ETS Dr.Genz Taiwan PS Co.,LTD

FCC Registration No.: 930600

Accredited Testing Laboratory

A2LA Cert.No.: 2300.01

PTCRB Accredited Type Certification Test House

FCC

TEST - REPORT

FCC RULES PART 15 / SUBPART C

FCC ID: LW5-MLPN5500

Test report no.: W6M20511-6309-P-15

ETS DR. GENZ TAIWAN PS CO., LTD
6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU, TAIPEI 114, TAIWAN, R.O.C.
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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
26.06.2005		Jay Chaing	Jay Chaing

Technical responsibility for area of testing:

Date	ETS	Name	Signature
26.06.2005		Steven Chuang	Steven Chuang

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. IC5679

PTCRB Accredited Type Certification Test House

Testing location, if different from item ETS DR. GENZ TAIWAN PS CO., LTD.

Name:	./.
Street:	./.
Town:	./.
Country:	./.
Telephone:	./.
Fax:	./.

1.3 Details of approval holder

Name	: METROLOGIC INSTRUMENTS, INC.
Street	: 90 COLES ROAD, BLACKWOOD, NJ 08012
Country	: UNITED STATES.
Telephone	: + 856.374.5844
Fax	: + 856.228.1879
Teletex	: ./.
Contact	: MR. JOHN DEAL
Telephone	: + 856.374.5844

1.4 Application details

Date of receipt of application	: 18.05.2005
Date of receipt of test sample	: 18.05.2005
Date of test	: from 20.05.2005 to 21.06.2005

1.5 General information of Test item

Type of test item	: Data Collector
Model Number	: SP5500
Software	: HCI 18.1
Hardware	: Rev.01
Serial number	: without
Photos	: see Annex

Technical data

Frequency band	: 2400 ~ 2483.5 MHz
Frequency (ch A)	: 2402 MHz
Frequency (ch B)	: 2441 MHz
Frequency (ch C)	: 2480 MHz
Number of Channels	: 79
Operation modes	: Duplex
Modulation Type	: GFSK
Fixed point-to-point operation:	☐ Yes / ☒ No
Antenna Type	: Chip Antenna
Antenna gain	: 3.0 dBi
Power supply	: 3.7 VDC (Battery * 1)
Emission designator	: 970KF7D

Registration number: W6M20511-6309-P-15
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Host device: none

Classification :

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

Transmitter **Unom**

Power (ch A **ch 0)** : **Conducted: 11.53 dBm**
Power (ch B **ch 39)** : **Conducted: 10.84 dBm**
Power (ch C **ch 78)** : **Conducted: 10.44 dBm**

Manufacturer:
(if applicable)

Name : --
Street : --
Town : --
Country : --

1.6 Test standards

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

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	: 3.7 VDC (Battery * 1)
Extrem conditions parameters	: test voltage : -- extreme min :-- V max :-- V

Remarks : The testing items of this test report are all according to customer's request and there are including 2 modes. Mode A is CCD barcode reader and Mode B is laser barcode reader. Worse case is CCD barcode reader.

2.3 Test equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2005/11/8
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY				
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	2006/11/8
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2006/11/3
ETSTW-CE 006	IMPULS-BEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2006/11/10
ETSTW-CE 007	SPECTRUM ANALYZER 5GHz	FSB	849670/001	R&S	
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	ABSORPTIONS-MESSWANDLER-ZANGE	2006/11/4
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2005/5/10
ETSTW-CE 010	Comb Generator-conducted			ETS	
ETSTW-CE 011	Power Line Conducted Emission Only			ETS	
ETSTW-CE 012	Dual-Phase-V-Network	NNB-2/16Z	03/10201	Telemeter	2006/4/11
ETSTW-CS 001	SIGNAL GENERATOR	SMX	849254/003	R&S	2005/10/31
ETSTW-CS 002	COUPLING AND DECOUPLING NETWORK	CDN S751	19263	CHAFFNER	2006/11/3
ETSTW-CS 003	COUPLING AND DECOUPLING NETWORK	CDN T400	19820	CHAFFNER	2006/11/3
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	CHAFFNER	2006/11/3
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	2005/11/3
ETSTW-CS 006	Terminal 50Ω Load	50T-116 M		JFW	
ETSTW-CS 007	Terminal 50Ω Load	50T-116 F		JFW	
ETSTW-CS 008	6 dB Attenautor	HFP-5100-3/06 N M/F	2010876106		
ETSTW-RE 001	Controller	CD 1000	C01000/154/867/004/L	Heinrich Deisel	
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2005/11/3
ETSTW-RE 003	EMI TEST RECEIVER	ESI	831438/001	R&S	2005/11/16
ETSTW-RE 004	EMI TEST RECEIVER	ESI	831459/012	R&S	2005/11/9
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2005/11/1
ETSTW-RE 008	Controller	HD100	C0100-L/047/6670703/L	Heinrich Deisel	
ETSTW-RE 009	Controller	HD100	100/341	Heinrich Deisel	
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	

ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0036	397	K&L	
ETSTW-RE 014	DUAL TRACKING WITH 5V FIXED	GPC-3030D		GW	
ETSTW-RE 015	ANTENNA	HK116	841489/003	R&S	
ETSTW-RE 016	ANTENNA	HL223	848953/006	R&S	
ETSTW-RE 017	ANTENNA	HL025	352886/001	R&S	
ETSTW-RE 018	ANTENNA	AT4560	27212	AR	2006/11/7
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	2005/11/10
ETSTW-RE 022	AMPLIFIER	8447D	2944A09837	Agilent	2005/11/1
ETSTW-RE 023	Shielded room	SR 1		Frankonia	
ETSTW-RE 024	Anechoic Chamber	CHC 1		Frankonia	
ETSTW-RE 025	Anechoic Chamber	CHC 2		Frankonia	
ETSTW-RE 026	Open Area Test Site	10m		ETS	
ETSTW-RE 027	Passive Loop Antenna	6512	34563	EMCO	2006/6/29
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/6/14
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/6/16
ETSTW-RE 030	Double-Ridged Waveguide Horm Antenna	3117	35224	EMCO	2006/5/4
ETSTW-RE 031	Comb Generator-radiated			ETS	
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2005/11/17
ETSTW-RE 033	4CH 1GHz 5GS/s DSO	WAVERUNNER 6100A	LCRY0604P14508	LeCory	
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2005/11/17
ETSTW-RE 035	1.5GHz Active Voltage Probe	HFP1500	2332	LeCory	
ETSTW-RE 036	100MHz High Voltage Diff Probe	ADP305	3305	LeCory	
ETSTW-RE 037	Log-Periodic DipoleArray Antenna	3148	00034546	EMCO	2006/11/17
ETSTW-RE 038	Log-Periodic DipoleArray Antenna	3148	00034547	EMCO	2006/11/17
ETSTW-RE 039	Biconical Antenna	3110B	41760	EMCO	2006/11/17
ETSTW-RE 040	Biconical Antenna	3110B	41761	EMCO	2006/11/17
ETSTW-RE 041	Anechoic Chamber	CHC 3		Frankonia	
ETSTW-RE 042	ANTENNA	HK116	100172	R&S	2007/1/13
ETSTW-RE 043	ANTENNA	HL223	100166	R&S	2006/4/15
ETSTW-RE 044	ANTENNA	HL050	100094	R&S	
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2006/3/21
ETSTW-EMI 001	HARMONICS 1000	HAR1000-1P	93	EMC-PARTNER	2005/11/17
ETSTW-EMS 001	Clamp BASELSTRASSE 160 CH-4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	2005/11/1

ETSTW-EMS 002	Frequency Converter	YF-6020	0308014		
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2005/11/1
ETSTW-EMS 004	ESD generator minizap	ESD2000	016	EMC-PARTNER	2005/11/1
ETSTW-EMS 005	Attenautor (50Ω)	VERI50	051	EMC-PARTNER	2006/8/30
ETSTW-EMS 006	Attenautor (1 KΩ)	VERI1K	019	EMC-PARTNER	2006/10/20
ETSTW-EMS 007	20GΩ Divider	ESD-VERI-V	021	EMC-PARTNER	2006/3/16
ETSTW-RS 001	14" COLOR VIDEO MONITOR	TP-1480HR	P009799	TOPICA	
ETSTW-RS 002	14" COLOR VIDEO MONITOR	TP-1480HR	P009814	TOPICA	
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR	
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	2005/11/18
ETSTW-RS 005	Electric Field Probe Type 8.3	EMR-20	BN 2244/20	nadar	2005/9/3
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2005/11/15
ETSTW-RS 007	AUDIO ANALYZER	UPA3	843458/029	R&S	2005/11/15
ETSTW-EMS 008	Safety Test Solutions	ELT-400	E-0039	Narda	2006/1/4
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	2006/12/2
ETSTW-GSM 01	SIM Simulator	IT3	B2004-50106	ORGA Testsystems GmBh	
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	103489	R&S	
ETSTW-GSM 03	Agilent 8960 Test Set 1	E5515C	GB44052675	Agilent	2006/7/14
ETSTW-GSM 04	Agilent 8960 Test Set 2	E5515C	GB44052665	Agilent	2006/7/14
ETSTW-GSM 05	Agilent 8960 Test Set 3	E5515C	GB44052852	Agilent	2006/7/17
ETSTW-GSM 06	Agilent 8960 Test Set 4	E5515C	GB44052984	Agilent	2006/7/16
ETSTW-GSM 07	Agilent 8960 Test Set 5	E5515C	GB44052658	Agilent	2006/7/14
ETSTW-GSM 08	Agilent 8960 Test Set 6	E5515C	GB44052666	Agilent	2006/7/16
ETSTW-GSM 09	Controler PC	Dell GX 270	700F61J	Dell	
ETSTW-GSM 10	Combiner Wessex / Anite	B4605/100	053	Wessex / Anite	07.06
ETSTW-GSM 11	GSM 850,900,1800,1900 Test system	TS8950G		Rohde & Schwarz	11.05
ETSTW-GSM 12	Acoustical Calibrator	4231	2463874	Brüel&Kjær	
ETSTW-GSM 13	Conditioning Amplifier	2690--0S2	2437856	Brüel&Kjær	
ETSTW-GSM 14	Telephone Test Head	4602B	2465324	Brüel&Kjær	2005/11/17
ETSTW-GSM 15	Mouth Simulator	4227	2462516	Brüel&Kjær	
ETSTW-GSM 16	TEMP.&HUMIDITY CHAMBER	GTH-120-40-1P-U	MAA0501002	GIANT FORCE	12/29/2005
ETSTW-GSM 17	ANTENNT COPLER	CMU-Z10	100988	R&S	

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2000 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 C63.4-2000 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 with a humidity of

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 C63.4-2000 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 chip 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)clause 7.1

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).

Test conditions		Conducted Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23 °C	V_{nom}= 3.7V DC	11.53	10.84	10.44
Measurement uncertainty		< 3 dB		

Test conditions		Radiated Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23 °C	V_{nom}= 3.7V DC	--	--	--
Measurement uncertainty		< 3 dB		

Test conditions T_{nom}= 23°C, V_{nom}= 4,1 V Frequency[MHz]	Signal Field strength TX highest power mode dBµV/m
2402	106.41
Measurement uncertainty	< 3 dB

Remarks: 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 point-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: 15.247 (b)(3)

EIRP = max. conducted output power + antenna gain
EIRP = 11.53dBm + 3dBi
= 14.53dBm
Limit: EIRP = +36 dBm for Antenna gain <6dBi

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.

"Based upon calculation on next page the power is lower than the low threshold, thus no SAR required for this product."

Duty Cycle correction factor(dB) = 20 log (27*3.058 ms / 100 ms)
= 1.66 dB

The "DH5" width measure of Burst is 3.058 ms.
100 ms got 27 Burst.

11.53 (dbm) - 1.66 (dB) + 3 dBi = 12.87dBm
12.87 dBm < 14 dBm.

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1,0

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

106.41 dBµV/m- 20 dB= 86.41 dBµV/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)
106.41 dBµV/m
For frequencies above 1GHz (Average measurements).
Max. reading – 20 dB - duty cycle correction:

No duty cycle correction was added to the reading

106.41 dBµV/m- 20 dB= 86.41 dBµV/m

Remarks: See attached diagrams.
Test equipment used: ETSTW-CE 003 , ETSTW-RE 003

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 012, ETSTW-RE 015, ETSTW-RE 016, ETSTW-RE 017, ETSTW-RE 024

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.
Calrulation of test result:
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

Freq,	Used Ch,	Frequency Marker [MHz]	Polari-zation	corrections dB	Corrected Reading [dBuV/m]	Compliance Limit [dBuV/m]	Detec-tor	BW [MHz]	Margin
1	0	192.164329	V		24.2	86.41	PK	0.1	19.3
1	0	192.164329	H		26.06	86.41	PK	0.1	17.44
2	0	426.052104	V		30.8	86.41	PK	0.1	15.2
2	0	426.052104	H		33.13	86.41	PK	0.1	12.87
3	0	2386.37275	V		47.33	54	PK	1	6.67
3	0	2386.37275	H		60.31	74	PK	1	26.1
3	0	2386.37275	H		49.75	54	AV	1	4.25
3	0	2370.34068	V		44.07	54	PK	1	9.93
3	0	2370.34068	H		57.39	74	PK	1	29.02
3	0	2370.34068	H		43.27	54	AV	1	10.73
4	0	4801.603	V		52.52	54	PK	1	1.48
4	0	4801.603	H		54.50	74	PK	1	31.91

4	0	4801.603	H		42.88	54	AV	1	11.12
4	0	7374.749	V		53.41	54	PK	1	0.59
4	0	7374.749	H		51.83	54	PK	1	2.17
5	0	11238.477	V		47.84	54	PK	1	6.16
5	0	11238.477	H		48.98	54	PK	1	5.02
6	0	17795.591	V		52.88	54	PK	1	1.12
6	0	17795.591	H		53.28	54	PK	1	0.72
1	39	196.934	V		24.84	86.41	PK	0.1	18.66
1	39	196.934	H		25.74	86.41	PK	0.1	17.76
2	39	419.639	V		30.59	86.41	PK	0.1	15.41
2	39	419.639	H		33.50	86.41	PK	0.1	12.5
2	39	719.439	V		32.82	46	PK	0.1	13.18
2	39	719.439	H		36.69	46	PK	0.1	9.31
3	39	1220.441	V		38.78	54	PK	1	15.22
3	39	1220.441	H		38.87	54	PK	1	15.13
4	39	4881.764	V		55.05	74	PK	1	31.36
4	39	4881.764	H		54.04	74	PK	1	32.37
4	39	4881.764	V		42.59	54	AV	1	11.41
4	39	4881.764	H		42.78	54	AV	1	11.22
4	39	7326.653	V		54.11	74	PK	1	32.3
4	39	7326.653	H		53.14	54	PK	1	0.86
4	39	7326.653	H		42.28	54	AV	1	11.72
5	39	9763.527	V		49.5	54	PK	1	4.5
5	39	9763.527	H		47.65	54	PK	1	6.35
6	39	17807.615	V		53.46	54	PK	1	0.54
6	39	17807.615	H		52.65	54	PK	1	1.35
1	78	188.758	V		23.13	86.41	PK	0.1	20.37
1	78	188.758	H		25.20	86.41	PK	0.1	18.3
2	78	430.862	V		31.33	86.41	PK	0.1	14.67
2	78	430.862	H		32.97	86.41	PK	0.1	13.03
3	78	2494.886	V		45.70	54	PK	1	8.3
3	78	2494.886	H		59.51	74	PK	1	14.49
3	78	2494.886	H		52.38	54	AV	1	1.62
3	78	2483.500	V		42.85	54	PK	1	11.15
3	78	2483.500	H		56.17	74	PK	1	30.24
3	78	2483.500	H		37.18	54	AV	1	16.82
4	78	4961.924	V		53.10	54	PK	1	0.9
4	78	4961.924	H		52.23	54	PK	1	1.77
5	78	11831.663	V		48.59	54	PK	1	5.41

5	78	11831.663	H		49.40	54	PK	1	4.6
5	78	9915.832	V		48.80	54	PK	1	5.2
5	78	9915.832	H		47.16	54	PK	1	6.84
6	78	17747.495	V		52.96	54	PK	1	1.04
6	78	17747.495	H		53.59	54	PK	1	0.41

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 012, ETSTW-RE 015, ETSTW-RE 016, ETSTW-RE 017, ETSTW-RE 024

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}= 3.7V DC	997.9959919 KHz	
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 003

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	V_{nom}= 3.7V DC	normal transmitting	79
T_{nom}= 23 °C	V_{nom}= 3.7V DC	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 003
Comment: see attached diagrams

3.8.1 Pseudorandom Frequency Hopping Sequence

The generation of the hopping sequence is determined by the Bluetooth 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}= 3.7V DC Channel B	normal transmitting		203.27 ms
	inquiry mode		6.33 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 003

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.

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
T_{nom}= 23 °C	V_{nom}= 3.7V DC	969.93987976 kHz	953.90781563 kHz	961.92384770 kHz
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 003

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.

Test conditions		Attenuation at or outside band-edges **Single Frequency**	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23 °C	V_{nom}= 3.7V DC	-44.70 dBm	-49.71 dBm
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}= 3.7V DC	48.52 dB	46.55 dB
Measurement uncertainty		< 100 Hz	

Limits:

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

Test equipment used: ETSTW-CE 003 , ETSTW-RE 003
Comment: see attached diagrams

3.12 Radiated Emissions from Receiver Section of Transceiver

FCC Rule: 15.109

(RX) Summary table with radiated data of the test plots

Freq,	Used Ch,	Frequency Marker [MHz]	Polari-zation	corrections dB	Corrected Reading [dBuV/m]	Compliance Limit [dBuV/m]	Detec-tor	BW [MHz]	Margin
1	0	55.89178	V		16.32	40	PK	0.1	23.68
1	0	55.89178	H		18.93	40	PK	0.1	21.07
2	0	430.86172	V		31.96	46	PK	0.1	14.04
2	0	430.86172	H		30.49	46	PK	0.1	15.51
3	0	1733.4669	V		31.93	54	PK	1	22.07
3	0	1733.4669	H		38.56	54	PK	1	47.85
4	0	6140.2806	V		43.19	54	PK	1	10.81
4	0	6140.2806	H		45.29	54	PK	1	41.12
5	0	11559.118	V		52.27	54	PK	1	1.73
5	0	11559.118	H		52.54	54	PK	1	33.87
6	0	17807.615	V		53.13	54	PK	1	0.87
6	0	17807.615	H		53.71	54	PK	1	0.29
1	39	198.637	V		24.23	43.5	PK	0.1	19.27
1	39	198.637	H		25.87	43.5	PK	0.1	17.63
2	39	419.639	V		27.76	46	PK	0.1	18.24
2	39	419.639	H		31.92	46	PK	0.1	14.08
3	39	1763.527	V		32.86	54	PK	1	21.14
3	39	1763.527	H		31.99	54	PK	1	22.01
4	39	7671.343	V		46.78	54	PK	1	7.22
4	39	7671.343	H		45.49	54	PK	1	8.51
5	39	11014.028	V		52.18	54	PK	1	1.82
5	39	11014.028	H		50.96	54	PK	1	3.04
6	39	14981.964	V		51.86	54	PK	1	2.14
6	39	14981.964	H		51.53	54	PK	1	2.47
1	78	193.186	V		23.89	43.5	PK	0.1	19.61
1	78	193.186	H		25.18	43.5	PK	0.1	18.32
2	78	419.639	V		29.34	46	PK	0.1	16.66
2	78	419.639	H		31.44	46	PK	0.1	14.56
3	78	1234.469	V		27.65	54	PK	1	26.35
3	78	1234.469	H		35.89	54	PK	1	18.11
3	78	2478.958	V		34.33	54	PK	1	19.67
3	78	2478.958	H		37.30	54	PK	1	16.7

4	78	7639.279	V		46.08	54	PK	1	7.92
4	78	7639.279	H		47.15	54	PK	1	6.85
5	78	8849.699	V		47.92	54	PK	1	6.08
5	78	8849.699	H		49.57	54	PK	1	4.43
6	78	17915.832	V		52.85	54	PK	1	1.15
6	78	17915.832	H		53.53	54	PK	1	0.47

Digital

Freq,	Used Ch,	Frequency Marker [MHz]	Polari-zation	corrections dB	Corrected Reading [dBuV/m]	Compliance Limit [dBuV/m]	Detec-tor	BW [MHz]	Margin
1		41.242485	V		26.04	40	PK	0.1	13.96
1		41.242485	H		26.55	40	PK	0.1	13.45
1		97.114228	V		30.58	43.5	PK	0.1	12.92
1		97.114228	H		27.53	43.5	PK	0.1	15.97
1		139.35872	V		24.49	43.5	PK	0.1	19.01
1		139.35872	H		29.12	43.5	PK	0.1	14.38
1		199.31864	V		31.04	43.5	PK	0.1	12.46
1		199.31864	H		29.43	43.5	PK	0.1	14.07
2		209.61924	V		28.15	43.5	PK	0.1	15.35
2		209.61924	H		27.83	46	PK	0.1	18.17
2		279.559	V		36.36	46	PK	0.1	9.64
2		279.559	H		36.57	46	PK	0.1	9.43
2		442.084	V		33.94	46	PK	0.1	12.06
2		442.084	H		35.16	46	PK	0.1	10.84
2		458.116	V		33.69	46	PK	0.1	12.31
2		458.116	H		36.54	46	PK	0.1	9.46

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 015, ETSTW-RE 016, ETSTW-RE 017, ETSTW-RE 027 ETSTW-RE 026, ETSTW-RE 003, ETSTW-RE 025
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

Measurement Result: "_ Fin AV"

Frequency Marker [MHz]	Level (N) dBµV	Transd dB	Limit dBµV	Margin dB
0.21	38.07	10.1	53	14.93
0.5	29.98	10.1	46	16.02
3.46	20.99	10.1	46	25.01
4.55	31.60	10.1	46	14.40
8.485	14.14	10.1	50	35.86
27.48	22.37	10.1	50	27.63

Frequency (MHz)	Level (L1) dBµV	Transd dB	Limit dBµV	Frequency (MHz)
0.21	37.89	10.1	53	15.11
0.5	26.68	10.1	46	19.32
3.46	26.05	10.1	46	19.95
4.55	24.88	10.1	46	21.12
8.485	12.73	10.1	50	37.27
27.48	7.55	10.1	50	42.45

Registration number: W6M20511-6309-P-15
FCC ID: LW5-MLPN5500

Measurement Result: "_ Fin QP"

Frequency (MHz)	Level (N) dBµV	Transd dB	Limit dBµV	Frequency (MHz)
0.21	50.52	10.1	64	13.48
0.5	32.56	10.1	56	23.44
3.46	32.36	10.1	56	23.64
4.55	33.32	10.1	56	42.91
8.485	26.35	10.1	60	26.46
27.48	27.69	10.1	60	36.81

Frequency (MHz)	Level (L1) dBµV	Transd dB	Limit dBµV	Frequency (MHz)
0.21	48.41	10.1	64	15.59
0.5	32.44	10.1	56	23.56
3.46	30.10	10.1	56	25.9
4.55	34.46	10.1	56	21.54
8.485	22.26	10.1	60	37.74
27.48	22.26	10.1	60	29.51

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 is not required if the sample is using a battery.

Test equipment used: ETSTW-CE 004, ETSTW-CE 001, ETSTW-RE 023

Comment: see attached diagram

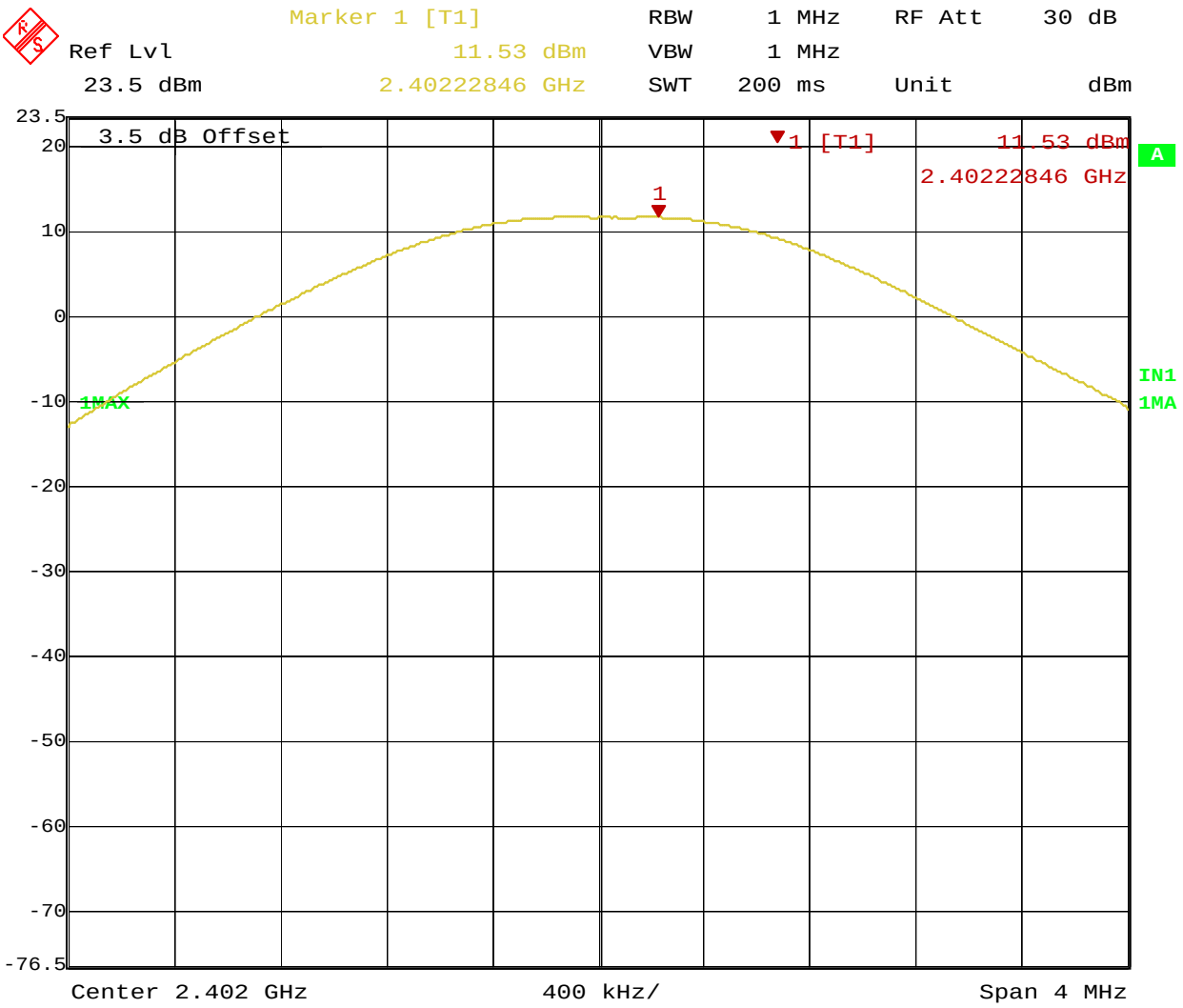
Registration number: W6M20511-6309-P-15
FCC ID: LW5-MLPN5500

Appendix

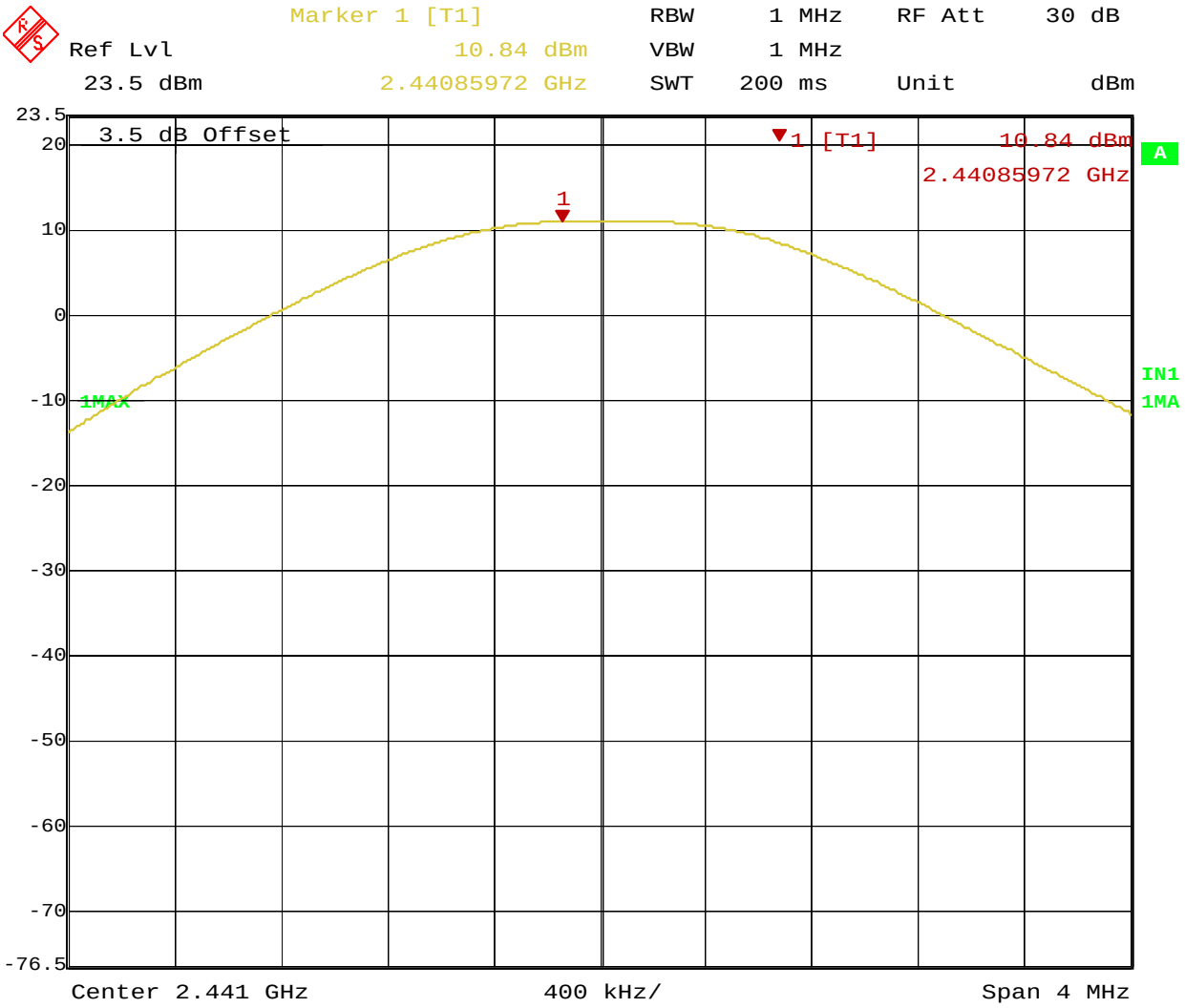
A Peak Output Power
B Spurious Emissions radiated - Transmitter operating
C Carrier Frequency Separation
D Number of Hopping Frequencies
E Time of Occupancy (Dwell Time)
F 20dB Bandwidth
G Band-edge Compliance of RF Conducted Emissions
H Radiated Emissions from Receiver Section of Transceiver
I Power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

Appendix A

Peak Output Power



Title: MAX OUTPUT POWER CH0
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 11:02:44



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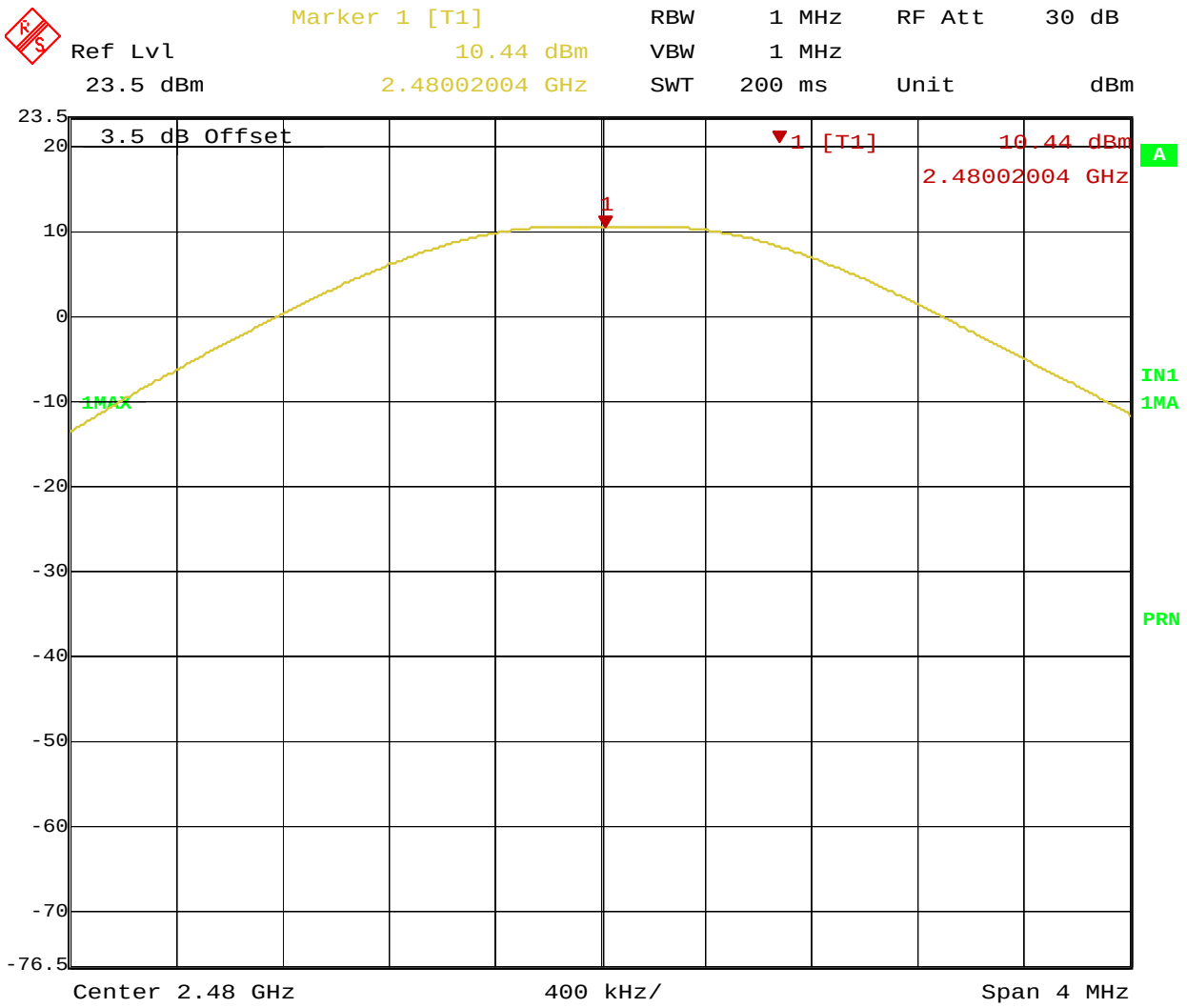
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 11:02:07

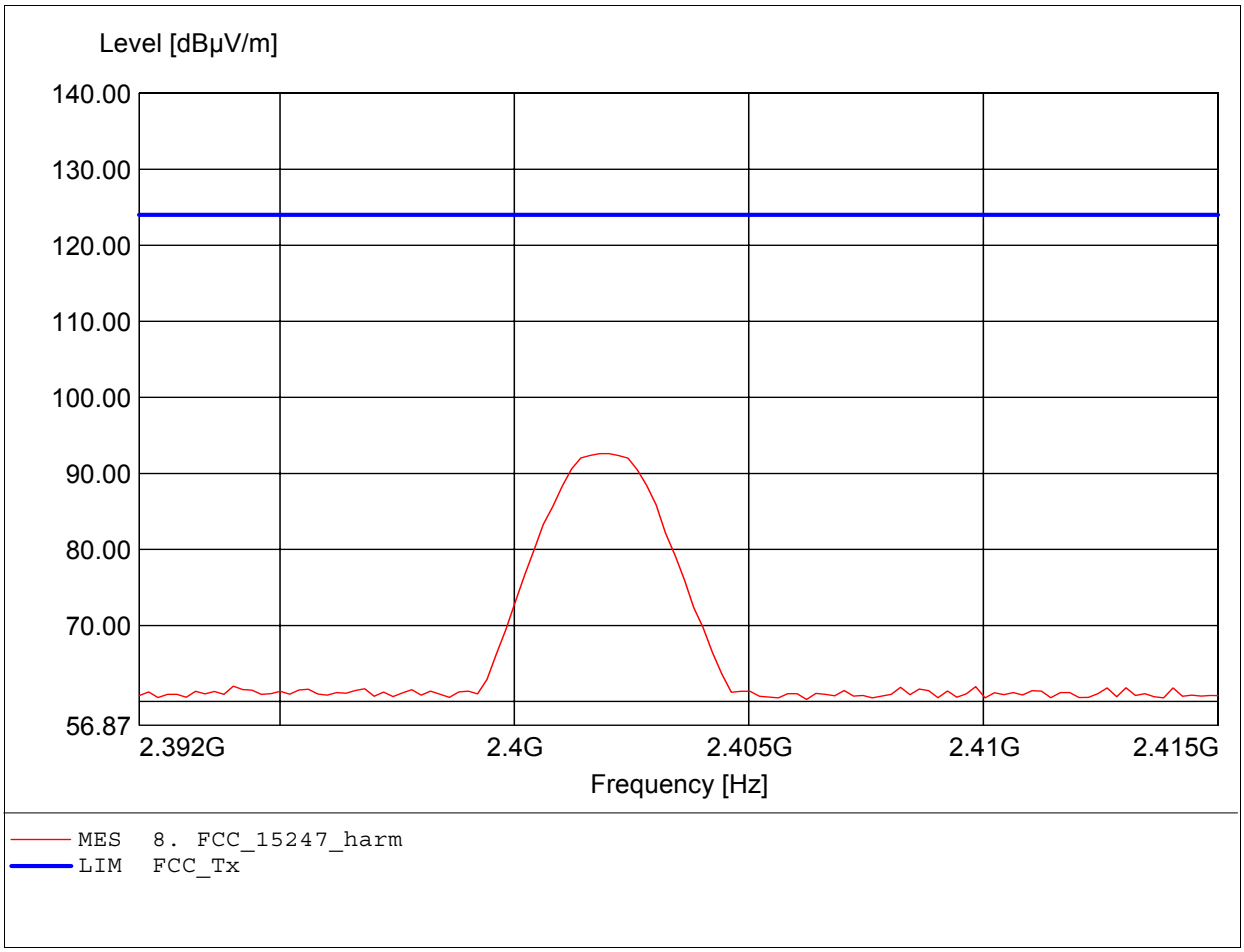


Title: MAX OUTPUT POWER CH78
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 10:44:59

Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

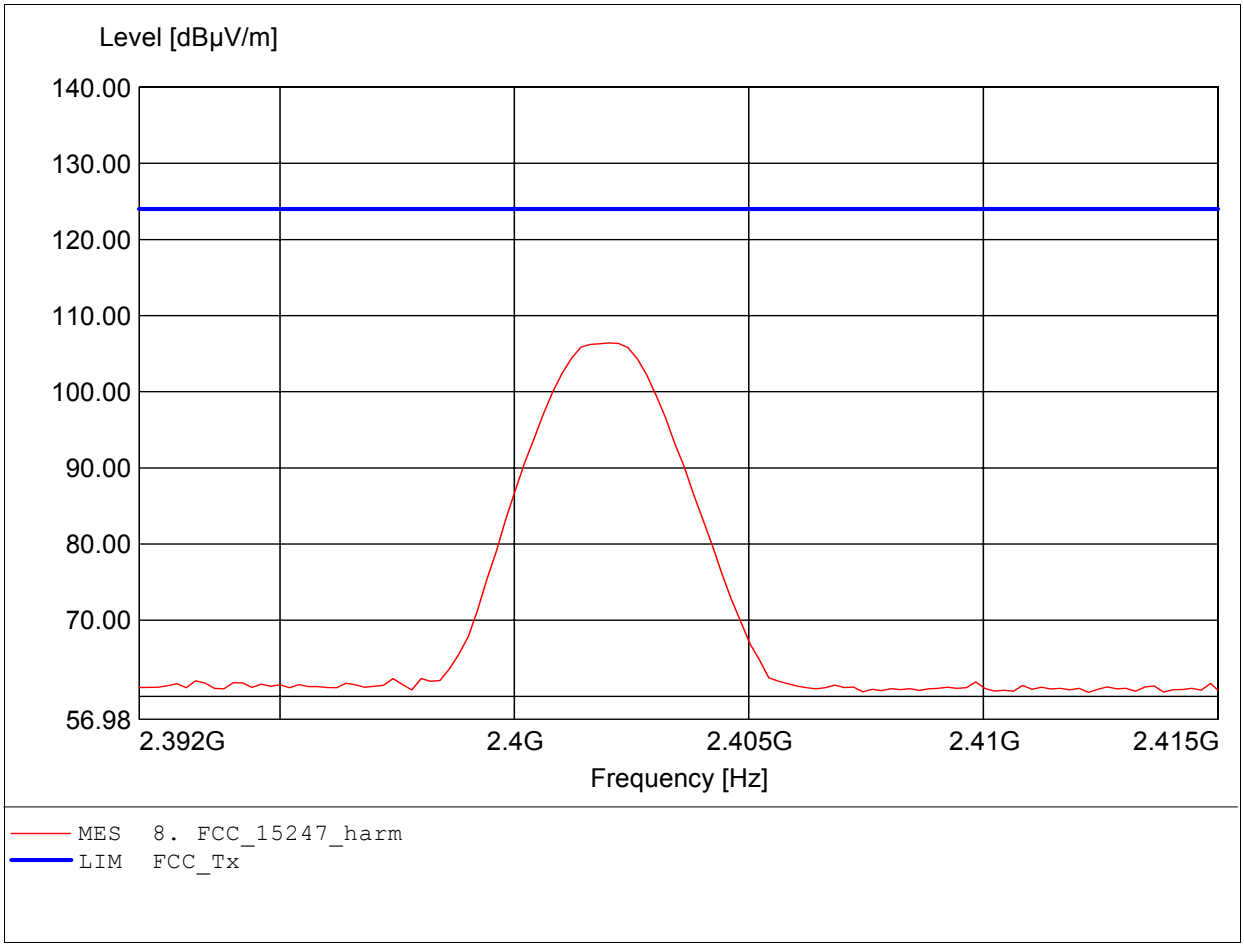
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.402GHz, Emax: 92.61dBµV/m, RBW: 1MHz



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

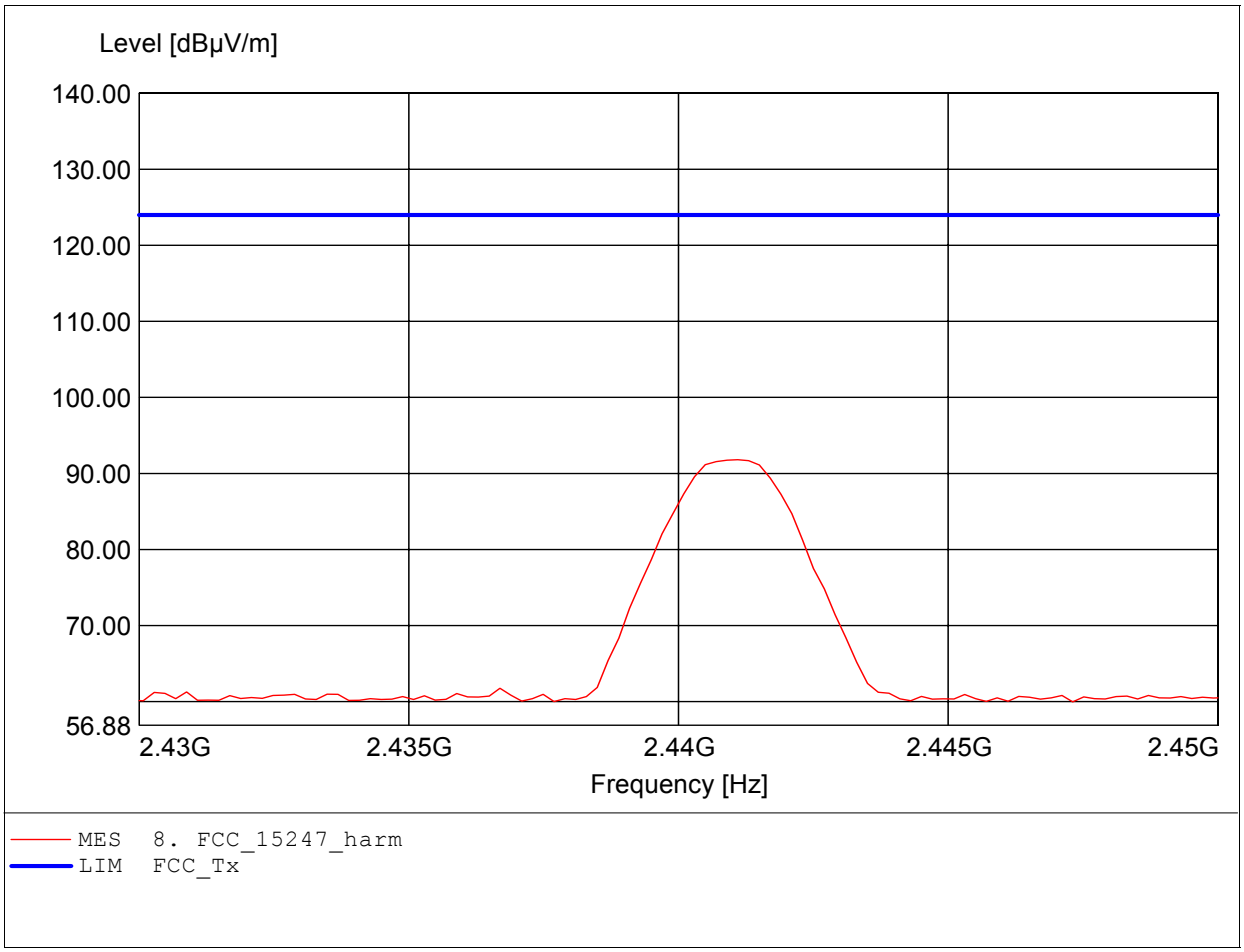
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.402GHz, Emax: 106.41dBµV/m, RBW: 1MHz



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

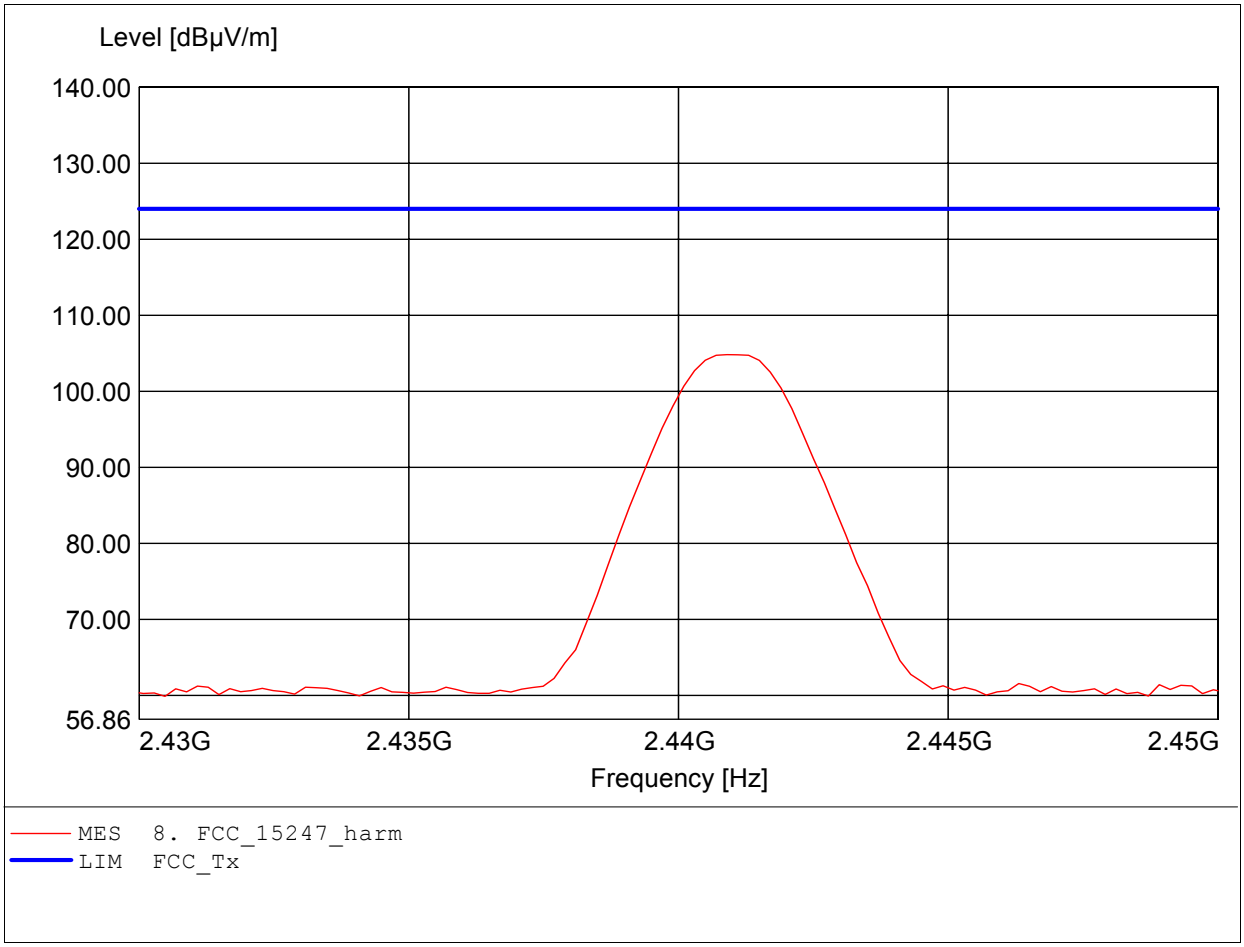
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.441GHz, Emax: 91.80dBµV/m, RBW: 1MHz



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

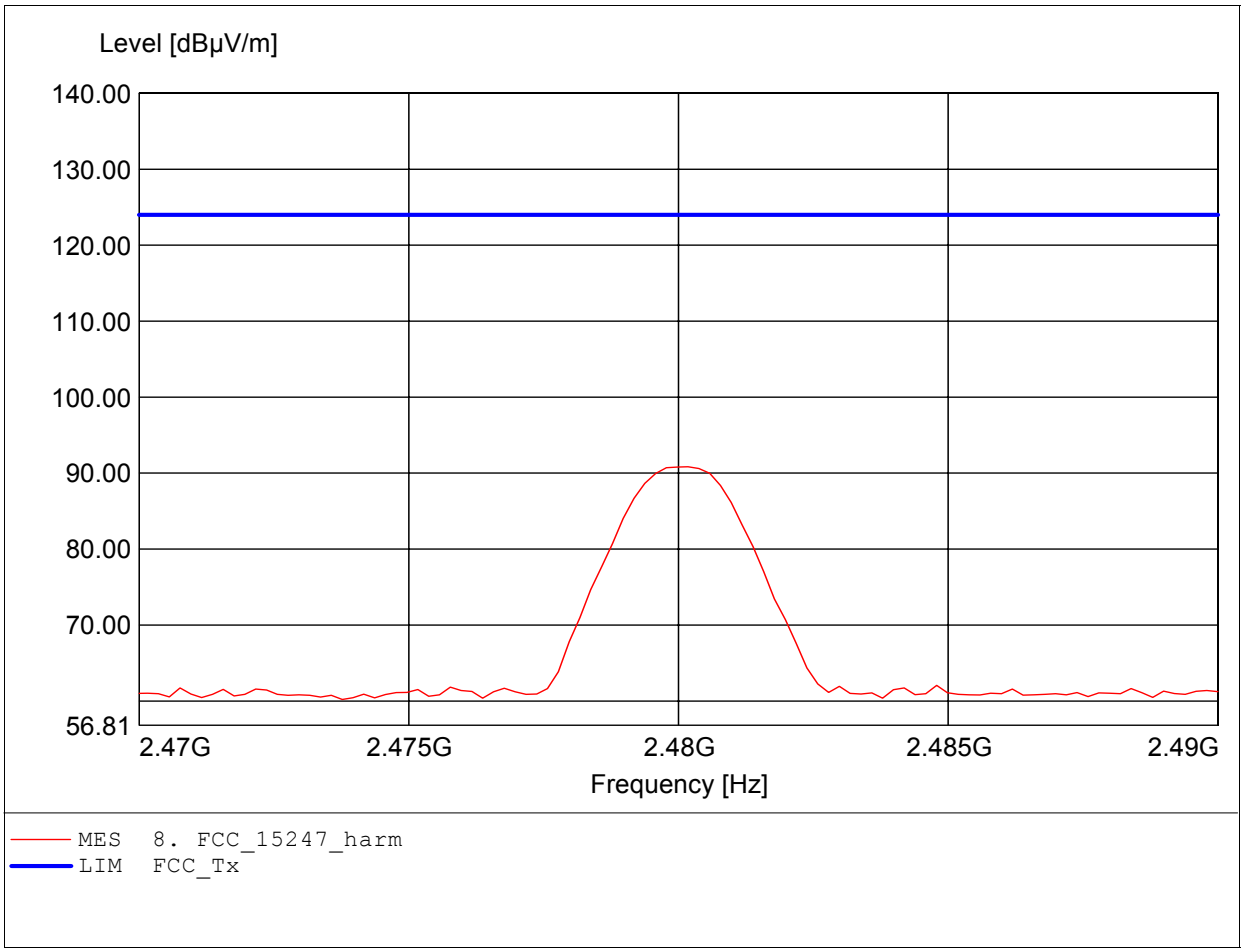
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.441GHz, Emax: 104.83dBµV/m, RBW: 1MHz



