

5.5 Spurious Emissions at Antenna Terminal Measurement Data {2.991}

Frequency Range	Emissions Level (dBm) Carrier @ 1850.2 MHz, 1 W (Ch 512)	Frequency of Spur (MHz)
13 - 1000 MHz	-32.3	39.43
	-38.0	964.57
1000 - 2900 MHz	-37.6	1.71502 GHz
2900 MHz - 20 GHz	-27.1	3.7 GHz
1849 - 1850 MHz	-16.0	

Table 5.5.1 Recorded Conducted Emissions with Carrier @ 1850.2 MHz, 1 W, (Ch 512)

Frequency Range	Emissions Level (dBm) Carrier @ 1864.8 MHz, 1 W (Ch 585)	Frequency of Spur (MHz)
13 - 1000 MHz	-31.3	54.11
	-38.2	986.5
1000 - 2900 MHz	-38.4	1.72968 GHz
2900 MHz - 20 GHz	-26.7	3.729 GHz
1865 - 1866 MHz	-14.5	

Table 5.5.2 Recorded Conducted Emissions with Carrier @ 1864.8 MHz, 1 W, (Ch 585)

Frequency Range	Emissions Level (dBm) Carrier @ 1865.2 MHz, 1 W (Ch 587)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.4	54.49
	-37.1	987.15
1000 - 2900 MHz	-38.2	1.73 GHz
2900 MHz - 20 GHz	-26.6	3.73 GHz
1864 - 1865 MHz	-13.6	

Table 5.5.3 Recorded Conducted Emissions with Carrier @ 1865.2 MHz, 1 W, (Ch 587)

Frequency Range	Emissions Level (dBm) Carrier @ 1869.8 MHz, 1 W (Ch 610)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.1	59.1
	-36.7	994.05
1000 - 2900 MHz	-38.6	1.734 GHz
	-38.6	1.859 GHz
2900 MHz - 20 GHz	-26.4	3.739 GHz
1870 - 1871 MHz	-14.9	

Table 5.5.4 Recorded Conducted Emissions with Carrier @ 1869.8 MHz, 1 W, (Ch 610)

Frequency Range	Emissions Level (dBm) Carrier @ 1870.2 MHz, 1 W (Ch 612)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.2 -36.8	59.51 994.6
1000 - 2900 MHz	-38.8 -39.2	1.735 GHz 1.859 GHz
2900 MHz - 20 GHz	-26.3	3.74037 GHz
1869 - 1870 MHz	-14.4	

Table 5.5.5 Recorded Conducted Emissions with Carrier @ 1870.2 MHz, 1 W, (Ch 612)

Frequency Range	Emissions Level (dBm) Carrier @ 1884.8 MHz, 1 W (Ch 685)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.3	74.08
1000 - 2900 MHz	-36.6 -38.8	1.0165 GHz 1.876 GHz
2900 MHz - 20 GHz	-25.9	3.769 GHz
1885 - 1886 MHz	-14.3	

Table 5.5.6 Recorded Conducted Emissions with Carrier @ 1884.8 MHz, 1 W, (Ch 685)

Frequency Range	Emissions Level (dBm) Carrier @ 1885.2 MHz, 1 W (Ch 687)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.2	74.45
1000 - 2900 MHz	-36.5 -38.8	1.017 GHz 1.874 GHz
2900 MHz - 20 GHz	-25.9	3.77 GHz
1884 - 1885 MHz	-13.9	

Table 5.5.7 Recorded Conducted Emissions with Carrier @ 1885.2 MHz, 1 W, (Ch 687)

Frequency Range	Emissions Level (dBm) Carrier @ 1889.8 MHz, 1 W (Ch 710)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.5	79.11
1000 - 2900 MHz	-36.5 -38.8	1.023 GHz 1.879 GHz
2900 MHz - 20 GHz	-25.6	3.779 GHz
1890 - 1891 MHz	-13.8	

Table 5.5.8 Recorded Conducted Emissions with Carrier @ 1889.8 MHz, 1 W, (Ch 710)

