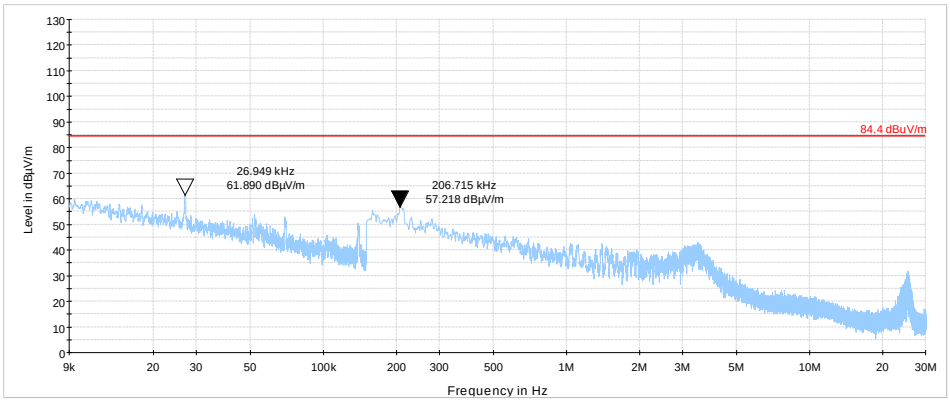
Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

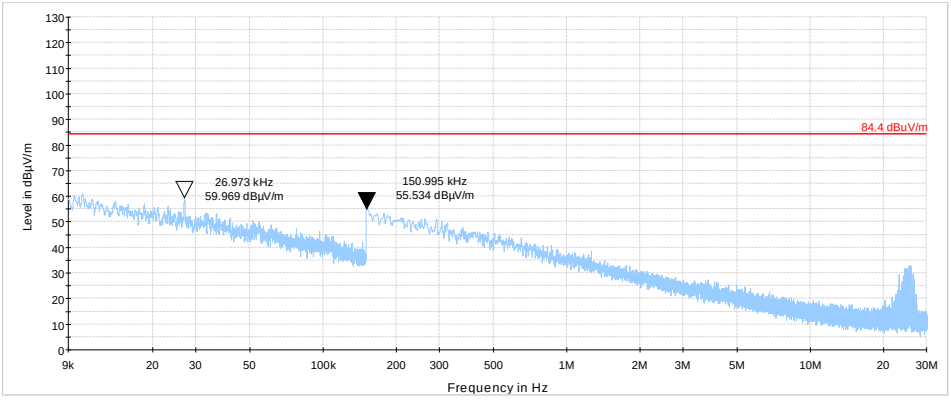
Plot 7.5.1 Radiated emission measurements in 0.009-30 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical
TEST DISTANCE:	3 m



Plot 7.5.2 Radiated emission measurements in 0.009-30 MHz range

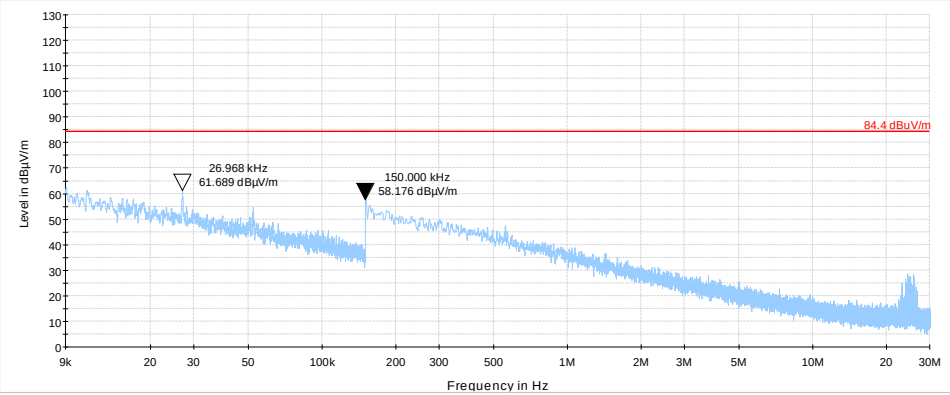
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
MODULATION / BANDWIDTH:	256 QAM / 10 MHz
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

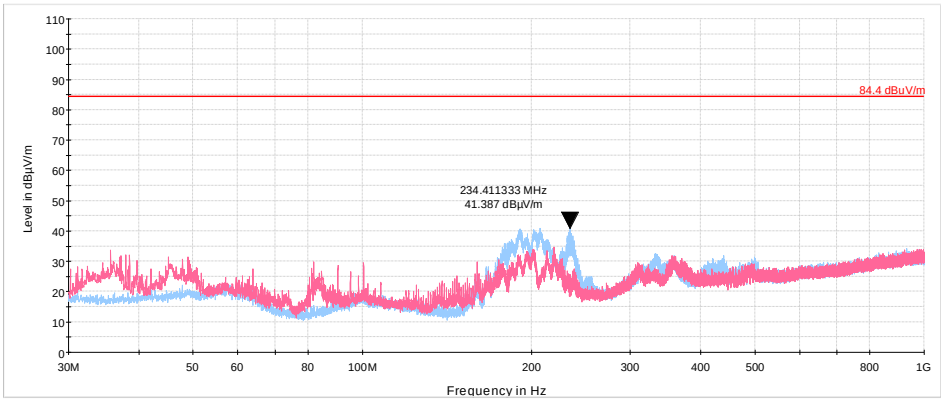
Plot 7.5.3 Radiated emission measurements in 0.009-30 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHz
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Plot 7.5.4 Radiated emission measurements in 30 - 1000 MHz range