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

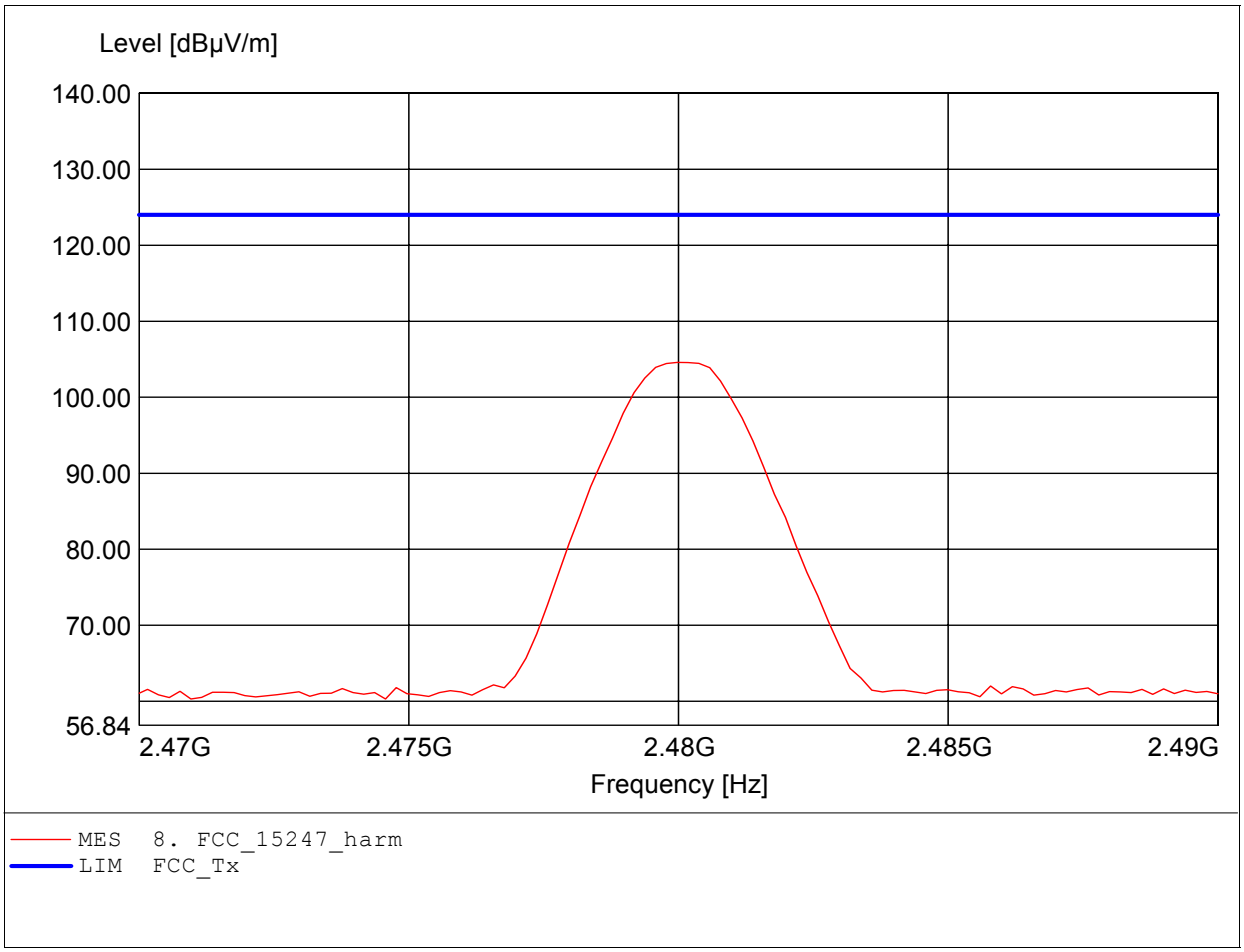
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.480GHz, Emax: 90.83dBµV/m, RBW: 1MHz



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL025
	Freq: 2.480GHz, Emax: 104.59dBµV/m, RBW: 1MHz



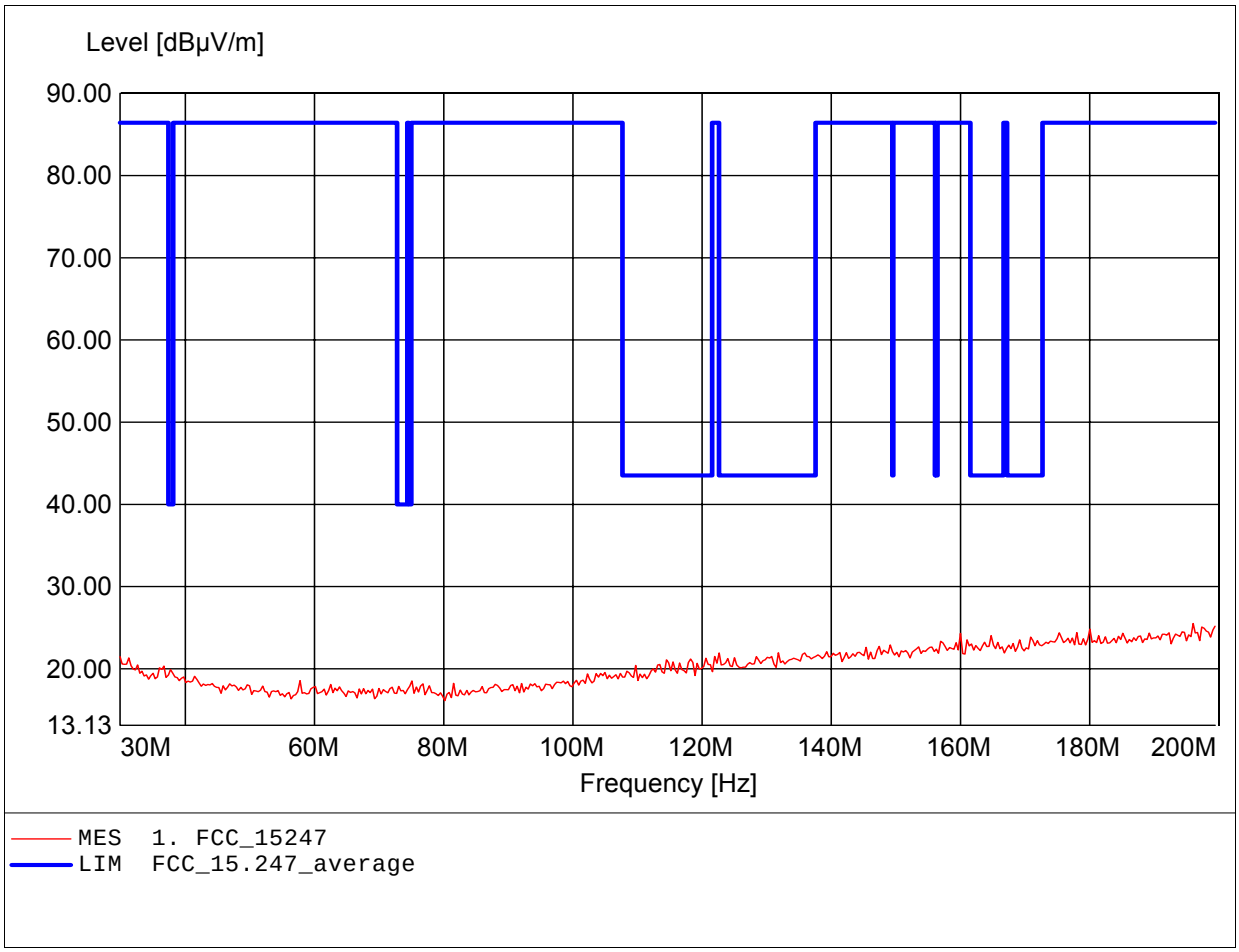
Appendix B

Spurious Emissions radiated – Transmitter operating

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

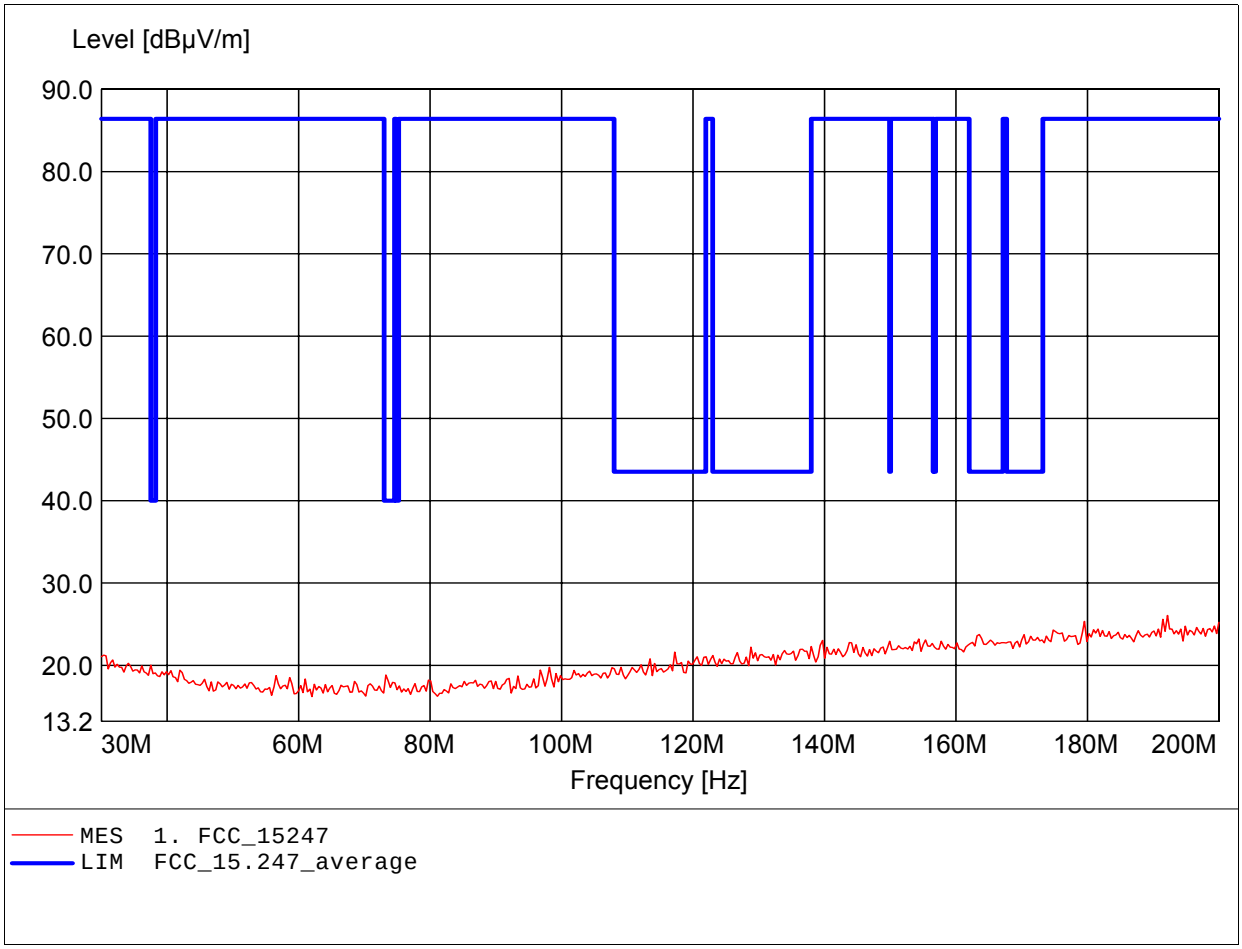
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 196.593MHz, Emax: 25.50dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

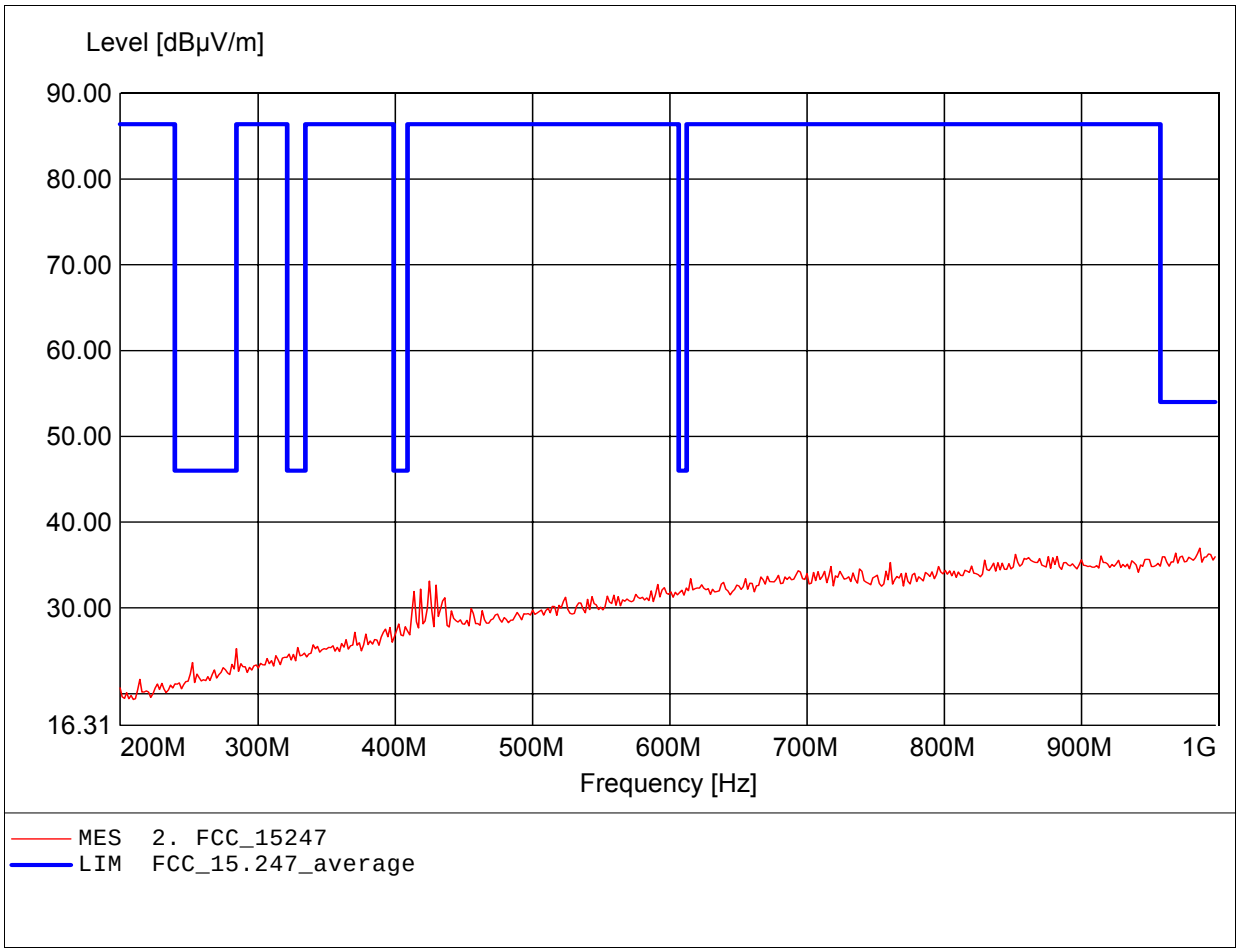
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 192.164MHz, Emax: 26.06dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

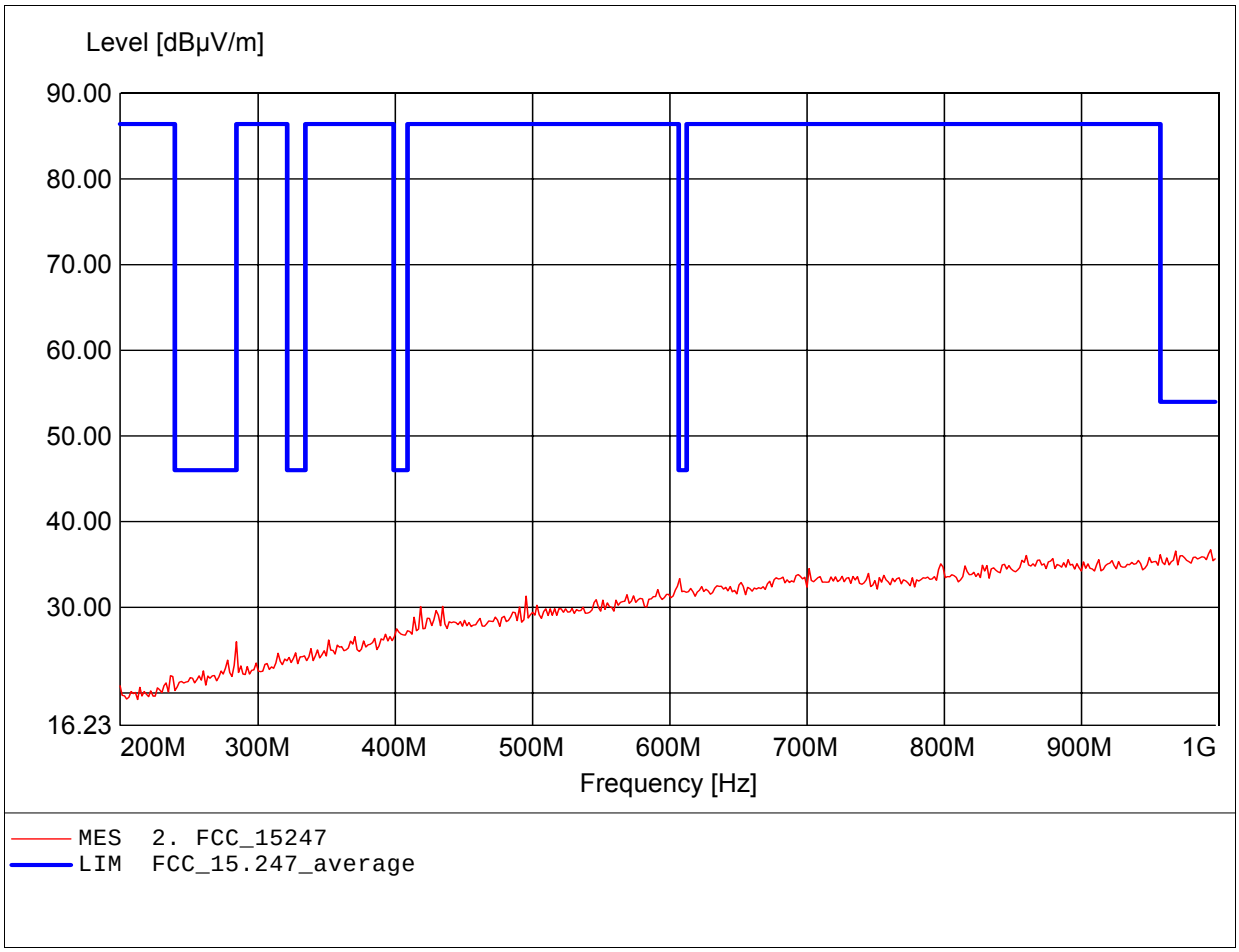
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 988.778MHz, Emax: 36.98dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

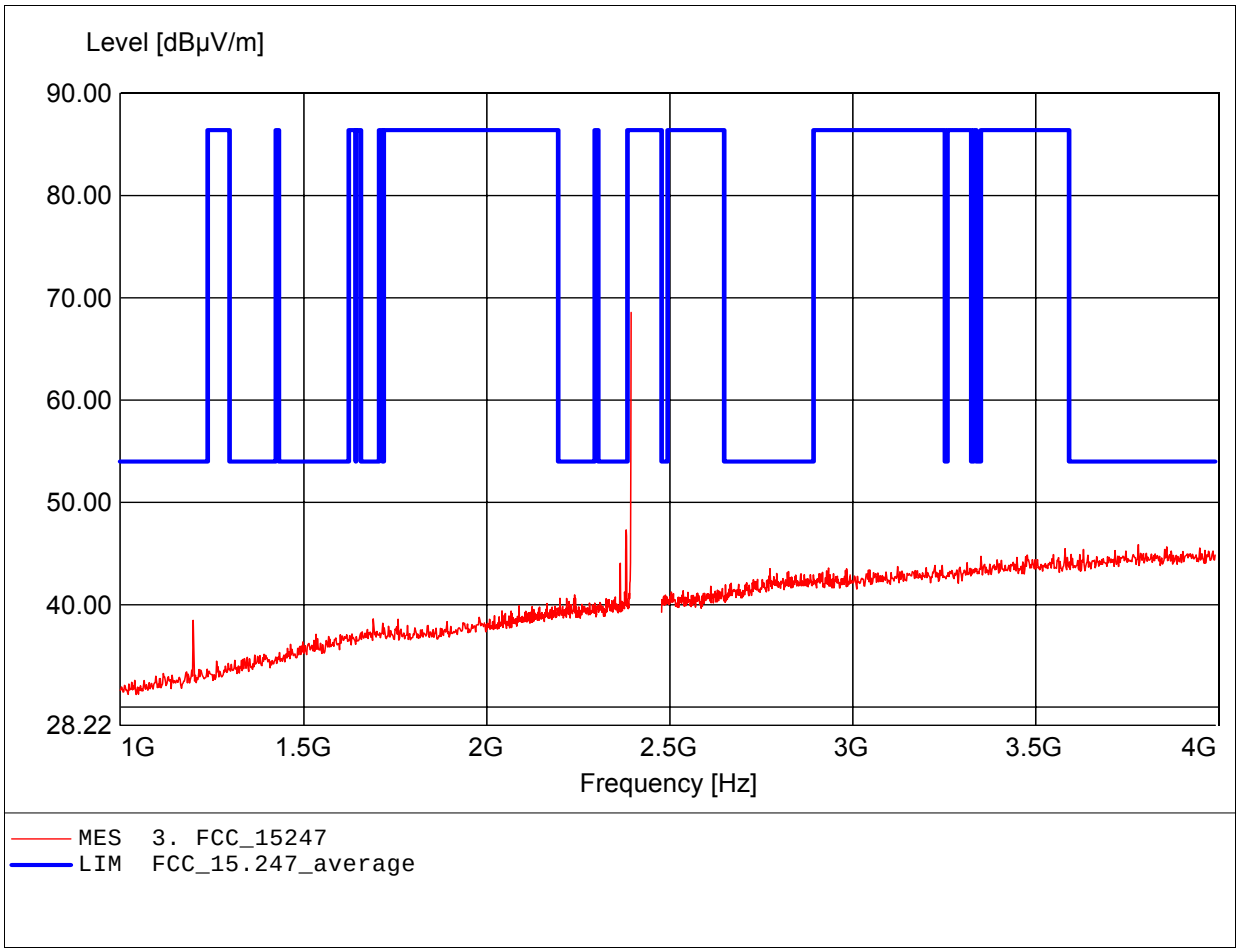
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 996.794MHz, Emax: 36.74dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

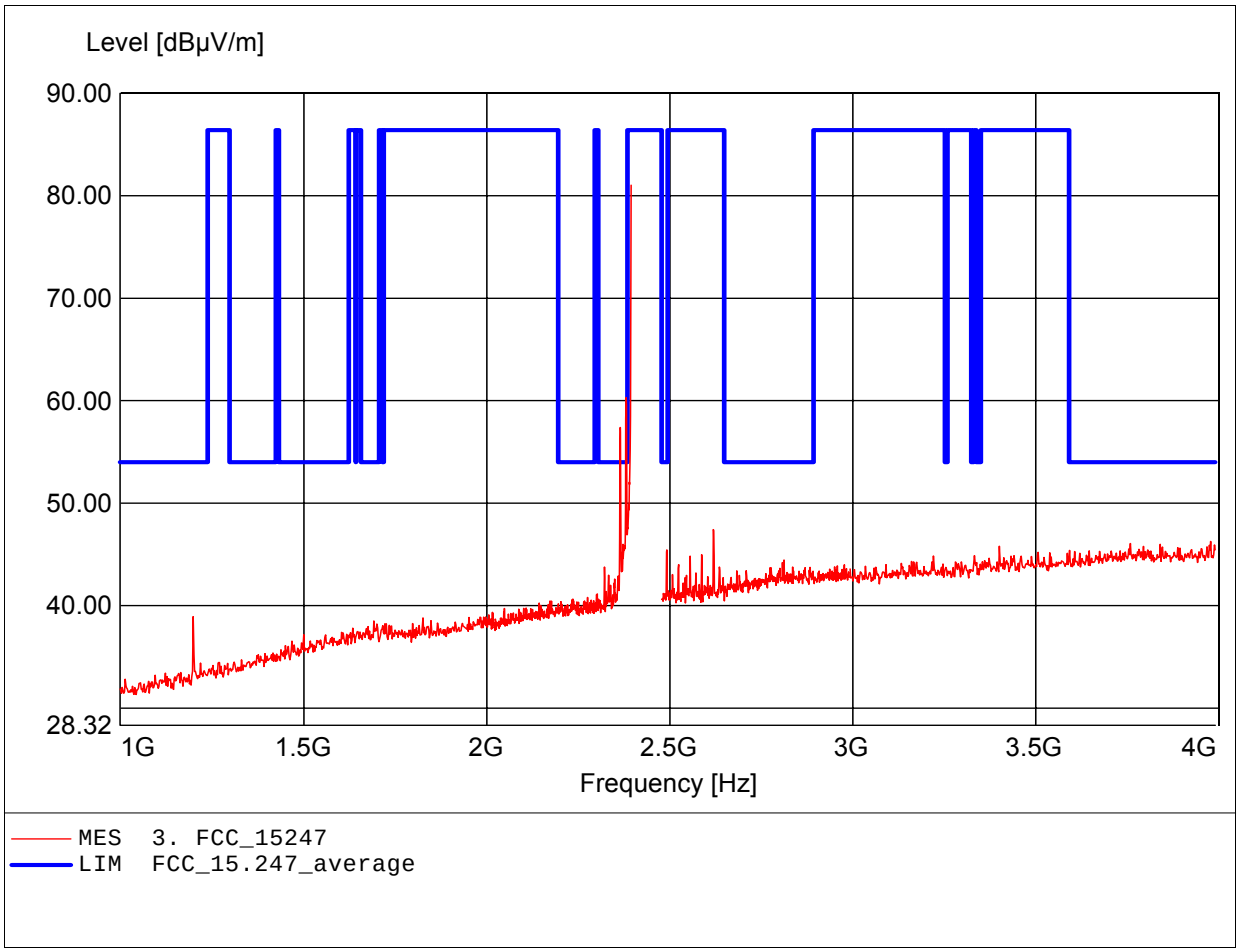
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 2.400GHz, Emax: 68.58dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

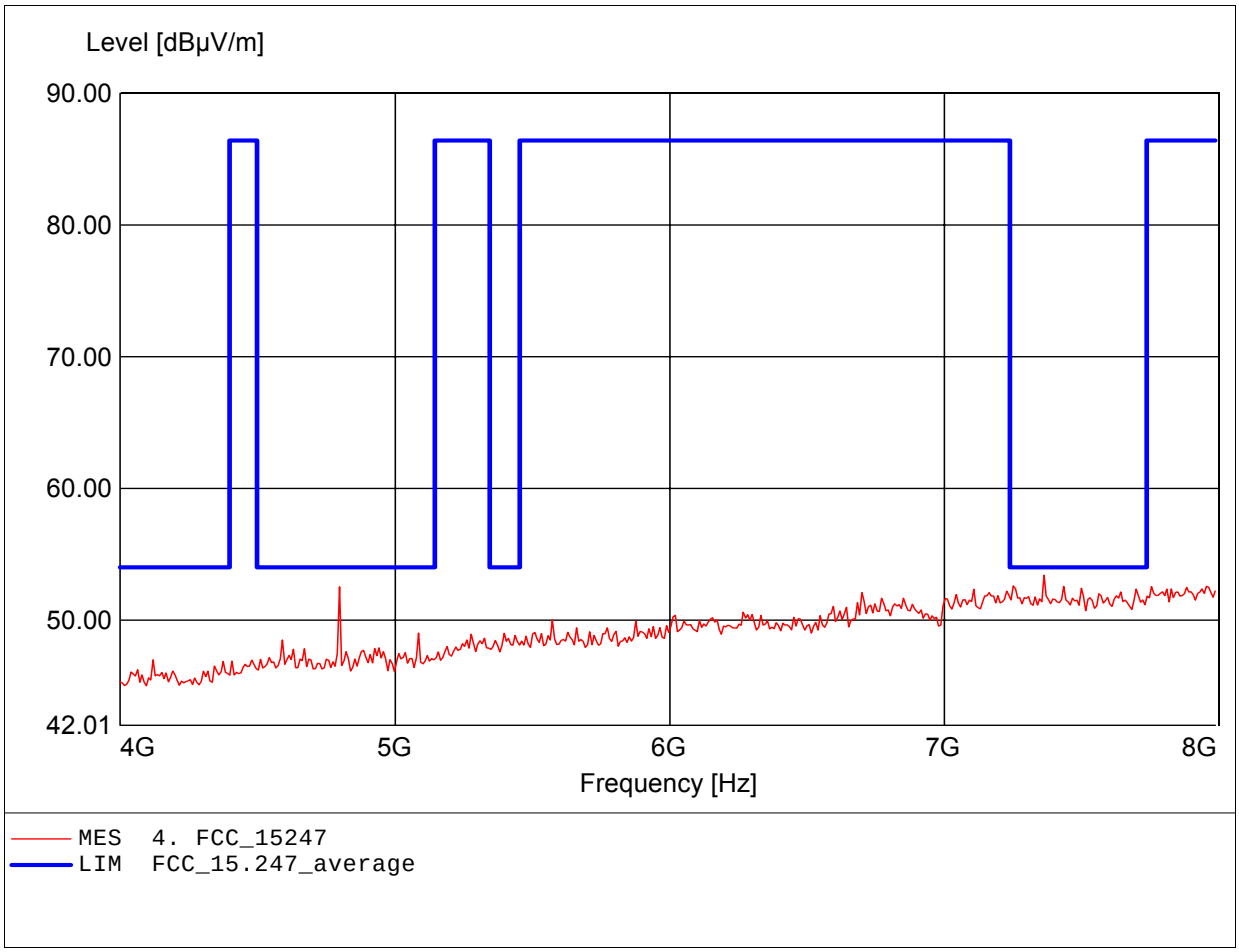
EUT:	Data Collector
MODEL NO.:	SP5500 Low Ch annel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 2.400GHz, Emax: 81.03dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

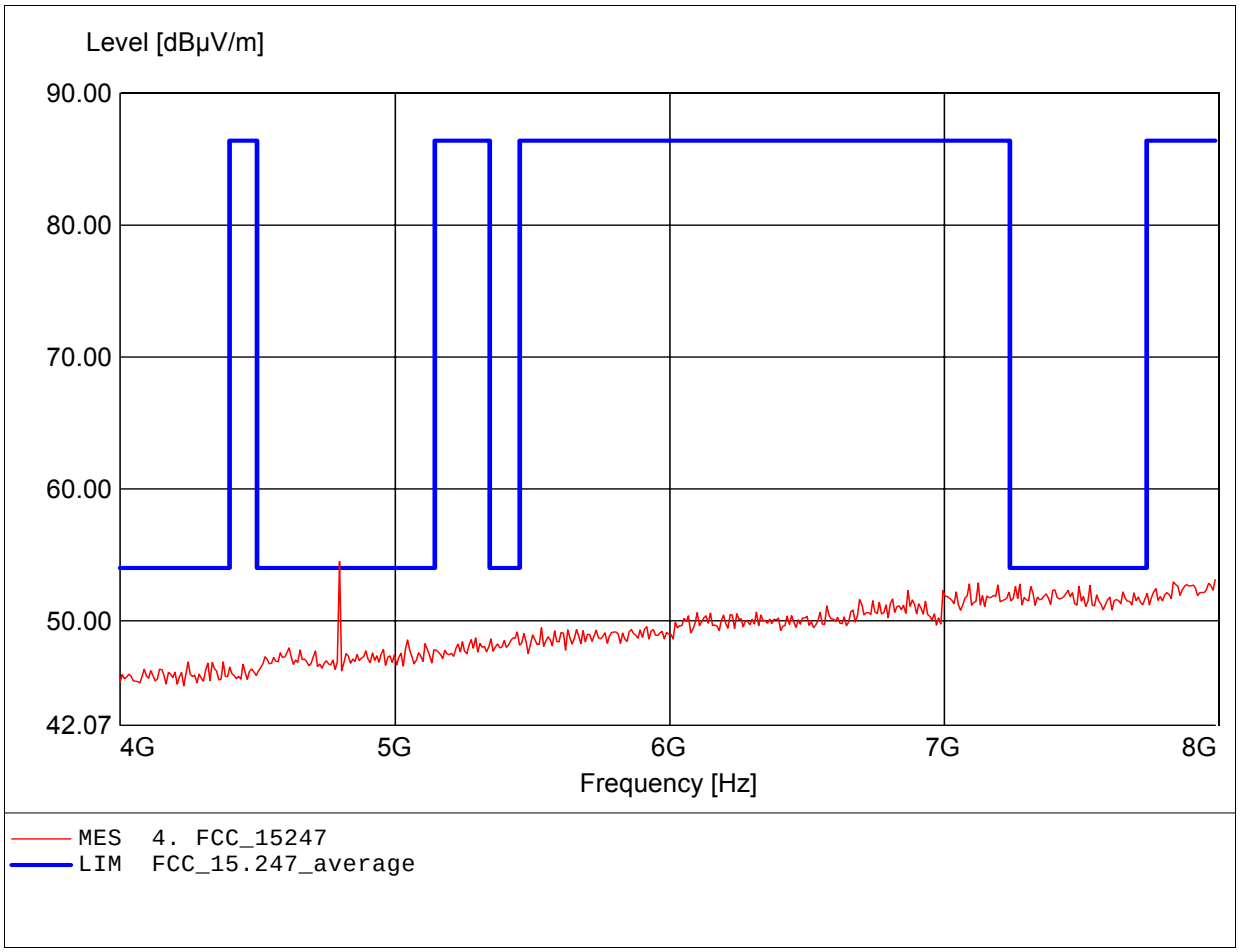
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 7.375GHz, Emax: 53.41dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

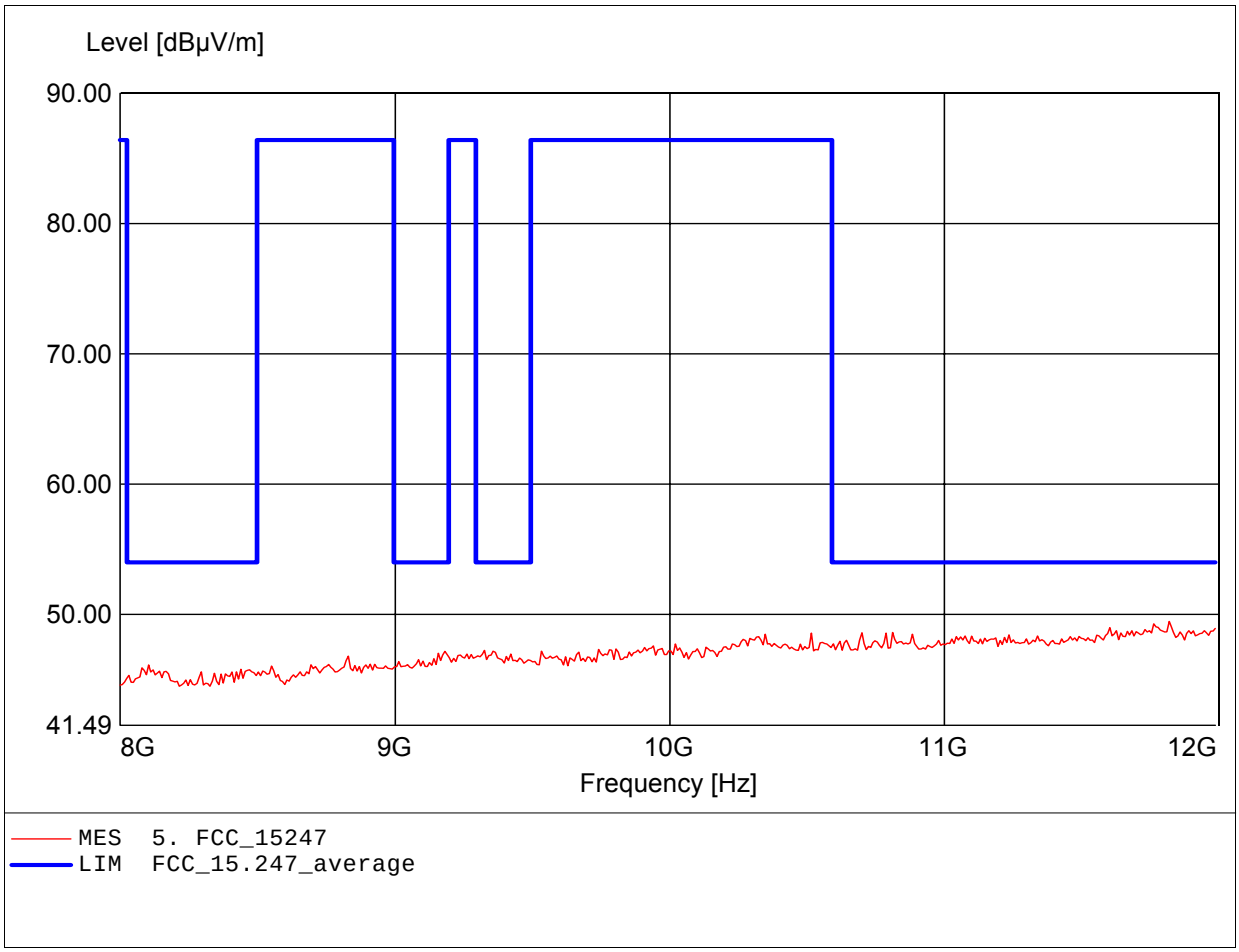
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 4.802GHz, Emax: 54.50dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

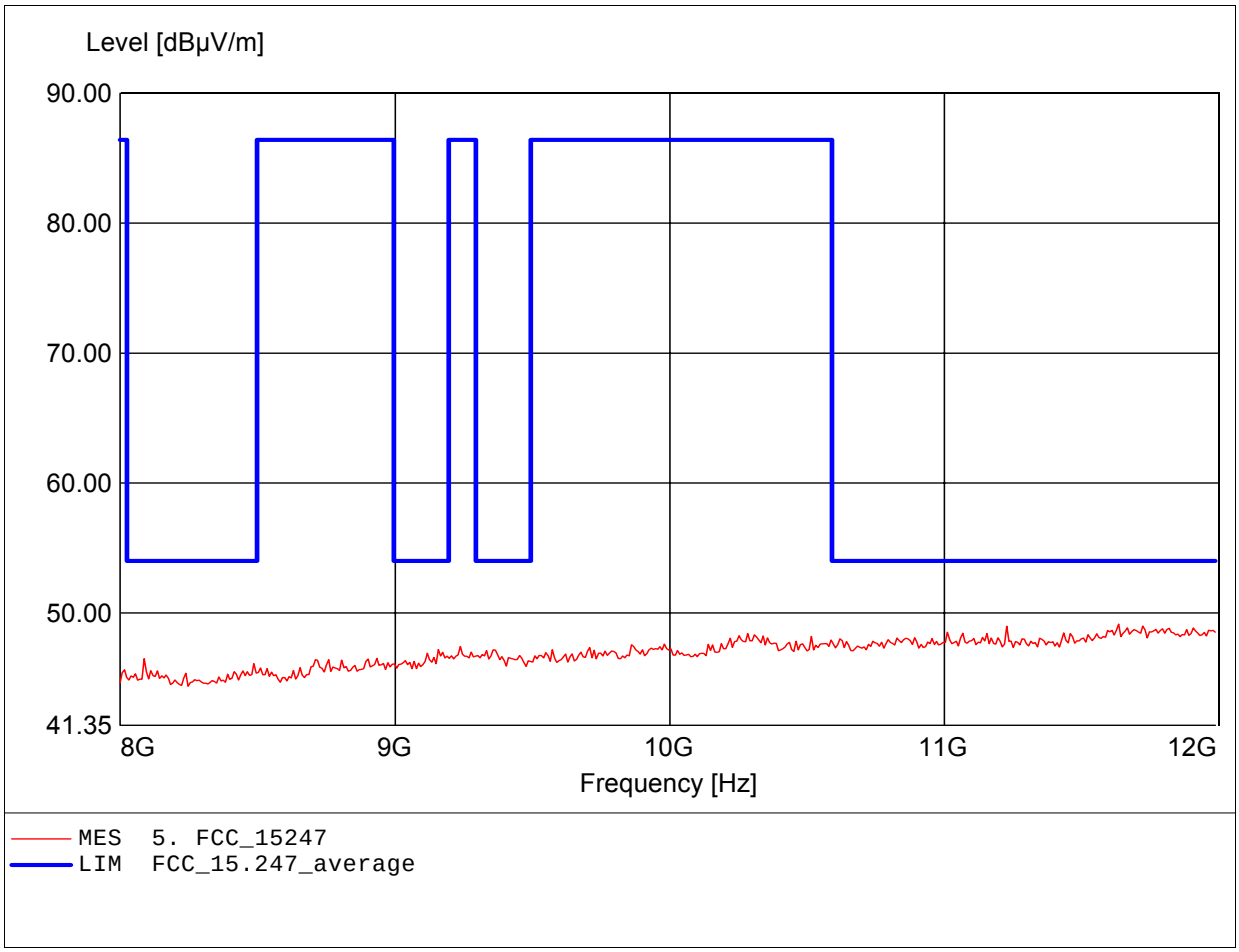
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 11.832GHz, Emax: 49.47dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

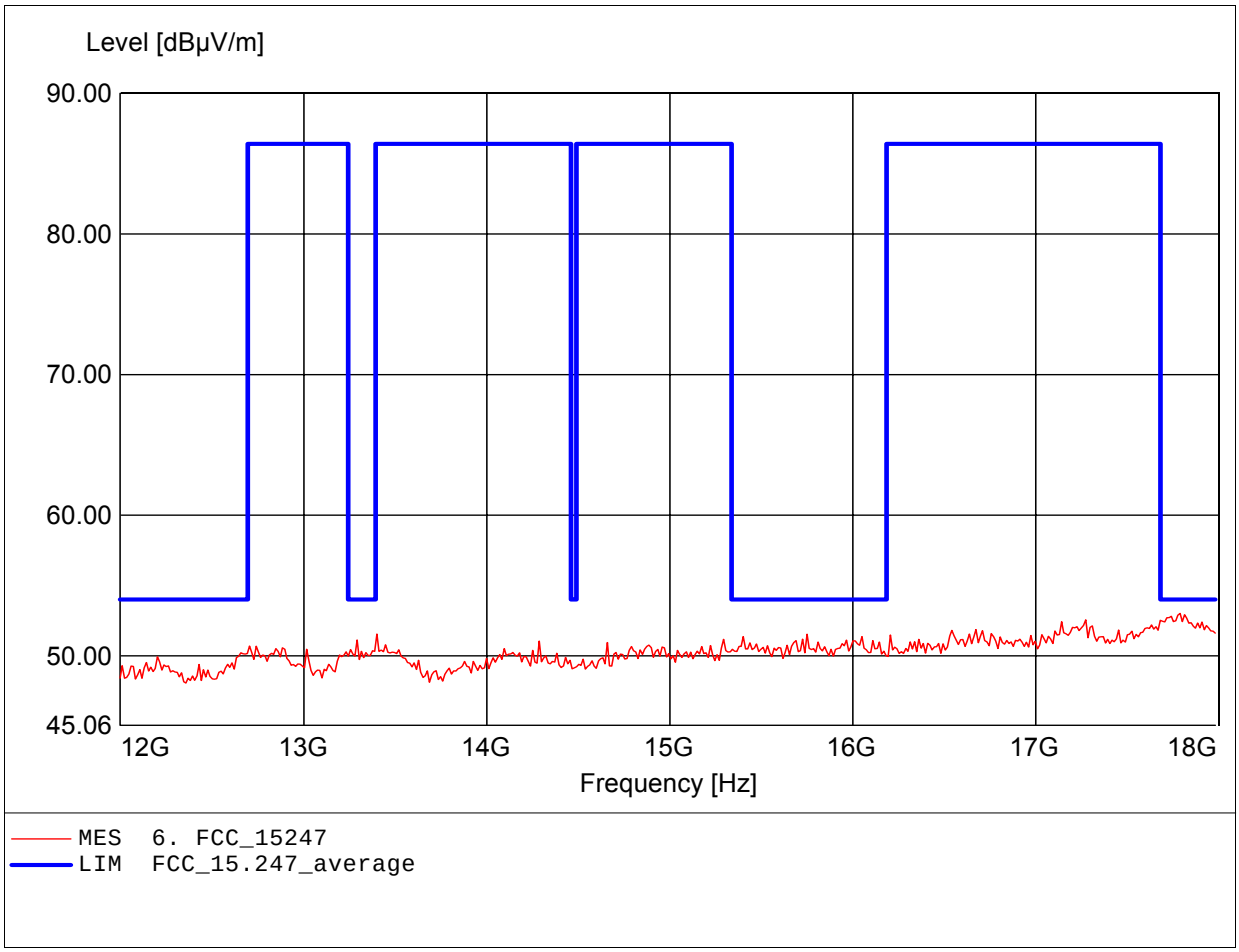
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 11.647GHz, Emax: 49.14dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

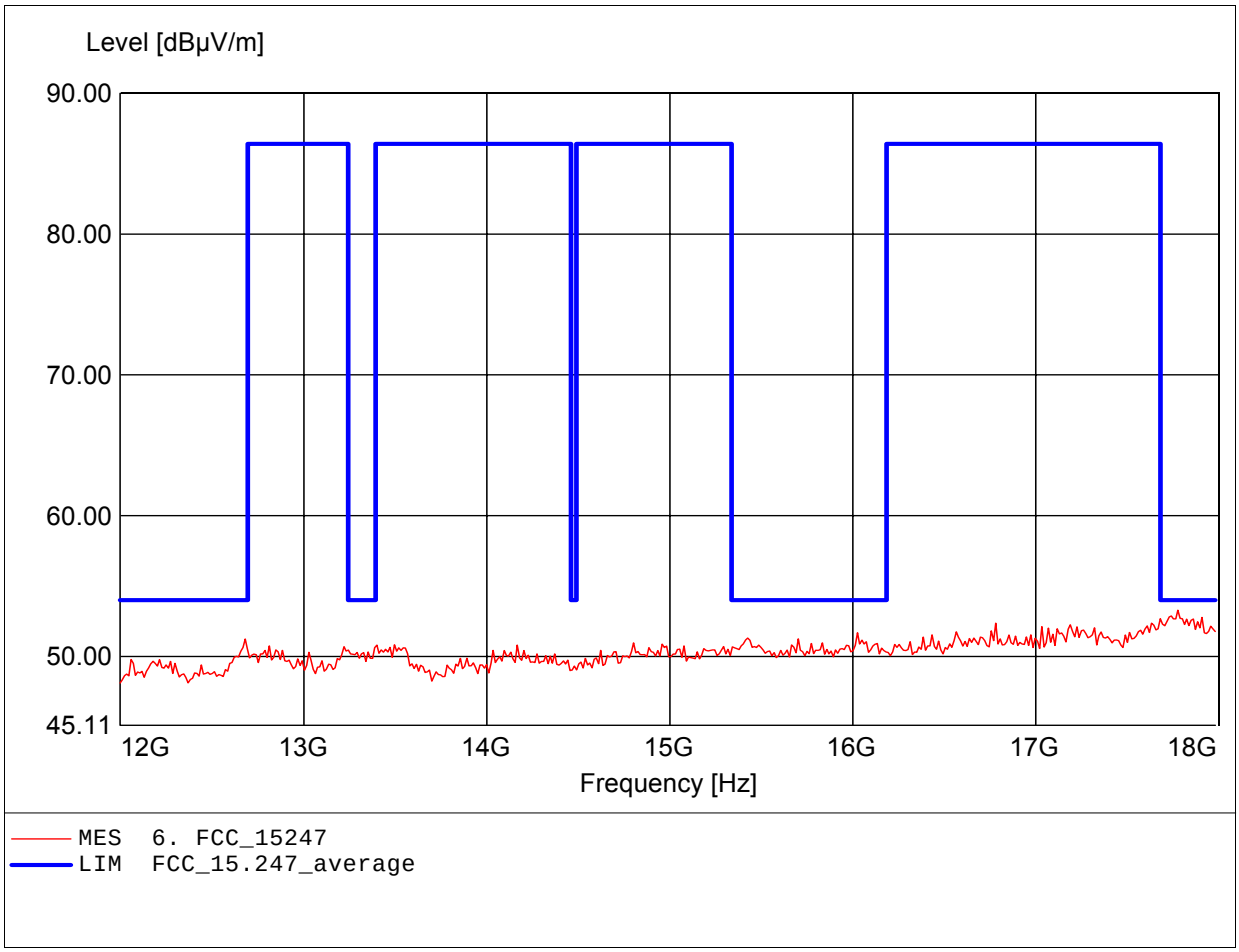
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 17.808GHz, Emax: 53.01dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

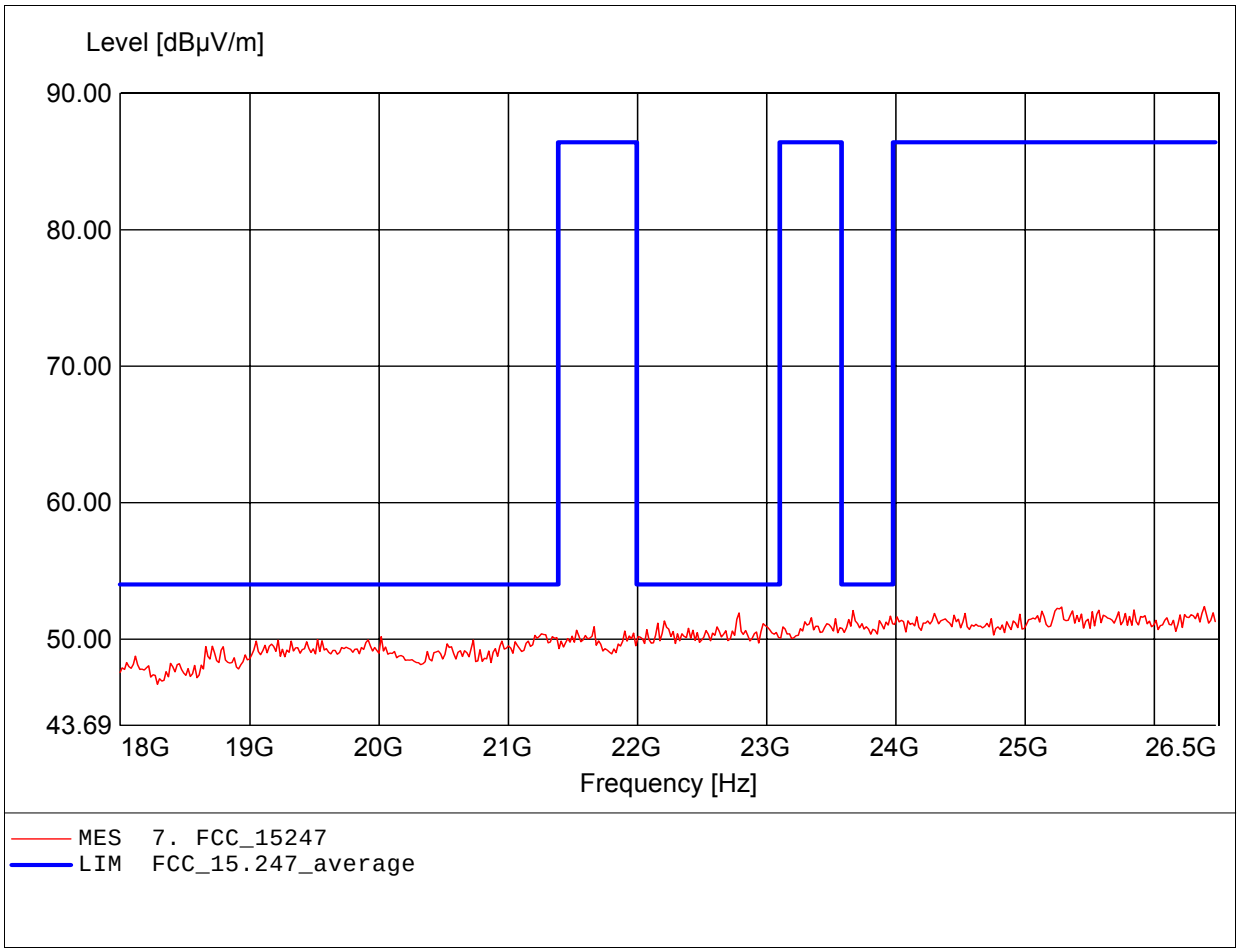
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 17.796GHz, Emax: 53.28dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

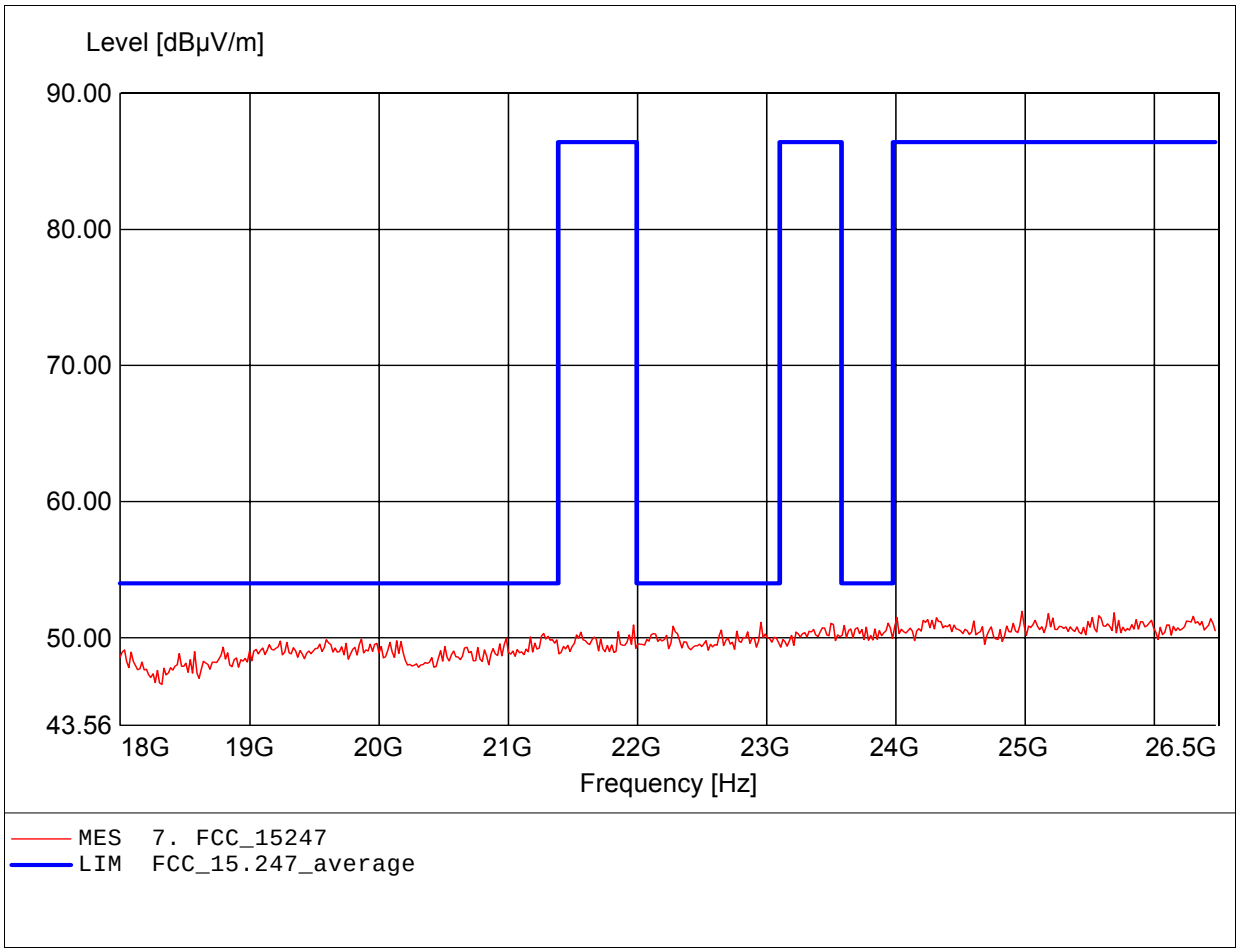
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 26.415GHz, Emax: 52.39dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