Frequency Range	Emissions Level (dBm) Carrier @ 1890.2 MHz, 1 W (Ch 712)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.5	79.55
1000 - 2900 MHz	-35.9	1.0245 GHz
	-40.1	1.755 GHz
2900 MHz - 20 GHz	-25.8	3.78 GHz
1889 - 1890 MHz	-15.3	

Table 5.5.9 Recorded Conducted Emissions with Carrier @ 1890.2 MHz, 1 W, (Ch 712)

Frequency Range	Emissions Level (dBm) Carrier @ 1894.8 MHz, 1 W (Ch 735)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.7	84.047
1000 - 2900 MHz	-36.5	1.032 GHz
	-38.8	1.884 GHz
2900 MHz - 20 GHz	-25.5	3.789 GHz
1895 - 1896 MHz	-15.1	

Table 5.5.10 Recorded Conducted Emissions with Carrier @ 1894.8 MHz, 1 W, (Ch 735)

Frequency Range	Emissions Level (dBm) Carrier @ 1895.2 MHz, 1 W (Ch 737)	Frequency of Spur (MHz)
13 - 1000 MHz	-30.8	84.449
1000 - 2900 MHz	-36.4	1.032 GHz
	-38.7	1.884 GHz
2900 MHz - 20 GHz	-25.6	3.79 GHz
1894 - 1895 MHz	-13.3	

Table 5.5.11 Recorded Conducted Emissions with Carrier @ 1895.2 MHz, 1 W, (Ch 737)

Frequency Range	Emissions Level (dBm) Carrier @ 1909.8 MHz, 1 W (Ch 810)	Frequency of Spur (MHz)
13 - 1000 MHz	-31.2	99.104
1000 - 2900 MHz	-36.6	1.054 GHz
	-38.8	1.899 GHz
2900 MHz - 20 GHz	-25	3.8197 GHz
1910 - 1911 MHz	-15.2	

Table 5.5.12 Recorded Conducted Emissions with Carrier @ 1909.8 MHz, 1 W, (Ch 810)

5.6 Field Strength of Spurious Emissions Measurement Data {2.993}

All harmonics and spurs beyond the third harmonic were below the spectrum analyzers noise floor of $\cong -90$ dBm.

Radiated Emissions / Interference									
Notes: Fundamental					Distance: 3				
Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	Distance Factor (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)
TX +30dBm Low Channel(1850.2Mhz) Retractable Antenna									
Below Readings are with the Antenna Fully Retracted									
V	1850.200	89.6	28.6	1.9	0.0	0.0	120.0	N/A	N/A
V	1850.200	70.3	28.6	1.9	0.0	0.0	100.7	N/A	N/A
H	1850.200	89.3	28.6	1.9	0.0	0.0	119.7	N/A	N/A
H	1850.200	69.9	28.6	1.9	0.0	0.0	100.3	N/A	N/A
Below Readings are with the Antenna Fully Extended									
V	1850.200	91.4	28.6	1.9	0.0	0.0	121.8	N/A	N/A
V	1850.200	71.1	28.6	1.9	0.0	0.0	101.5	N/A	N/A
H	1850.200	89.7	28.6	1.9	0.0	0.0	120.1	N/A	N/A
H	1850.200	69.5	28.6	1.9	0.0	0.0	99.9	N/A	N/A

PK

AVC

PK

AVC

PK

AVC

PK

AVC

Table 5.6.1 Recorded Radiated Emissions with Carrier @ 1850.2 MHz, 1 W, (Ch 512)

Radiated Emissions / Interference

Notes: Field Strength of Spurious Emissions

Distance: 3

TX +30dBm Low Channel(1850.2Mhz)

Signature:

Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	External Atten. (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)	
All Readings are with the EUT antenna port terminated by a 50ohm load										
V	1850.200	70.1	28.6	1.9	0.0	0.0	100.5	N/A	N/A	PK
V	1850.200	50.6	28.6	1.9	0.0	0.0	81.0	N/A	N/A	AVC
H	1850.200	72.6	28.6	1.9	0.0	0.0	103.0	N/A	N/A	PK
H	1850.200	52.8	28.6	1.9	0.0	0.0	83.2	N/A	N/A	AVC
V	3700.400	30.9	32.3	2.3	0.0	0.0	65.4	84.6	-19.2	PK
V	3700.400	17.0	32.3	2.3	0.0	0.0	51.5	84.6	-33.1	AVC
H	3700.400	38.7	32.3	2.3	0.0	0.0	73.2	84.6	-11.4	PK
H	3700.400	21.4	32.3	2.3	0.0	0.0	55.9	84.6	-28.7	AVC
V	5550.600	29.7	34.9	2.9	0.0	0.0	67.5	84.6	-17.1	PK
V	5550.600	16.9	34.9	2.9	0.0	0.0	54.7	84.6	-29.9	AVC
H	5550.600	32.6	34.9	2.9	0.0	0.0	70.4	84.6	-14.2	PK
H	5550.600	17.7	34.9	2.9	0.0	0.0	55.5	84.6	-29.1	AVC
V	7400.800	42.7	37.9	3.5	36.5	20.0	67.7	84.6	-16.9	PK
V	7400.800	25.8	37.9	3.5	36.5	20.0	50.8	84.6	-33.8	AVC
H	7400.800	42.4	37.9	3.5	36.5	20.0	67.4	84.6	-17.2	PK
H	7400.800	25.5	37.9	3.5	36.5	20.0	50.5	84.6	-34.1	AVC
V	9251.000	38.2	39.4	4.1	37.0	20.0	64.7	84.6	-19.9	PK
V	9251.000	23.2	39.4	4.1	37.0	20.0	49.7	84.6	-34.9	AVC
H	9251.000	35.8	39.4	4.1	37.0	20.0	62.3	84.6	-22.3	PK
H	9251.000	22.3	39.4	4.1	37.0	20.0	48.8	84.6	-35.8	AVC
V	11101.200	36.3	40.5	4.5	36.6	20.0	64.7	84.6	-19.9	PK
V	11101.200	21.9	40.5	4.5	36.6	20.0	50.3	84.6	-34.3	AVC
H	11101.200	34.2	40.5	4.5	36.6	20.0	62.6	84.6	-22.0	PK
H	11101.200	21.6	40.5	4.5	36.6	20.0	50.0	84.6	-34.6	AVC
V	1186.000	31.5	25.3	1.3	37.4	20.0	40.7	84.6	-43.9	PK
V	1186.000	18.3	25.3	1.3	37.4	20.0	27.5	84.6	-57.1	AVC
H	1186.000	39.5	25.3	1.3	37.4	20.0	48.7	84.6	-35.9	PK
H	1186.000	20.4	25.3	1.3	37.4	20.0	29.6	84.6	-55.0	AVC

Scanned 1-20Ghz

Table 5.6.2 Recorded Radiated Emissions with Carrier @ 1850.2 MHz, 1 W, (Ch 512)
(Antenna terminated with 50 ohm load)

Radiated Emissions / Interference

Notes: Fundamental

Distance: 3

Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	Distance Factor (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)	
TX +30dBm Mid Channel(1880.0Mhz) Retractable Antenna										
Below Readings are with the Antenna Fully Retracted										
V	1880.000	90.8	28.8	1.9	0.0	0.0	121.4	N/A	N/A	PK
V	1880.000	71.2	28.8	1.9	0.0	0.0	101.8	N/A	N/A	AVG
H	1880.000	89.0	28.8	1.9	0.0	0.0	119.6	N/A	N/A	PK
H	1880.000	69.5	28.8	1.9	0.0	0.0	100.1	N/A	N/A	AVG
Below Readings are with the Antenna Fully Extended										
V	1880.000	91.5	28.8	1.9	0.0	0.0	122.1	N/A	N/A	PK
V	1880.000	72.2	28.8	1.9	0.0	0.0	102.8	N/A	N/A	AVG
H	1880.000	89.9	28.8	1.9	0.0	0.0	120.5	N/A	N/A	PK
H	1880.000	69.5	28.8	1.9	0.0	0.0	100.1	N/A	N/A	AVG

Table 5.6.3 Recorded Radiated Emissions with Carrier @ 1880.0 MHz, 1 W, (Ch 661)