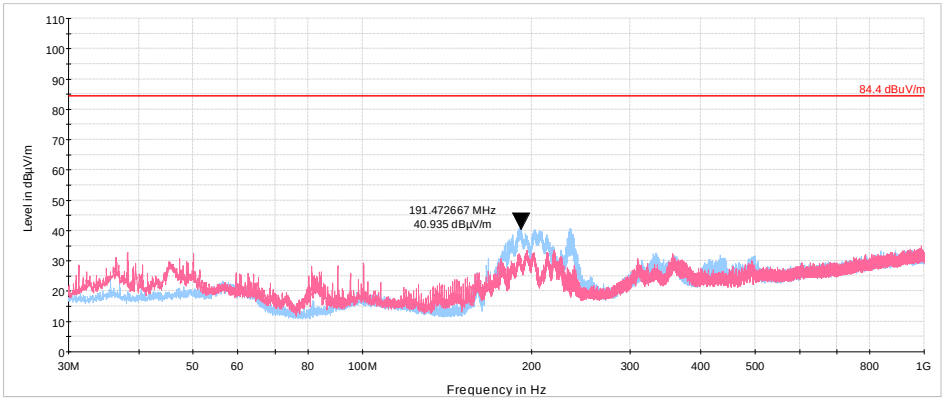
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

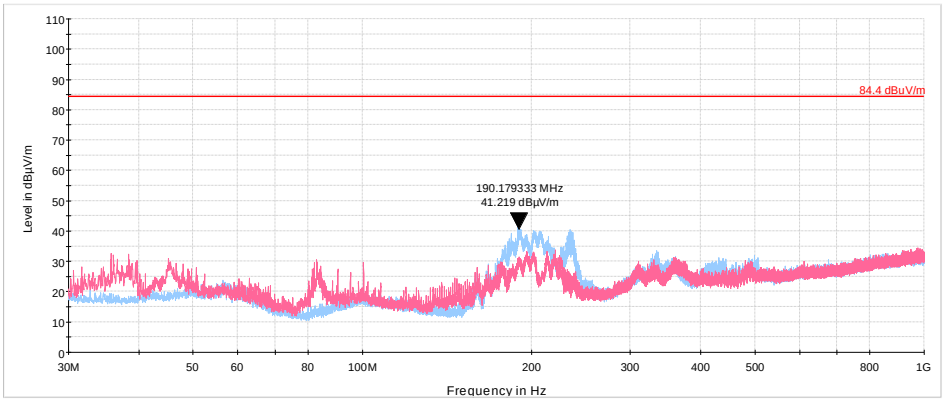
Plot 7.5.5 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Plot 7.5.6 Radiated emission measurements in 30 - 1000 MHz range

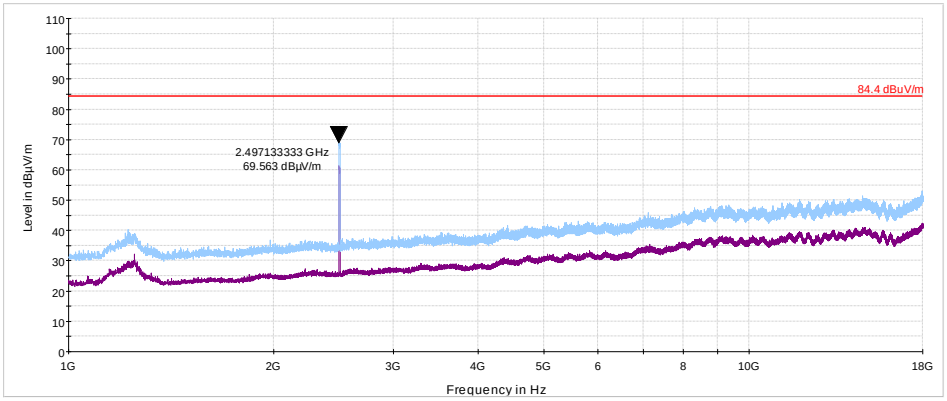
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

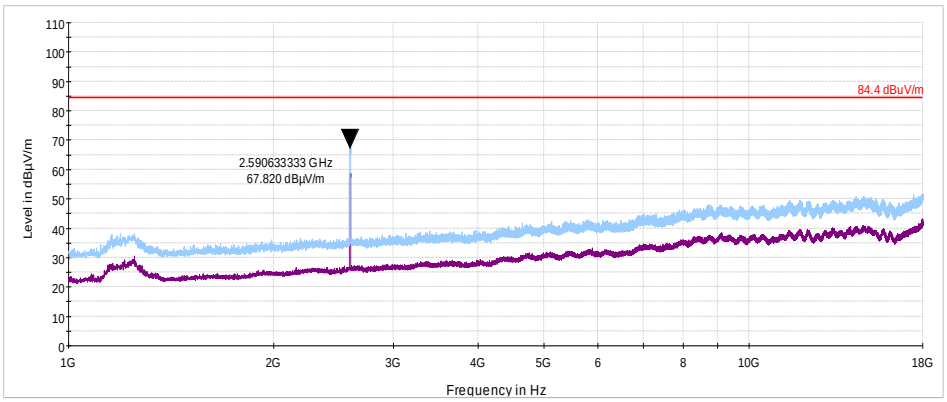
Plot 7.5.7 Radiated emission measurements in 1000 – 18000 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Plot 7.5.8 Radiated emission measurements in 1000 – 18000 MHz range