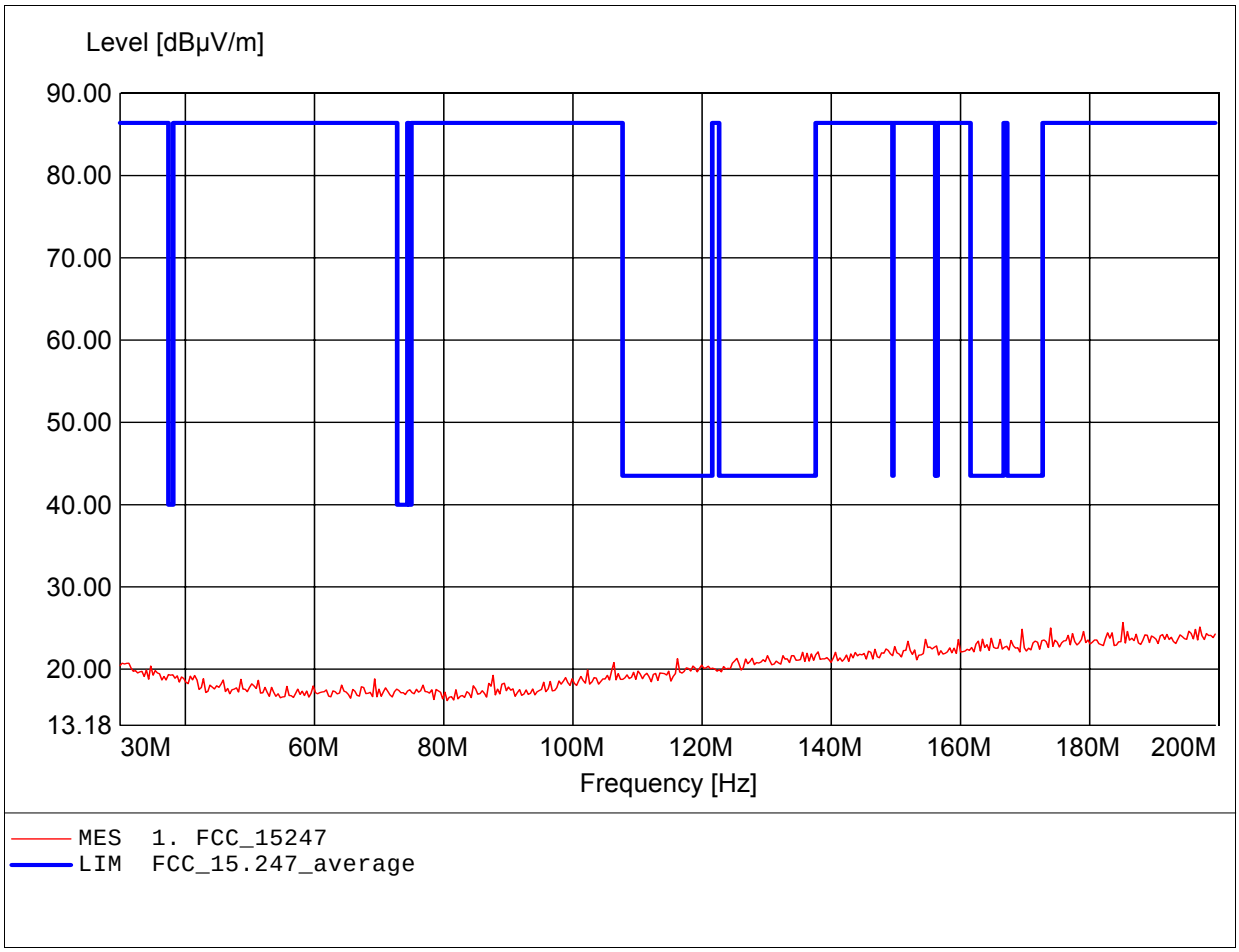
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.001GHz, Emax: 51.93dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

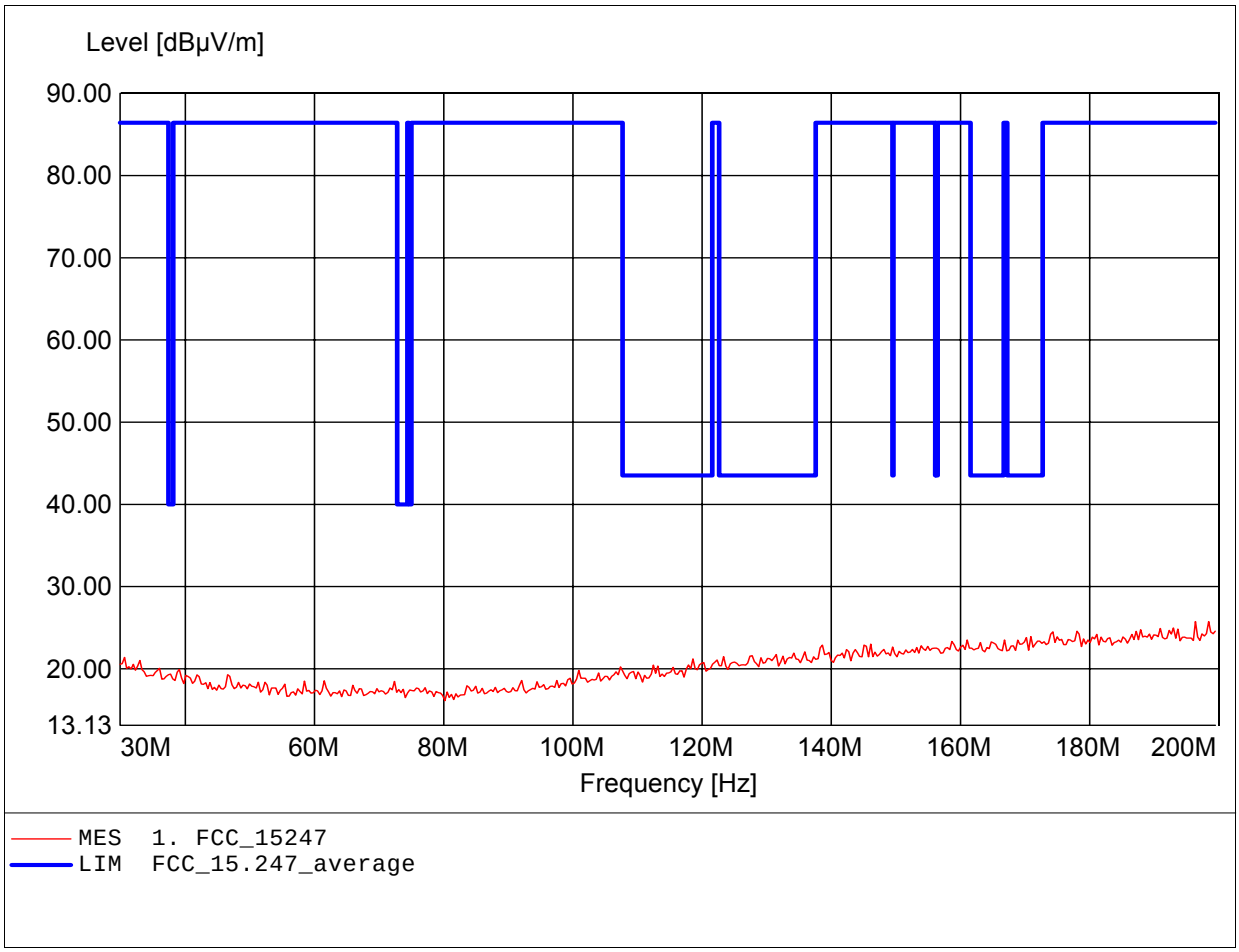
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 185.691MHz, Emax: 25.68dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

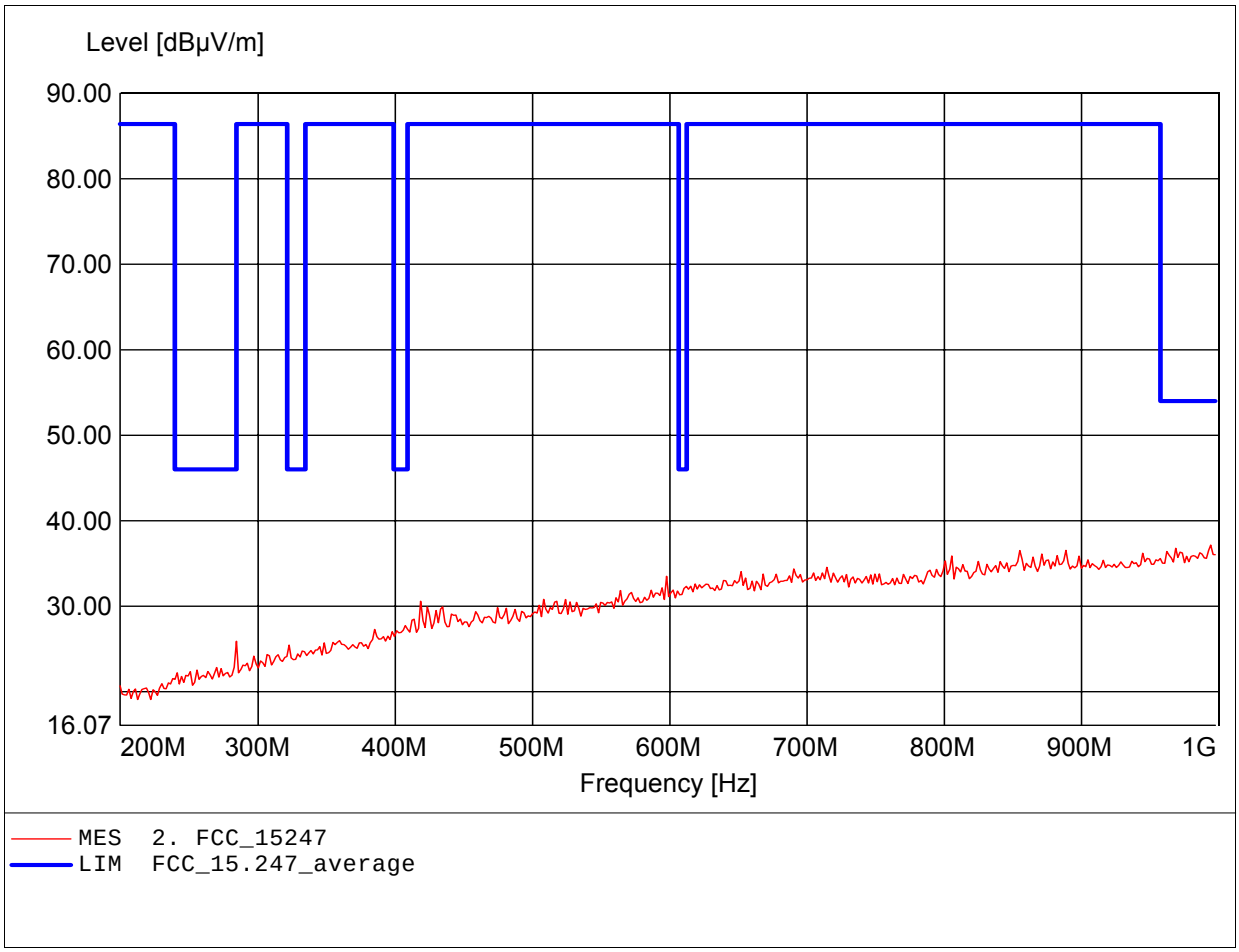
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 196.934MHz, Emax: 25.74dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

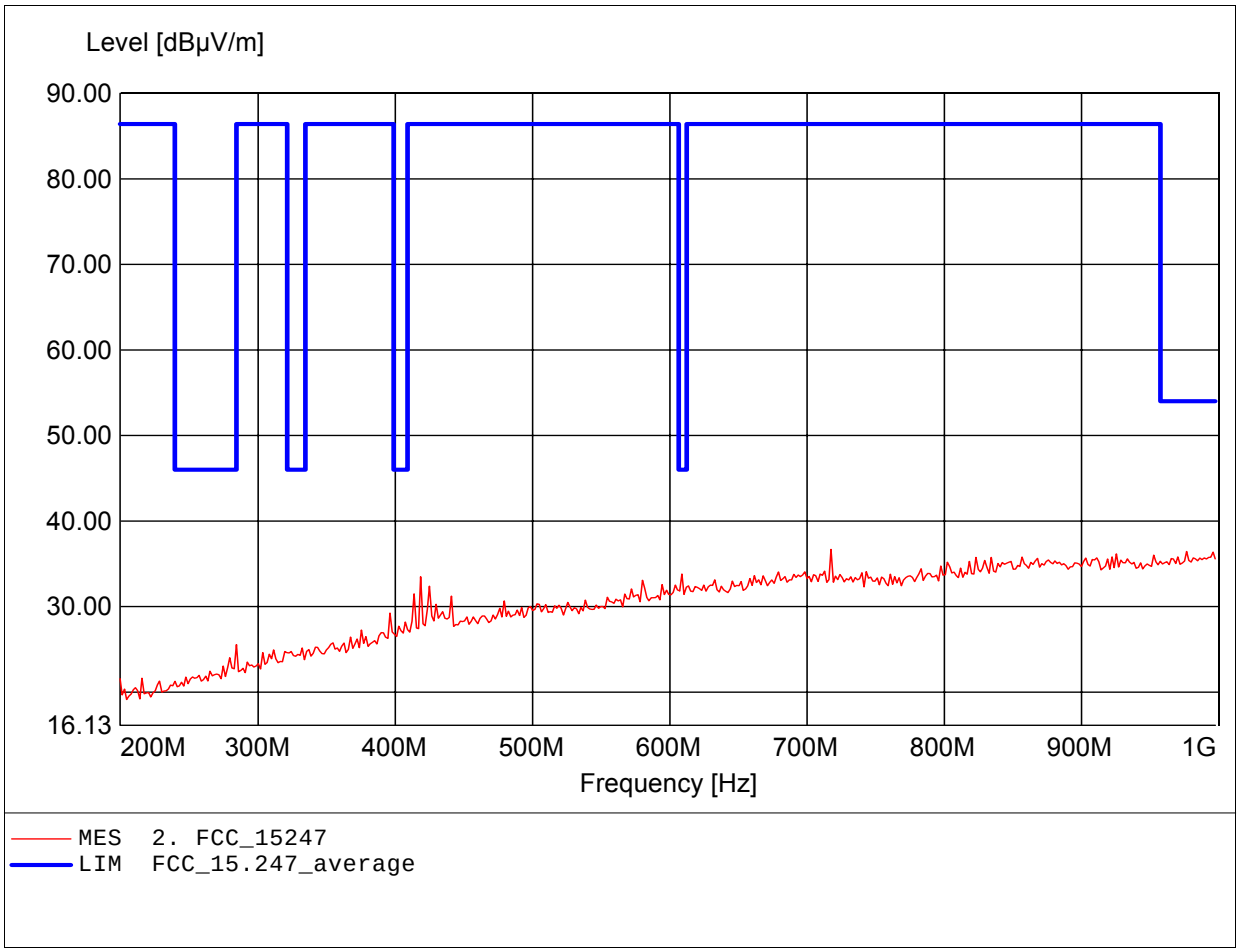
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 996.794MHz, Emax: 37.16dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

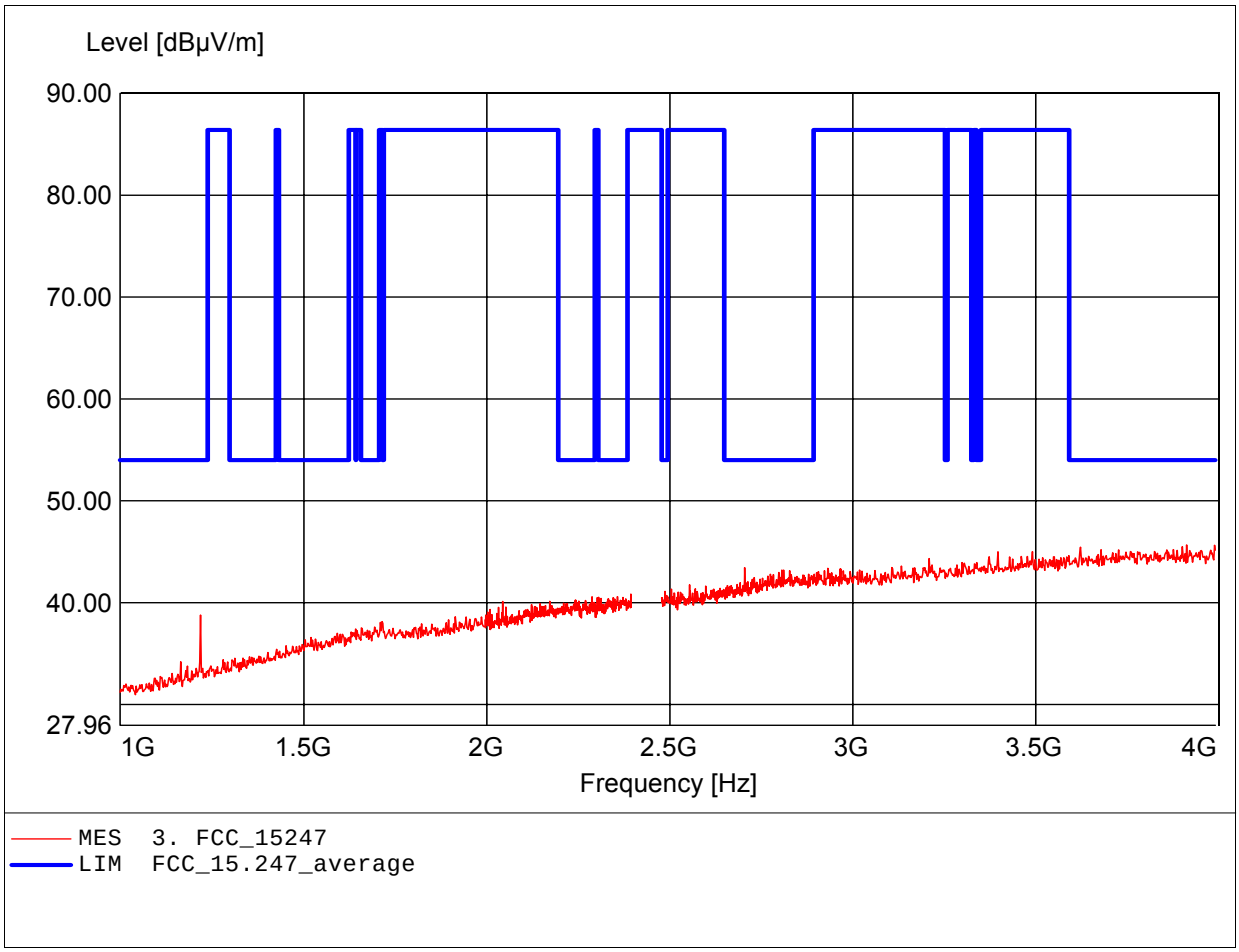
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 719.439MHz, Emax: 36.69dBµ V/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

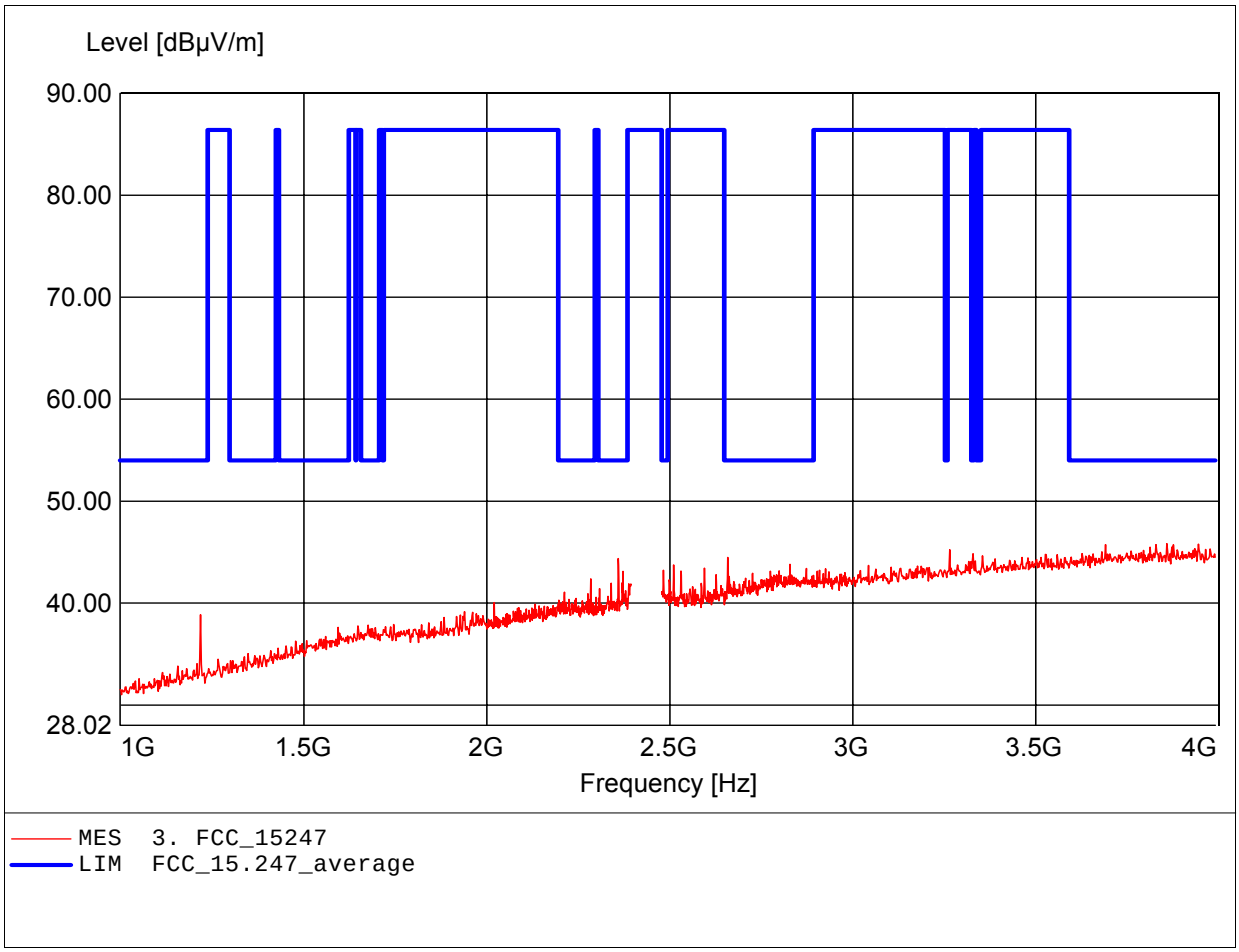
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 3.922GHz, Emax: 45.66dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

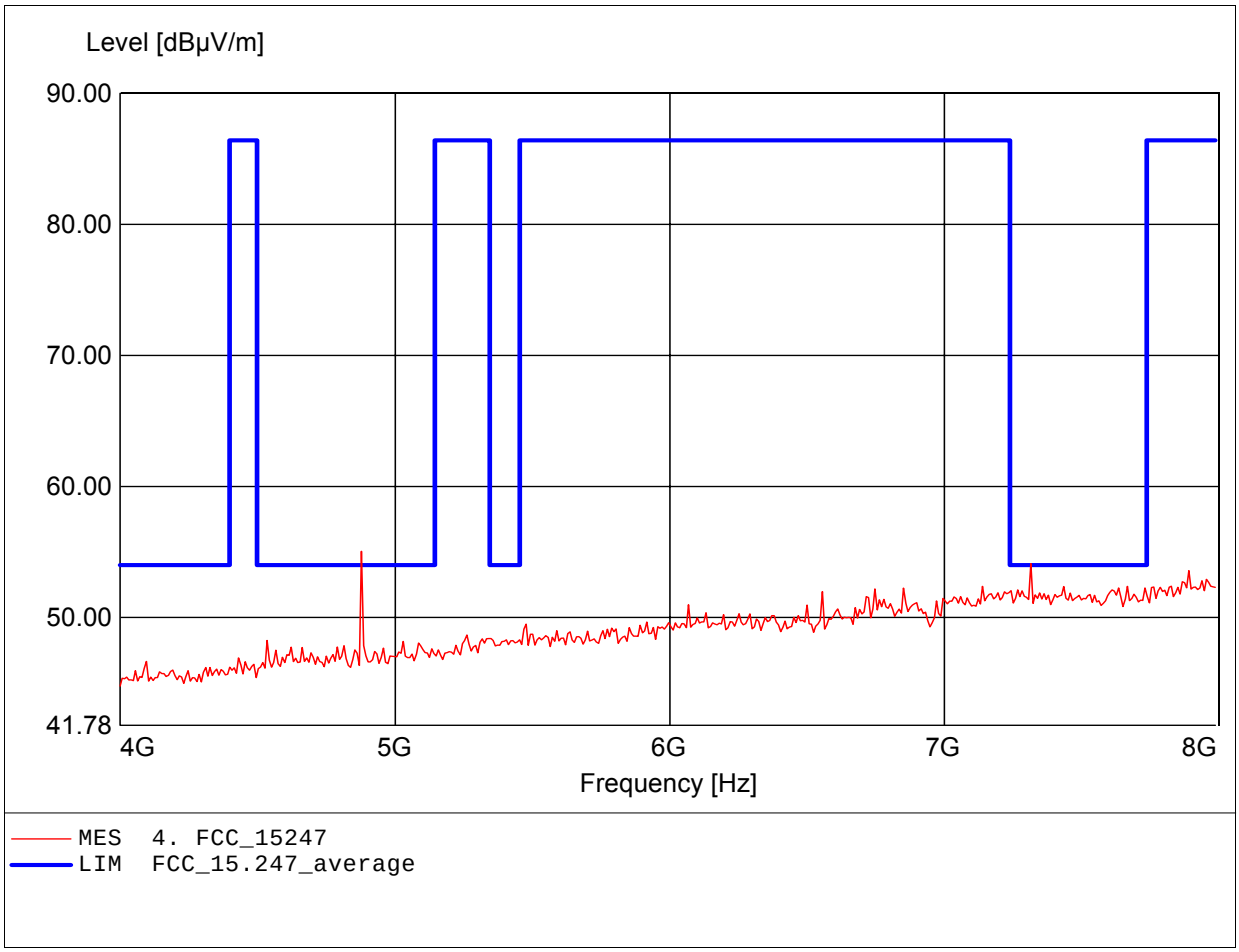
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 3.868GHz, Emax: 45.83dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

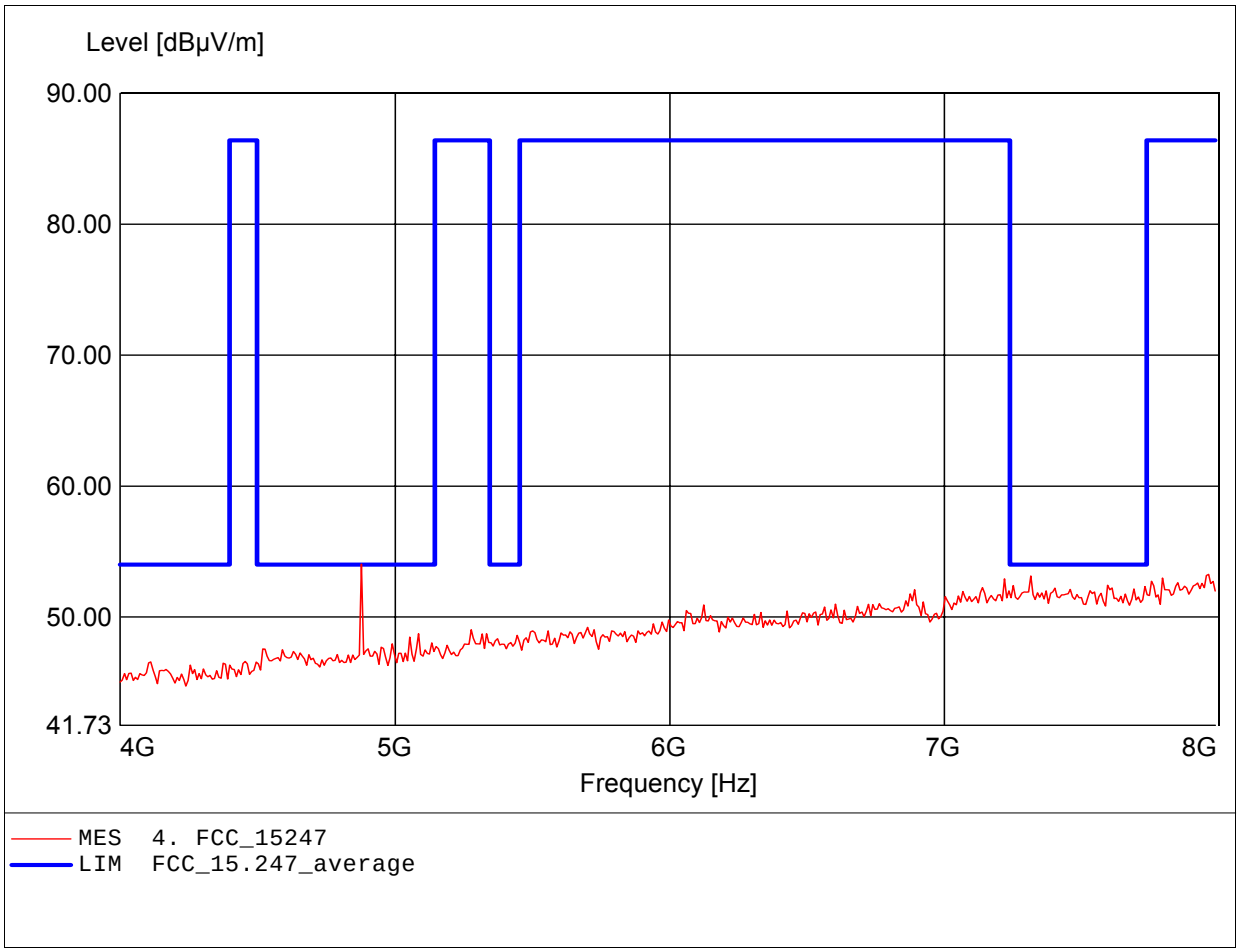
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 4.882GHz, Emax: 55.05dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

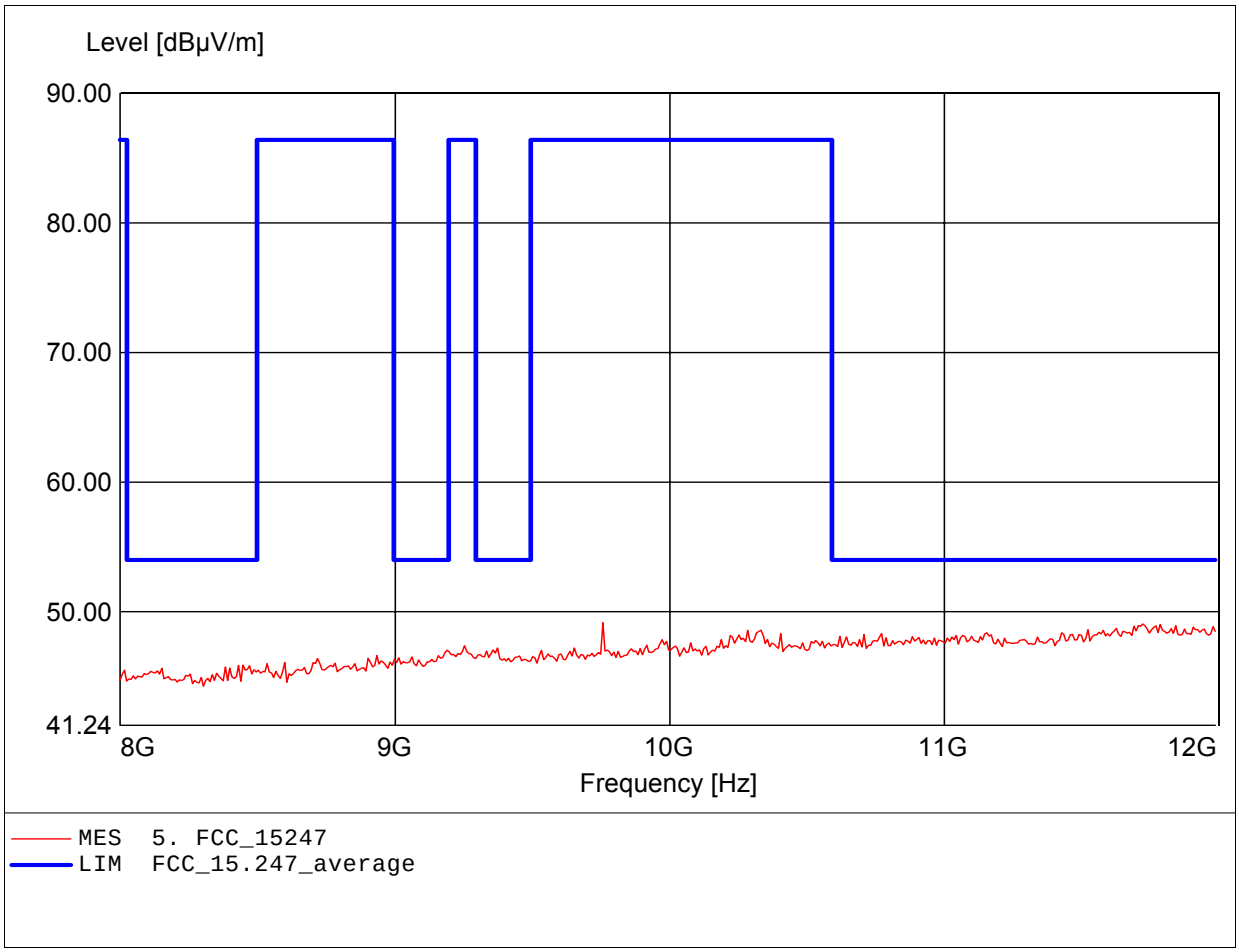
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperatu re/Voltag	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Spec ific atio	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 4.882GHz, Emax: 54.04dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

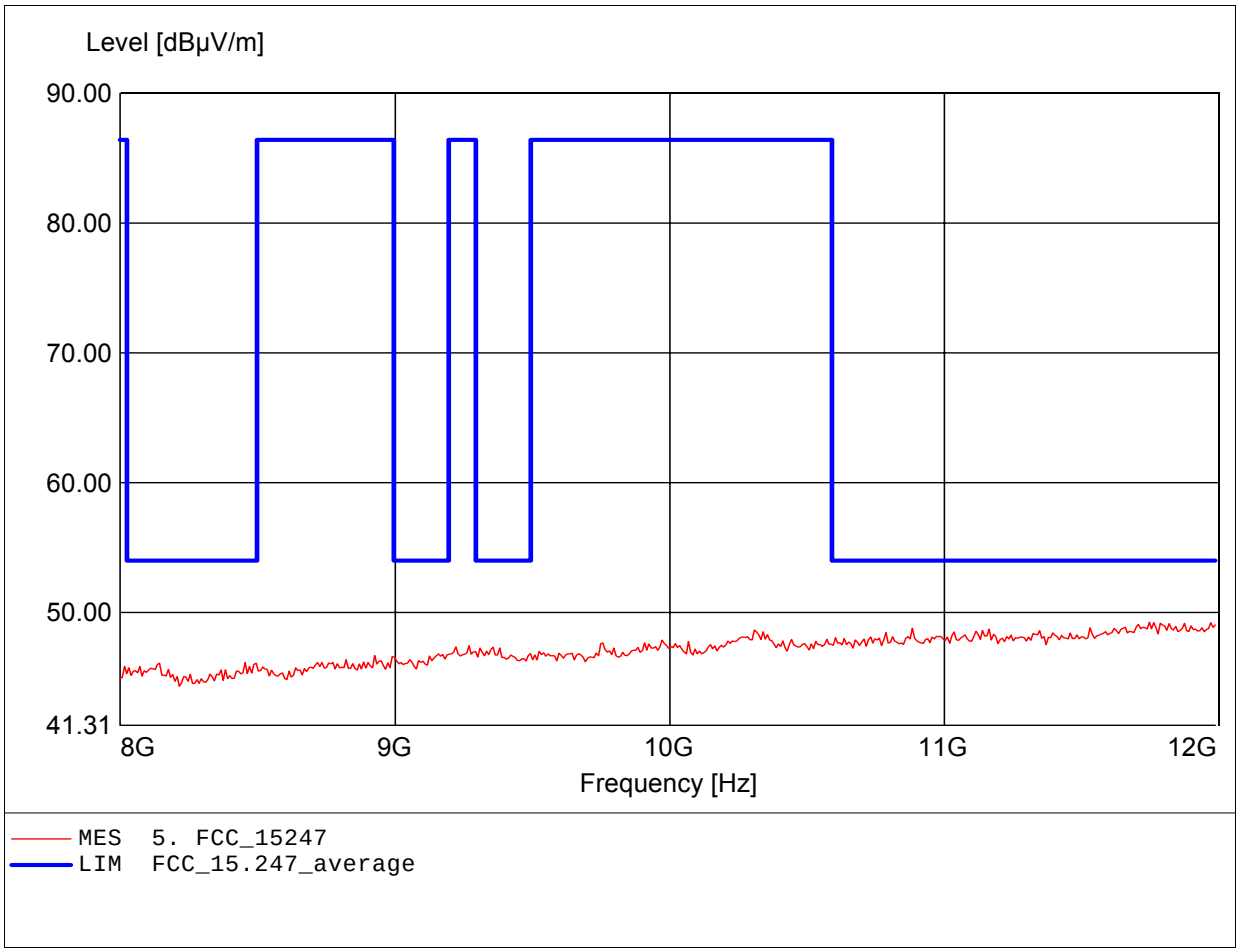
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 9.764GHz, Emax: 49.15dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

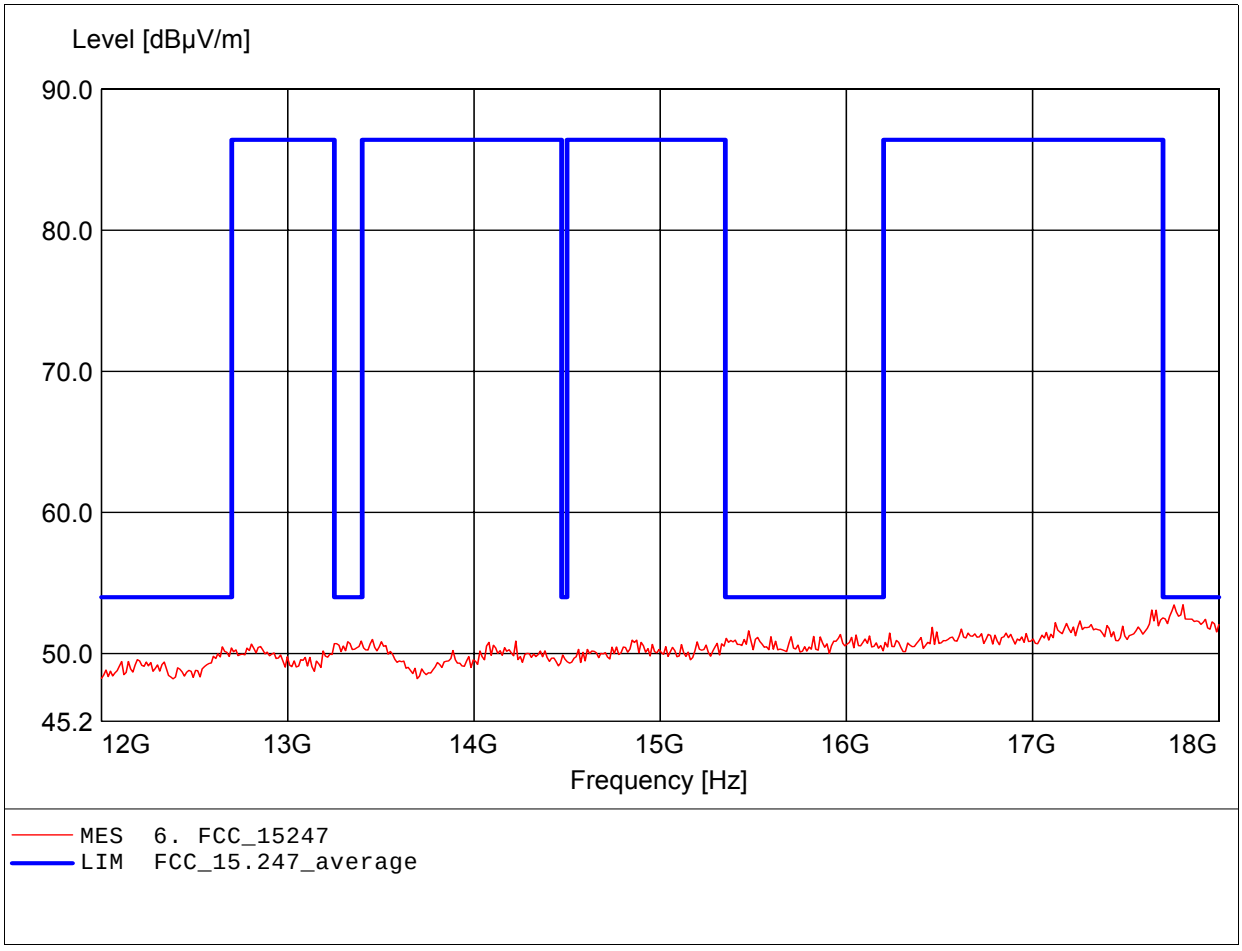
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 11.760GHz, Emax: 49.25dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

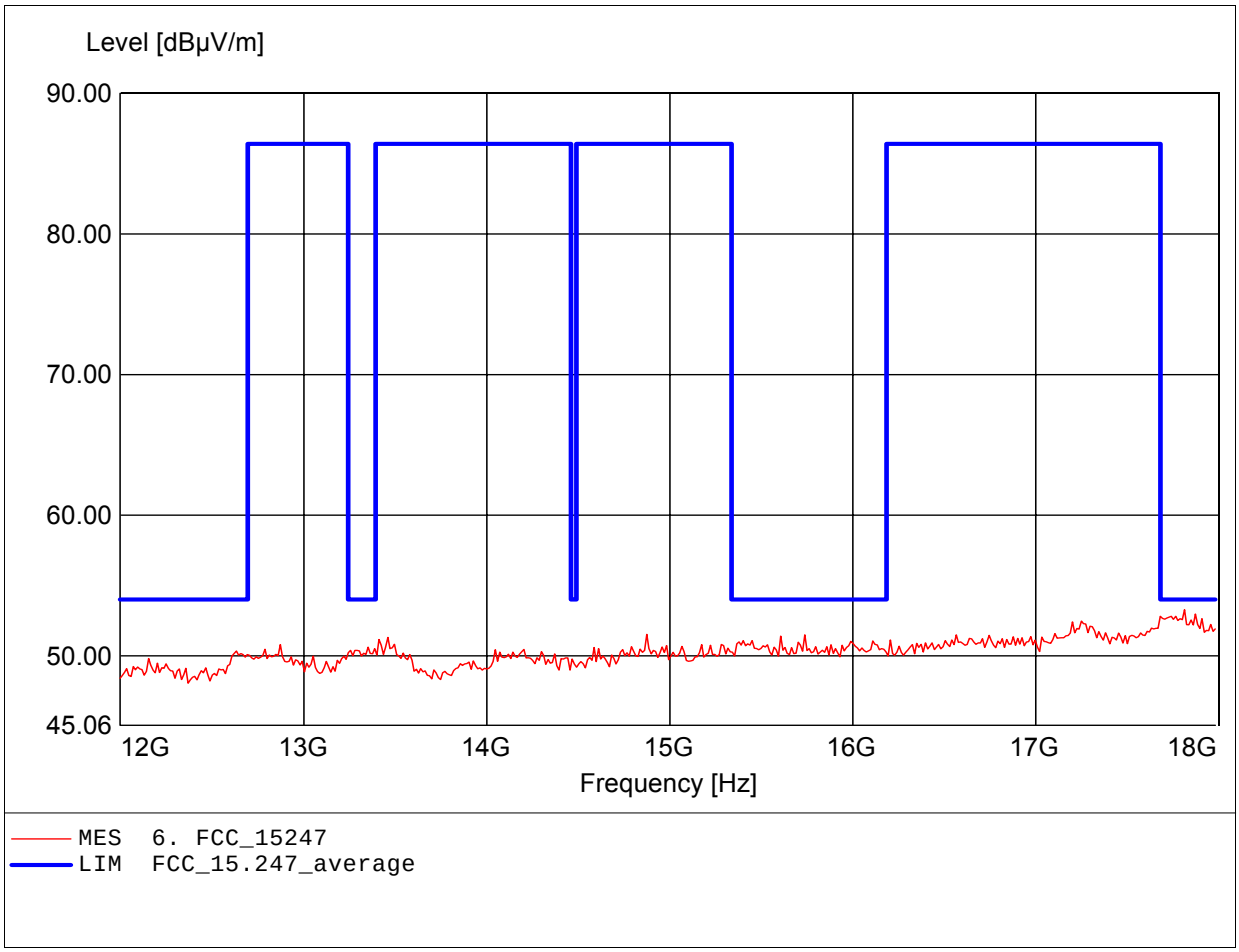
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 17.808GHz, Emax: 53.46dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

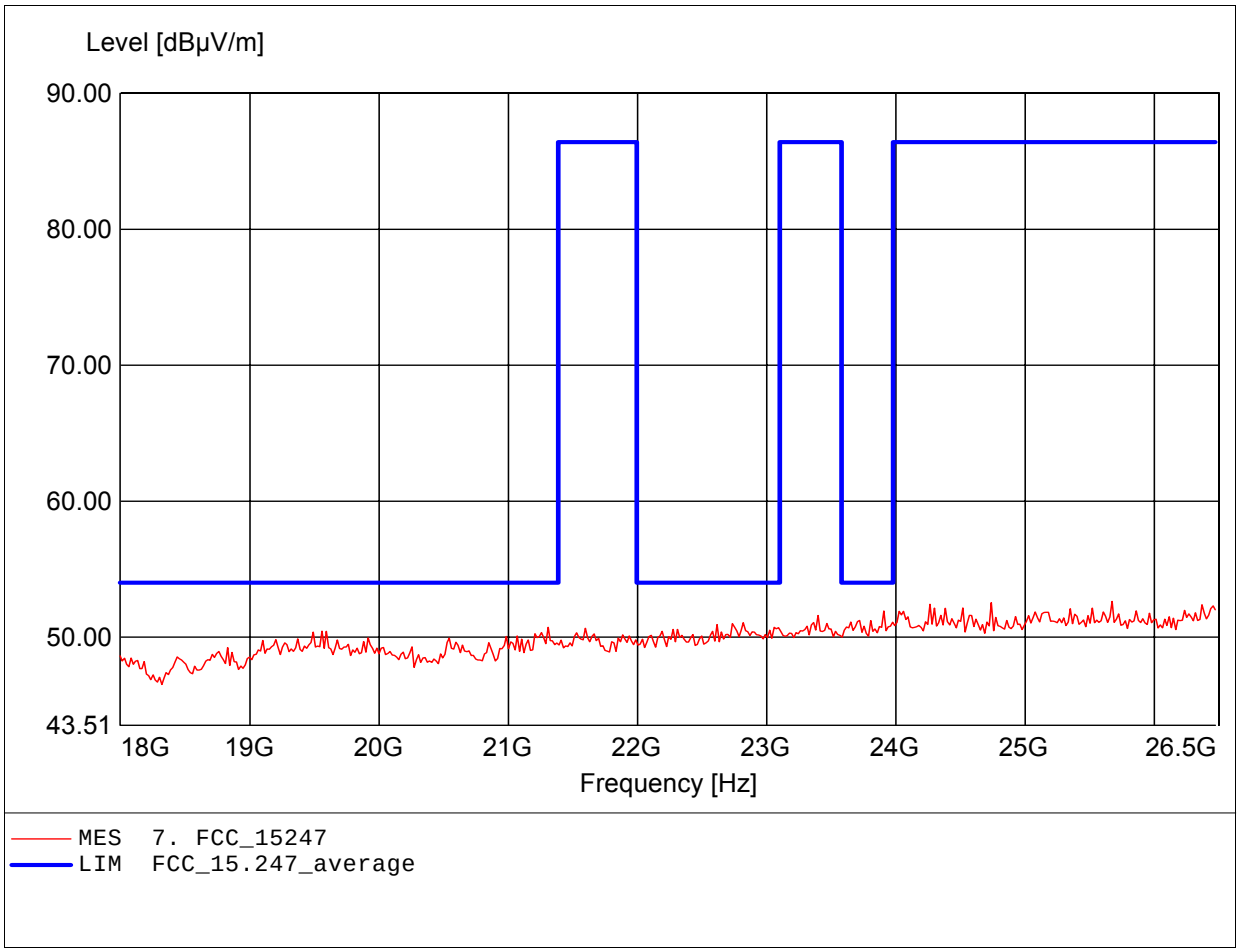
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+ HP.
	Freq: 17.832GHz, Emax: 53.28dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

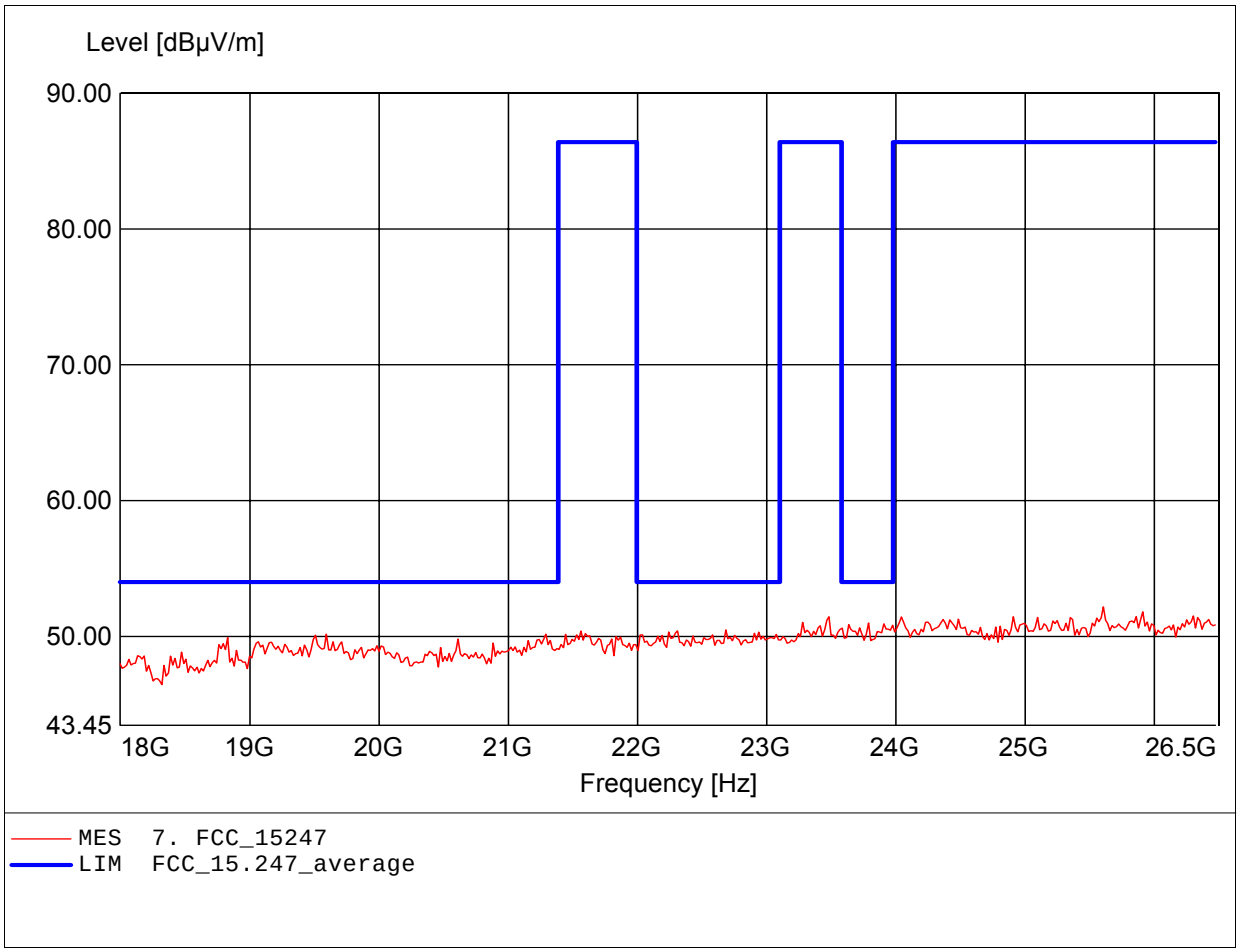
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.699GHz, Emax: 52.62dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

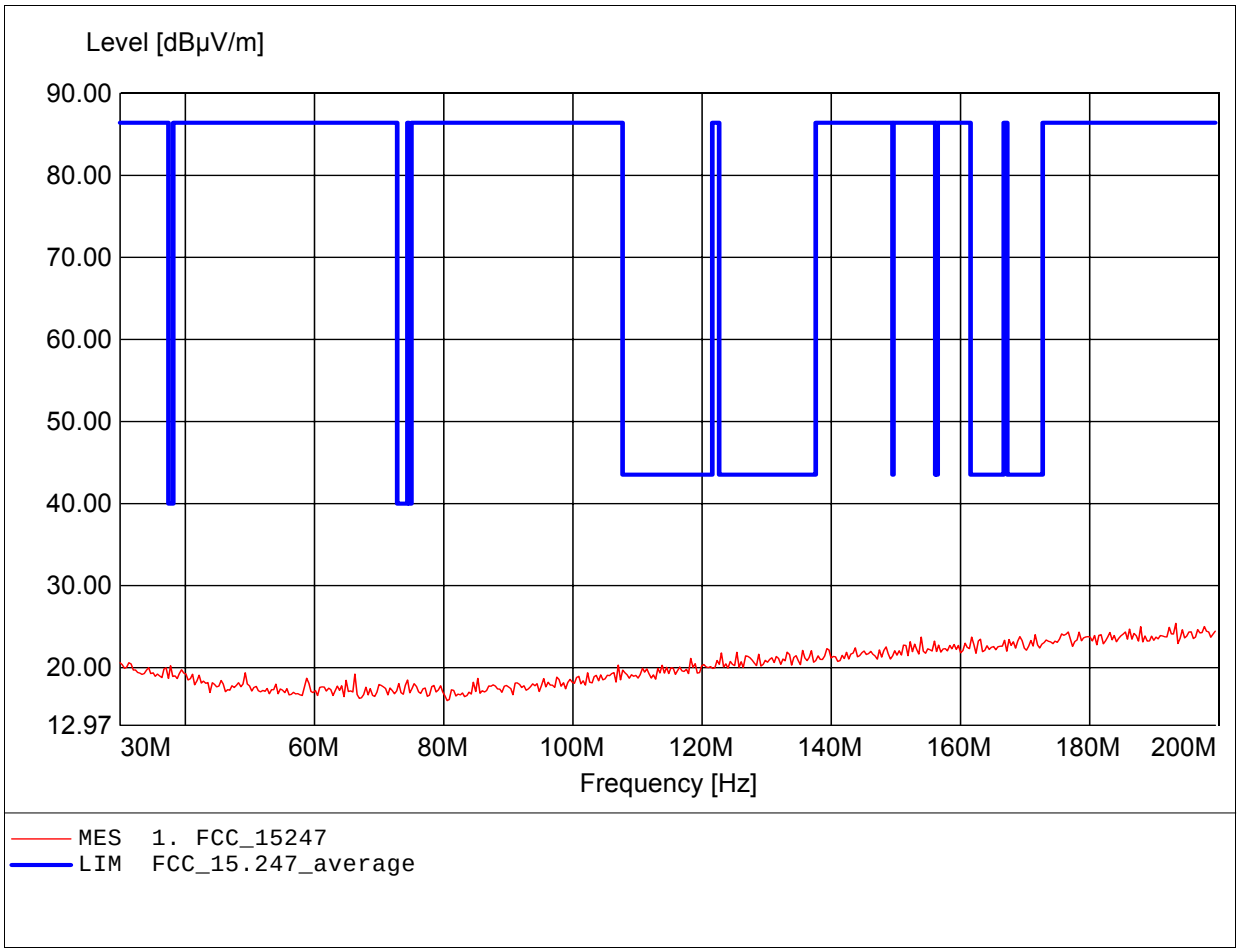
EUT:	Data Collec tor
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.631GHz, Emax: 52.18dBµ V/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