Radiated Emissions / Interference										
Notes:		Field Strength of Spurious Emissions Distance:						3		
TX +30dBm Mid Channel(1880.0Mhz)										
Ant.	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	External Atten. (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)	
Pol.										
(V/H)										
All Readings are with the EUT antenna port terminated by a 50 ohm load										
V	1880	74.100	28.8	1.9	0.0	0.0	104.7	N/A	N/A	Pk
V	1880	54.500	28.8	1.9	0.0	0.0	85.1	N/A	N/A	Avg
H	1880	72.500	28.8	1.9	0.0	0.0	103.1	N/A	N/A	Pk
H	1880	52.200	28.8	1.9	0.0	0.0	82.8	N/A	N/A	Avg
V	3760	30.300	32.5	2.3	0.0	0.0	65.1	84.6	-19.5	Pk
V	3760	17.400	32.5	2.3	0.0	0.0	52.2	84.6	-32.4	Avg
H	3760	35.300	32.5	2.3	0.0	0.0	70.1	84.6	-14.5	Pk
H	3760	19.500	32.5	2.3	0.0	0.0	54.3	84.6	-30.3	Avg
V	5640	29.200	35.4	2.9	0.0	0.0	67.5	84.6	-17.1	Pk
V	5640	17.400	35.4	2.9	0.0	0.0	55.7	84.6	-28.9	Avg
H	5640	32.300	35.4	2.9	0.0	0.0	70.6	84.6	-14.0	Pk
H	5640	18.400	35.4	2.9	0.0	0.0	56.7	84.6	-27.9	Avg
V	7520	45.200	37.8	3.6	36.5	20.0	70.1	84.6	-14.5	Pk
V	7520	28.000	37.8	3.6	36.5	20.0	52.9	84.6	-31.7	Avg
H	7520	47.900	37.8	3.6	36.5	20.0	72.8	84.6	-11.8	Pk
H	7520	29.800	37.8	3.6	36.5	20.0	54.7	84.6	-29.9	Avg
V	9400	38.200	38.7	4.1	37.1	20.0	63.9	84.6	-20.7	Pk
V	9400	23.600	38.7	4.1	37.1	20.0	49.3	84.6	-35.3	Avg
H	9400	36.100	38.7	4.1	37.1	20.0	61.8	84.6	-22.8	Pk
H	9400	23.400	38.7	4.1	37.1	20.0	49.1	84.6	-35.5	Avg
V	11280	35.000	40.7	4.6	36.5	20.0	63.8	84.6	-20.8	Pk
V	11280	21.400	40.7	4.6	36.5	20.0	50.2	84.6	-34.4	Avg
H	11280	34.000	40.7	4.6	36.5	20.0	62.8	84.6	-21.8	Pk
H	11280	21.200	40.7	4.6	36.5	20.0	50.0	84.6	-34.6	Avg
V	1114	21.200	25.2	1.3	37.5	20.0	30.2	84.6	-54.4	Pk
V	1114	21.200	25.2	1.3	37.5	20.0	30.2	84.6	-54.4	Avg
H	1114	21.200	25.2	1.3	37.5	20.0	30.2	84.6	-54.4	Pk
H	1114	21.200	25.2	1.3	37.5	20.0	30.2	84.6	-54.4	Avg
Scanned 1-20Ghz										

Table 5.6.4 Recorded Radiated Emissions with Carrier @ 1880.0 MHz, 1 W, (Ch 661)
(Antenna terminated with 50 ohm load)

Radiated Emissions / Interference

Notes: Fundamental

Distance: 3

Signature: _____

Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	Distance Factor (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)	
TX +30dBm High Channel(1910.0Mhz) Retractable Antenna										
Below Readings are with the Antenna Fully Retracted										
V	1910.000	91.7	29.0	1.9	0.0	0.0	122.6	N/A	N/A	PK
V	1910.000	72.1	29.0	1.9	0.0	0.0	103.0	N/A	N/A	AVC
H	1910.000	90.7	29.0	1.9	0.0	0.0	121.6	N/A	N/A	PK
H	1910.000	70.9	29.0	1.9	0.0	0.0	101.8	N/A	N/A	AVC
Below Readings are with the Antenna Fully Extended										
V	1910.000	89.7	29.0	1.9	0.0	0.0	120.6	N/A	N/A	PK
V	1910.000	69.3	29.0	1.9	0.0	0.0	100.2	N/A	N/A	AVC
H	1910.000	90.3	29.0	1.9	0.0	0.0	121.2	N/A	N/A	PK
H	1910.000	70.8	29.0	1.9	0.0	0.0	101.7	N/A	N/A	AVC

