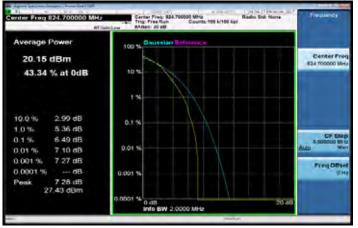
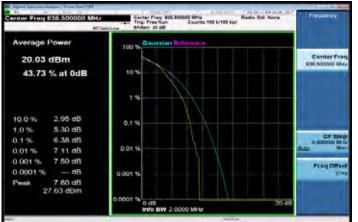


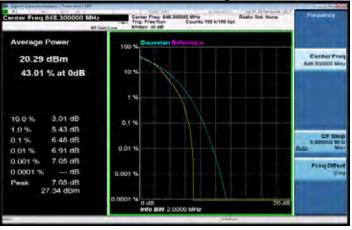
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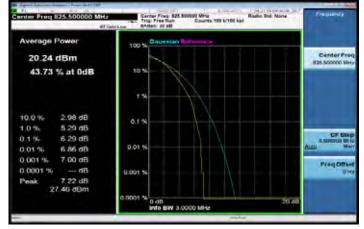
LTE_Band5 1.4MHz_16-QAM 6 0_MidCH20525-836.5



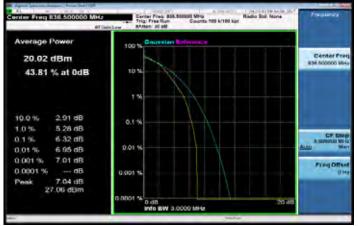
LTE_Band5 1.4MHz_16-QAM 6 0_HighCH20643-848.3



LTE_Band5 3MHz_16-QAM 15 0_LowCH20415-825.5



LTE_Band5 3MHz_16-QAM 15 0_MidCH20525-836.5



COLUMN STATE Average Power Center Free 20.27 dBm 42.92 % at 0dB 10 1 15 2.99 dB 10.0 % 0.1 5 35 dB 1.0 % CF D 6.33 dB 0.1 % 0.01 0.01 % 6.86 dB 0 001 % 6.97 dB First Offs 0.0001 % +++ dB 0.001 7.00 dB 27.27 dBm nnos o dit. Info BW 3.0000 MHz

LTE_Band5 3MHz_16-QAM 15 0_HighCH20635-847.5

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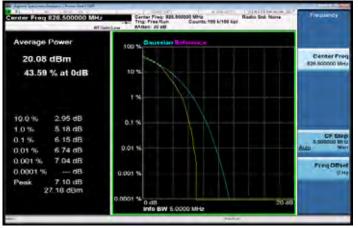
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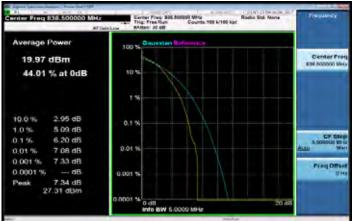
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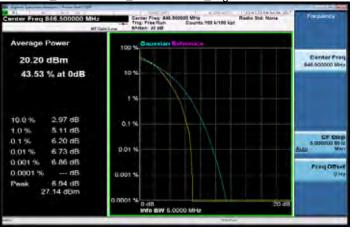
LTE_Band5 5MHz_16-QAM 25 0_LowCH20425-826.5

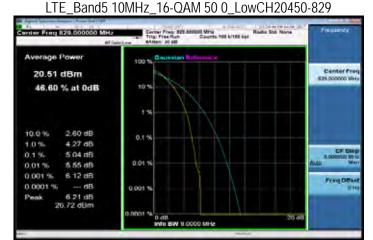


LTE_Band5 5MHz_16-QAM 25 0_MidCH20525-836.5

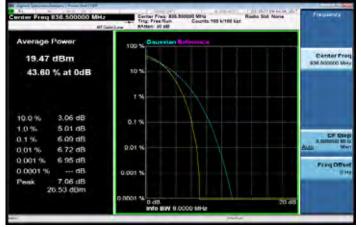


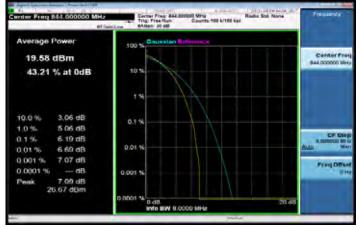
LTE_Band5 5MHz_16-QAM 25 0_HighCH20625-846.5





LTE_Band5 10MHz_16-QAM 50 0_MidCH20525-836.5





LTE_Band5 10MHz_16-QAM 50 0_HighCH20600-844

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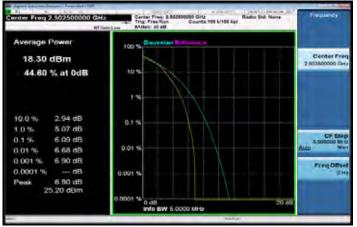
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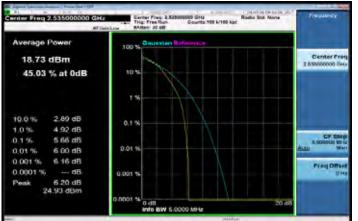


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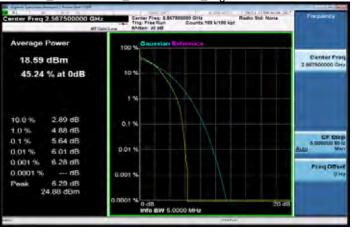
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LTE_Band7 5MHz_16-QAM 25 0_MidCH21100-2535



LTE_Band7 5MHz_16-QAM 25 0_HighCH21425-2567.5



LTE_Band7 10MHz_16-QAM 50 0_LowCH20800-2505 ter Freq 2 50500 Average Powe 100 Center Fre 17.90 dBm 43.71 % at 0dB 10 3.04 dB 10.0 %

0.11

0.01

0.001

1.0 %

0.1%

0.01 % 0.001 %

0.0001 %

4.95 dB

5.95 dB

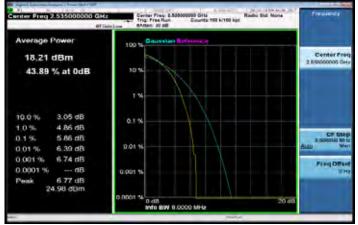
6.52 dB

6.90 dB

6 93 dB 24.83 dBm

--- dB

LTE_Band7 10MHz_16-QAM 50 0_MidCH21100-2535



Average Power Center Free 18.08 dBm 2.4 43.92 % at 0dB 10.5 15 3,06 dB 10.0 % 0.1 4 88 dB 1.0 % CF D 5.87 dB 0.1 % 0.01 0.01 % 6.44 dB 0.001 % 6 60 dB First Offs 0.0001 % +++ dB 0.001 6 67 dB 24.75 dBm nnos -0 dtl. Info BW 8.0000 MHz

