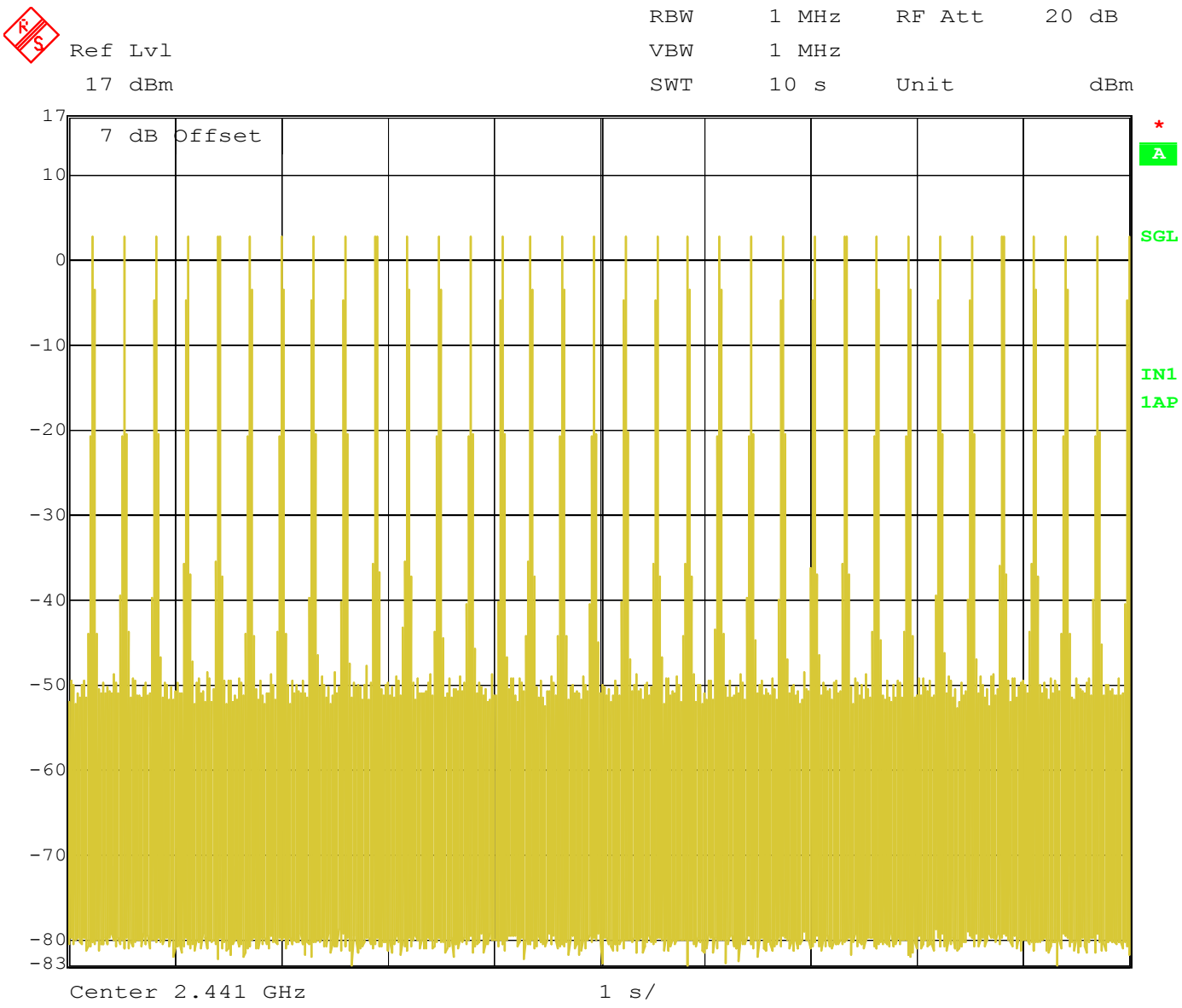
Title: NUMBE OF HAPPING FREQUENCIES
Date: 17.MAY.2006 16:49:18



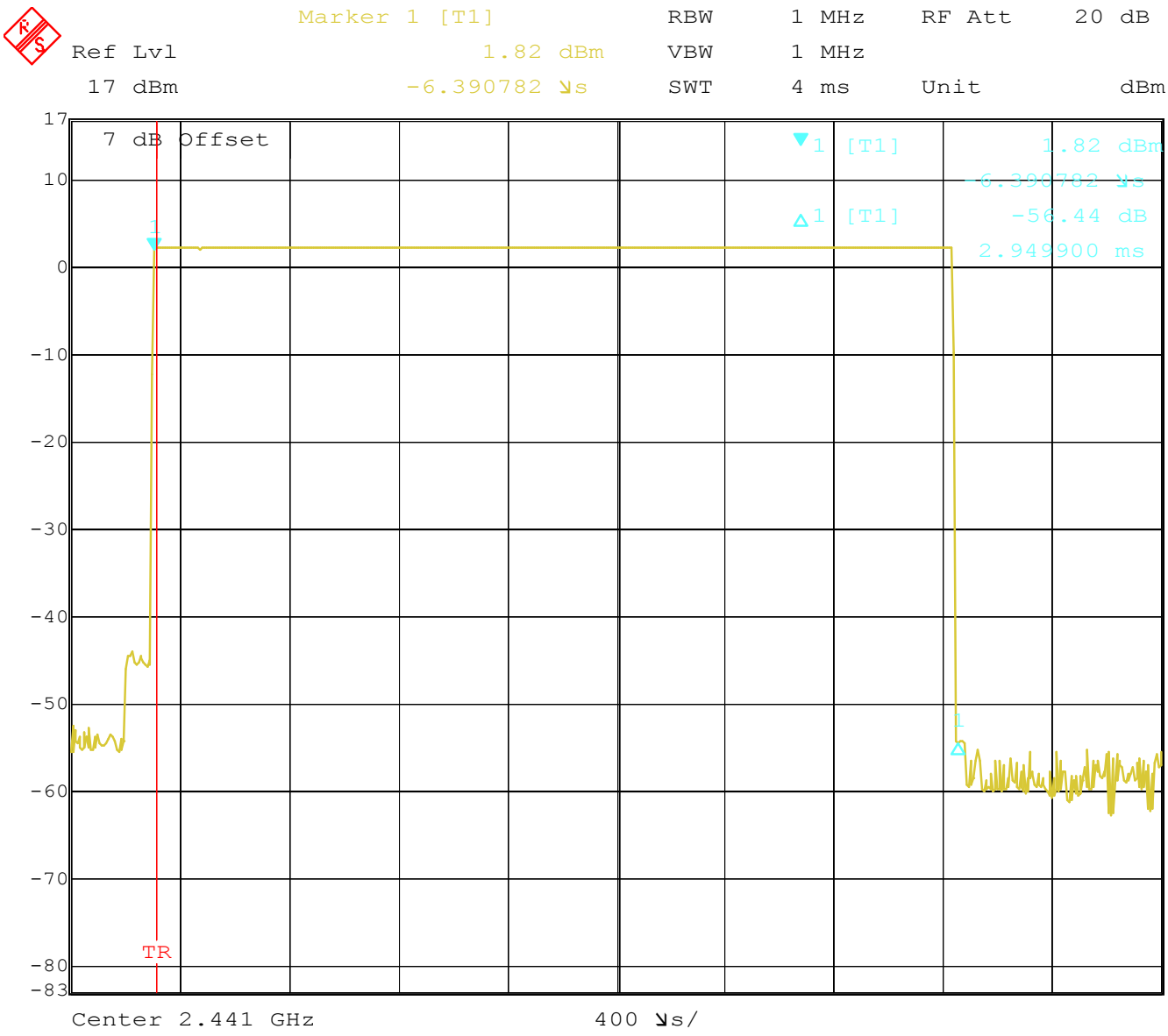
Title: NUMBE OF HAPPING FREQUENCIES
Date: 17.MAY.2006 16:53:33

Appendix E

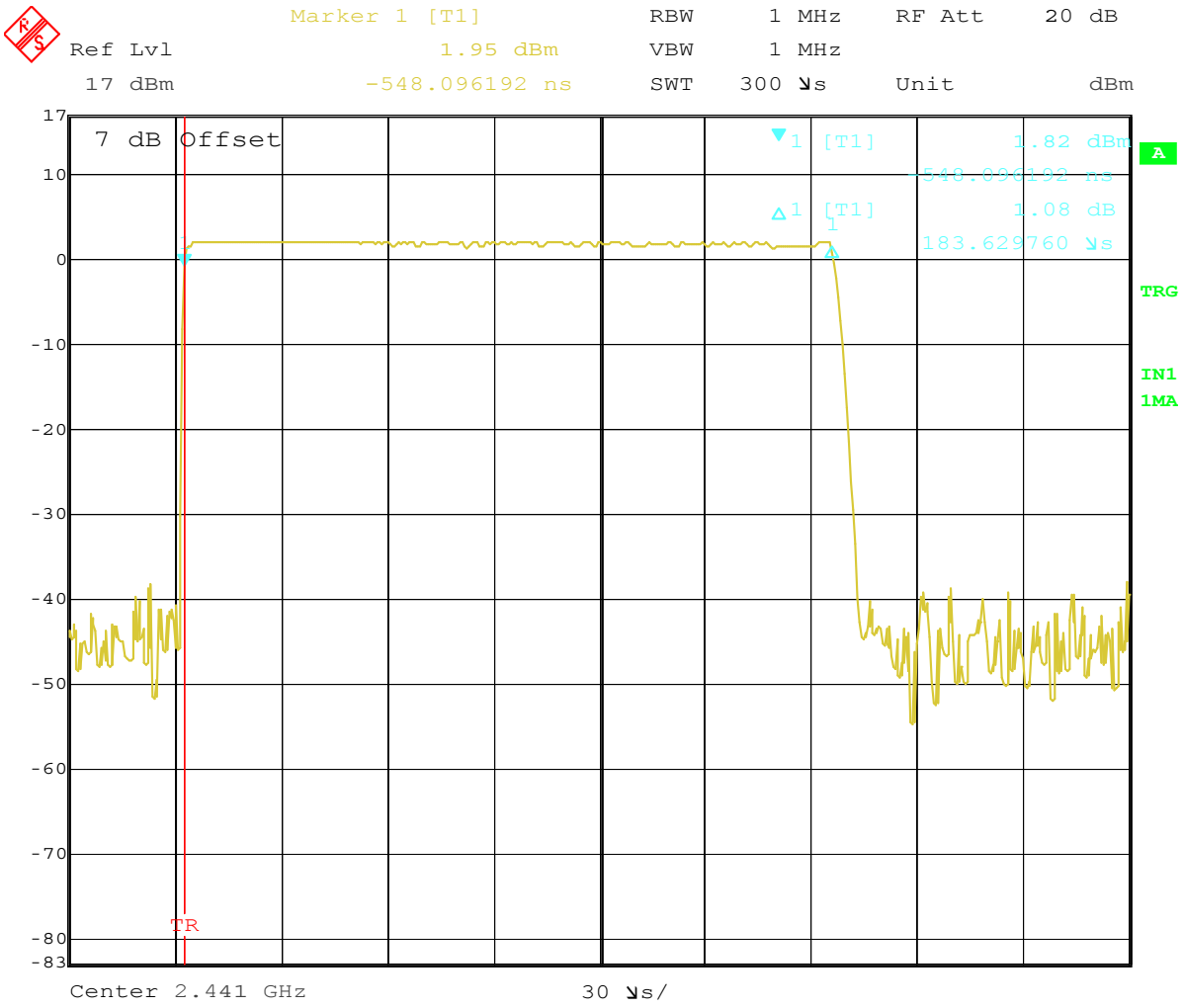
Time of Occupancy (Dwell Time)



Title: Total occur times in 31.6s (DH5 Packet) = 34 * 3.16 = 107
Date: 20.MAY.2006 15:26:49



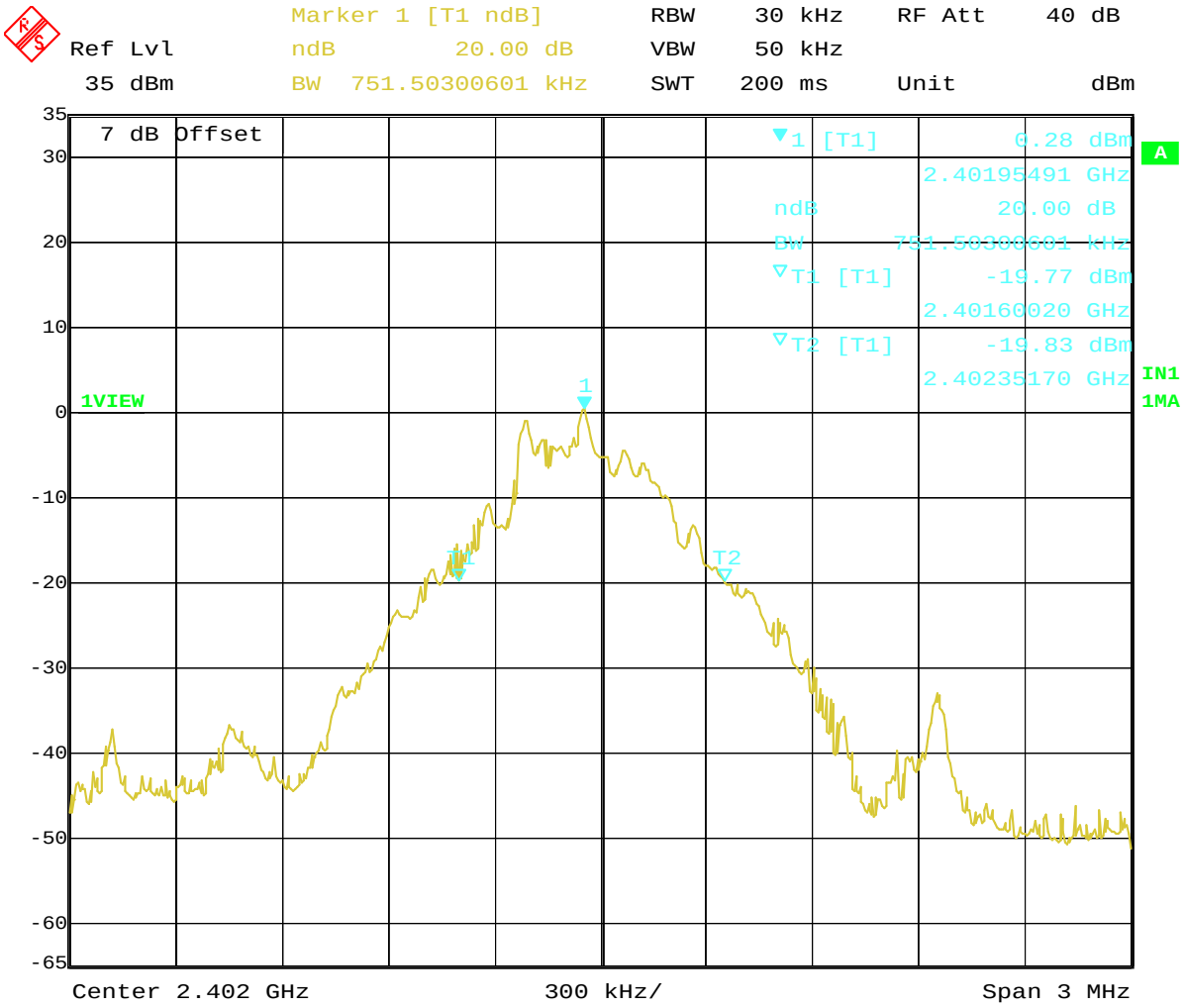
Title: Total sum of occurance time (DH5 Packet)=2.9499ms*107=315.64ms
Date: 23.MAY.2006 12:08:59



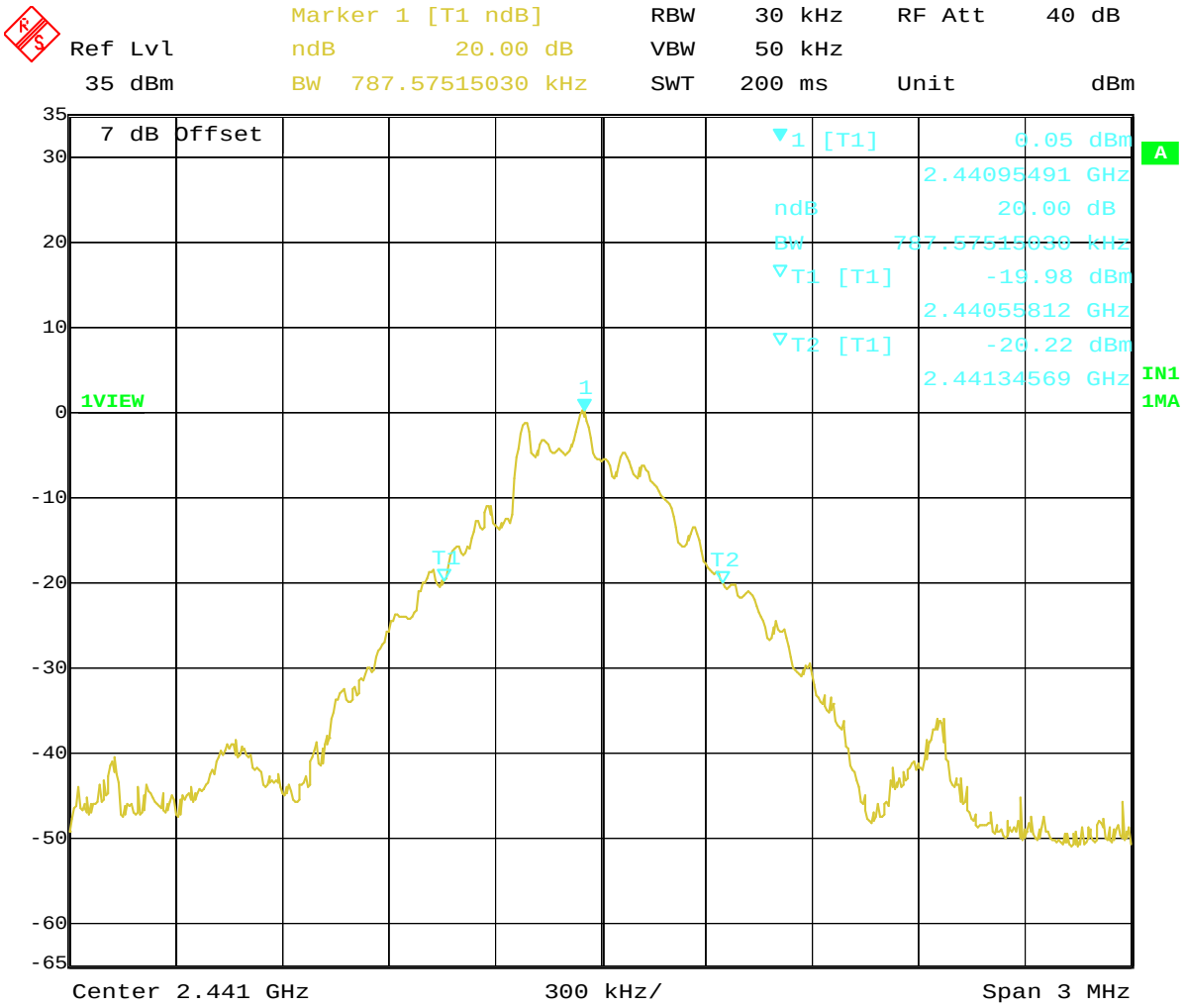
Title: Time of occupancy (Inquiry Mode)183,63us*475events=87.22ms
Date: 23.MAY.2006 12:18:49

Appendix F

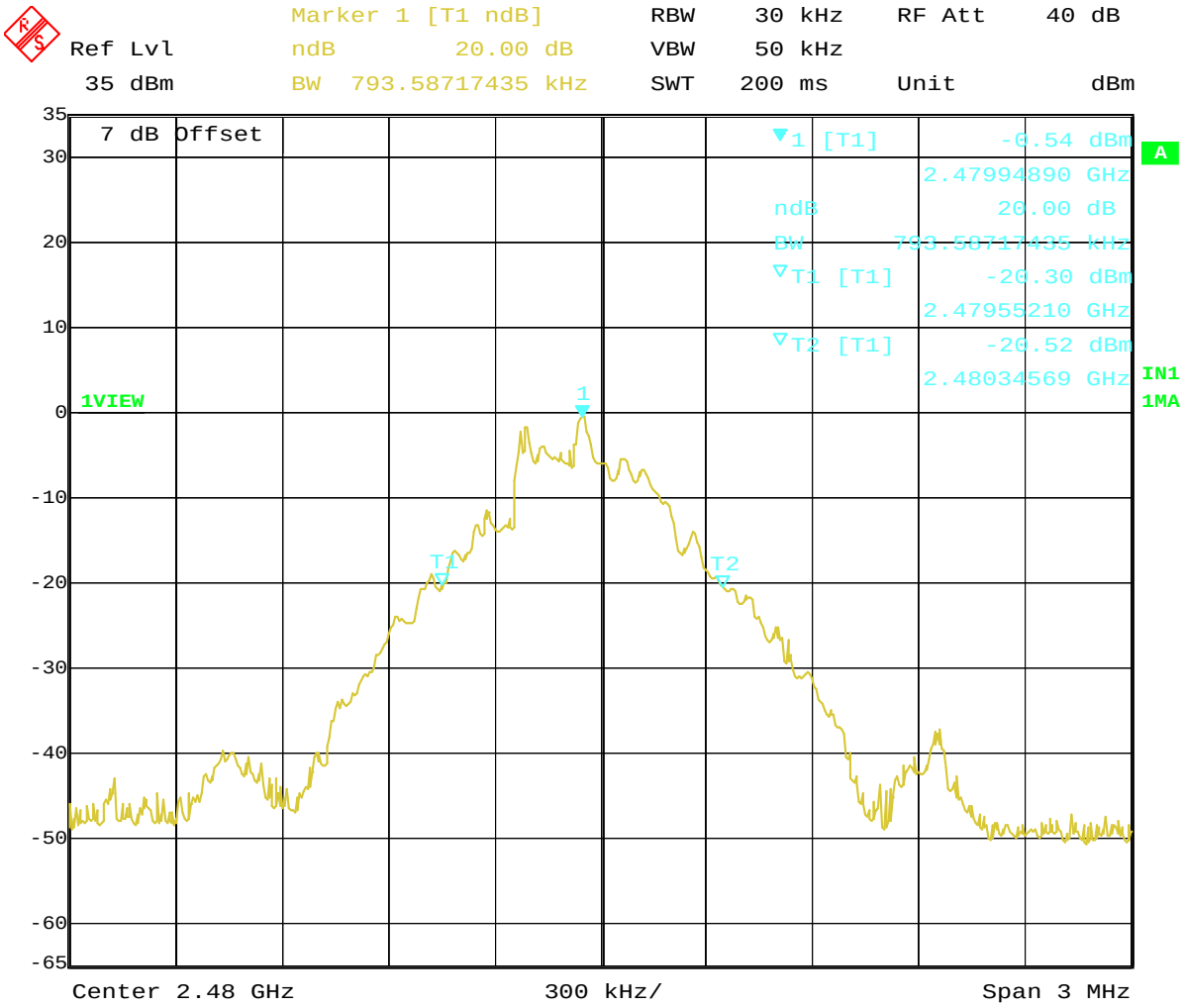
20dB Bandwidth



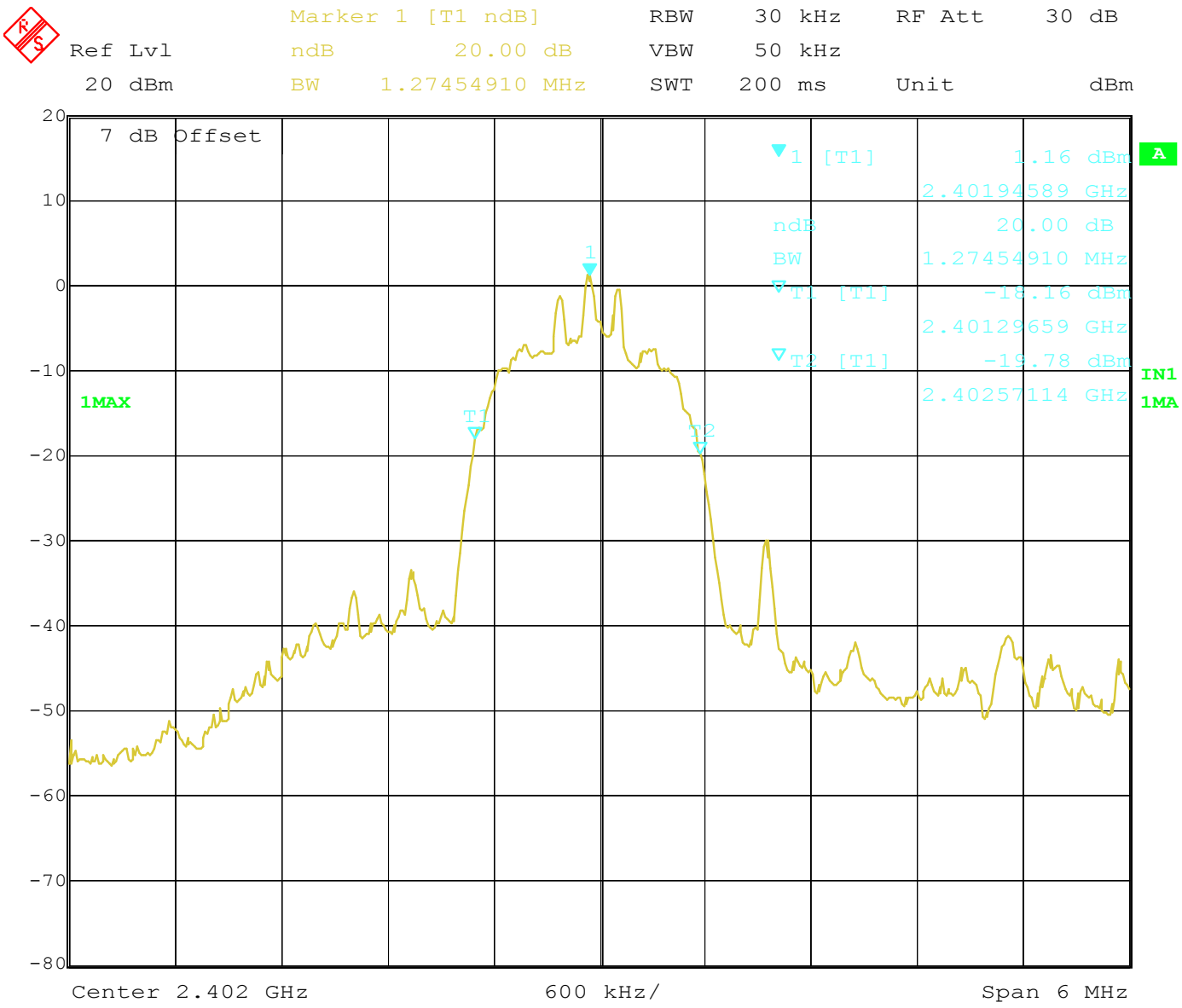
Title: 20 dB Bandwidth Ch.: 0
Date: 17.MAY.2006 16:03:24