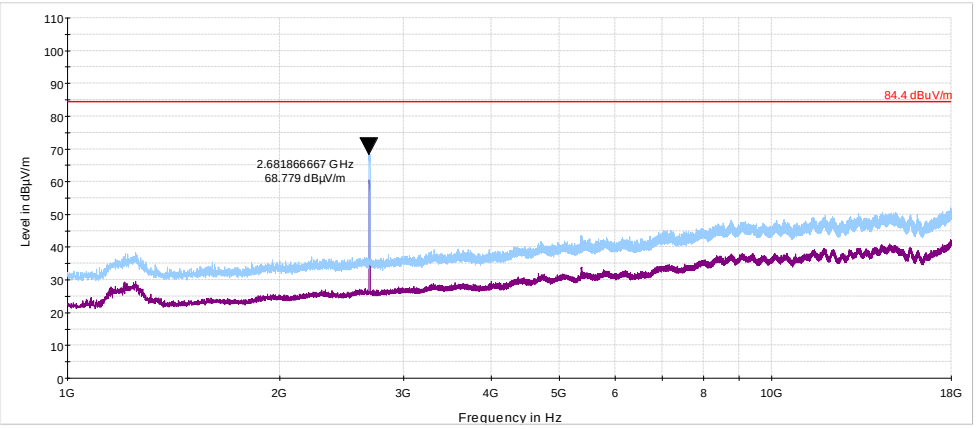
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High 2593 MHz
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

Plot 7.5.9 Radiated emission measurements in 1000 – 18000 MHz range

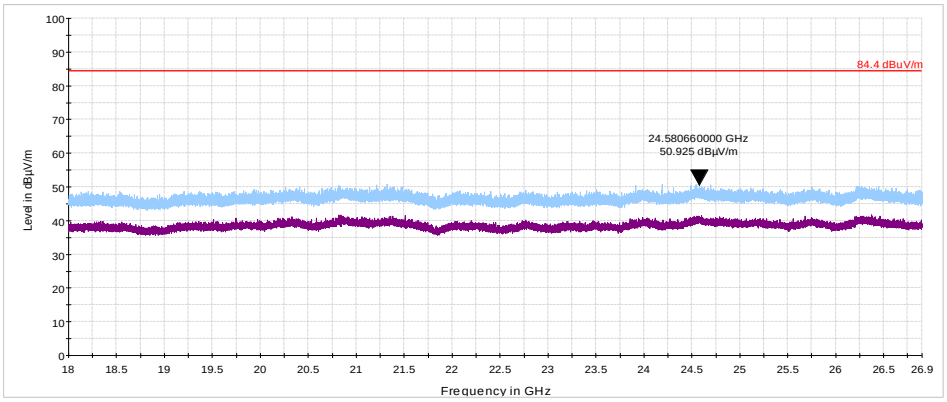
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

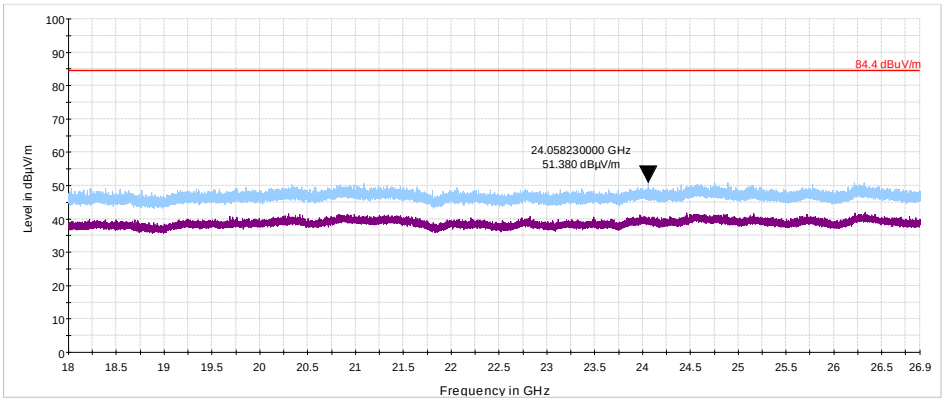
Plot 7.5.10 Radiated emission measurements in 18000 – 26900 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Plot 7.5.11 Radiated emission measurements in 18000 – 26900 MHz range

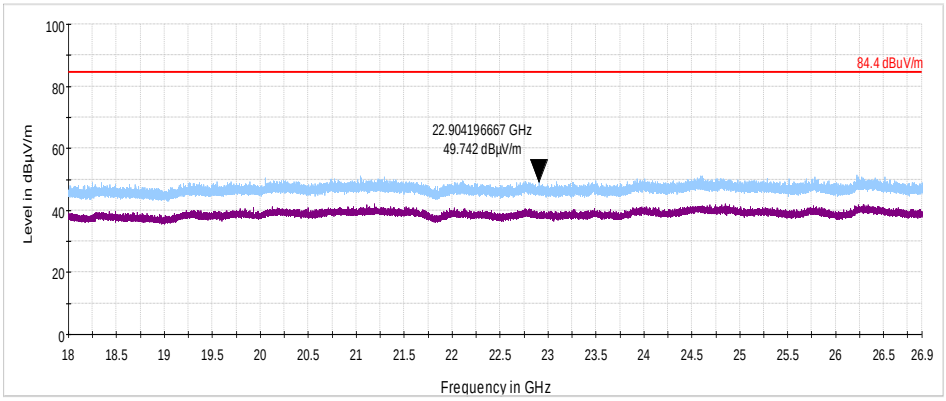
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.53, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053;		
Test mode:	Compliance	Verdict:	PASS
Date(s):	31-Jul-23		
Temperature: 25 ºC	Relative Humidity: 41 %	Air Pressure: 1002 hPa	Power: 120 VAC, 60 Hz
Remarks:			

Plot 7.5.12 Radiated emission measurements in 18000 – 26900 MHz range

TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
MODULATION / BANDWIDTH:	256 QAM / 10 MHZ
ANTENNA POLARIZATION:	Vertical and horizontal
TEST DISTANCE:	3 m



Test specification:	Section 27.54, Frequency stability		
Test procedure:	47 CFR, Section 2.1055; TIA/EIA-603-E Section 2.2.2		
Test mode:	Compliance	Verdict:	PASS
Date(s):	25-Jul-23		
Temperature: 25 ºC	Relative Humidity: 48 %	Air Pressure: 999 hPa	Power: 120 VAC, 60 Hz
Remarks:			

7.6 Frequency stability test

7.6.1 General

This test was performed to measure frequency stability of transmitter RF carrier. Specification test limits are given in Table 7.6.1.

