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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	50.5Ω - 3.27jΩ
Return Loss	- 29.7dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	54.2Ω + 0.81jΩ
Return Loss	- 27.8dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	49.4Ω + 1.99jΩ
Return Loss	- 33.6dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.098 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 10.22.2021

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1315

Communication System: CW; Frequency: 5250 MHz, Frequency: 5600 MHz,
Frequency: 5750 MHz,

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.704$ S/m; $\epsilon_r = 36.62$; $\rho = 1000$ kg/m³,
Medium parameters used: $f = 5600$ MHz; $\sigma = 5.084$ S/m; $\epsilon_r = 36$; $\rho = 1000$ kg/m³,
Medium parameters used: $f = 5750$ MHz; $\sigma = 5.248$ S/m; $\epsilon_r = 35.78$; $\rho = 1000$ kg/m³,

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7517; ConvF(5.42, 5.42, 5.42) @ 5250 MHz; ConvF(4.75, 4.75, 4.75) @ 5600 MHz; ConvF(4.82, 4.82, 4.82) @ 5750 MHz; Calibrated: 2021-02-03
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2021-01-15
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

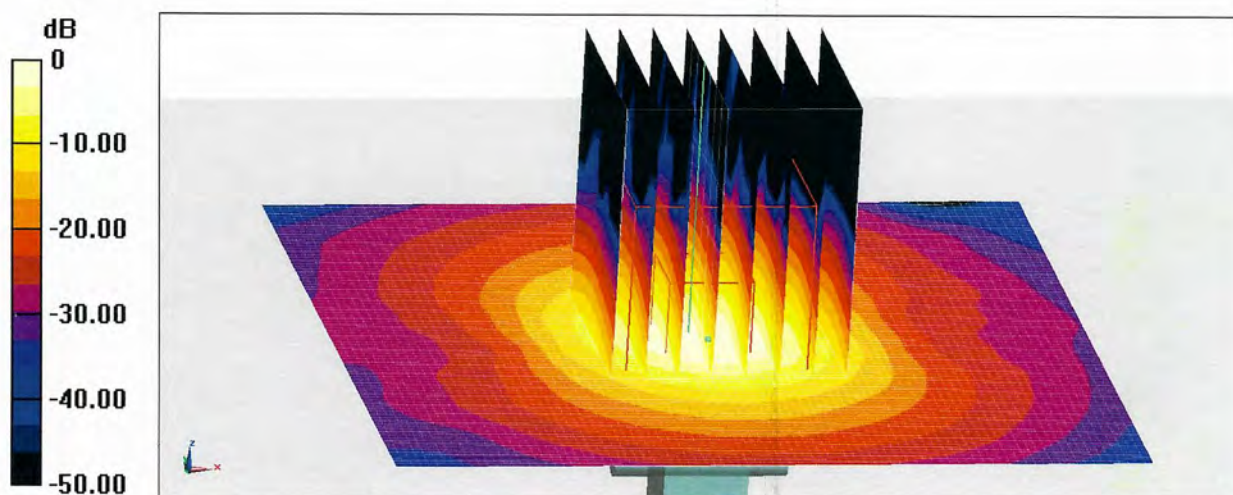
Dipole Calibration /Pin=100mW, d=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.32 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 31.0 W/kg
SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.2 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 65%
Maximum value of SAR (measured) = 18.2 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 71.09 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 34.9 W/kg
SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.34 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 63.3%
Maximum value of SAR (measured) = 19.9 W/kg



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Dipole Calibration /Pin=100mW, d=10mm, f=5750 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.72 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 33.5 W/kg
SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.16 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62.4%
Maximum value of SAR (measured) = 18.6 W/kg

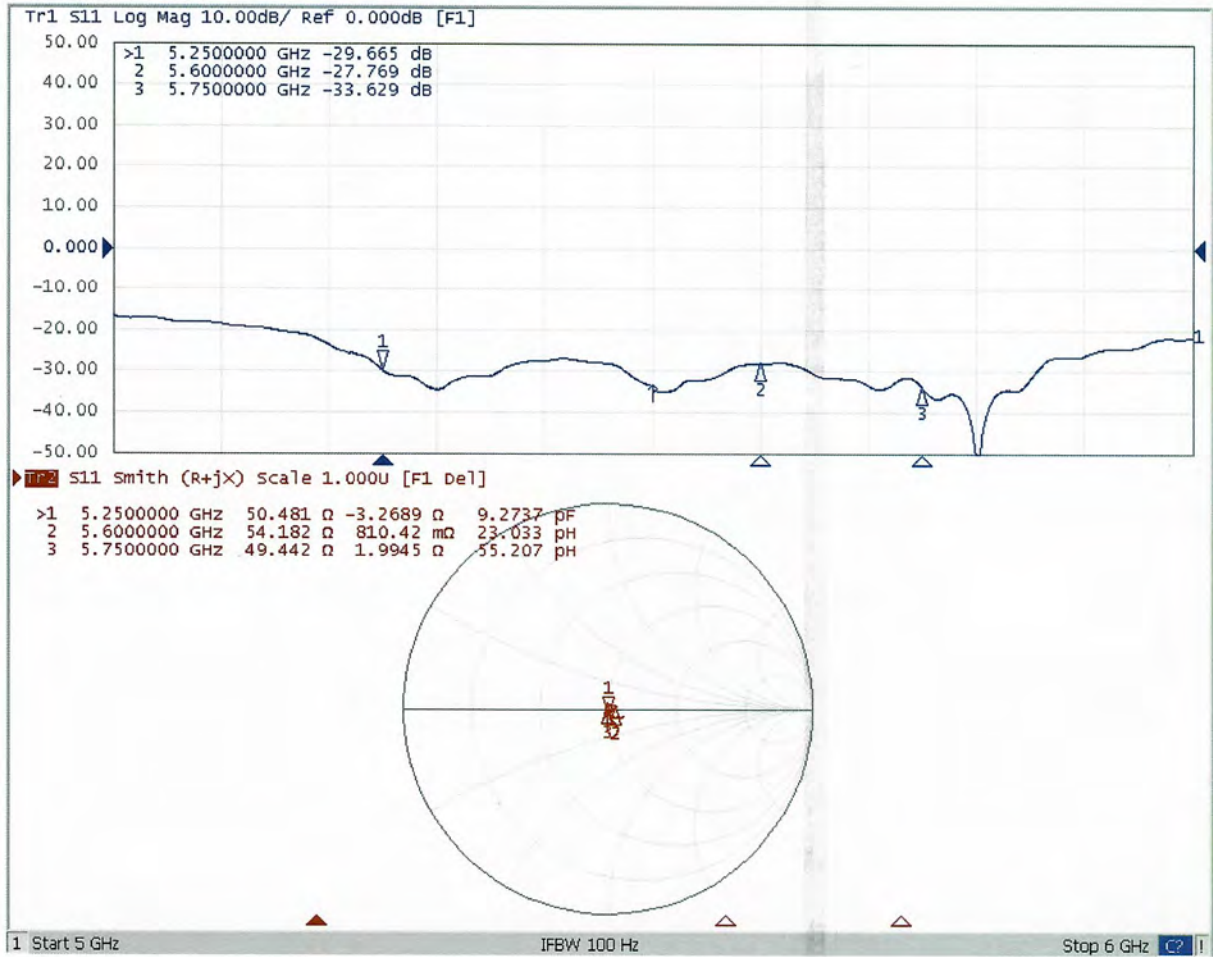


0 dB = 18.6 W/kg = 12.70 dBW/kg



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Impedance Measurement Plot for Head TSL



D5GHzV2 - SN: 1315 Extended Dipole Calibrations

Referring to KDB 865664 D01, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

D5GHzV2 - SN: 1315						
5250MHz Head						
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
10.22.2021	-29.7		50.5		-3.27	
10.21.2022	-34.53	16.26	51.16	0.66	1.56	4.83
10.20.2023	-25.84	-12.98	54.50	4.00	-2.96	0.31

D5GHzV2 - SN: 1315						
5600MHz Head						
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
10.22.2021	-27.8		54.2		0.81	
10.21.2022	-31.03	11.63	49.59	-4.61	-2.79	-3.60
10.20.2023	-26.15	-5.95	54.92	0.71	-1.82	-2.63

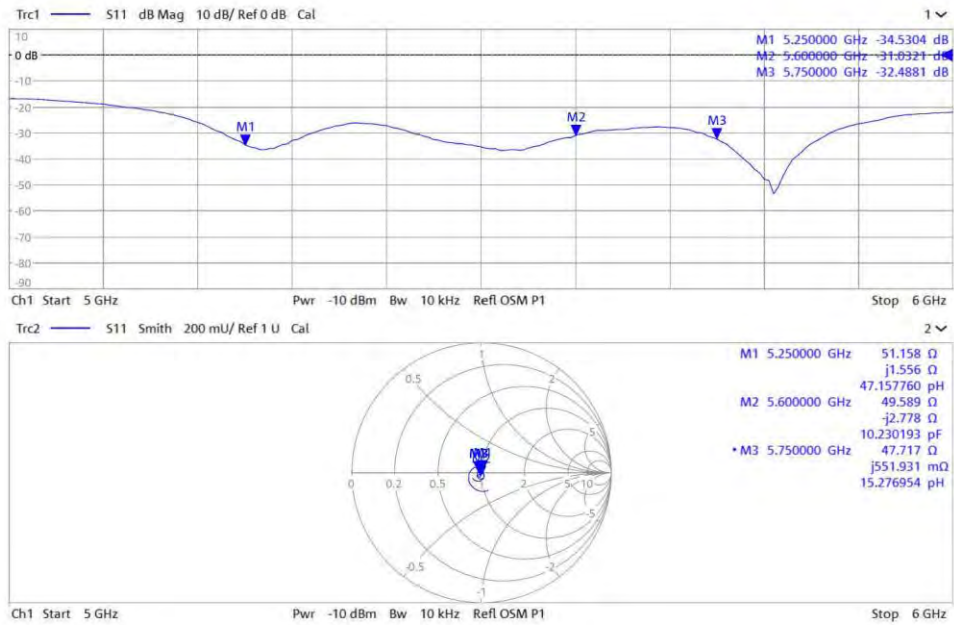
D5GHzV2 - SN: 1315						
5750MHz Head						
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
10.22.2021	-33.6		49.4		1.99	
10.21.2022	-32.49	-3.31	47.72	-1.68	0.55	-1.44
10.20.2023	-36.43	8.41	50.87	1.47	1.34	-0.65