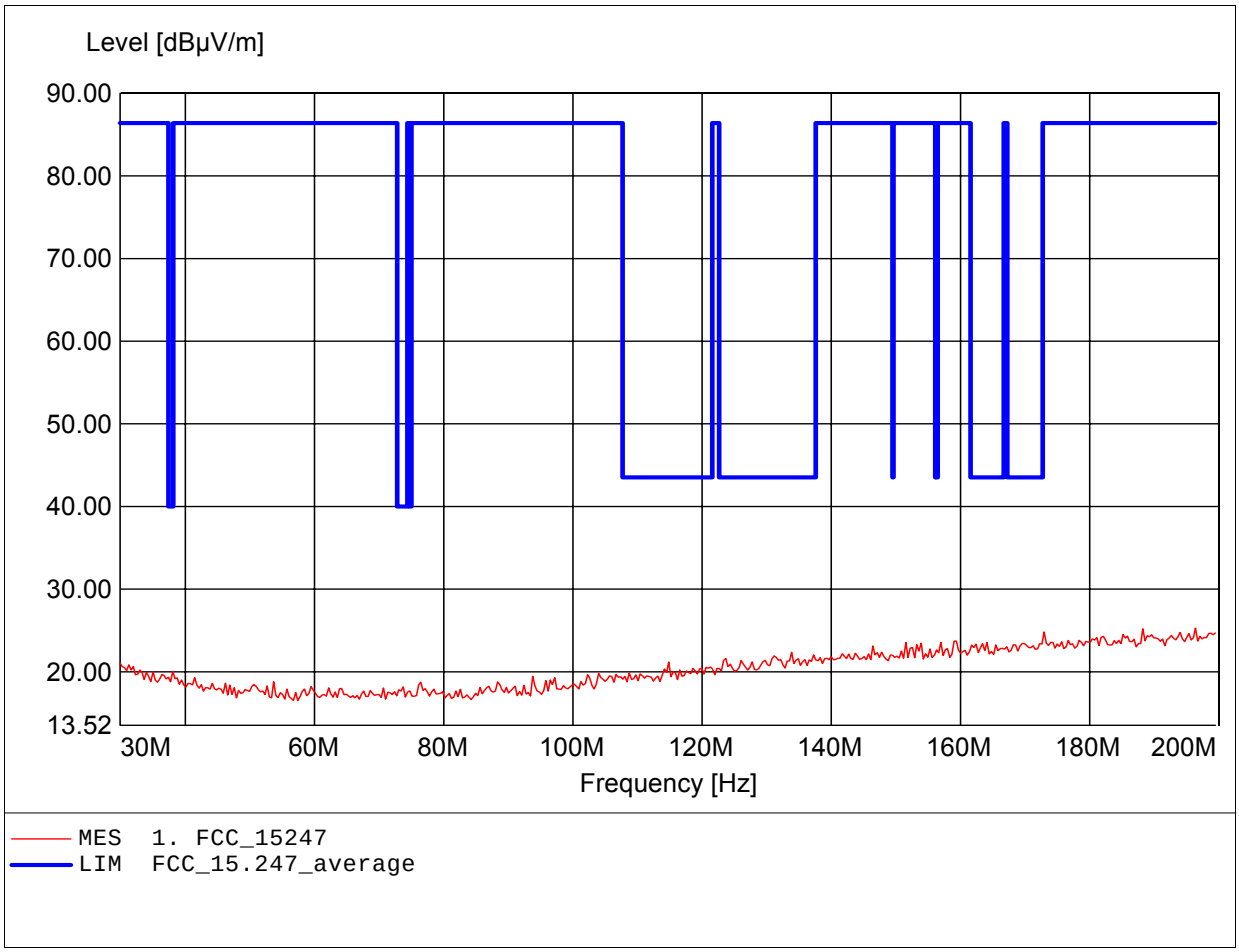
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 193.868MHz, Emax: 25.40dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

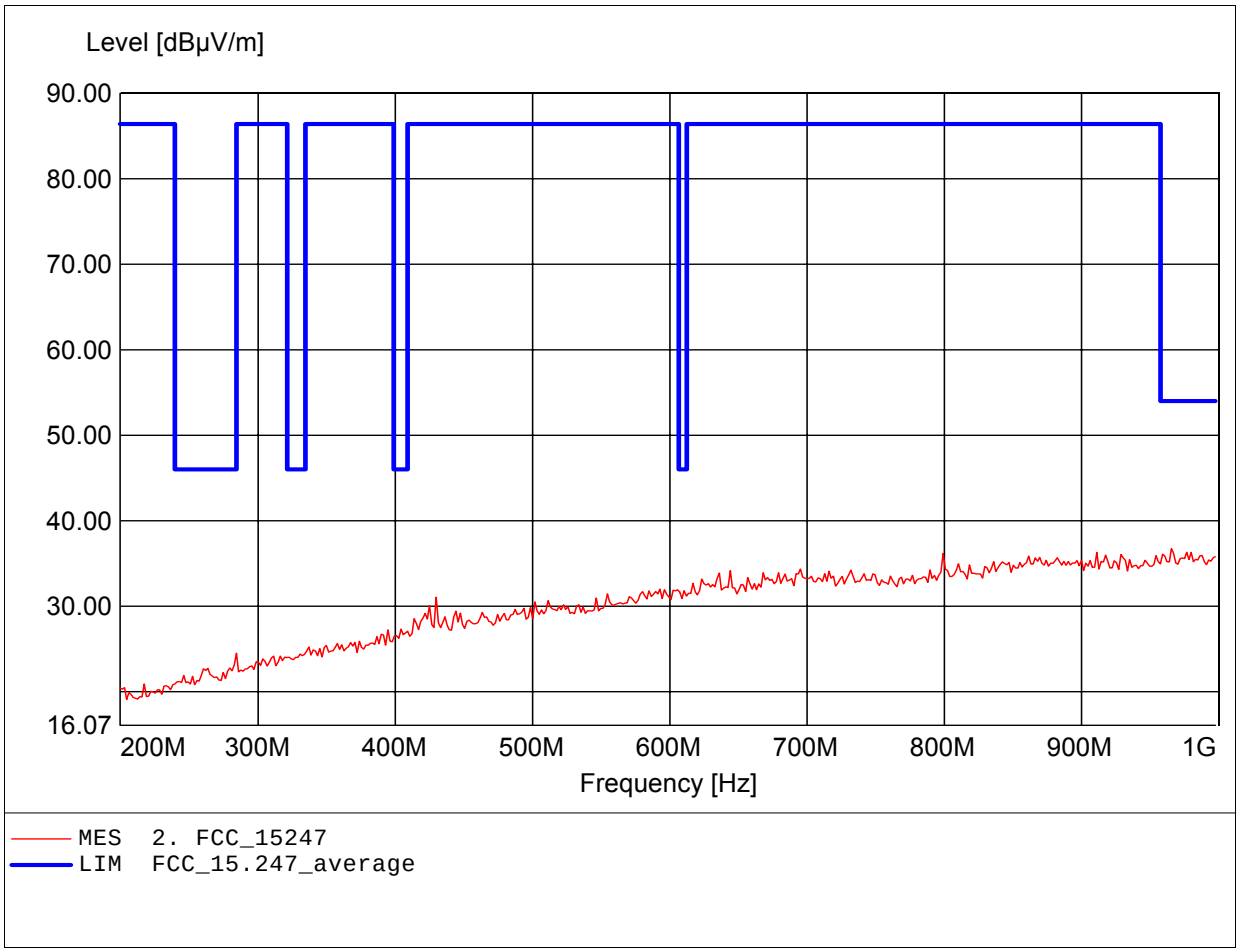
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq: 196.934MHz, Emax: 25.28dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

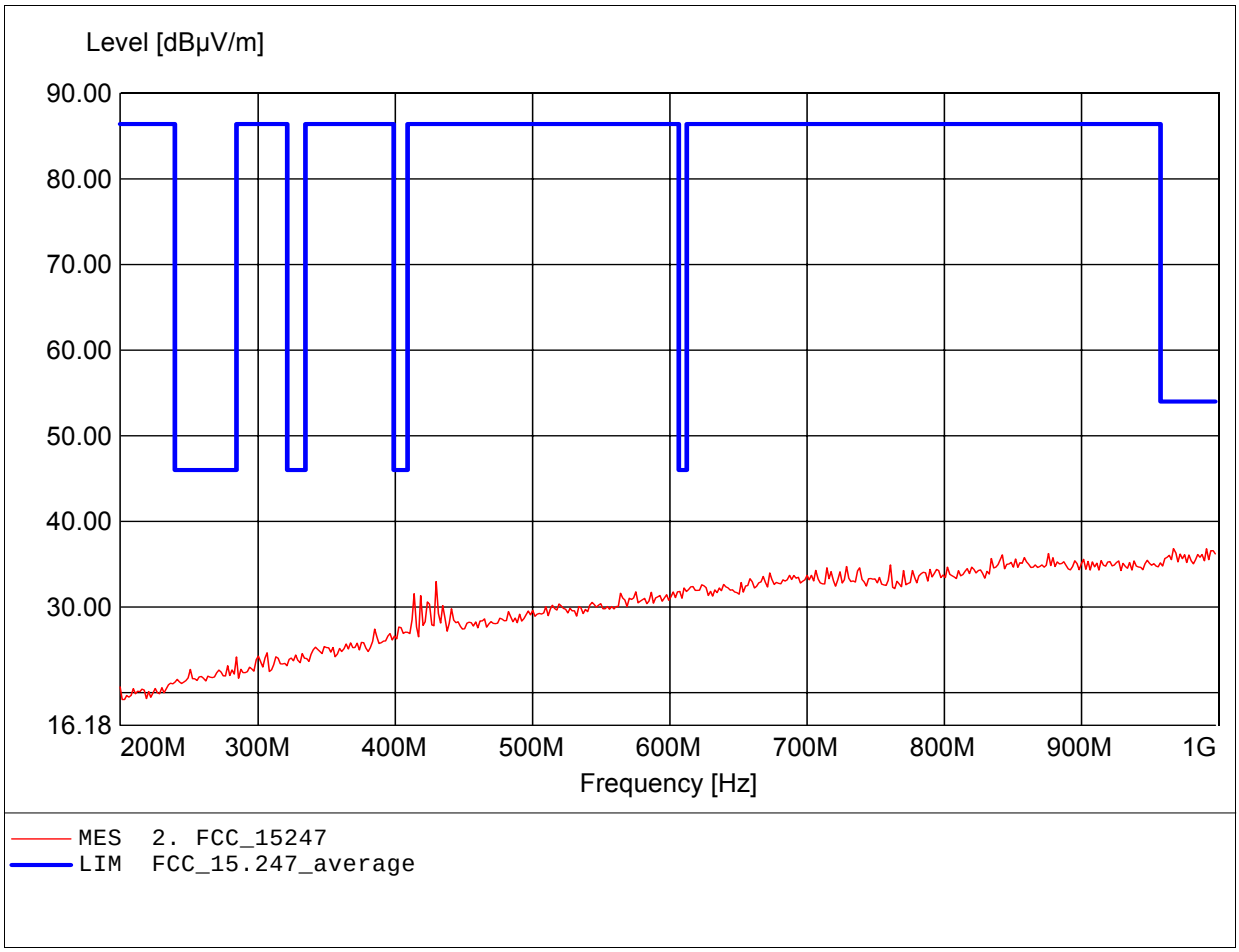
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 967.936MHz, Emax: 36.72dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

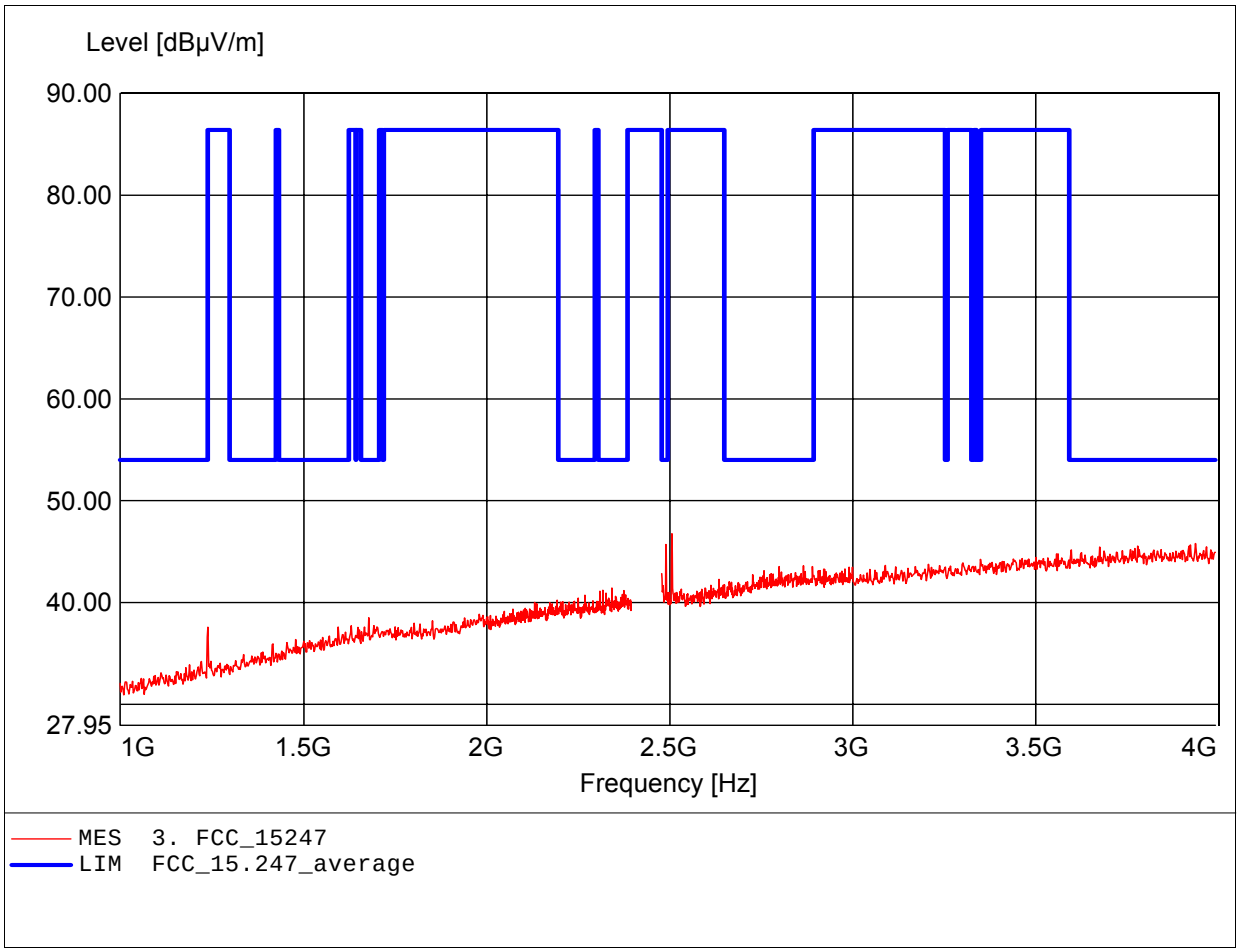
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223,
	Freq: 969.539MHz, Emax: 36.82dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

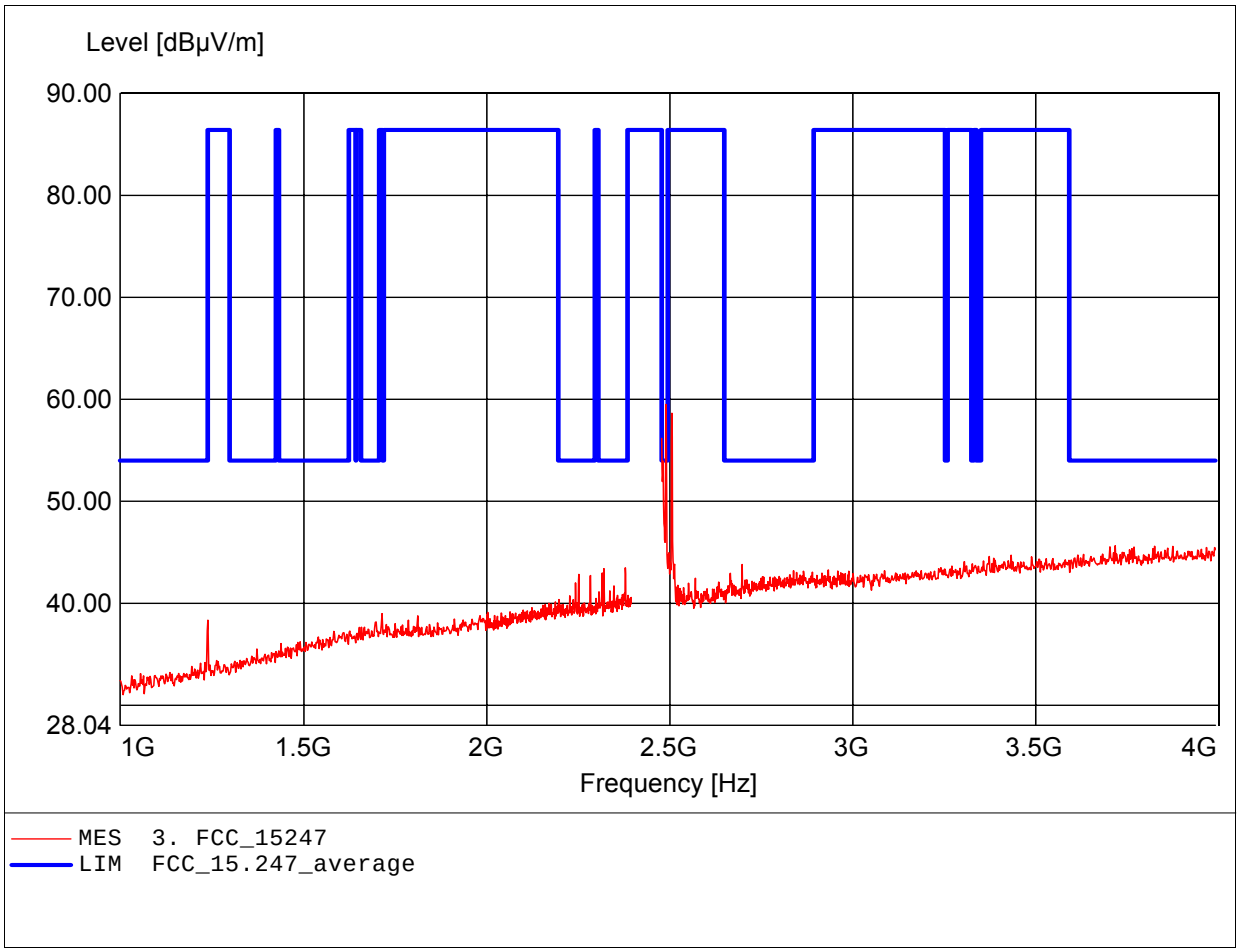
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 2.511GHz, Emax: 46.75dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

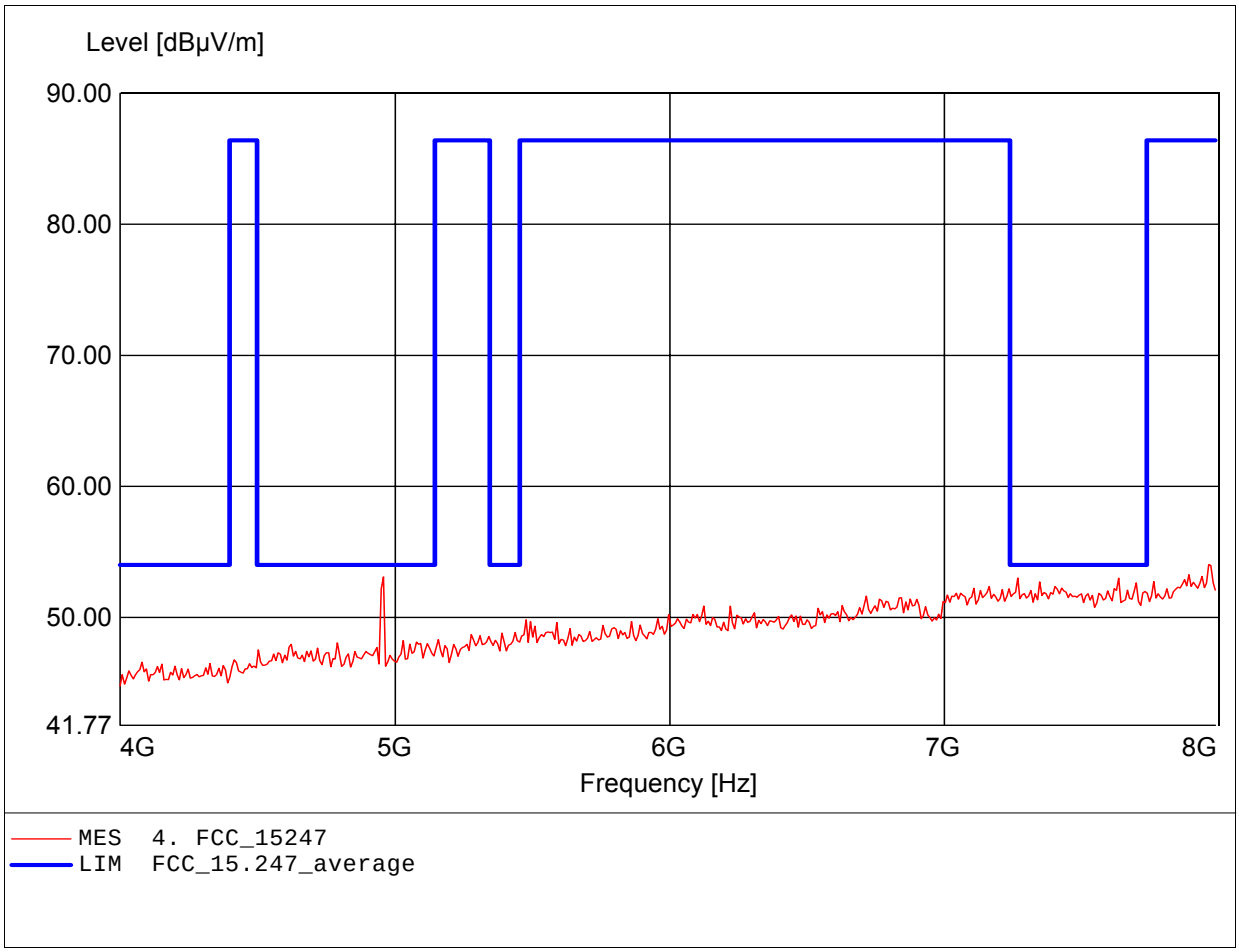
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 2.495GHz, Emax: 59.51dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

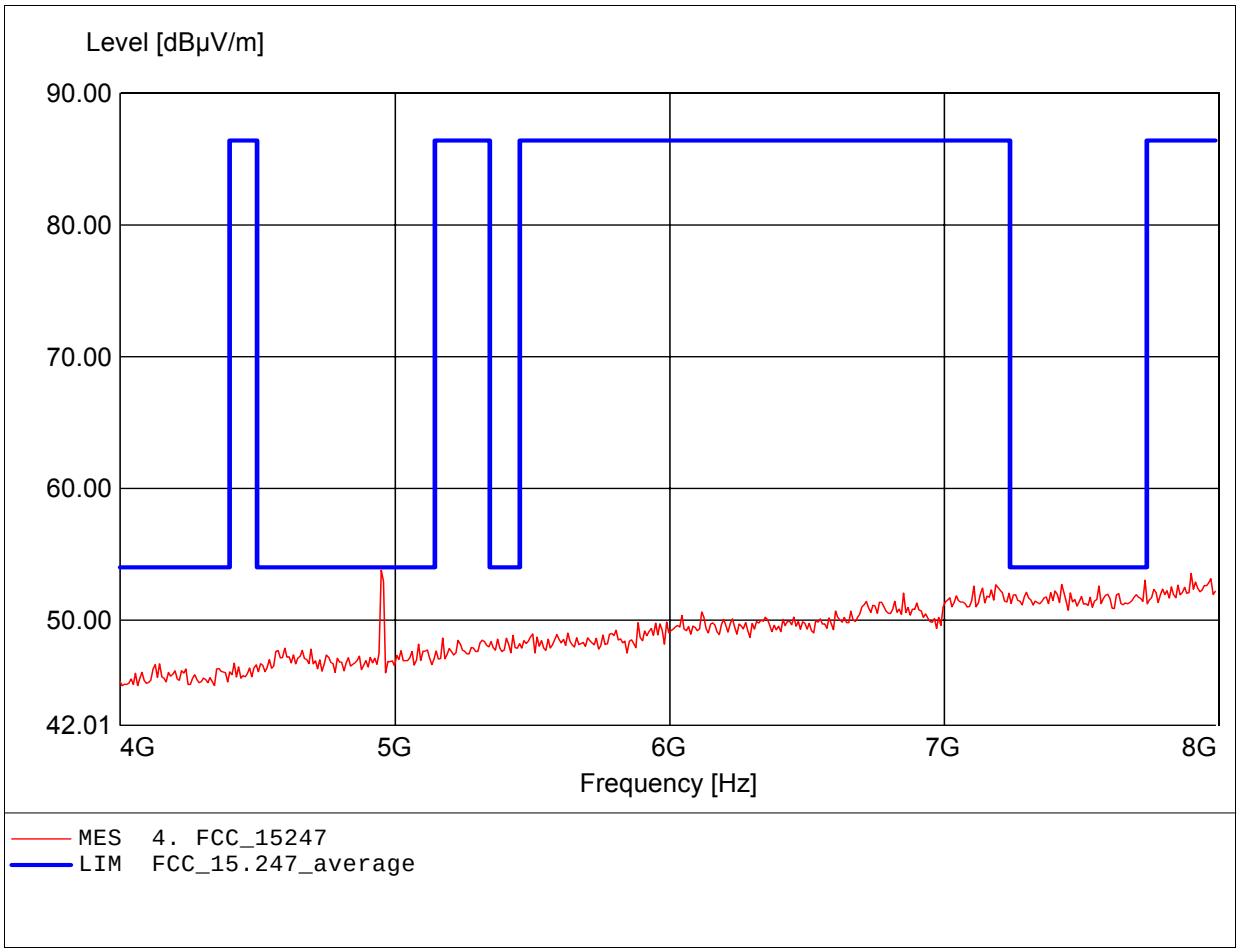
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 7.976GHz, Emax: 54.04dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

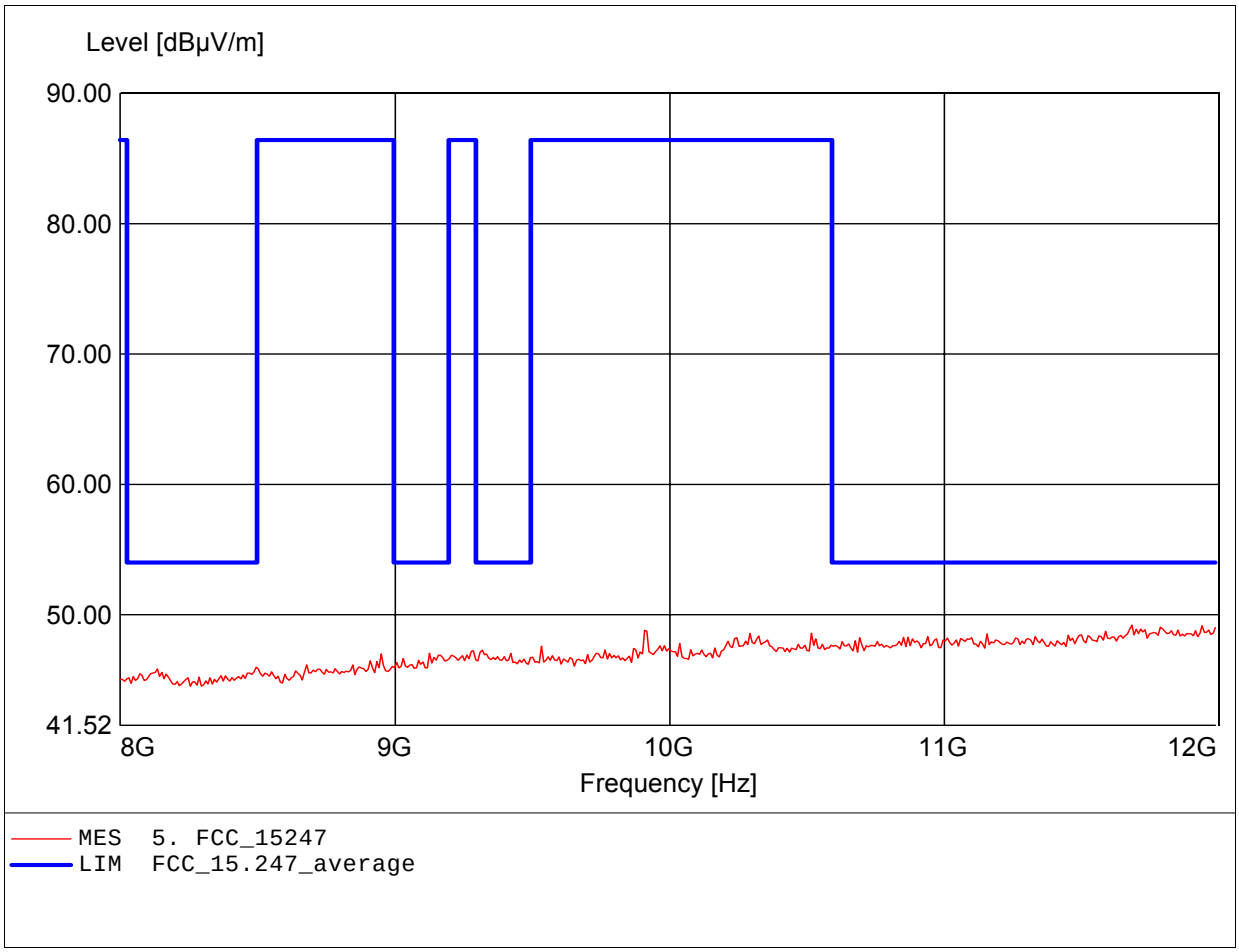
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 4.954GHz, Emax: 53.79dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

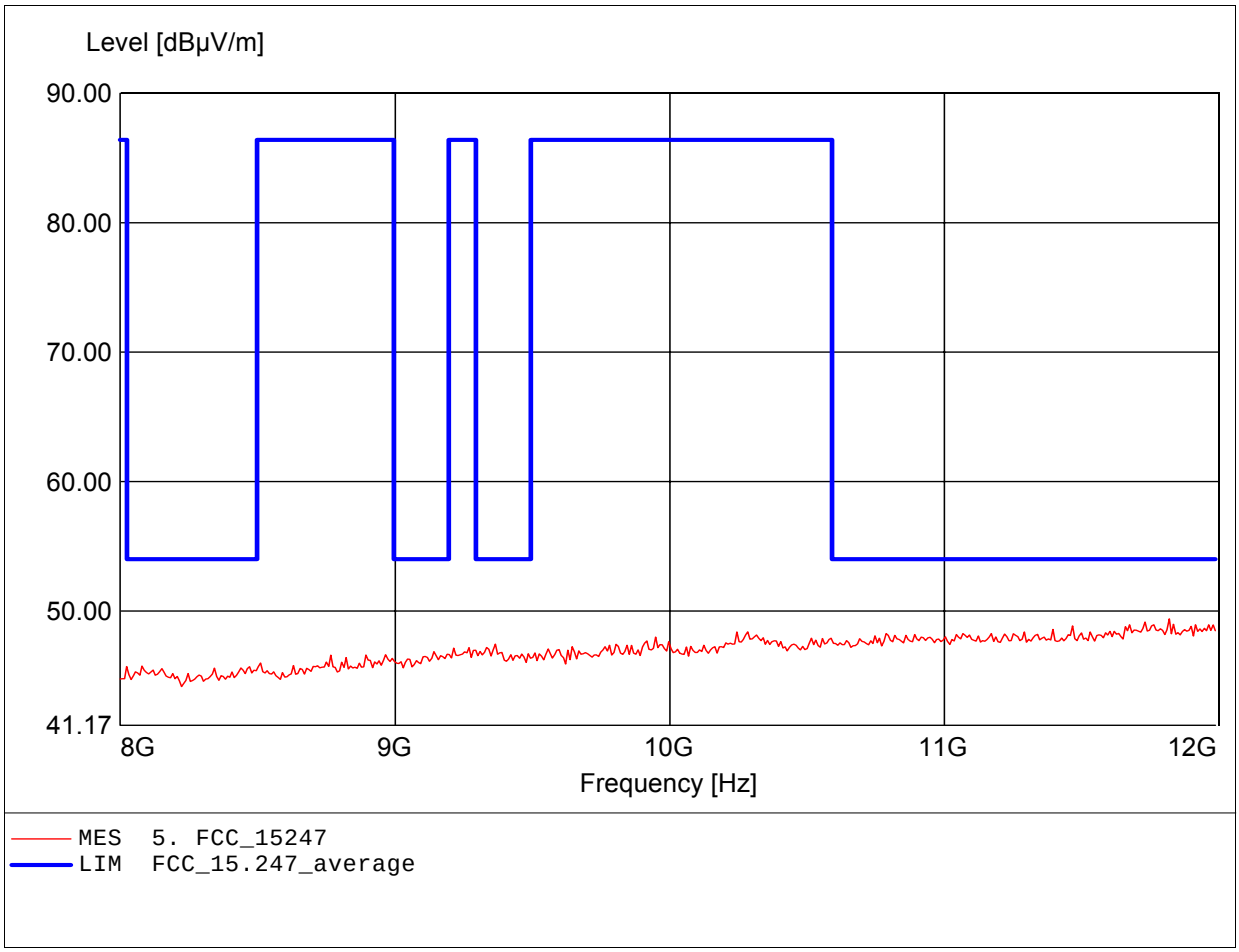
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 11.695GHz, Emax: 49.20dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

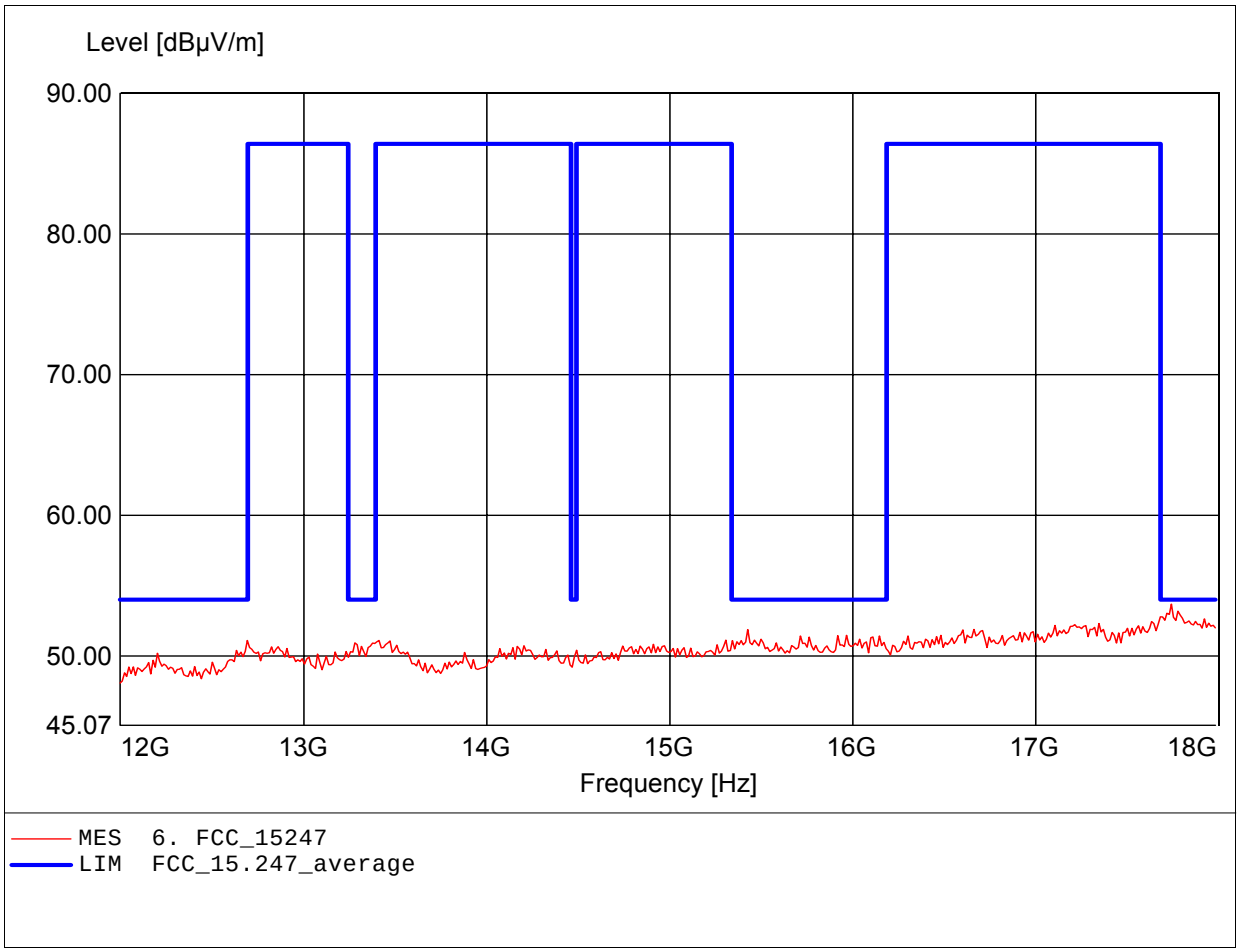
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 11.832GHz, Emax: 49.40dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

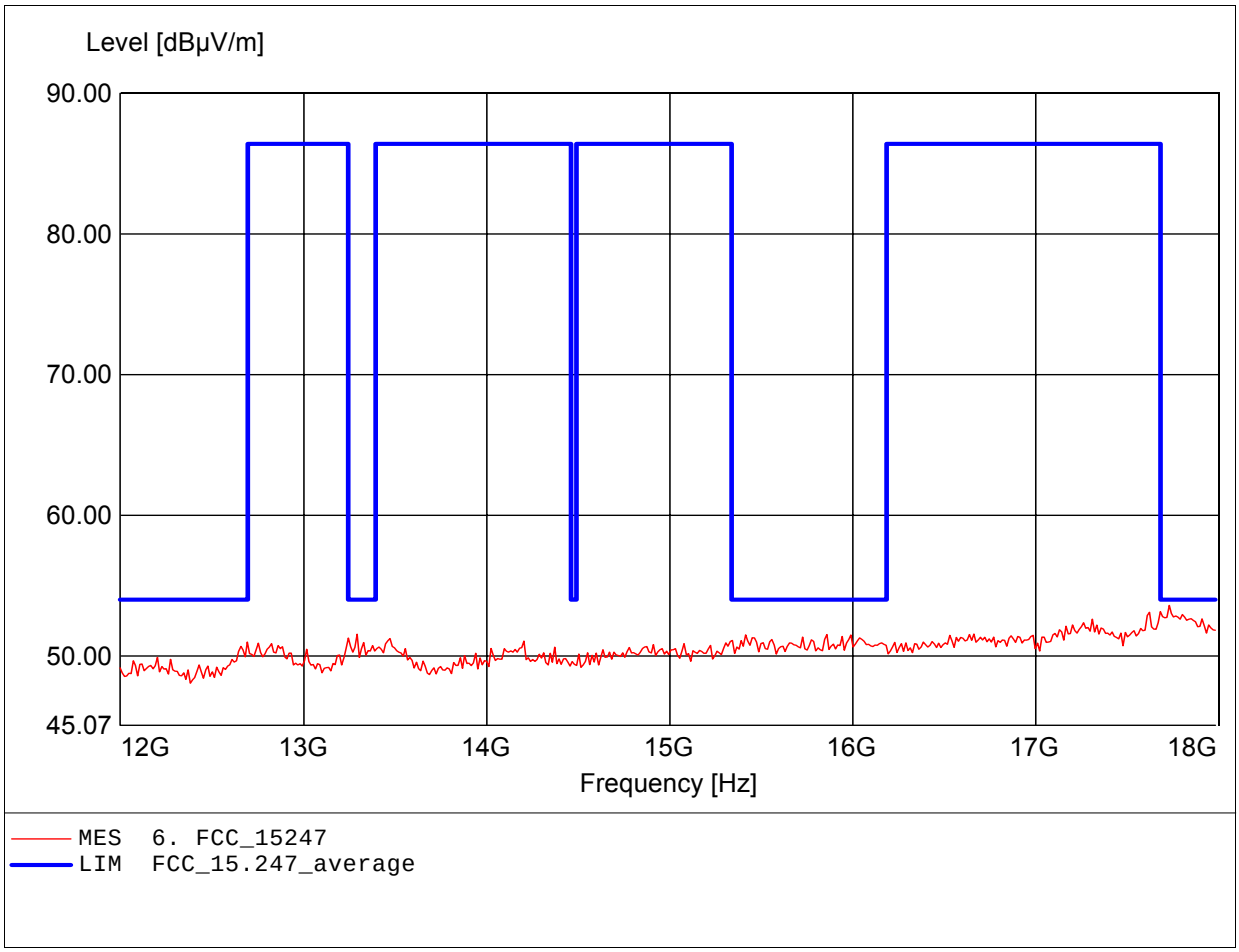
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 17.760GHz, Emax: 53.69dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

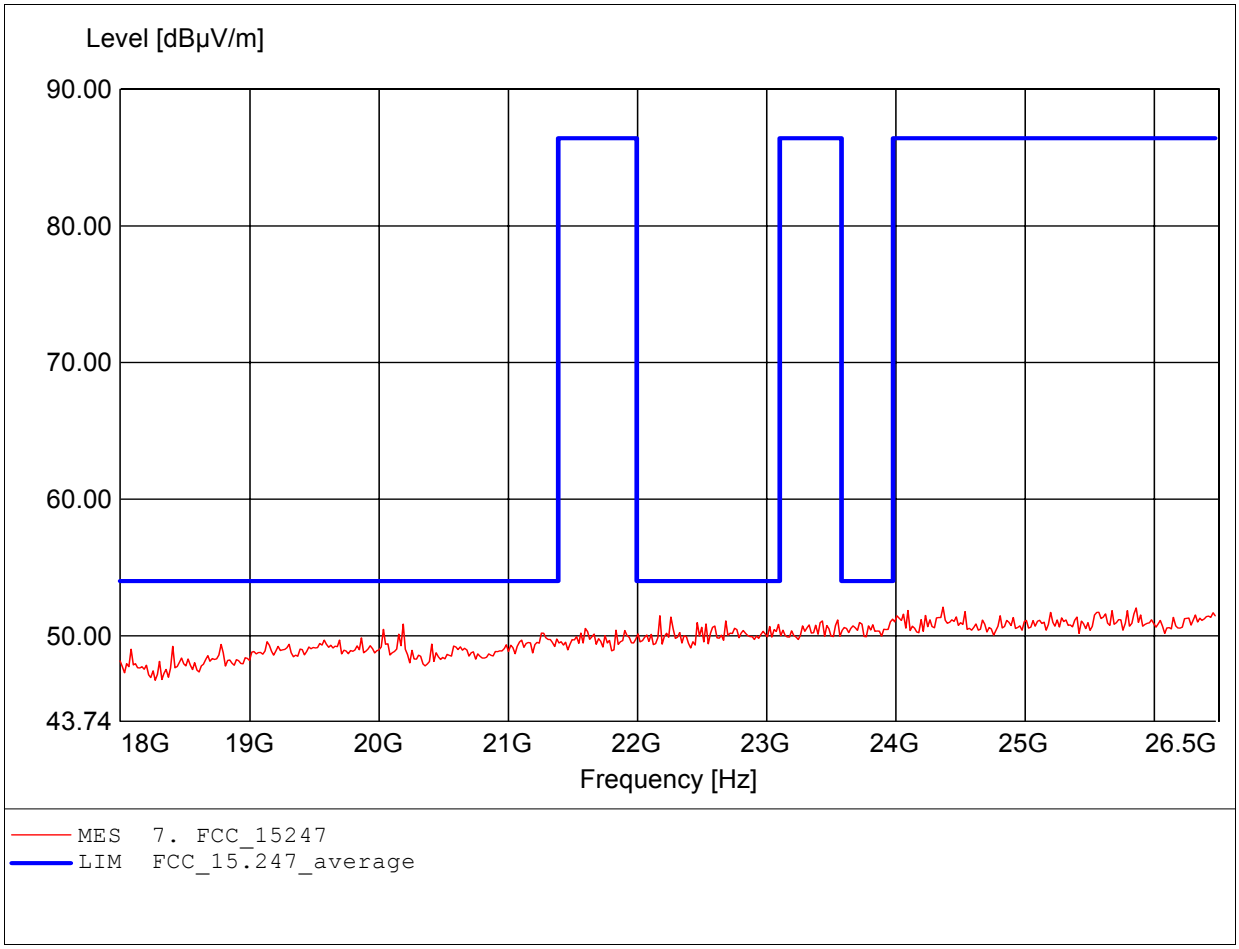
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.+HP.
	Freq: 17.747GHz, Emax: 53.59dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

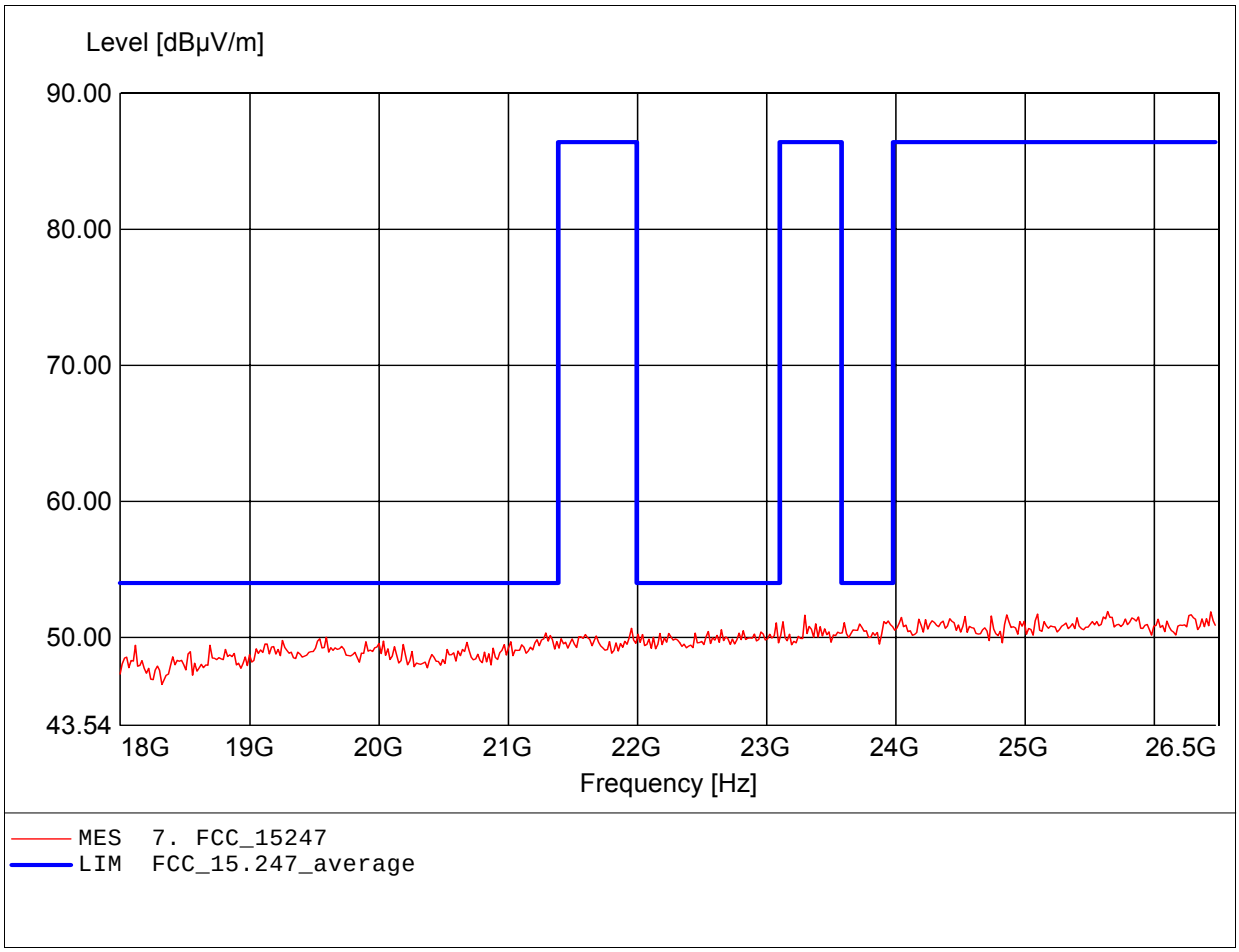
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 24.388GHz, Emax: 52.10dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

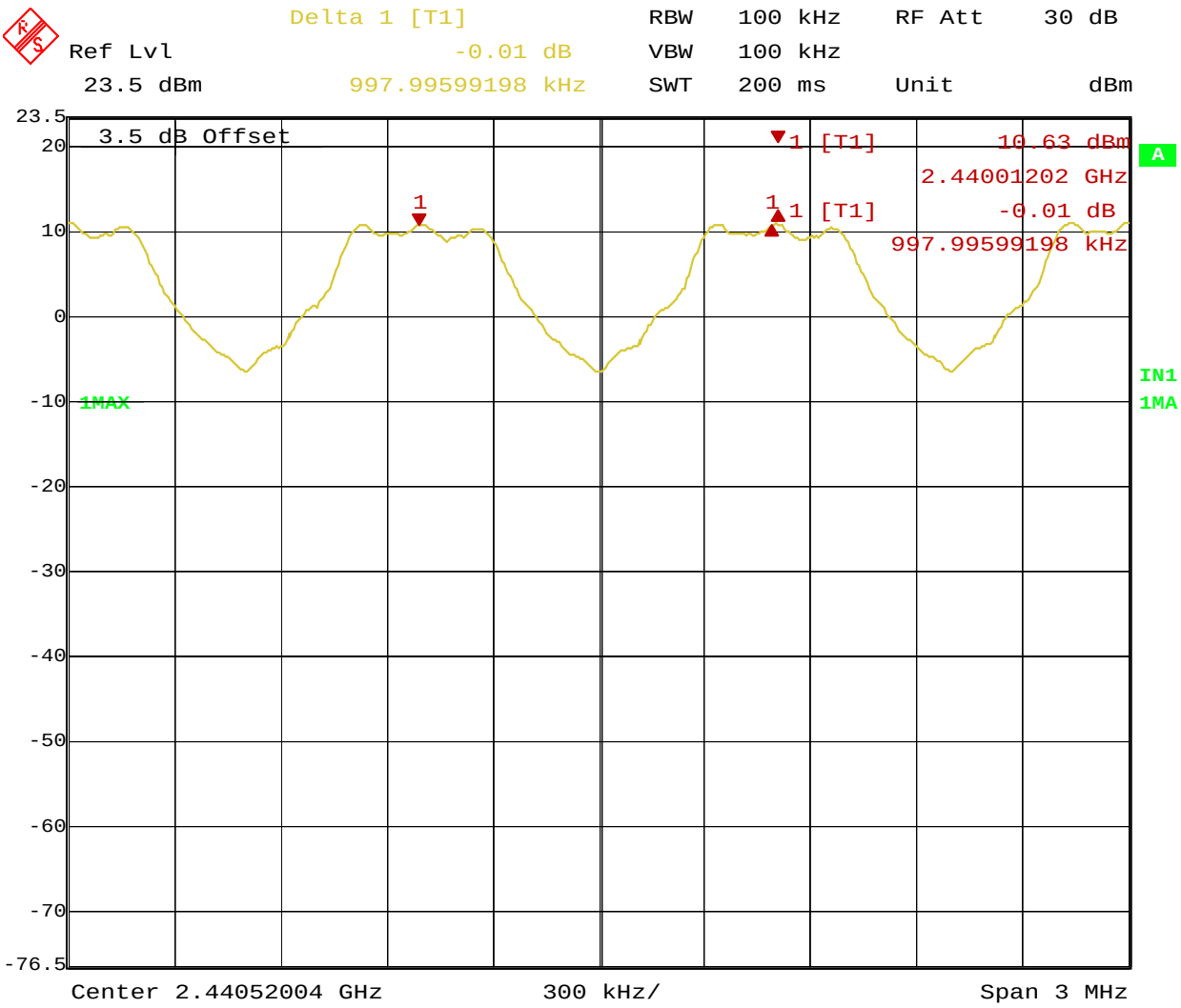
FCC RULES PART 15, SUBPART C

EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
	Freq: 25.665GHz, Emax: 51.90dBµV/m, RBW: 1MHz