Table 7.6.1 Frequency stability limits

Assigned frequency, MHz	Maximum allowed frequency displacement
2496 -2690	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

7.6.2 Test procedure

7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.

7.6.2.2 The EUT power was turned off. Temperature within test chamber was set to +30˚C and a period of time sufficient to stabilize all of the oscillator circuit components was allowed.

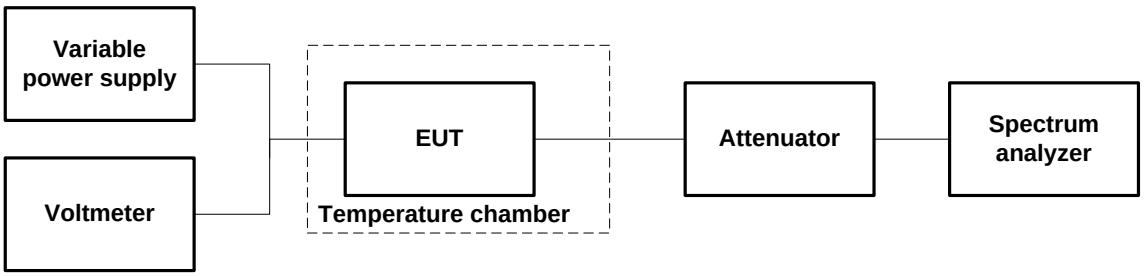
7.6.2.3 The EUT was powered on and carrier frequency was measured at start up moment and then every minute until frequency had been stabilized or 10 minutes elapsed whichever reached the last. The EUT was powered off.

7.6.2.4 The above procedure was repeated at 0˚C and at the lowest test temperature.

7.6.2.5 The EUT was powered on and carrier frequency was measured at start up moment and at the end of stabilization period at the rest of test temperatures and voltages. The EUT was powered off.

7.6.2.6 Frequency displacement was calculated and provided in Table 7.6.2.

Figure 7.6.1 Frequency stability test setup



Test specification:	**Section 27.54, Frequency stability**		
Test procedure:	47 CFR, Section 2.1055; TIA/EIA-603-E Section 2.2.2		
Test mode:	Compliance	**Verdict:**	PASS
Date(s):	25-Jul-23		
Temperature: 25 ºC	**Relative Humidity:** 48 %	**Air Pressure:** 999 hPa	**Power:** 120 VAC, 60 Hz
Remarks:			

Table 7.6.2 Frequency stability test results

OPERATING FREQUENCY:	2496-2690MHz
NOMINAL POWER VOLTAGE:	120V
TEMPERATURE STABILIZATION PERIOD:	20 min
POWER DURING TEMPERATURE TRANSITION:	Off
SPECTRUM ANALYZER MODE:	Counter
RESOLUTION BANDWIDTH:	100 Hz
VIDEO BANDWIDTH:	300 Hz
MODULATION:	Unmodulated

T, ºC	Voltage, V	Frequency, MHz							Max frequency drift, Hz	
		Start up	1st min	2nd min	3rd min	4th min	5th min	10th min	Positive	Negative
Low carrier frequency 2501 MHz										
-30	nominal	2501.000005	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	5	N/A
-20	nominal	2501.000005	NA	NA	NA	NA	NA	2501.000005	5	N/A
-10	nominal	2501.000000	NA	NA	NA	NA	NA	2501.000000	0	N/A
0	nominal	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	0	N/A
10	nominal	2501.000000	NA	NA	NA	NA	NA	2501.000000	0	N/A
20	15%(138v)	2501.000000	NA	NA	NA	NA	NA	2501.000000	0	N/A
20	nominal	2501.000000	NA	NA	NA	NA	NA	2501.000000*	0	N/A
20	-15%(102v)	2501.000000	NA	NA	NA	NA	NA	2501.000005	5	N/A
30	nominal	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	2501.000000	0	N/A
40	nominal	2501.000000	NA	NA	NA	NA	NA	2501.000000	0	N/A
50	nominal	2501.000000	NA	NA	NA	NA	NA	2501.000000	0	N/A
Mid carrier frequency 2590 MHz										
-30	nominal	2590.000000	2590.000000	2590.000000	2590.000000	2590.000000	2590.000000	2590.000000	N/A	5
-20	nominal	2589.000005	NA	NA	NA	NA	NA	2590.000000	0	N/A
-10	nominal	2590.000005	NA	NA	NA	NA	NA	2590.000005	0	N/A
0	nominal	2590.000000	2590.000000	2590.000000	2590.0000000	2590.000000	2590.000000	2590.000000	N/A	5
10	nominal	2590.000005	NA	NA	NA	NA	NA	2590.000000	0	N/A
20	15%(138v)	2590.000005	NA	NA	NA	NA	NA	2590.000005	0	N/A
20	nominal	2590.000005	NA	NA	NA	NA	NA	2590.000005*	0	N/A
20	-15%(102v)	2590.000005	NA	NA	NA	NA	NA	2590.000000	0	N/A
30	nominal	2590.000005	2590.000000	2590.000005	2590.000000	2590.000005	2590.000005	2590.000000	0	N/A
40	nominal	2590.000005	NA	NA	NA	NA	NA	2590.000005	0	N/A
50	nominal	2590.000000	NA	NA	NA	NA	NA	2590.000000	N/A	5
High carrier frequency 2685 MHz										
-30	nominal	2685.000005	2685000005	2690.000005	2690.000000	2690.000000	2690.000005	2690.000000	0	N/A
-20	nominal	2685.000000	NA	NA	NA	NA	NA	2685.000000	N/A	5
-10	nominal	2685.000005	NA	NA	NA	NA	NA	2684.999995	N/A	10
0	nominal	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	N/A	5
10	nominal	2685.000005	NA	NA	NA	NA	NA	2685.000000	0	N/A
20	15%(138v)	2685.000000	NA	NA	NA	NA	NA	2685.000005	0	N/A
20	nominal	2685.000000	NA	NA	NA	NA	NA	2685.000005*	N/A	5
20	-15%(102v)	2685.000000	NA	NA	NA	NA	NA	2685.000005	0	N/A
30	nominal	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	2685.000000	N/A	5
40	nominal	2685.000000	NA	NA	NA	NA	NA	2685.000000	N/A	5
50	nominal	2685.000005	NA	NA	NA	NA	NA	2685.000005	0	N/A