<Justification of the extended calibration>

The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

<Dipole Verification Data>

Head 5250-5750MHz_2022.10.21

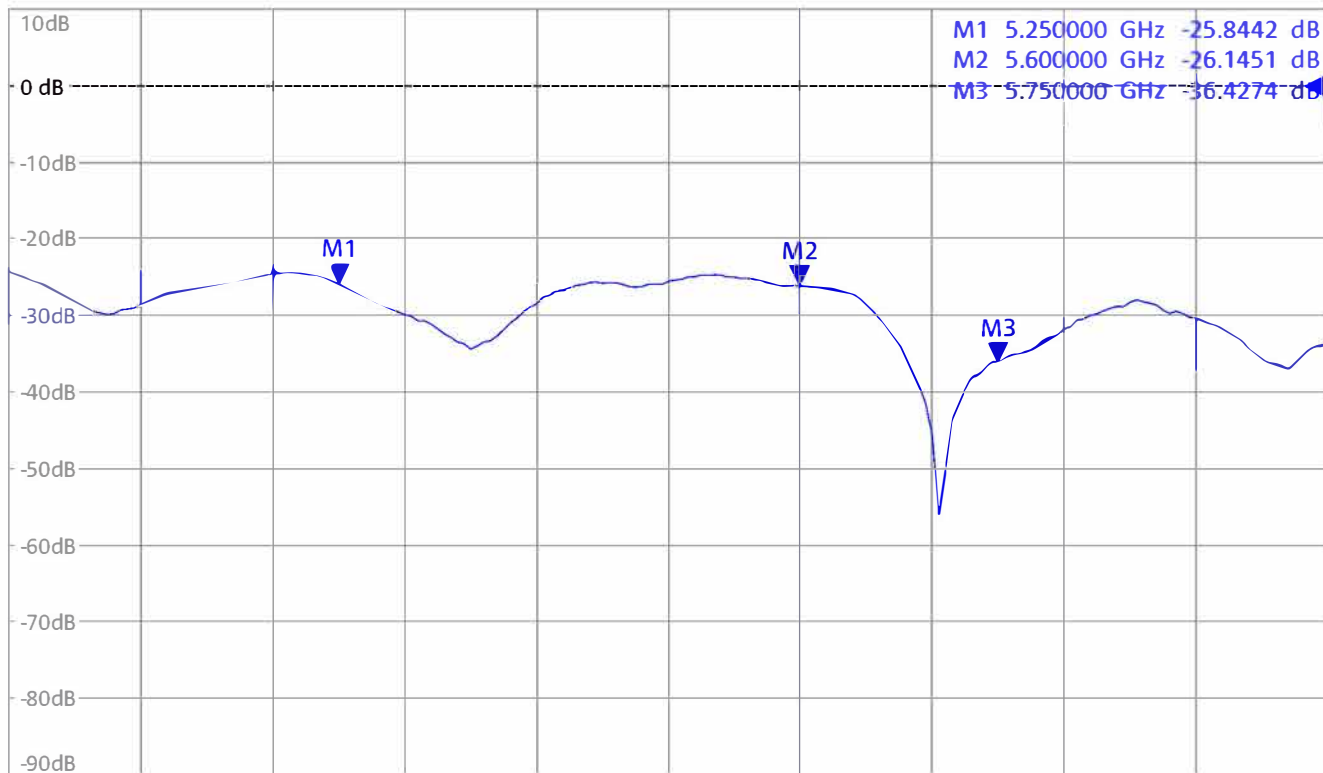


<Dipole Verification Data>

Head 5250-5750MHz_2023.10.20

Trc1 — S11 dB Mag 10 dB/ Ref 0 dB Cal

1

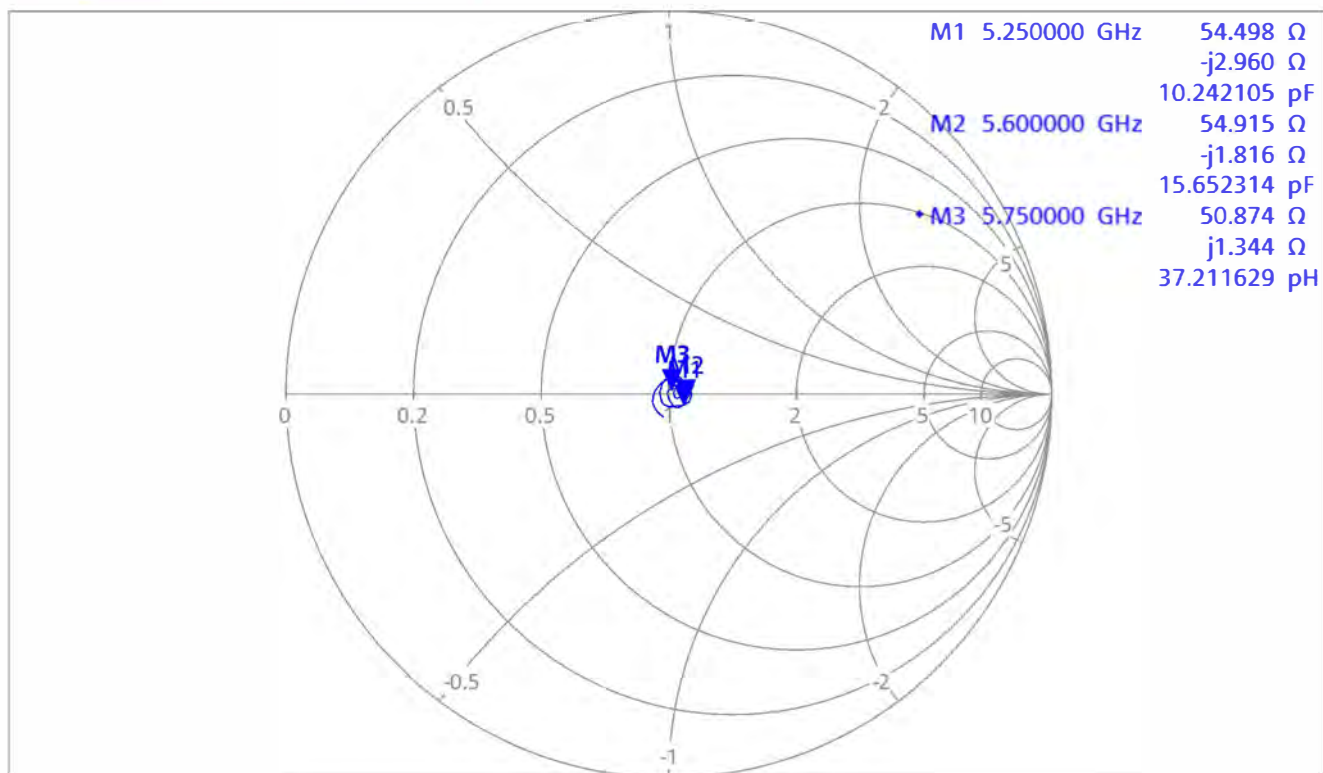


Ch1 Start 5 GHz Pwr -10 dBm Bw 10 kHz Refl OSM P1

Stop 6 GHz

Trc2 — S11 Smith 200 mU/ Ref 1 U Cal

2



Ch1 Start 5 GHz Pwr -10 dBm Bw 10 kHz Refl OSM P1

Stop 6 GHz



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Appendix D. Conducted RF Output Power Table

The detailed power table are shown as follows.