Appendix C

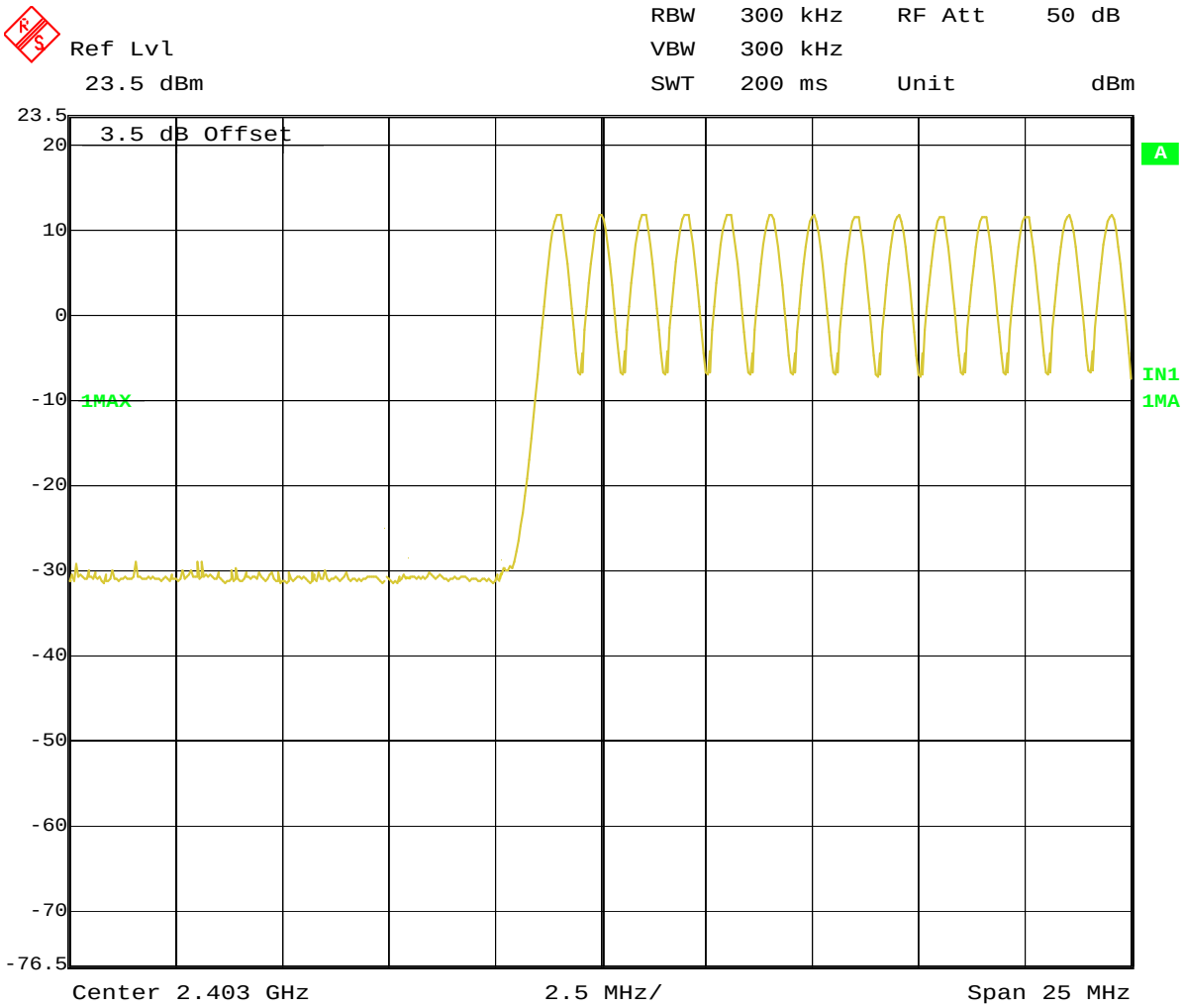
Carrier Frequency Separation



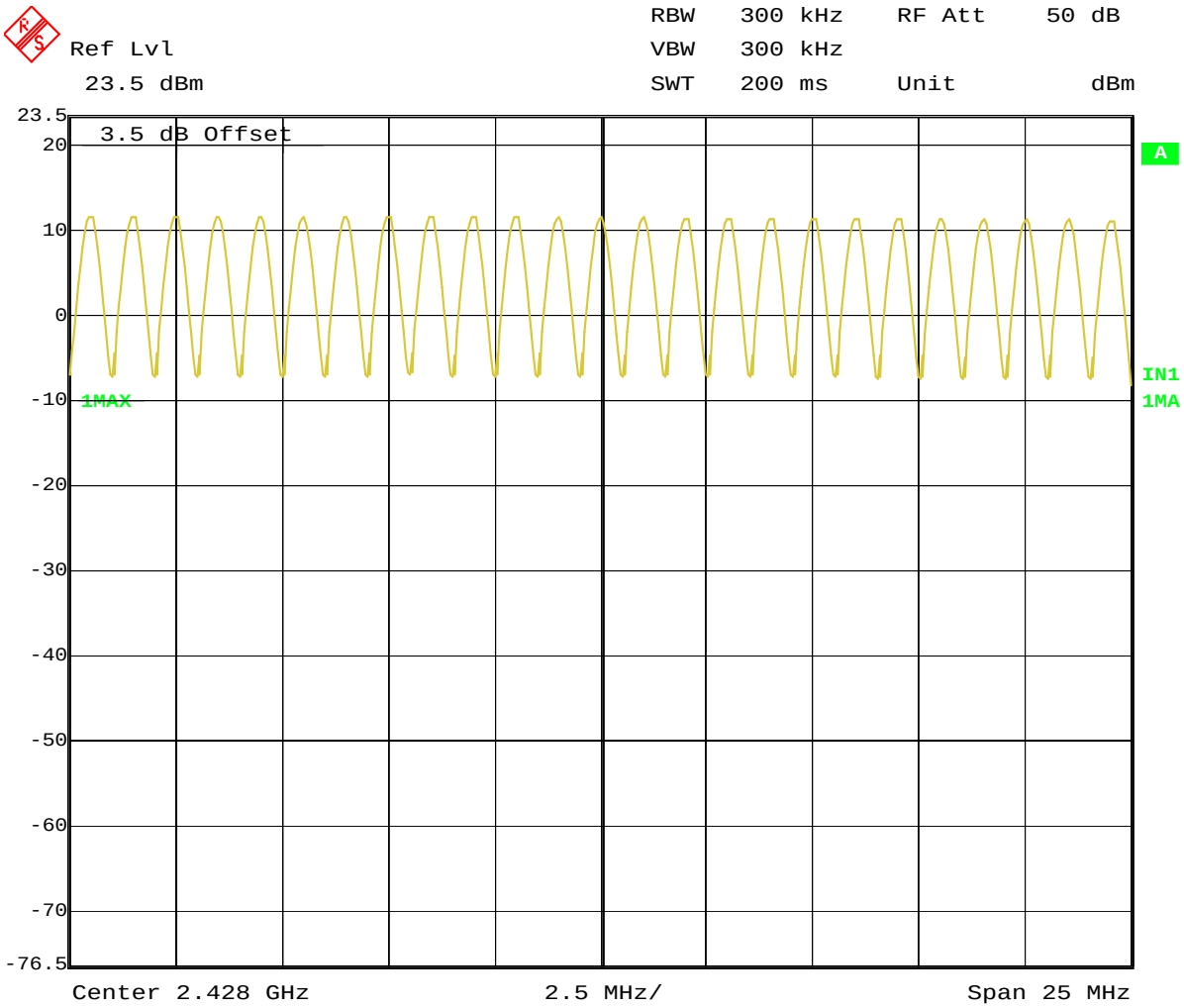
Title: FREQUENCY SEPARATION CH38 AND CH39
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 11:52:02

Appendix D

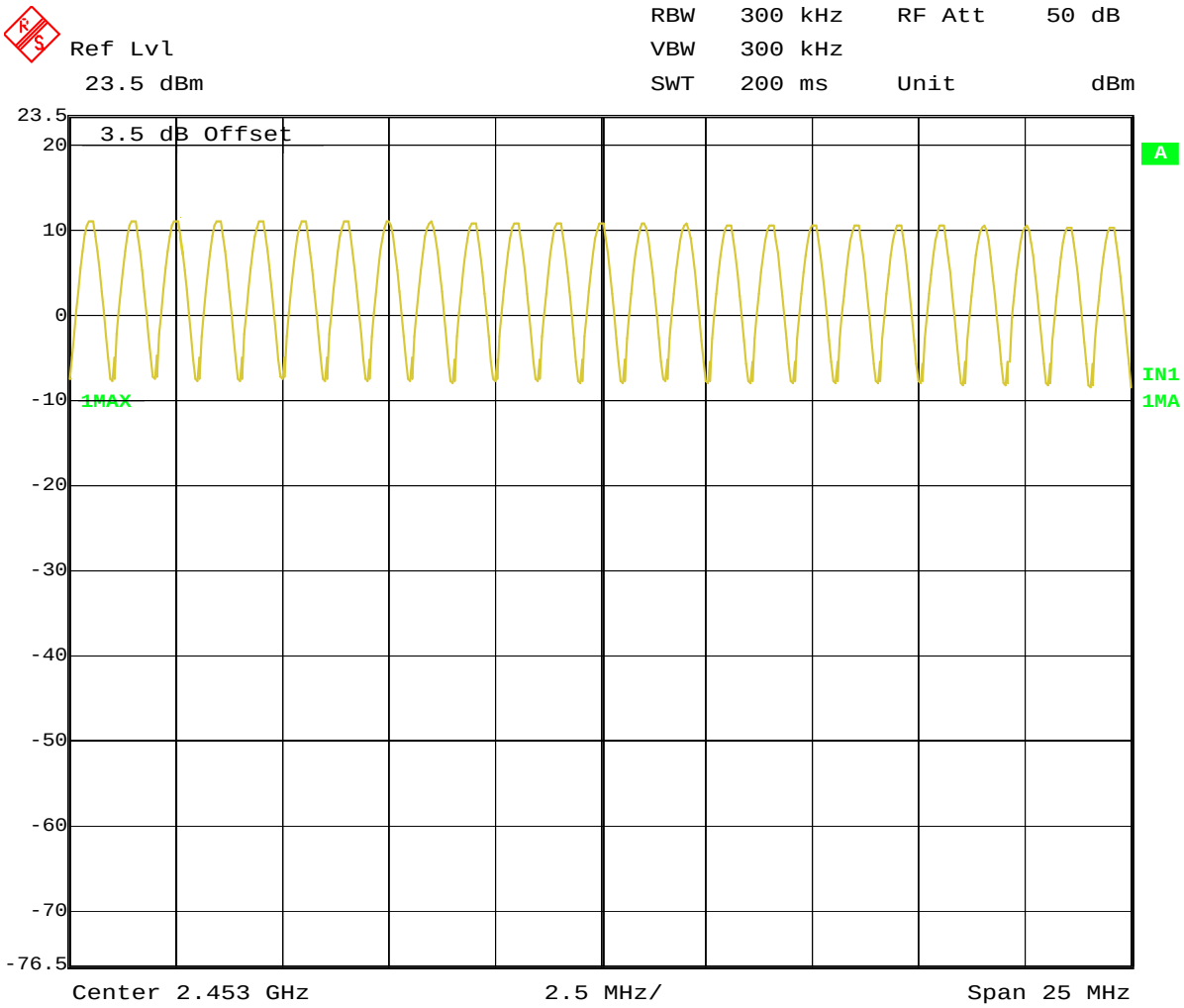
Number of Hopping Frequencies



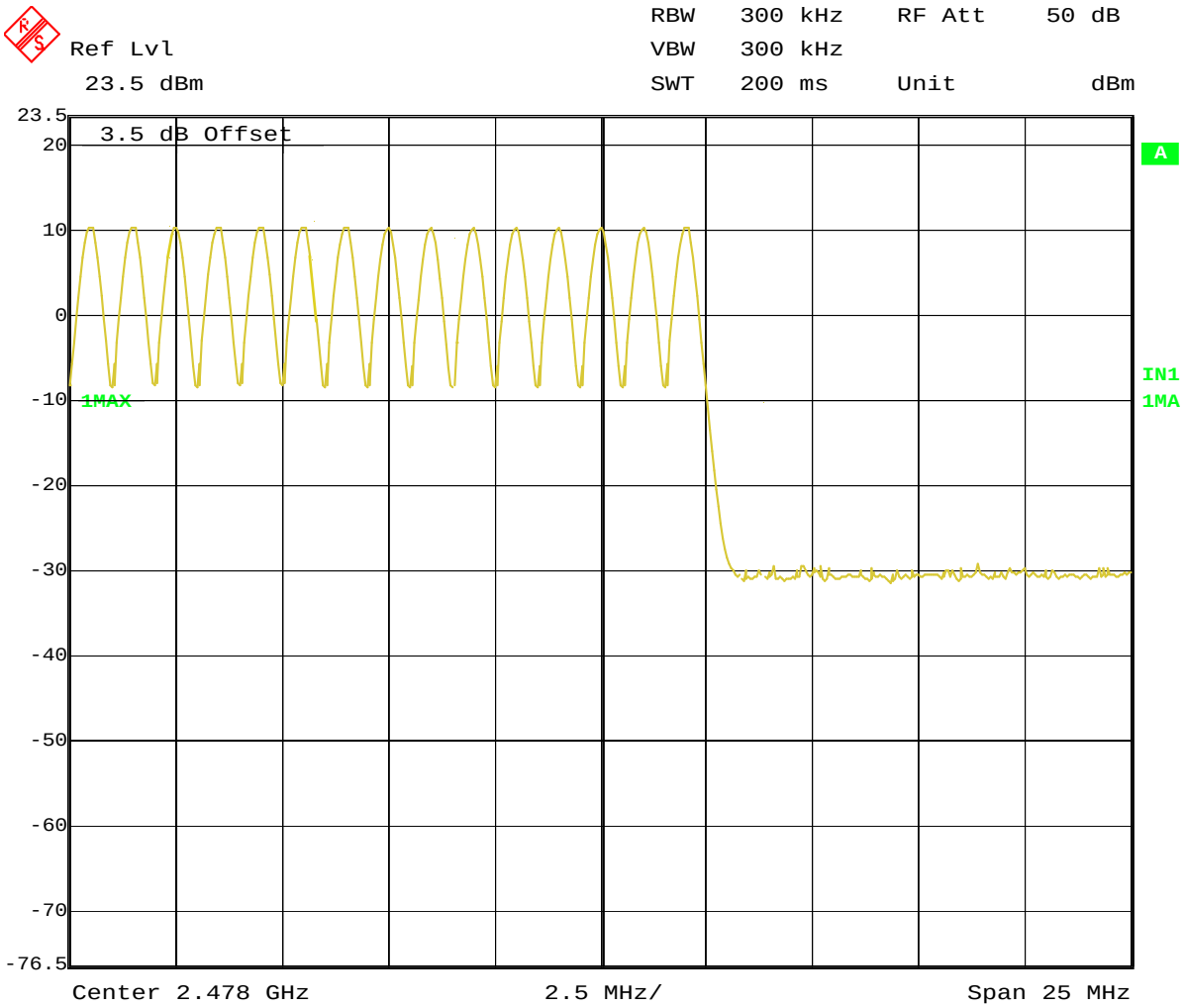
Title: NUMBER OF HOPPING FREQ UNCIES (CH:0-13)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:48:36



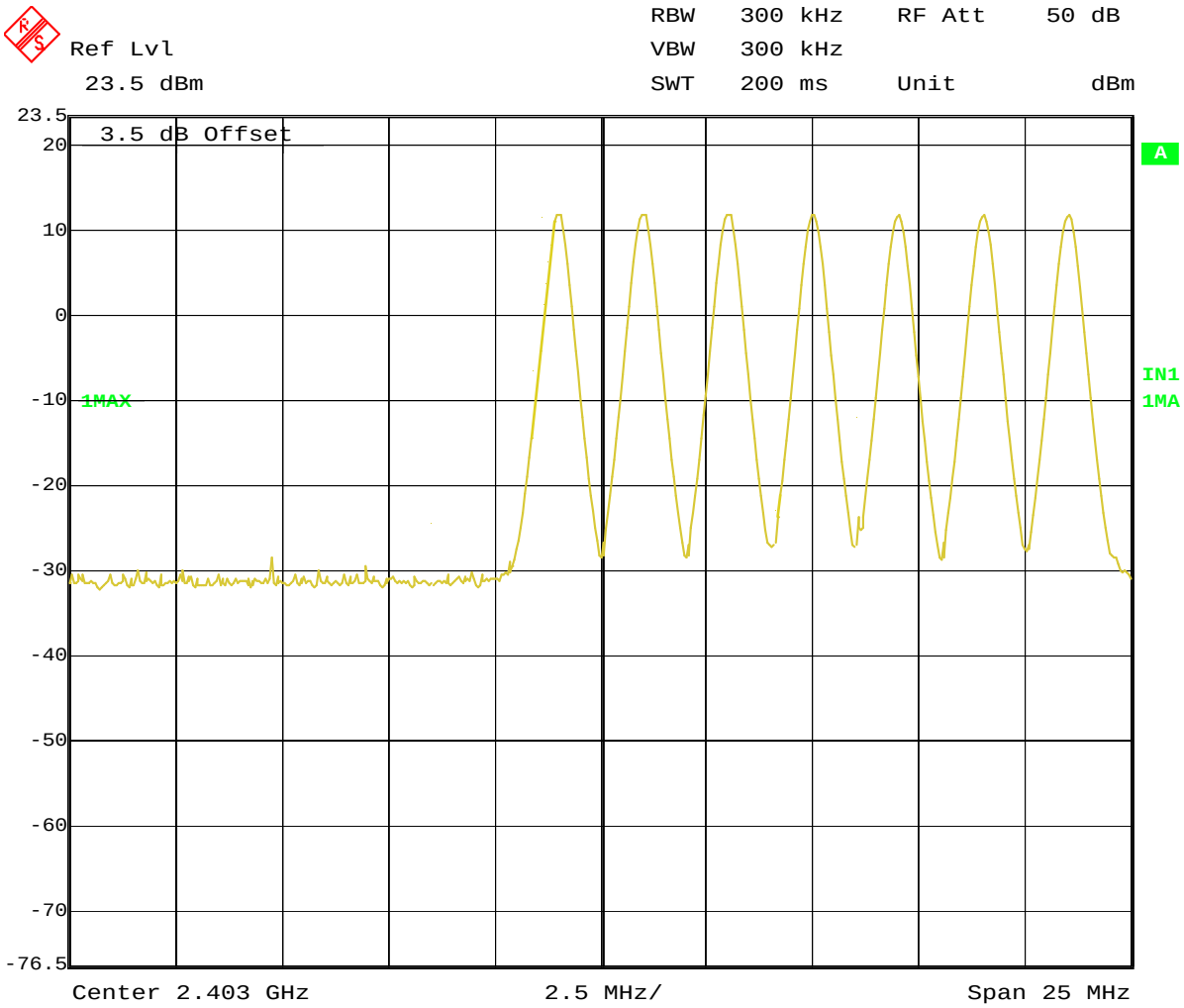
Title: NUMBER OF HOPPING FREQ UNCIES (CH:14-38)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:52:59



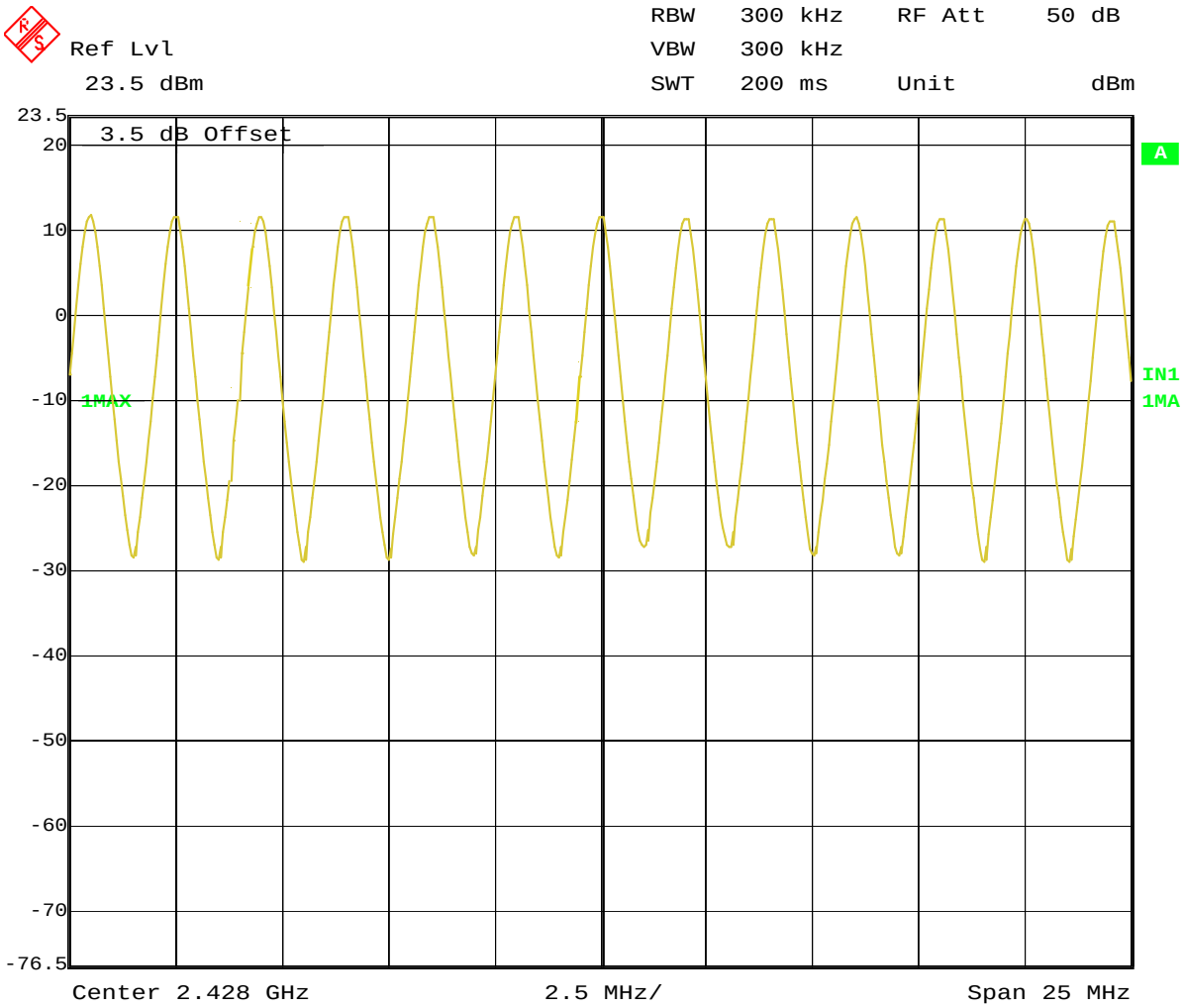
Title: NUMBER OF HOPPING FREQUNCIES (CH:39-63)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:59:10



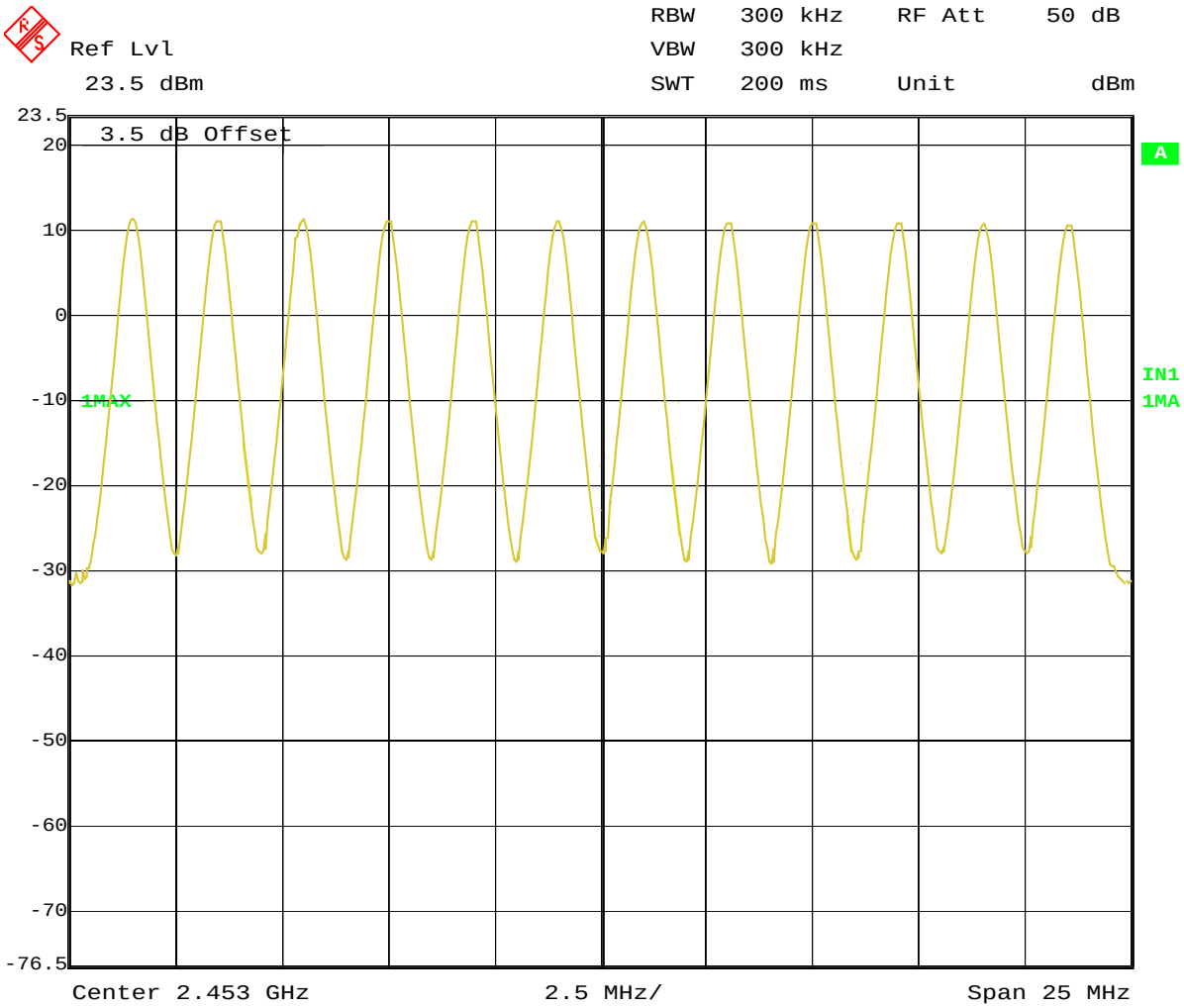
Title: NUMBER OF HOPPING FREQUNCIES (CH:64-78)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 13:06:32



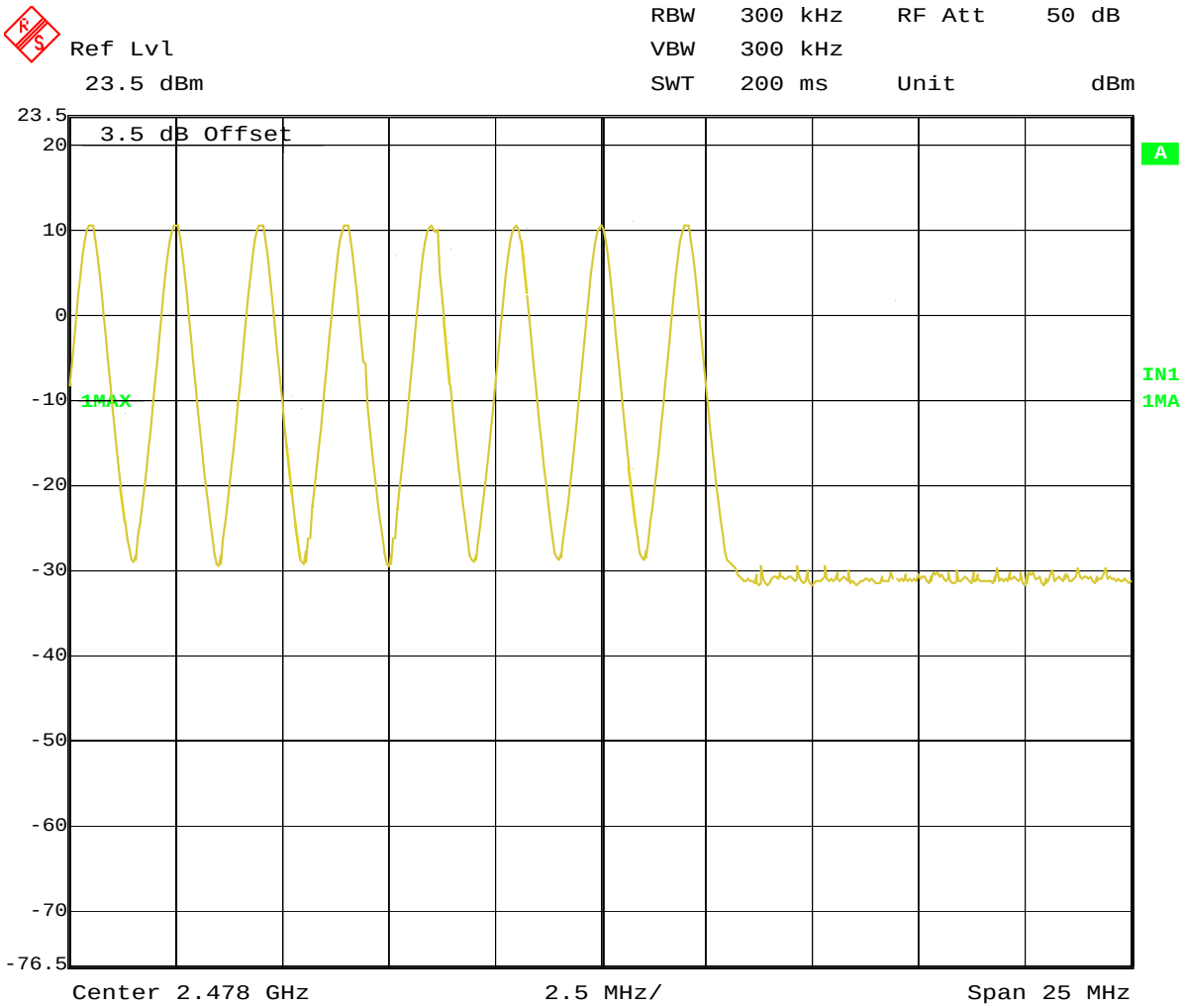
Title: NUMBER OF HOPPING FREQUNCIES (MASTER INQUIRY MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 13:11:44



Title: NUMBER OF HOPPING FREQUNCIES (MASTER INQUIRY MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 13:14:02



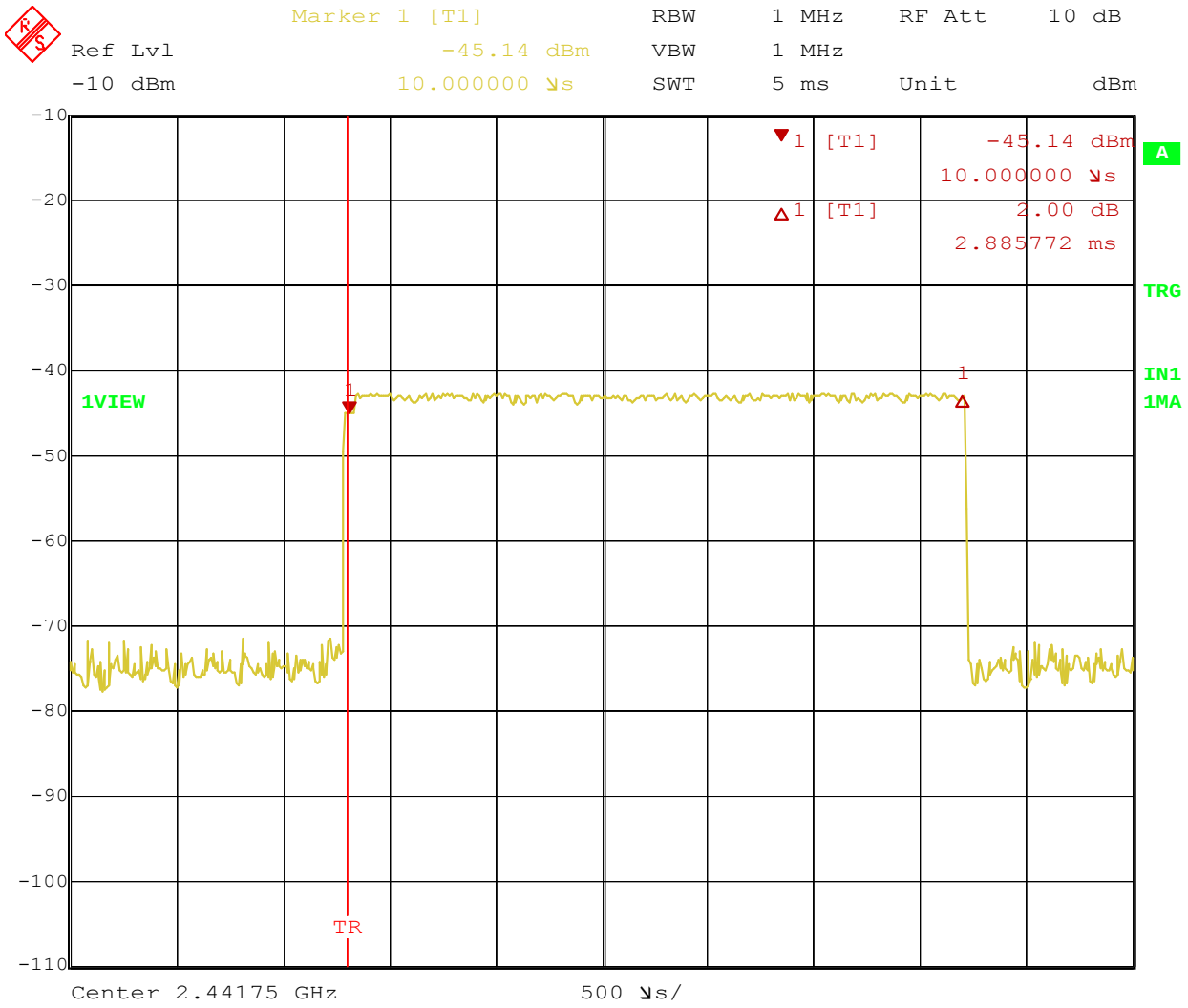
Title: NUMBER OF HOPPING FREQUNCIES (MASTER INQUIRY MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 13:16:28



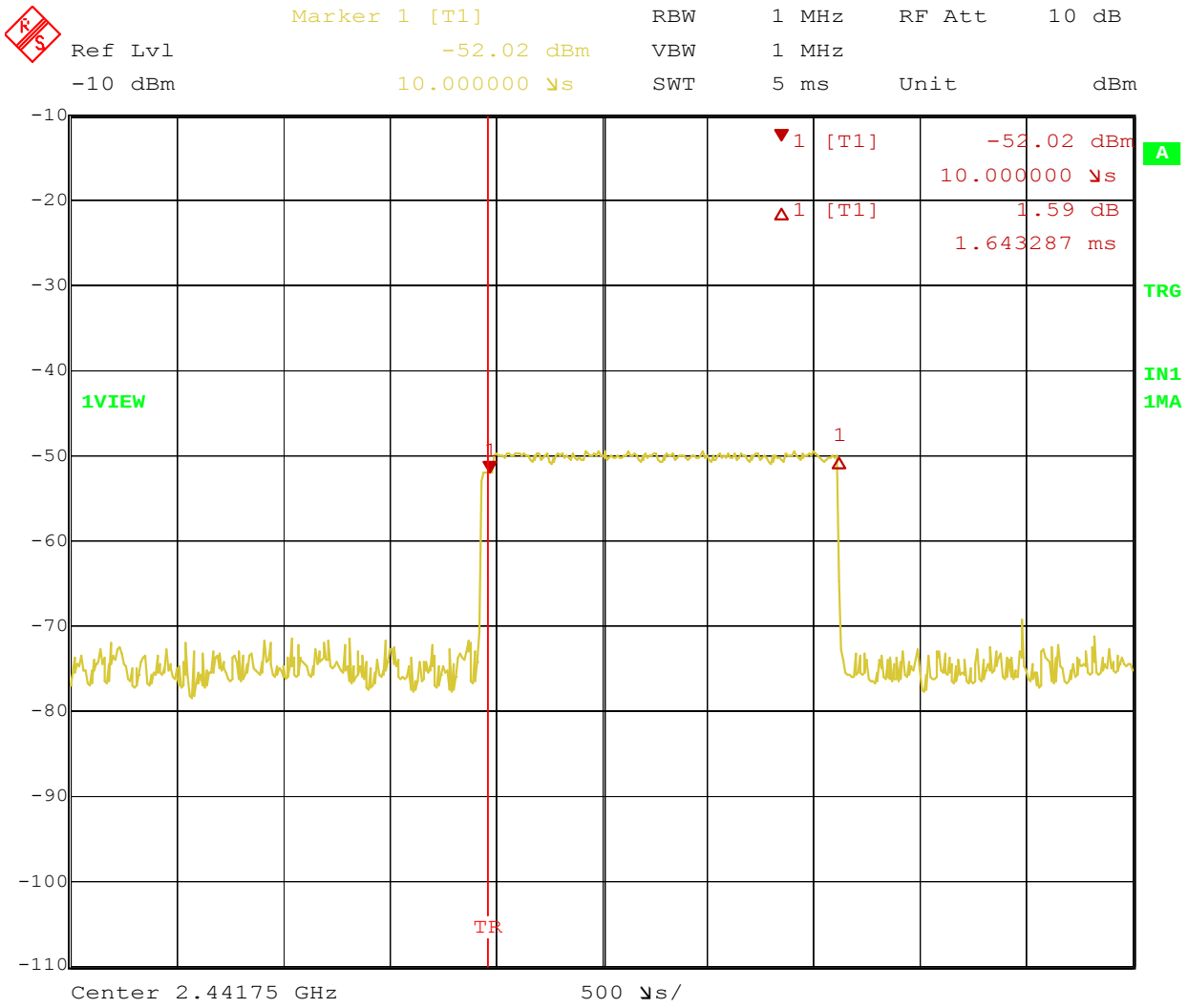
Title: NUMBER OF HOPPING FREQUNCIES (MASTER INQUIRY MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 14:08:55

Appendix E

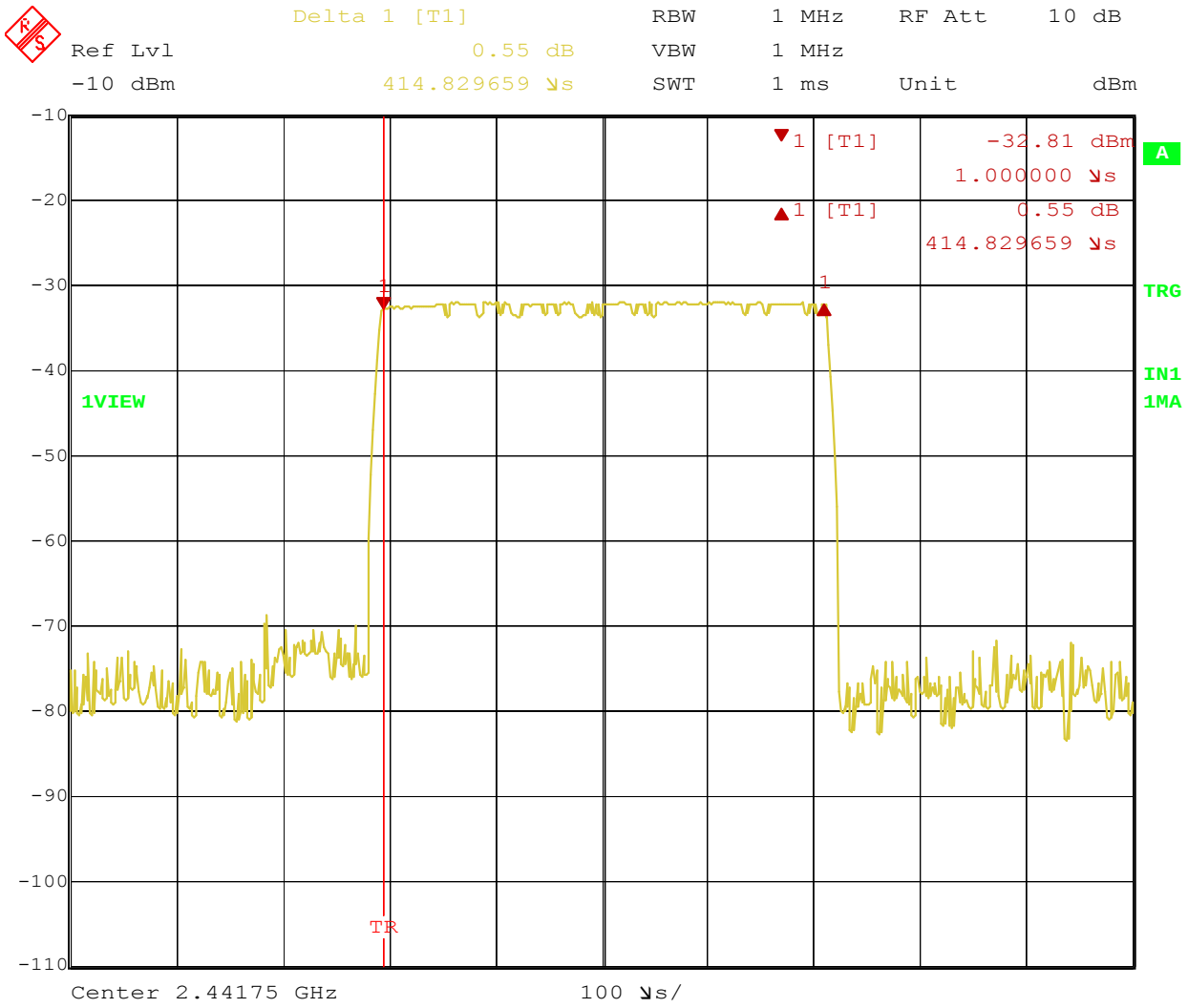
Time of Occupancy (Dwell Time)



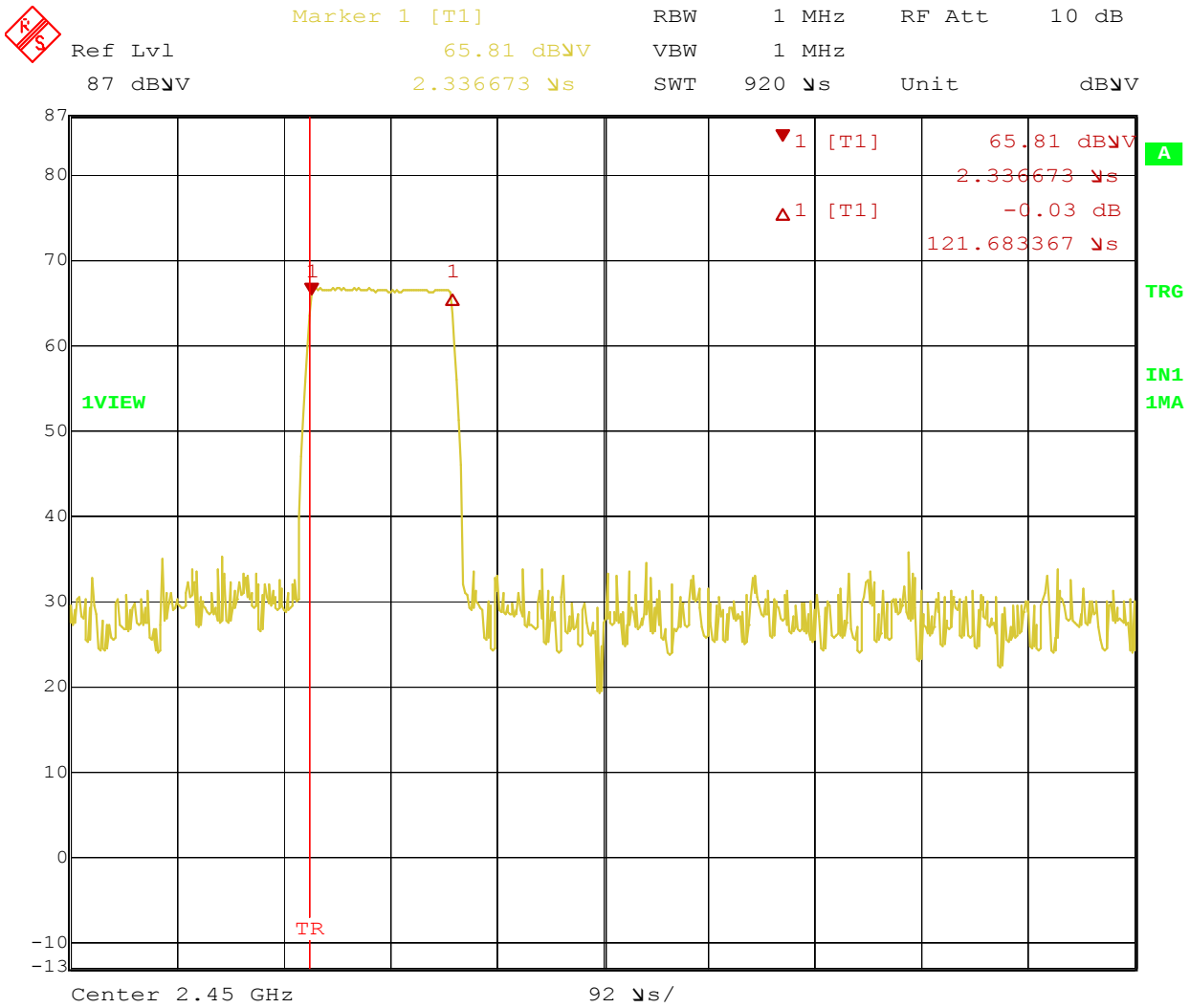
Title: Time of occupancy (Hopping DH5)65 events * 2.885772 ms= 187.757ms
Comment A: Metrologic Instruments, Inc.
Date: 14.JUN.2005 10:33:23



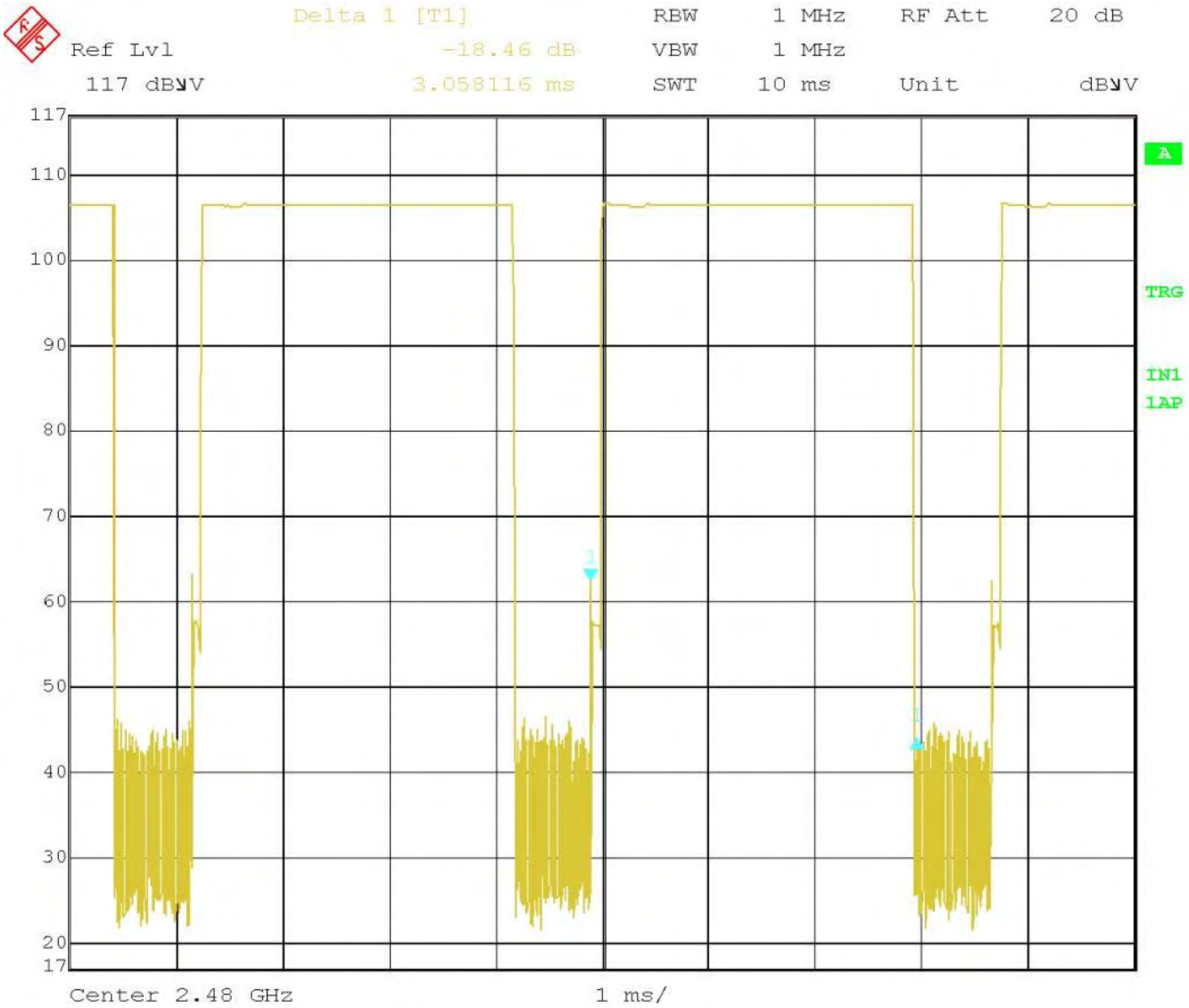
Title: Time of occupancy (Hopping DH3)70 events * 1.643287 ms= 115.03ms
Comment A: Metrologic Instruments, Inc.
Date: 14.JUN.2005 10:30:54



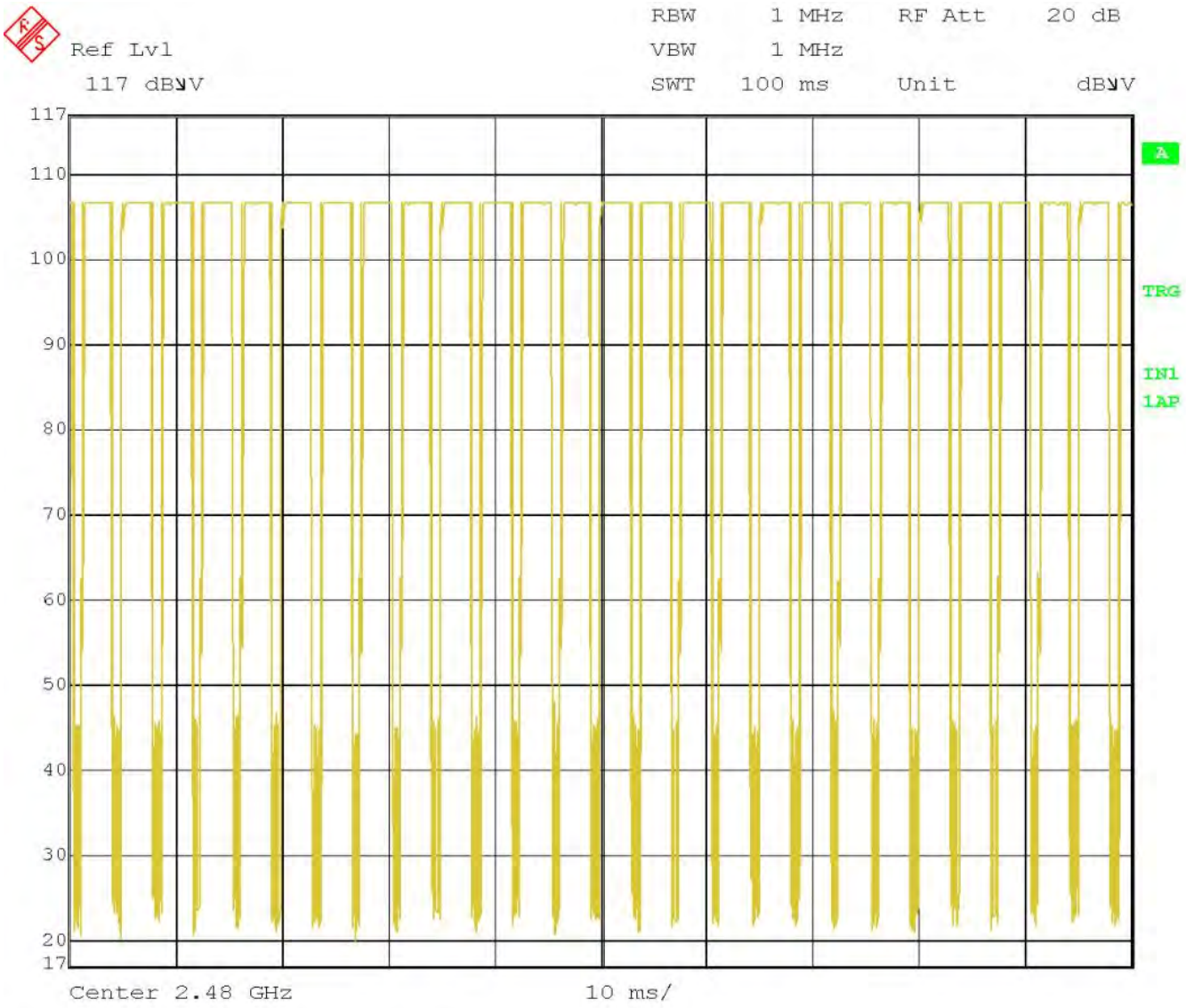
Title: Time of occupancy (Hopping Mode)414.83us*490events=203.27ms
Comment A: Metrologic Instruments, Inc.
Date: 14.JUN.2005 10:37:58



Title: Time of occupancy (Inquiry Mode)121.683us*52events=6.33ms
Comment A: Metrologic Instruments, Inc.
Date: 14.JUN.2005 16:42:12