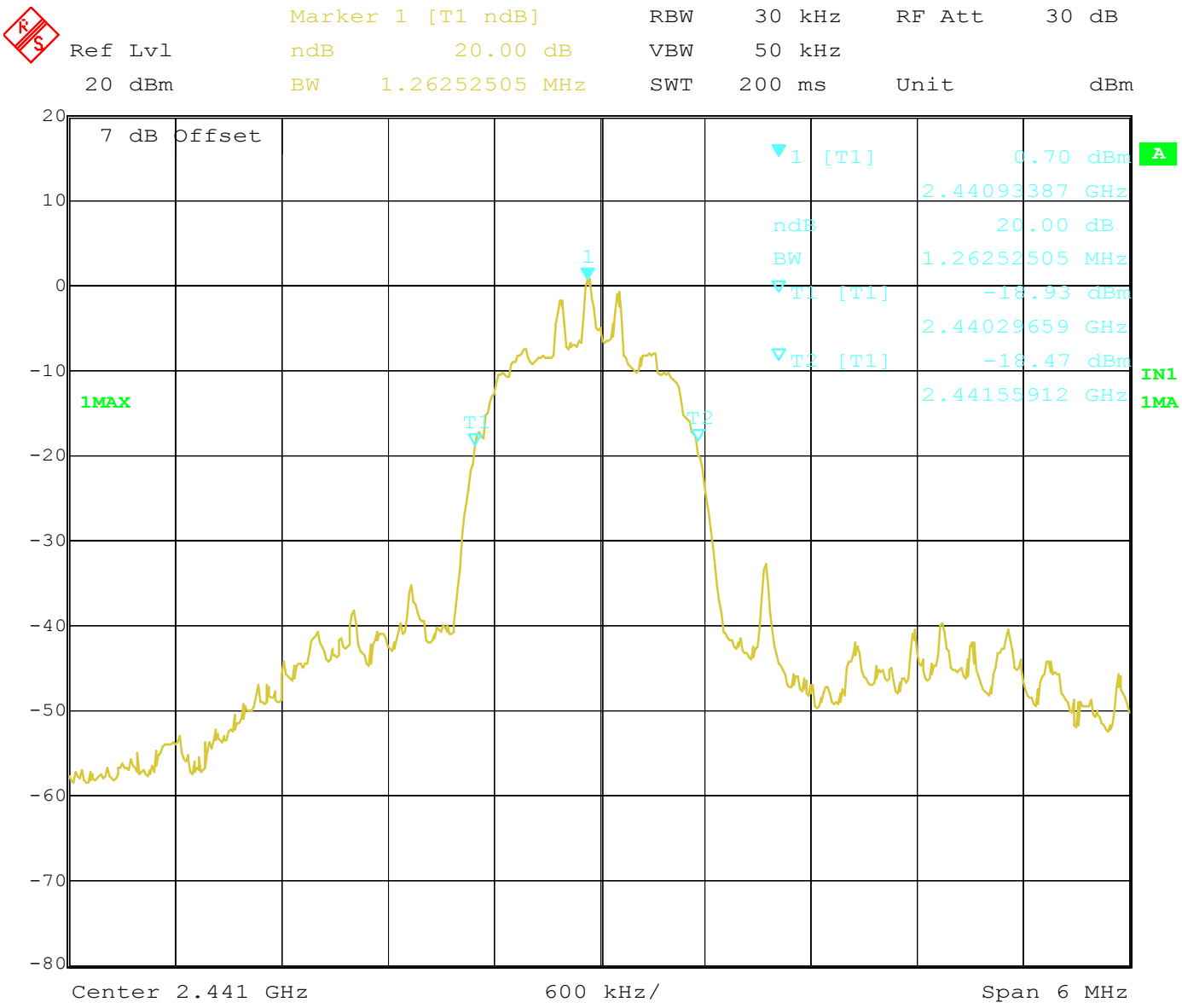
Title: 20 dB Bandwidth Ch.: 39
Date: 17.MAY.2006 16:02:41



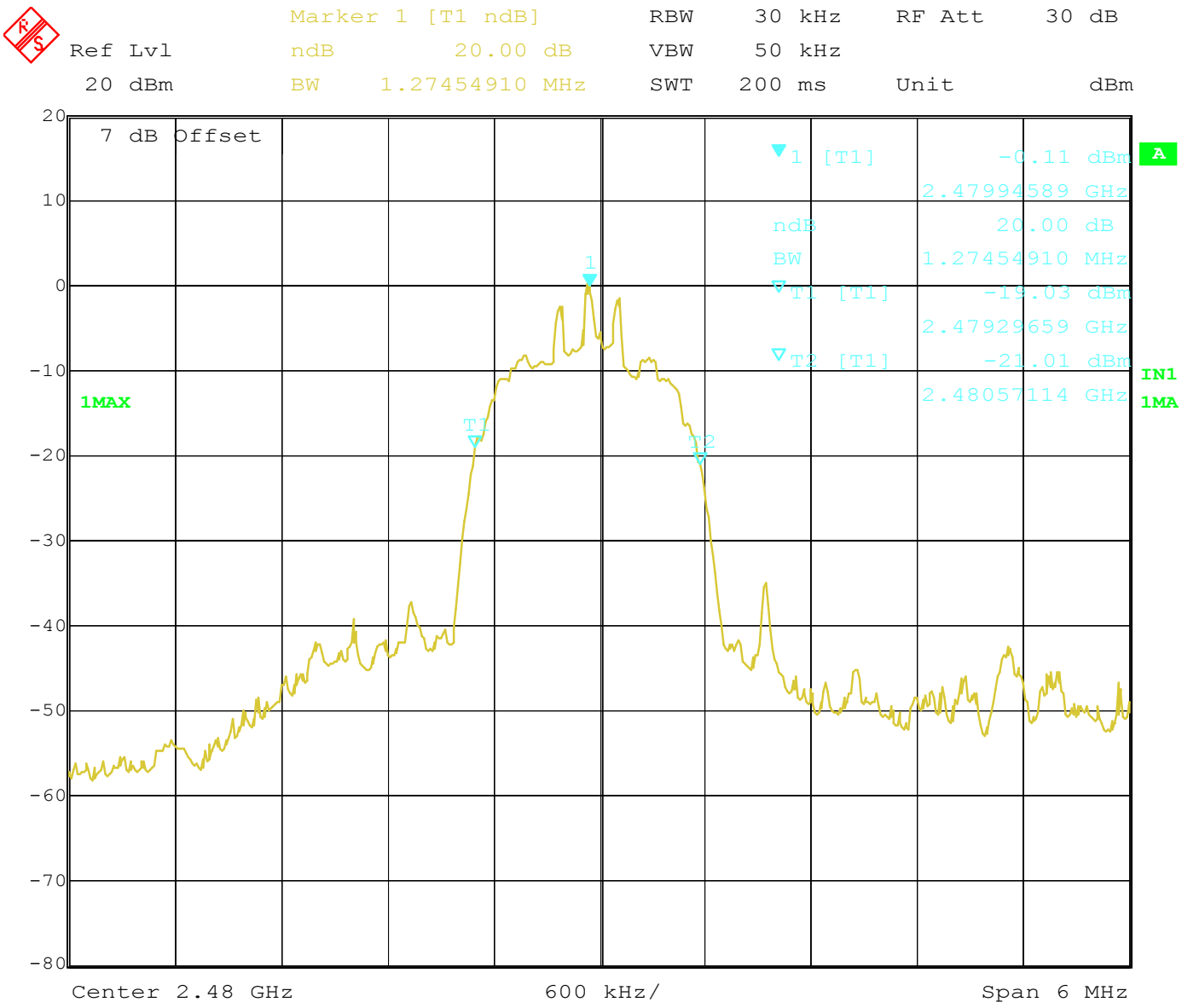
Title: 20 dB Bandwidth Ch.:78
Date: 17.MAY.2006 16:05:31



Title: 20 dB Bandwidth Ch.0 (EDR mode)
Date: 30.MAY.2006 14:11:44



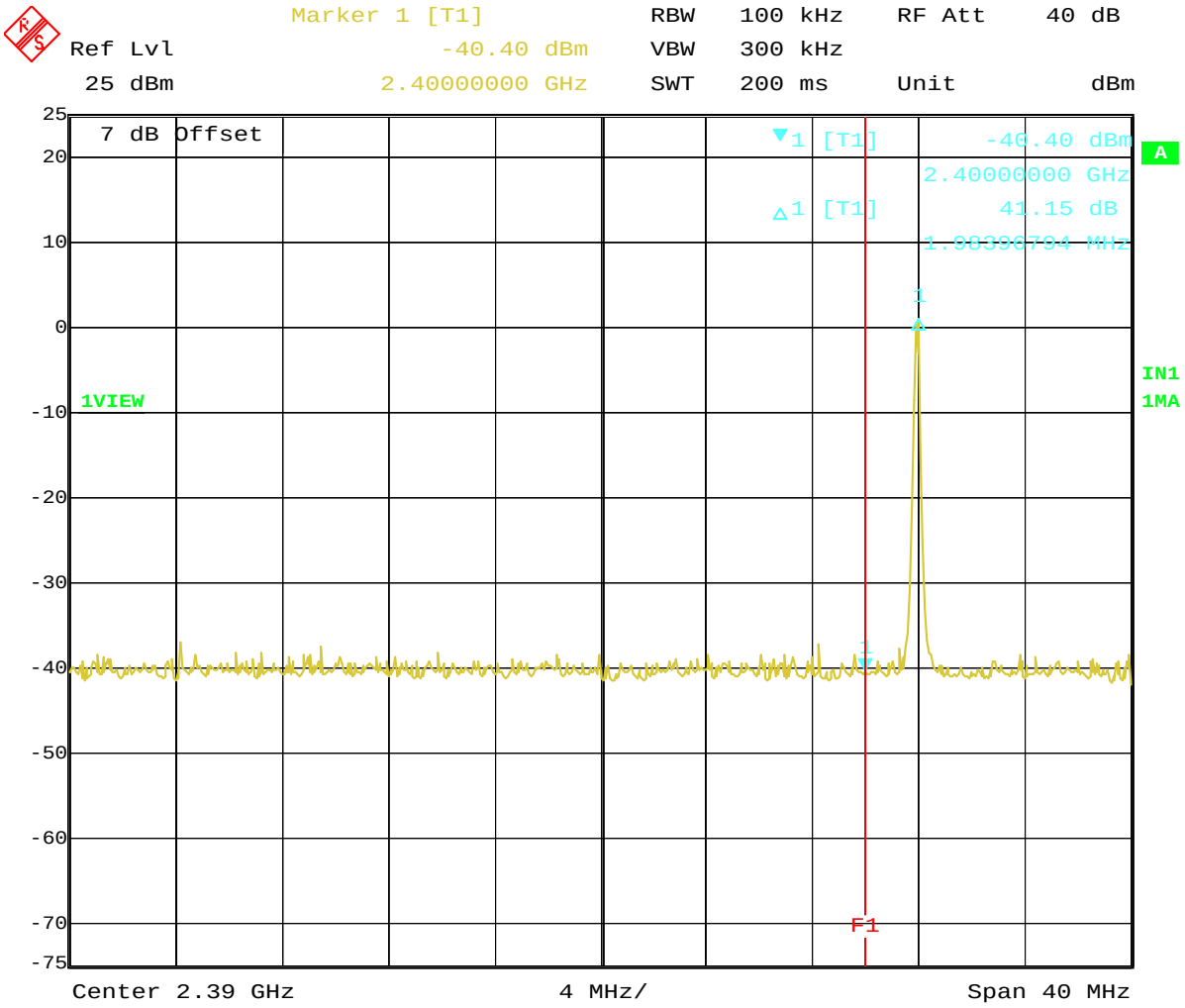
Title: 20 dB Bandwidth Ch.39 (EDR mode)
Date: 30.MAY.2006 14:12:06



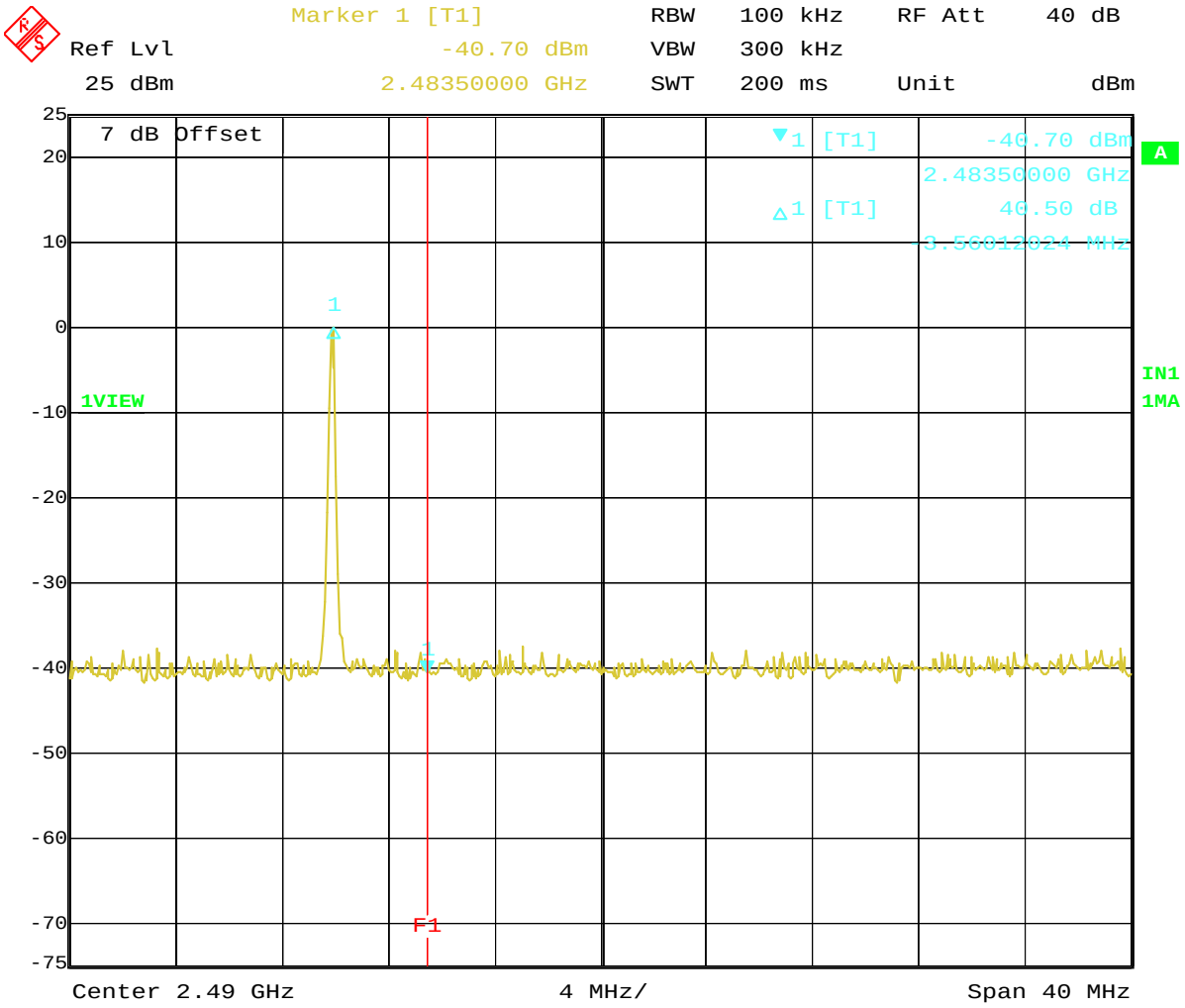
Title: 20 dB Bandwidth Ch.78 (EDR mode)
Date: 30.MAY.2006 14:12:50

Appendix G

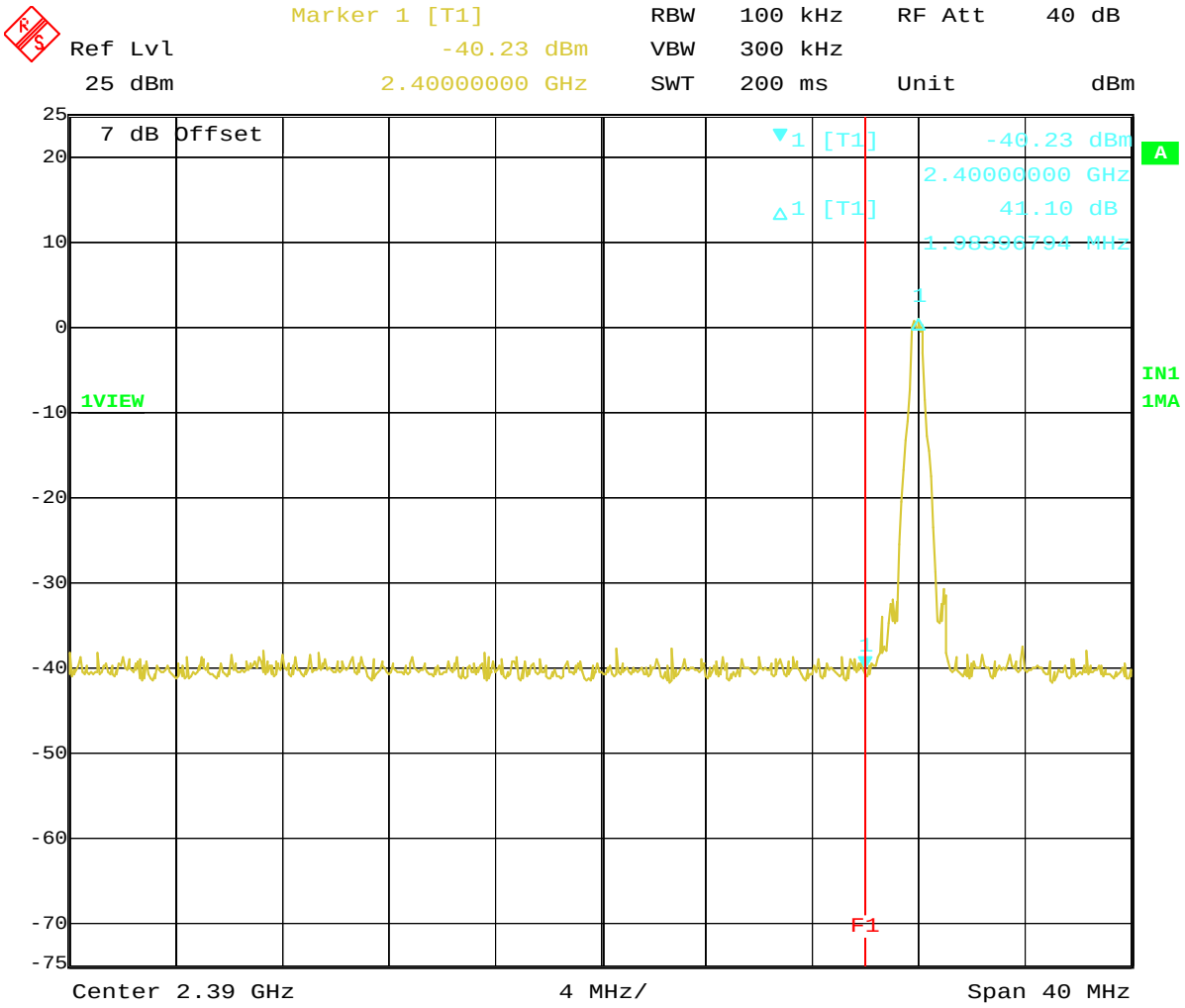
Band-edge Compliance of RF Conducted Emissions



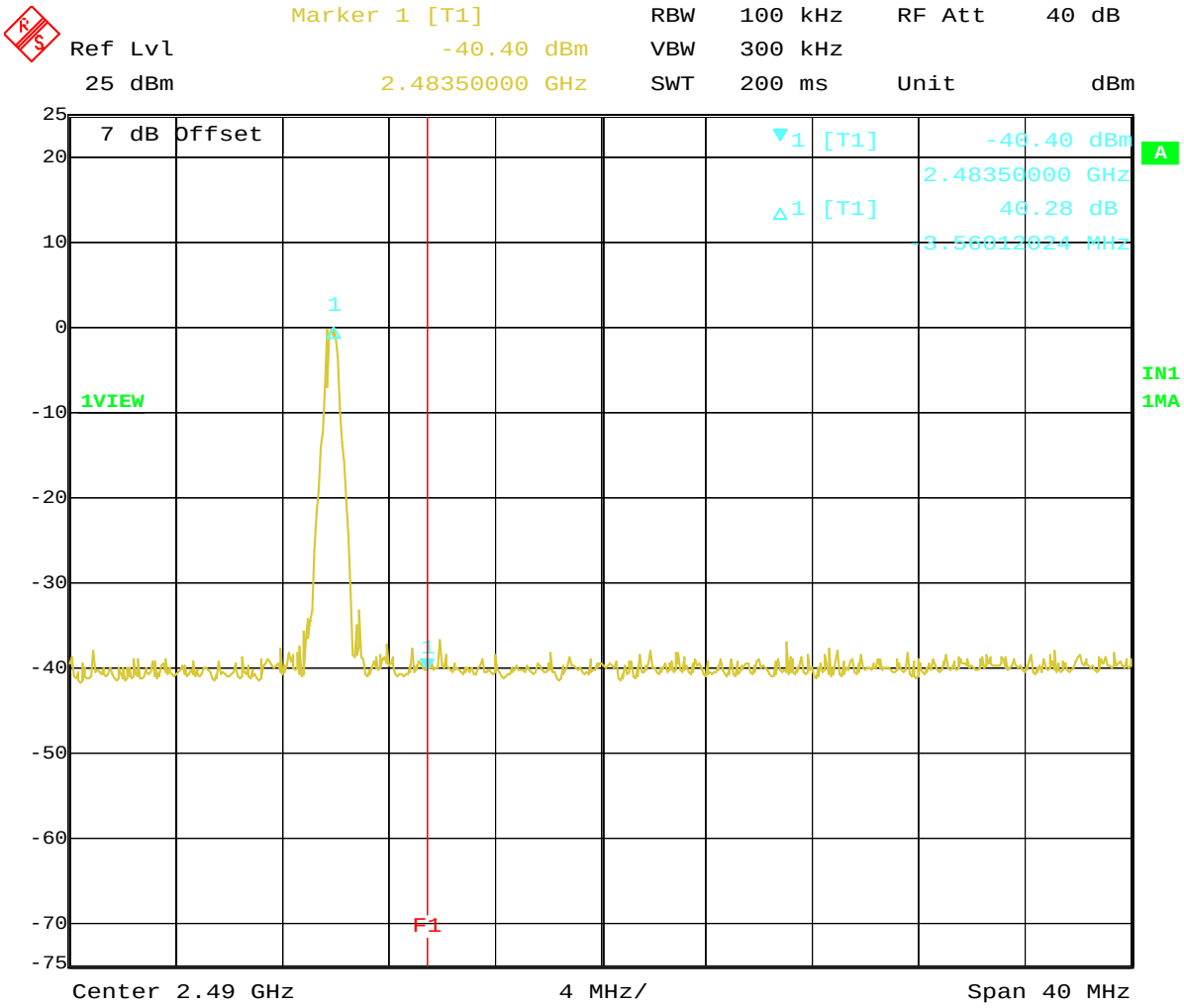
Title: Band edge compliance (single frequency)
Date: 17.MAY.2006 16:04:47