<WWAN Full Power>

Band	GSM850				GSM1900				
	Channel	128	189	251	Max. Tune-up Power (dBm)	512	661	810	Max. Tune-up Power (dBm)
Frequency (MHz)	824.2	836.4	848.8		1850.2	1880	1909.8		
GSM	33.42	33.48	33.37	34.50	30.02	30.26	30.43	31.50	
GPRS 1Tx Slot	33.56	33.49	33.35	34.50	30.03	30.21	30.39	31.50	
GPRS 2Tx Slot	32.14	32.10	32.02	33.00	29.05	29.26	29.45	30.50	
GPRS 3Tx Slot	30.89	30.94	30.87	32.00	27.62	27.84	28.04	29.00	
GPRS 4Tx Slot	26.78	26.91	26.84	28.00	25.84	25.98	26.04	27.00	
EDGE 1Tx Slot	27.37	27.54	27.59	29.00	26.16	26.42	26.58	28.00	
EDGE 2Tx Slot	25.89	25.99	25.96	27.00	25.58	25.73	25.87	27.00	
EDGE 3Tx Slot	24.32	24.43	24.39	26.00	23.54	23.58	23.76	25.00	
EDGE 4Tx Slot	22.25	22.29	22.27	23.00	21.62	21.69	21.83	23.00	

Source-Based Time-Averaged Power								
Band	GSM850			Max. Tune-up Power (dBm)	GSM1900			Max. Tune-up Power (dBm)
	Channel	128	189		251	512	661	
GSM	24.42	24.48	24.37	25.50	21.02	21.26	21.43	22.50
GPRS 1Tx Slot	24.56	24.49	24.35	25.50	21.03	21.21	21.39	22.50
GPRS 2Tx Slot	26.14	26.10	26.02	27.00	23.05	23.26	23.45	24.50
GPRS 3Tx Slot	26.63	26.68	26.61	27.74	23.36	23.58	23.78	24.74
GPRS 4Tx Slot	23.78	23.91	23.84	25.00	22.84	22.98	23.04	24.00
EDGE 1Tx Slot	18.37	18.54	18.59	20.00	17.16	17.42	17.58	19.00
EDGE 2Tx Slot	19.89	19.99	19.96	21.00	19.58	19.73	19.87	21.00
EDGE 3Tx Slot	20.06	20.17	20.13	21.74	19.28	19.32	19.50	20.74
EDGE 4Tx Slot	19.25	19.29	19.27	20.00	18.62	18.69	18.83	20.00

Band	WCDMA II			WCDMA II	WCDMA IV			WCDMA IV	WCDMA V			WCDMA V
	TX Channel	9262	9400		9538	Max. Tune-up Power (dBm)	1312		1413	1513	Max. Tune-up Power (dBm)	
Rx Channel	9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)	1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
RMC 12.2K	24.52	24.69	24.73	25.50	24.80	24.83	24.75	25.50	24.01	24.47	24.59	25.50
HSDPA Subtest-1	23.71	23.89	23.88	24.50	23.91	24.05	23.89	24.50	23.23	23.62	23.79	24.50
HSDPA Subtest-2	23.65	23.83	23.91	24.50	23.90	23.99	23.88	24.50	23.18	23.56	23.84	24.50
HSDPA Subtest-3	23.17	23.39	23.45	24.00	23.53	23.55	23.39	24.00	22.69	23.11	23.29	24.00
HSDPA Subtest-4	23.13	23.33	23.32	24.00	23.45	23.50	23.39	24.00	22.72	23.13	23.29	24.00
DC-HSDPA Subtest-1	23.63	23.83	23.78	24.50	23.89	23.98	23.79	24.50	23.07	23.63	23.64	24.50
DC-HSDPA Subtest-2	23.65	23.72	23.83	24.50	23.92	23.98	23.81	24.50	23.16	23.60	23.62	24.50
DC-HSDPA Subtest-3	23.24	23.22	23.40	24.00	23.51	23.39	23.33	24.00	22.63	23.01	23.25	24.00
DC-HSDPA Subtest-4	23.17	23.25	23.34	24.00	23.46	23.43	23.36	24.00	22.66	23.03	23.17	24.00
HSUPA Subtest-1	23.69	23.86	23.94	24.50	23.97	24.01	23.92	24.50	23.09	23.67	23.68	24.50
HSUPA Subtest-2	22.68	22.88	22.94	23.50	22.90	22.88	22.88	23.50	22.10	22.59	22.70	23.50
HSUPA Subtest-3	23.19	23.23	23.31	24.00	23.36	23.47	23.37	24.00	22.66	23.15	23.28	24.00
HSUPA Subtest-4	22.64	22.79	22.88	23.50	22.95	22.91	22.80	23.50	22.14	22.60	22.74	23.50
HSUPA Subtest-5	23.67	23.82	23.87	24.50	23.87	23.98	23.79	24.50	23.03	23.60	23.63	24.50

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)
	TX Channel	1013	384		777	25	600	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75	
RC1 SO55	23.74	23.95	23.09	25.00	24.73	24.68	24.79	25.50
RC3 SO55	23.89	24.17	23.32	25.00	24.86	24.98	24.83	25.50
RC3 SO32 (F+SCH)	23.77	23.86	22.98	25.00	24.92	24.88	24.85	25.50
RC3 SO32 (+SCH)	23.57	23.87	22.95	25.00	24.95	24.96	24.95	25.50
RTAP 153.6Kbps	23.81	24.16	23.31	25.00	24.93	24.92	24.90	25.50
RETAP 4096Bits	23.80	24.15	23.29	25.00	24.90	24.95	24.88	25.50

LTE Band 2										
BW	Modulation	RB Size Channel	RB Offset	Low			SDFP MPR (dB)	Max. Time-avg. (dBm)		
				1875	1890	1910				
20M	QPSK	1	0	22.32	22.45	22.62	0	23.5		
		1	0	22.42	22.62	22.86	0	23.5		
		1	99	22.02	22.17	22.22	0	23.5		
		50	0	21.51	21.72	21.79	1	22.5		
		50	25	21.56	21.76	21.81	1	22.5		
	16QAM	1	0	21.46	21.68	21.69	1	22.5		
		1	0	21.58	21.78	21.82	1	22.5		
		1	50	21.74	21.88	21.93	1	22.5		
		1	99	21.91	21.92	21.97	1	22.5		
		50	0	20.50	20.73	20.77	2	21.5		
64QAM	50	25	20.69	20.77	20.82	2	21.5			
	50	50	20.48	20.56	20.63	2	21.5			
	100	0	20.49	20.63	20.70	2	21.5			
	1	0	20.48	20.73	20.76	2	21.5			
	1	50	20.69	20.82	20.79	2	21.5			
20M	QPSK	1	0	22.05	22.09	22.10	0	23.5		
		1	74	21.90	22.13	22.10	0	23.5		
		36	0	21.40	21.60	21.71	1	22.5		
		36	39	21.41	21.63	21.64	1	22.5		
		36	39	21.30	21.50	21.57	1	22.5		
	16QAM	75	0	21.34	21.61	21.60	1	22.5		
		1	0	21.43	21.66	21.64	1	22.5		
		1	37	21.62	21.76	21.84	1	22.5		
		1	74	21.20	21.37	21.41	1	22.5		
		36	0	20.39	20.59	20.62	2	21.5		
64QAM	36	19	20.46	20.62	20.80	2	21.5			
	36	39	20.39	20.41	20.59	2	21.5			
	75	0	20.36	20.53	20.64	2	21.5			
	1	0	20.45	20.63	20.73	2	21.5			
	1	37	20.61	20.60	20.73	2	21.5			
20M	QPSK	1	0	22.23	22.28	22.27	0	23.5		
		1	24	22.29	22.55	22.61	0	23.5		
		1	48	21.81	22.07	22.11	0	23.5		
		25	0	21.39	21.73	21.68	1	22.5		
		25	12	21.61	21.64	21.68	1	22.5		
	16QAM	25	25	21.21	21.56	21.65	1	22.5		
		50	0	21.32	21.65	21.64	1	22.5		
		1	0	21.48	21.77	21.74	1	22.5		
		1	24	21.72	21.82	21.91	1	22.5		
		1	48	21.68	21.88	21.85	1	22.5		
64QAM	25	0	20.47	20.68	20.66	2	21.5			
	25	12	20.49	20.67	20.69	2	21.5			
	25	25	20.27	20.47	20.48	2	21.5			
	50	0	20.37	20.63	20.63	2	21.5			
	1	0	20.37	20.63	20.68	2	21.5			
20M	QPSK	1	0	22.20	22.27	22.25	0	23.5		
		1	24	22.29	22.55	22.61	0	23.5		
		1	48	21.81	22.07	22.11	0	23.5		
		25	0	21.39	21.73	21.68	1	22.5		
		25	12	21.61	21.64	21.68	1	22.5		
	16QAM	25	25	21.21	21.56	21.65	1	22.5		
		50	0	21.32	21.65	21.64	1	22.5		
		1	0	21.48	21.77	21.74	1	22.5		
		1	24	21.72	21.82	21.91	1	22.5		
		1	48	21.68	21.88	21.85	1	22.5		
64QAM	25	0	20.47	20.68	20.66	2	21.5			
	25	12	20.49	20.67	20.69	2	21.5			
	25	25	20.27	20.47	20.48	2	21.5			
	50	0	20.37	20.63	20.63	2	21.5			
	1	0	20.37	20.63	20.68	2	21.5			
20M	QPSK	1	0	22.20	22.27	22.25	0	23.5		
		1	24	22.29	22.55	22.61	0	23.5		
		1	48	21.81	22.07	22.11	0	23.5		
		25	0	21.39	21.73	21.68	1	22.5		
		25	12	21.61	21.64	21.68	1	22.5		
	16QAM	25	25	21.21	21.56	21.65	1	22.5		
		50	0	21.32	21.65	21.64	1	22.5		
		1	0	21.48	21.77	21.74	1	22.5		
		1	24	21.72	21.82	21.91	1	22.5		
		1	48	21.68	21.88	21.85	1	22.5		
64QAM	25	0	20.47	20.68	20.66	2	21.5			
	25	12	20.49	20.67	20.69	2	21.5			
	25	25	20.27	20.47	20.48	2	21.5			
	50	0	20.37	20.63	20.63	2	21.5			
	1	0	20.37	20.63	20.68	2	21.5			
20M	QPSK	1	0	22.23	22.28	22.27	0	23.5		
		1	24	22.29	22.55	22.61	0	23.5		
		1	48	21.81	22.07	22.11	0	23.5		
		25	0	21.39	21.73	21.68	1	22.5		
		25	12	21.61	21.64	21.68	1	22.5		
	16QAM	25	25	21.21	21.56	21.65	1	22.5		
		50	0	21.32	21.65	21.64	1	22.5		
		1	0	21.48	21.77	21.74	1	22.5		
		1	24	21.72	21.82	21.91	1	22.5		
		1	48	21.68	21.88	21.85	1	22.5		
64QAM	25	0	20.47	20.68	20.66	2	21.5			
	25	12	20.49	20.67	20.69	2	21.5			
	25	25	20.27	20.47	20.48	2	21.5			
	50	0	20.37	20.63	20.63	2	21.5			
	1	0	20.37	20.63	20.68	2	21.5			