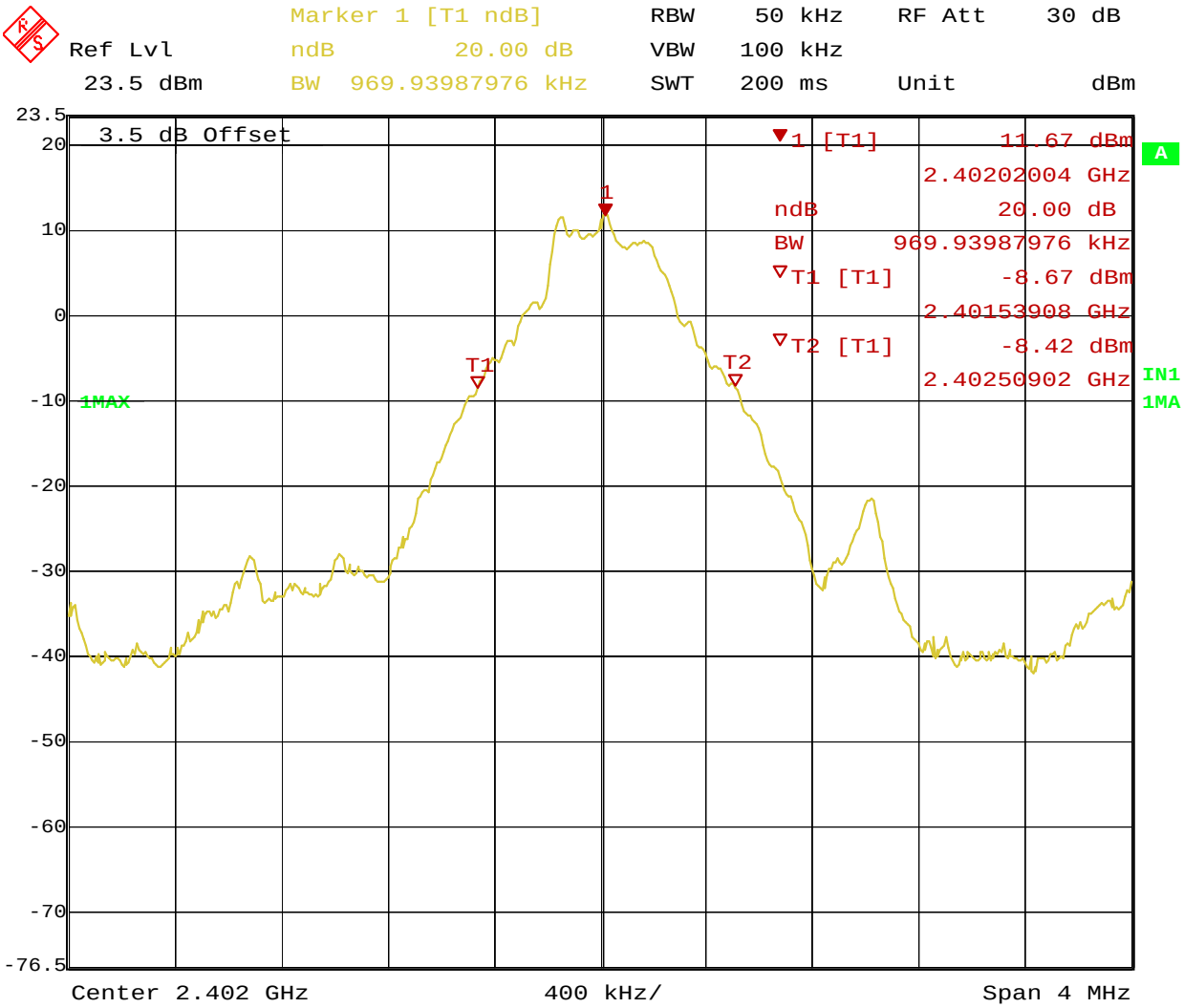
Date: 10.AUG.2005 19:05:07



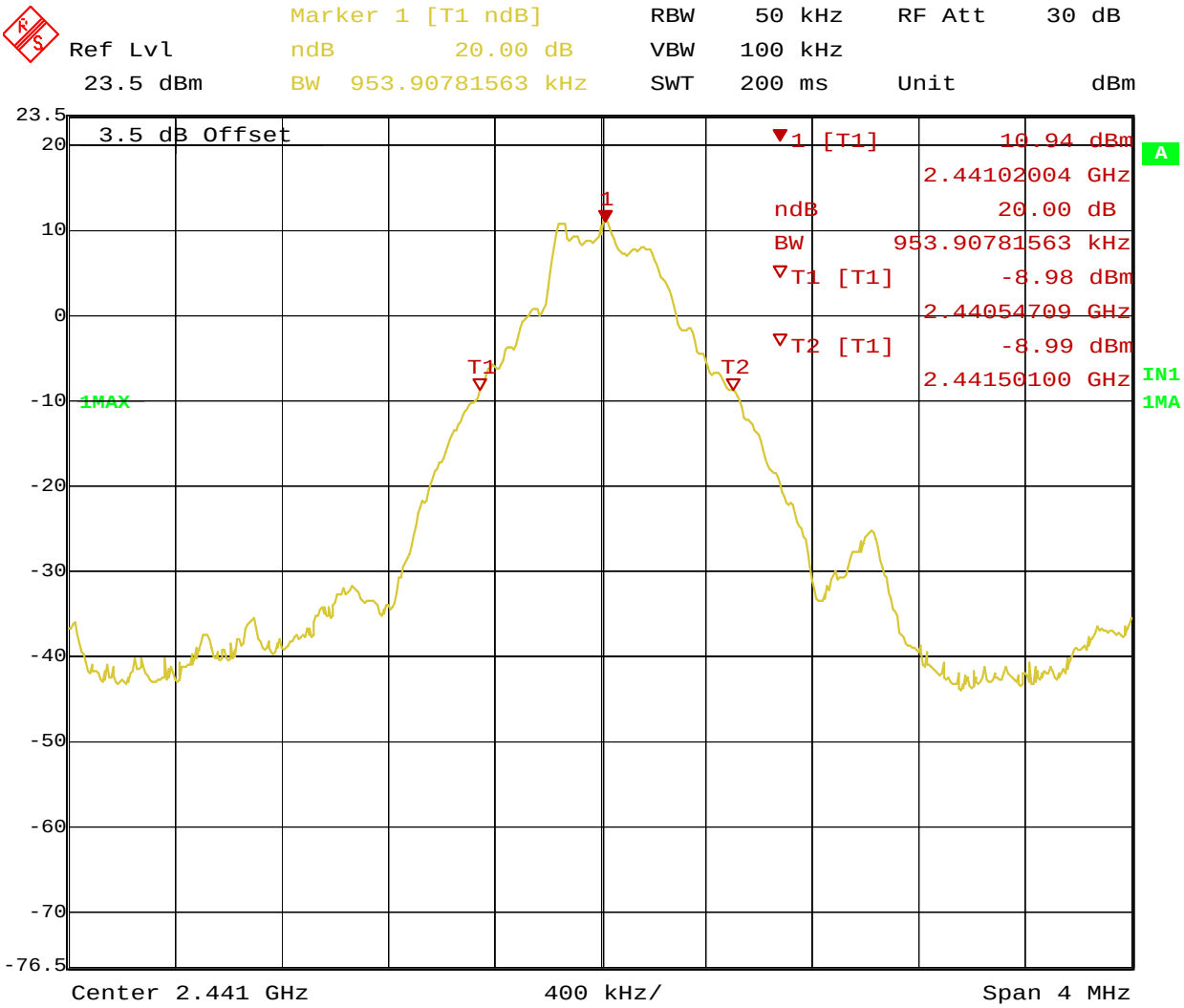
Date: 10.AUG.2005 19:05:57

Appendix F

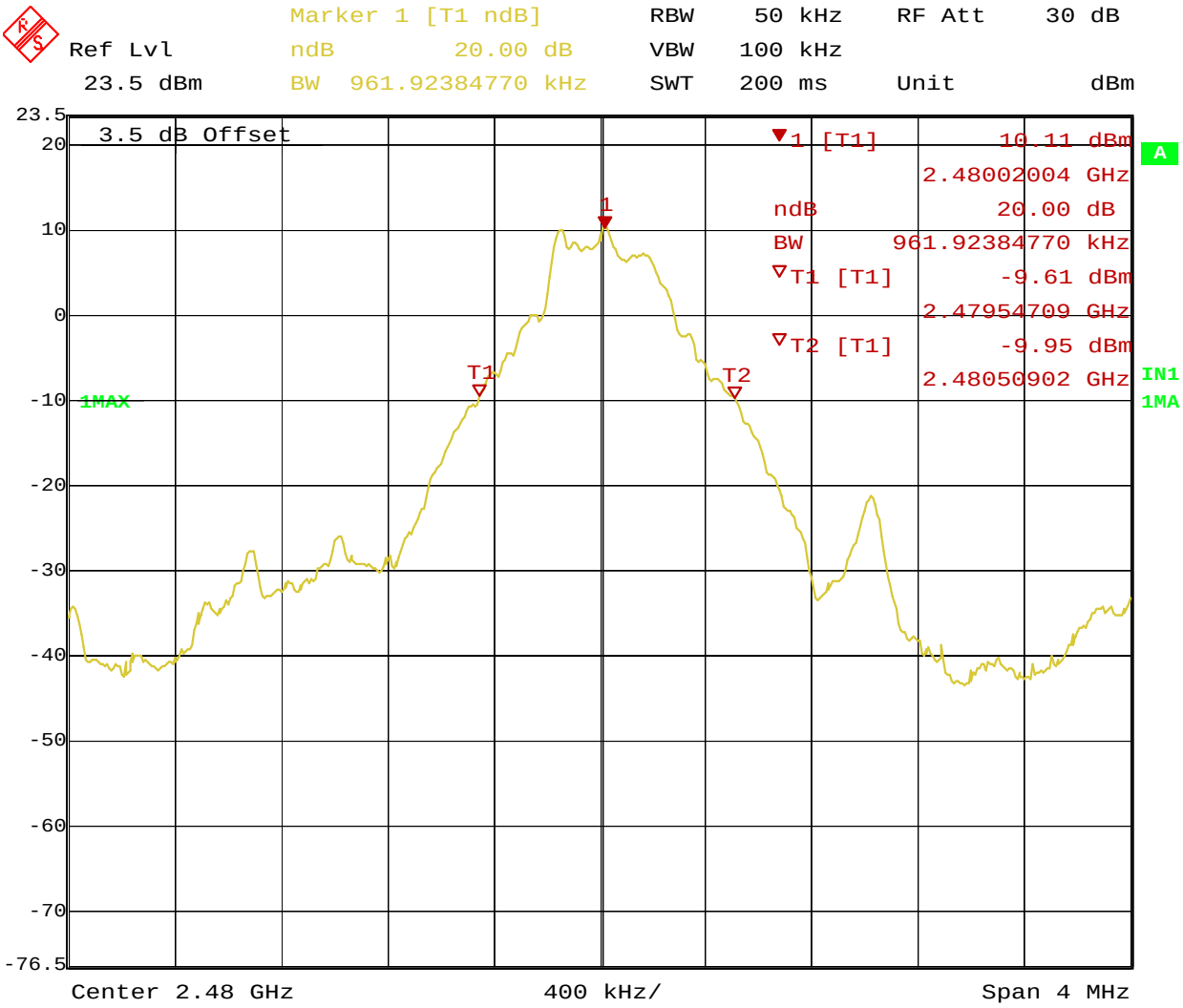
20dB Bandwidth



Title: 20dB BANDWIDTH CH0
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:13:13



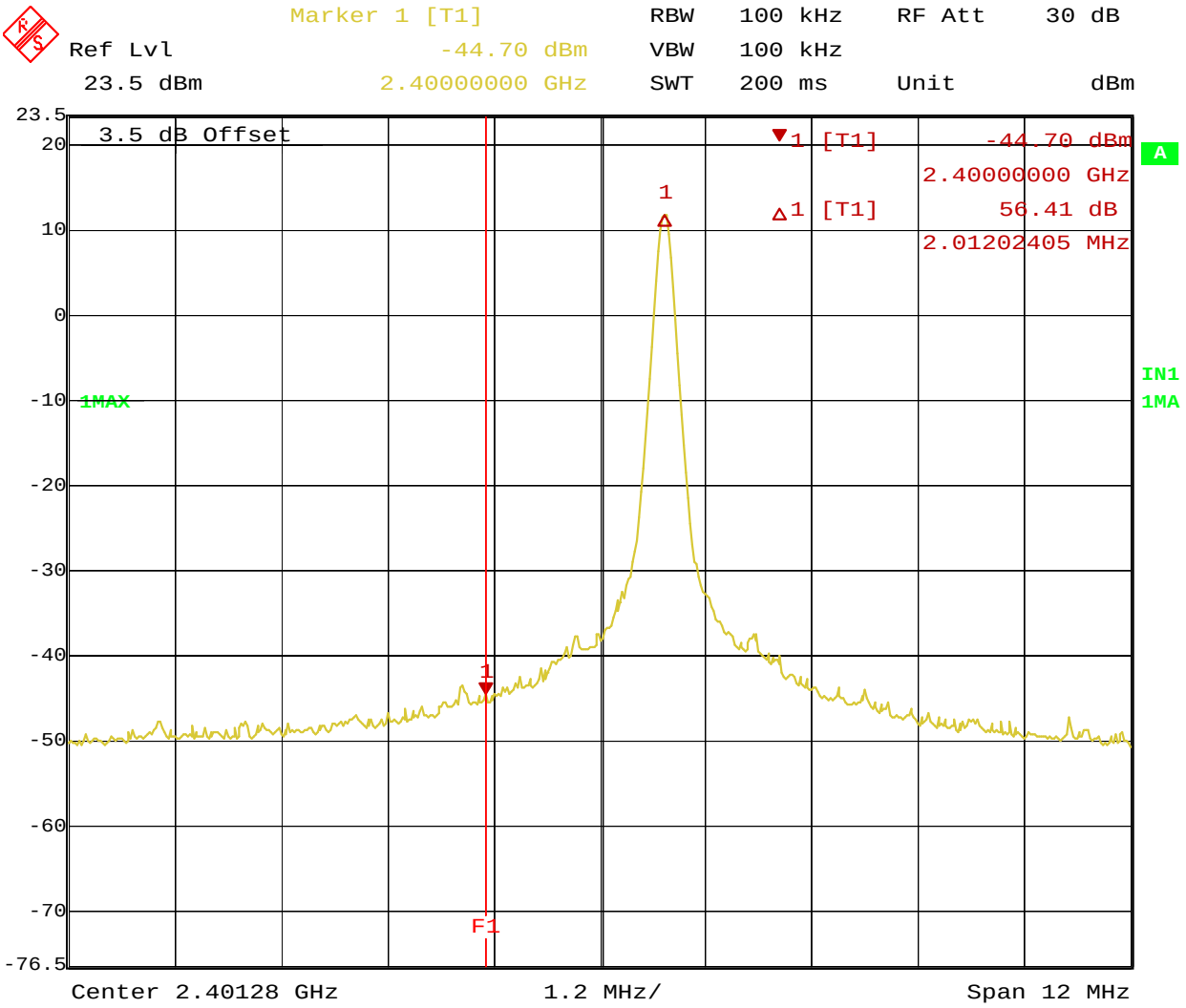
Title: 20dB BANDWIDTH CH39
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:11:25



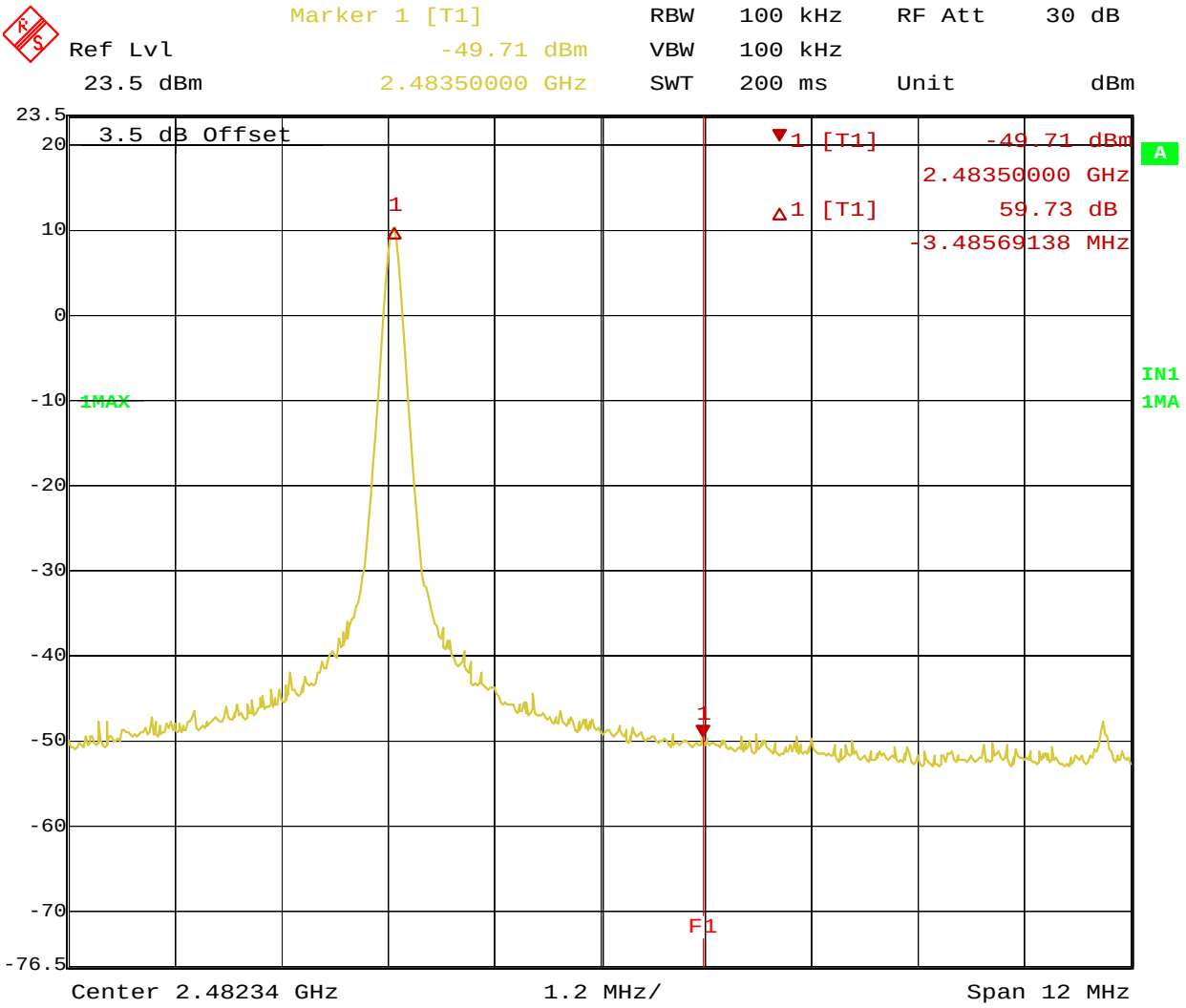
Title: 20dB BANDWIDTH CH78
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:15:14

Appendix G

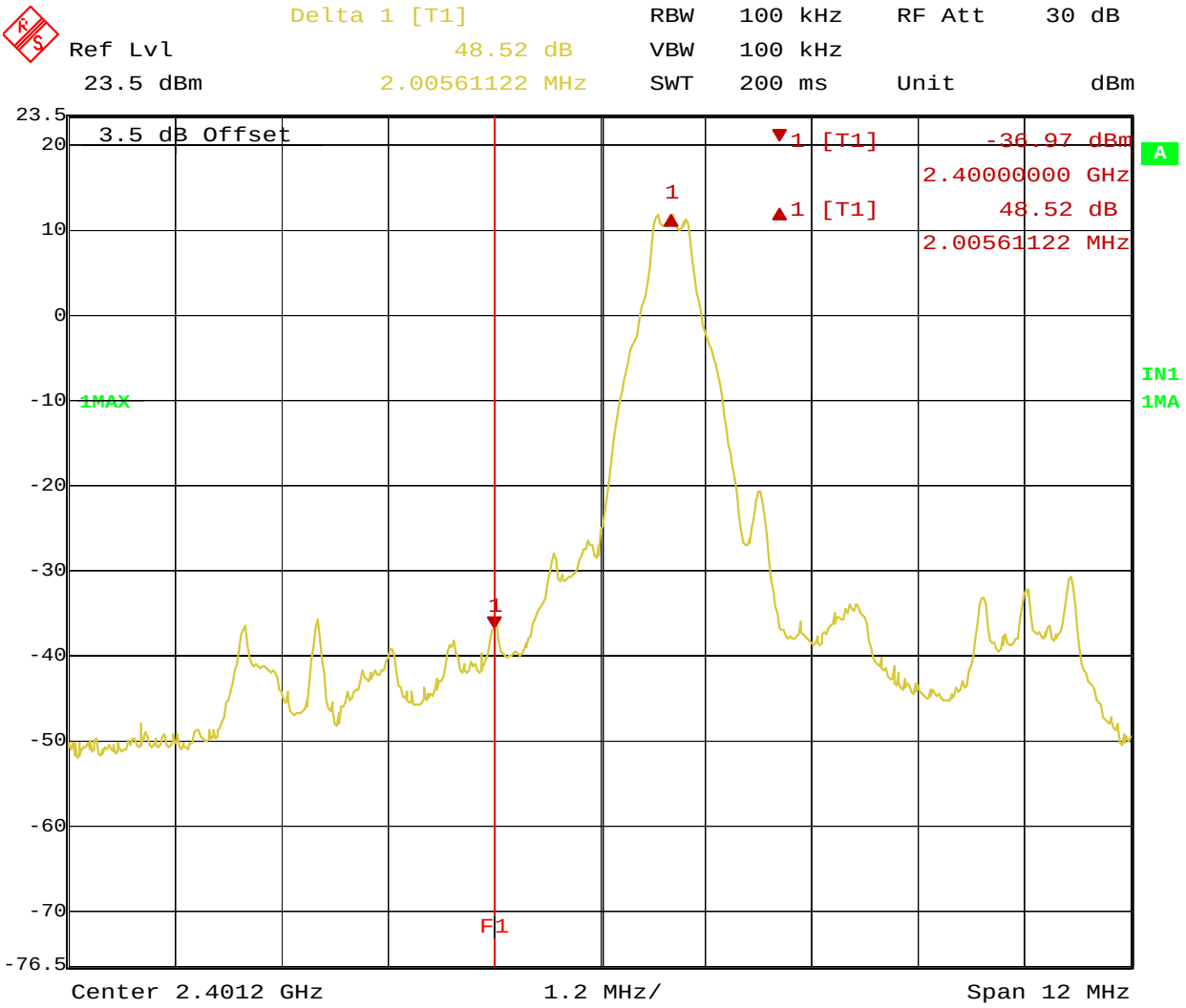
Band-edge Compliance of RF Conducted Emissions



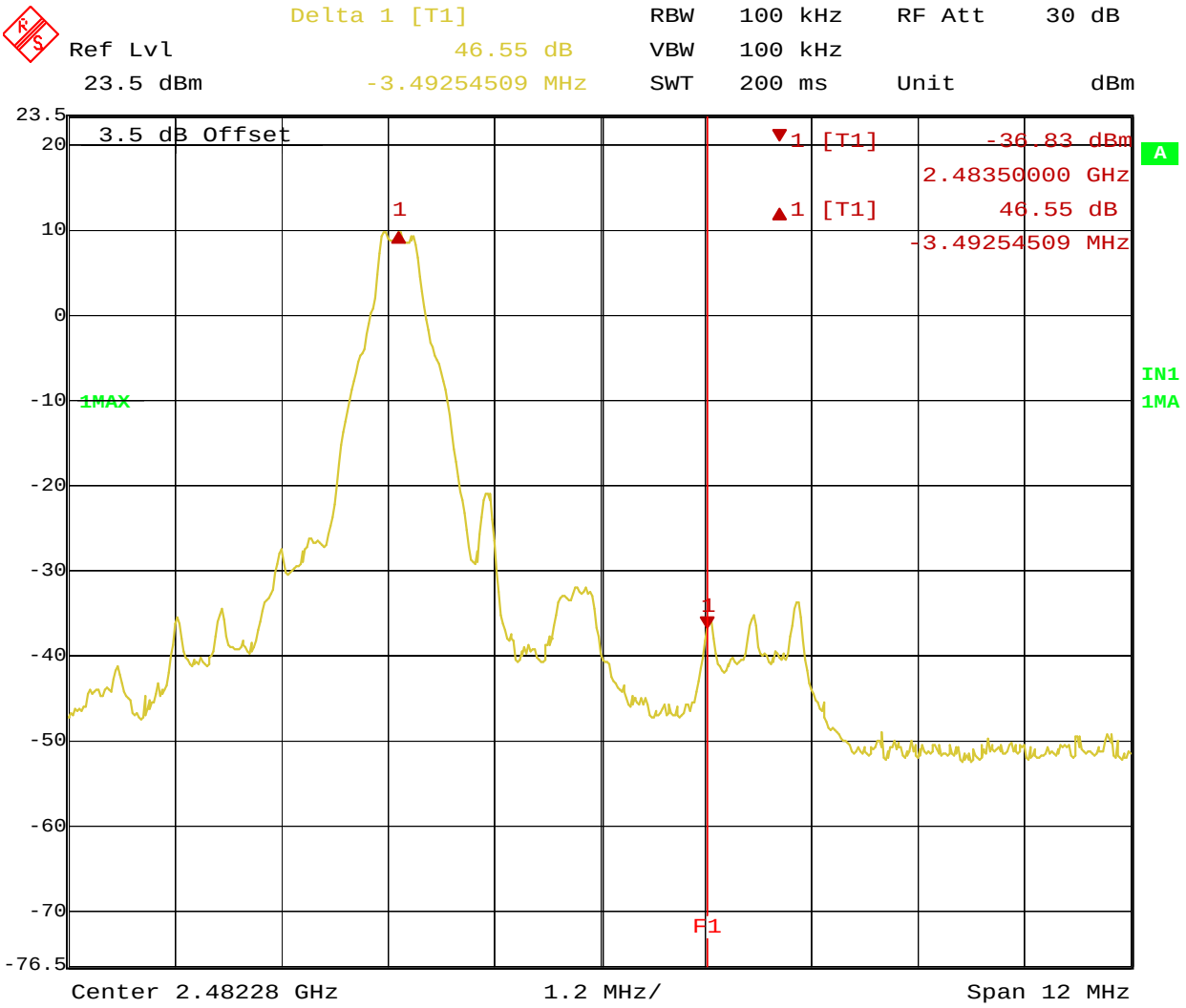
Title: BANDEDGE COMPLIANCE CH0 (CONDUCT, SINGLE MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 14:21:55



Title: BANDEDGE COMPLIANCE CH78 (CONDUCT, SINGLE MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 12:39:02



Title: BANDEDGE COMPLIANCE CH0 (CONDUCT, HOPPING MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 11:29:42



Title: BANDEDGE COMPLIANCE CH78 (CONDUCT, HOPPING MODE)
Comment A: Metrologic Instruments, Inc.
Date: 9.JUN.2005 11:18:47

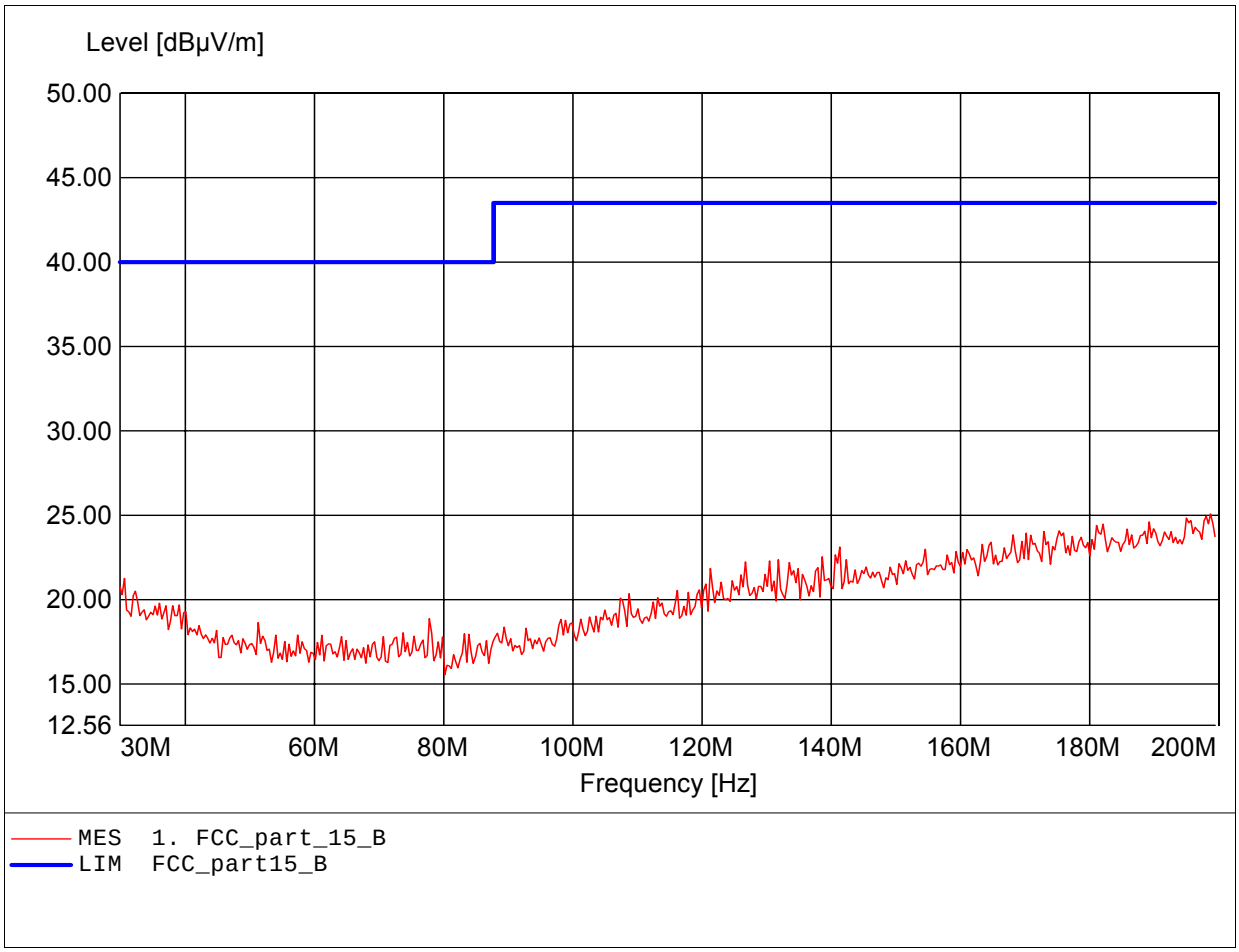
Appendix H

Radiated Emissions from Receiver Section of Transceiver

Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

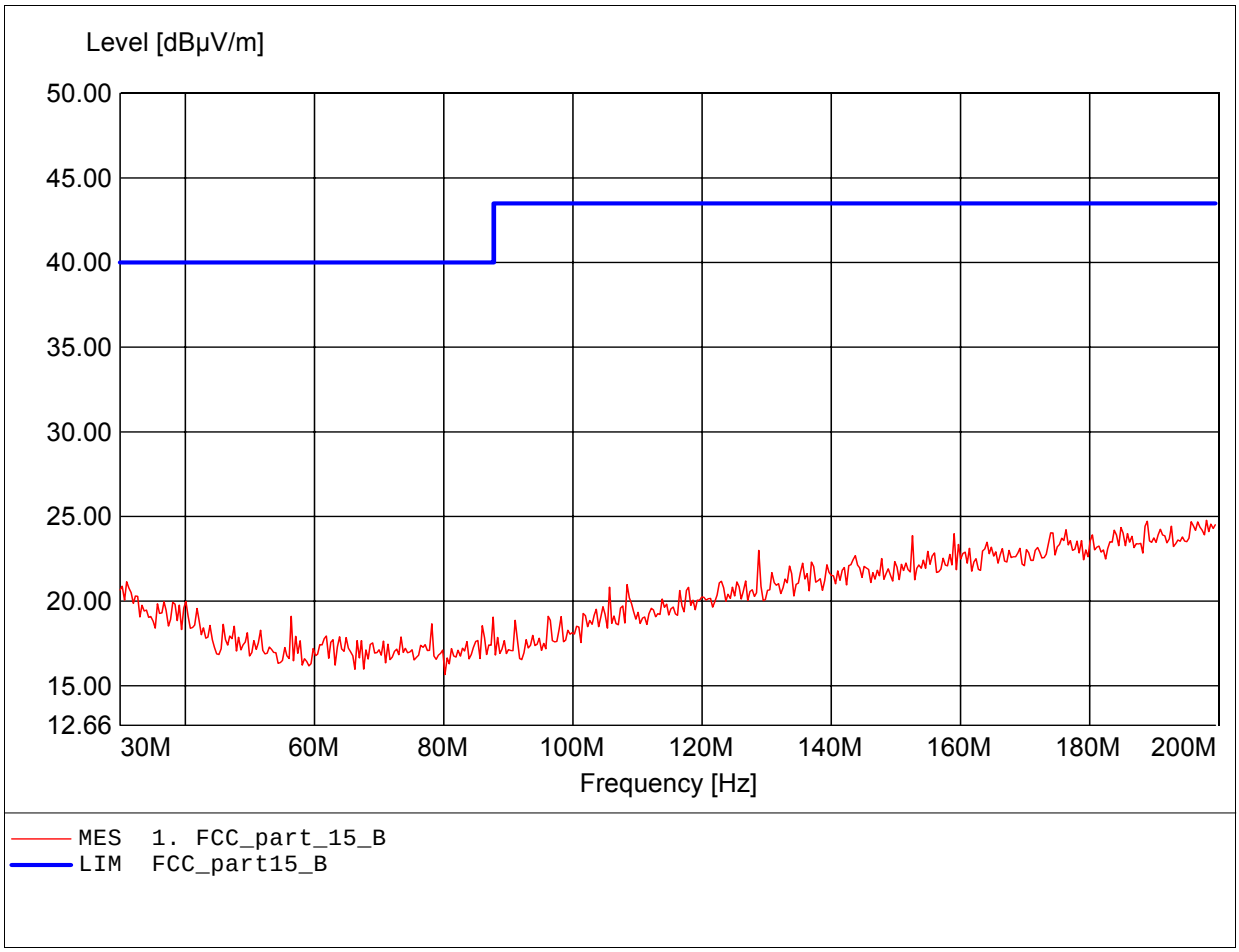
EUT:	Data Collector
MODEL NO.:	SP5500 Low channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltag e	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Spec ific atio	according to subpart B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:199.319MHz Emax :25.09dBµ V/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

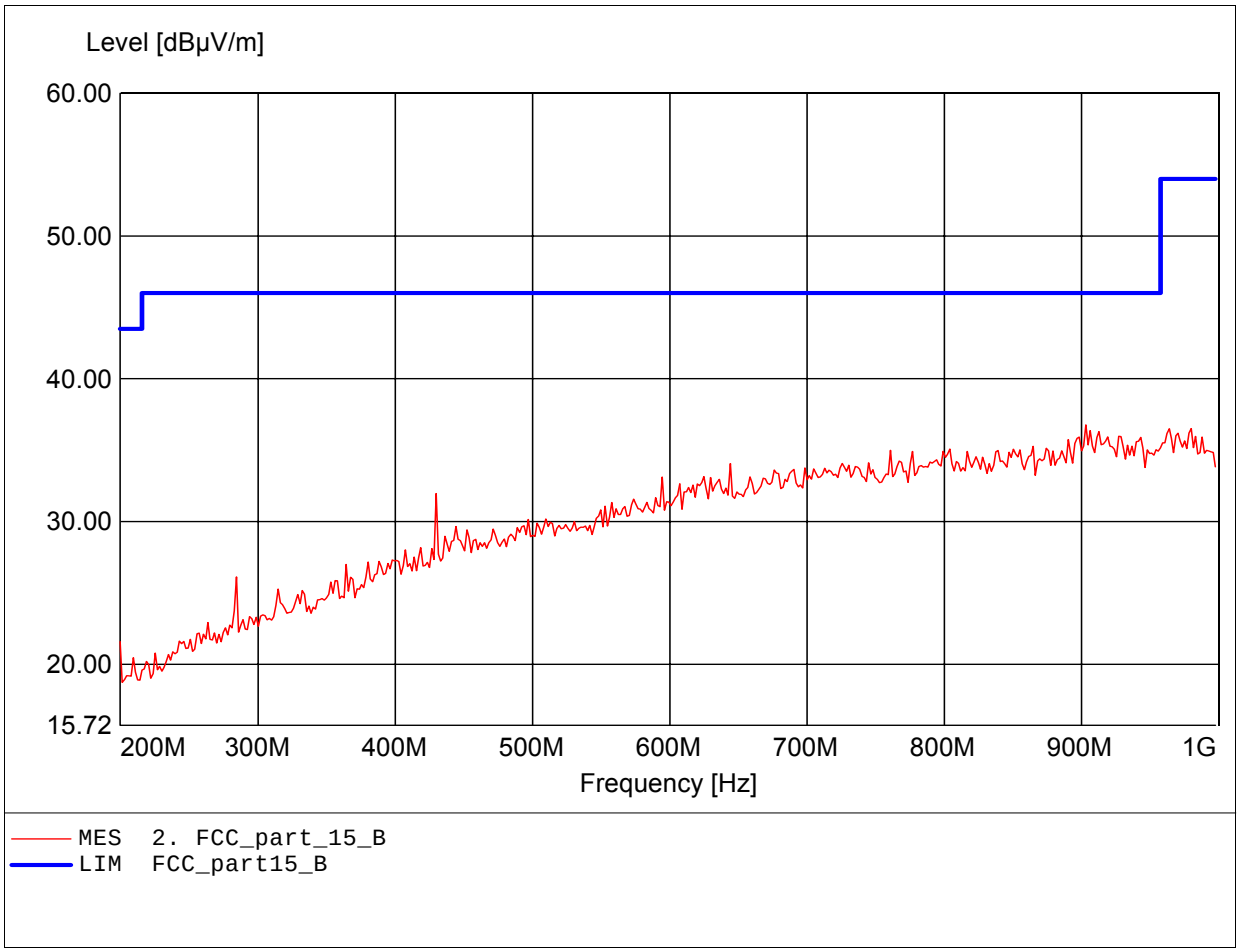
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:198.637MHz Emax:24.77dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

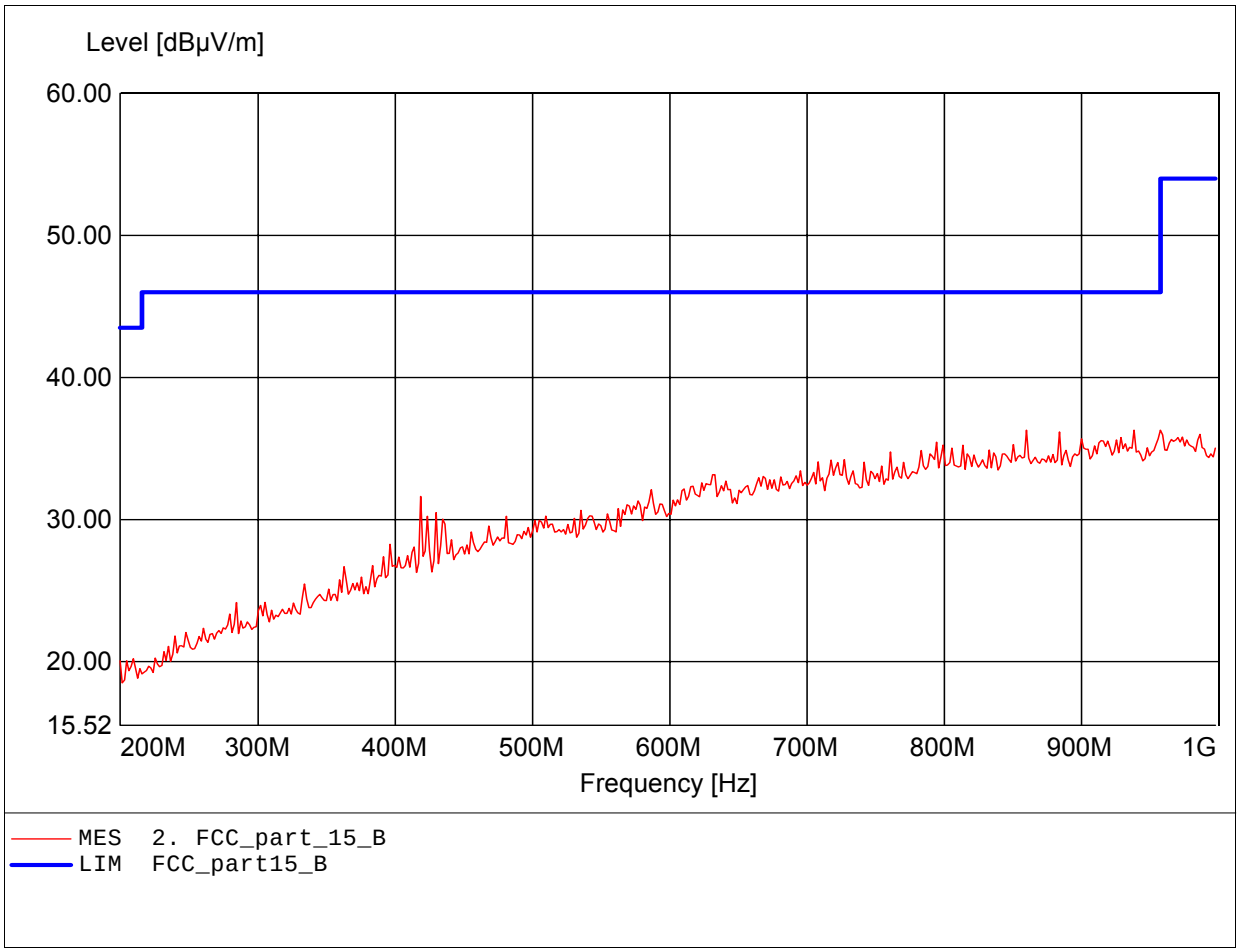
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:905.411MHz Emax:36.77dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

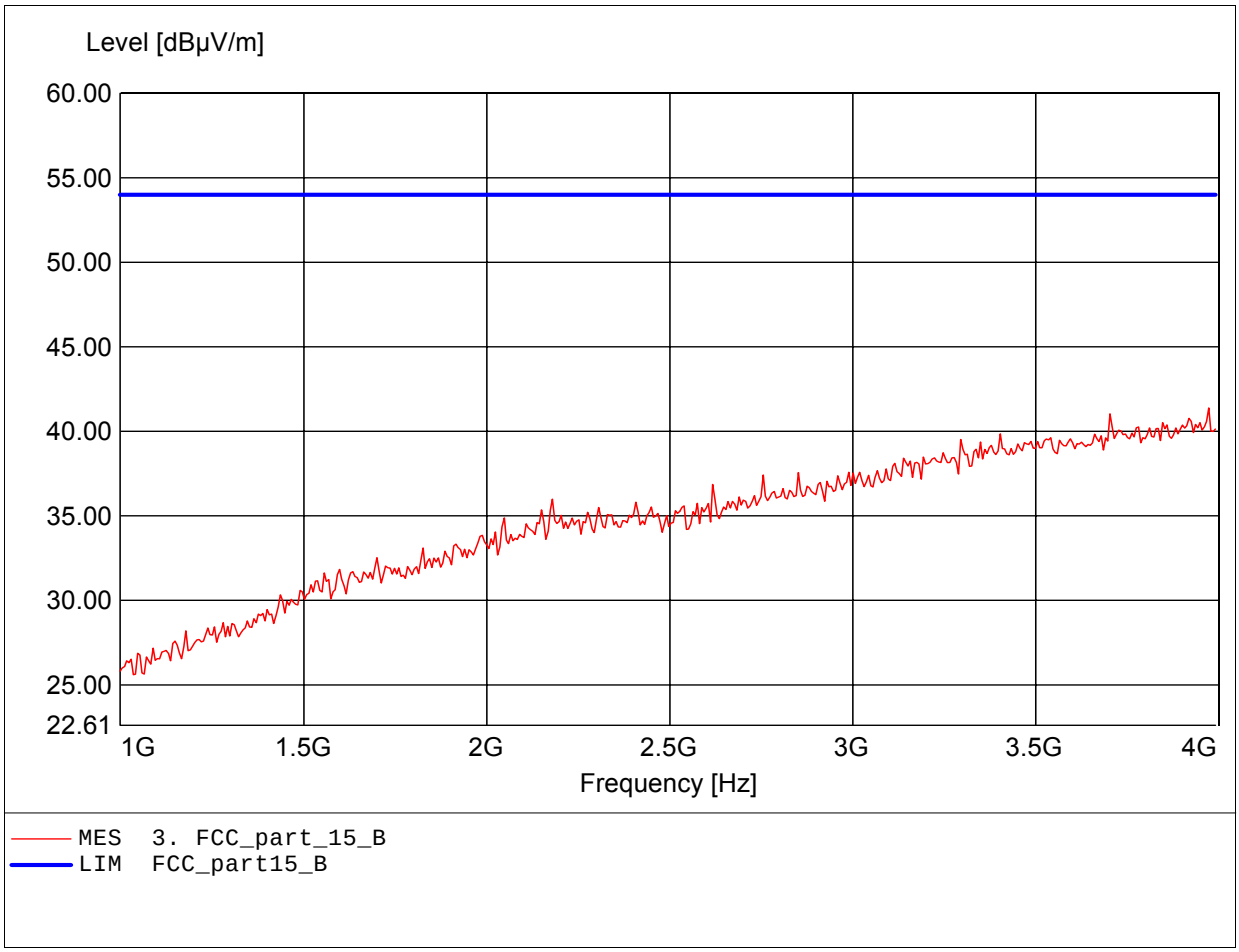
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:862.124MHz Emax:36.30dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

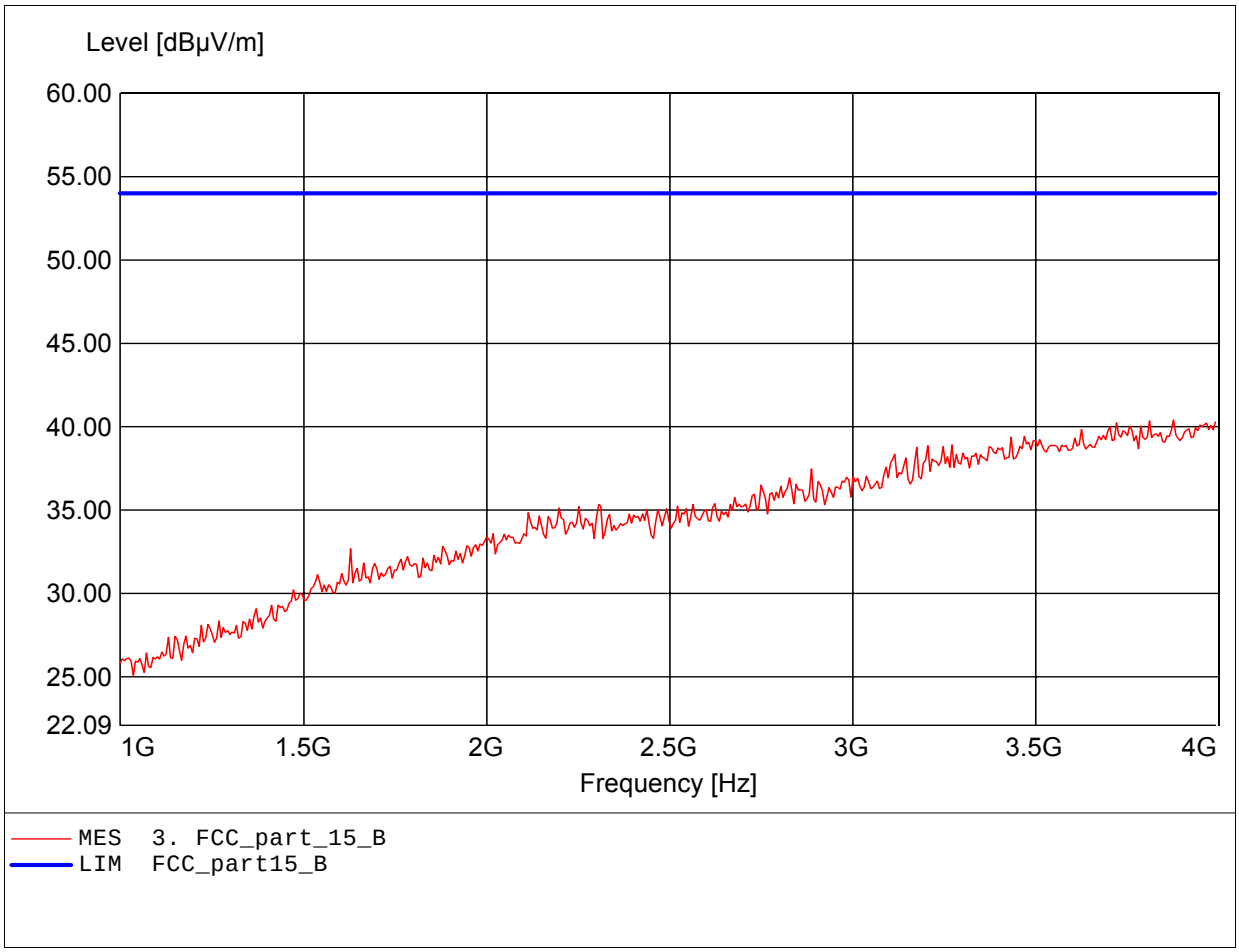
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.982GHz Emax:41.39dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

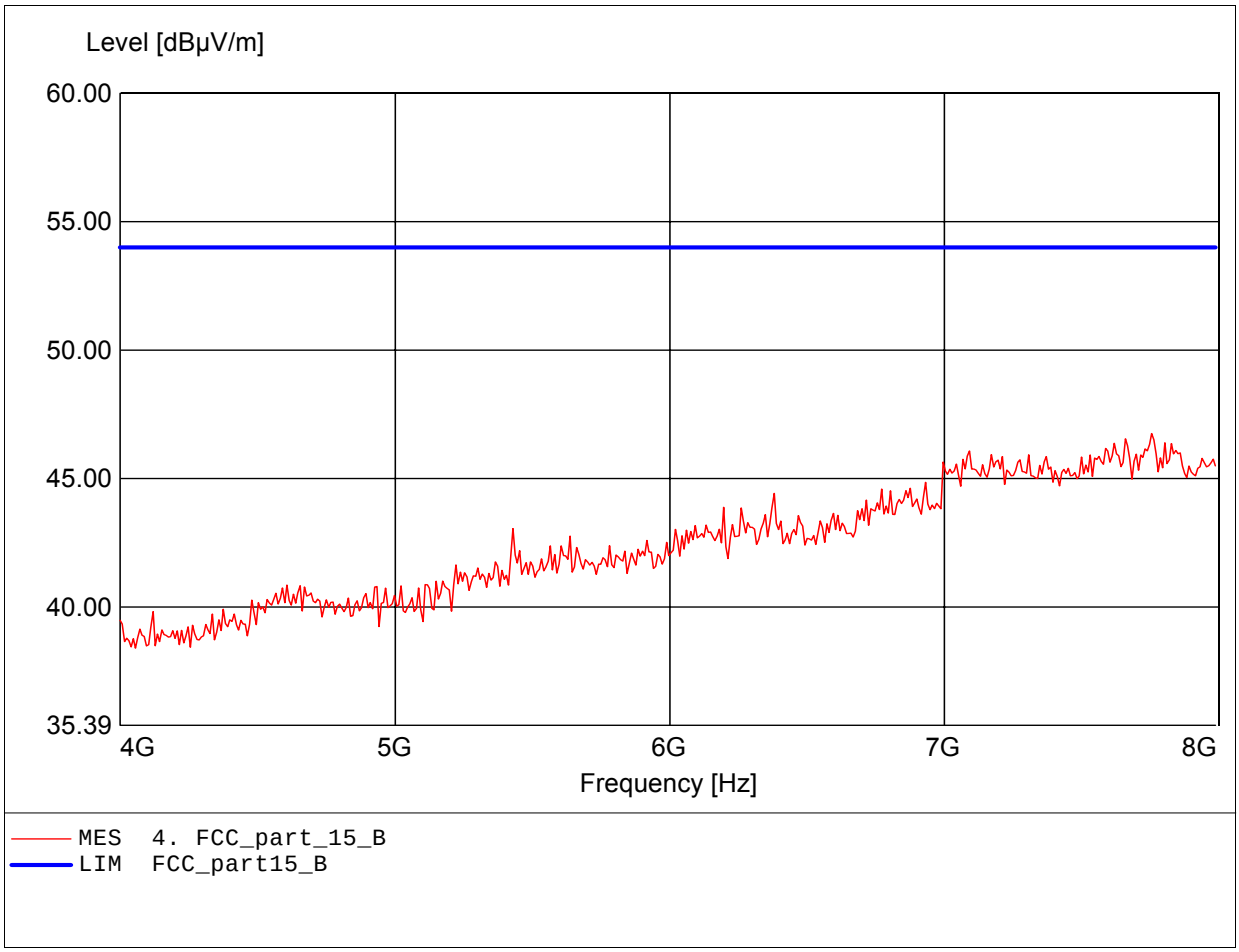
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.886GHz Emax:40.40dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

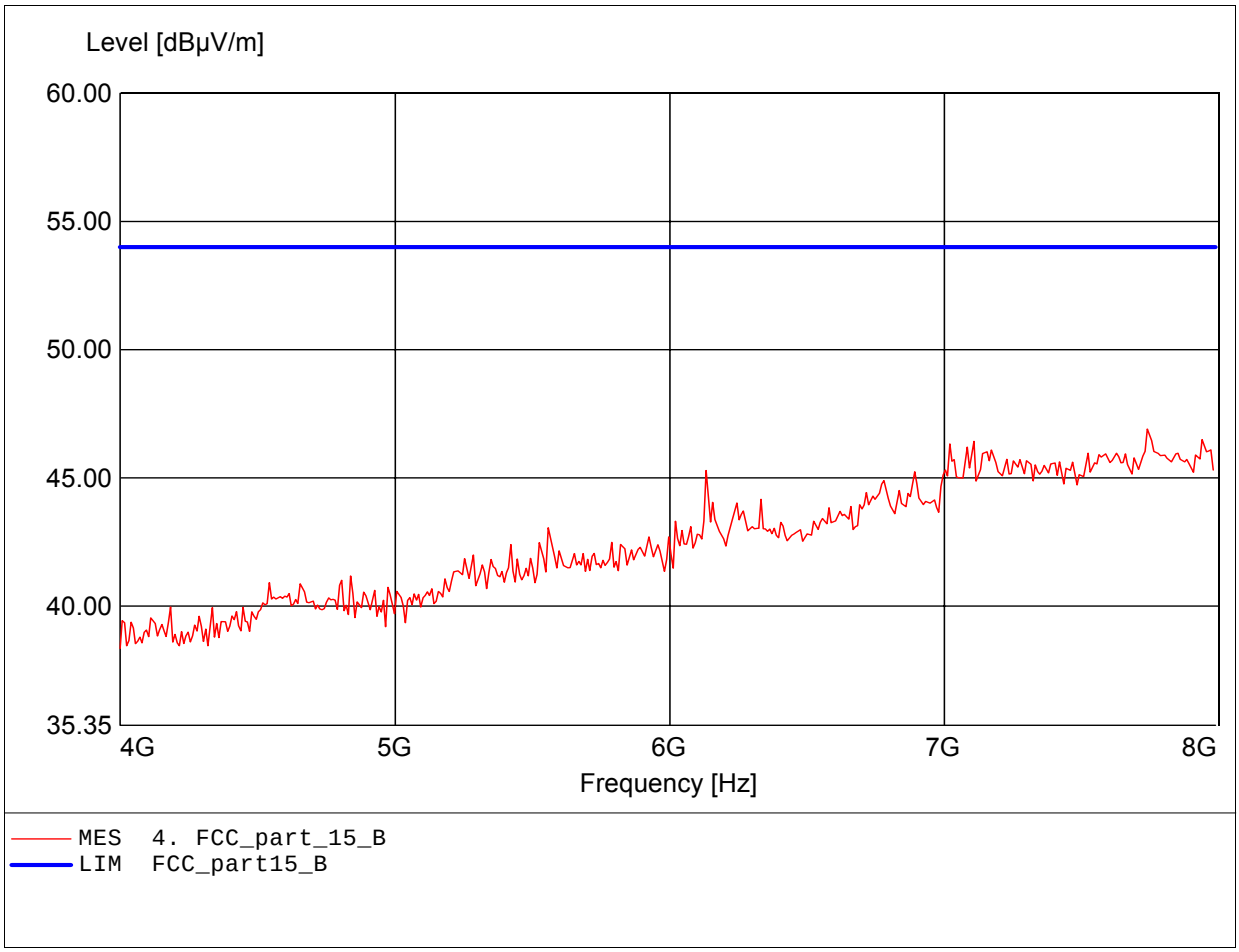
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.768GHz Emax:46.75dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

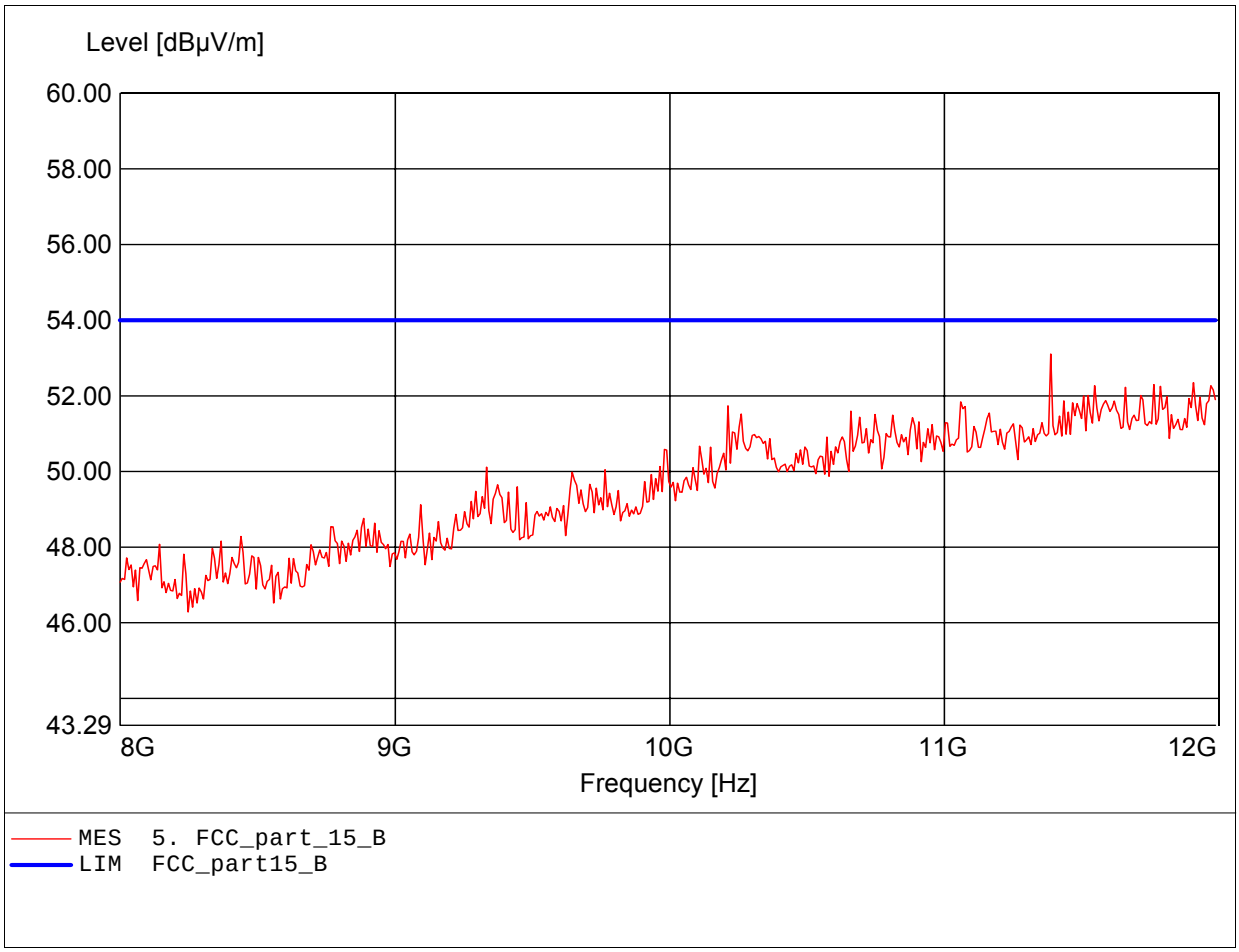
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.752GHz Emax:46.90dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

