

IX. Measurement Results for FCC Tests Cont'd:

4. Conducted Spurious.

Specification: Attenuation > 20 dB from Fundamental

Limit

QualComm and TSP Development documentation are needed to see the plot.

Limit

QualComm and TSP Development documentation are needed to see the plot.

IX. Measurement Results for FCC Tests Cont'd:

5. Frequency Stability/Tolerance Cont'd.

Frequencies: 433.92 MHz

Specification: 3 VDC through battery end (Normal Operation)

The table below shows no variation in frequency with selected applied voltage:

Voltage (VDC)	% Nominal	Frequency (MHz)
3.10	Nominal	433.92
3.08	Nominal	433.92
3.06	Nominal	433.92
3.04	Nominal	433.92
3.02	Nominal	433.92
3.00	Nominal	433.92
2.98	Nominal	433.92
2.96	Nominal	433.92
2.94	Nominal	433.92
2.92	Nominal	433.92
2.90	Nominal	433.92

IX. Measurement Results for FCC Tests Cont'd:

6. Radiated Emissions.

The table below contains the spectrum analyzer output and the correction factors necessary to apply the limit to the data.

Limit Interpolation: $3750 + [(433.9-260)(12500-3750)]/(470-260) = 11,000$ uV/m Fundamental

Limit Interpolation: $375 + [(433.9-260)(1250-375)]/(470-260) = 1,100$ uV/m Spurious

Duty Cycle Correction: $20 \log(0.0039) = -48$ dB for transmitter fundamental and spurious.

Field (dBuV/m) = Vmeas (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) - Amp Gain (dB).

Deviation (dB) = Field (dBuV/m) - Limit (dBuV/m); Negative deviation is compliant.

Freq MHz	Pol H/V	RBW kHz	VBW kHz	Vmeas dBuV	AF dB1/m	Amp dB	Cable dB	Field dBuV/m	Duty dB	Limit dBuV/m	Dev dB
1	H	9	9	32	24.2	29	1	28.2	0	49.5	-21.3
1	V	9	9	31	24.2	29	1	27.2	0	49.5	-22.3
10	H	9	9	31	20.1	29	1	23.1	0	49.5	-26.4
10	V	9	9	32	20.1	29	1	24.1	0	49.5	-25.4
30	H	120	300	40	18.6	29	1	30.6	0	40	-9.4
30	V	120	300	39	18.6	29	1	29.6	0	40	-10.4
40	H	120	300	44	18.3	29	1	34.3	0	40	-5.7
40	V	120	300	46	18.3	29	1	36.3	0	40	-3.7
50	H	120	300	39	15.1	29	2	27.1	0	40	-12.9
50	V	120	300	40	15.1	29	2	28.1	0	40	-11.9
60	H	120	300	50	11.1	29	2	34.1	0	40	-5.9
60	V	120	300	47	11.1	29	2	31.1	0	40	-8.9
70	H	120	300	53	8.1	29	2	34.1	0	40	-5.9
70	V	120	300	51	8.1	29	2	32.1	0	40	-7.9
80	H	120	300	52	9.8	29	2	34.8	0	40	-5.2
80	V	120	300	44	9.8	29	2	26.8	0	40	-13.2
90	H	120	300	45	10.9	29	2	28.9	0	43.5	-14.6
90	V	120	300	41	10.9	29	2	24.9	0	43.5	-18.6
100	H	120	300	43.5	12.2	29	3	29.7	0	43.5	-13.8
100	V	120	300	43	12.2	29	3	29.2	0	43.5	-14.3

Table 1 – Corrected Radiated Emissions Data and FCC Limit

IX. Measurement Results for FCC Tests Cont'd:

6. Radiated Emissions Cont'd.

The table below contains the spectrum analyzer output and the correction factors necessary to apply the limit to the data.