LTE_Band7 10MHz_16-QAM 50 0_HighCH21400-2565

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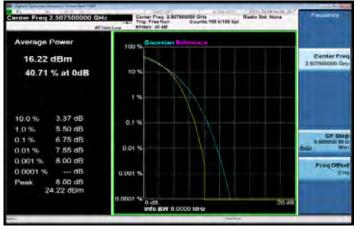
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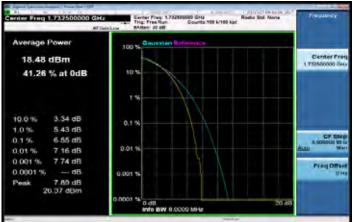
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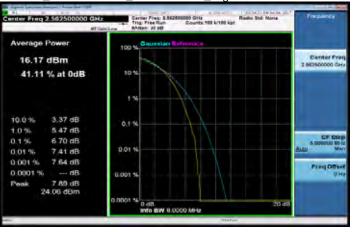
LTE_Band7 15MHz_16-QAM 75 0_LowCH20825-2507.5



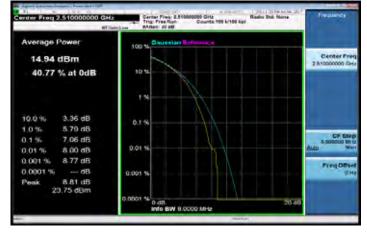
LTE_Band7 15MHz_16-QAM 75 0_MidCH21100-2535



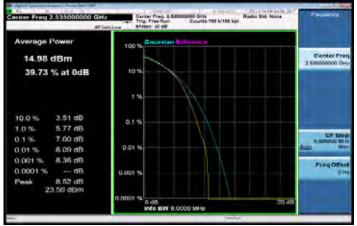
LTE_Band7 15MHz_16-QAM 75 0_HighCH21375-2562.5



LTE_Band7 20MHz_16-QAM 100 0_LowCH20850-2510



LTE_Band7 20MHz_16-QAM 100 0_MidCH21100-2535



Average Power Center Free 14.90 dBm 2.4 39.74 % at 0dB 10 1 15 3.45 dB 10.0 % 0.1 5.76 dB 1.0 % CF D 6.98 dB 0.1 % 0.01 0.01 % 8 03 dB 0.001 % 8 58 dB First Offs 0.0001 % +++ dB 0.001 8.65 dB 23.55 dBm nnos -0 dtl. Info BW 8.0000 MHz

LTE_Band7 20MHz_16-QAM 100 0_HighCH21350-2560

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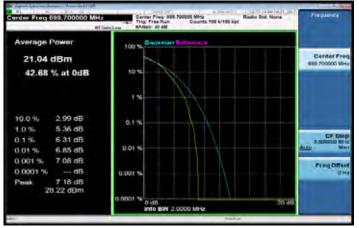
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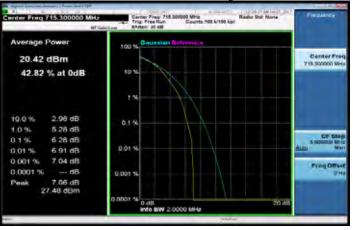
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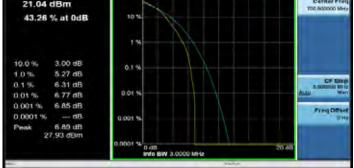
LTE_Band12 1.4MHz_16-QAM 6 0_MidCH23095-707.5



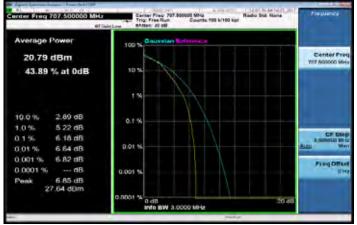
LTE_Band12 1.4MHz_16-QAM 6 0_HighCH23173-715.3



LTE_Band12 3MHz_16-QAM 15 0_LowCH23025-700.5



LTE_Band12 3MHz_16-QAM 15 0_MidCH23095-707.5



744.50 COLUMN STATE Average Power Center Frei 714.500000 MH 20.57 dBm 43.30 % at 0dB 10 1 15 2.99 dB 10.0 % 0.1 5 27 dB 1.0 % CF D 6.25 dB 0.1 % 0.01 0.01 % 6 74 dB 0.001 % 6.94 dB First Offs 0.0001 % +++ dB 0.001 6.94 dB 27.51 dBm nnos o dit. Info BW 3.0000 MHz

LTE_Band12 3MHz_16-QAM 15 0_HighCH23165-714.5

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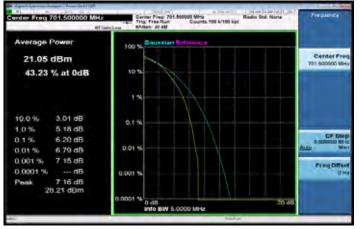
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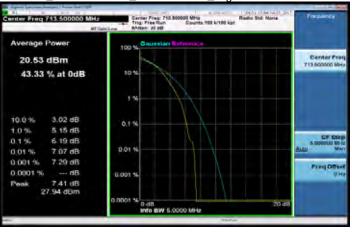
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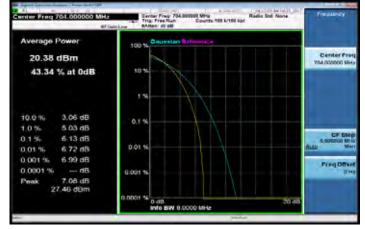
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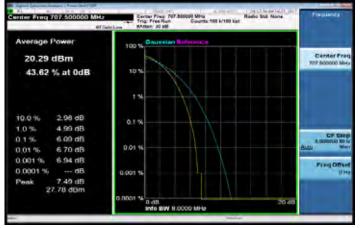
LTE_Band12 5MHz_16-QAM 25 0_HighCH23155-713.5



LTE_Band12 10MHz_16-QAM 50 0_LowCH23060-704



LTE_Band12 10MHz_16-QAM 50 0_MidCH23095-707.5



1741.00 DOM: NO Average Power Center Frei 711.000000 Mit 20.11 dBm 43.16 % at 0dB 10 1 15 3.11 dB 10.0 % 0.1 5.12 dB 1.0 % CF D 6.26 dB 0.1 % 0.01 0.01 % 6.80 dB 7.03 dB 0 001 % First Offs 0.0001 % +++ dB 0.001 7.13 dB 27.24 dBm nnos o dit. Info BW 8.0000 MHz