LTE Band 4										
BW	Modulation	RB Size Channel	RB Offset	Low			SDFP MPR (dB)	Max. Time-avg. (dBm)		
				1920	1975	1945				
20M	QPSK	1	0	23.20	23.24	23.21	0	24.5		
		1	0	23.57	23.59	23.43	0	24.5		
		1	99	23.49	23.52	23.30	0	24.5		
		50	0	22.64	22.66	22.56	1	23.5		
		50	25	22.51	22.64	22.58	1	23.5		
	16QAM	50	50	22.68	22.68	22.68	1	23.5		
		100	0	22.58	22.61	22.55	1	23.5		
		1	0	22.21	22.34	22.19	1	23.5		
		1	50	22.39	22.53	22.52	1	23.5		
		1	99	22.49	22.51	22.45	1	23.5		
64QAM	50	0	21.53	21.57	21.51	2	22.5			
	50	25	21.51	21.56	21.42	2	22.5			
	50	50	21.61	21.66	21.65	2	22.5			
	100	0	21.55	21.59	21.58	2	22.5			
	1	0	21.49	21.43	21.41	2	22.5			
20M	QPSK	1	0	23.12	23.11	23.10	0	24.5		
		1	24	23.55	23.67	23.30	0	24.5		
		1	48	23.38	23.48	23.30	0	24.5		
		25	0	22.50	22.60	22.48	1	23.5		
		25	12	22.46	22.51	22.53	1	23.5		
	16QAM	25	25	22.61	22.67	22.63	1	23.5		
		50	0	22.62	22.67	22.67	1	23.5		
		1	0	22.06	22.21	22.17	1	23.5		
		1	24	22.29	22.41	22.39	1	23.5		
		1	48	22.48	22.59	22.43	1	23.5		
64QAM	25	0	21.51	21.46	21.39	2	22.5			
	25	12	21.48	21.55	21.42	2	22.5			
	25	25	21.38	21.52	21.44	2	22.5			
	50	0	21.42	21.49	21.42	2	22.5			
	1	0	21.48	21.48	21.30	2	22.5			
20M	QPSK	1	0	23.12	23.19	23.10	0	24.5		
		1	24	23.55	23.67	23.30	0	24.5		
		1	48	23.38	23.48	23.30	0	24.5		
		25	0	22.50	22.60	22.48	1	23.5		
		25	12	22.46	22.51	22.53	1	23.5		
	16QAM	25	25	22.61	22.67	22.63	1	23.5		
		50	0	22.62	22.67	22.67	1	23.5		
		1	0	22.06	22.21	22.17	1	23.5		
		1	24	22.29	22.41	22.39	1	23.5		
		1	48	22.48	22.59	22.43	1	23.5		
64QAM	25	0	21.51	21.46	21.39	2	22.5			
	25	12	21.48	21.55	21.42	2	22.5			
	25	25	21.38	21.52	21.44	2	22.5			
	50	0	21.42	21.49	21.42	2	22.5			
	1	0	21.48	21.48	21.30	2	22.5			
20M	QPSK	1	0	23.12	23.19	23.10	0	24.5		
		1	24	23.55	23.67	23.30	0	24.5		
		1	48	23.38	23.48	23.30	0	24.5		
		25	0	22.50	22.60	22.48	1	23.5		
		25	12	22.46	22.51	22.53	1	23.5		
	16QAM	25	25	22.61	22.67	22.63	1	23.5		
		50	0	22.62	22.67	22.67	1	23.5		
		1	0	22.06	22.21	22.17	1	23.5		
		1	24	22.29	22.41	22.39	1	23.5		
		1	48	22.48	22.59	22.43	1	23.5		
64QAM	25	0	21.51	21.46	21.39	2	22.5			
	25	12	21.48	21.55	21.42	2	22.5			
	25	25	21.38	21.52	21.44	2	22.5			
	50	0	21.42	21.49	21.42	2	22.5			
	1	0	21.48	21.48	21.30	2	22.5			
20M	QPSK	1	0	23.12	23.19	23.10	0	24.5		
		1	24	23.55	23.67	23.30	0	24.5		
		1	48	23.38	23.48	23.30	0	24.5		
		25	0	22.50	22.60	22.48	1	23.5		
		25	12	22.46	22.51	22.53	1	23.5		
	16QAM	25	25	22.61	22.67	22.63	1	23.5		
		50	0	22.62	22.67	22.67	1	23.5		
		1	0	22.06	22.21	22.17	1	23.5		
		1	24	22.29	22.41	22.3				

LTE Band 7									
BW	Modulation	RB Size	RB Offset	Mid		High	SOPP	Max. Turn-up	Max. Turn-up (dBm)
		Channel	Channel	2395	2190	2190			
		Frequency (MHz)	2810	2836	2862	2888	MPR (dB)	Turn-up (dB)	
20M	QPSK	1	0	24.05	24.05	24.09	0	25	
		1	50	24.16	24.11	24.18	0	25	
		1	99	23.75	23.87	23.88	0	25	
		50	0	23.19	23.16	23.18	1	24	
		50	25	23.22	23.18	23.26	1	24	
		50	50	23.06	23.01	23.09	1	24	
	100	0	23.07	22.93	23.14	1	24		
	16QAM	1	0	23.14	23.13	23.08	1	24	
		1	50	23.19	23.51	23.30	1	24	
		1	99	22.77	22.97	22.94	1	24	
		50	0	22.39	21.91	22.21	2	23	
		50	25	22.27	22.23	22.28	2	23	
50		50	22.59	22.02	22.36	2	23		
64QAM	1	0	22.01	22.05	21.89	2	23		
	1	50	22.28	22.12	21.99	2	23		
	1	99	22.02	22.17	21.77	2	23		
	50	0	20.98	20.75	20.67	3	22		
	50	25	20.89	20.97	20.64	3	22		
	50	50	20.64	20.79	20.61	3	22		
20M	QPSK	1	0	20.75	20.75	20.54	3	22	
		1	50	20.82	21.00	21.37	3	22	
		1	99	20.75	20.88	20.82	3	22	
		50	0	20.12	20.06	20.00	3	22	
		50	25	20.02	20.09	20.00	3	22	
		50	50	20.16	20.19	20.01	3	22	
	16QAM	1	0	20.12	20.06	20.00	3	22	
		1	50	20.02	20.09	20.00	3	22	
		1	99	20.16	20.19	20.01	3	22	
		50	0	19.42	19.36	19.30	3	21	
		50	25	19.32	19.39	19.30	3	21	
		50	50	19.46	19.49	19.31	3	21	
64QAM	1	0	19.32	19.39	19.30	3	21		
	1	50	19.42	19.36	19.30	3	21		
	1	99	19.46	19.49	19.31	3	21		
	50	0	18.62	18.56	18.50	3	20		
	50	25	18.52	18.59	18.50	3	20		
	50	50	18.66	18.69	18.51	3	20		
20M	QPSK	1	0	18.62	18.56	18.50	3	20	
		1	50	18.52	18.59	18.50	3	20	
		1	99	18.66	18.69	18.51	3	20	
		50	0	17.82	17.76	17.70	3	19	
		50	25	17.72	17.79	17.70	3	19	
		50	50	17.86	17.89	17.71	3	19	
	16QAM	1	0	17.82	17.76	17.70	3	19	
		1	50	17.72	17.79	17.70	3	19	
		1	99	17.86	17.89	17.71	3	19	
		50	0	17.02	16.96	16.90	3	18	
		50	25	16.92	16.99	16.90	3	18	
		50	50	17.06	17.09	16.91	3	18	
64QAM	1	0	17.02	16.96	16.90	3	18		
	1	50	16.92	16.99	16.90	3	18		
	1	99	17.06	17.09	16.91	3	18		
	50	0	16.22	16.16	16.10	3	17		
	50	25	16.12	16.19	16.10	3	17		
	50	50	16.26	16.29	16.11	3	17		
20M	QPSK	1	0	16.22	16.16	16.10	3	17	
		1	50	16.12	16.19	16.10	3	17	
		1	99	16.26	16.29	16.11	3	17	
		50	0	15.42	15.36	15.30	3	16	
		50	25	15.32	15.39	15.30	3	16	
		50	50	15.46	15.49	15.31	3	16	
	16QAM	1	0	15.42	15.36	15.30	3	16	
		1	50	15.32	15.39	15.30	3	16	
		1	99	15.46	15.49	15.31	3	16	
		50	0	14.62	14.56	14.50	3	15	
		50	25	14.52	14.59	14.50	3	15	
		50	50	14.66	14.69	14.51	3	15	
64QAM	1	0	14.62	14.56	14.50	3	15		
	1	50	14.52	14.59	14.50	3	15		
	1	99	14.66	14.69	14.51	3	15		
	50	0	13.82	13.76	13.70	3	14		
	50	25	13.72	13.79	13.70	3	14		
	50	50	13.86	13.89	13.71	3	14		
20M	QPSK	1	0	13.82	13.76	13.70	3	14	
		1	50	13.72	13.79	13.70	3	14	
		1	99	13.86	13.89	13.71	3	14	
		50	0	13.02	12.96	12.90	3	13	
		50	25	12.92	12.99	12.90	3	13	
		50	50	13.06	13.09	12.91	3	13	
	16QAM	1	0	13.02	12.96	12.90	3	13	
		1	50	12.92	12.99	12.90	3	13	
		1	99	13.06	13.09	12.91	3	13	
		50	0	12.22	12.16	12.10	3	12	
		50	25	12.12	12.19	12.10	3	12	
		50	50	12.26	12.29	12.11	3	12	
64QAM	1	0	12.22	12.16	12.10	3	12		
	1	50	12.12	12.19	12.10	3	12		
	1	99	12.26	12.29	12.11	3	12		
	50	0	11.42	11.36	11.30	3	11		
	50	25	11.32	11.39	11.30	3	11		
	50	50	11.46	11.49	11.31	3	11		
20M	QPSK	1	0	11.42	11.36	11.30	3	11	
		1	50	11.32	11.39	11.30	3	11	
		1	99	11.46	11.49	11.31	3	11	
		50	0	10.62	10.56	10.50	3	10	
		50	25	10.52	10.59	10.50	3	10	
		50	50	10.66	10.69	10.51	3	10	
	16QAM	1	0	10.62	10.56	10.50	3	10	
		1	50	10.52	10.59	10.50	3	10	
		1	99	10.66	10.69	10.51	3	10	
		50	0	9.82	9.76	9.70	3	9	
		50	25	9.72	9.79	9.70	3	9	
		50	50	9.86	9.89	9.71	3	9	
64QAM	1	0	9.82	9.76	9.70	3	9		
	1	50	9.72	9.79	9.70	3	9		
	1	99	9.86	9.89	9.71	3	9		
	50	0	8.92	8.86	8.80	3	8		
	50	25	8.82	8.89	8.80	3	8		
	50	50	8.96	8.99	8.81	3	8		
20M	QPSK	1	0	8.92	8.86	8.80	3	8	
		1	50	8.82	8.89	8.80	3	8	
		1	99	8.96	8.99	8.81	3	8	
		50	0	8.12	8.06	8.00	3	7	
		50	25	8.02	8.09	8.00	3	7	
		50	50	8.16	8.19	8.01	3	7	
	16QAM	1	0	8.12	8.06	8.00	3	7	
		1	50	8.02	8.09	8.00	3	7	
		1	99	8.16	8.19	8.01	3	7	
		50	0	7.32	7.26	7.20	3	6	
		50	25	7.22	7.29	7.20	3	6	
		50	50	7.36	7.39	7.21	3	6	
64QAM	1	0	7.32	7.26	7.20	3	6		
	1	50	7.22	7.29	7.20	3	6		
	1	99	7.36	7.39	7.21	3	6		
	50	0	6.52	6.46	6.40	3	5		
	50	25	6.42	6.49	6.40	3	5		
	50	50	6.56	6.59	6.41	3	5		
20M	QPSK	1	0	6.52	6.46	6.40	3	5	
		1	50	6.42	6.49	6.40	3	5	
		1	99	6.56	6.59	6.41	3	5	
		50	0	5.72	5.66	5.60	3	4	
		50	25	5.62	5.69	5.60	3	4	
		50	50	5.76	5.79	5.61	3	4	
	16QAM	1	0	5.72	5.66	5.60	3	4	
		1	50	5.62	5.69	5.60	3	4	
		1	99	5.76	5.79	5.61	3	4	
		50	0	4.92	4.86	4.80	3	3	
		50	25	4.82	4.89	4.80	3	3	
		50	50	4.96	4.99	4.81	3	3	
64QAM	1	0	4.92	4.86	4.80	3	3		
	1	50	4.82	4.89	4.80	3	3		
	1	99	4.96	4.99	4.81	3	3		
	50	0	4.12	4.06	4.00	3	2		
	50	25	4.02	4.09	4.00	3	2		
	50	50	4.16	4.19	4.01	3	2		
20M	QPSK	1	0	4.12	4.06	4.00	3	2	
		1	50	4.02	4.09	4.00	3	2	
		1	99	4.16	4.19	4.01	3	2	
		50	0	3.32	3.26	3.20	3	1	
		50	25	3.22	3.29	3.20	3	1	
		50	50	3.36	3.39	3.21	3	1	
	16QAM	1	0	3.32	3.26	3.20	3	1	
		1	50	3.22	3.29	3.20	3	1	
		1	99	3.36	3.39	3.21	3	1	
		50	0	2.52	2.46	2.40	3	0	
		50	25	2.42	2.49	2.40	3	0	
		50	50	2.56	2.59	2.41	3	0	
64QAM	1	0	2.52	2.46	2.40</				