Freq MHz	Pol H/V	RBW kHz	VBW kHz	Vmeas dBuV	AF dB1/m	Amp dB	Cable dB	Field dBuV/m	Duty dB	Limit dBuV/m	Dev dB
125	H	120	300	43.5	12.9	29	3	30.4	0	43.5	-13.1
125	V	120	300	42	12.9	29	3	28.9	0	43.5	-14.6
150	H	120	300	43.5	11.1	29	4	29.6	0	43.5	-13.9
150	V	120	300	43	11.1	29	4	29.1	0	43.5	-14.4
175	H	120	300	44	10.9	29	4	29.9	0	43.5	-13.6
175	V	120	300	45	10.9	29	4	30.9	0	43.5	-12.6
200	H	120	300	46	11.3	29	4	32.3	0	43.5	-11.2
200	V	120	300	43	11.3	29	4	29.3	0	43.5	-14.2
250	H	120	300	38	13.4	29	4	26.4	0	46	-19.6
250	V	120	300	39	13.4	29	4	27.4	0	46	-18.6
300	H	120	300	41	14.9	28	4	31.9	0	46	-14.1
300	H	120	300	41	14.9	28	4	31.9	0	46	-14.1
433	H	120	300	95	16.1	28	5	88.1	48	80.8	-40.7
433	V	120	300	95	16.1	28	5	88.1	48	80.8	-40.7
500	H	120	300	46	18.6	28	5	41.6	0	46	-4.4
500	V	120	300	45	18.6	28	5	40.6	0	46	-5.4
600	H	120	300	40	19.7	28	5	36.7	0	46	-9.3
600	V	120	300	43	19.7	28	5	39.7	0	46	-6.3
700	H	120	300	44	20.2	28	5.5	41.7	0	46	-4.3
700	V	120	300	43	20.2	28	5.5	40.7	0	46	-5.3
800	H	120	300	38	21.5	28	6	37.5	0	46	-8.5
800	V	120	300	39	21.5	28	6	38.5	0	46	-7.5
866	H	120	300	68	21.5	28	6	67.5	48	46	-26.5
866	V	120	300	69	21.5	28	6	68.5	48	46	-25.5

Table 1 Cont'd – Corrected Radiated Emissions Data and FCC Limit

IX. Measurement Results for FCC Tests Cont'd:

6. Radiated Emissions Cont'd.

The table below contains the spectrum analyzer output and the correction factors necessary to apply the limit to the data.

Freq MHz	Pol H/V	RBW kHz	VBW kHz	Vmeas dBuV	AF dB1/m	Amp dB	Cable dB	Field dBuV/m	Duty dB	Limit dBuV/m	Dev dB
959	H	120	300	37	22.4	27	7	39.4	0	46	-6.6
959	V	120	300	39	22.4	27	7	41.4	0	46	-4.6
960	H	120	300	38	22.4	27	7	40.4	0	46	-5.6
960	V	120	300	37	22.4	27	7	39.4	0	46	-6.6
1000	H	1000	1000	34	24.2	27	8	39.2	0	54	-14.8
1000	V	1000	1000	32	24.2	27	8	37.2	0	54	-16.8
1299	H	1000	1000	76	24.8	26	9	83.8	48	61	-25.2
1299	V	1000	1000	75	24.8	26	9	82.8	48	61	-26.2
1732	H	1000	1000	73	26.1	24	12	87.1	48	61	-21.9
1732	V	1000	1000	73	26.1	24	12	87.1	48	61	-21.9
2165	H	1000	1000	59	26.1	24	12	73.1	48	61	-35.9
2165	V	1000	1000	58	26.1	24	12	72.1	48	61	-36.9
2598	H	1000	1000	47	28.2	23	1	53.2	48	61	-55.8
2598	V	1000	1000	47	28.2	23	1	53.2	48	61	-55.8
3031	H	1000	1000	32	28.2	23	1	38.2	48	61	-70.8
3031	V	1000	1000	34	28.2	23	1	40.2	48	61	-68.8
3464	H	1000	1000	35	28.2	23	1	41.2	48	61	-67.8
3464	V	1000	1000	32	28.2	23	1	38.2	48	61	-70.8
3897	H	1000	1000	33	32.4	23	2	44.4	48	61	-64.6
3897	V	1000	1000	34	32.4	23	2	45.4	48	61	-63.6
4339	H	1000	1000	35	32.8	23	3	47.8	48	61	-61.2
4339	V	1000	1000	31	32.8	23	3	43.8	48	61	-65.2

Table 1 Cont'd – Corrected Radiated Emissions Data and FCC Limit

IX. Measurement Results for FCC Tests Cont'd:

7. Exposure Evaluation.

The analysis below compares the measured power to the maximum permissible exposure limit for general population with uncontrolled access. The unit can be used continuously; no special averaging time or limit relaxations are employed. Maximum peak available power is used in calculations.

Unit Frequency: 433.9 MHz

Unit Maximum Average Power .0001 Watt measured/available

Standard User Weight: 100 kg

Specific Absorption Rate (SAR) Limit for whole-body: 0.08 W/kg

Specific Absorption Rate (SAR) Limit for one-gram tissue volume: 1.6 W/kg

SAR Whole body = 100 kg * .0001 W = 0.01 W/kg for FW9T

SAR 1g tissue = .001 kg * = 0.000001 W/kg for FW9T

In addition per IEEE C95.1 paragraph 6.10 (2): low power devices are unlikely to expose users in excess of the criteria when power is less than or equal to:

$P_{max} = 1.4 * (450/f)$ Watts where f is in MHz.

P_{max} is significantly greater than the power available at the FW9T:

$P_{max} = 1.4 * (450/433.9) = 1.45$ W.