LTE_Band12 10MHz_16-QAM 50 0_HighCH23130-711

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Center Fre

Fing Diffs

LTE_Band13 10MHz_16-QAM 50 0_MidCH23230-782

782.00

100

0.11

0.01 1

0.001

ter Freq 782.000000 MHz

Average Power

10.0 %

1.0 %

0.1%

0.01 % 0.001 %

0.0001 %

20.08 dBm

42.90 % at 0dB

3.11 dB

5 12 dB

6.16 dB

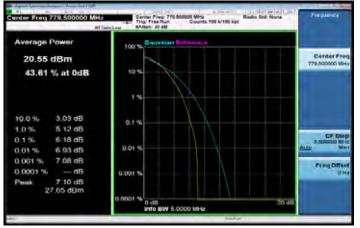
6.85 dB

7 12 dB

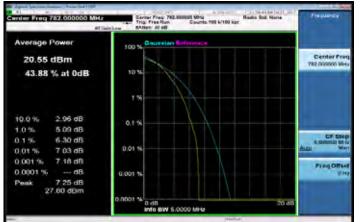
7.15 dB 27.23 dBm

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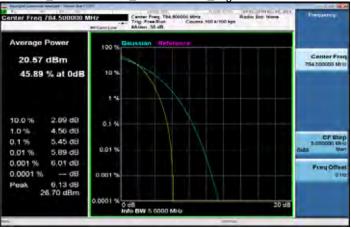
LTE_Band13 5MHz_16-QAM 25 0_LowCH23205-779.5



LTE_Band13 5MHz_16-QAM 25 0_MidCH23230-782



LTE_Band13 5MHz_16-QAM 25 0_HighCH23255-784.5



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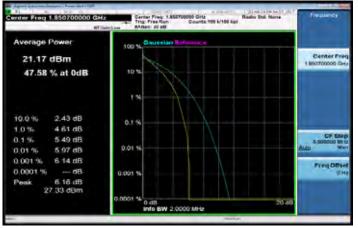
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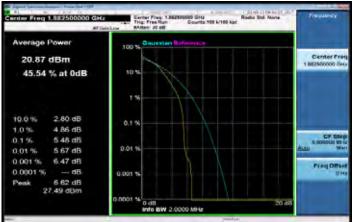
습	港台」	哈科 村	股份	盲限公	3
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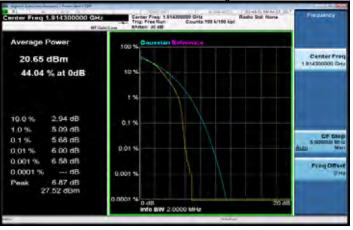
LTE_Band25 1.4MHz_16-QAM 6 0_LowCH26047-1850.7



LTE_Band25 1.4MHz_16-QAM 6 0_MidCH26365-1882.5

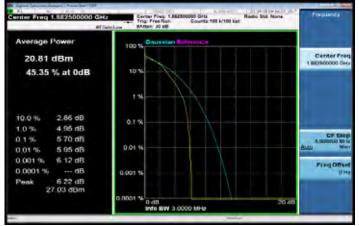


LTE_Band25 1.4MHz_16-QAM 6 0_HighCH26683-1914.3





LTE_Band25 3MHz_16-QAM 15 0_MidCH26365-1882.5



g 1.913500000 GH Average Power Center Frei 1.81360000 CH 20.63 dBm 44.30 % at 0dB 10 1 15 2.93 dB 10.0 % 0.1 5.11 dB 1.0 % CF D 5.91 dB 0.1 % 0.01 0.01 % 6.30 dB 0.001 % 6.38 dB First Offs 0.0001 % +++ dB 0.001 6.50 dB 13 dBm nnos o dit. Info BW 3.0000 MHz

LTE_Band25 3MHz_16-QAM 15 0_HighCH26675-1913.5

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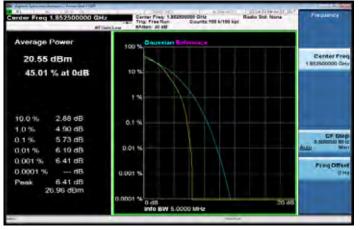
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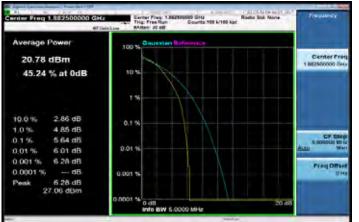
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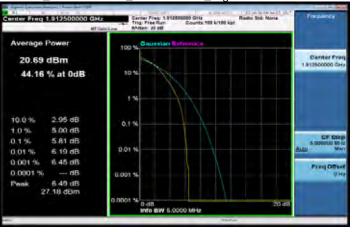
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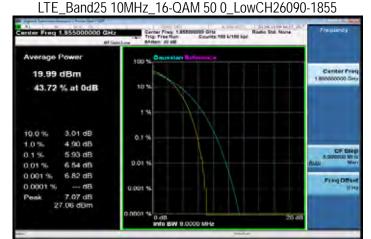


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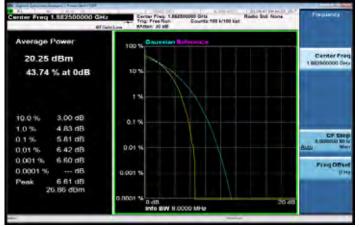


LTE_Band25 5MHz_16-QAM 25 0_HighCH26665-1912.5





LTE_Band25 10MHz_16-QAM 50 0_MidCH26365-1882.5



Average Power Center Frei 20.10 dBm 43.49 % at 0dB 10 1 15 3.05 dB 10.0 % 0.1 4 93 dB 1.0 % CF D 5.90 dB 0.1 % 0.01 0.01 % 6 59 dB 7.05 dB 0.001 % First Offs 0.0001 % +++ dB 0.001 7.05 dB 27.15 dBm nnos o dit. Info BW 9.0000 MHz