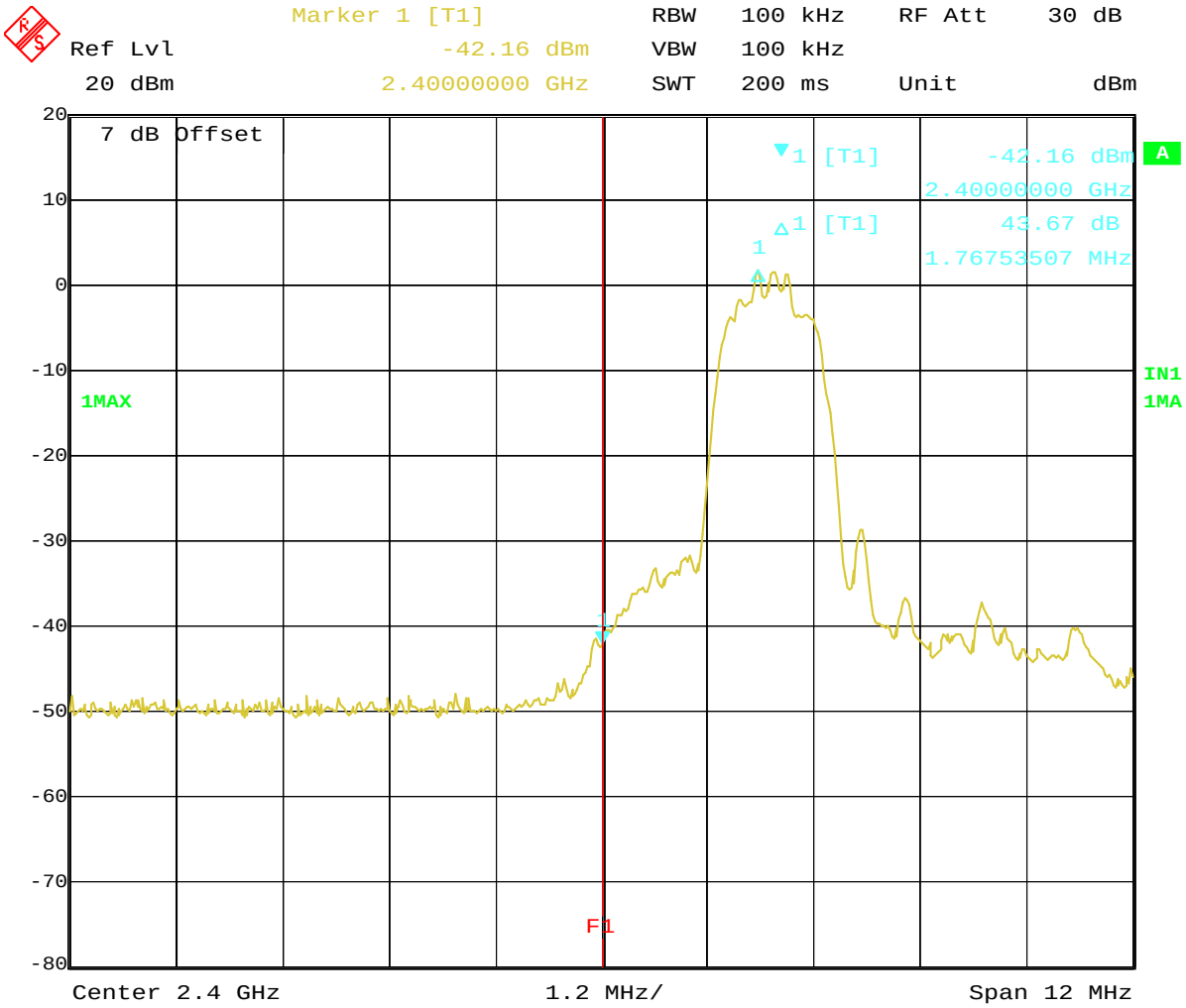
Title: Band edge compliance (single frequency)
Date: 17.MAY.2006 17:22:58



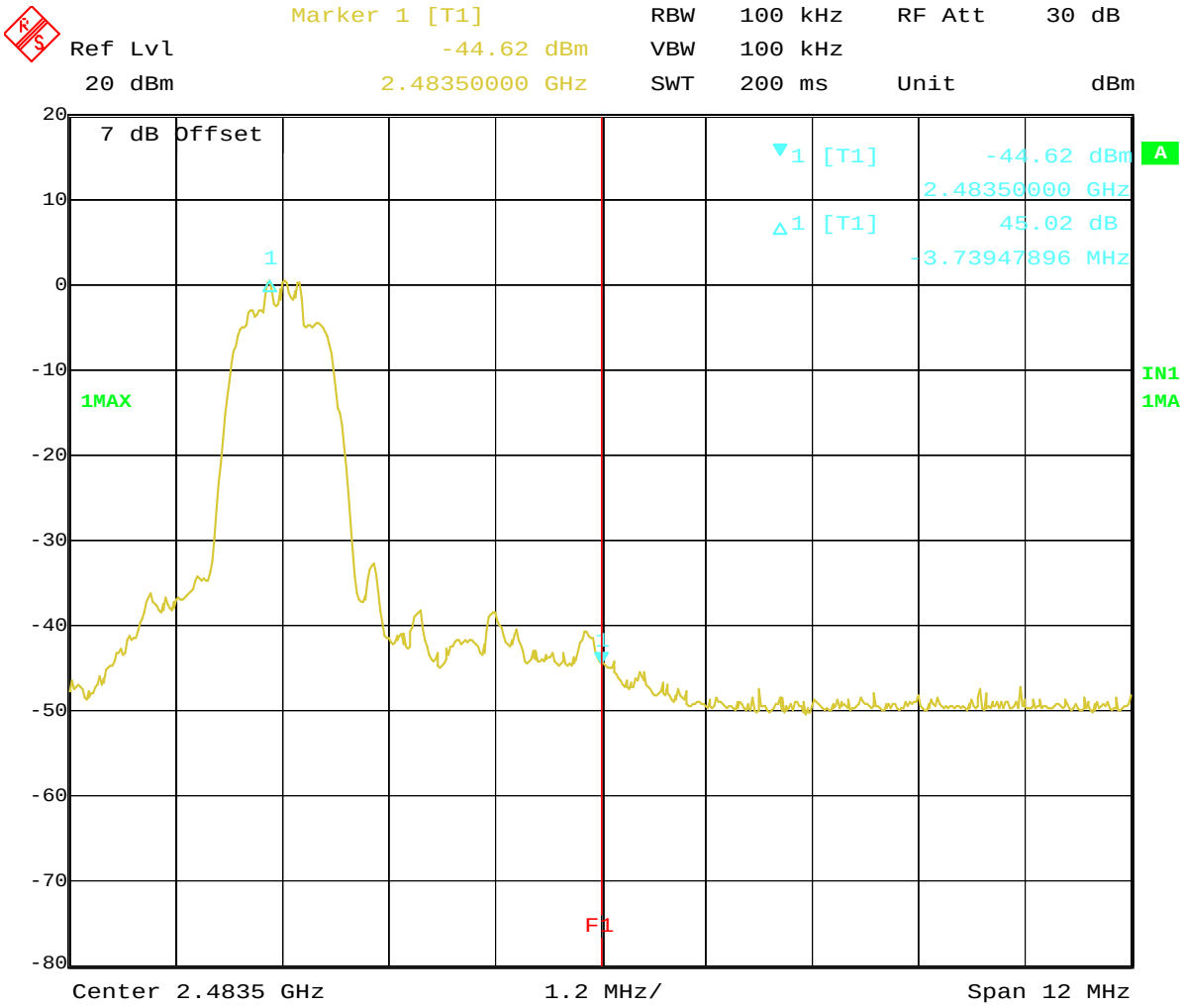
Title: Band edge compliance (hopping mode)
Date: 17.MAY.2006 16:04:24



Title: Band edge compliance (hopping mode)
Date: 17.MAY.2006 16:06:23



Title: Bandedge Ch.0 (EDR mode)
Date: 30.MAY.2006 14:15:33



Title: Bandedge Ch.78 (EDR mode)
Date: 30.MAY.2006 14:14:47

Appendix H

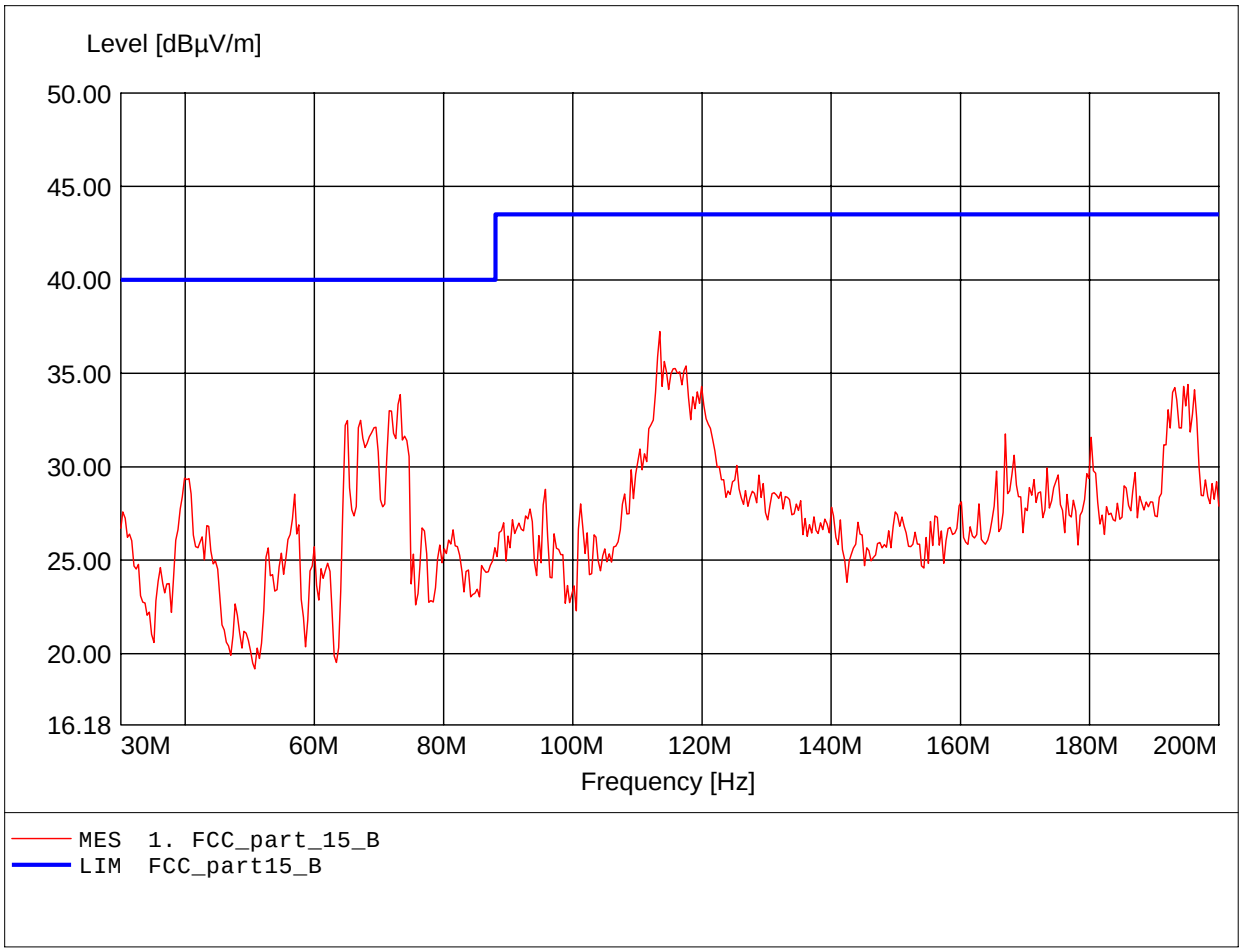
Radiated Emissions from Receiver Section of Transceiver

The measurement diagram are wideband pre-scan results; only for reference.

Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

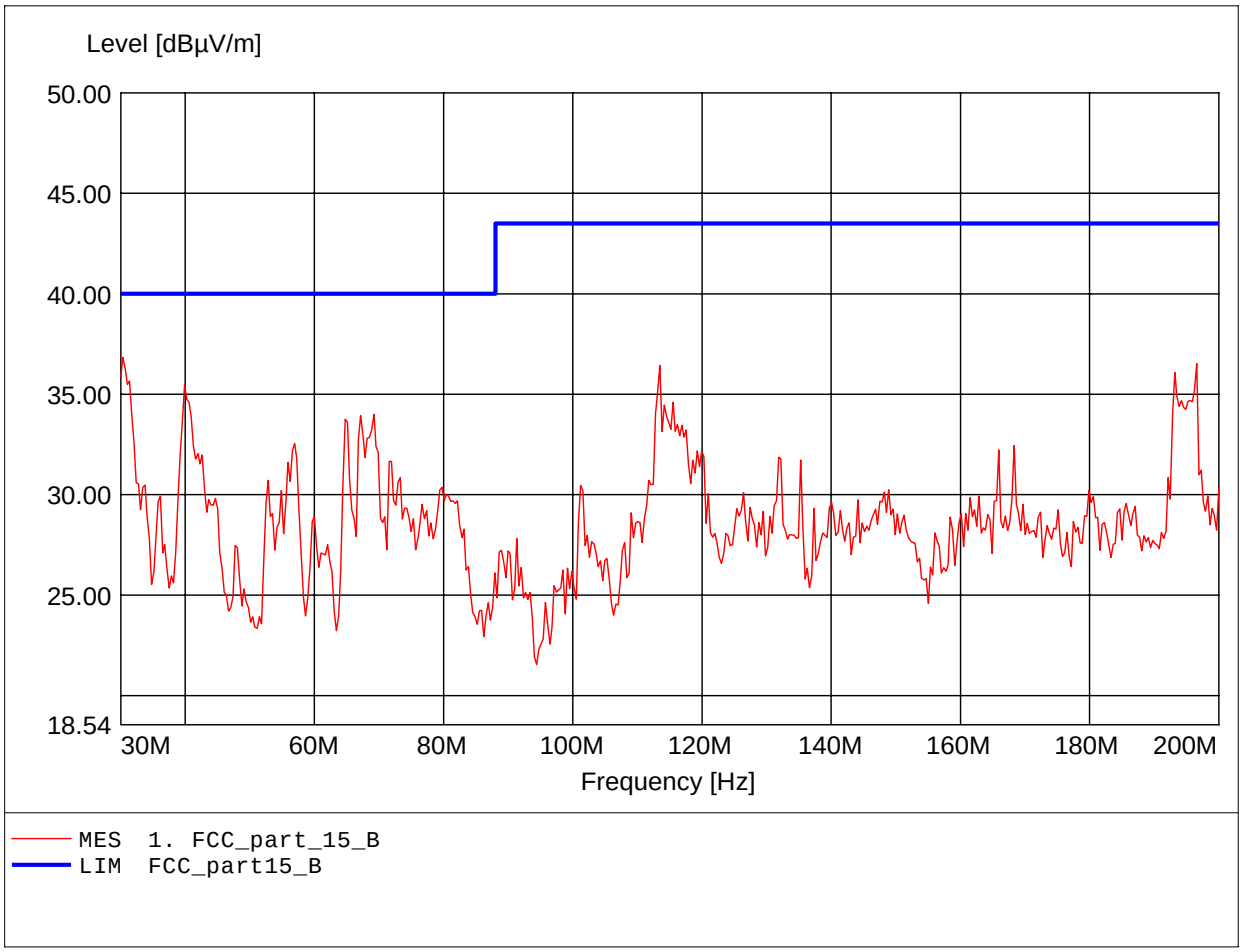
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:113.467MHz Emax:37.24dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

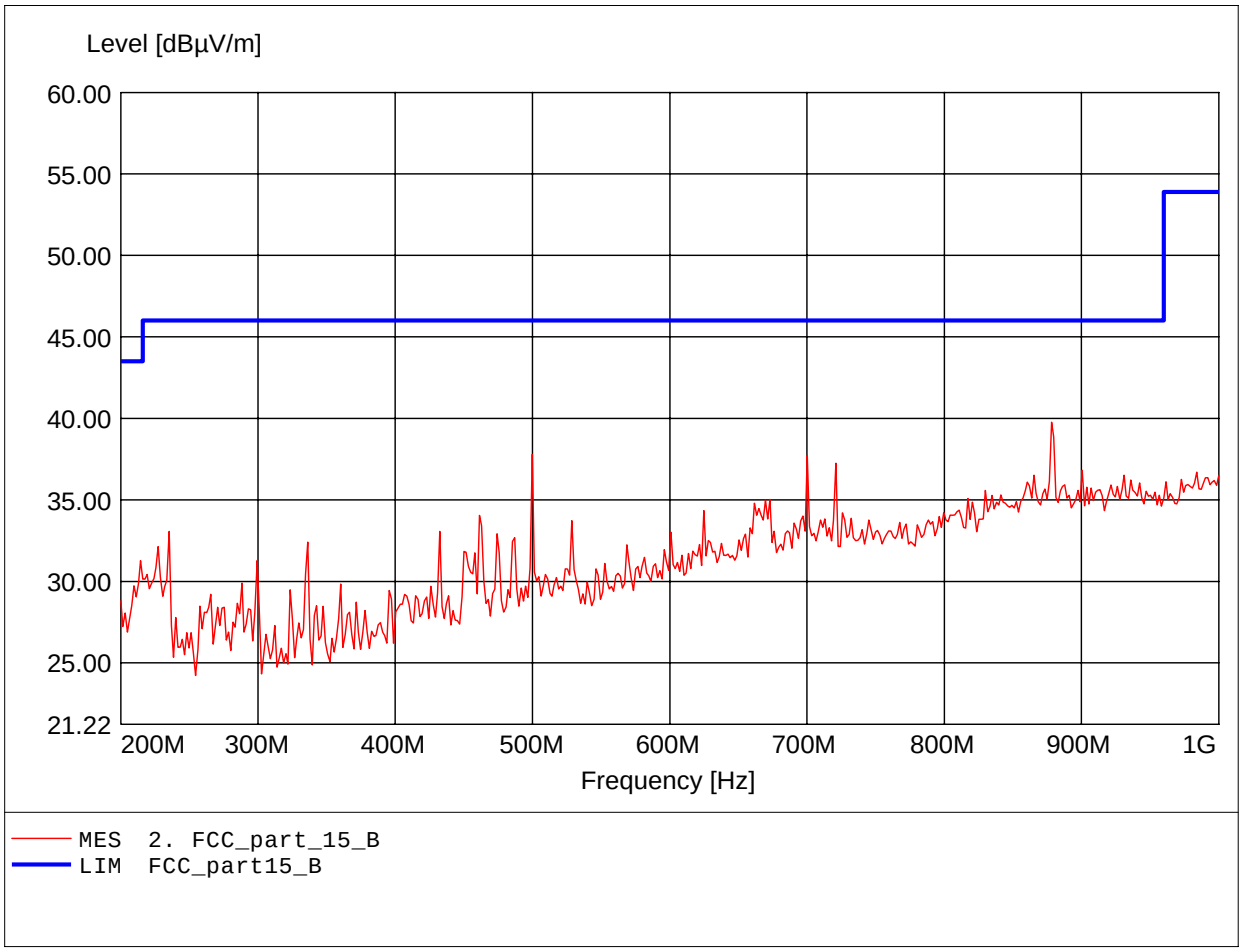
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:30.341MHz Emax:36.84dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

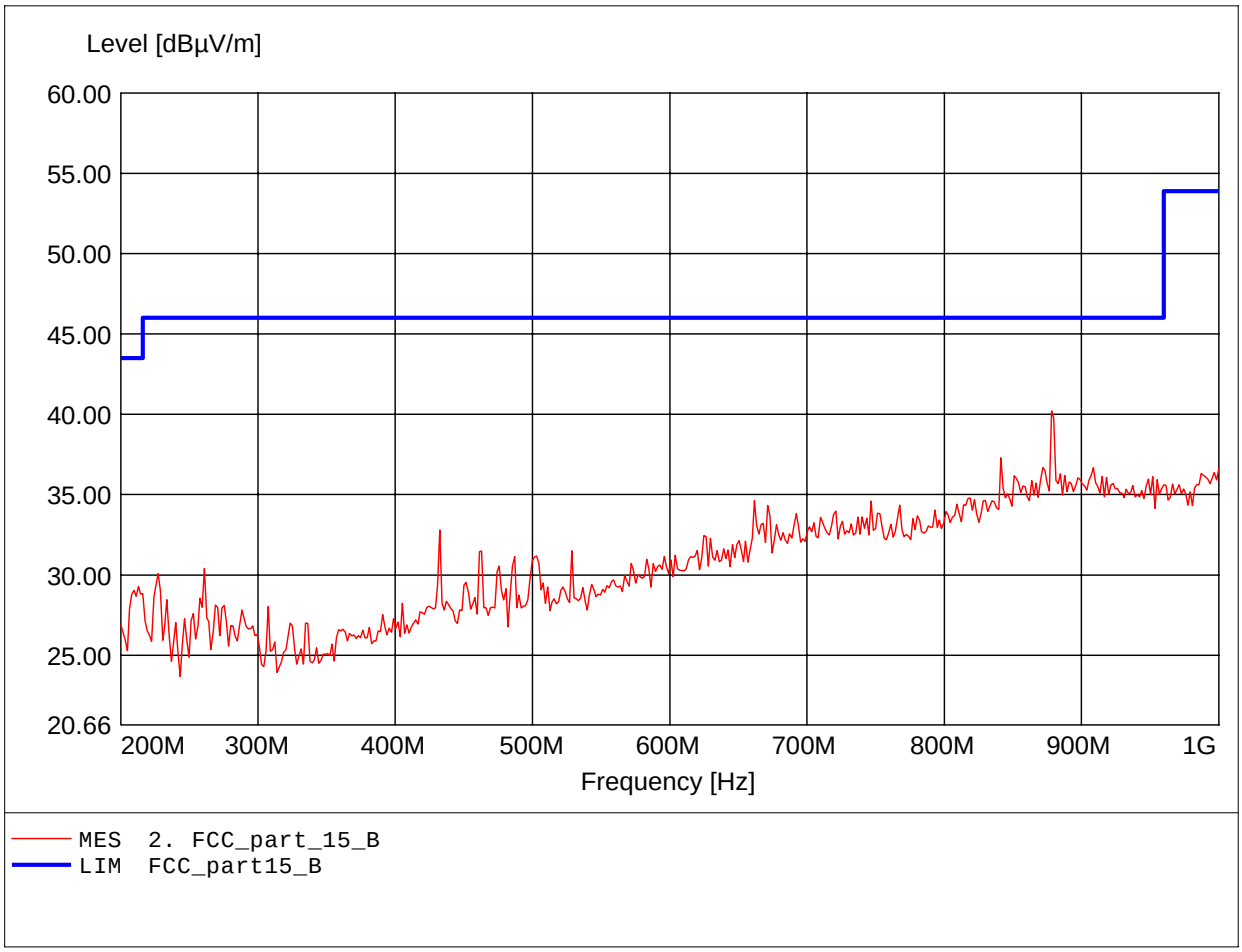
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:878.156MHz Emax:39.77dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

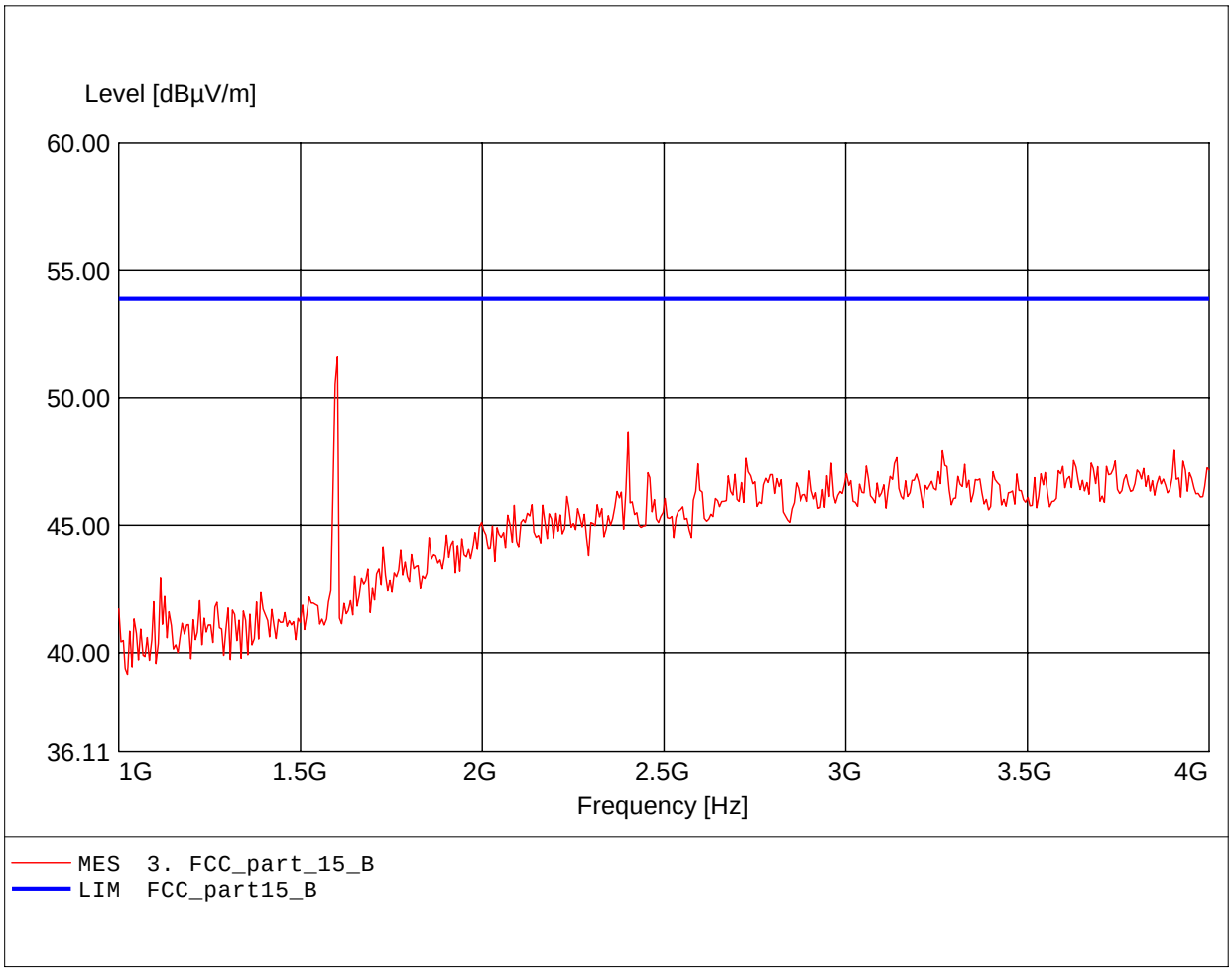
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:878.156MHz Emax:40.22dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