* - Reference frequency

Reference numbers of test equipment used

HL 5376	HL 3230	HL 0495	HL 5391				

Full description is given in Appendix A.

8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
0446	Antenna, Loop, Active, 10 (9) kHz - 30 MHz	EMCO	6502	2857	07-Mar-23	07-Mar-24
0495	Autotransformer 0-255V, 10A	Variac	EMPL01	495	03-May-23	03-May-24
1501	Cable RF, 6 m, BNC/BNC	Belden	M17/167 MIL-C-17	1501	11-May-23	11-May-24
2016	Attenuator, Manual Step, 0-9/1 dB, 0-8 GHz, 2 W	Midwest Microwave	1072	1315	27-Mar-23	27-Mar-24
3230	Multimeter	Fluke	115C	94173028	10-Jul-22	10-Aug-23
3301	Power Meter, P-series, 50 MHz to 40 GHz	Agilent Technologies	N1911A	MY45101057	09-Jul-23	09-Jul-24
3302	Power sensor, P-Series, 50 MHz to 40 GHz, -35/30 to 20 dBm	Agilent Technologies	N1922A	MY45240586	09-Jul-23	09-Jul-24
3903	Microwave Cable Assembly, 40.0 GHz, 1.5 m, SMA/SMA	Huber-Suhner	SUCOFLEX 102A	1226/2A	16-Apr-23	16-Apr-24
4355	Signal and Spectrum Analyzer, 9 kHz to 7 GHz	Rohde & Schwarz	FSV 7	101630	11-Oct-22	11-Oct-23
4366	Directional coupler, 1 GHz to 18 GHz, 10 dB, SMA Female	Tiger Micro-Electronics Institute	TGD-A1101-10	01e-JSDE805-007	29-May-22	29-May-24
4933	Active Horn Antenna, 1 GHz to 18 GHz	COM-POWER CORPORATION	AHA-118	701046	19-Jan-23	19-Jan-24
4956	Active horn antenna, 18 to 40 GHz	COM-POWER CORPORATION	AHA-840	105004	08-Mar-23	08-Mar-24
5112	RF cable, 40 GHz, 5.5 m, K-type	Huber-Suhner	SF102EA/11SK/11SK/5500MM	502494/2EA	16-Apr-23	16-Apr-24
5288	Trilog Antenna, 25 MHz - 8 GHz, 100W	Frankonia	ALX-8000E	00809	24-Mar-22	24-Mar-25
5376	EXA Signal Analyzer, 10 Hz - 32 GHz	Keysight Technologies	N9010B	MY57470404	27-Dec-22	27-Dec-23
5391	Temperature/Humidity Cycle Chamber, -77 - +177 deg., Humidity Range 20% RH to 95% RH	Thermotron	SM-8C	27737	14-Nov-22	14-Nov-23
5409	RF cable, 40 GHz, SMA-SMA, 2 m	Huber-Suhner	SF102EA/11SK/11SK/2000MM	503973/2EA	25-Jul-22	25-Jul-23
5476	Cable, BNC/BNC, 10.5 m	Western wire	MIL-C-17G	NA	11-May-23	11-May-24
5589	Cable, 50 Ohm, DC to 18 GHz, 1.8 m, SMA/N	Mini Circuits	CBL-6FT-SMNM+	NA	07-Nov-22	07-Nov-23

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
5637	Cable, 50 Ohm, DC to 18 GHz, 1.8 m, SMA/SMA	Mini Circuits	CBL-6FT-SMSM+	NA	21-Jul-22	21-Jul-23
5638	Cable, 50 Ohm, DC to 18 GHz, 1.8 m, SMA/SMA	Mini Circuits	CBL-6FT-SMSM+	NA	29-Nov-22	29-Nov-23
5707	EMI receiver	PMM / Narda	PMM 9010F	060WW91101	22-Jun-23	22-Jun-24
5708	Click analyzer	PMM / Narda	CA0010	010WX90602	12-Dec-22	12-Dec-24
5902	RF cable, 18 GHz, 6.0m, N-type	Huber-Suhner	SF126EA/11N/11N/6000	NA	08-Dec-22	08-Dec-23
7802	EMI Test Receiver, 1 Hz to 44 GHz	Rohde & Schwarz	ESW44	103170	15-Sep-22	15-Sep-23