LTE_Band25 10MHz_16-QAM 50 0_HighCH26640-1910

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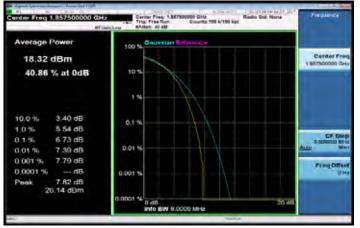
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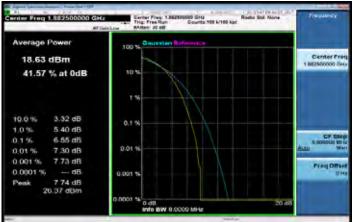
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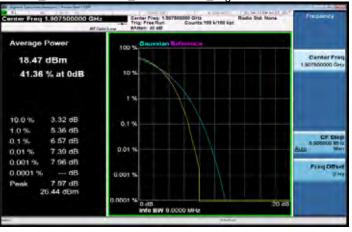
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LTE_Band25 15MHz_16-QAM 75 0_MidCH26365-1882.5

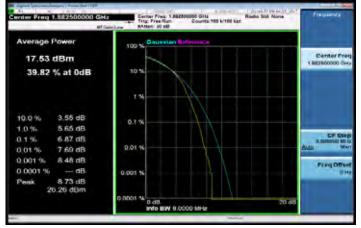


LTE_Band25 15MHz_16-QAM 75 0_HighCH26615-1907.5





LTE_Band25 20MHz_16-QAM 100 0_MidCH26365-1882.5



Average Power Center Free 17.35 dBm 40.63 % at 0dB 10 1 15 3.45 dB 10.0 % 0.1 5.57 dB 1.0 % CF D 6 79 dB 0.1 % 0.01 7 80 dB 0.01 % 0.001 % 8.36 dB First Offs 0.0001 % +++ dB 0.001 1 8 62 dB 25.97 dBm 0001 o dit. Info BW 8.0000 MHz

LTE_Band25 20MHz_16-QAM 100 0_HighCH26590-1905

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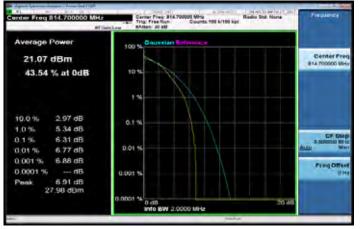
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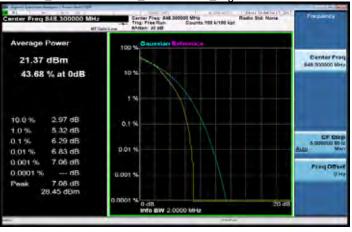
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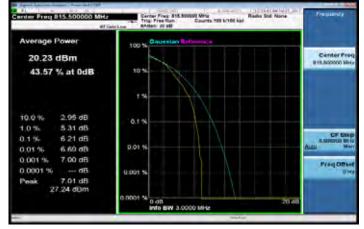
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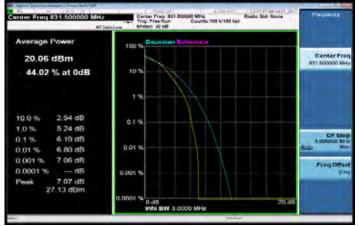
LTE_Band26 1.4MHz_16-QAM 6 0_HighCH27033-848.3



LTE_Band26 3MHz_16-QAM 15 0_LowCH26705-815.5



LTE_Band26 3MHz_16-QAM 15 0_MidCH26865-831.5



COLUMN STATE Average Power Center Free 20.34 dBm 43.68 % at 0dB 10 1 15 2.98 dB 10.0 % 0.1 5 35 dB 1.0 % CF D 6.31 dB 0.1 % 0.01 0.01 % 6 79 dB 0 001 % 6.91 dB First Offs 0.0001 % +++ dB 0.001 6 92 dB 27.26 dBm nnos o dit. Into BW 3.0000 MHz

LTE_Band26 3MHz_16-QAM 15 0_HighCH27025-847.5

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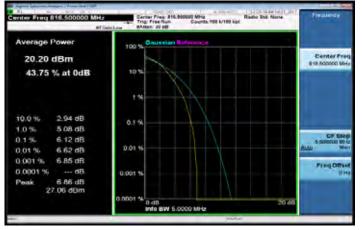
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LTE_Band26 5MHz_16-QAM 25 0_LowCH26715-816.5



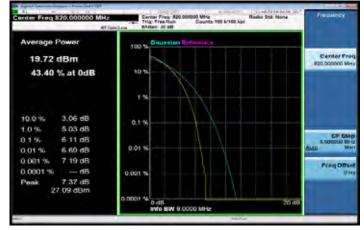
LTE_Band26 5MHz_16-QAM 25 0_MidCH26865-831.5



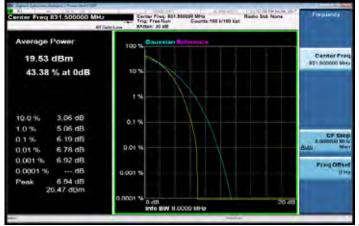
LTE_Band26 5MHz_16-QAM 25 0_HighCH27015-846.5



LTE_Band26 10MHz_16-QAM 50 0_LowCH26750-820



LTE_Band26 10MHz_16-QAM 50 0_MidCH26865-831.5



a 844.00 Average Power Center Free 844.000000 MH 19.76 dBm 43.24 % at 0dB 10.5 15 3.08 dB 10.0 % 0.1 5 02 dB 1.0 % CF D 6.11 dB 0.1 % 0.01 0.01 % 7 01 dB 7.60 dB 0.001 % First Offs 0.0001 % +++ dB 0.001 7.63 dB 27.39 dBm nnos -0 dtl. Info BW 8.0000 MHz

LTE_Band26 10MHz_16-QAM 50 0_HighCH26990-844

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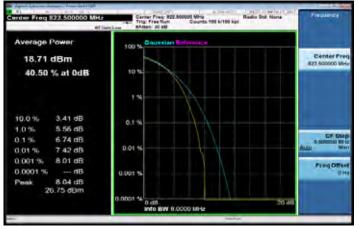
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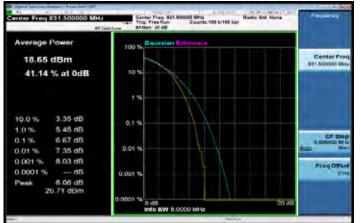
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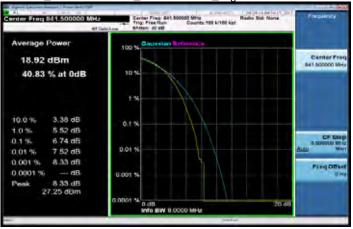
LTE_Band26 15MHz_16-QAM 75 0_LowCH26825-822.5