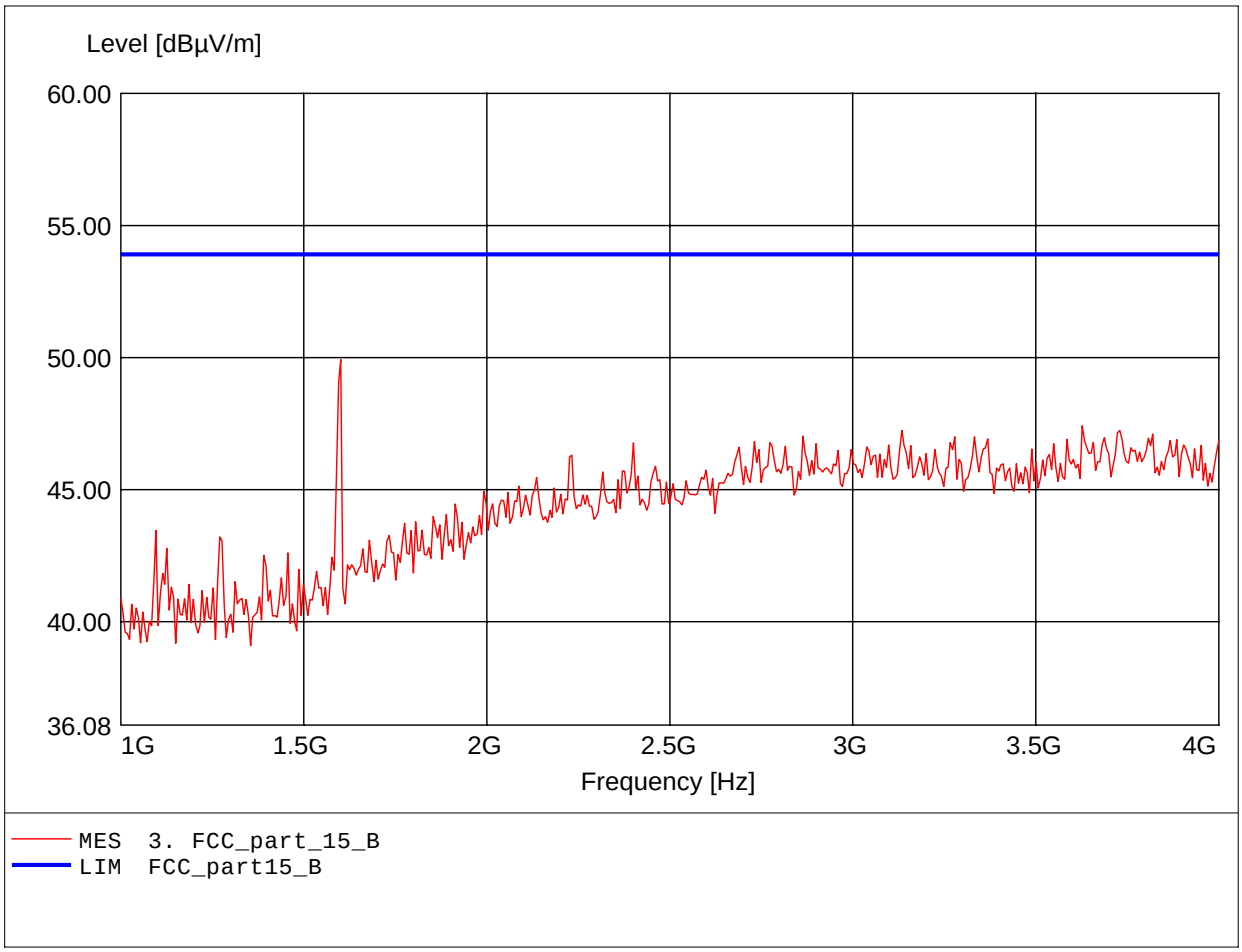
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:1.601GHz Emax:51.60dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

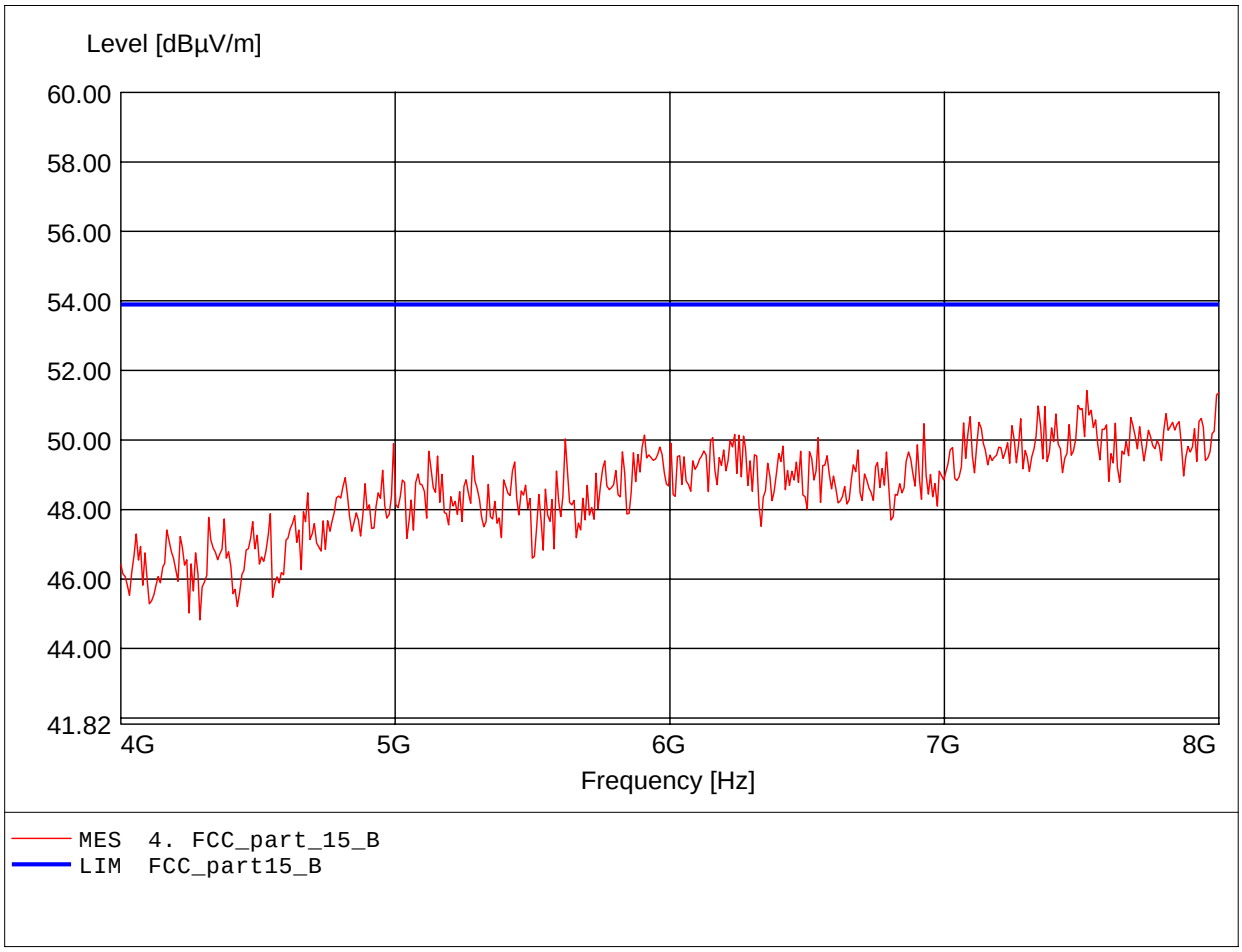
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:1.601GHz Emax:49.92dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

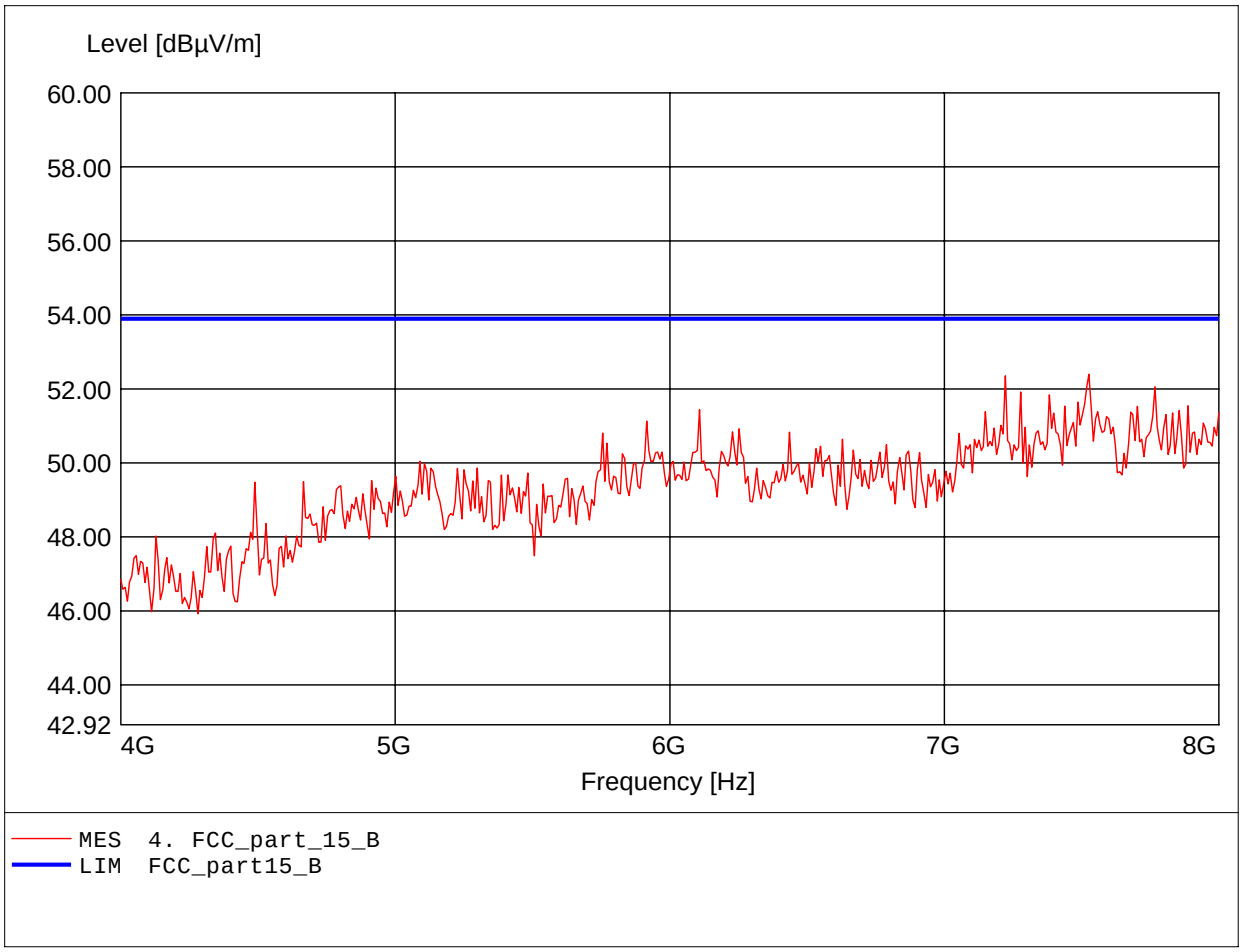
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.519GHz Emax:51.42dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

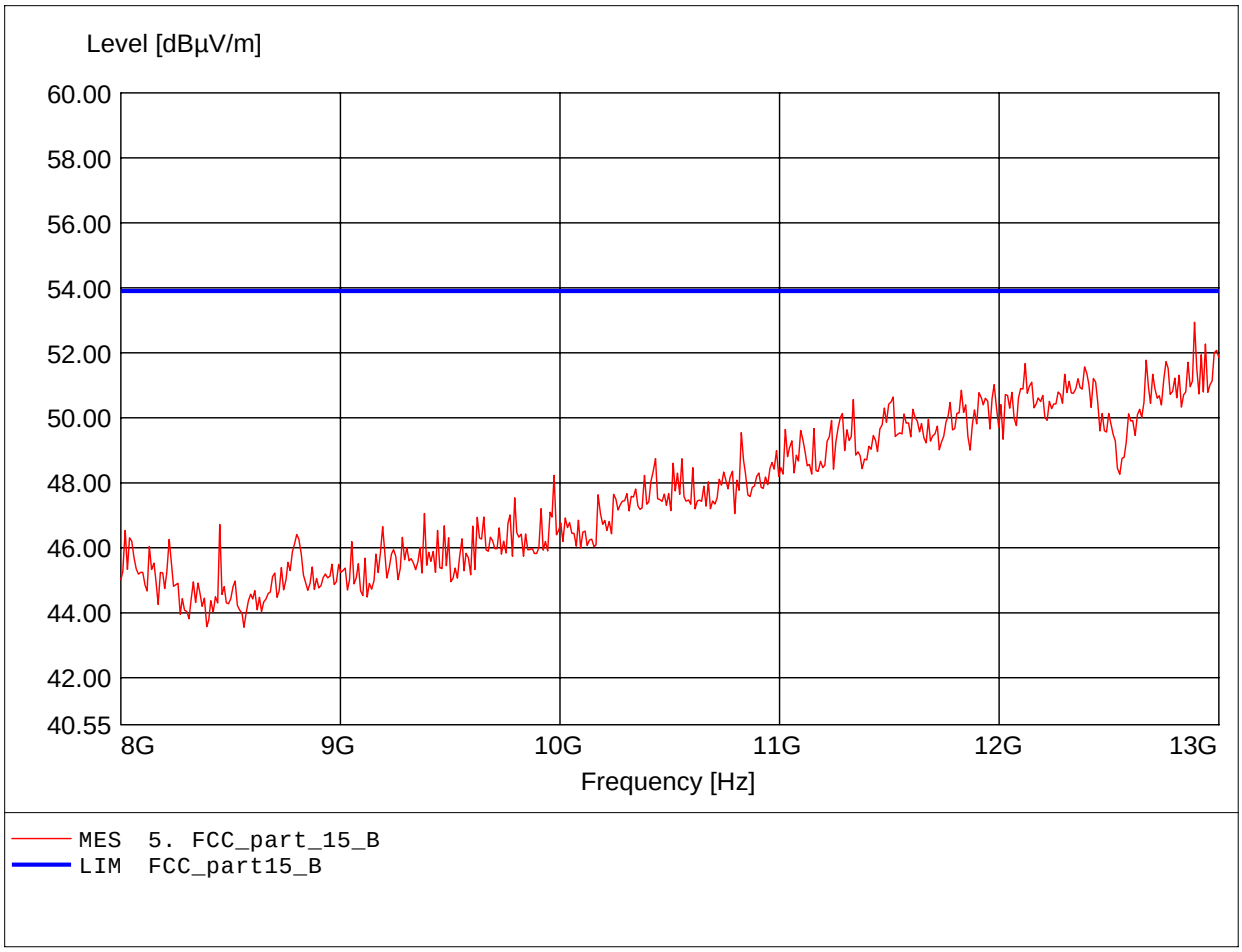
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:7.527GHz Emax:52.40dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

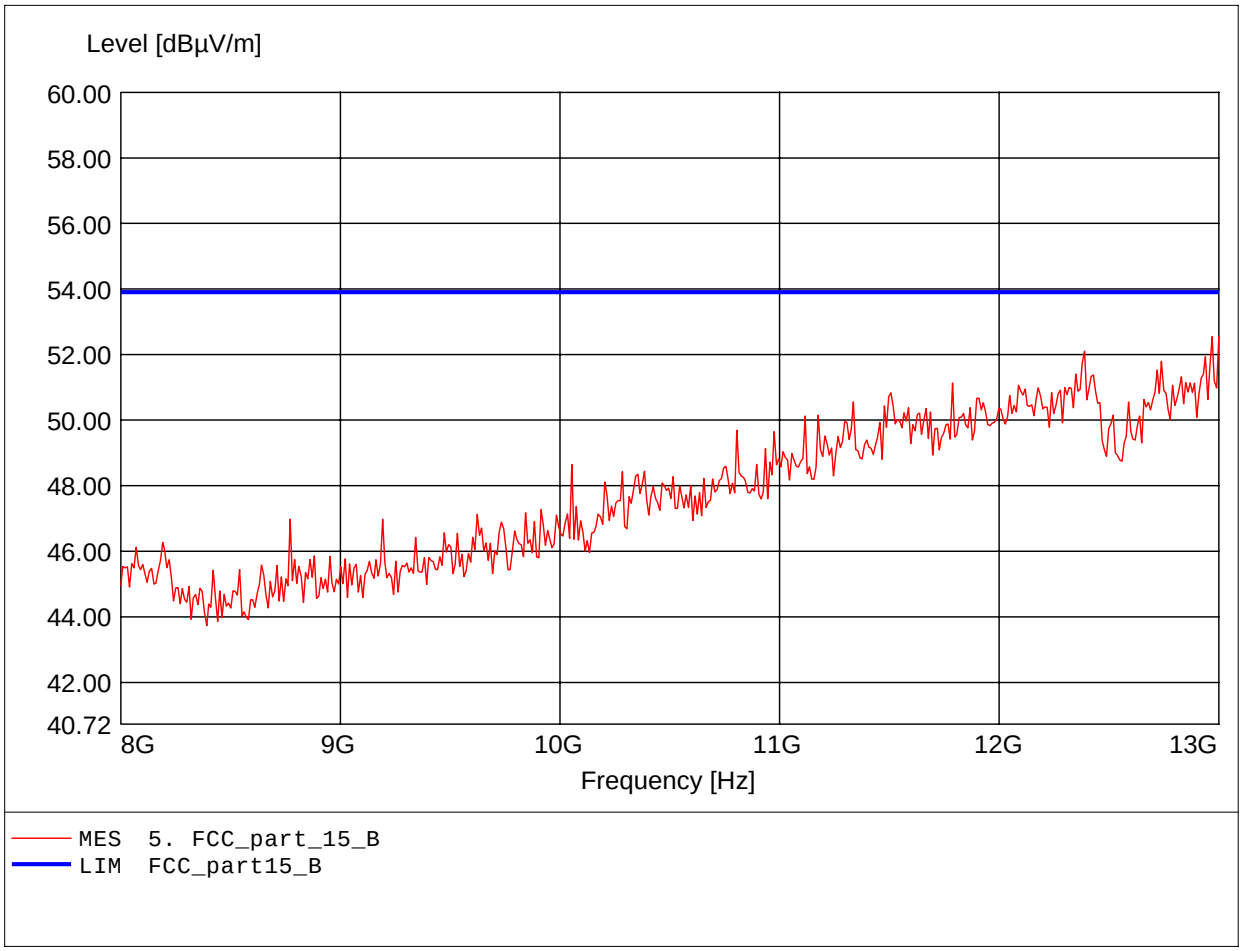
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:12.890GHz Emax:52.94dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

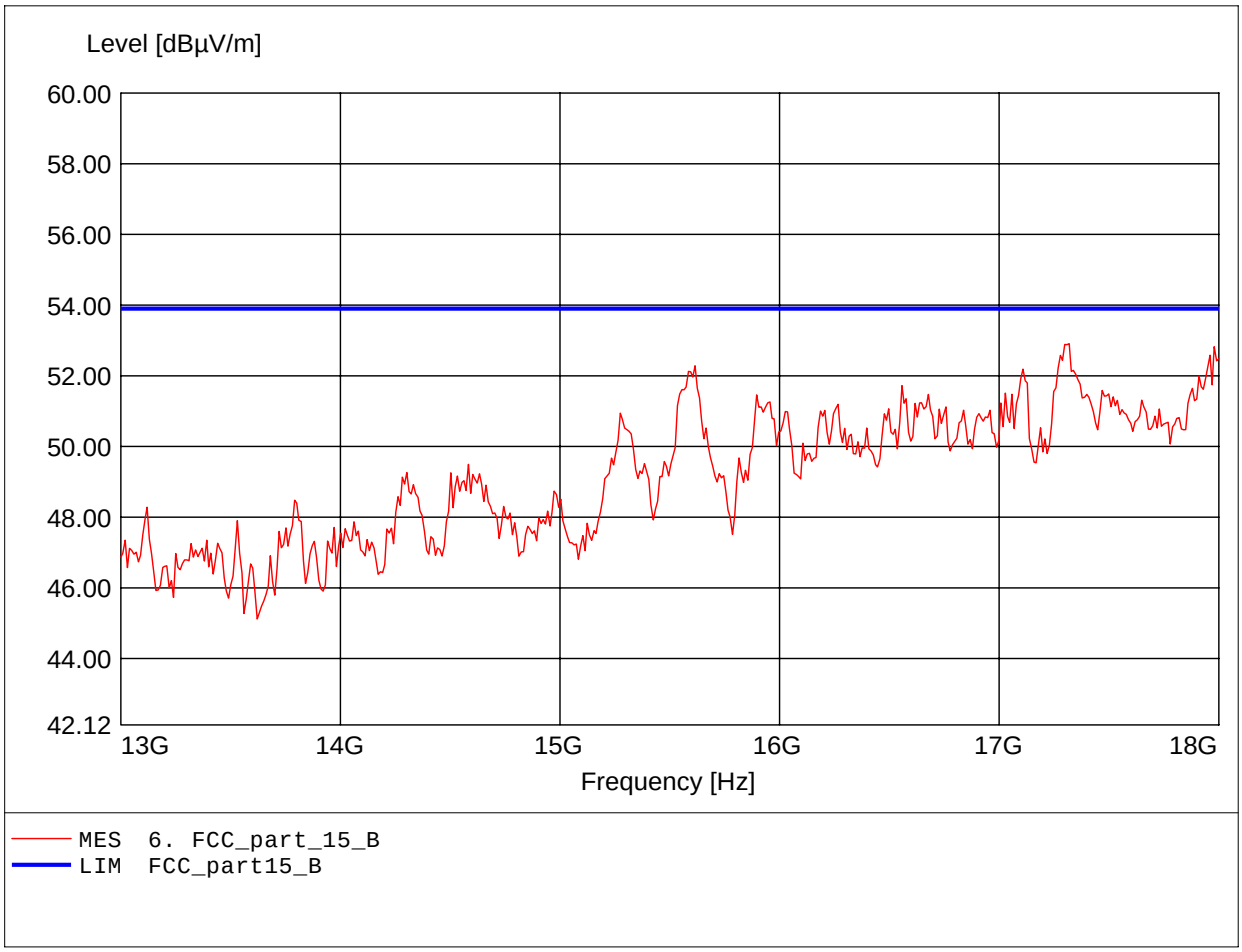
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:13.000GHz Emax:52.55dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