LTE Band 14						
BW	MCS Index	RB Size	RB Offset	Mid	3GPP MPR (dB)	Max. Time-up (dBm)
		Channel	Channel	2330		
		Frequency (MHz)	793	793		
10M	QPSK	1	0	23.96	0	24.5
		1	24	23.65	0	24.5
		1	49	23.65	0	24.5
		25	0	22.79	1	23.5
		25	12	22.64	1	23.5
	16QAM	25	25	22.66	1	23.5
		50	0	22.75	1	23.5
		1	0	23.16	1	23.5
		1	24	22.84	1	23.5
		1	49	22.89	1	23.5
	64QAM	25	0	21.73	2	22.5
		25	12	21.56	2	22.5
		25	25	21.64	2	22.5
		50	0	21.57	2	22.5
		1	0	21.13	2	22.5
SM	QPSK	1	0	23.96	0	24.5
		1	24	23.65	0	24.5
		1	49	23.65	0	24.5
		12	0	22.64	1	23.5
		12	6	22.71	1	23.5
	16QAM	12	13	22.47	1	23.5
		25	0	22.72	1	23.5
		1	0	22.89	1	23.5
		1	12	22.92	1	23.5
		1	24	22.72	1	23.5
	64QAM	12	0	21.67	2	22.5
		12	6	21.77	2	22.5
		12	13	21.69	2	22.5
		25	0	21.76	2	22.5
		1	0	21.85	2	22.5

LTE Band 17								
BW	MCS Index	RB Size	RB Offset	Mid	High	3GPP MPR (dB)	Max. Time-up (dBm)	
		Channel	Channel	2370	2370			2369
		Frequency (MHz)	709	710	711			
10M	QPSK	1	0	23.73	23.61	23.66	0	24.5
		1	24	23.56	23.41	23.52	0	24.5
		1	49	23.62	23.43	23.53	0	24.5
		25	0	22.69	22.65	22.63	1	23.5
		25	12	22.65	22.64	22.61	1	23.5
	16QAM	25	25	22.66	22.56	22.59	1	23.5
		50	0	22.70	22.62	22.69	1	23.5
		1	0	22.84	22.64	22.80	1	23.5
		1	24	22.68	22.53	22.55	1	23.5
		1	49	22.66	22.49	22.76	1	23.5
	64QAM	25	0	21.46	21.45	21.50	2	22.5
		25	12	21.58	21.40	21.69	2	22.5
		25	25	21.67	21.56	21.63	2	22.5
		50	0	21.72	21.63	21.70	2	22.5
		1	0	21.51	21.47	21.59	2	22.5
SM	QPSK	1	0	23.73	23.61	23.66	0	24.5
		1	24	23.56	23.41	23.52	0	24.5
		1	49	23.62	23.43	23.53	0	24.5
		12	0	22.69	22.65	22.63	1	23.5
		12	6	22.67	22.58	22.61	1	23.5
	16QAM	12	13	22.55	22.46	22.51	1	23.5
		25	0	22.62	22.59	22.54	1	23.5
		1	0	22.72	22.53	22.75	1	23.5
		1	12	22.55	22.39	22.50	1	23.5
		1	24	22.62	22.36	22.69	1	23.5
	64QAM	12	0	21.34	21.38	21.41	2	22.5
		12	6	21.45	21.25	21.67	2	22.5
		12	13	21.65	21.51	21.53	2	22.5
		25	0	21.68	21.59	21.68	2	22.5
		1	0	21.46	21.42	21.50	2	22.5