LTE_Band26 15MHz_16-QAM 75 0_MidCH26865-831.5



LTE_Band26 15MHz_16-QAM 75 0_HighCH26965-841.5



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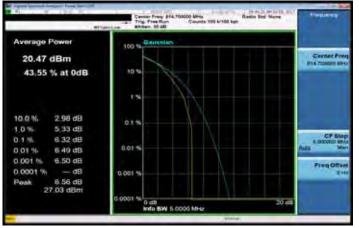
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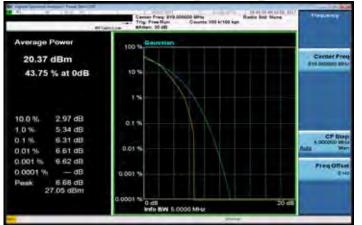
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	1 (000 2) 2200 0210



LTE_Bamd26 for Part90S 1.4MHz_16-QAM 6 0_LowCH26697



LTE_ Band26 for Part90S 1.4MHz_16-QAM 6 0_MidCH26740

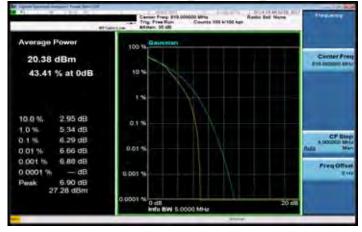


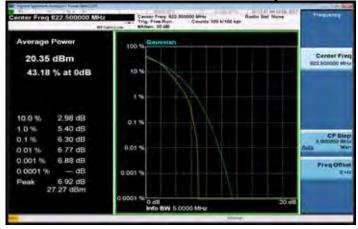
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LTE_Band26 for Part90S 3MHz_16-QAM 15 0_MidCH26740





LTE_ Band26 for Part90S 3MHz_16-QAM 15 0_HighCH26775

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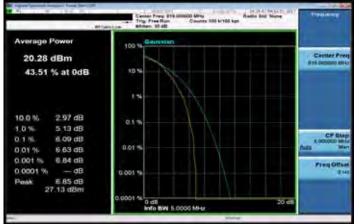
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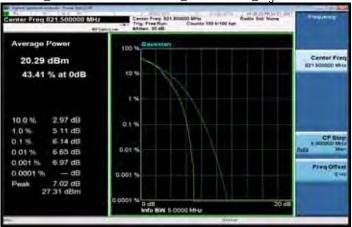
LTE_Band26 for Part90S 5MHz_16-QAM 25 0_LowCH26715



LTE_ Band26 for Part90S 5MHz_16-QAM 25 0_MidCH26740



LTE_ Band26 for Part90S 5MHz_16-QAM 25 0_HighCH26765



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LTE_ Band26 for Part90S 10MHz_16-QAM 50 0_MidCH26740

Average Power	100 % Gaussian	
17.74 dBm 40.37 % at 0dB	10%	Conter Pres
	18 10-10-10-10-10-10-10-10-10-10-10-10-10-1	
10.0 % 3.38 dB	0.1%	
0.1% 6.69 dB	0.01%	CF Base s. occord inits Auto Man
0.001 % B.42 dB 0.0001 % — dB Peak 8.43 dB	0.001 %	Preg Offact



Carmer Pr

CFI

Fing Of

LTE_Band30 10MHz_16-QAM 50 0_MidCH27710-2310

100

10

0.1.1

0.01 4

0.001

Average Power

10.0 %

1.0 %

0.1%

0.01 %

Deak

0.001 %

0.0001 %

16.82 dBm

40.17 % at 0dB

3.43 dB

5.56 dB

6.73 dB

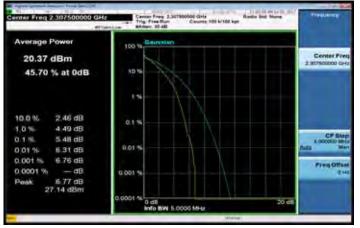
7 48 dB

8.71 dB

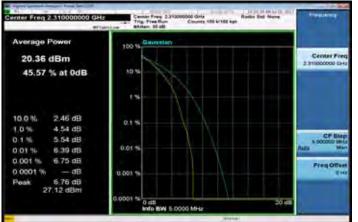
8.72 dB 25.54 dBm

- dB

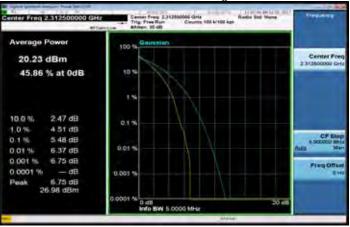
LTE_Band30 5MHz_16-QAM 25 0_LowCH27685-2307.5



LTE_Band30 5MHz_16-QAM 25 0_MidCH27710-2310



LTE_Band30 5MHz_16-QAM 25 0_HighCH27735-2312.5



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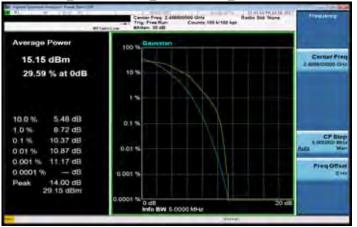
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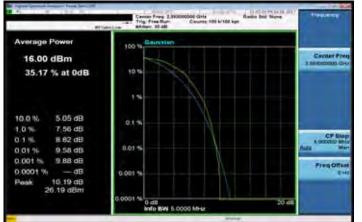
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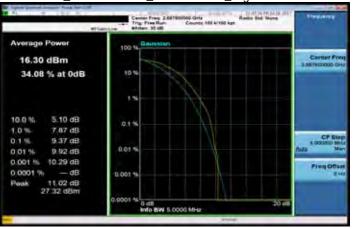
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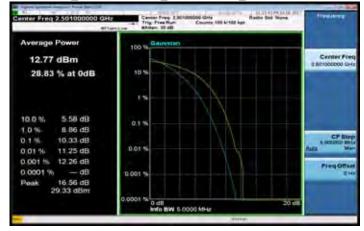
LTE_Band41 5MHz_16-QAM 25 0_MidCH40620