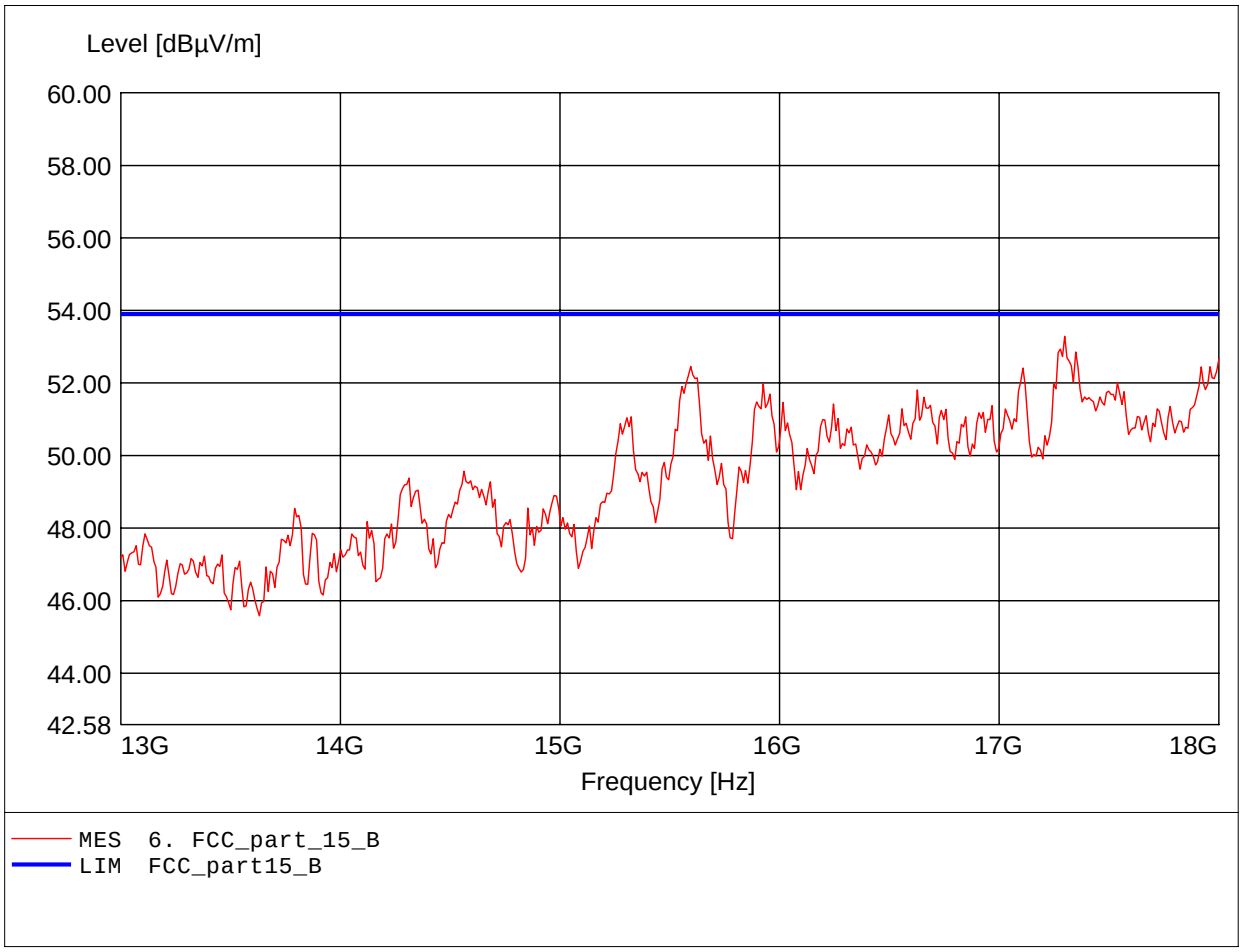
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.319GHz Emax:52.91dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

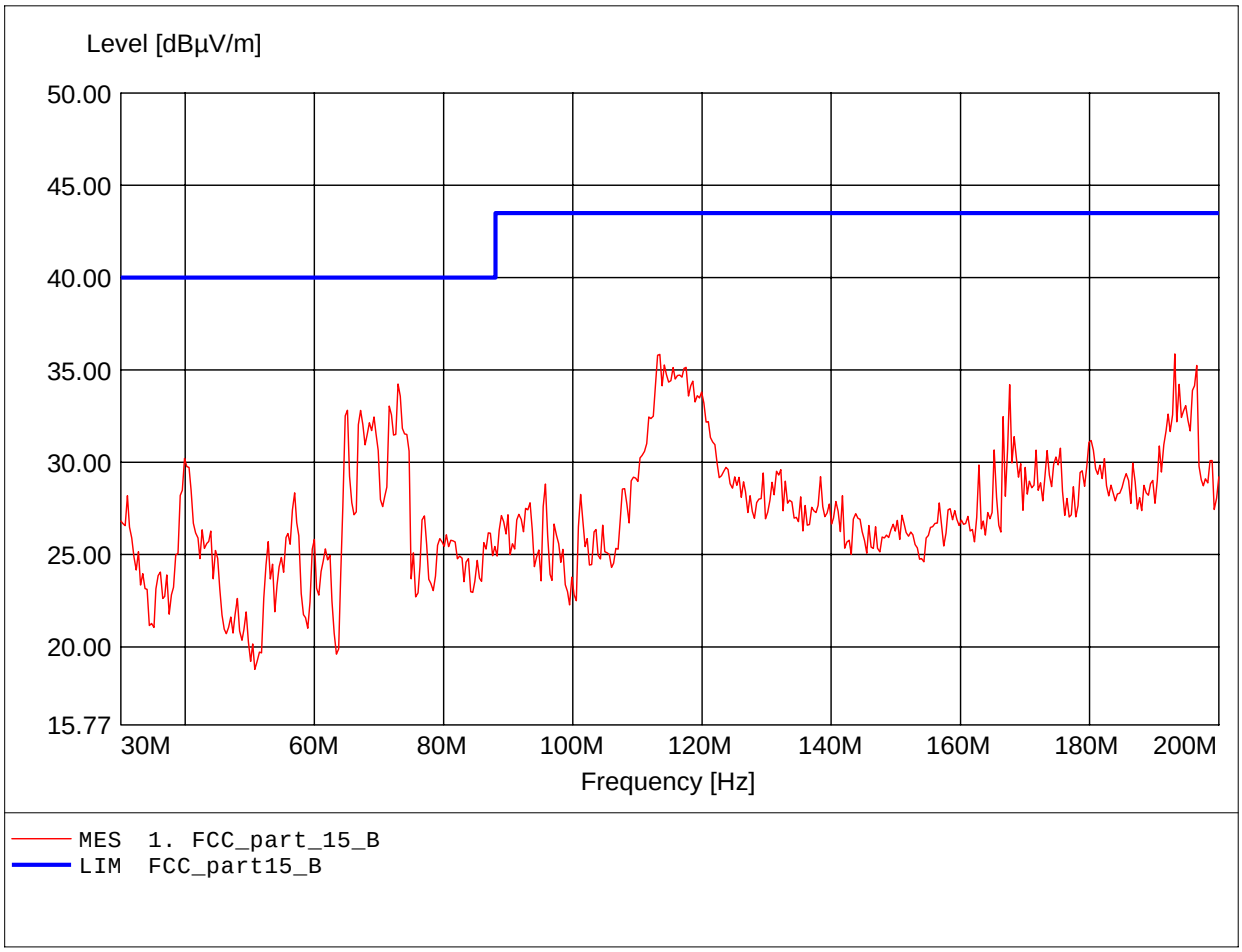
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.299GHz Emax:53.29dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

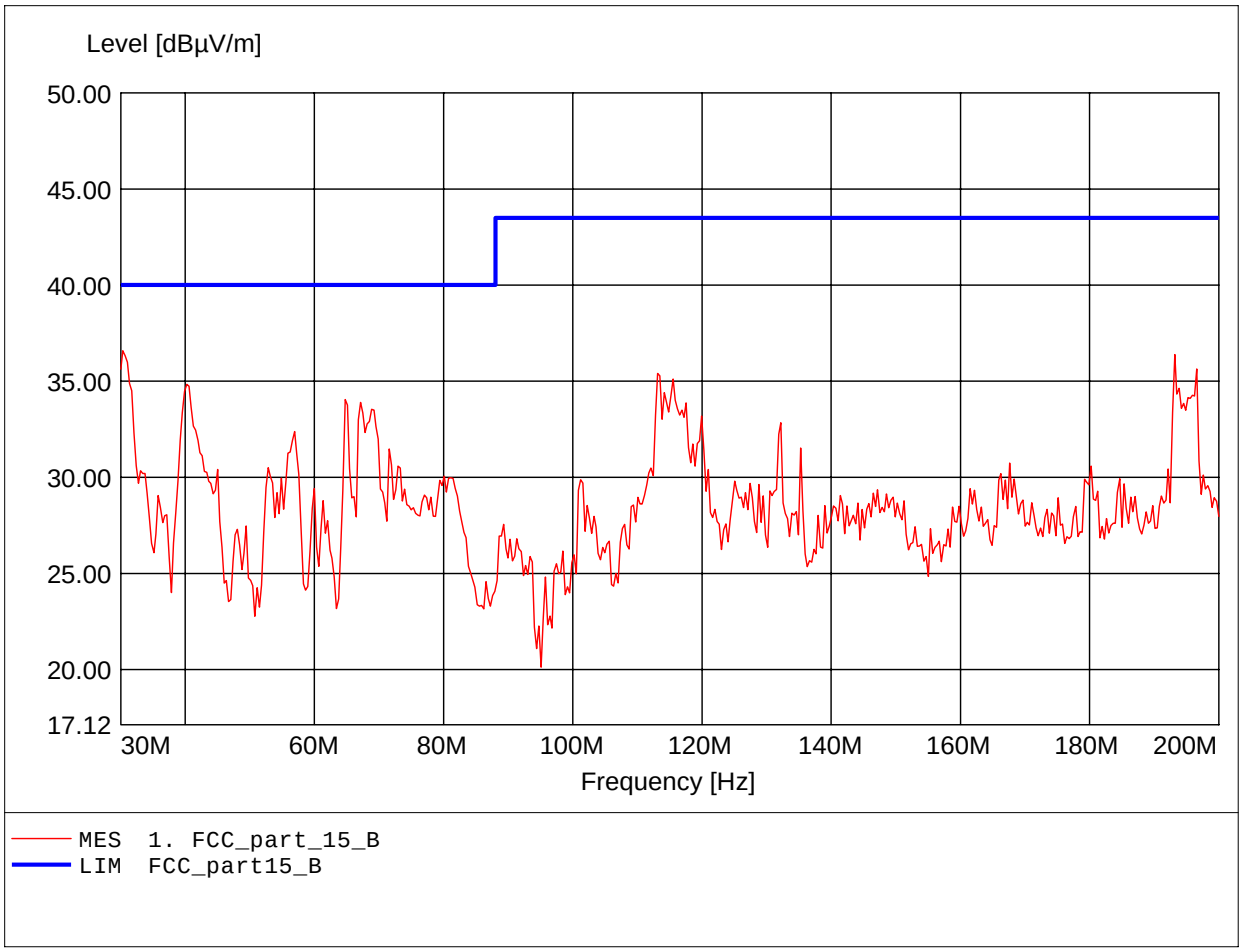
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:193.186MHz Emax:35.87dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

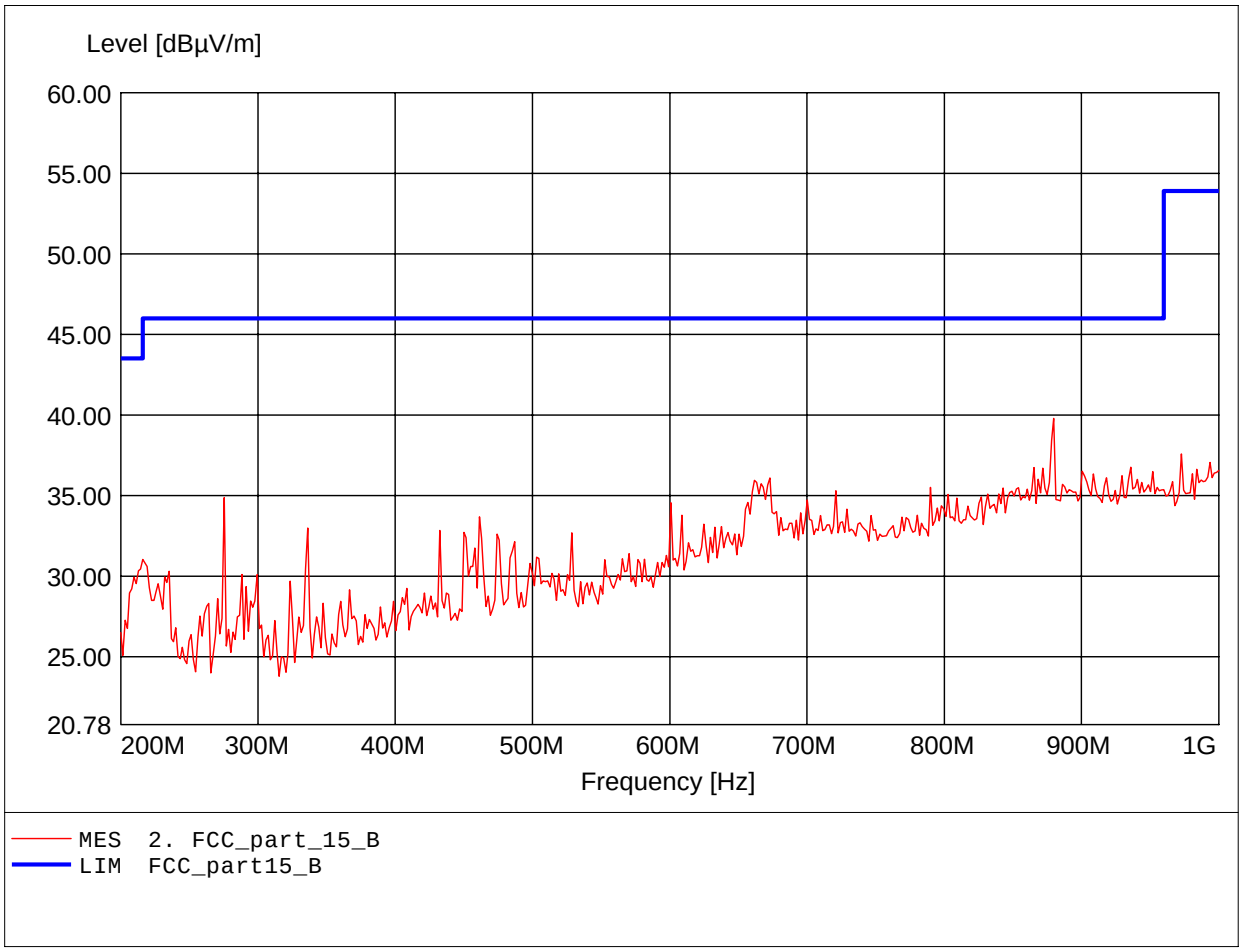
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:30.341MHz Emax:36.59dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

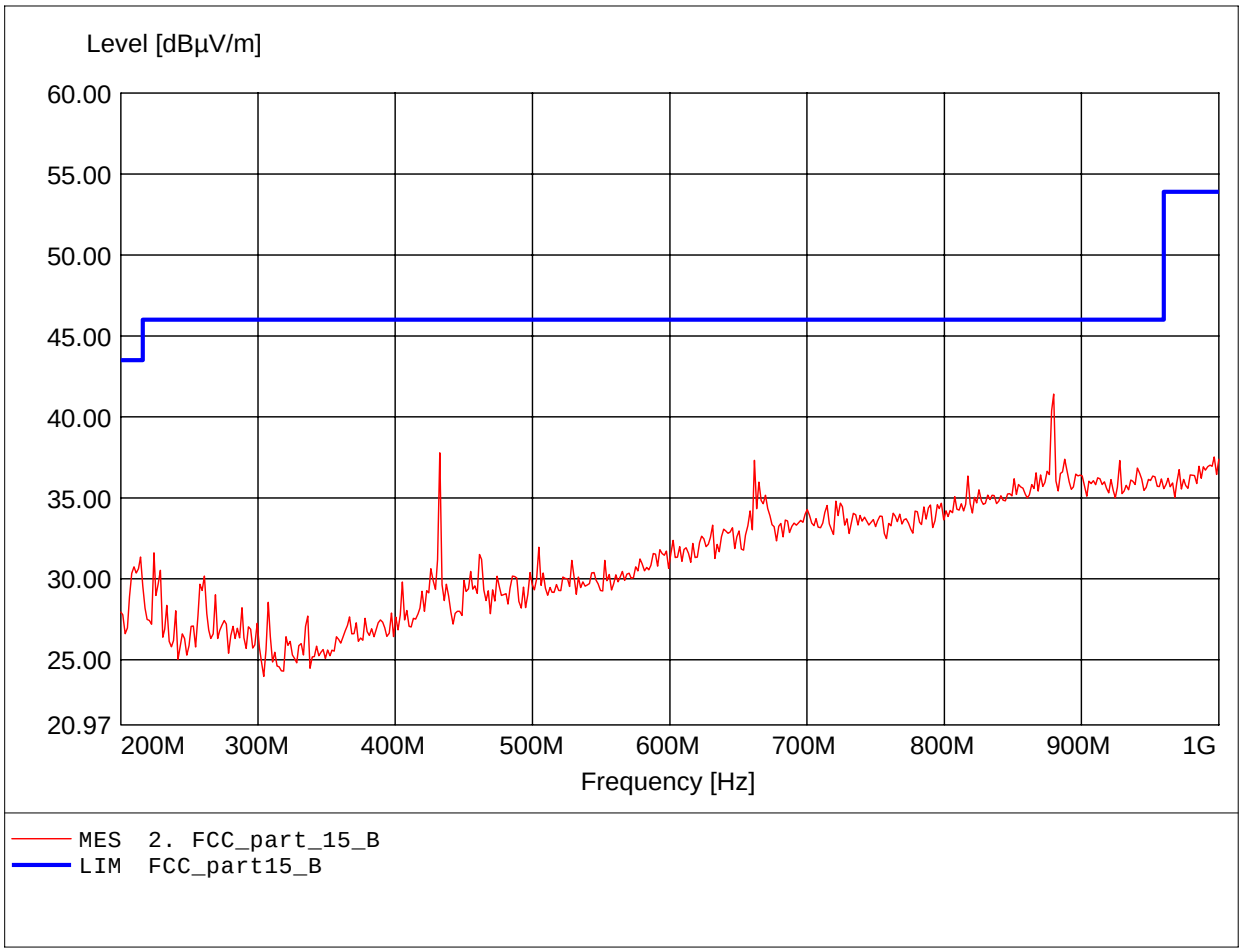
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:879.760MHz Emax:39.79dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

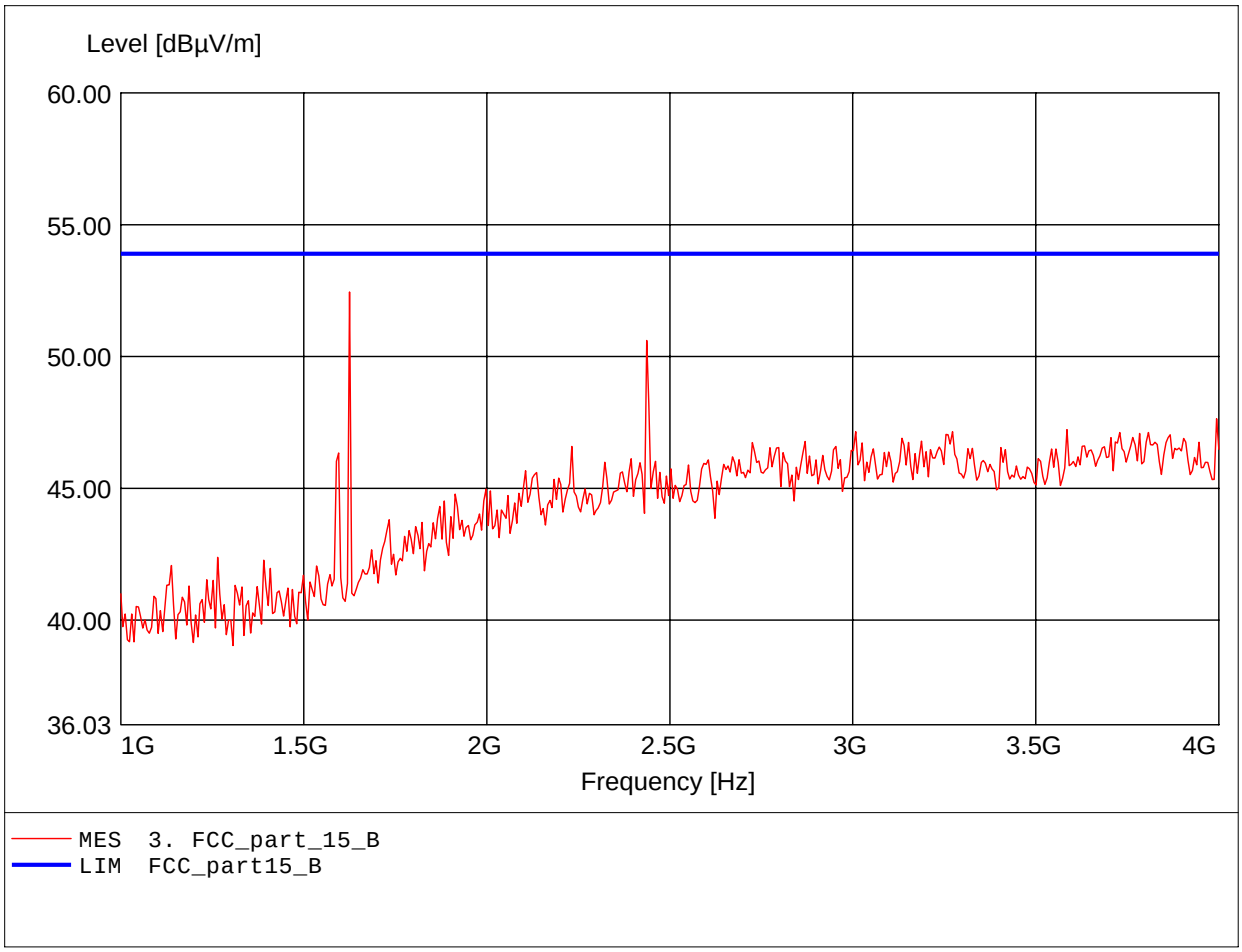
EUT:	BT module
MODEL NO.:	UGPZ8 low channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:879.760MHz Emax:41.41dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

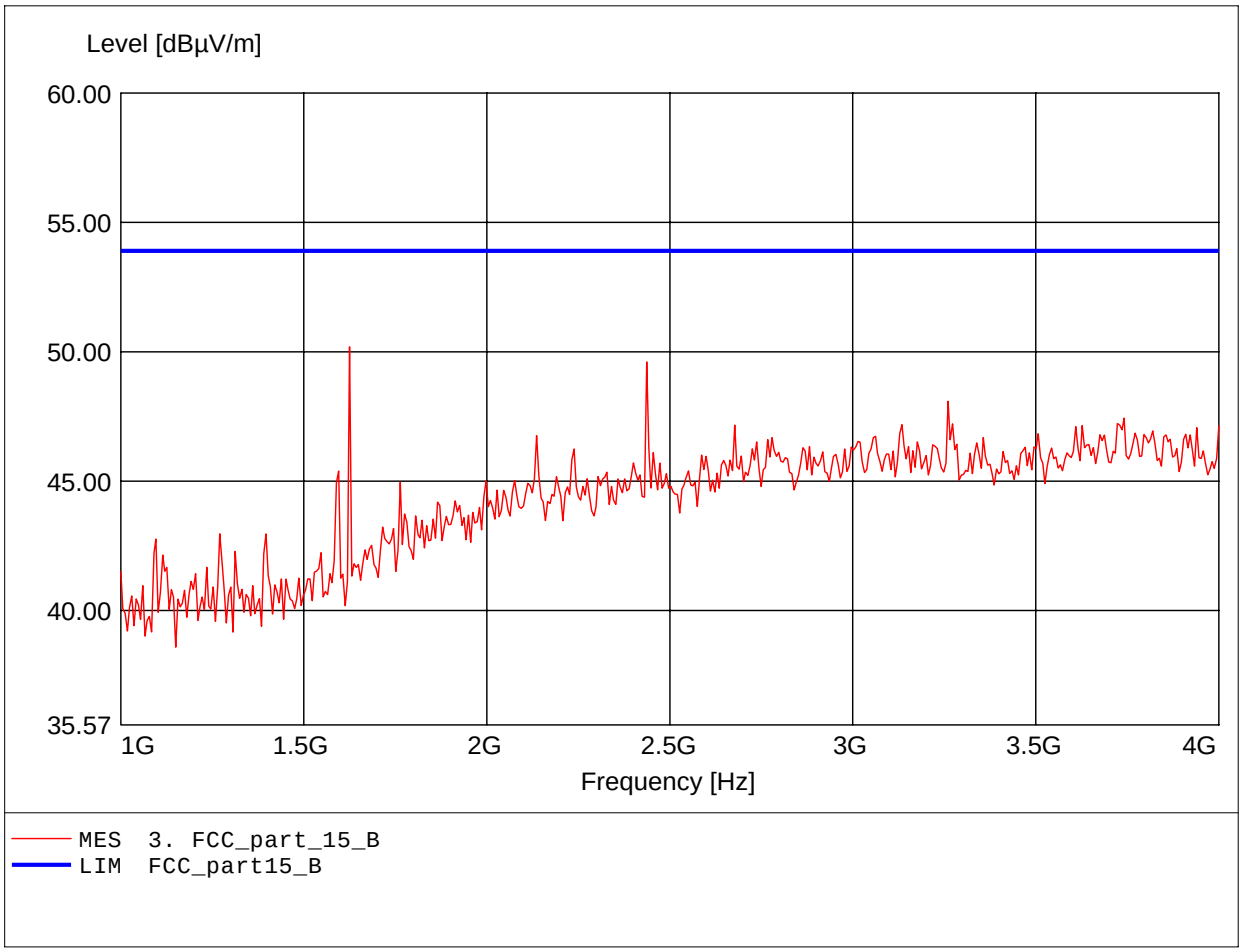
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:1.625GHz Emax:52.45dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