9 APPENDIX B Test equipment correction factors

HL 0446: Active Loop Antenna
EMCO, model: 6502, s/n 2857

Frequency,	Measured antenna factor, dBS/m	Measurement uncertainty, dB
10	-33.4	±1.0
20	-37.8	±1.0
50	-40.5	±1.0
75	-41.0	±1.0
100	-41.2	±1.0
150	-41.2	±1.0
250	-41.1	±1.0
500	-41.2	±1.0
750	-41.3	±1.0
1000	-41.3	±1.0

Frequency,	Measured antenna factor, dBS/m	Measurement uncertainty, dB
2000	-41.4	±1.0
3000	-41.4	±1.0
4000	-41.5	±1.0
5000	-41.5	±1.0
10000	-41.7	±1.0
15000	-42.1	±1.0
20000	-42.7	±1.0
25000	-44.2	±1.0
30000	-45.8	±1.0

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμA/m.

HL 4933: Active Horn Antenna
COM-POWER CORPORATION, model: AHA-118, s/n 701046

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
1000	-16.1
1500	-15.1
2000	-10.9
2500	-11.9
3000	-11.1
3500	-10.6
4000	-8.6
4500	-8.3
5000	-5.9
5500	-5.7
6000	-3.3
6500	-4.0
7000	-2.2
7500	-1.7
8000	1.1
8500	-0.8
9000	-1.5
9500	-0.2

Frequency, MHz	Measured antenna factor (with preamplifier), dB/m
10000	1.8
10500	1.0
11000	0.3
11500	-0.5
12000	3.1
12500	1.4
13000	-0.3
13500	-0.4
14000	2.5
14500	2.2
15000	1.9
15500	0.5
16000	2.1
16500	1.2
17000	0.6
17500	3.1
18000	4.2

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/m.

Antenna Factors

Antenna factor, HL 4956

COM-POWER CORPORATION

Active Horn Antenna Factor Calibration

18 GHz to 40 GHz

Equipment:	**ACTIVE HORN ANTENNA**
Model:	**AHA-840**
Serial Number:	**105004**
Calibration Distance:	**3 meter**
Polarization:	**Horizontal**
Calibration Date:	**1/26/2015**

Frequency (GHz)	*Preamplifier Gain* (dB)	*Antenna Factor with pre-amp* (dB/m)	*Frequency* (GHz)	*Preamplifier Gain* (dB)	*Antenna Factor with pre-amp* (dB/m)
18	38.83	-1.06	29.5	42.47	-5.33
18.5	39.34	-2.65	30	41.91	-4.86
19	39.71	-3.88	30.5	41.60	-4.64
19.5	39.87	-4.35	31	41.52	-4.60
20	39.98	-3.97	31.5	41.56	-4.79
20.5	40.42	-3.68	32	41.80	-5.21
21	41.12	-4.06	32.5	42.29	-5.54
21.5	41.74	-5.46	33	42.79	-5.63
22	42.14	-6.22	33.5	42.88	-5.38
22.5	42.35	-6.42	34	42.62	-4.76
23	42.50	-6.59	34.5	42.63	-4.84
23.5	42.65	-6.82	35	43.15	-5.13
24	42.81	-7.01	35.5	43.91	-5.83
24.5	42.86	-7.37	36	44.59	-6.39
25	42.73	-7.53	36.5	45.04	-6.64
25.5	42.77	-7.45	37	45.08	-6.40
26	42.85	-7.21	37.5	44.82	-5.75
26.5	42.98	-7.17	38	44.16	-4.58
27	43.14	-7.22	38.5	42.90	-2.66
27.5	43.18	-7.32	39	42.39	-1.71
28	43.04	-7.10	39.5	43.76	-2.49
28.5	43.01	-6.73	40	45.98	-5.21

Calibration per ANSI C63.5: 2006

Standard Site Method, Equations 1-6 (3-antenna)

Corrected Reading (dBµV/m) = Meter Reading (dBµV) + AFE(dB/m)

HL 5288: Trilog Antenna
Frankonia, model: ALX-8000E, s/n: 00809
30-1000 MHz

Frequency, MHz	Antenna factor, dB/m	Frequency, MHz	Antenna factor, dB/m
30	14.96	160	12.67
35	15.33	180	13.34
40	16.37	200	15.40
45	17.56	250	16.42
50	17.95	300	17.28
60	16.87	400	19.98
70	13.22	500	21.11
80	10.56	600	22.90
90	13.61	700	24.13
100	15.46	800	25.25
120	14.03	900	26.35
140	12.23	1000	27.18

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/m.

above 1000 MHz

Frequency, MHz	Antenna factor, dB/m	Frequency, MHz	Antenna factor, dB/m
1000	26.9	3600	38.9
1100	28.1	3700	39.4
1200	28.4	3800	39.4
1300	29.6	3900	39.6
1400	29.1	4000	39.7
1500	30.4	4100	39.8
1600	30.7	4200	40.5
1700	31.5	4300	40.9
1800	32.3	4400	41.1
1900	32.6	4500	41.4
2000	32.5	4600	41.3
2100	32.9	4700	41.6
2200	33.5	4800	41.9
2300	33.2	4900	42.3
2400	33.7	5000	42.7
2500	34.6	5100	43.0
2600	34.7	5200	42.9
2700	34.6	5300	43.5
2800	35.0	5400	43.6
2900	35.5	5500	44.3
3000	36.2	5600	44.7
3100	36.8	5700	45.0
3200	36.8	5800	45.0
3300	37.0	5900	45.3
3400	37.5	6000	45.9
3500	38.2		

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/m.