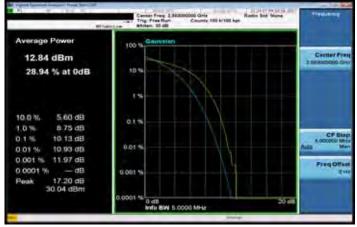
LTE_Band41 5MHz_16-QAM 25 0_HighCH41565

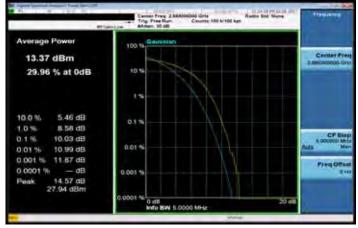


LTE_Band41 10MHz_16-QAM 50 0_LowCH39700



LTE_Band41 10MHz_16-QAM 50 0_MidCH40620





LTE_Band41 10MHz_16-QAM 50 0_HighCH41540

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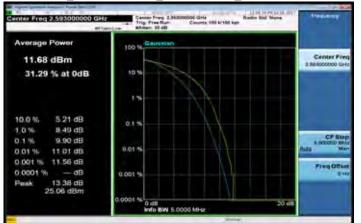
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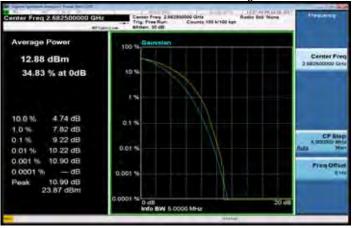
LTE_Band41 15MHz_16-QAM 75 0_LowCH39725



LTE_Band41 15MHz_16-QAM 75 0_MidCH40620

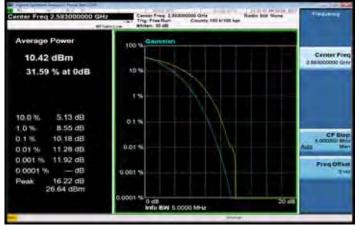


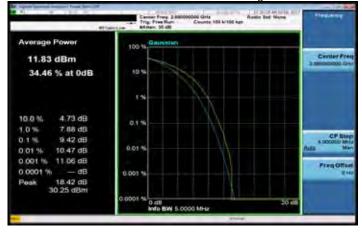
LTE_Band41 15MHz_16-QAM 75 0_HighCH41515



LTE_Band41 20MHz_16-QAM 100 0_LowCH39750 100 Center Fre 11.07 dBm ۱D 34.11 % at 0dB 10.0 % 4.78 dB 1.0 % 8.04 dB 9.61 dB 0.1% 9.01 1

LTE_Band41 20MHz_16-QAM 100 0_MidCH40620





LTE_Band41 20MHz_16-QAM 100 0_HighCH41490

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台灣檢驗科技股份有限公司

f (886-2) 2298-0488

0.01 %

0.001 %

0.0001 %

10 52 dB

11.29 dB

11.29 dB 22.36 dBm

- dB

0.001



13. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

13.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with § 2.1091 Radiofrequency radiation exposure evaluation: mobile devices of the FCC CFR 47 Rules, CFR 1.1310 (b) Radio frequency Radiation Exposure Requirement.

13.2. Special Accessories

Not available for this EUT intended for grant

13.3. Equipment Modifications

Not available for this EUT intended for grant.

13.4. Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits	for General	Population/U	ncontrolled E	Exposure
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

13.5. Exposure (MPE) Evaluation

The evaluation and calculation as deduces below presents only worst-case that produces highest value of the result:

Operation Configuration of the Worst-Case picked up to evaluate:

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Operation in WCDMA II band (1852.4 – 1907.6 MHz)

	EUT	Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1852.4	9262	V	26.49	9.6	-5.05	31.04	33.00
	1052.4	9202	Н	15.44	9.6	-5.05	19.99	33.00
WCDMA	1880.0	9400	V	26.57	9.69	-5.16	31.10	33.00
Band II	1000.0	9400	Н	14.03	9.69	-5.16	18.56	33.00
	1007.0	9538	V	25.82	9.78	-5.12	30.48	33.00
	1907.6	9000	Н	13.12	9.78	-5.12	17.78	33.00

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for WCDMA II band operation and R is 20cm.

EIRP	31.10	(dBm)
EIRP	1288.250	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1288.24955	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	1880	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.25642	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.25642 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 1880MHz.

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Operation in WCDMA V band (826.4 – 846.6 MHz)

	Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
	826.4	4132	V	21.50	5.48	-3.21	23.77	38.45
	020.4	4132	Н	18.33	5.48	-3.21	20.60	38.45
WCDMA	836.6 418	1100	V	21.59	5.47	-3.26	23.80	38.45
Band V		4103	Н	19.51	5.47	-3.26	21.72	38.45
		4233	V	20.93	5.45	-3.19	23.19	38.45
	846.6	4233	Н	19.37	5.45	-3.19	21.63	38.45

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for WCDMA V band operation and R is 20cm.

ERP	23.80	(dBm)
ERP	239.883	(mW)
Duty cycle:	100	(%)
Maximum Pav :	239.883292	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	836.6	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5577	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.04775	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.04775 mW/cm2.

This is below the uncontrolled exposure limit of 0.5577 mW/cm2 at 836.6MHz.

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Operation in LTE 2 band (1855.0 - 1905.0 MHz)

EUT			Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1851.5	18615	V	27.98	9.60	-5.05	32.53	33.01
BAND 2	1651.5	10010	Н	15.77	9.60	-5.05	20.32	33.01
BW: 3M	1880.0	18900	V	27.74	9.70	-5.17	32.27	33.01
QPSK RB: 1,14	1880.0	10900	Н	16.85	9.70	-5.17	21.38	33.01
	1908.5	19185	V	26.67	9.79	-5.13	31.33	33.01
	1906.5	19100	Н	17.45	9.79	-5.13	22.11	33.01

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 2 band operation and R is 20cm.

EIRP	32.53	(dBm)
EIRP	1790.606	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1790.60585	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	1851.5	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.35641	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.35641 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 1851.5MHz.

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Operation in LTE 4 band (1711.5 - 1753.5 MHz)

EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit	
	MHz		V/H	dBm	dBi	dB	dBm	dBm	
	4744 5	1711.5	19965	V	25.36	9.12	-4.82	29.66	30.00
BAND 4	1711.5	19900	Н	17.68	9.12	-4.82	21.98	30.00	
BW: 3M	1732.5	20175	V	24.72	9.19	-4.85	29.06	30.00	
QPSK	1732.5	20175	20175	Н	15.79	9.19	-4.85	20.13	30.00
RB: 1,0	4750 5	20385	V	24.86	9.26	-4.91	29.21	30.00	
	1753.5	20300	Н	15.28	9.26	-4.91	19.63	30.00	

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 4 band operation and R is 20cm.

EIRP	29.66	(dBm)
EIRP	924.698	(mW)
Duty cycle:	100	(%)
Maximum Pav :	924.698174	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	1711.5	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.18406	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.18406 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 1711.5MHz.