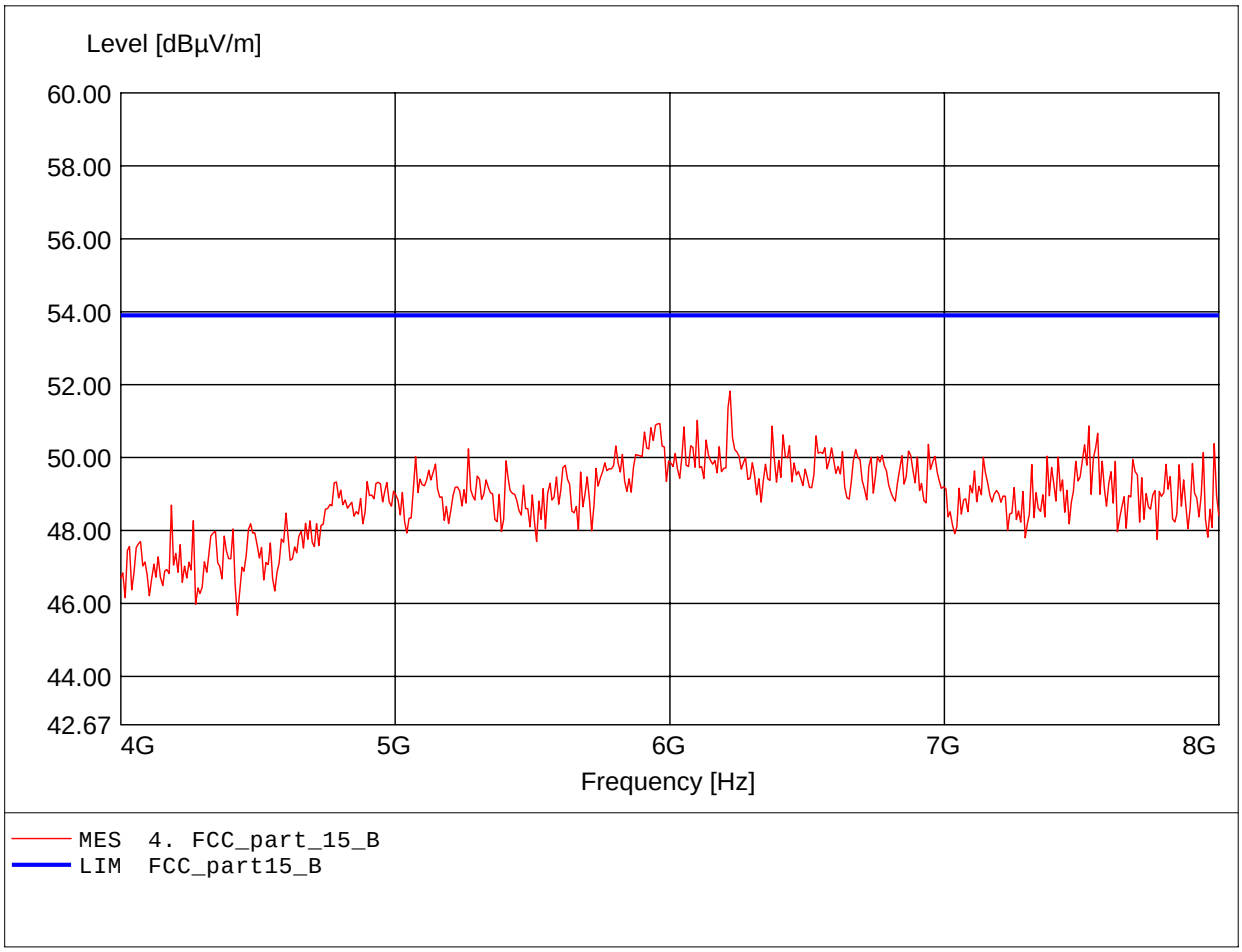
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:1.625GHz Emax:50.19dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

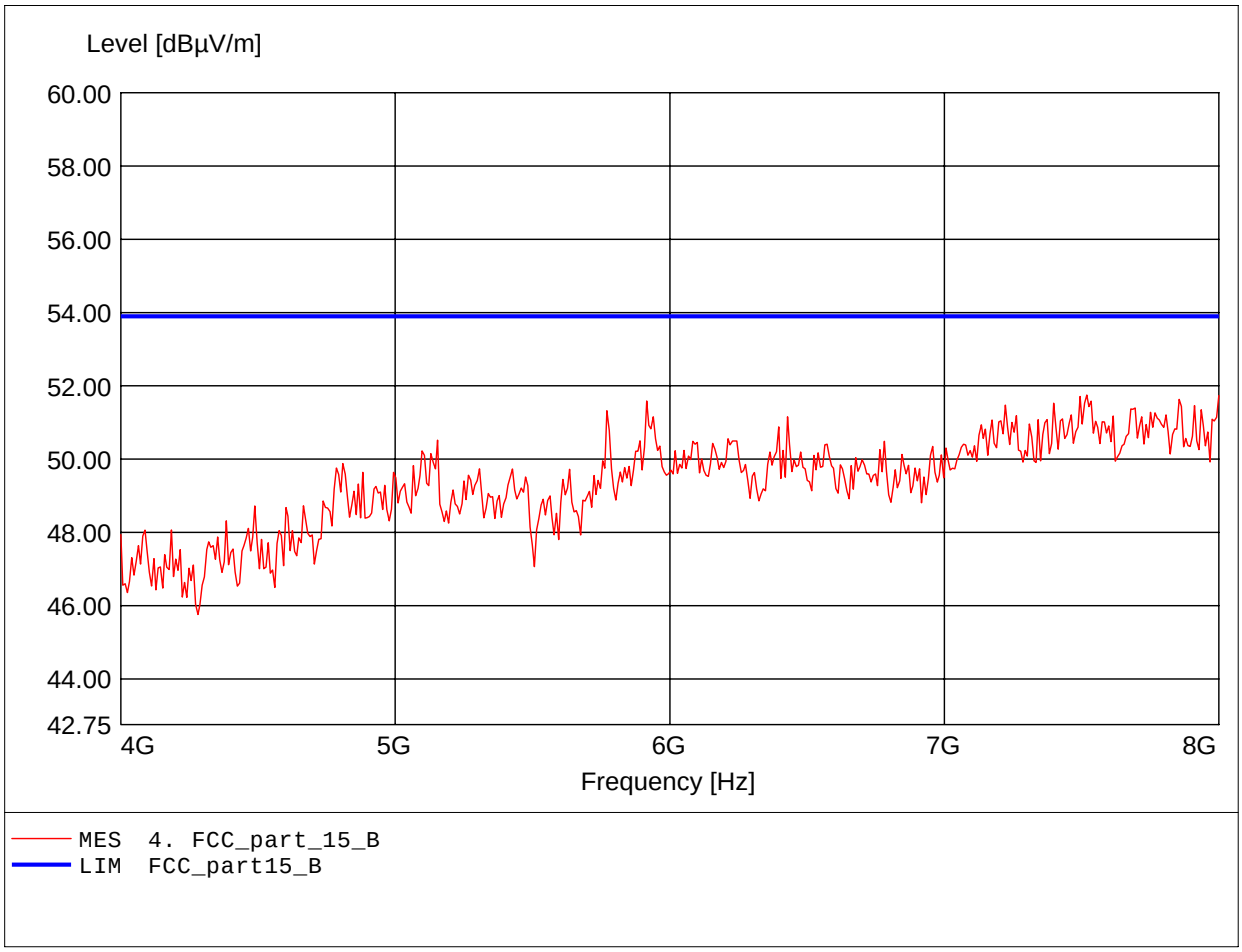
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:6.220GHz Emax:51.82dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

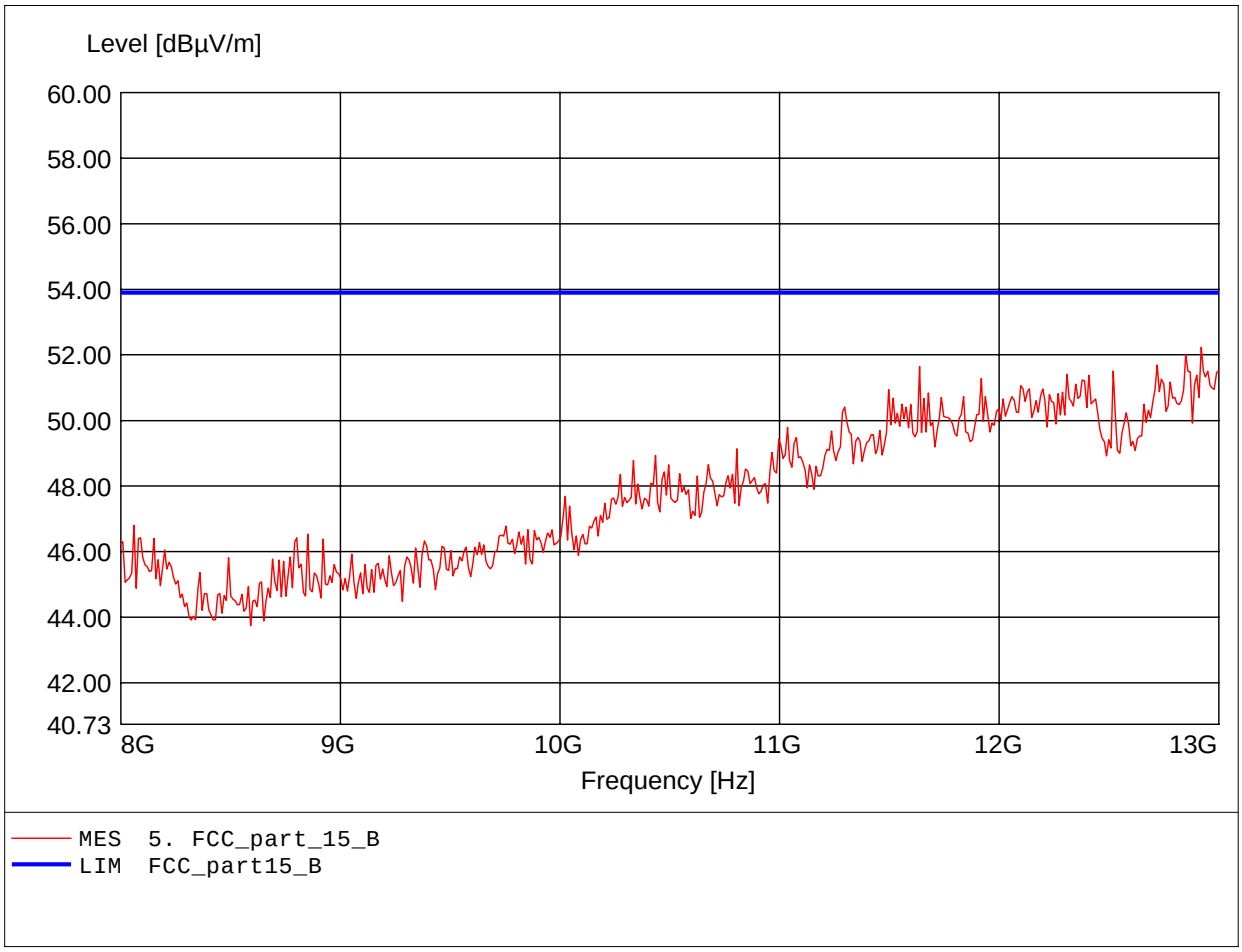
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.519GHz Emax:51.75dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

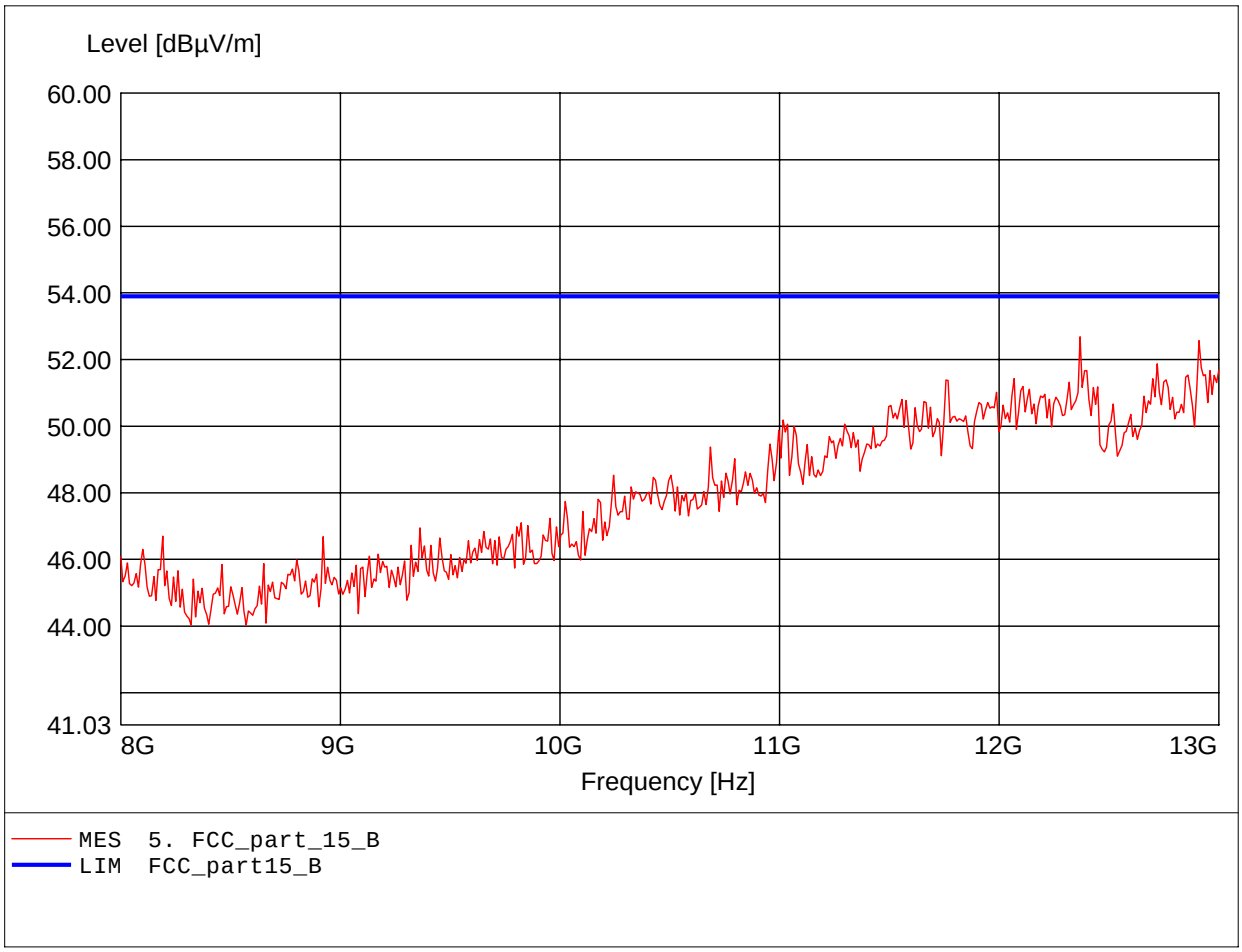
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:12.920GHz Emax:52.23dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

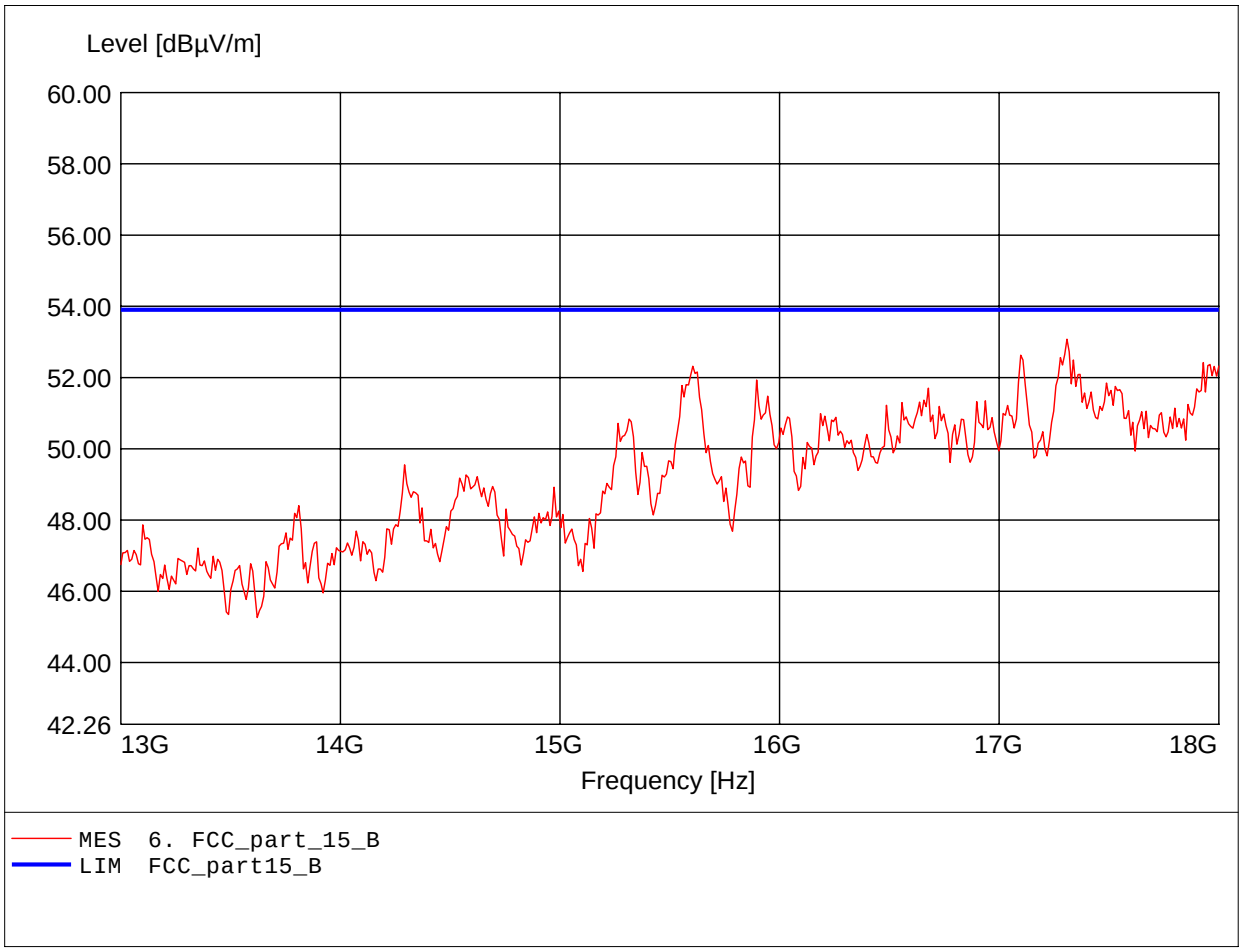
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:12.369GHz Emax:52.68dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

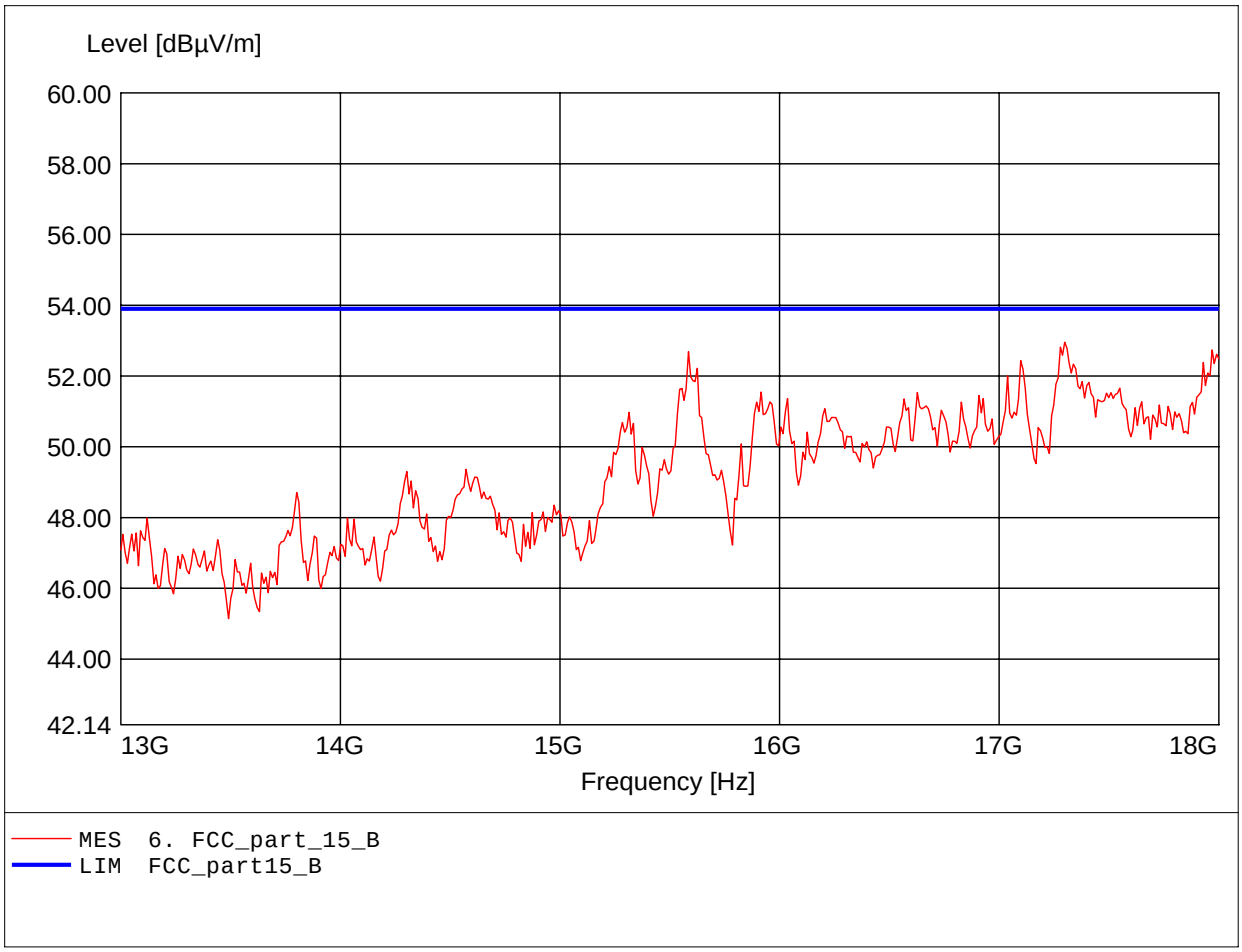
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.309GHz Emax:53.07dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

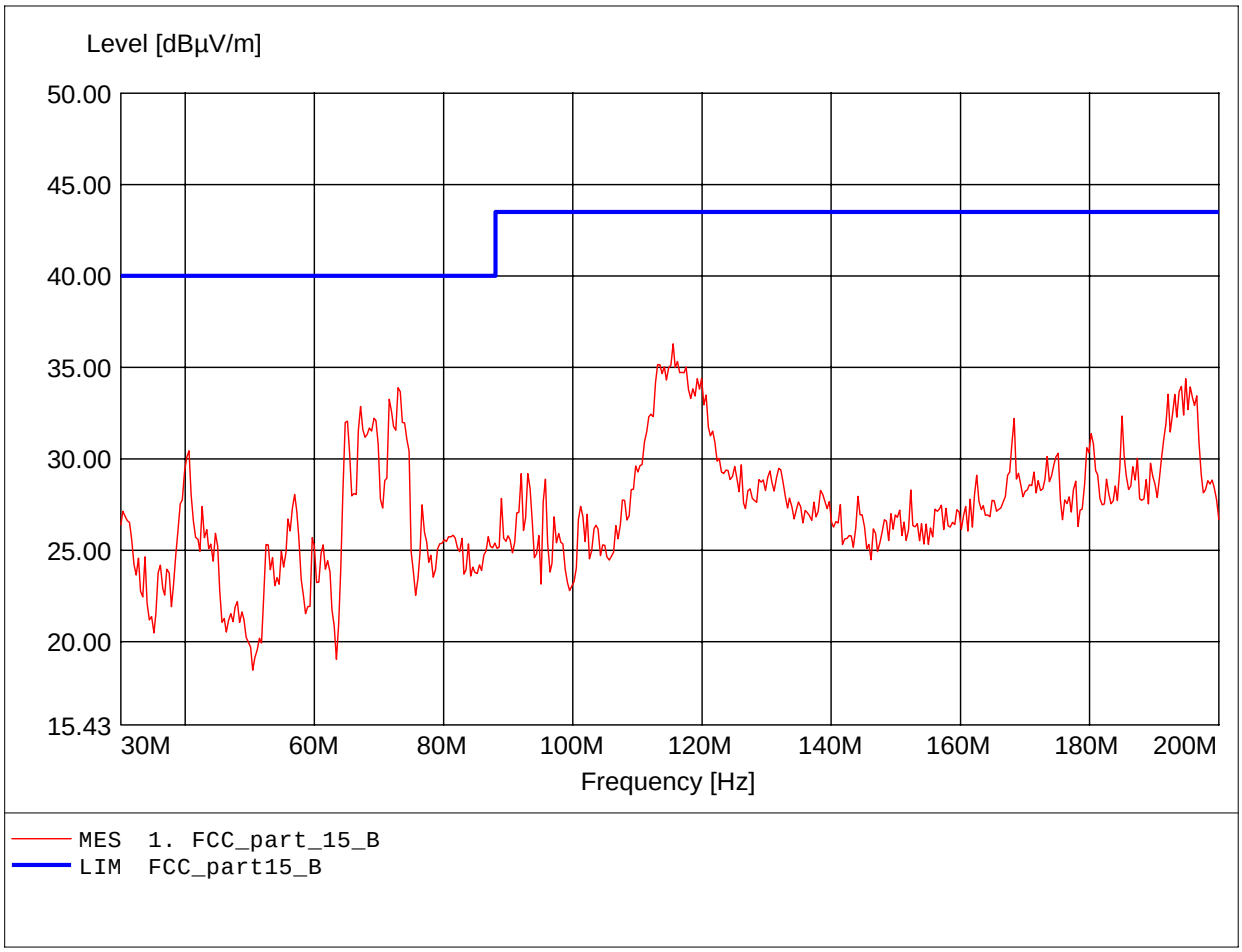
EUT:	BT module
MODEL NO.:	UGPZ8 middle channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:17.299GHz Emax:52.96dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