LTE Band 38								
BW	Modulation	RB Size	RB Offset	Mid	High	3GPP MPR (dB)	Max. Time-up (dBm)	
		Channel	Channel	3763	3805			3810
		Frequency (MHz)	2883	2883	2876			
20M	QPSK	1	0	23.56	23.55	23.61	0	24.5
		1	60	23.67	23.72	23.69	0	24.5
		1	99	23.61	23.56	23.65	0	24.5
		50	0	22.75	22.81	22.77	1	23.5
		50	25	22.65	22.46	22.64	1	23.5
	16QAM	50	50	22.73	22.67	22.72	1	23.5
		100	0	22.80	22.82	22.79	1	23.5
		1	0	22.71	22.81	22.95	1	23.5
		1	50	22.85	22.87	22.96	1	23.5
		1	99	22.86	22.89	22.91	1	23.5
	64QAM	50	0	21.75	21.83	21.71	2	22.5
		50	25	21.69	21.55	21.76	2	22.5
		50	50	21.78	21.47	21.68	3	21.5
		100	0	21.80	21.50	21.79	2	22.5
		1	0	21.08	21.01	21.37	2	22.5
SM	QPSK	1	0	23.56	23.55	23.61	0	24.5
		1	60	23.67	23.72	23.69	0	24.5
		1	99	23.61	23.56	23.65	0	24.5
		36	0	22.74	22.68	22.58	1	23.5
		36	19	22.64	22.34	22.61	1	23.5
	16QAM	36	39	22.58	22.57	22.72	1	23.5
		75	0	22.77	22.79	22.70	1	23.5
		1	0	22.66	22.80	22.81	1	23.5
		1	37	22.70	22.80	22.84	1	23.5
		1	74	22.86	22.65	22.79	1	23.5
	64QAM	36	0	21.65	21.71	21.69	2	22.5
		36	19	21.45	21.46	21.64	2	22.5
		36	39	21.55	21.63	21.56	2	22.5
		75	0	21.70	21.35	21.75	2	22.5
		1	0	21.07	21.06	21.32	2	22.5
BW	QPSK	1	0	23.41	23.40	23.46	0	24.5
		1	24	23.53	23.65	23.68	0	24.5
		1	49	23.66	23.53	23.68	0	24.5
		25	0	22.71	22.75	22.59	1	23.5
		25	12	22.54	22.41	22.55	1	23.5
	16QAM	25	25	22.64	22.63	22.79	1	23.5
		50	0	22.71	22.70	22.71	1	23.5
		1	0	22.62	22.77	22.83	1	23.5
		1	24	22.72	22.79	22.85	1	23.5
		1	49	22.80	22.61	22.76	1	23.5
	64QAM	25	0	21.74	21.71	21.68	2	22.5
		25	12	21.46	21.48	21.68	2	22.5
		25	25	21.56	21.70	21.63	2	22.5
		50	0	21.70	21.44	21.71	2	22.5
		1	0	21.04	20.94	21.34	2	22.5
SM	QPSK	1	0	23.41	23.40	23.46	0	24.5
		1	24	23.53	23.65	23.68	0	24.5
		1	49	23.66	23.53	23.68	0	24.5
		12	0	22.65	22.66	22.66	1	23.5
		12	6	22.63	22.42	22.55	1	23.5
	16QAM	12	13	22.59	22.55	22.70	1	23.5
		25	0	22.68	22.78	22.71	1	23.5
		1	0	22.69	22.76	22.80	1	23.5
		1	12	22.83	22.73	22.86	1	23.5
		1	24	22.84	22.59	22.88	1	23.5
	64QAM	12	0	21.61	21.70	21.57	2	22.5
		12	6	21.48	21.52	21.74	2	22.5
		12	13	21.50	21.67	21.57	2	22.5
		25	0	21.65	21.49	21.75	2	22.5
		1	0	20.99	21.00	21.31	2	22.5

LTE Band 41 (2496 ~ 2690MHz) For FCC SAR											
BW	Modulation	RB Size	RB Offset	Low	Low Mid	Mid	High Mid	High	3GPP MPR (dB)	Max. Tune-up (dBm)	
		Channel	Frequency (MHz)	3970	4015	4060	4105	4140			
20M	QPSK	1	0	23.96	24.00	24.04	24.08	24.12	0	25	
		1	50	23.83	23.86	24.04	23.91	24.03	0	25	
		1	99	23.51	23.65	23.88	23.58	23.98	0	25	
		50	0	22.83	22.87	22.95	22.85	22.91	1	24	
		50	25	22.88	22.93	23.00	22.86	22.98	1	24	
		50	50	22.85	22.77	22.78	22.77	22.95	1	24	
		100	0	22.87	22.74	23.95	22.94	22.90	1	24	
		1	0	22.96	22.85	23.06	22.91	23.04	1	24	
		1	50	22.98	22.90	23.06	23.11	23.14	1	24	
		1	99	22.81	22.73	22.75	22.95	23.11	1	24	
		50	0	21.95	21.87	21.97	21.78	21.85	2	23	
		50	25	21.96	21.82	22.01	21.92	21.94	2	23	
	50	50	21.99	21.78	21.86	21.87	21.83	2	23		
	100	0	21.89	21.88	21.94	21.84	21.87	2	23		
	16QAM	1	0	21.96	21.84	21.93	21.96	21.46	2	23	
		1	50	21.93	21.53	21.53	21.43	21.54	2	23	
		1	99	21.53	21.35	21.46	21.20	21.21	2	23	
		50	0	20.95	20.89	20.93	20.85	20.84	3	22	
		50	25	20.92	20.81	21.01	20.80	20.74	3	22	
		50	50	20.96	20.77	20.77	20.65	21.01	3	22	
		100	0	20.89	20.83	20.91	20.82	20.70	3	22	
		64QAM	1	0	20.95	20.78	20.79	20.68	20.97	3	22
			1	50	20.95	20.78	20.79	20.68	20.97	3	22
			1	99	21.53	21.35	21.46	21.20	21.21	2	23
50			0	20.95	20.89	20.93	20.85	20.84	3	22	
50			25	20.92	20.81	21.01	20.80	20.74	3	22	
50	50		20.96	20.77	20.77	20.65	21.01	3	22		
100	0		20.89	20.83	20.91	20.82	20.70	3	22		
15M	QPSK		1	0	23.67	23.53	23.96	23.51	24.00	0	25
			1	37	23.71	23.78	24.03	23.76	23.96	0	25
			1	74	23.37	23.57	23.73	23.56	23.96	0	25
			36	0	22.72	22.80	22.89	22.73	22.84	1	24
			36	19	22.87	22.87	22.86	22.81	22.84	1	24
		36	39	22.77	22.74	22.68	22.76	22.89	1	24	
		75	0	22.72	22.83	21.53	21.43	22.83	2	24	
		1	0	22.85	22.73	22.98	22.76	23.02	1	24	
		1	37	22.90	22.88	22.93	23.00	23.11	1	24	
		1	74	22.76	22.69	22.71	22.84	23.00	1	24	
		36	0	21.81	21.84	21.89	21.69	21.80	2	23	
		36	19	21.84	21.71	21.98	21.79	21.85	2	23	
	36	39	21.92	21.68	21.73	21.82	21.71	2	23		
	75	0	21.87	21.78	21.93	21.70	21.74	2	23		
	1	0	21.85	21.36	21.49	21.43	21.44	2	23		
	16QAM	1	37	21.68	21.39	21.51	21.29	21.23	2	23	
		1	74	21.50	21.20	21.40	21.14	21.14	2	23	
		36	0	20.86	20.85	20.87	20.72	20.75	3	22	
		36	19	20.90	20.76	20.88	20.68	20.62	3	22	
		36	39	20.89	20.69	20.69	20.53	20.52	3	22	
		75	0	20.85	20.66	20.64	20.70	20.69	3	22	
		64QAM	1	37	21.68	21.39	21.51	21.29	21.23	2	23
			1	74	21.50	21.20	21.40	21.14	21.14	2	23
			36	0	20.86	20.85	20.87	20.72	20.75	3	22
36			19	20.90	20.76	20.88	20.68	20.62	3	22	
36			39	20.89	20.69	20.69	20.53	20.52	3	22	
75			0	20.85	20.66	20.64	20.70	20.69	3	22	
10M	QPSK		1	0	23.60	23.59	23.87	23.75	23.92	0	25
			1	24	23.74	23.72	24.02	23.87	23.94	0	25
			1	49	23.39	23.60	23.73	23.53	23.85	0	25
			25	0	22.69	22.80	22.89	22.82	22.78	1	24
			25	12	22.79	22.85	22.90	22.80	22.84	1	24
			25	25	22.87	22.83	22.92	22.85	22.89	1	24
		50	0	22.74	22.87	22.77	22.90	22.80	1	24	
		1	0	22.85	22.79	23.04	22.82	22.90	1	24	
		1	24	22.92	22.89	22.93	23.09	23.05	1	24	
		1	49	22.74	22.69	22.60	22.89	23.10	1	24	
		25	0	21.89	21.74	21.96	21.74	21.70	2	23	
		25	12	21.83	21.80	21.93	21.83	21.82	2	23	
	25	25	21.87	21.84	21.75	21.72	21.74	2	23		
	50	0	21.84	21.76	21.83	21.69	21.82	2	23		
	16QAM	1	0	21.60	21.38	21.50	21.52	21.43	2	23	
		1	24	21.60	21.50	21.51	21.38	21.25	2	23	
		1	49	21.48	21.29	21.37	21.18	21.10	2	23	
		25	0	20.90	20.74	20.84	20.80	20.82	3	22	
		25	12	20.83	20.73	20.97	20.70	20.71	3	22	
		25	25	20.88	20.66	20.64	20.70	20.69	3	22	
		50	0	20.75	20.71	20.86	20.70	20.62	3	22	
		64QAM	1	0	21.60	21.38	21.50	21.52	21.43	2	23
			1	24	21.60	21.50	21.51	21.38	21.25	2	23
			1	49	21.48	21.29	21.37	21.18	21.10	2	23
25			0	20.90	20.74	20.84	20.80	20.82	3	22	
25			12	20.83	20.73	20.97	20.70	20.71	3	22	
25	25		20.88	20.66	20.64	20.70	20.69	3	22		
50	0		20.75	20.71	20.86	20.70	20.62	3	22		
5M	QPSK		1	0	23.62	23.51	23.85	23.81	23.89	0	25
			1	12	23.73	23.79	23.89	23.89	23.98	0	25
			1	24	23.46	23.59	23.79	23.54	23.90	0	25
			12	0	22.81	22.77	22.85	22.78	22.81	1	24
			12	6	22.82	22.80	22.92	22.85	22.89	1	24
		12	13	22.72	22.73	22.77	22.66	22.86	1	24	
		25	0	22.85	22.71	23.93	22.88	22.84	1	24	
		1	0	22.94	22.84	23.00	22.83	22.92	1	24	
		1	12	22.96	22.85	22.96	22.98	23.06	1	24	
		1	24	22.75	22.65	22.70	22.81	23.07	1	24	
		12	0	21.87	21.73	21.82	21.84	21.71	2	23	
		12	6	21.94	21.70	21.97	21.82	21.82	2	23	
	12	13	21.89	21.67	21.72	21.72	21.73	2	23		
	25	0	21.78	21.81	21.81	21.83	21.84	2	23		
	16QAM	1	0	21.63	21.43	21.45	21.46	21.44	2	23	
		1	12	21.65	21.42	21.46	21.29	21.22	2	23	
		1	24	21.48	21.30	21.35	21.09	21.1	2	23	
		12	0	20.87	20.83	20.79	20.71	20.62	3	22	
		12	6	20.79	20.70	20.94	20.75	20.62	3	22	
		12	13	20.92	20.76	20.69	20.52	20.90	3	22	
		25	0	20.90	20.69	20.89	20.69	20.62	3	22	
		1.4M	QPSK	1	0	23.22	23.59	23.44	0	25	
				1	7	23.59	23.70	23.49	0	25	
				1	14	23.77	23.91	23.66	0	25	
8				0	22.66	22.85	22.85	1	24		
8				3	22.69	22.91	22.90	1	24		
8	7			22.70	22.88	22.57	1	24			
15	0			22.56	22.83	22.80	1	24			
1	0			22.34	22.51	22.38	1	24			
1	7			22.78	22.74	22.69	1	24			
1	14			23.05	23.21	23.01	1	24			
8	0			21.51	21.74	21.71	2	23			
8	3			21.77	21.86	21.89	2	23			
8	7		21.69	21.85	21.72	2	23				
15	0		21.63	21.69	21.47	2	23				
16QAM	1		0	21.32	21.65	21.55	2	23			
	1		7	21.35	21.99	21.51	2	23			
	1		14	21.97	22.13	21.97	2	23			
	8		0	20.48	20.79	20.63	3	22			
	8		3	20.49	20.65	20.62	3	22			
	8		7	20.72	20.80	20.77	3	22			
	15		0	20.63	20.84	20.67	3	22			
	3M		QPSK	1	0	23.16	23.53	23.39	0	25	
				1	2	23.71	23.73	23.54	0	25	
				1	4	23.76	23.88	23.66	0	25	
		3		0	23.43	23.63	23.54	0	25		
		3		1	23.51	23.67	23.73	0	25		
3		3		23.50	23.70	23.38	0	25			
6		0		22.64	22.83	22.78	1	24			
1		0		22.37	22.57	22.51	1	24			
1		2		22.71	22.78	22.77	1	24			
1		4		23.01	23.08	23.05	1	24			
3		0		22.23	22.02	22.47	1	24			
3		1		22.49	22.63	22.59					