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Operation in LTE 5 band (825.5 - 847.5 MHz)

EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit	
	MHz		V/H	dBm	dBd	dB	dBm	dBm	
	0047	20407	V	24.70	5.49	-3.30	26.89	38.45	
BAND 5	824.7	024.7 20407	Н	21.16	5.49	-3.30	23.35	38.45	
BW: 1.4M	836.5	20525	V	23.68	5.47	-3.35	25.80	38.45	
QPSK	630.5	20525	Н	21.82	5.47	-3.35	23.94	38.45	
RB: 1,0	848.3 20643	0.40.0	20642	V	21.56	5.45	-3.07	23.94	38.45
		Н	21.08	5.45	-3.07	23.46	38.45		

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 5 band operation and R is 20cm.

ERP	26.89	(dBm)
ERP	488.652	(mW)
Duty cycle:	100	(%)
Maximum Pav :	488.652359	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	824.7	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5498	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.09726	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.09726 mW/cm2.

This is below the uncontrolled exposure limit of 0.5498 mW/cm2 at 824.7MHz.

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Operation in LTE 7 band (2507.5 - 2562.5 MHz)

EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit	
	MHz		V/H	dBm	dBi	dB	dBm	dBm	
	0505.0	20800	V	27.58	10.42	-5.89	32.11	33.01	
BAND 7	2505.0	20800	20000	Н	17.07	10.42	-5.89	21.60	33.01
BW: 10M	2535.0	21100	V	26.23	10.47	-5.90	30.80	33.01	
QPSK	2000.0	2000.0 21100	Н	18.21	10.47	-5.90	22.78	33.01	
RB: 1,49	2565.0 21400	21400	V	26.90	10.52	-5.98	31.44	33.01	
		Н	13.74	10.52	-5.98	18.28	33.01		

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 7 band operation and R is 20cm.

EIRP	32.11	(dBm)
EIRP	1625.549	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1625.54876	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	2505	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.32356	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.32356 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2505MHz.

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Operation in LTE 12 band (700.5 - 714.5 MHz)

EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit	
	MHz		V/H	dBm	dBd	dB	dBm	dBm	
	000 7	23017	V	23.60	5.44	-3.28	25.76	34.77	
BAND 12	699.7	23017	Н	12.89	5.44	-3.28	15.05	34.77	
BW: 1.4M	707.5	23095	V	20.72	5.46	-3.23	22.95	34.77	
QPSK	707.5	23095	Н	13.70	5.46	-3.23	15.93	34.77	
RB: 1,0	715.3 23173		22172	V	20.15	5.46	-3.01	22.60	34.77
		Н	11.62	5.46	-3.01	14.07	34.77		

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 12 band operation and R is 20cm.

ERP	25.76	(dBm)
ERP	376.704	(mW)
Duty cycle:		(%)
Maximum Pav :	376.703799	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	699.7	(MHz)
MPE limit for uncontrolled exposure at prediction	0.4665	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.07498	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.07498 mW/cm2.

This is below the uncontrolled exposure limit of 0.4665 mW/cm2 at 699.7MHz.

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Operation in LTE 13 band (779.5 – 784.5 MHz)

EUT			Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
BAND 13 BW: 10M	782.0	23230	V	22.13	5.49	-3.11	24.51	34.77
QPSK RB: 1,49		0	Н	21.00	5.49	-3.11	23.38	34.77

Power Density = ERP*Duty Cycle/($4\pi R^2$) Duty Cycle is 1 for LTE 13 band operation and R is 20cm.

ERP	24.51	(dBm)
ERP	282.488	(mW)
Duty cycle:	100	(%)
Maximum Pav :	282.487997	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	782	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5213	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.05623	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.05623 mW/cm2.

This is below the uncontrolled exposure limit of 0.5213 mW/cm2 at 782MHz.

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Operation in LTE 25 band (1850.7 - 1914.3 MHz)

EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit	
	MHz		V/H	dBm	dBi	dB	dBm	dBm	
	4054.5	26055	V	22.37	9.59	-5.05	26.91	33.01	
BAND 25	1851.5	20055	Н	15.21	9.59	-5.05	19.75	33.01	
BW: 3M	1882.5	26365	V	23.28	9.70	-5.16	27.82	33.01	
QPSK	1002.5	20305	Н	16.93	9.70	-5.16	21.47	33.01	
RB: 1,0	1913.5 26675 -	RB: 1,0	26675	V	26.70	9.80	-5.14	31.36	33.01
		Н	18.61	9.80	-5.14	23.27	33.01		

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 25 band operation and R is 20cm.

EIRP	31.36	(dBm)
EIRP	1367.729	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1367.72883	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	1913.5	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.27224	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.27224 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 1913.5MHz.

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Operation in LTE 26 band (825.5 – 847.5 MHz)

	EUT		Measurement							
Operation Band	Fundamental Frequency CH		Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	824.7	26797	V	23.85	5.49	-3.29	26.05	38.50		
BAND 26	024.7	20797	Н	16.47	5.49	-3.29	18.67	38.50		
BW: 1.4M	836.5	26915	V	22.57	5.47	-3.32	24.72	38.50		
QPSK	030.5	20915	Н	17.02	5.47	-3.32	19.17	38.50		
RB: 1,0	848.3	27033 -	V	19.68	5.45	-3.08	22.05	38.50		
			Н	18.57	5.45	-3.08	20.94	38.50		

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 26 band operation and R is 20cm.

ERP	26.05	(dBm)
ERP	402.717	(mW)
Duty cycle:		(%)
Maximum Pav :	402.717034	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	824.7	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5498	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.08016	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.08016 mW/cm2.

This is below the uncontrolled exposure limit of 0.5498 mW/cm2 at 824.7MHz.

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Operation in LTE 26 band (815.5 - 822.5 MHz) for Part 90S

	EUT		Measurement							
Operation Band	Fundamental Frequency		Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	814.7	20007	V	22.27	5.50	-3.50	24.27	50.00		
BAND 26	014.7	26697	Н	15.12	5.50	-3.50	17.12	50.00		
BW: 1.4M	819.0	26740	V	23.75	5.50	-3.24	26.01	50.00		
QPSK	819.0	26740	Н	16.43	5.50	-3.24	18.69	50.00		
RB: 1,0	823.3	26783 -	V	24.52	5.49	-3.51	26.50	50.00		
			Н	17.14	5.49	-3.51	19.12	50.00		

Power Density = ERP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 26 band operation and R is 20cm.