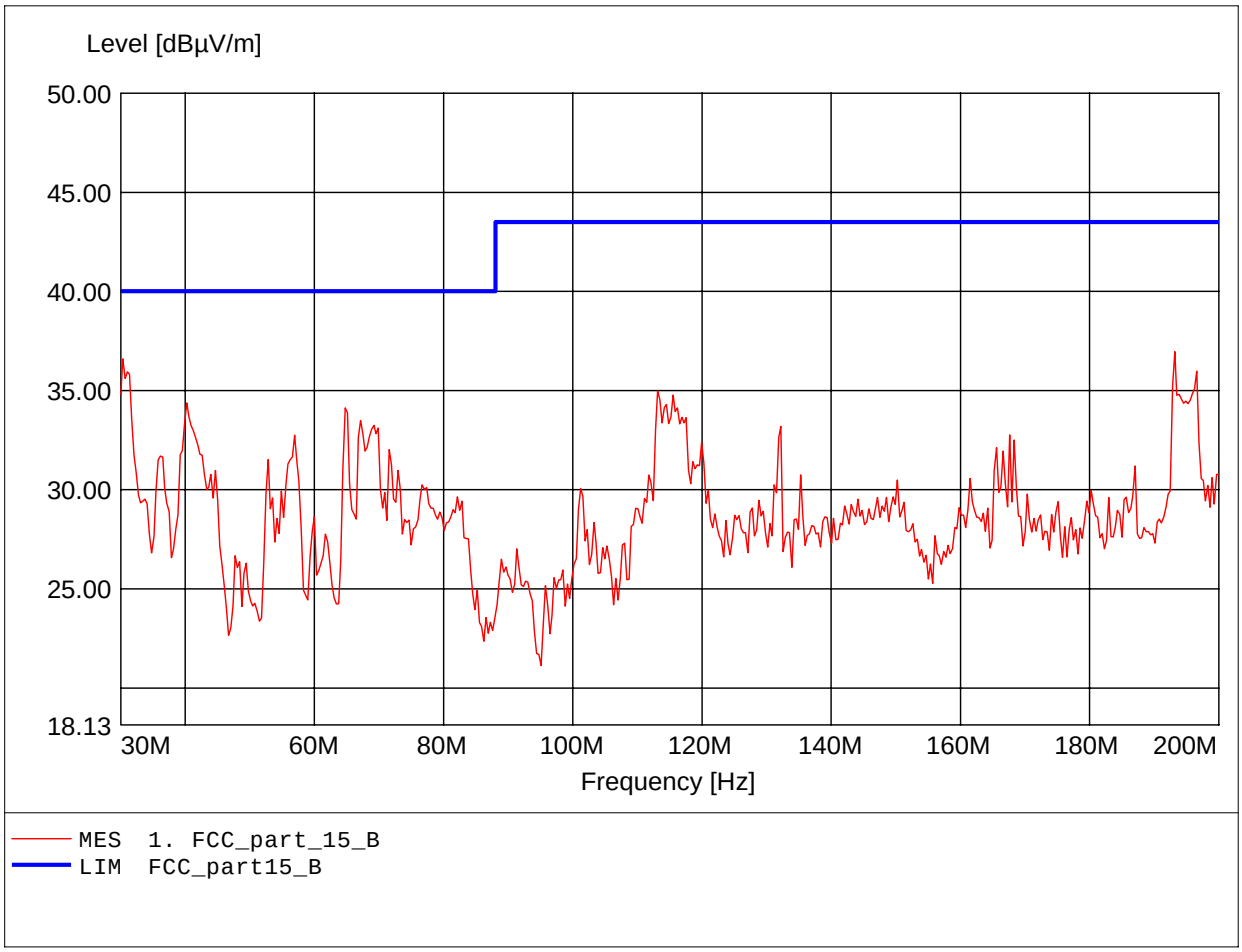
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:115.511MHz Emax:36.29dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

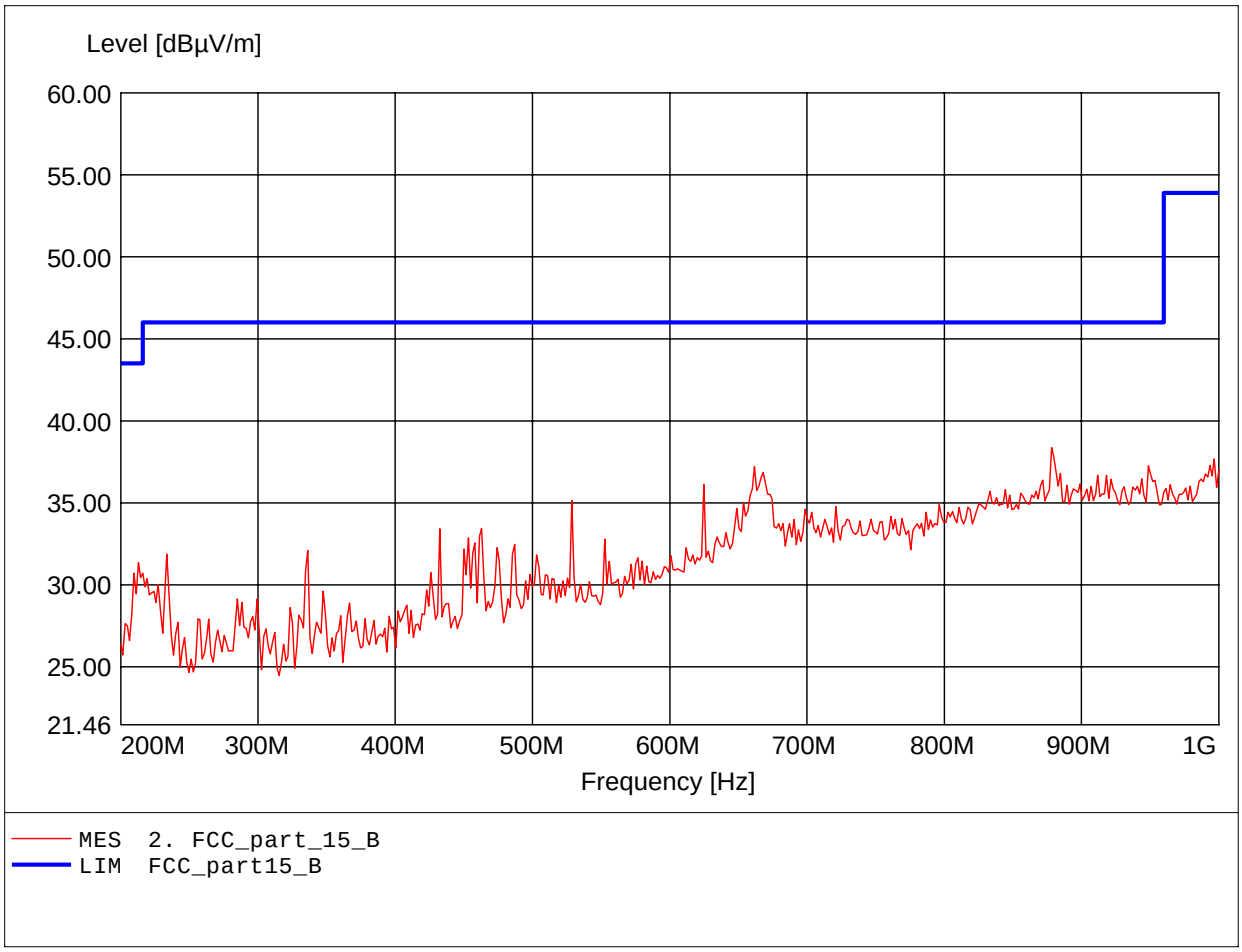
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HK 116
	Freq:193.186MHz Emax:36.96dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

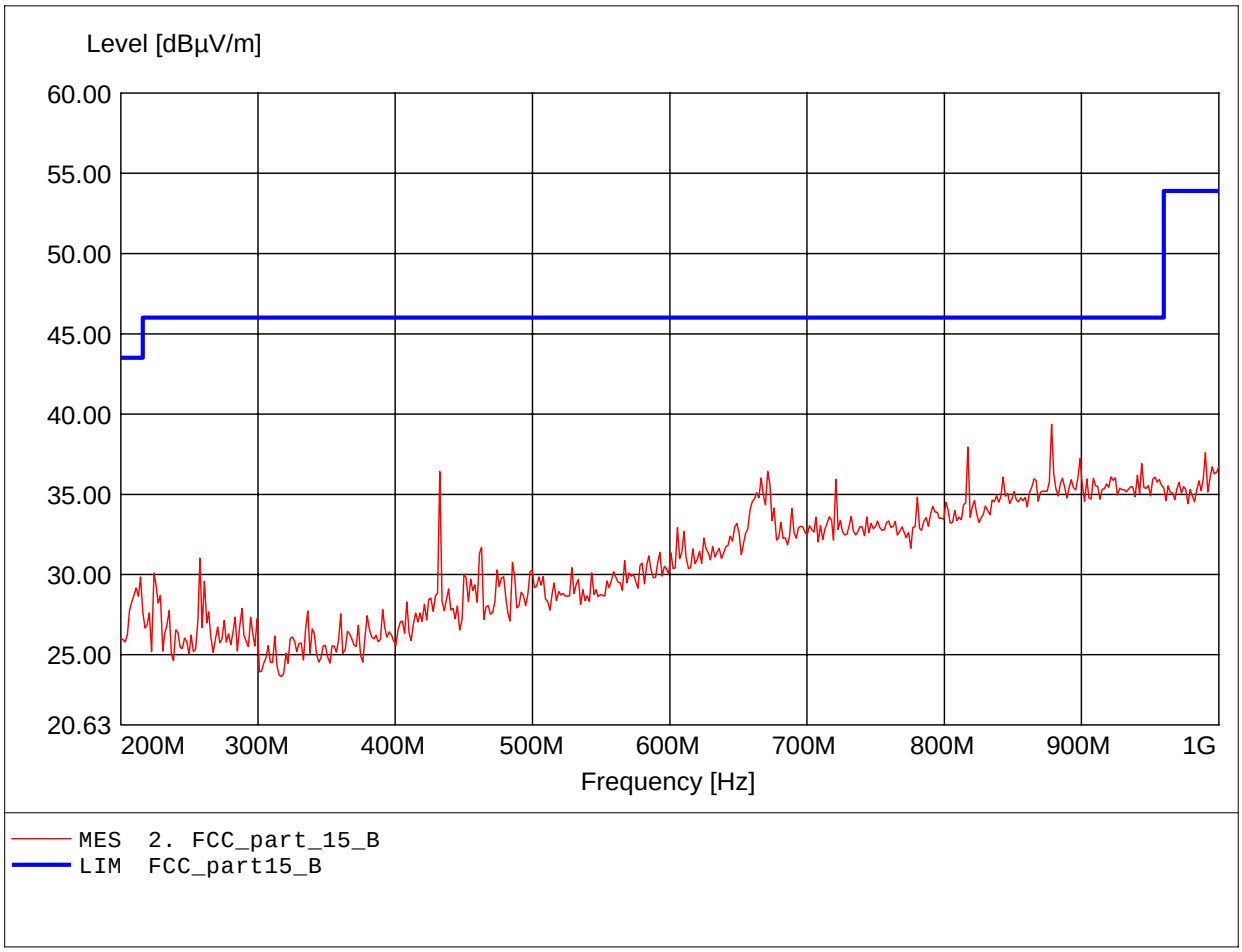
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:878.156MHz Emax:38.37dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

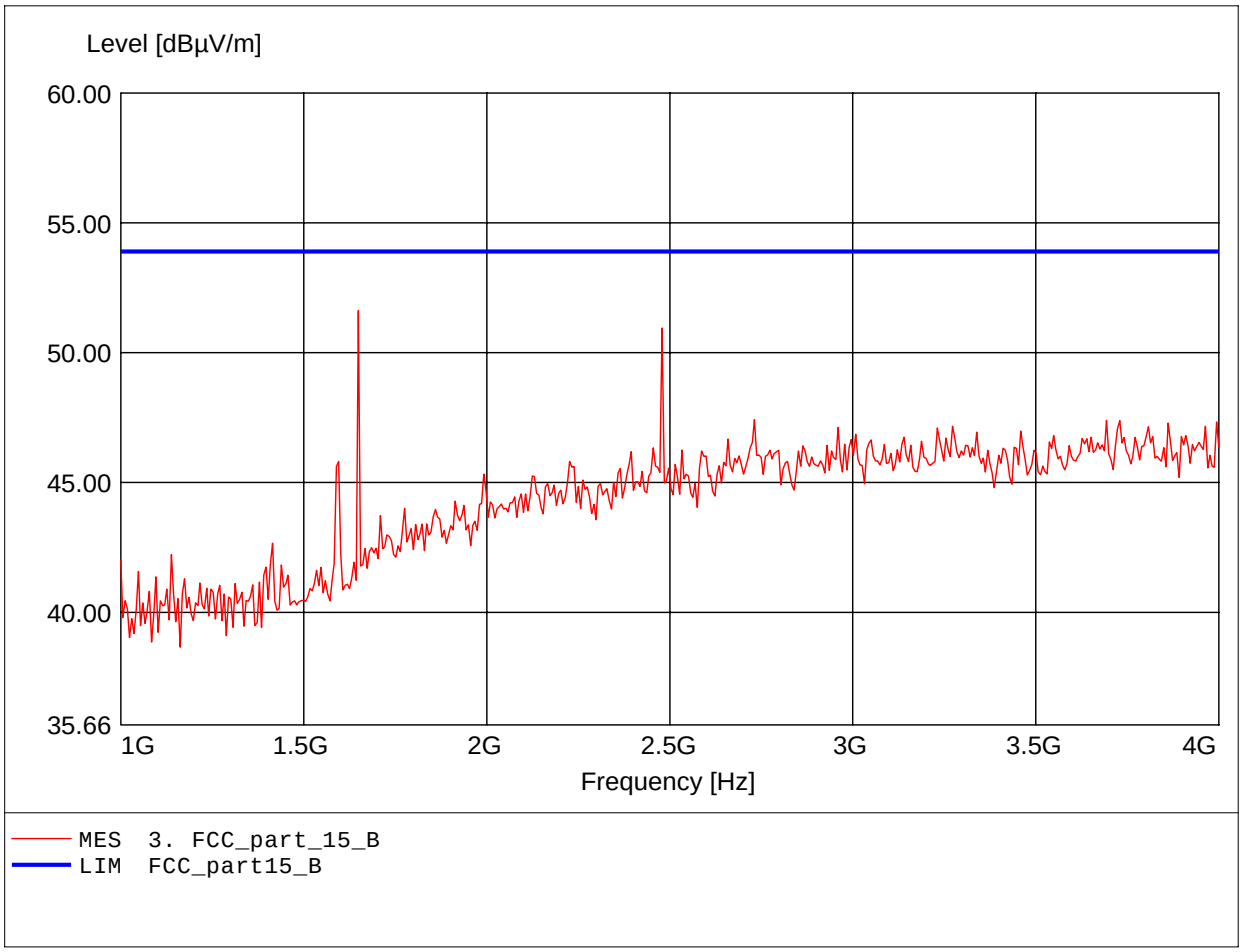
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL 223, ampl. Freq:878.156MHz Emax:39.36dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

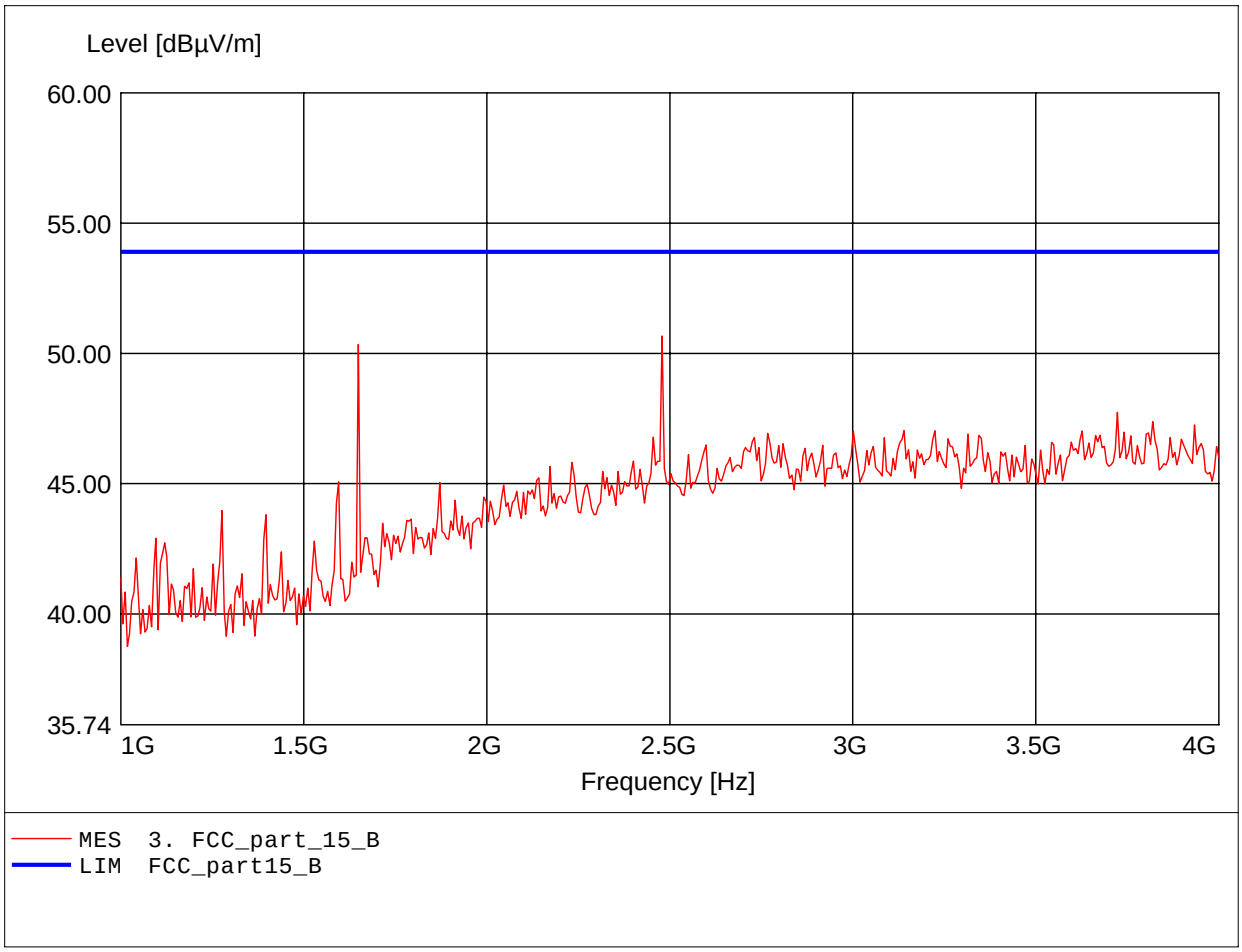
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:1.649GHz Emax:51.61dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

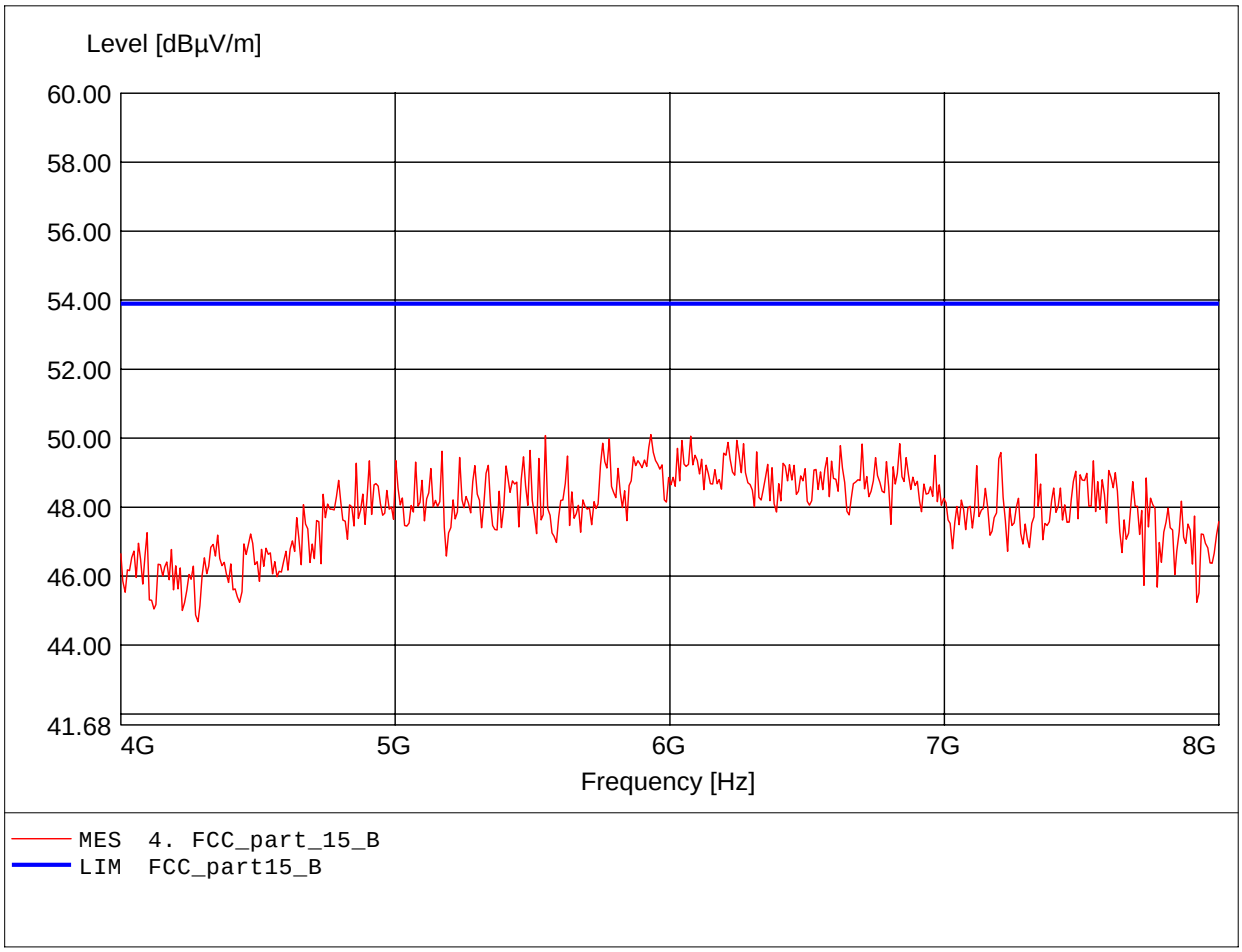
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl. Freq:2.479GHz Emax:50.67dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

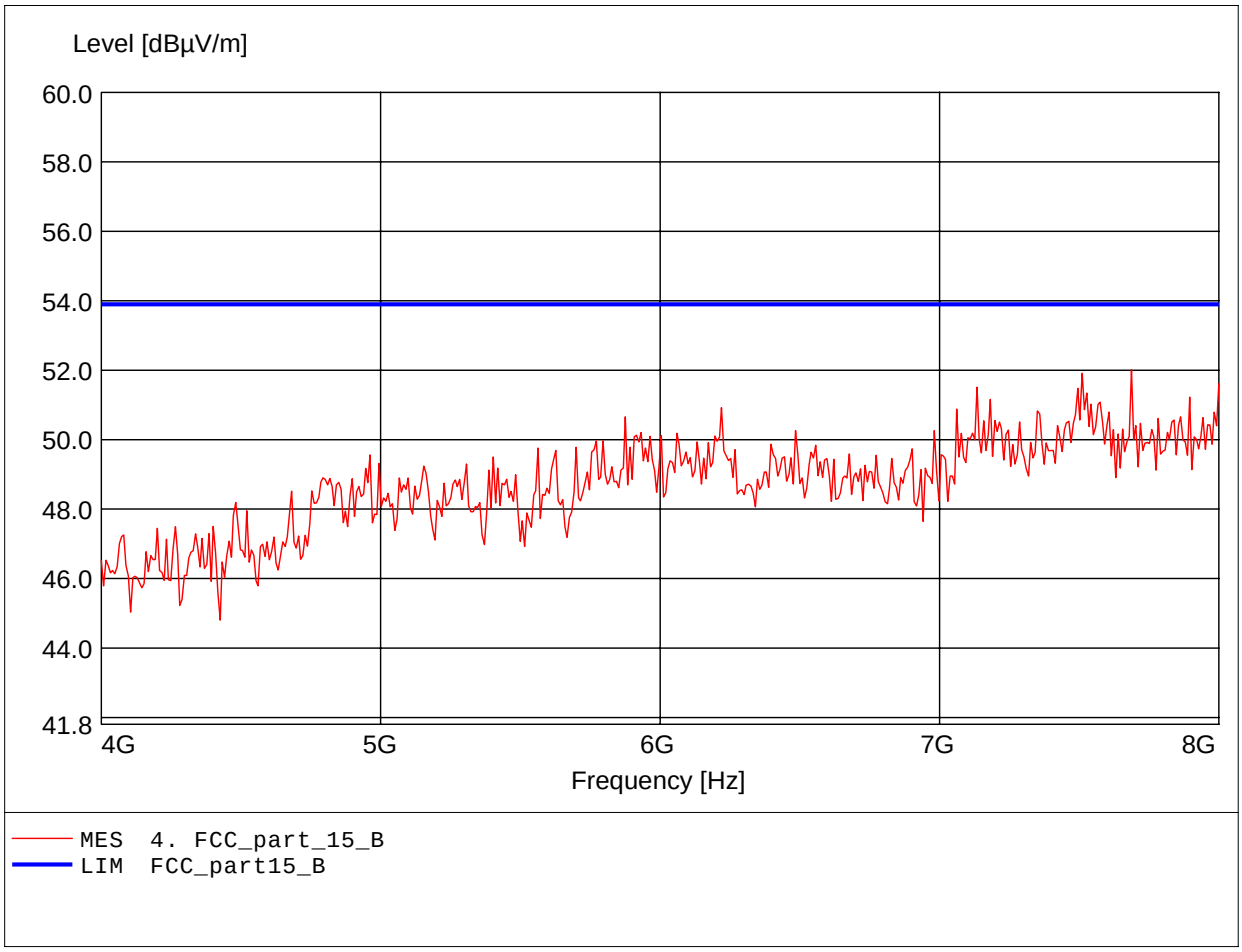
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:5.932GHz Emax:50.10dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