Table 5.6.5 Recorded Radiated Emissions with Carrier @ 1909.8 MHz, 1 W, (Ch 810)

Radiated Emissions / Interference

Notes: Field Strength of Spurious Emissions Distance: 3
 TX +30dBm High Channel(1910.0Mhz) Signature:

Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	External Atten. (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)	
All Readings are with the EUT antenna port terminated by a 50 ohm load										
V	1910.000	74.3	29.0	1.9	0.0	0.0	105.2	N/A	N/A	Pk
V	1910.000	54.7	29.0	1.9	0.0	0.0	85.6	N/A	N/A	Avç
H	1910.000	70.3	29.0	1.9	0.0	0.0	101.2	N/A	N/A	Pk
H	1910.000	51.0	29.0	1.9	0.0	0.0	81.9	N/A	N/A	Avç
V	3820.000	32.4	32.7	2.3	0.0	0.0	67.4	84.6	-17.2	Pk
V	3820.000	17.1	32.7	2.3	0.0	0.0	52.1	84.6	-32.5	Avç
H	3820.000	32.2	32.7	2.3	0.0	0.0	67.2	84.6	-17.4	Pk
H	3820.000	17.5	32.7	2.3	0.0	0.0	52.5	84.6	-32.1	Avç
V	5730.000	30.6	35.8	2.9	0.0	0.0	69.3	84.6	-15.3	Pk
V	5730.000	17.4	35.8	2.9	0.0	0.0	56.1	84.6	-28.5	Avç
H	5730.000	33.1	35.8	2.9	0.0	0.0	71.8	84.6	-12.8	Pk
H	5730.000	18.4	35.8	2.9	0.0	0.0	57.1	84.6	-27.5	Avç
V	7640.000	43.5	37.5	3.7	36.6	20.0	68.1	84.6	-16.5	Pk
V	7640.000	26.9	37.5	3.7	36.6	20.0	51.5	84.6	-33.1	Avç
H	7640.000	54.9	37.5	3.7	36.6	20.0	79.5	84.6	-5.1	Pk
H	7640.000	30.0	37.5	3.7	36.6	20.0	54.6	84.6	-30.0	Avç
V	9550.000	38.2	38.2	4.1	37.2	20.0	63.3	84.6	-21.3	Pk
V	9550.000	23.4	38.2	4.1	37.2	20.0	48.5	84.6	-36.1	Avç
H	9550.000	35.1	38.2	4.1	37.2	20.0	60.2	84.6	-24.4	Pk
H	9550.000	22.3	38.2	4.1	37.2	20.0	47.4	84.6	-37.2	Avç
V	11460.000	34.5	40.9	4.8	36.5	20.0	63.6	84.6	-21.0	Pk
V	11460.000	21.3	40.9	4.8	36.5	20.0	50.4	84.6	-34.2	Avç
H	11460.000	34.0	40.9	4.8	36.5	20.0	63.1	84.6	-21.5	Pk
H	11460.000	21.4	40.9	4.8	36.5	20.0	50.5	84.6	-34.1	Avç
V	1144.500	39.6	25.2	1.3	37.5	20.0	48.7	84.6	-35.9	Pk
V	1144.500	20.1	25.2	1.3	37.5	20.0	29.2	84.6	-55.4	Avç
H	1144.500	42.6	25.2	1.3	37.5	20.0	51.7	84.6	-32.9	Pk
H	1144.500	22.1	25.2	1.3	37.5	20.0	31.2	84.6	-53.4	Avç
Scanned 1-20Ghz										

Table 5.6.6 Recorded Radiated Emissions with Carrier @ 1909.8 MHz, 1 W, (Ch 810)
 (Antenna terminated with 50 ohm load)