ERP	26.50	(dBm)
ERP	446.684	(mW)
Duty cycle:		(%)
Maximum Pav :	446.683592	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	823.3	(MHz)
MPE limit for uncontrolled exposure at prediction	0.5489	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.08891	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.08891 mW/cm2.

This is below the uncontrolled exposure limit of 0.5489 mW/cm2 at 823.3MHz.

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Operation in LTE 30 band (2307.5 – 2312.5 MHz)

	EUT	Measurement							
Operation Band	Fundamental Frequency	СН	Antenna S.G. Pol. Output		Antenna Gain	Cable Loss	ERP	Limit	
	MHz		V/H	dBm	dBd	dB	dBm	dBm	
BAND 30 BW: 10M	2310.0	27710	V	26.17	10.28	-5.65	30.80	34.77	
16QAM RB: 1,0			Н	19.67	10.28	-5.65	24.30	34.77	

Power Density = ERP*Duty Cycle/($4\pi R^2$) Duty Cycle is 1 for LTE 30 band operation and R is 20cm.

EIRP	30.80	(dBm)
EIRP	1202.264	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1202.26443	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	2310	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.23930	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.2393 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2310MHz.

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Operation in LTE 41 band (2506.0 - 2680.0 MHz)

	EUT		Measurement							
Operation Band	Fundamental Frequency CH		Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit		
	MHz		V/H	dBm	dBi	dB	dBm	dBm		
	2547.5	40165	V	26.06	10.39	-5.88	30.57	33.01		
BAND 41	2047.0	40105	Н	16.15	10.39	-5.88	20.66	33.01		
BW: 5M	2600.0	40690	V	24.58	10.57	-6.00	29.15	33.01		
QPSK	2000.0	40090	Н	12.67	10.57	-6.00	17.24	33.01		
RB: 1,0	2652.5	41215	V	20.94	10.73	-6.16	25.51	33.01		
			Н	11.33	10.73	-6.16	15.90	33.01		

Power Density = EIRP*Duty Cycle/($4\pi R^2$)

Duty Cycle is 1 for LTE 41 band operation and R is 20cm.

EIRP	30.57	(dBm)
EIRP	1140.250	(mW)
Duty cycle:	100	(%)
Maximum Pav :	1140.24979	(mW)
Prediction distance:	20	(cm)
Prediction frequency:	2547.5	(MHz)
MPE limit for uncontrolled exposure at prediction	1.0000	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.22696	(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.22696 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2547.5MHz.

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13.6. Collocated MPE Analysis

The modem may transmit simultaneously with other collocated radio transmitters within a host device, provided the following conditions are met:

Each collocated radio transmitter has been certified by FCC/IC for mobile application (that will be met since SQNS module will have its own FCC ID and host device will have its own FCC ID) At least 20 cm separation distance between the antennas of the collocated transmitters and the user's body must be maintained at all times (host installation should taking care of that)

The output power and antenna gain in a collocated configuration must not exceed the limits and configurations stipulated in the following table 1. The power density calculations for the individual transmitters per wireless technology at an exposure minimum separation distance of 20cm.

Exclusion of test condition:

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is \leq 1.0.

MPE ratio1 + MPE ratio2+MPE ration <=1.0 The spreadsheet as FCC deduces, and releases is employed to conduct the measurement:

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Table 1 : Collocated MPE Calculation (Worse-case table)

Technology	Frequency (MHz)	Max Conducted Power (dBm)	Max Gain (dBi)	Duty Cycle	FCC Power Density @20cm (mW/cm^2)	FCC MPE Limit (mW/cm^2)
LTE B12	699.7	23.47	-3.21	1.00	0.021	0.466
LTE B26	824.7	23.20	1.63	1.00	0.061	0.550
LTE B4	1711.5	23.20	0.13	1.00	0.043	1.000
LTE B2	1851.5	23.35	0.69	1.00	0.050	1.000
LTE B7	2535.0	22.07	3.82	1.00	0.077	1.000
LTE B30	2310	21.76	2.55	1.00	0.054	1.000
LTE B41	2547.5	21.78	3.82	1.00	0.072	1.000
WLAN (2.4GHz MIMO)	2412	15.97	5.8	1.00	0.030	1.000
WLAN (5GHz MIMO)	5825	12.99	7.38	1.00	0.022	1.000

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Scenario 1:

Wifi_MIMO 2.4G + Wifi_MIMO 5G + 3/4G (frequency band 700)

VLAN 2.4G mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 700 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 700MHz) / MPE limit	(WWAN 700MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.021	0.521	0.045	0.097	1.000

Scenario 2:

Wifi_MIMO 2.4G + Wifi_MIMO 5G + 3/4G (frequency band 850)

WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 850 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 700MHz) / MPE limit	(WWAN 850MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.061	0.550	0.111	0.163	1.000

Scenario 3:

Wifi MIMO 2.4G + Wifi MIMO 5G + 3/4G (frequency band 1700)

 WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 1700 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 1700MHz) / MPE limit	(WWAN 1700MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.043	1.00	0.043	0.095	1.000

Scenario 4:

Wifi_MIMO 2.4G + Wifi_MIMO 5G + 3/4G (frequency band 1900)

WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 1900 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 1900MHz) / MPE limit	(WWAN 1900MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.050	1.00	0.050	0.102	1.000

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Scenario 5:

Wifi MIMO 2.4G + Wifi MIMO 5G + 3/4G (frequency band 2500)

WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 2500 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 2500MHz) / MPE limit	(WWAN 2500MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.077	1.00	0.077	0.129	1.000

Scenario 56

Wifi MIMO 2.4G + Wifi MIMO 5G + 3/4G (frequency band 2300)

WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 2500 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 2500MHz) / MPE limit	(WWAN 2500MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.054	1.00	0.054	0.106	1.000

Scenario 7:

Wifi MIMO 2.4G + Wifi MIMO 5G + 3/4G (frequency band 2600)

WLAN 2.4G (mW/cm^2)	WLAN 2.4G / MPE limit	(WLAN 2.4G) / MPE limit	WLAN 5G MIMO (mW/cm^2)	WLAN 5G MIMO / MPE limit	(WLAN 5G) MIMO / MPE limit	WWAN 2500 MHz (mW/cm^2)	FCC MPE limit (mW/cm^2)	(WWAN 2500MHz) / MPE limit	(WWAN 2500MHz +WLAN MIMO 2.4G + WLAN MIMO 5G	FCC Limit (mW/cm^2)
0.030	1.00	0.030	0.022	1.00	0.022	0.072	1.00	0.072	0.124	1.000

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