<LTE Sensor Power>

		LTE Band 7						
BW	Modulation	RB Size	RB Offset	Low	Mid	High	Max. Tune-up (dBm)	
		Channel	Frequency (MHz)	20890	21000	21090		
20M	QPSK	1	0	19.33	19.22	19.26	20	
		1	50	19.45	19.33	19.88	20	
		1	99	19.21	19.06	19.05	20	
		50	0	19.45	19.38	19.43	20	
		50	25	19.46	19.42	19.48	20	
	16QAM	50	50	19.37	19.40	19.42	20	
		100	0	19.39	19.43	19.52	20	
		1	0	19.42	19.36	19.38	20	
		1	50	19.47	19.44	19.42	20	
		1	99	19.47	19.39	19.30	20	
	64QAM	50	0	19.44	19.43	19.47	20	
		50	25	19.42	19.47	19.48	20	
		50	50	19.35	19.46	19.40	20	
		100	0	19.45	19.60	19.35	20	
		1	0	19.39	19.38	19.46	20	
	15M	QPSK	1	0	19.24	19.14	19.11	20
			1	37	19.43	19.44	19.44	20
			1	74	19.14	19.06	19.04	20
			36	0	19.33	19.30	19.33	20
			36	19	19.38	19.40	19.39	20
16QAM		36	39	19.23	19.36	19.40	20	
		75	0	19.25	19.42	19.40	20	
		1	0	19.40	19.33	19.31	20	
		1	37	19.32	19.43	19.40	20	
		1	74	19.36	19.27	19.17	20	
64QAM		36	0	19.40	19.31	19.25	20	
		36	19	19.34	19.36	19.44	20	
		36	39	19.24	19.37	19.35	20	
		75	0	19.40	19.41	19.31	20	
		1	0	19.38	19.32	19.32	20	
10M		QPSK	1	0	19.32	19.10	19.22	20
			1	24	19.38	19.60	19.42	20
			1	49	19.19	19.04	18.97	20
			25	0	19.37	19.23	19.37	20
			25	12	19.40	19.37	19.44	20
	16QAM	25	25	19.35	19.36	19.30	20	
		50	0	19.25	19.38	19.37	20	
		1	0	19.40	19.25	19.23	20	
		1	24	19.45	19.30	19.36	20	
		1	49	19.35	19.30	19.26	20	
	64QAM	25	0	19.41	19.38	19.30	20	
		25	12	19.38	19.33	19.36	20	
		25	25	19.24	19.38	19.32	20	
		50	0	19.38	19.39	19.28	20	
		1	0	19.24	19.32	19.44	20	
	5M	QPSK	1	0	19.32	19.36	19.31	20
			12	6	19.31	19.39	19.34	20
			12	13	19.26	19.32	19.27	20
			25	0	19.26	19.42	19.45	20
			1	0	19.34	19.29	19.28	20
16QAM		1	12	19.33	19.33	19.31	20	
		1	24	19.44	19.29	19.29	20	
		12	0	19.32	19.30	19.28	20	
		12	6	19.33	19.35	19.40	20	
		12	13	19.32	19.36	19.25	20	
64QAM		25	0	19.31	19.36	19.22	20	
		1	0	19.33	19.34	19.37	20	
		1	12	19.34	19.39	19.25	20	
		1	24	19.33	19.41	19.19	20	
		12	0	19.43	19.32	19.38	20	

		LTE Band 38						
BW	Modulation	RB Size	RB Offset	Low	Mid	High	Max. Tune-up (dBm)	
		Channel	Frequency (MHz)	37690	38000	38190		
20M	QPSK	1	0	20.08	20.21	20.26	21	
		1	50	20.31	20.67	20.62	21	
		1	99	20.22	20.29	20.59	21	
		50	0	19.40	19.64	19.62	21	
		50	25	19.27	19.20	19.54	21	
	16QAM	50	50	19.34	19.29	19.61	21	
		100	0	19.22	19.31	19.53	21	
		1	0	19.27	19.29	19.74	21	
		1	50	19.42	19.43	19.63	21	
		1	99	19.59	19.54	20.01	21	
	64QAM	50	0	18.23	18.34	18.44	19	
		50	25	18.37	18.30	18.50	19	
		50	50	18.35	18.33	18.52	19	
		100	0	18.30	18.31	18.48	19	
		1	0	17.82	18.01	18.49	19	
	15M	QPSK	1	0	19.98	20.11	20.41	21
			1	37	20.23	20.54	20.60	21
			1	74	20.12	20.27	20.54	21
			36	0	19.38	19.54	19.57	21
			36	19	19.24	19.09	19.53	21
16QAM		36	39	19.20	19.21	19.45	21	
		75	0	19.18	19.26	19.70	21	
		1	0	19.15	19.28	19.64	21	
		1	37	19.35	19.40	19.78	21	
		1	74	19.46	19.44	19.94	21	
64QAM		36	0	18.14	18.21	18.29	19	
		36	19	18.24	18.21	18.36	19	
		36	39	18.32	18.32	18.45	19	
		75	0	18.24	18.30	18.46	19	
		1	0	17.81	17.94	18.47	19	
10M		QPSK	1	0	19.95	20.19	20.49	21
			1	24	20.29	20.63	20.51	21
			1	49	20.20	20.17	20.49	21
			25	0	19.35	19.60	19.55	21
			25	12	19.19	19.12	19.52	21
	16QAM	25	25	19.30	19.15	19.56	21	
		50	0	19.07	19.24	19.75	21	
		1	0	19.12	19.18	19.70	21	
		1	24	19.38	19.35	19.84	21	
		1	49	19.51	19.44	19.92	21	
	64QAM	25	0	18.09	18.21	18.42	19	
		25	12	17.25	17.13	17.68	19	
		25	12	17.14	17.22	17.70	19	
		25	25	17.21	17.36	17.75	19	
		50	0	17.19	17.28	17.74	19	
	5M	QPSK	1	0	19.98	20.17	20.53	21
			1	12	20.17	20.63	20.59	21
			1	24	20.18	20.25	20.51	21
			12	0	19.26	19.63	19.61	21
			12	6	19.21	19.12	19.45	21
16QAM		12	13	19.31	19.14	19.56	21	
		25	0	19.17	19.26	19.77	21	
		1	0	19.18	19.21	19.61	21	
		1	12	19.30	19.39	19.85	21	
		1	24	19.44	19.48	19.94	21	
64QAM		12	0	18.10	18.24	18.39	19	
		12	6	18.26	18.27	18.46	19	
		12	13	18.21	18.26	18.44	19	
		25	0	18.18	18.22	18.36	19	
		1	0	17.71	17.91	18.38	19	