10 APPENDIX C Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Transmitter tests	
Carrier power conducted at antenna connector	± 1.7 dB
Carrier power radiated (substitution method)	± 4.5 dB
Occupied bandwidth	±8%
Conducted emissions at RF antenna connector	9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB
Spurious emissions radiated 30 MHz – 40 GHz (substitution method)	± 4.5 dB
Frequency error	30 – 300 MHz: ± 50.5 Hz (1.68 ppm) 300 – 1000 MHz: ± 168 Hz (0.56 ppm)
Transient frequency behaviour	187 Hz ± 13.9 %
Duty cycle, timing (Tx ON / OFF) and average factor measurements	± 1.0 %
Unintentional radiator tests	
Conducted emissions with LISN	9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB
Radiated emissions at 3 m measuring distance Horizontal polarization Vertical polarization	 Biconilog antenna: ± 5.3 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.3 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 6.0 dB Biconical antenna: ± 5.7 dB Log periodic antenna: ± 6.0 dB Double ridged horn antenna: ± 6.0 dB

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.

Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.

In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

11 APPENDIX D Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, Radio, Safety, Environmental and Telecommunication testing facility.
Hermon Laboratories is recognized and accredited by the Federal Communications Commission (USA) for relevant parts of Code of Federal Regulations 47 (CFR 47), Test Firm Registration Number is 927748, Designation Number is IL1001; Recognized by Innovation, Science and Economic Development Canada for wireless and terminal testing (ISED), ISED #2186A, CAB identifier is IL1001; Certified by VCCI, Japan (the registration numbers are R-10808 for OATS, R-1082 for anechoic chamber, G-10869 for RE measurements above 1 GHz, C-10845 for conducted emissions site and T-11606 for conducted emissions at telecommunication ports).
The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing, environmental simulation and calibration (for exact scope please refer to Certificate No. 839.01, 839.03 and 839.04).

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12 APPENDIX E Specification references

47CFR part 27: 2020	Private land mobile radio services
47CFR part 1: 2020	Practice and procedure
47CFR part 2: 2020	Frequency allocations and radio treaty matters; general rules and regulations

13 APPENDIX F Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
BB	broad band
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
dB(μA)	decibel referred to one microampere
dBΩ	decibel referred to one Ohm
DC	direct current
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
ITE	information technology equipment
k	kilo
kHz	kilohertz
LISN	line impedance stabilization network
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μs	microsecond
NA	not applicable
NB	narrow band
NT	not tested
OATS	open area test site
Ω	Ohm
QP	quasi-peak
PCB	printed circuit board
PM	pulse modulation
PS	power supply
RE	radiated emission
RF	radio frequency
rms	root mean square
Rx	receive
s	second
T	temperature
Tx	transmit
V	volt
VA	volt-ampere

14 APPENDIX G Test equipment correction factors

Biconical antenna factor
Electro-Metrics, model BIA-25/30, serial number 3577

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
20	15.1	115	16.7
25	14.6	120	14.1
30	13.7	125	13.1
35	11.8	130	13.0
40	11.4	135	12.9
45	11.7	140	12.7
50	11.4	145	12.5
55	10.5	150	14.3
60	10.3	155	14.8
65	8.9	160	14.7
70	7.6	165	15.1
75	7.3	170	15.6
80	7.3	175	16.5
85	7.8	180	16.7
90	9.4	185	17.3
95	10.6	190	17.9
100	11.8	195	17.6
105	12.5	200	17.9
110	13.7		

Antenna factor in dB (1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Biconical antenna factor
Electro-Metrics, model BIA-25/30, serial number 3566

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
20	14.1	115	15.2
25	14.5	120	14.9
30	13.8	125	13.5
35	11.9	130	13.5
40	11.5	135	13.0
45	11.7	140	12.7
50	11.4	145	12.9
55	10.6	150	14.7
60	10.4	155	15.0
65	9.0	160	15.0
70	7.8	165	15.5
75	7.6	170	15.9
80	7.5	175	16.6
85	7.9	180	17.1
90	9.5	185	17.5
95	10.9	190	17.9
100	11.9	195	18.0
105	12.4	200	18.1
110	13.5		

Antenna factor in dB (1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Log periodic antenna factor

Electro-Metrics, model LPA-25/30, serial number 1953

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
200	15.2	625	25.2
225	15.1	650	25.8
250	16.3	675	27.2
275	17.2	700	27.6
300	19.6	725	27.6
325	18.4	750	27.6
350	19.0	775	28.0
375	20.0	800	28.2
400	20.9	825	29.4
425	21.3	850	29.9
450	22.1	875	30.0
475	22.7	900	30.4
500	23.2	925	30.6
525	23.9	950	30.8
550	24.2	975	31.6
575	24.6	1000	32.1
600	24.7		

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Log periodic antenna factor

Electro-Metrics, model LPA-25/30, serial number 1988

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
200	12.6	625	20.4
225	12.2	650	20.9
250	13.4	675	22.0
275	14.3	700	22.2
300	15.2	725	22.7
325	15.7	750	22.5
350	15.9	775	22.7
375	16.4	800	22.8
400	17.0	825	23.2
425	17.4	850	23.5
450	17.9	875	23.9
475	18.6	900	24.0
500	19.1	925	24.0
525	19.3	950	24.2
550	19.6	975	24.7
575	19.8	1000	25.1
600	20.0		