Radiated Emissions / Interference

Notes: Fundamental

Distance: 3

Fixed Antenna									
Ant. Pol. (V/H)	Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-amp Factor (dB)	Distance Factor (dB)	Net dBuV/m	Limit dBuV/m	Margin (dB)
TX +30dBm Low Channel(1850.2Mhz) Fixed Antenna									
V	1850.200	90.3	28.6	1.9	0.0	0.0	120.7	N/A	N/A
V	1850.200	71.0	28.6	1.9	0.0	0.0	101.4	N/A	N/A
H	1850.200	92.0	28.6	1.9	0.0	0.0	122.4	N/A	N/A
H	1850.200	72.2	28.6	1.9	0.0	0.0	102.6	N/A	N/A
TX +30dBm Mid Channel(1880.0Mhz) Fixed Antenna									
V	1880.000	90.7	28.8	1.9	0.0	0.0	121.3	N/A	N/A
V	1880.000	71.4	28.8	1.9	0.0	0.0	102.0	N/A	N/A
H	1880.000	92.7	28.8	1.9	0.0	0.0	123.3	N/A	N/A
H	1880.000	73.2	28.8	1.9	0.0	0.0	103.8	N/A	N/A
TX +30dBm High Channel(1910.0Mhz) Fixed Antenna									
V	1910.000	91.6	29.0	1.9	0.0	0.0	122.5	N/A	N/A
V	1910.000	72.3	29.0	1.9	0.0	0.0	103.2	N/A	N/A
H	1910.000	91.1	29.0	1.9	0.0	0.0	122.0	N/A	N/A
H	1910.000	71.8	29.0	1.9	0.0	0.0	102.7	N/A	N/A

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Table 5.6.7 Recorded Radiated Emissions for All Channels with Fixed Antenna

Frequency Stability Measurement Data {2.995}

5.7 Frequency Stability with Voltage Variation Measurement Data

The mobile station will operate @ 3.8 Vdc $\pm 10\%$.

Voltage (Vdc)	Frequency Variation (Hz)
3.4	56
3.5	50.2
3.6	49.4
3.7	46.9
3.8	51.7
3.9	37.7
4.0	33.6
4.1	27.5
4.2	24.4

Table 5.7.1 Frequency Stability with Voltage Variation Measurement Data

5.7.1 Frequency Stability with Temperature Variation Measurement Data

Temp. (°C)	Frequency Variation (Hz)
-30	83.3
-20	94.7
-10	99.8
0	94.2
10	104.3
20	-69.4
30	48.5
40	-48.4
50	-25.4

Table 5.7.2 Frequency Stability with Temperature Variation Measurement Data

5.8 Measurement Procedures and Data {Part 15 Class B}

Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions as described below was followed. All radiated tests were performed at an antenna to EUT distance of 3 meters.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB/m and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}(\mu\text{V})$$

$$AF = 7.4 \text{ dB}(1/\text{m})$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = 32 \text{ dB}(\mu\text{V}/\text{m})$$

$$\text{Level in } \mu\text{V}/\text{m} = \text{Common Antilogarithm } [(32 \text{ dB}(\mu\text{V}/\text{m}))/20] = 39.8 \mu\text{V}/\text{m}$$

Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of equipment operating under FCC Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4: 1992.

The Equipment Under Test (EUT) is placed on a wooden turntable which is 1.0m x 1.5m and 0.8 meters in height above the groundplane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

The receiver detector function for radiated emissions below 1 GHz is quasi-peak mode. Average readings, when required, are taken using the average detector function of the receiver. The detector function used for each measurement is indicated in the data tables.

For radiated emissions, the frequency range scanned is from the lowest radio frequency signal generated or used in the device or 30 MHz, whichever is lower, to the upper frequency chosen based on the following table from §15.33(b)(1) for digital unintentional radiators:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

For line conducted emissions, the frequency range scanned is 450 kHz to 30 MHz.

For conducted emission measurements, an IF bandwidth of 9 kHz is used, and quasi-peak detection is employed. The resolution bandwidth used for measurement of radiated signals below 1 GHz is 120 kHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above GHz, a resolution bandwidth of 1 MHz is used.

Measurements are normally conducted at a test distance of three meters. However, to assure low enough noise floor above 1 GHz, signals may be acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling (20dB/decade), but those measurements taken at a closer distance are so marked.