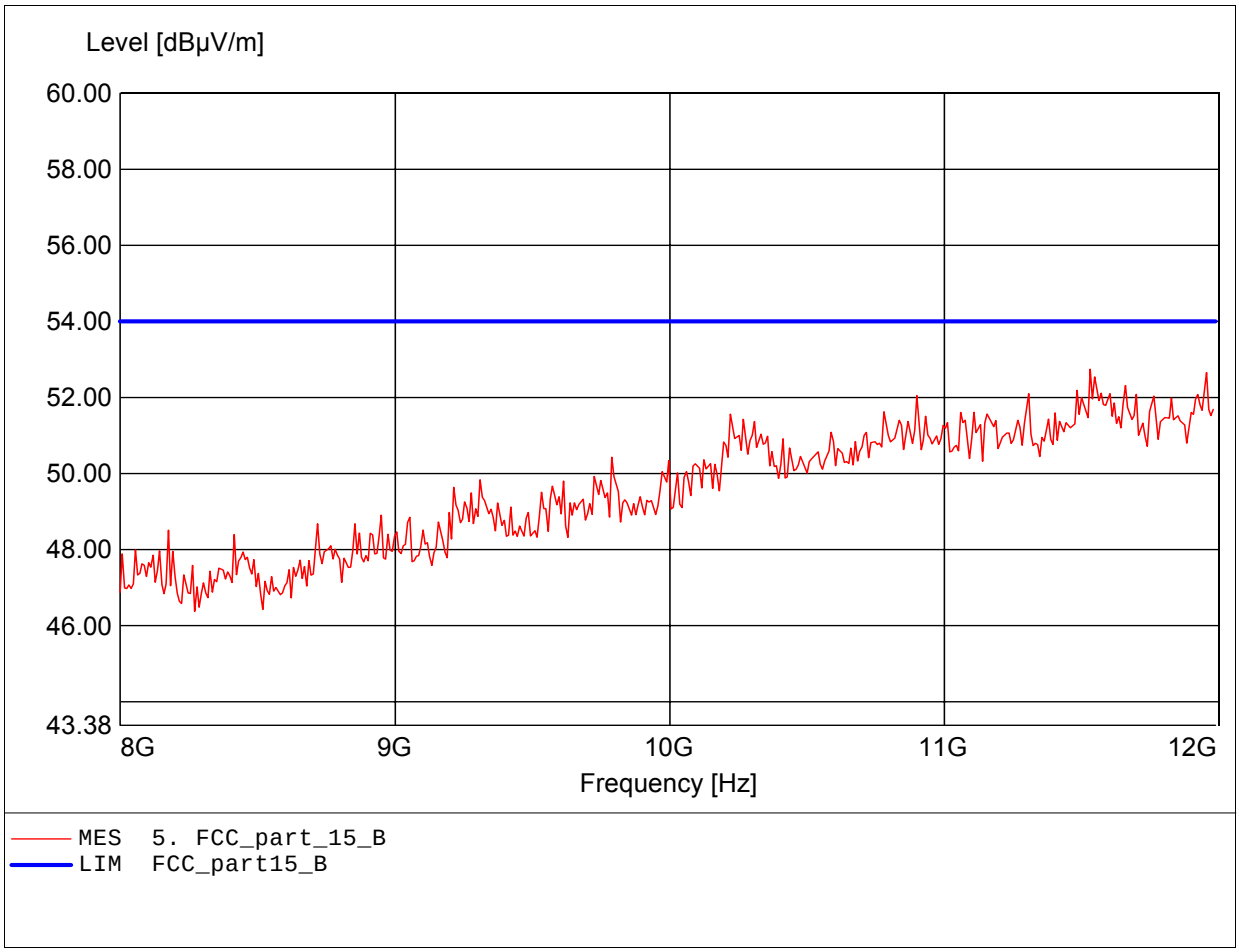
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.399GHz Emax:53.11dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

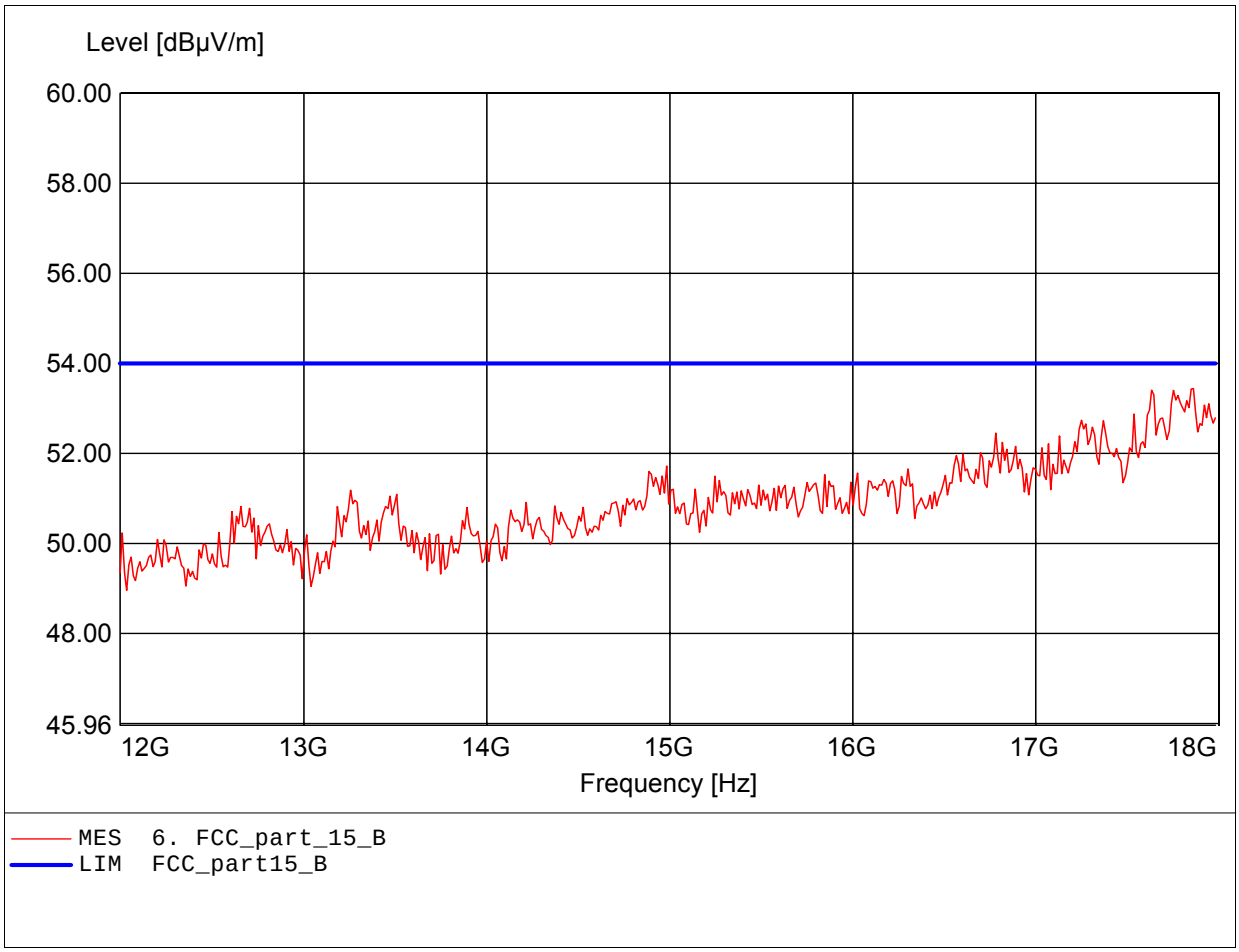
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.543GHz Emax:52.74dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

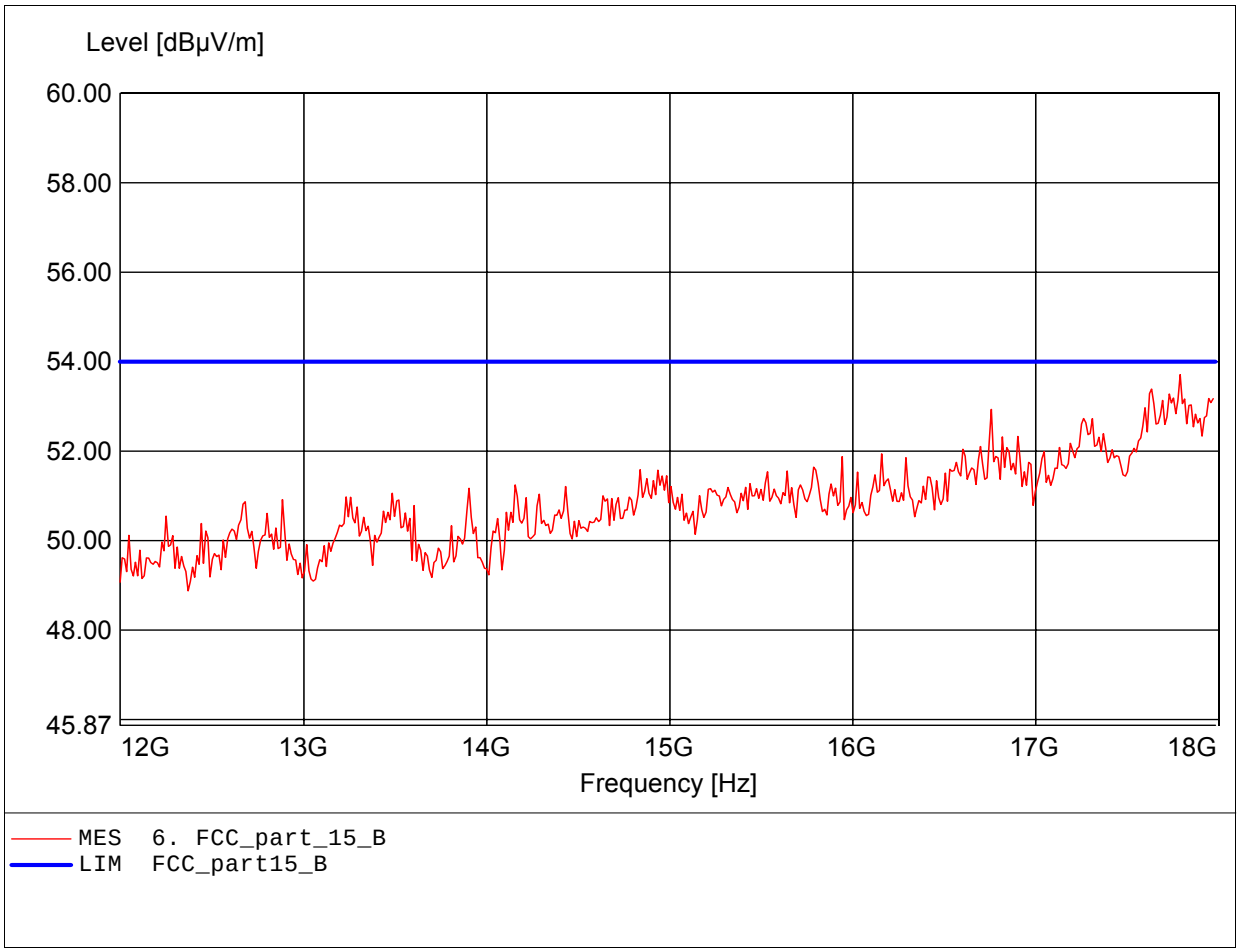
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.880GHz Emax:53.44dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

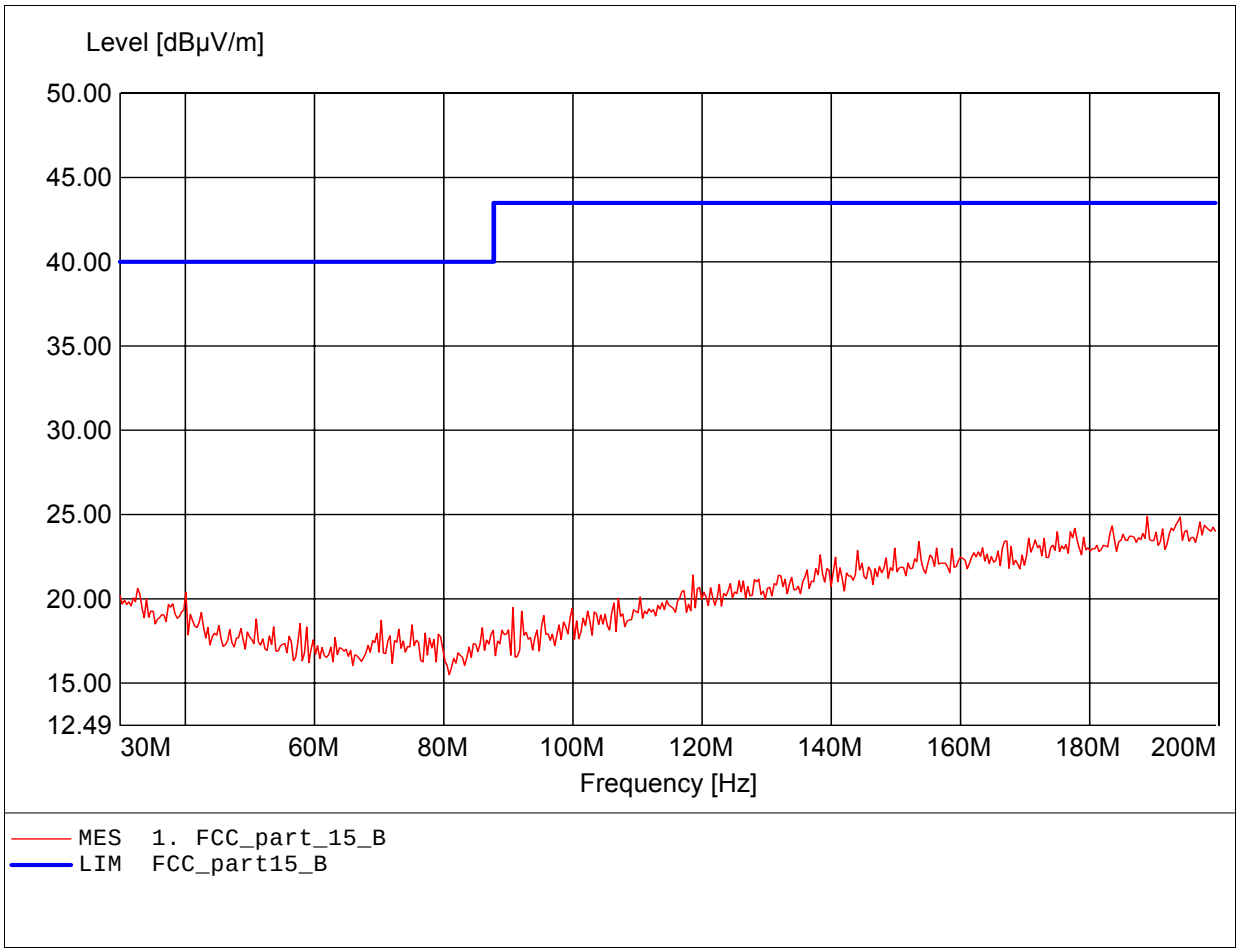
EUT:	Data Collector
MODEL NO.:	SP5500 Low Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.808GHz Emax:53.71dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

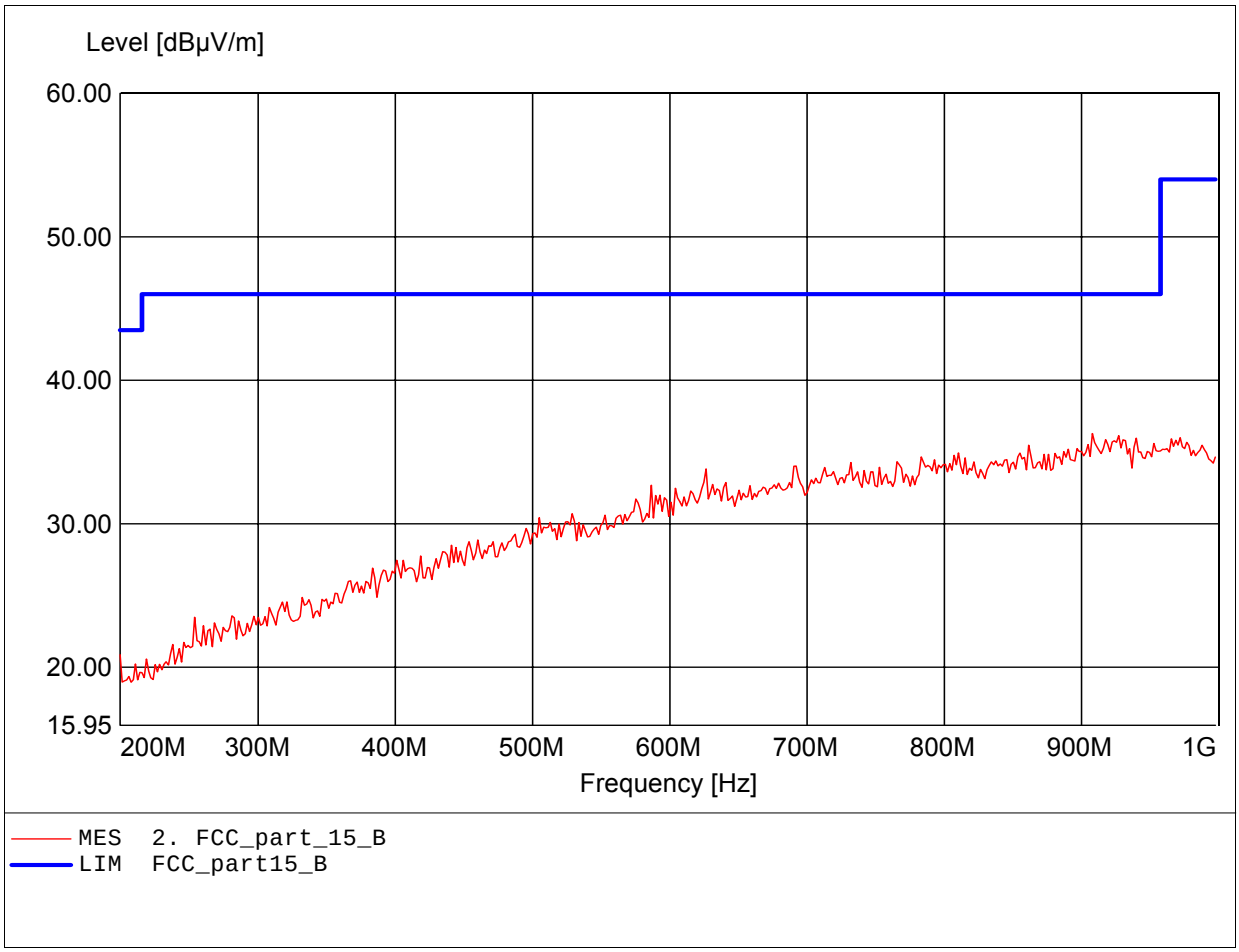
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:189.439MHz Emax:24.89dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

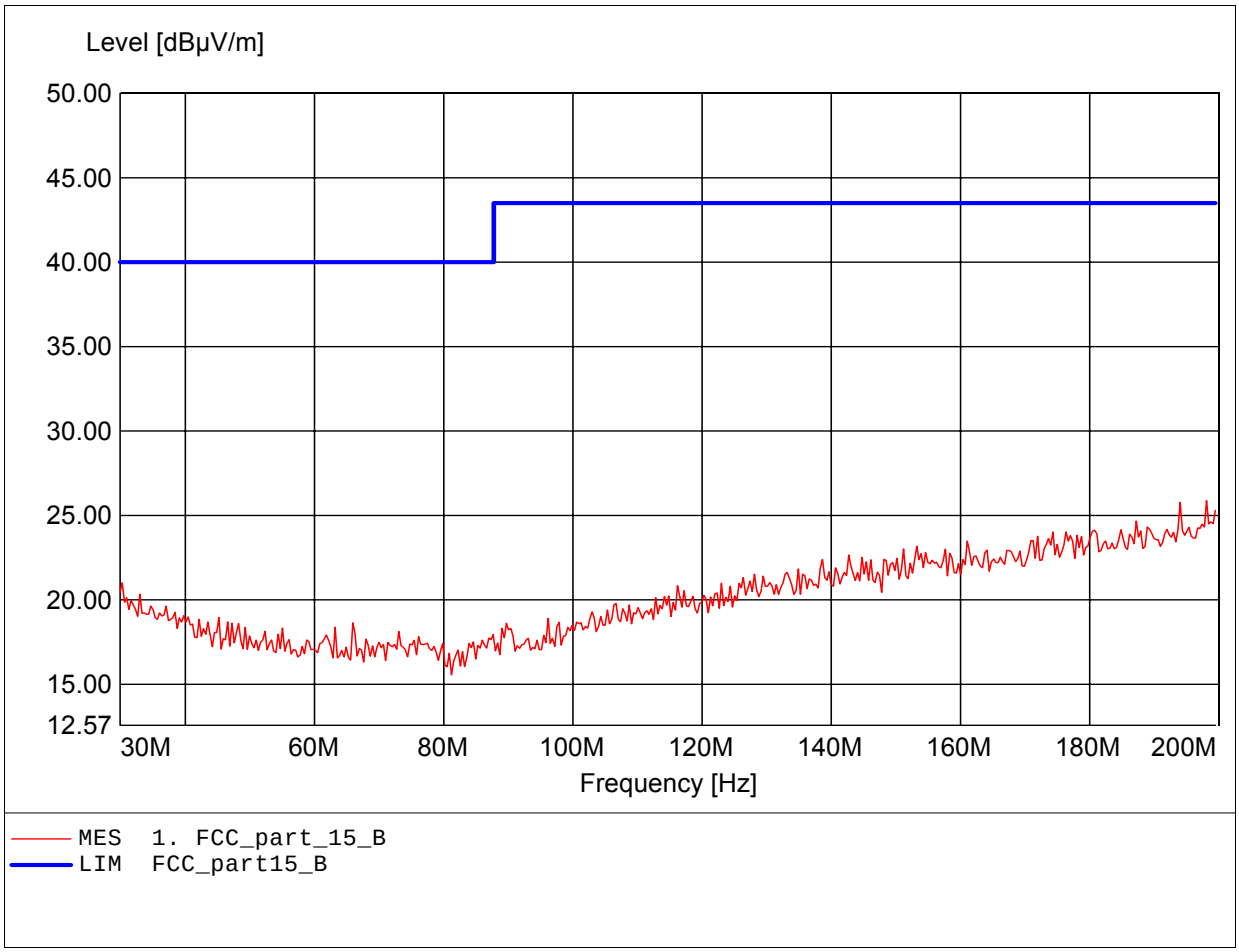
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:910.220MHz Emax:36.29dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

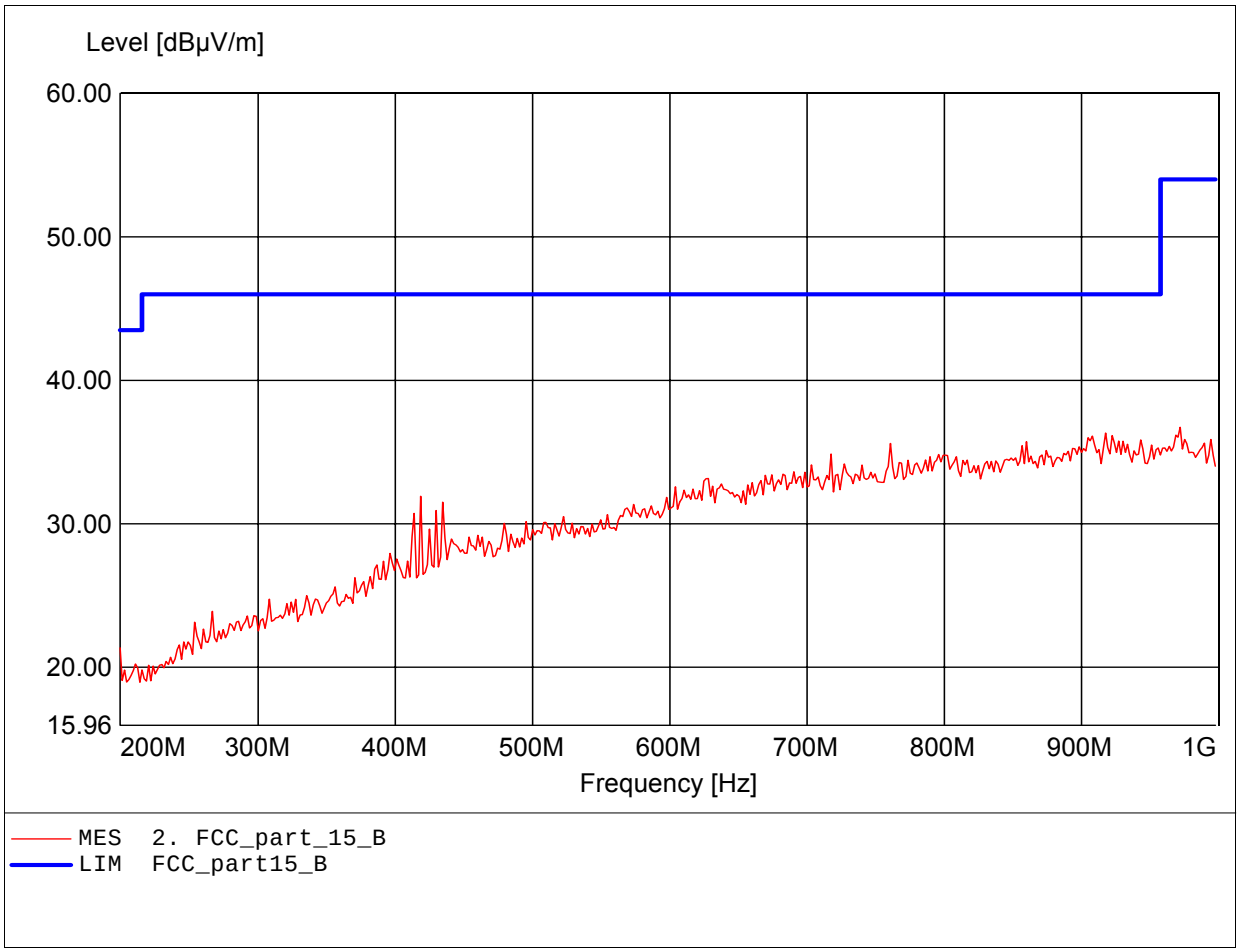
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:198.637MHz Emax:25.87dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

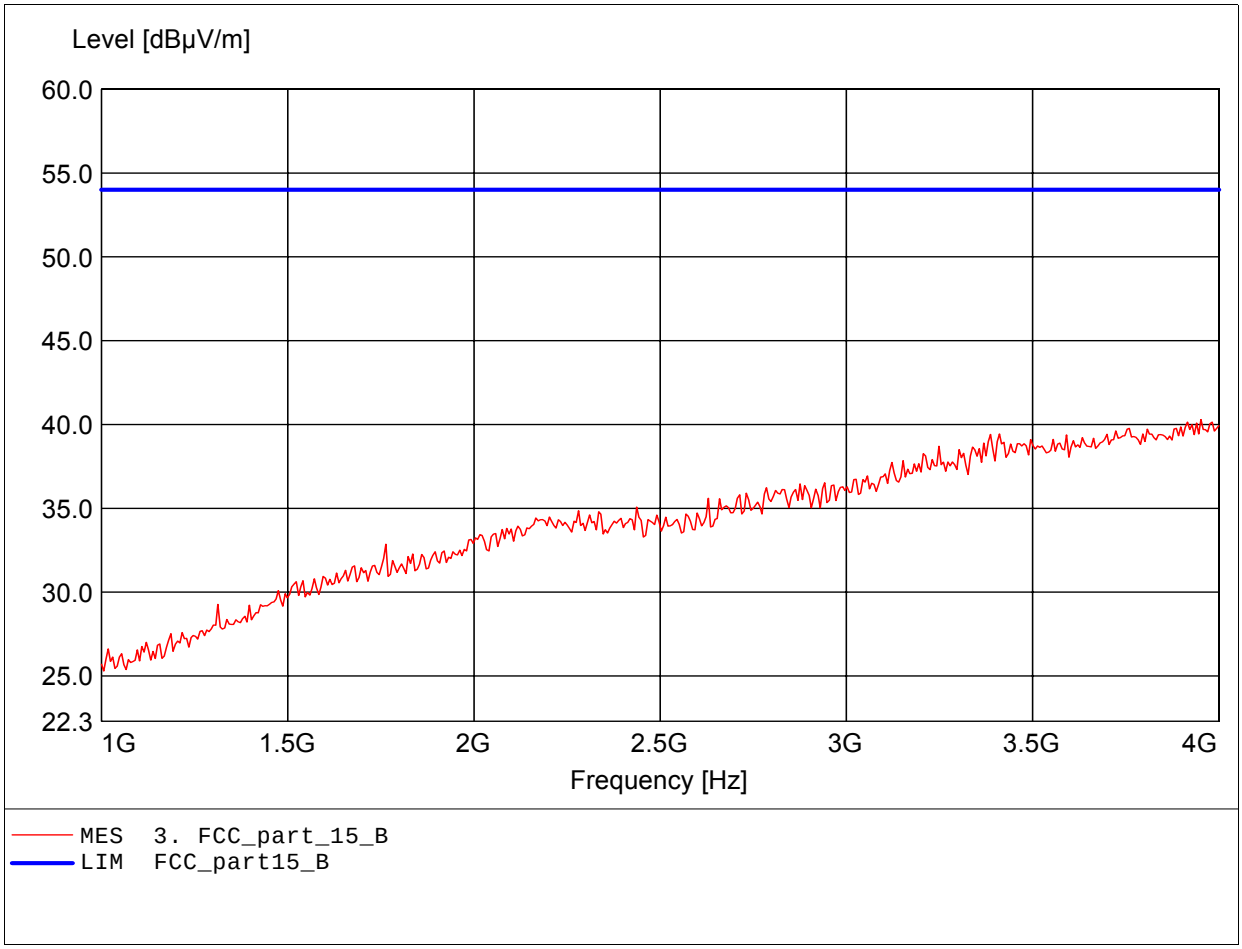
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:974.349MHz Emax:36.73dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

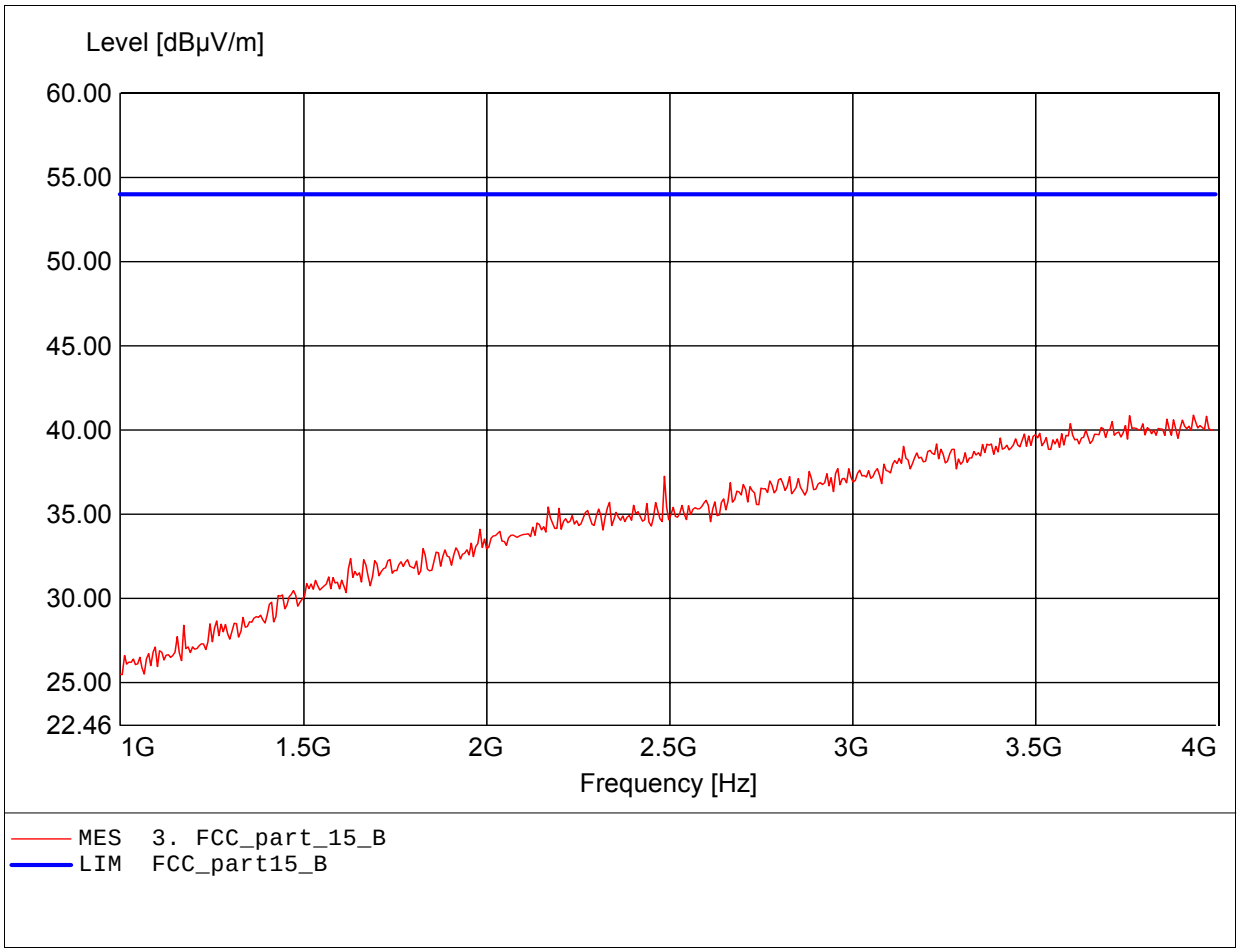
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.952GHz Emax:40.30dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

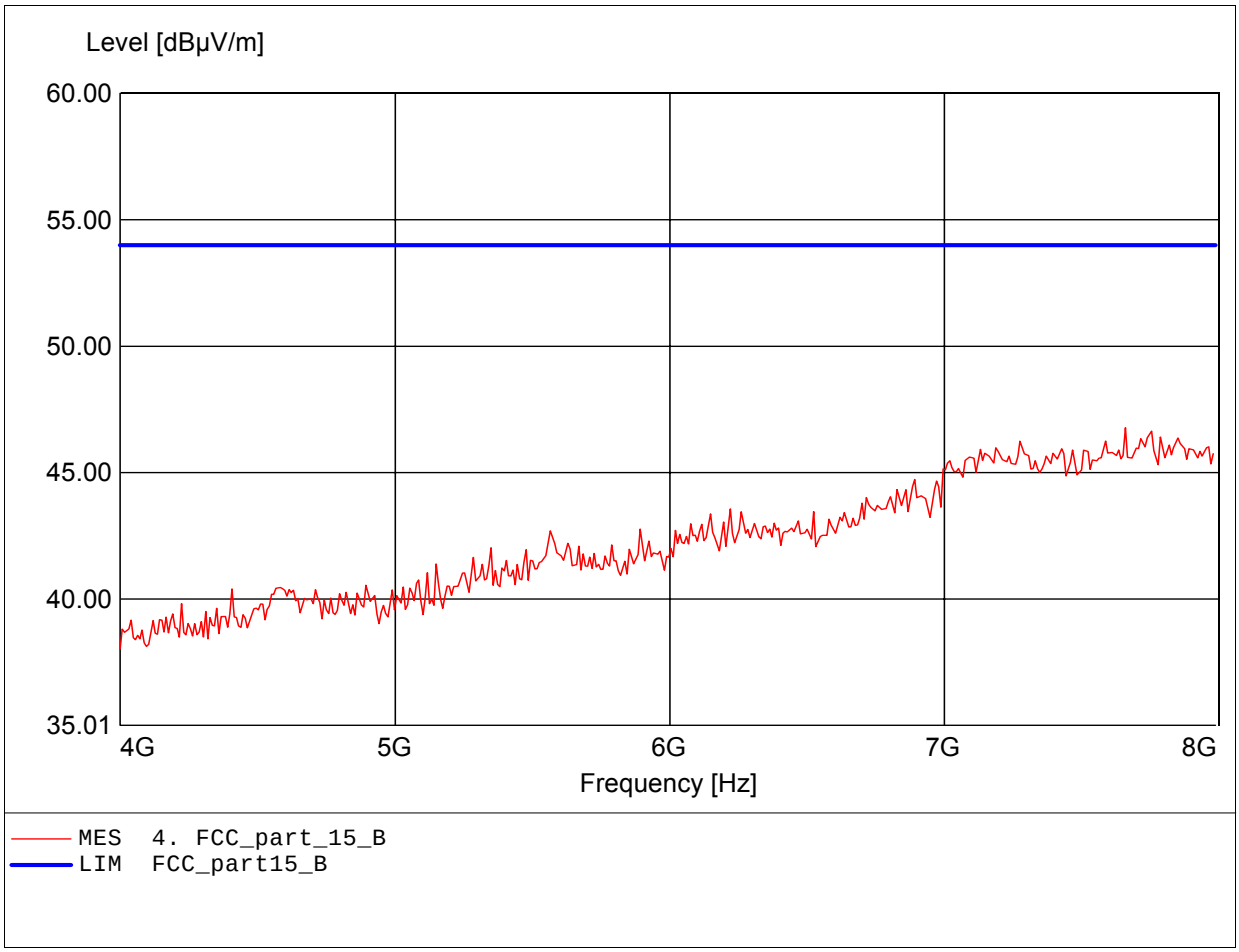
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.940GHz Emax:40.88dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

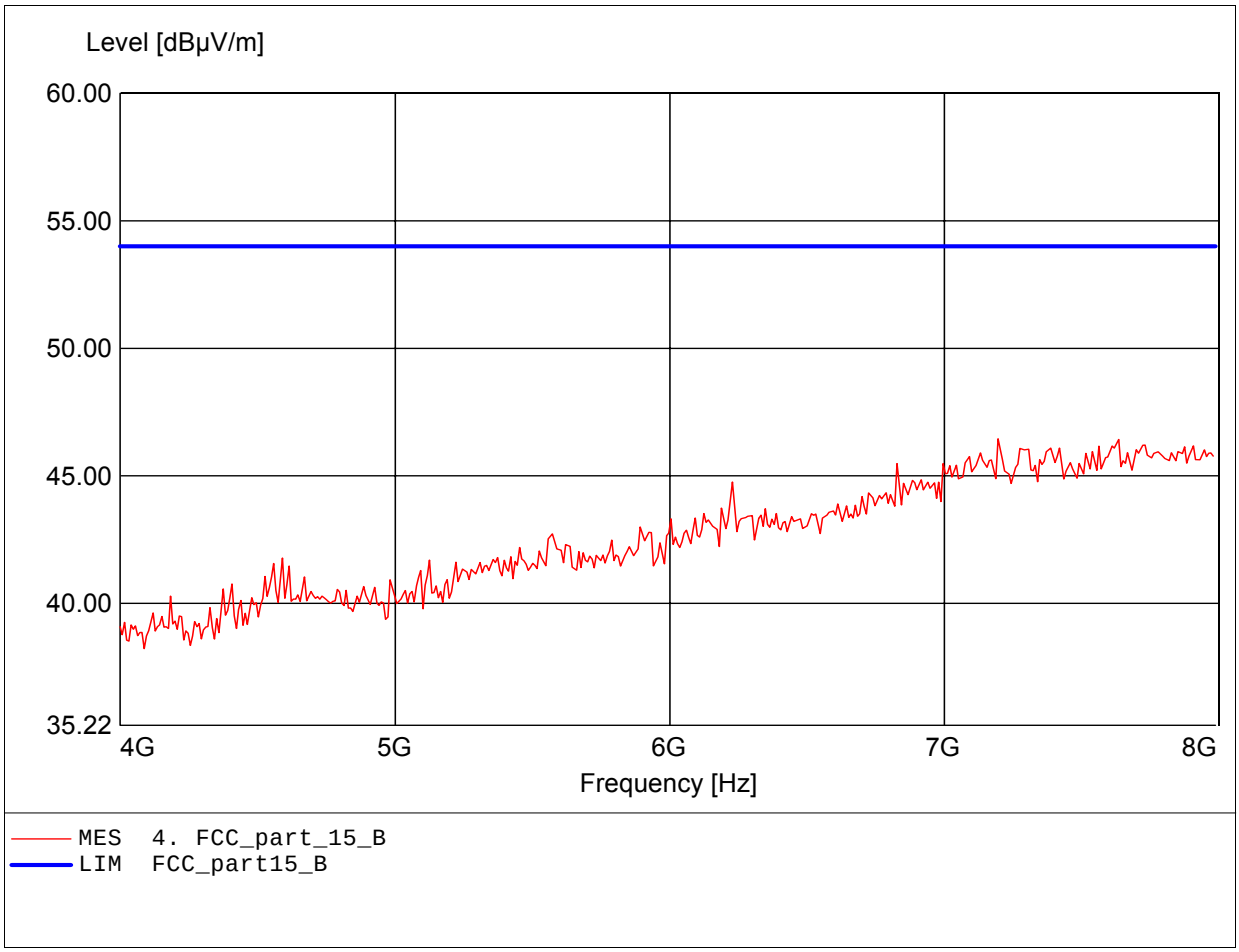
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.671GHz Emax:46.78dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

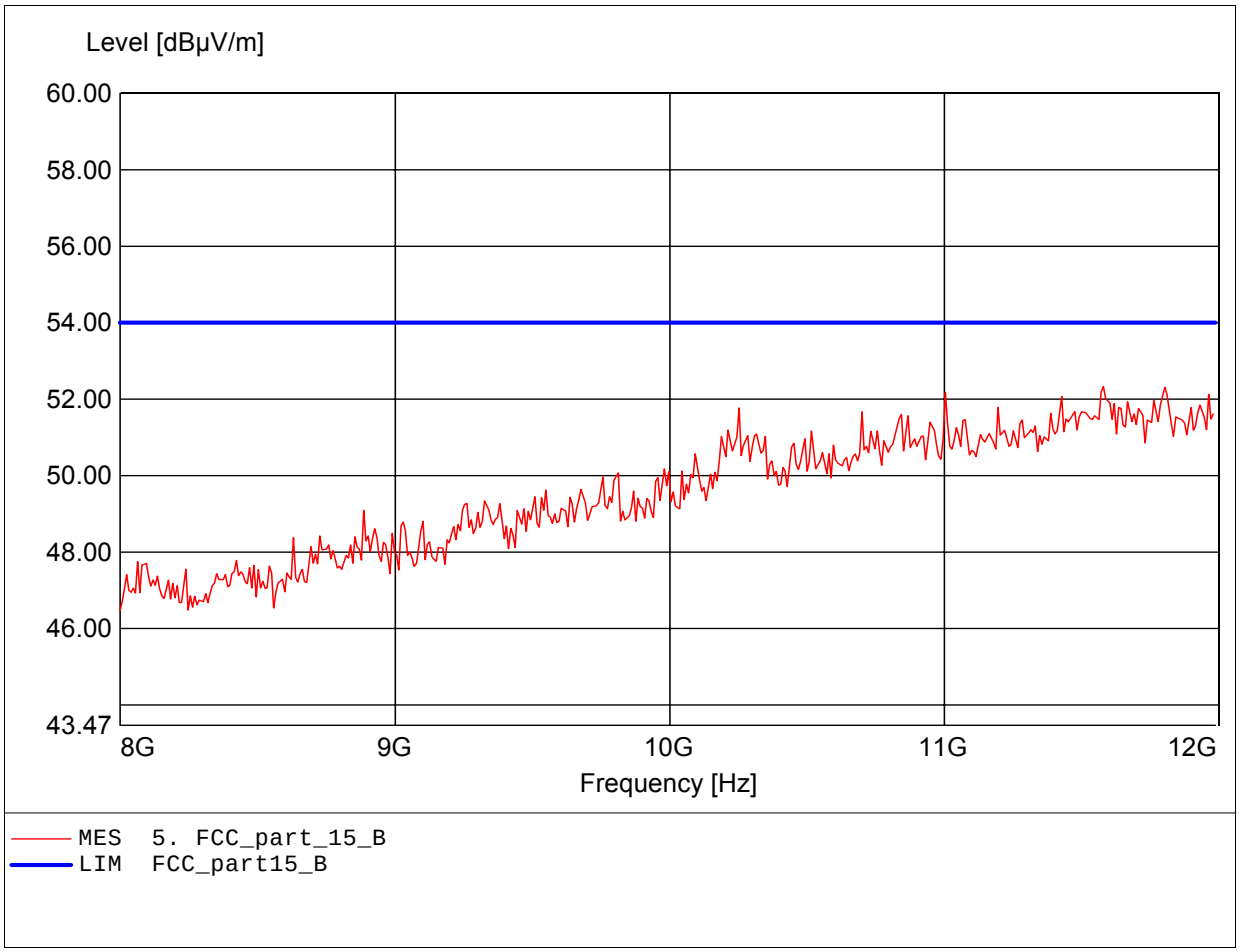
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.206GHz Emax:46.46dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

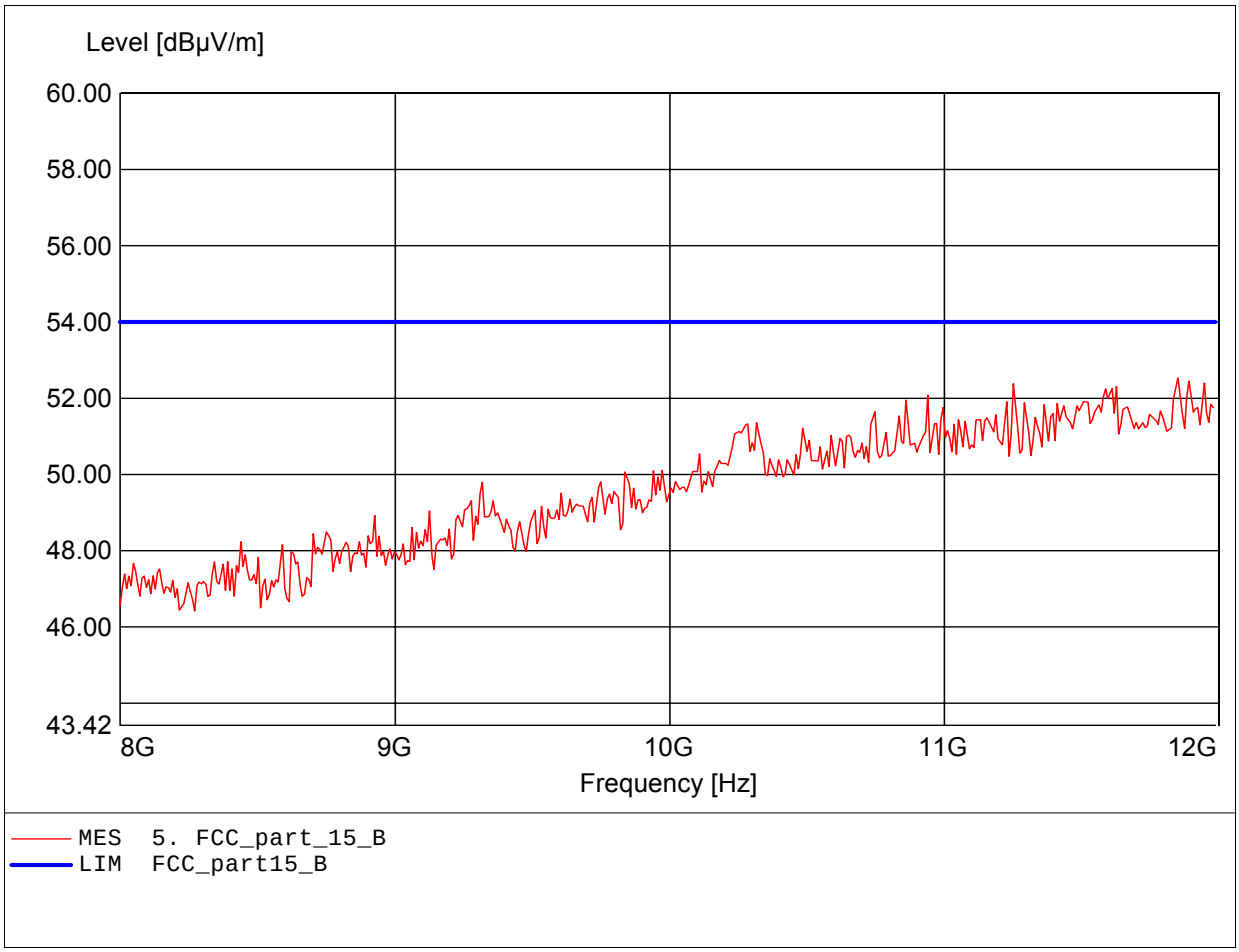
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.591GHz Emax:52.33dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

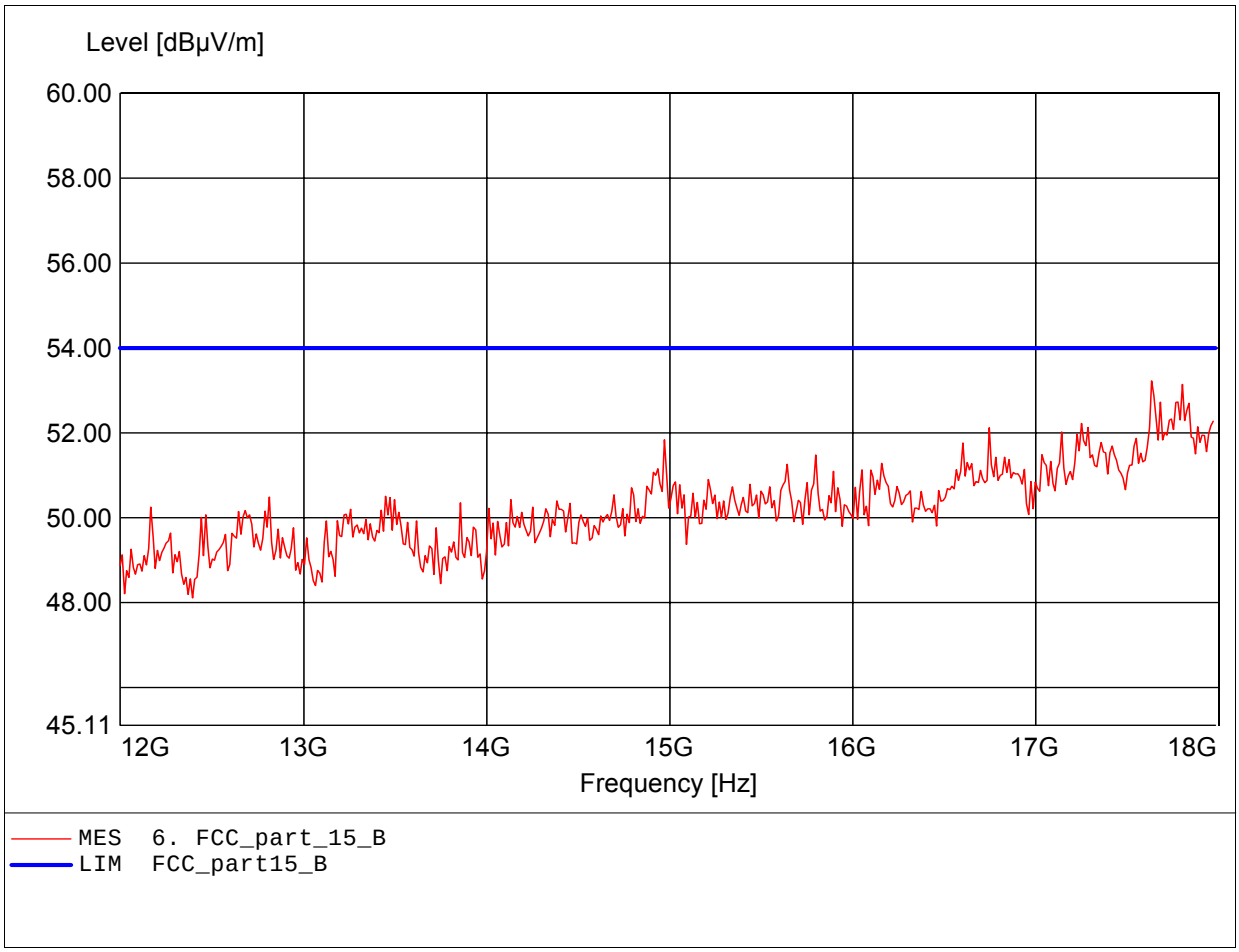
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.864GHz Emax:52.53dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