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor

Biconilog antenna EMCO, model 3141, serial number 1011

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
26	7.8	560	19.8	1300	27.0
28	7.8	580	20.6	1320	27.8
30	7.8	600	21.3	1340	28.3
40	7.2	620	21.5	1360	28.2
60	7.1	640	21.2	1380	27.9
70	8.5	660	21.4	1400	27.9
80	9.4	680	21.9	1420	27.9
90	9.8	700	22.2	1440	27.8
100	9.7	720	22.2	1460	27.8
110	9.3	740	22.1	1480	28.0
120	8.8	760	22.3	1500	28.5
130	8.7	780	22.6	1520	28.9
140	9.2	800	22.7	1540	29.6
150	9.8	820	22.9	1560	29.8
160	10.2	840	23.1	1580	29.6
170	10.4	860	23.4	1600	29.5
180	10.4	880	23.8	1620	29.3
190	10.3	900	24.1	1640	29.2
200	10.6	920	24.1	1660	29.4
220	11.6	940	24.0	1680	29.6
240	12.4	960	24.1	1700	29.8
260	12.8	980	24.5	1720	30.3
280	13.7	1000	24.9	1740	30.8
300	14.7	1020	25.0	1760	31.1
320	15.2	1040	25.2	1780	31.0
340	15.4	1060	25.4	1800	30.9
360	16.1	1080	25.6	1820	30.7
380	16.4	1100	25.7	1840	30.6
400	16.6	1120	26.0	1860	30.6
420	16.7	1140	26.4	1880	30.6
440	17.0	1160	27.0	1900	30.6
460	17.7	1180	27.0	1920	30.7
480	18.1	1200	26.7	1940	30.9
500	18.5	1220	26.5	1960	31.2
520	19.1	1240	26.5	1980	31.6
540	19.5	1260	26.5	2000	32.0
		1280	26.6		

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Biconilog antenna factor

Schaffner Chase EMC, model CBL 6140A, serial number 1120

Frequency, MHz	Antenna factor, dB(1/m)
20	12.1
22	8.8
24	5.5
26	3.0
28	2.8
30	3.9
40	8.4
50	9.3
60	9.7
70	9.3
80	7.5
90	6.8
100	7.6
110	6.6
120	6.9
140	7.6
160	11.6
170	8.3
190	9.2
200	9.9
220	10.5
240	11.2
260	12.9
280	12.1
300	12.9
320	13.2
340	13.9
360	15.2
380	15.3
400	15.7
420	16.6
440	16.8
460	17.6
480	18.3
500	18.0
520	18.0
540	18.7
560	19.2
580	19.0

Frequency, MHz	Antenna factor, dB(1/m)
600	19.1
620	19.8
640	20.6
660	20.7
680	20.9
700	21.0
720	21.4
740	21.7
760	21.6
780	21.6
800	21.9
820	22.2
840	22.6
860	22.7
880	22.7
900	22.9
920	23.2
940	23.7
960	24.3
980	24.6
1000	24.4
1.060	24.3
1.120	24.8
1.180	25.3
1.240	26.1
1.300	26.9
1.360	27.6
1.420	26.8
1.480	26.9
1.520	28.1
1.560	28.1
1.640	28.2
1.700	28.6
1.760	30.0
1.840	31.3
1.900	31.8
1.960	31.6
2.000	32.0

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Double-ridged wave guide horn antenna
EMC Test Systems, model 3115, serial no: 9911-5964

Frequency, MHz	Antenna gain, dBi	Antenna factor. dB(1/m)
1000.0	5.8	24.5
1500.0	9.0	24.8
2000.0	8.6	27.7
2500.0	9.5	28.7
3000.0	8.9	30.8
3500.0	8.2	32.9
4000.0	9.6	32.7
4500.0	11.2	32.1
5000.0	10.6	33.6
5500.0	9.8	35.3
6000.0	10.1	35.7
6500.0	10.7	35.8
7000.0	10.9	36.2
7500.0	10.5	37.2
8000.0	11.1	37.2
8500.0	10.8	38.1
9000.0	10.7	38.6
9500.0	11.5	38.3
10000.0	11.8	38.4
10500.0	12.3	38.3
11000.0	12.3	38.8
11500.0	11.5	39.9
12000.0	12.2	39.6
12500.0	12.6	39.5
13000.0	12.0	40.5
13500.0	11.7	41.1
14000.0	11.7	41.5
14500.0	12.7	40.8
15000.0	14.2	39.5
15500.0	16.0	38.1
16000.0	16.2	38.1
16500.0	14.5	40.1
17000.0	12.2	42.6
17500.0	9.7	45.4
18000.0	6.6	48.7

Antenna factor is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Double-ridged wave guide horn antenna
EMC Test Systems, model 3115, serial no: 00027177

Frequency, MHz	Antenna gain, dBi	Antenna factor. dB(1/m)
1000.0	5.5	24.7
1500.0	8.0	25.7
2000.0	8.4	27.8
2500.0	9.3	28.9
3000.0	9.0	30.7
3500.0	9.3	31.8
4000.0	9.3	33.0
4500.0	10.4	32.8
5000.0	10.0	34.2
5500.0	10.1	34.9
6000.0	10.6	35.2
6500.0	11.0	35.4
7000.0	10.8	36.3
7500.0	10.4	37.3
8000.0	10.8	37.5
8500.0	10.8	38.0
9000.0	11.0	38.3
9500.0	11.5	38.3
10000.0	11.5	38.7
10500.0	11.9	38.7
11000.0	12.2	38.9
11500.0	11.9	39.5
12000.0	12.3	39.5
12500.0	12.7	39.4
13000.0	12.0	40.5
13500.0	12.0	40.8
14000.0	11.6	41.5
14500.0	12.2	41.3
15000.0	13.6	40.2
15500.0	15.3	38.7
16000.0	15.8	38.5
16500.0	14.8	39.8
17000.0	12.9	41.9
17500.0	9.2	45.8
18000.0	6.2	49.1

Antenna factor is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

END OF DOCUMENT