		LTE Band 41 (2496-2690MHz) For FCC SAR								
BW	Modulation	RB Size	RB Offset	Low	Mid	High	High Mic	High	Max. Tune-up (dBm)	
		Channel	Frequency (MHz)	39750	40195	40620	41055	41490		
20M	QPSK	1	0	19.91	20.02	20.12	19.83	20.07	21	
		1	50	20.05	20.21	20.28	19.98	20.16	21	
		1	99	19.85	19.90	19.70	19.66	19.89	21	
		50	0	19.32	19.42	19.41	19.24	19.41	21	
		50	25	19.41	19.45	19.46	19.26	19.43	21	
	16QAM	50	50	19.27	19.37	19.25	19.04	19.35	21	
		100	0	19.30	19.35	19.39	19.23	19.37	21	
		1	0	19.84	19.18	20.20	20.06	20.04	21	
		1	50	19.67	20.13	20.18	20.17	20.23	21	
		1	99	19.59	19.94	19.89	19.87	19.99	21	
	64QAM	50	0	19.90	20.14	20.16	20.08	20.09	21	
		50	25	19.83	20.17	20.13	20.05	20.12	21	
		50	50	19.83	20.03	20.05	19.89	20.03	21	
		100	0	19.88	20.15	20.08	20.03	20.01	21	
		1	0	19.64	19.87	19.84	19.76	19.81	21	
	15M	QPSK	1	0	19.87	19.90	20.08	19.69	19.94	21
			1	37	19.96	20.16	20.18	19.93	20.11	21
			1	74	19.58	19.79	20.14	19.55	19.87	21
			36	0	19.22	19.32	19.32	19.23	19.30	21
			36	19	19.31	19.43	19.36	19.25	19.26	21
16QAM		36	39	19.17	19.29	19.12	18.92	19.22	21	
		75	0	19.16	19.25	19.25	19.17	19.25	21	
		1	0	19.74	20.15	20.08	19.91	19.93	21	
		1	37	19.79	20.07	20.15	20.02	20.18	21	
		1	74	19.48	19.87	19.80	19.84	19.86	21	
64QAM		36	0	19.85	20.13	20.09	20.02	20.08	21	
		36	19	19.70	20.06	20.00	20.00	19.98	21	
		36	39	19.84	19.94	19.95	19.74	19.94	21	
		75	0	19.80	20.09	19.95	19.88	19.97	21	
		1	0	19.59	19.82	19.69	19.61	19.59	21	
10M		QPSK	1	0	19.85	19.87	19.78	19.75	19.85	21
			1	37	19.85	19.87	19.78	19.75	19.85	21
			1	74	19.59	19.56	19.37	19.35	19.43	21
			36	0	19.78	19.74	20.05	19.84	19.97	21
			36	19	19.82	20.08	19.99	20.01	19.92	21
	16QAM	36	39	19.70	19.85	19.82	19.72	19.80	21	
		75	0	19.70	19.99	19.87	19.93	20.01	21	
		1	0	19.70	19.99	19.87	19.93	20.01	21	
		1	37	19.70	19.99	19.87	19.93	20.01	21	
		1	74	19.70	19.99	19.87	19.93	20.01	21	
	64QAM	36	0	19.83	19.95	20.09	19.82	19.96	21	
		36	19	1						

Full Power								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	0	0	0	1	23.86
		16QAM	1	0	0	0	1	23.24
		64QAM	1	0	0	0	1	22.26
21100	21298	QPSK	1	0	0	0	1	23.78
		16QAM	1	0	0	0	1	23.15
		64QAM	1	0	0	0	1	22.30
21350	21152	QPSK	1	0	0	0	1	23.89
		16QAM	1	0	0	0	1	23.18
		64QAM	1	0	0	0	1	22.12

CA_41C For FCC								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	1	23.53
		16QAM	1	0	0	0	1	22.98
		64QAM	1	0	0	0	1	21.35
40185	40383	QPSK	1	0	0	0	1	23.37
		16QAM	1	0	0	0	1	22.55
		64QAM	1	0	0	0	1	21.16
40620	40422	QPSK	1	0	0	0	1	23.93
		16QAM	1	0	0	0	1	22.73
		64QAM	1	0	0	0	1	21.10
41055	40857	QPSK	1	0	0	0	1	23.46
		16QAM	1	0	0	0	1	22.68
		64QAM	1	0	0	0	1	20.97
41490	41292	QPSK	1	0	0	0	1	23.85
		16QAM	1	0	0	0	1	22.88
		64QAM	1	0	0	0	1	21.16

Sensor Power								
CA_7C								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
20850	21048	QPSK	1	0	0	0	1	19.07
		16QAM	1	0	0	0	1	18.91
		64QAM	1	0	0	0	1	17.73
21100	21298	QPSK	1	0	0	0	1	19.01
		16QAM	1	0	0	0	1	18.92
		64QAM	1	0	0	0	1	17.75
21350	21152	QPSK	1	0	0	0	1	19.23
		16QAM	1	0	0	0	1	19.15
		64QAM	1	0	0	0	1	17.93

CA_41C For FCC								
Combination 20MHz+20MHz (100RB+100RB)								
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset		
39750	39948	QPSK	1	0	0	0	1	20.24
		16QAM	1	0	0	0	1	19.73
		64QAM	1	0	0	0	1	18.09
40185	40383	QPSK	1	0	0	0	1	20.45
		16QAM	1	0	0	0	1	19.79
		64QAM	1	0	0	0	1	18.22
40620	40422	QPSK	1	0	0	0	1	20.76
		16QAM	1	0	0	0	1	19.72
		64QAM	1	0	0	0	1	18.21
41055	40857	QPSK	1	0	0	0	1	20.56
		16QAM	1	0	0	0	1	19.33
		64QAM	1	0	0	0	1	18.11
41490	41292	QPSK	1	0	0	0	1	20.71
		16QAM	1	0	0	0	1	19.66
		64QAM	1	0	0	0	1	18.27

Full Power

2.4GHz WLAN

	Mode	Channel	2.4GHz WLAN		
			Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
2.4GHz WLAN	802.11b 1Mbps	1	2412	14.10	15.50
		6	2437	14.36	15.50
		11	2462	14.26	15.50
	802.11g 6Mbps	1	2412	12.15	13.50
		6	2437	12.49	13.50
		11	2462	12.24	13.50
	802.11n-HT20 MCS0	1	2412	11.11	12.50
		6	2437	11.60	12.50
		11	2462	11.39	12.50
	802.11n-HT40 MCS0	3	2422	10.34	12.00
		6	2437	10.48	12.00
		9	2452	10.78	12.00
	802.11ac-VHT20 MCS0	1	2412	8.93	10.50
		6	2437	9.03	10.50
		11	2462	9.55	10.50
	802.11ac-VHT40 MCS0	3	2422	9.51	11.00
		6	2437	9.82	11.00
		9	2452	10.25	11.00

5GHz WLAN

	Mode	Channel	5GHz WLAN		
			Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
5.2GHz WLAN	802.11a 6Mbps	36	5180	10.70	12.00
		40	5200	10.60	12.00
		44	5220	10.58	12.00
		48	5240	10.71	12.00
	802.11n-HT20 MCS0	36	5180	10.68	12.00
		40	5200	10.64	12.00
		44	5220	10.62	12.00
		48	5240	10.68	12.00
	802.11n-HT40 MCS0	38	5190	11.48	13.00
		46	5230	11.16	13.00
		36	5180	7.63	9.00
	802.11ac-VHT20 MCS0	40	5200	7.50	9.00
		44	5220	7.44	9.00
		48	5240	7.81	9.00
	802.11ac-VHT40 MCS0	38	5190	8.56	9.50
		46	5230	7.95	9.50
	802.11ac-VHT80 MCS0	42	5210	8.24	9.50

5GHz WLAN

	Mode	Channel	5GHz WLAN		
			Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
5.3GHz WLAN	802.11a 6Mbps	52	5260	10.74	12.00
		56	5280	10.72	12.00
		60	5300	10.78	12.00
		64	5320	10.86	12.00
	802.11n-HT20 MCS0	52	5260	10.58	12.00
		56	5280	10.55	12.00
		60	5300	10.74	12.00
		64	5320	10.89	12.00
	802.11n-HT40 MCS0	54	5270	11.26	13.00
		62	5310	11.57	13.00
	802.11ac-VHT20 MCS0	52	5260	7.93	9.00
		56	5280	7.43	9.00
		60	5300	7.41	9.00
		64	5320	7.94	9.00
	802.11ac-VHT40 MCS0	54	5270	8.59	9.50
		62	5310	8.06	9.50
	802.11ac-VHT80 MCS0	58	5290	8.22	9.50

5GHz WLAN

	Mode	Channel	5GHz WLAN		
			Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
5.8GHz WLAN	802.11a 6Mbps	149	5745	10.11	10.50
		157	5785	8.67	10.50
		165	5825	8.66	10.50
	802.11n-HT20 MCS0	149	5745	6.82	7.50
		157	5785	5.67	7.50
		165	5825	5.84	7.50
	802.11n-HT40 MCS0	151	5755	7.14	8.00
		159	5795	6.49	8.00
	802.11ac-VHT20 MCS0	149	5745	6.76	7.50
		157	5785	5.57	7.50
		165	5825	5.72	7.50
	802.11ac-VHT40 MCS0	151	5755	6.99	8.00
		159	5795	6.33	8.00
	802.11ac-VHT80 MCS0	155	5775	6.51	8.00

BR/EDR

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
GFSK	CH 0	2402	4.67	6.00
	CH 19	2441	2.24	4.00
	CH 78	2480	6.24	8.00
DQPSK	CH 0	2402	1.46	3.00
	CH 39	2441	-0.45	1.00
	CH 78	2480	3.60	5.00
8DPSK	CH 0	2402	1.56	3.00
	CH 39	2441	-0.59	1.00
	CH 78	2480	3.70	5.00

BLE

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)
1Mbps	CH 0	2402	5.28	7.00
	CH 19	2440	3.05	4.00
	CH 39	2480	7.23	8.00
2Mbps	CH 0	2404	6.86	8.00
	CH 19	2440	4.19	5.00
	CH 39	2478	8.82	10.00
S2	CH 0	2402	5.53	7.00
	CH 19	2440	3.36	4.00
	CH 39	2480	7.63	9.00
S8	CH 0	2402	4.82	6.00
	CH 19	2440	2.70	4.00
	CH 39	2480	6.83	8.00