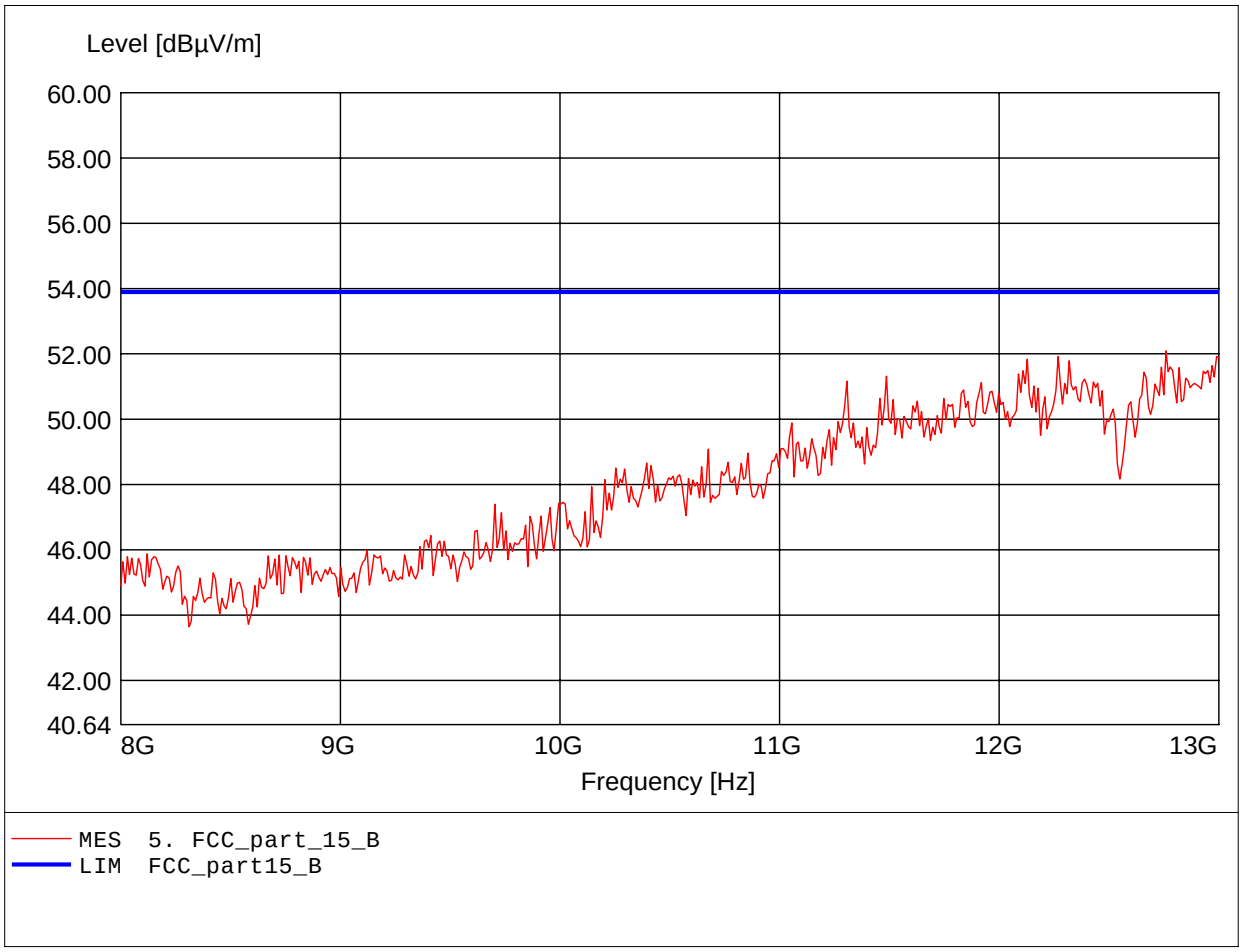
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.687GHz Emax:52.01dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

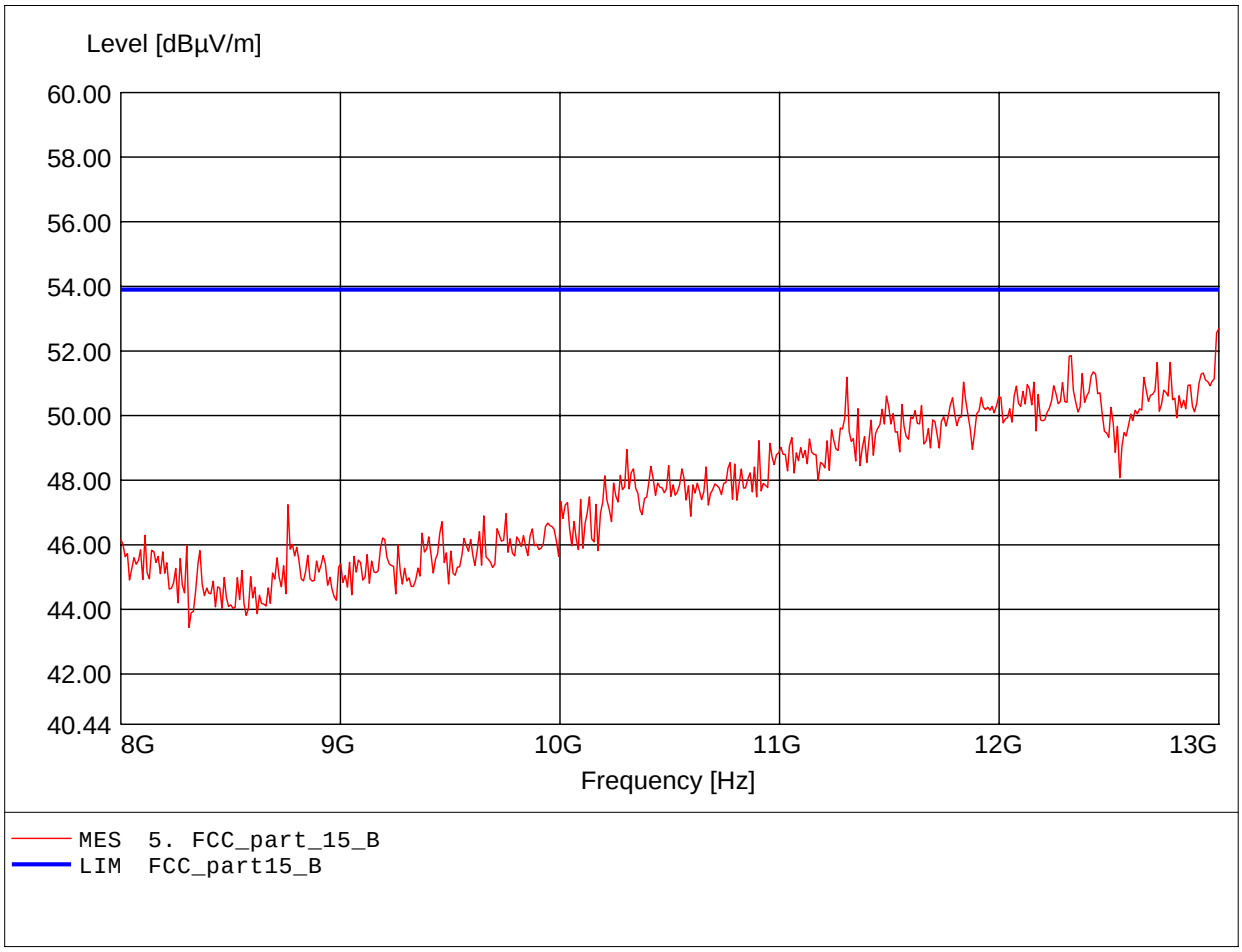
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:12.760GHz Emax:52.09dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

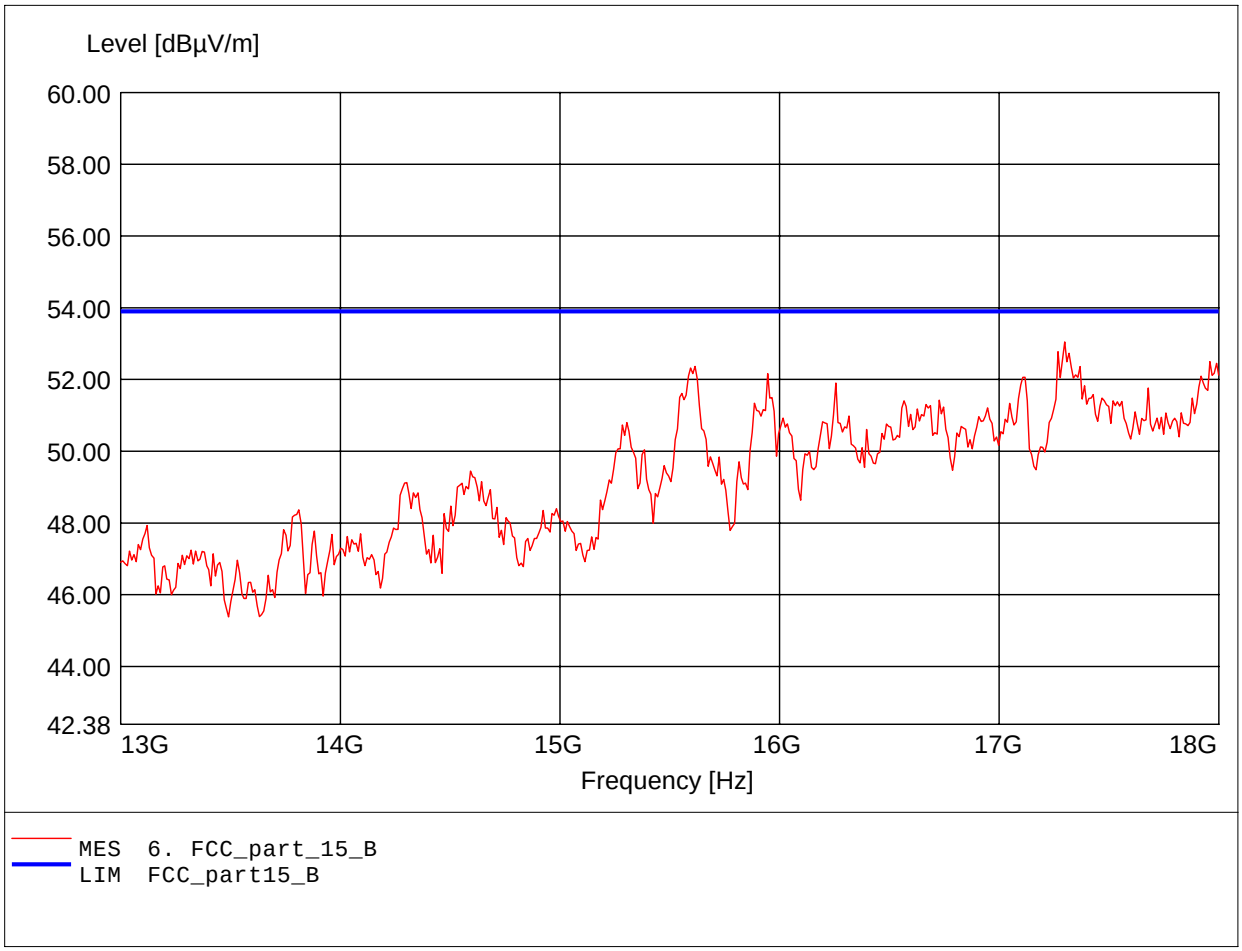
EUT:	BT module
MODEL NO.:	UGPZ8 high channel
Approval Holder:	ALPS ELECTRIC CO.,LTD.
Test Site / Operator:	ETS / Dennis
Temperature/Voltage:	Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification:	according to subpart B
Comment 2:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:13.000GHz Emax:52.69dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

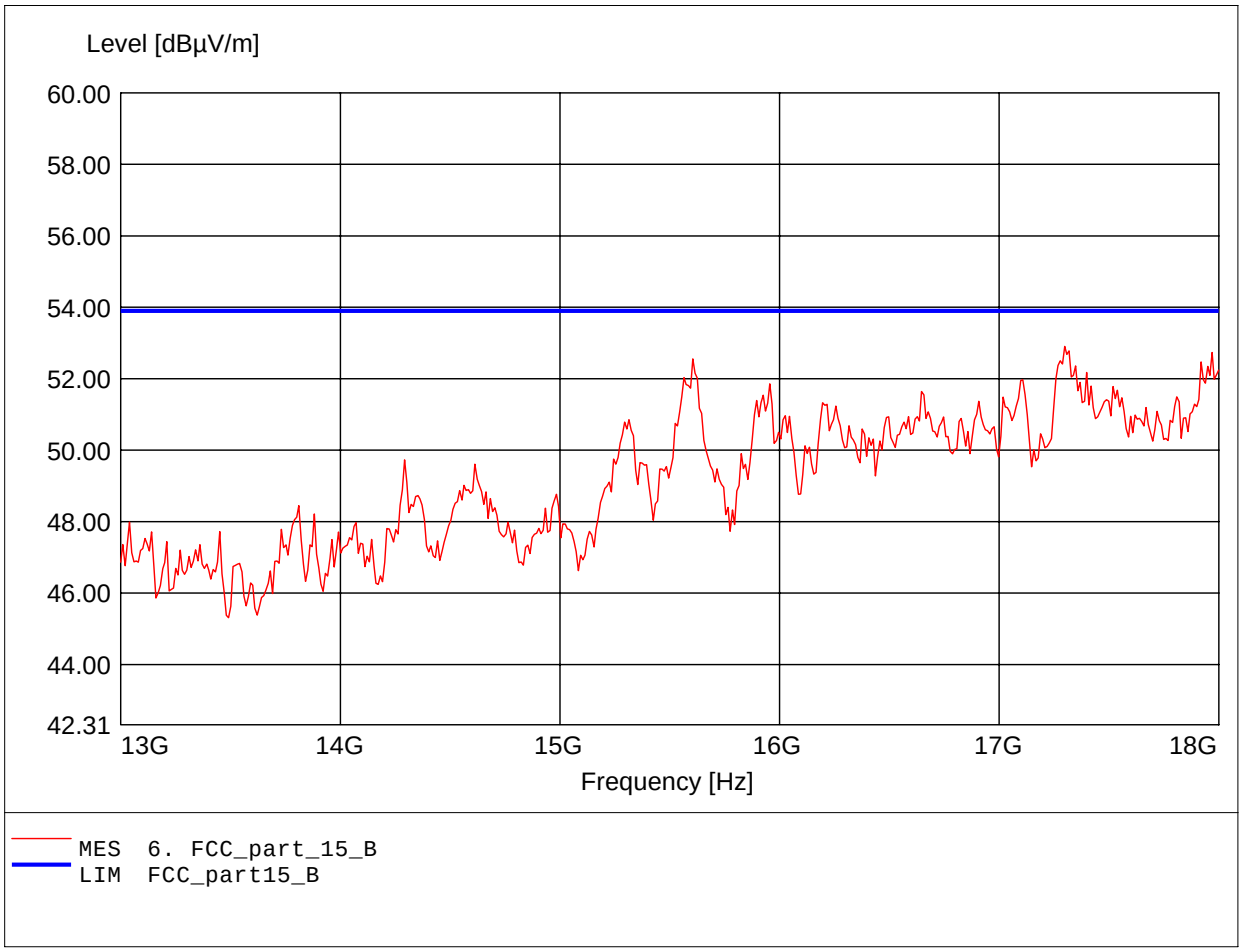
EUT: BT module
MODEL NO.: UGPZ8 high channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to subpart B
Comment 2: Dist.: 3m, Ant.: HL25, ampl.
Freq:17.299GHz Emax:53.04dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

EUT: BT module
MODEL NO.: UGPZ8 high channel
Approval Holder: ALPS ELECTRIC CO.,LTD.
Test Site / Operator: ETS / Dennis
Temperature/Voltage: Temp.: 25.5°C/ Unom.: 3.3 VDC
Test Specification: according to subpart B
Comment 2: Dist.: 3m, Ant.: HL25, ampl.
Freq:17.299GHz Emax:52.90dBµV/m RBW: 1 MHz



Appendix I

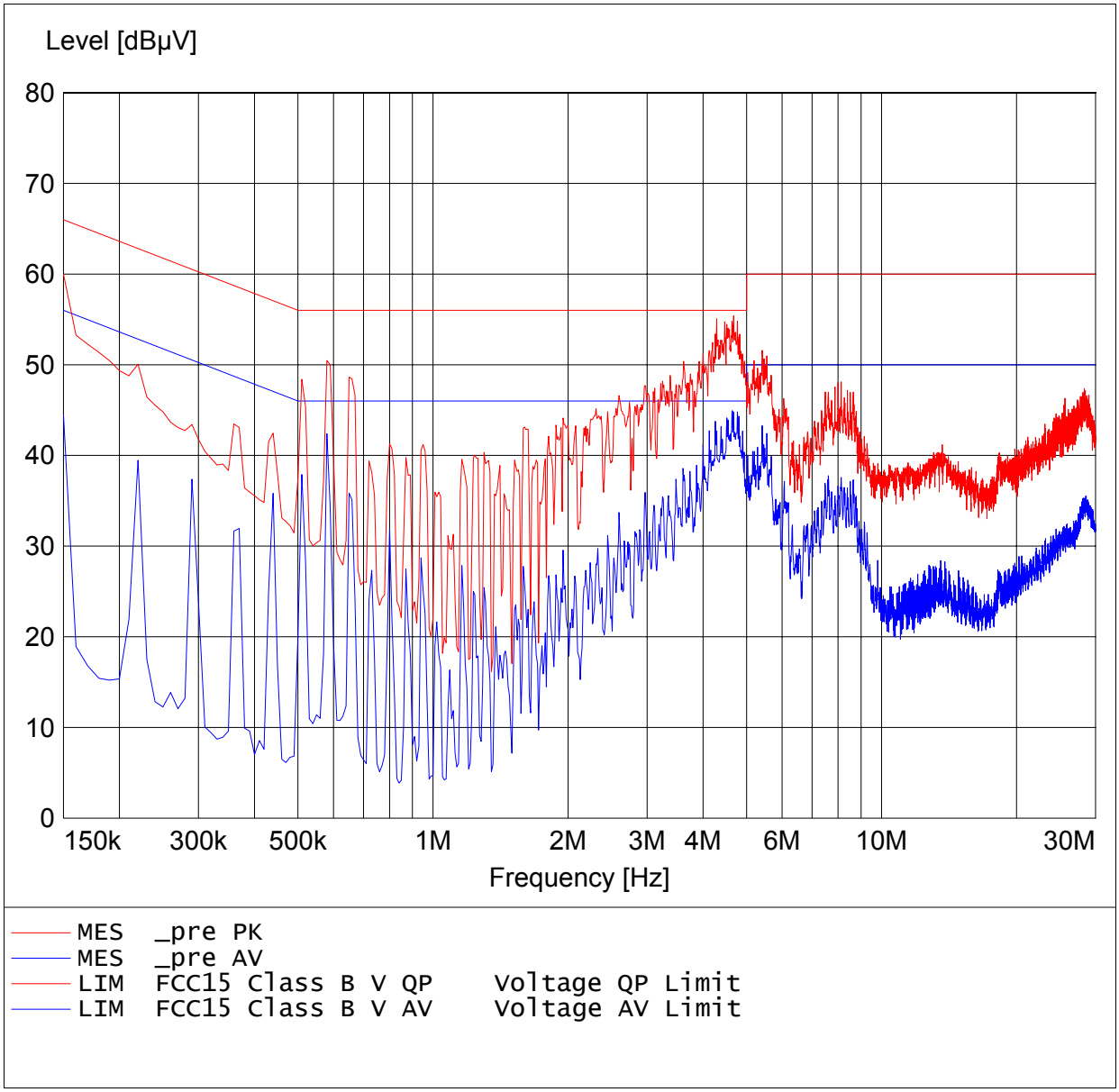
Power Line Conducted Emission

The measurement diagram are wideband pre-scan results; only for reference.

EMI voltage test in the ac-mains according to FCC Part 15

Class B

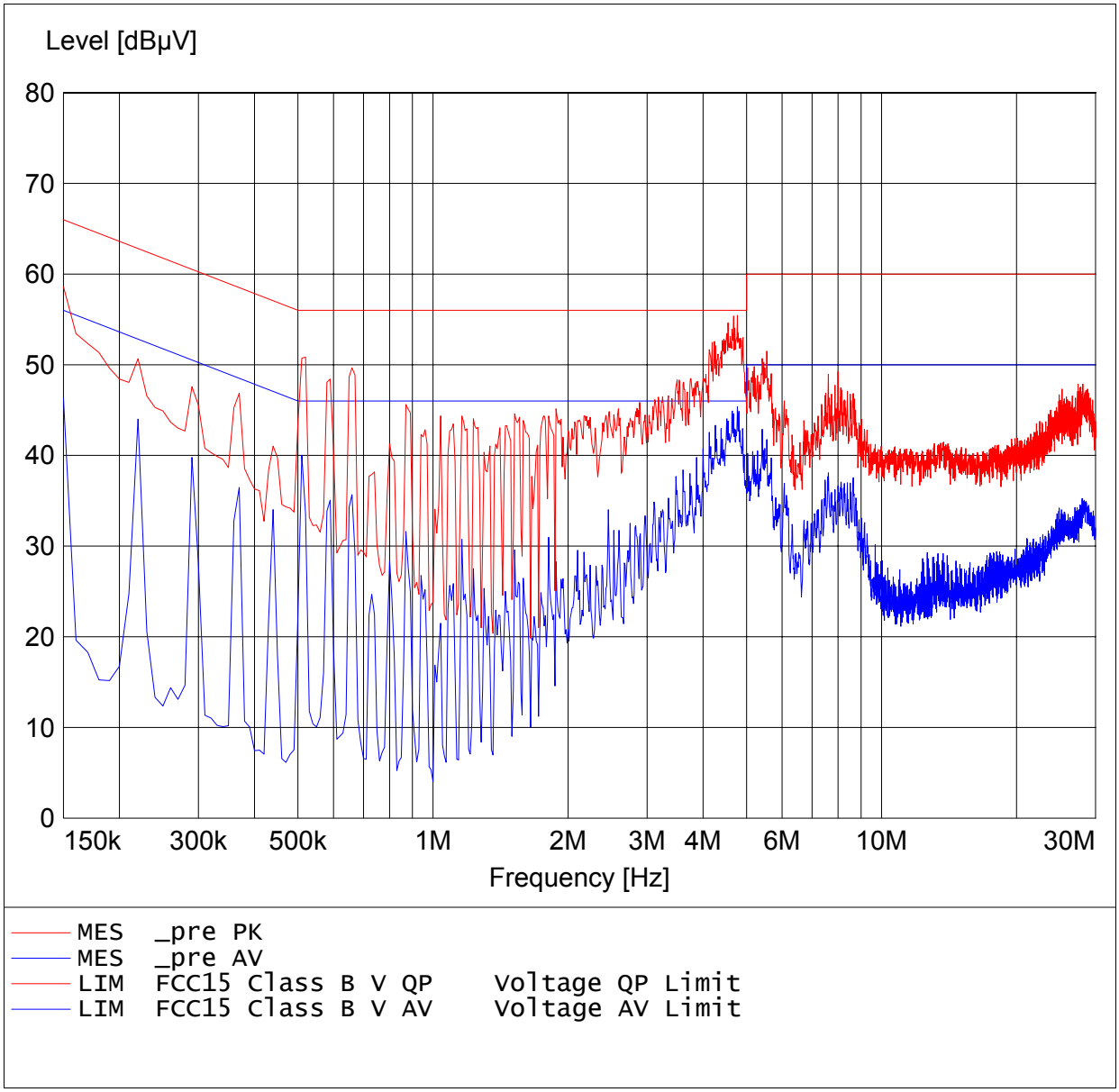
EUT: BT module
Approval Holder: ALPS Electric Co.,Ltd.
Operating Condition: Unom : 3 VDC (Power on Power supply) Tnom : 24.2°C
Test Site: ETS
Operator: Catey
Test Specification: V-network: ESH3-Z5 N
Comment:: model: UGPZ8 mode: active



EMI voltage test in the ac-mains according to FCC Part 15

Class B

EUT: BT module
Approval Holder: ALPS Electric Co.,Ltd.
Operating Condition: Unom : 3 VDC (Power on Power supply) Tnom : 24.2°C
Test Site: ETS
Operator: Catey
Test Specification: V-network: ESH3-Z5 L1
Comment:: model: UGPZ8 mode: active



Appendix J

Pictures