

INTERNAL CELLULAR ANTENNA

For purposes of this exhibit the internal antenna gain is defined as the gain of the stamped metal antenna in the module plastic case exterior, minus all path losses.

INTERNAL ANTENNA GAIN

The internal antenna gain derived below is strictly an evaluation by Sierra Wireless' certified OTA test lab of the Honeywell host assembly containing the SL3010T module and a stamped metal antenna in the host's plastic case exterior.

The Sierra SL3010T cellular module maximum RMS power comes from the maximum of the lab report data across the two lab reports included with the two FCC listings for the cellular module. This is described further in the updated exhibit, "SL5011 PC2 EXHIBIT 2-4A-D INT ANTENNA.pdf", which determines the values to be 23.98dBm for the Cellular band and 24.13dBm for the PCS band.

Cellular Band

For stamped-metal antenna 2 (Unit #2 below), the maximum Peak EIRP is 24.88 dBm in the cellular band. So the estimated gain is $24.88\text{dBm} - 23.98\text{dBm} = +0.90\text{ dBi}$ for the CDMA 800 (CELL) band .

PCS Band

For stamped-metal antenna 2 (Unit #2 below), the maximum Peak EIRP is 25.90 dBm in the PCS band. So the estimated gain is $25.90\text{dBm} - 24.13\text{dBm} = +1.77\text{ dBi}$ for the CDMA 1900 (PCS) band .

Radiated Performance Test Results

Radiated Performance Test Results (TRP/TIS)									
Comments: 1. Unit#1, No ferrite on power cable 2. ESN:60E050E2									
Band/ Channel	Freq (MHz)	Cond. Power (dBm)	TRP (dBm)	Peak EIRP (dBm)	Band/ Channel	Freq (MHz)	Cond. Sensitivity (dBm)	TIS (dBm)	Peak EIS (dBm)
CDMA 800 (CELL)			Target:20dBm		CDMA 800 (CELL)			Target:-101dBm	
1013	824.70		20.52	23.76	1013	869.70		-97.51	-100.59
384	836.52		20.65	23.56	384	881.52		-96.57	-101.91
777	848.31		20.36	22.78	777	893.31		-96.26	-100.72
Average		0.00	20.51	23.39	Average		0.00	-96.81	-101.12
CDMA 1900 (PCS)			Target:20dBm		CDMA 1900 (PCS)			Target:-101dBm	
25	1851.25		17.46	21.52	25	1931.25		-103.49	-107.80
600	1880.00		19.31	23.54	600	1960.00		-104.41	-109.36
1175	1908.75		19.00	23.39	1175	1988.75		-102.88	-108.65
Average		0.00	18.66	22.91	Average		0.00	-103.64	-108.65
Comments: 1. Unit#2, No ferrite on power cable 2. ESN:60E1A8DE									
Band/ Channel	Freq (MHz)	Cond. Power (dBm)	TRP (dBm)	Peak EIRP (dBm)	Band/ Channel	Freq (MHz)	Cond. Sensitivity (dBm)	TIS (dBm)	Peak EIS (dBm)
CDMA 800 (CELL)			Target:20dBm		CDMA 800 (CELL)			Target:-101dBm	
1013	824.70		21.19	24.88	1013	869.70		-96.44	-99.97
384	836.52		20.72	23.65	384	881.52		-96.83	-101.99
777	848.31		20.15	23.04	777	893.31		-95.25	-99.58
Average		0.00	20.71	23.93	Average		0.00	-96.22	-100.65
CDMA 1900 (PCS)			Target:20dBm		CDMA 1900 (PCS)			Target:-101dBm	
25	1851.25		20.64	25.19	25	1931.25		-103.89	-108.19
600	1880.00		21.41	25.90	600	1960.00		-103.73	-108.20
1175	1908.75		21.41	25.89	1175	1988.75		-102.15	-105.59
Average		0.00	21.17	25.67	Average		0.00	-103.32	-107.49

Table 1. Sierra Wireless Radiated Performance Test Results

LOW BAND EMISSIONS

The information in this table is from (1) the radiated emissions lab report included with Sierra's N7N-SL5011 original FCC listing, and (2) the radiated emissions lab report included with Sierra's N7N-SL5011 FCC listing for the class 2 permissive change.

Files:

(1) SL5011 Test Report FOR FCC and IC Certifications IC: 2417C-SL5011 FCC ID: N7NSL5011 (Original Filing)

(2) SL3010T Test Report FOR FCC Certifications FCC ID: N7NSL5011 (PC2)

Sierra Wireless Report Dates: February 18, 2011 (Orig. Filing), August 22, 2013 (PC2)

CDMA-2000 Max Duty Cycle = 100%

MEASUREMENTS FROM REPORT FOR: N7N-SL5011 850 MHz and 1900 MHz Band RF Power Output §2.0153, §22.917						
BAND:	MODE:	TEST:	CHANNEL:	FREQ (MHz):	PEAK (dbm):	RMS while XMIT (dbm): (note 1)
850	CDMA 2000	Lab Meas. for Orig. Filing	1013	824.7	28.48	23.98
850	CDMA 2000	Lab Meas. for Orig. Filing	384	836.52	28.43	23.89
850	CDMA 2000	Lab Meas. for Orig. Filing	777	848.31	28.32	23.82
850	CDMA 2000	Lab Meas. for PC2	1013	824.7	27.88	23.38
850	CDMA 2000	Lab Meas. for PC2	384	836.52	28.18	23.64
850	CDMA 2000	Lab Meas. for PC2	777	848.31	28.04	23.54
Maximum Conducted Power in 850MHz Band					28.48	23.98

note 1 - This column is the average taken during transmitter-on time only; duty-factor is not included.

HIGH BAND EMISSIONS

The information in this table is from the radiated emissions lab report included with Sierra's N7N-SL5011 FCC listing.

Files:

(1) SL5011 Test Report FOR FCC and IC Certifications IC: 2417C-SL5011 FCC ID: N7NSL5011 (Original Filing)

(2) SL3010T Test Report FOR FCC Certifications FCC ID: N7NSL5011 (PC2)

Sierra Wireless Report Dates: February 18, 2011 (Orig. Filing), August 22, 2013 (PC2)

CDMA-2000 Max Duty Cycle = 100%

MEASUREMENTS FROM REPORT FOR: N7N-SL5011 850 MHz and 1900 MHz Band RF Power Output §2.0153, §24.238						
BAND:	MODE:	TEST:	CHANNEL:	FREQ (MHz):	PEAK (dbm):	RMS while XMIT (dbm): (note 1)
1900	CDMA 2000	Lab Meas. for Orig. Filing	25	1851.25	28.63	24.13
1900	CDMA 2000	Lab Meas. for Orig. Filing	600	1880	28.54	24.04
1900	CDMA 2000	Lab Meas. for Orig. Filing	1175	1908.75	28.59	24.09
1900	CDMA 2000	Lab Meas. for PC2	25	1851.25	28.35	23.85
1900	CDMA 2000	Lab Meas. for PC2	600	1880	28.44	23.94
1900	CDMA 2000	Lab Meas. for PC2	1175	1908.75	28.28	23.78
Maximum Conducted Power in 850MHz Band					28.63	24.13

note 1 - This column is the average taken during transmitter-on time only; duty-factor is not included