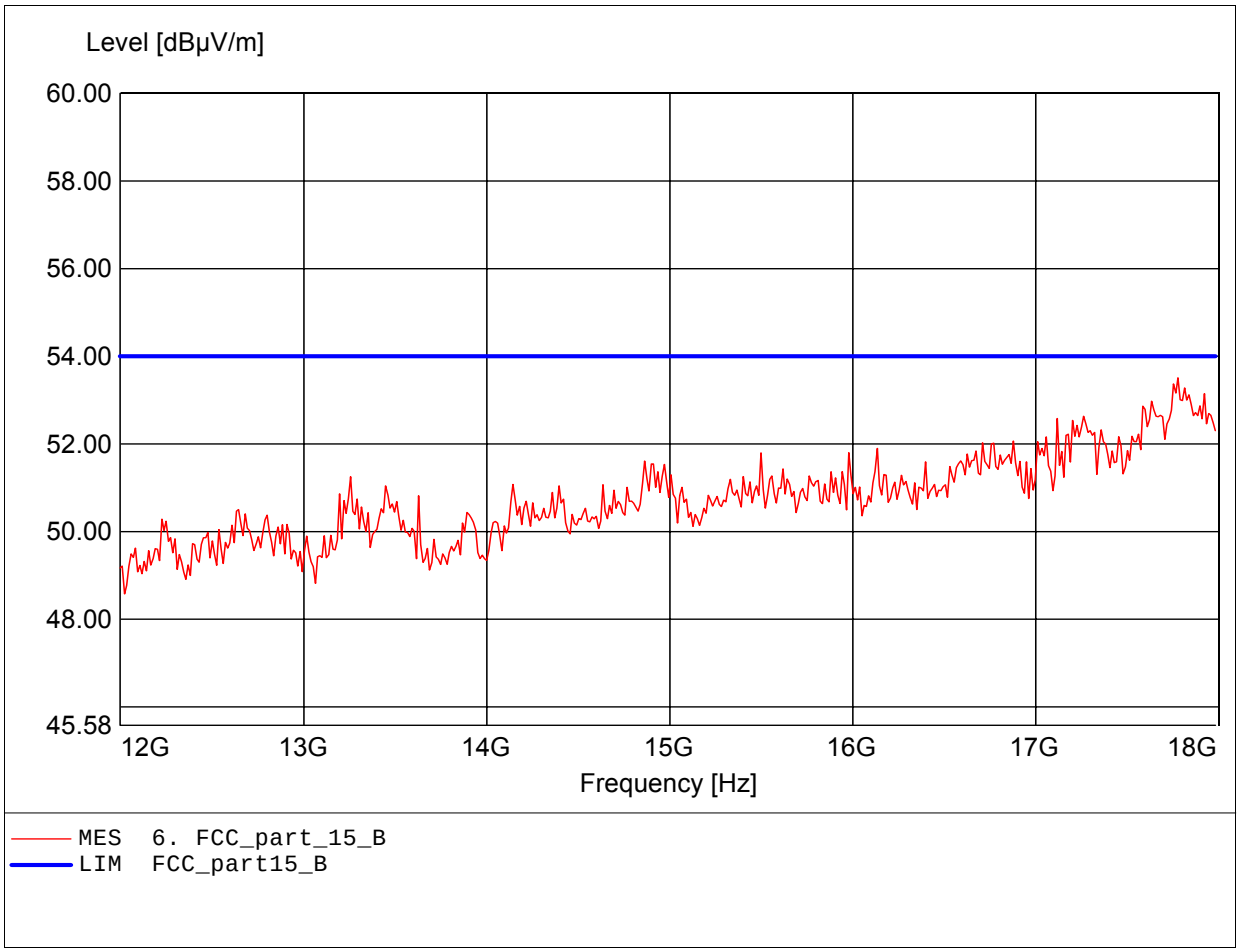
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.651GHz Emax:53.23dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

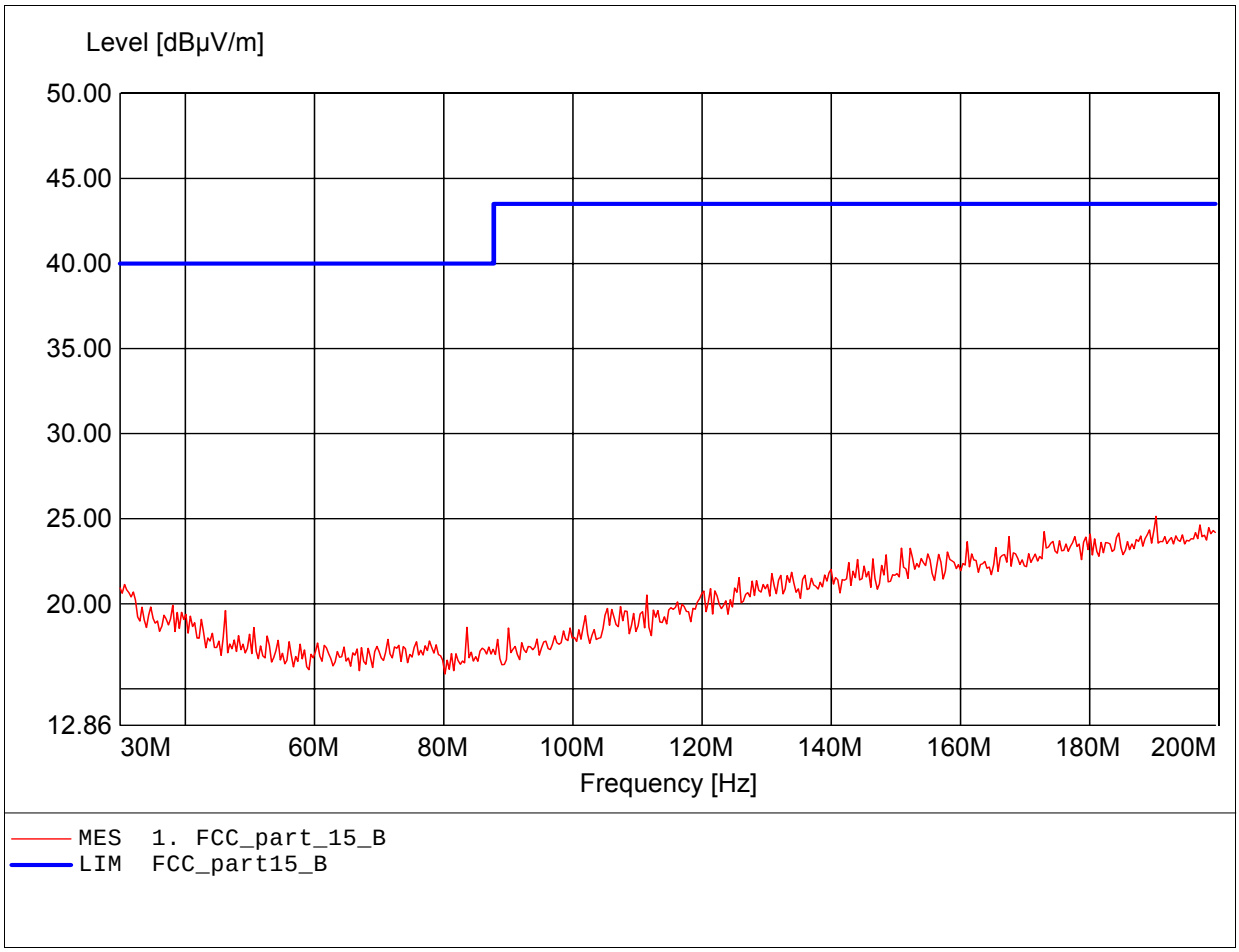
EUT:	Data Collector
MODEL NO.:	SP5500 Middle Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.796GHz Emax:53.51dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

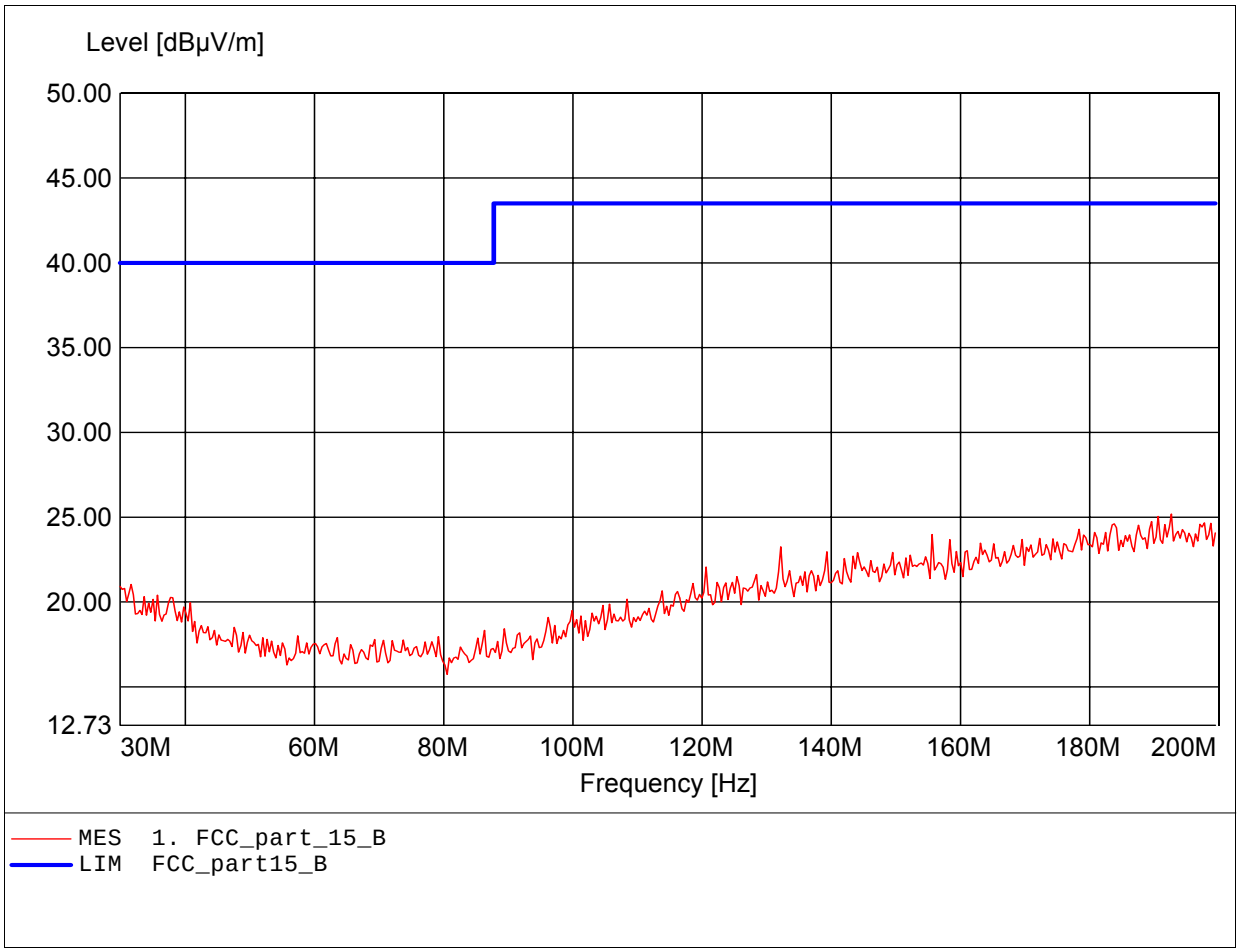
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:190.802MHz Emax:25.14dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

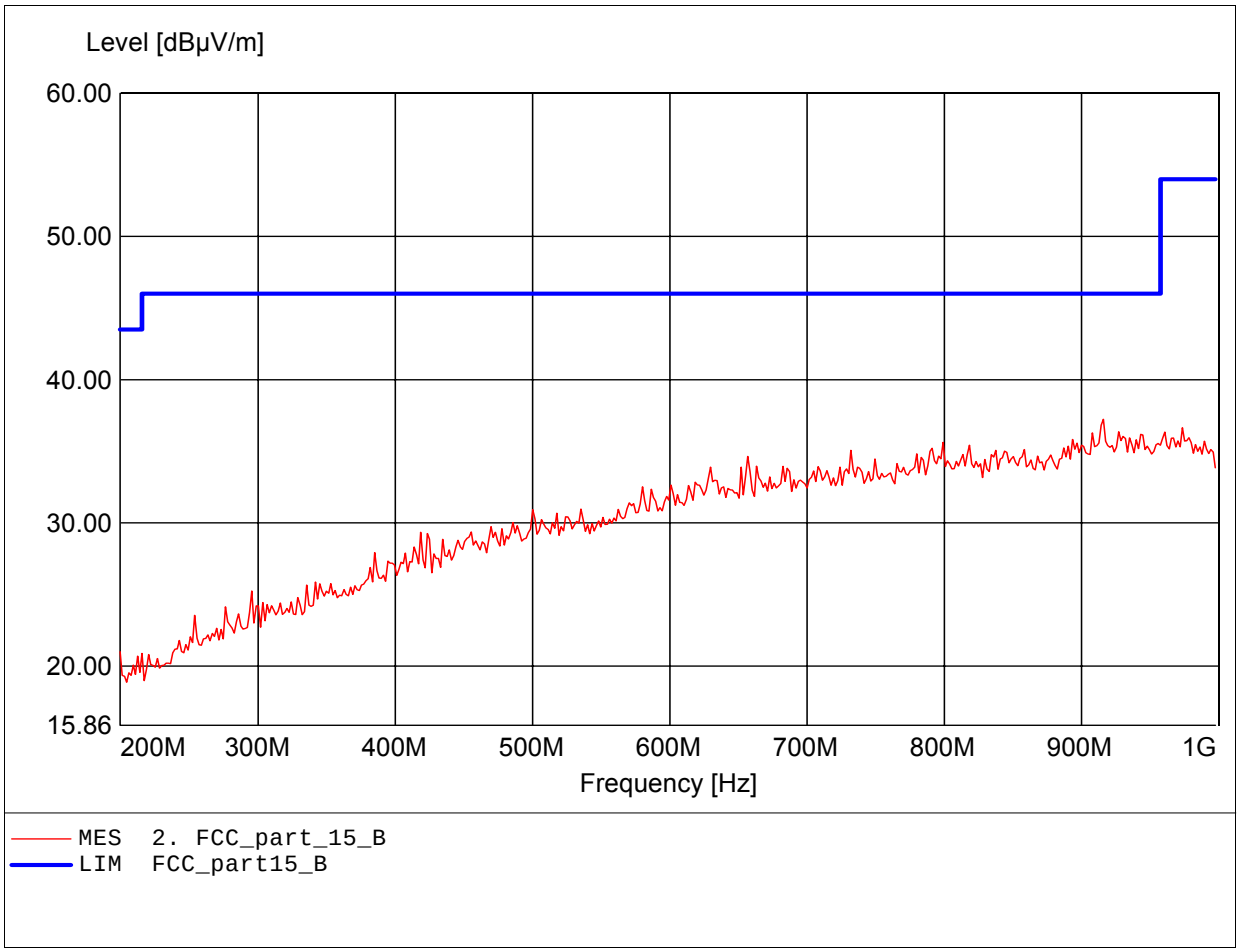
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HK 116
	Freq:193.186MHz Emax:25.18dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

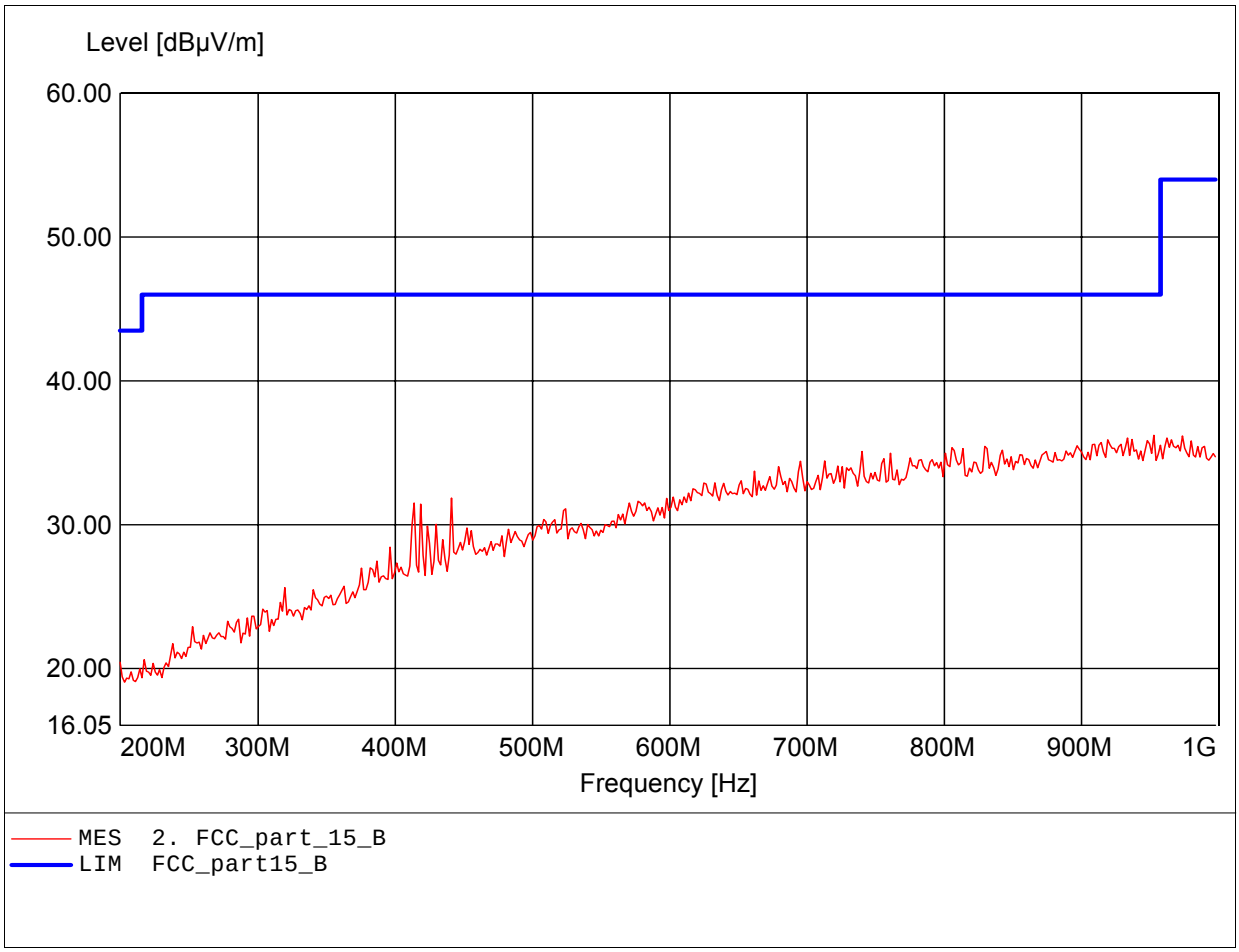
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:918.236MHz Emax:37.23dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

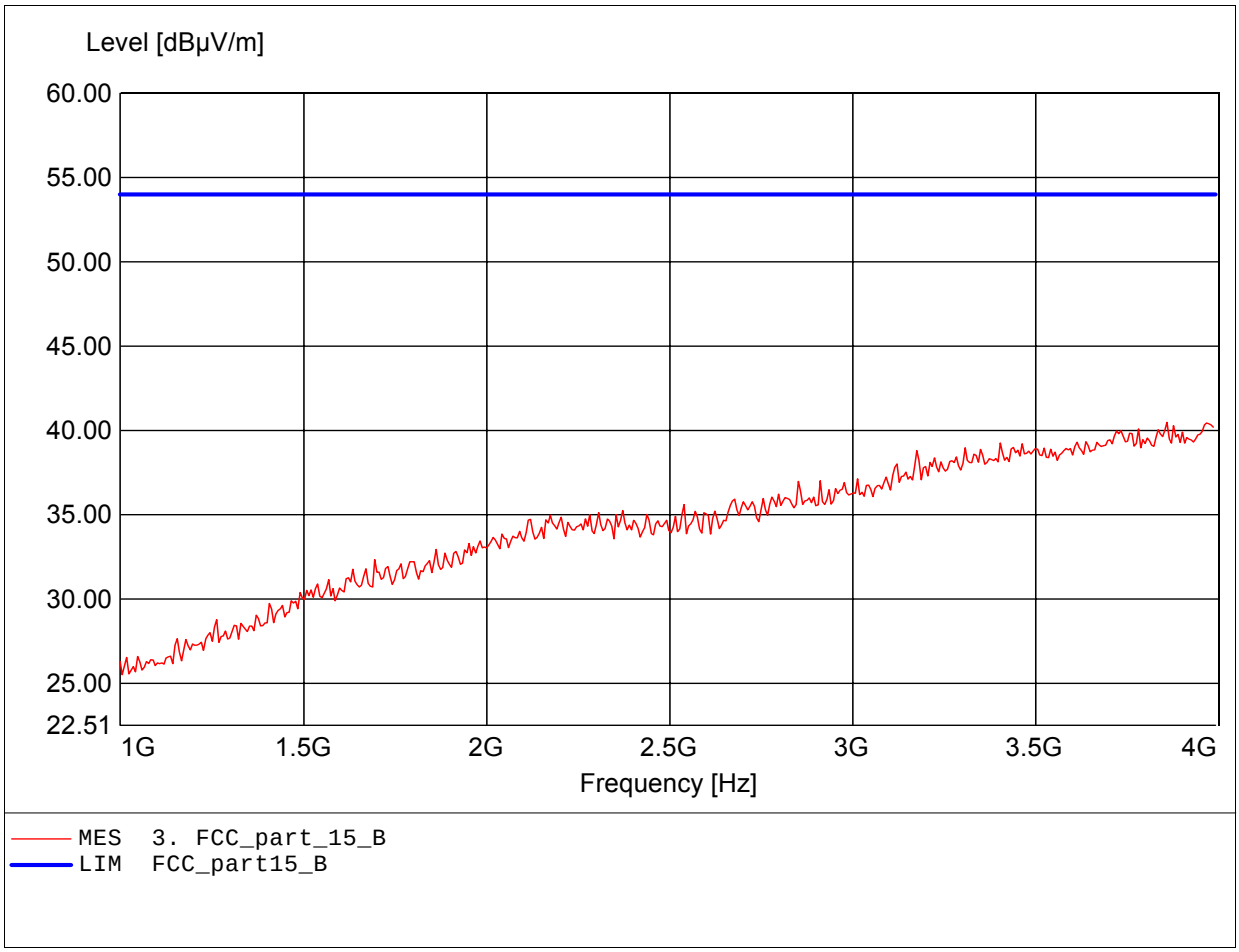
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL 223, ampl.
	Freq:955.110MHz Emax:36.21dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

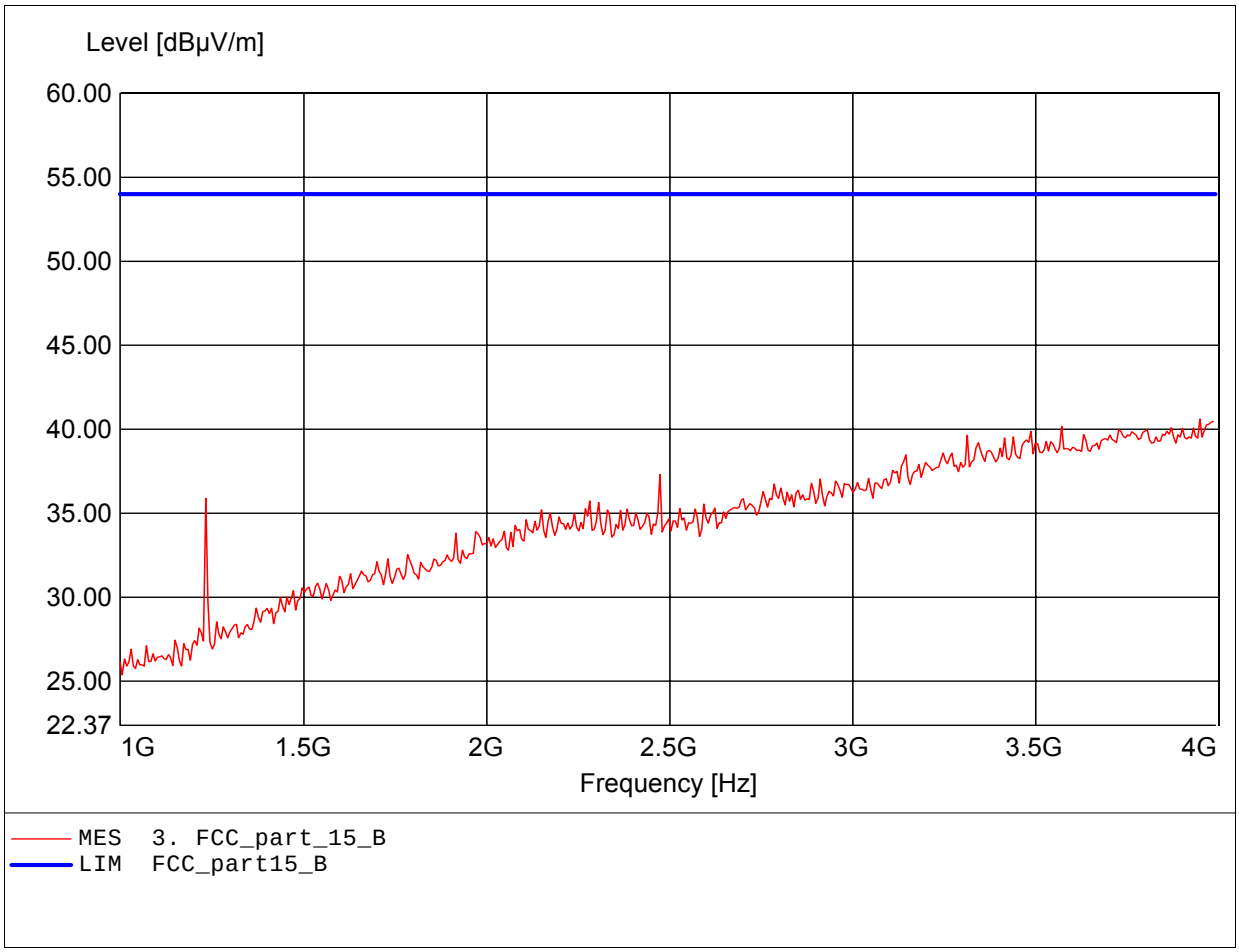
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.868GHz Emax:40.48dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

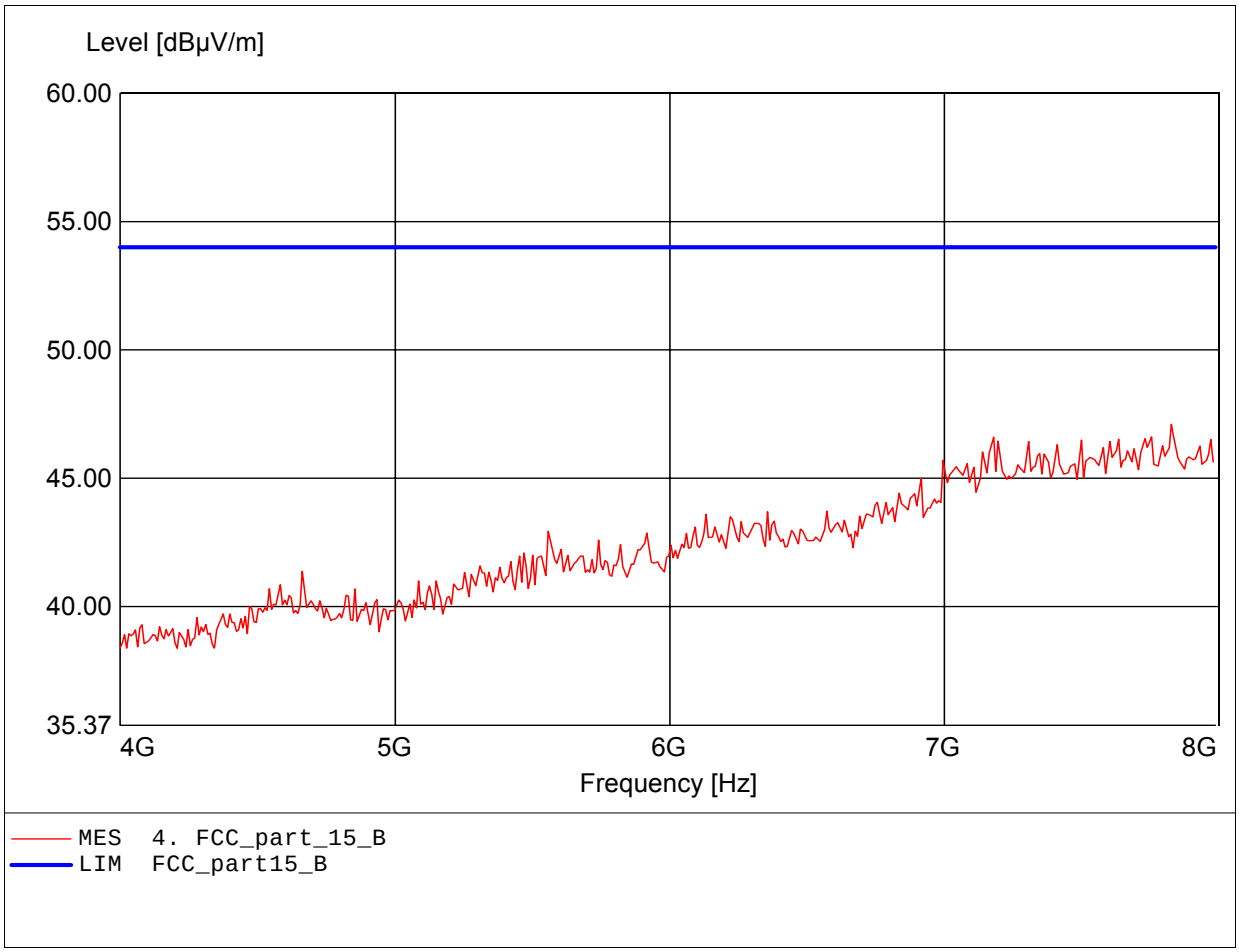
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:3.958GHz Emax:40.61dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

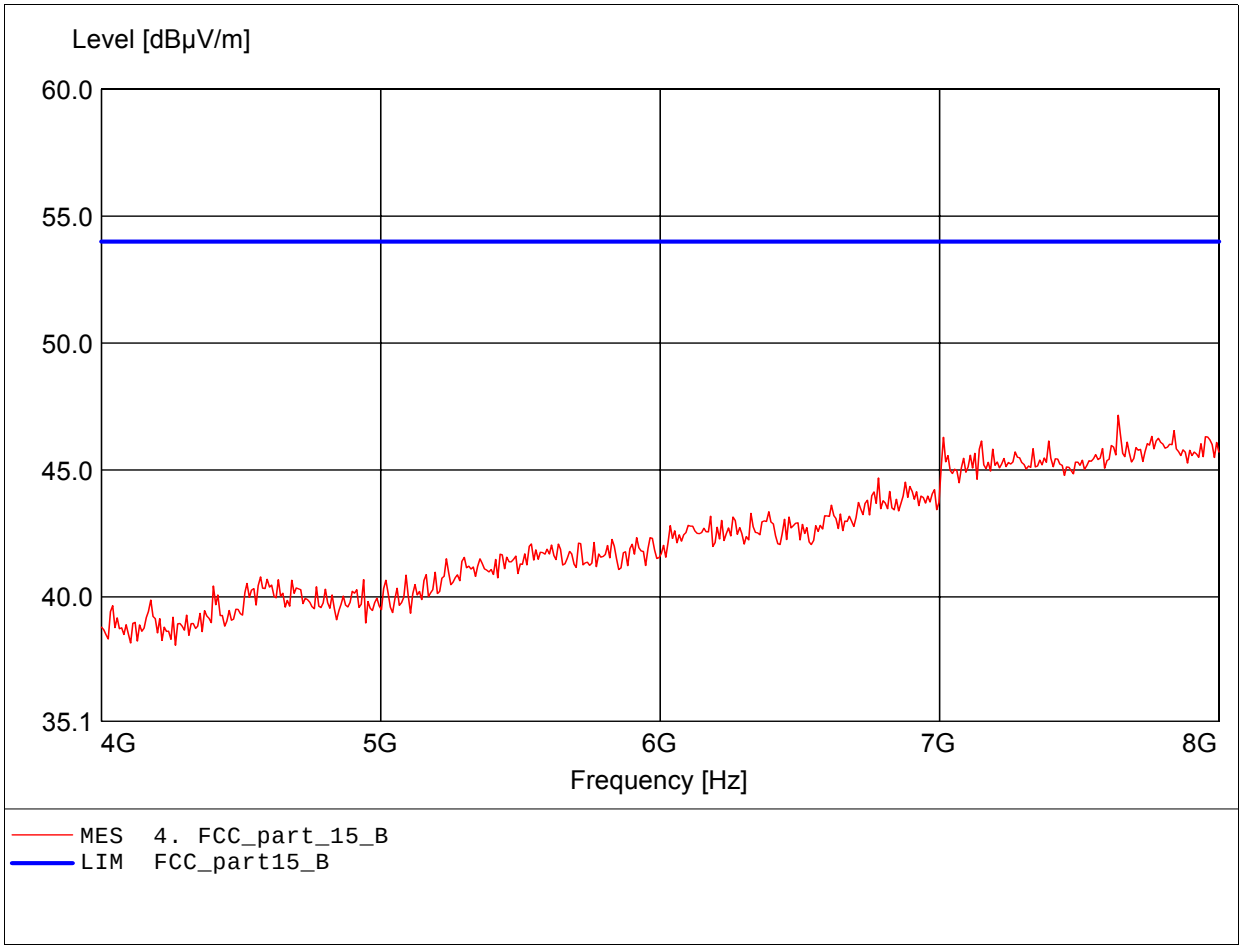
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.840GHz Emax:47.10dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

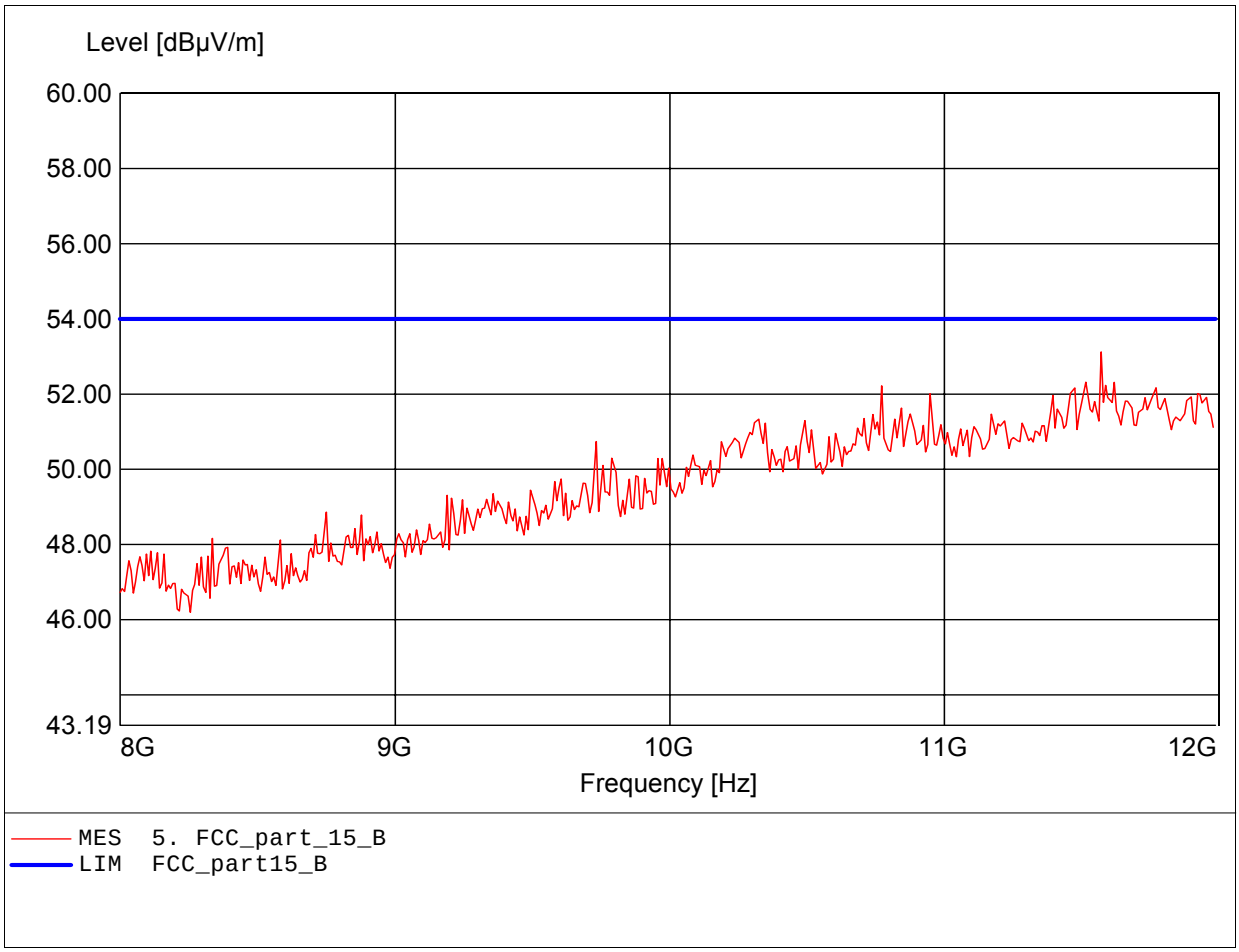
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:7.639GHz Emax:47.15dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

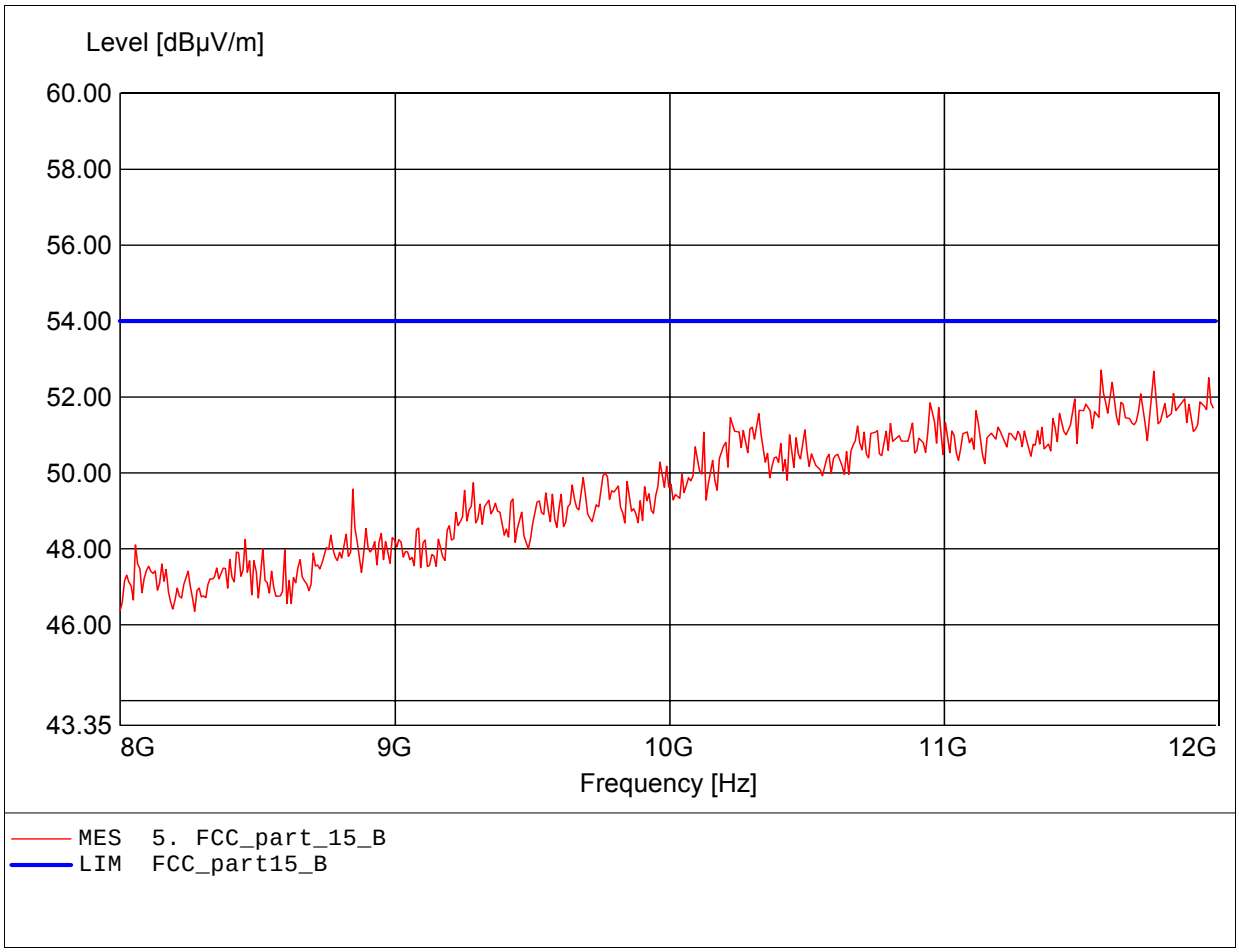
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.583GHz Emax:53.12dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

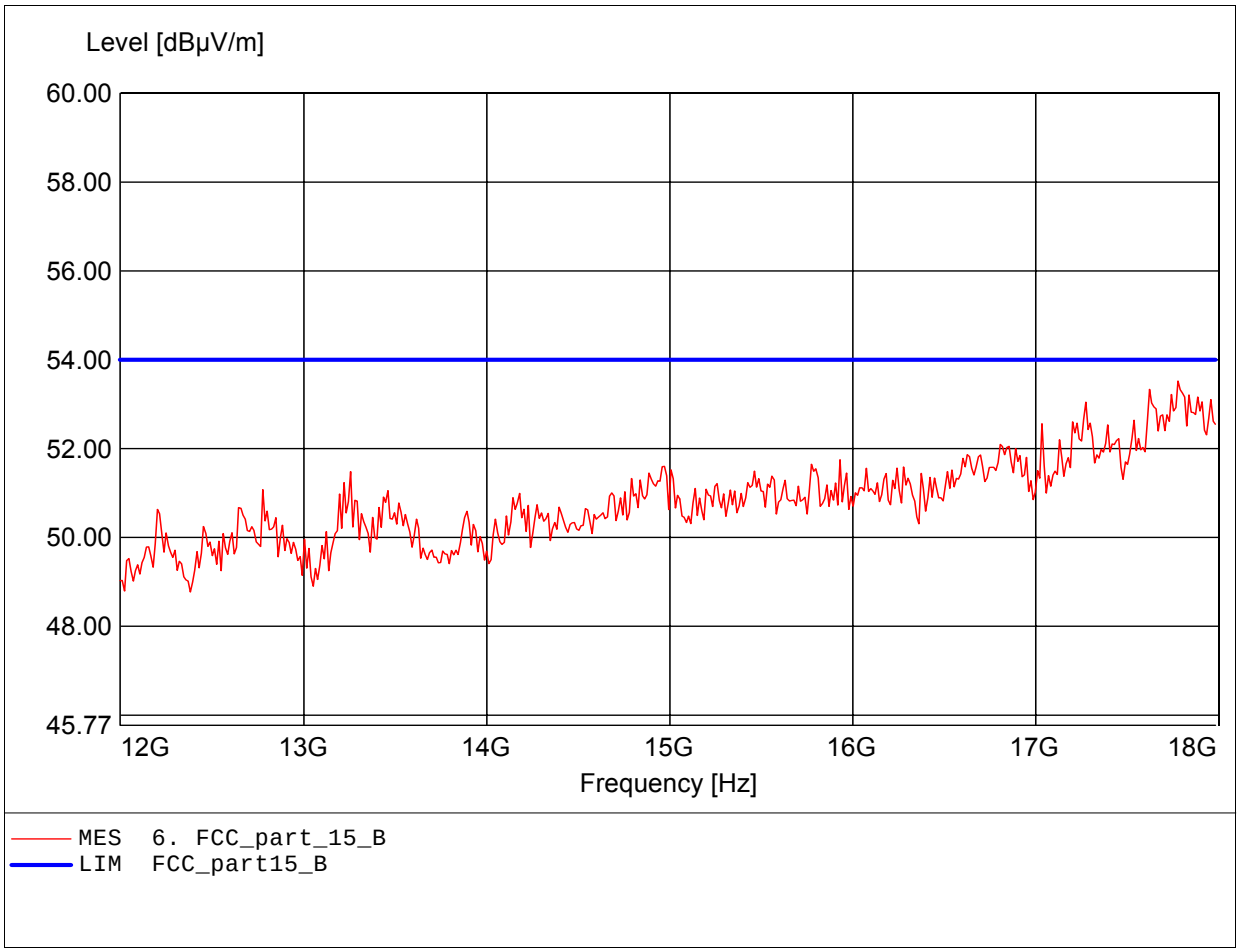
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:11.583GHz Emax:52.71dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

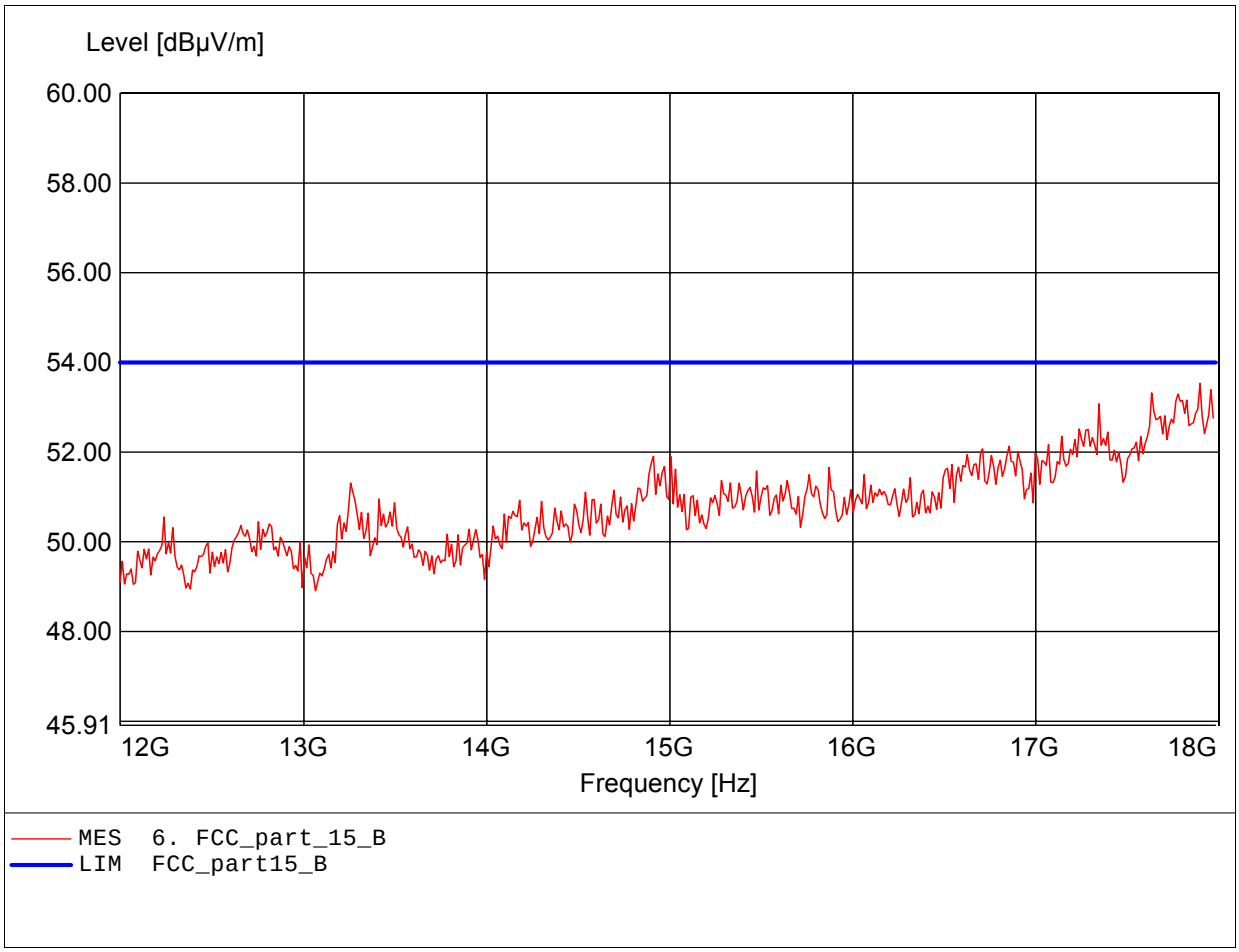
EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.796GHz Emax:53.52dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

EUT:	Data Collector
MODEL NO.:	SP5500 High Channel
Approval Holder:	Metrologic Instruments, Inc.
Test Site / Operator:	ETS / Mike Wu
Temperature/Voltage:	Temp.: 23°C/ Unom.: 3.7VDC (Battery x 1)
Test Specification:	according to sub part B
Comment 1:	Dist.: 3m, Ant.: HL25, ampl.
	Freq:17.916GHz Emax:53.53dBµV/m RBW: 1 MHz

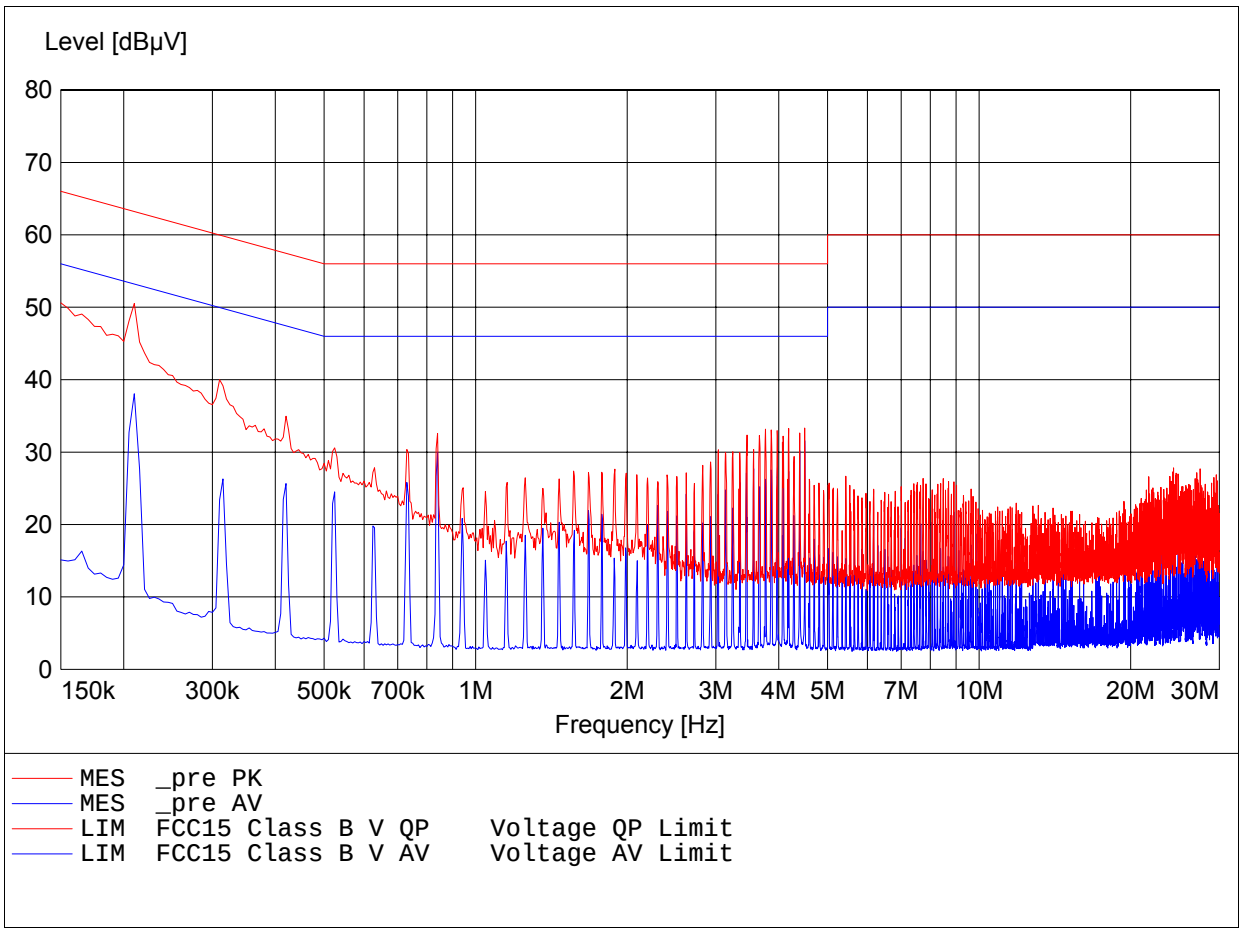


Appendix I

Power Line Conducted Emission

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

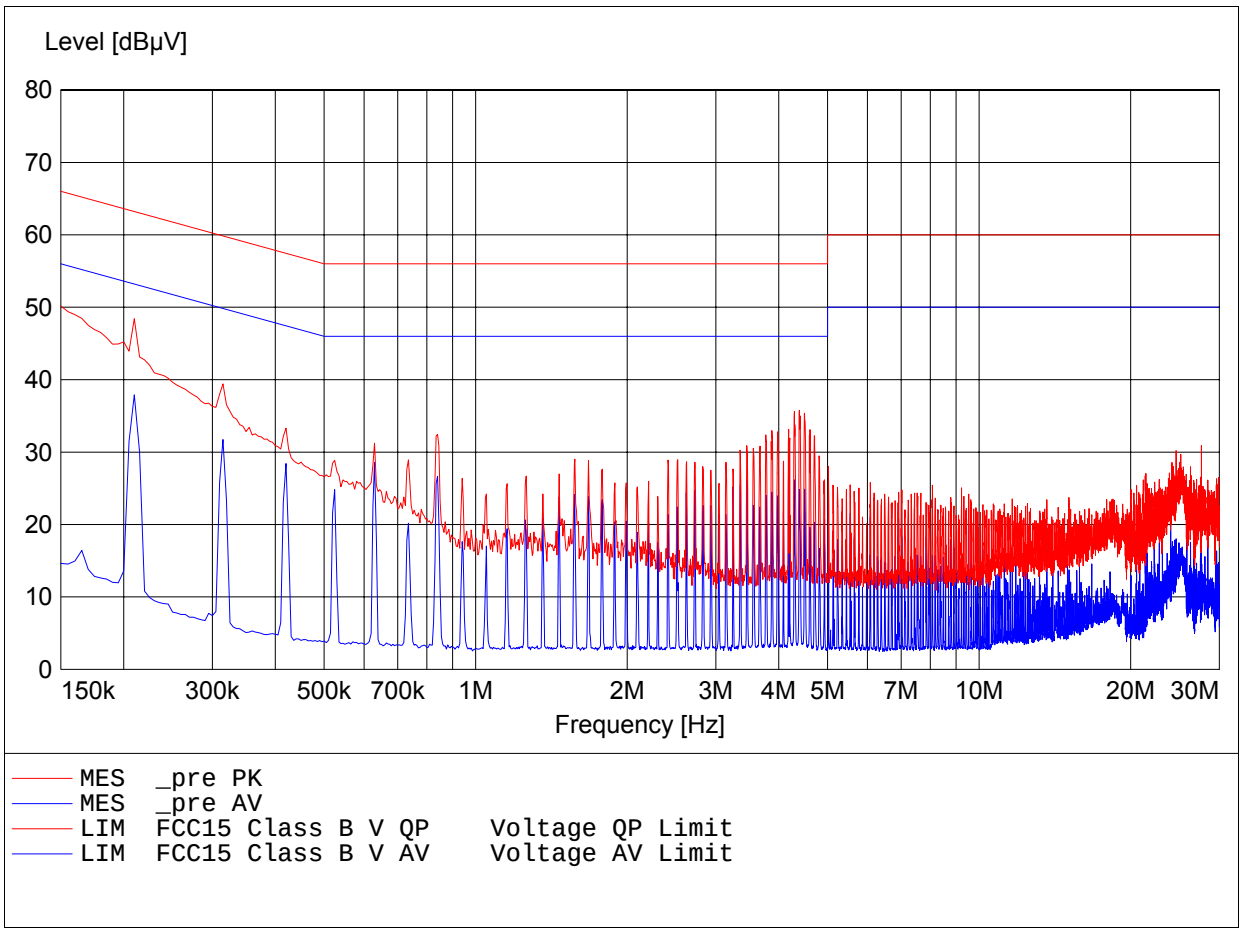
EUT:	Data Collector
Manufacturer:	Metrologic Instruments, Inc.
Operating Condition:	Unom: 120VAC (AC/DC ADAPTOR) , Tnom: 23°C
Test Site:	ETS
Operator:	Eric
Test Specification:	V-network: ESH3-Z5 N
Comment :	model: SP5500 mode: active



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

Class B

EUT:	Data Collector
Manufacturer:	Metrologic Instruments, Inc.
Operating Condition:	Unom: 120VAC (AC/DC ADAPTOR) , Tnom: 23°C
Test Site:	ETS
Operator:	Eric
Test Specification:	V-network: ESH3-Z5 L1
Comment :	model: 5P5500 mode: active



Appendix J

Pictures