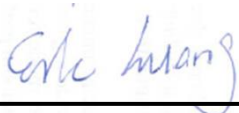


## RF Exposure Evaluation Report

**APPLICANT** : Telit Communications S.p.A.  
**EQUIPMENT** : Data Card  
**BRAND NAME** : Telit  
**MODEL NAME** : LN930  
**MARKETING NAME** : LN930  
**FCC ID** : RI7LN930  
**STANDARD** : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



### **SPORTON INTERNATIONAL INC.**

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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**1. Administration Data**

**1.1. Testing Laboratory**

<b>Test Site</b>	SPORTON INTERNATIONAL INC.
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

**1.2. Applicant**

<b>Company Name</b>	Telit Communications S.p.A.
<b>Address</b>	Viale Stazione di Prosecco 5/b, Trieste Italy 34010

**1.3. Manufacturer**

<b>Company Name</b>	Foxconn International Holdings Ltd.
<b>Address</b>	No. 4, Mingsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan



## 2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Data Card
Brand Name	Telit
Model Name	LN930
Marketing Name	LN930
FCC ID	RI7LN930
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2506.5 MHz ~ 2535 MHz and 2553.5 MHz ~ 2570MHz
Mode	<ul style="list-style-type: none"><li>• GPRS/EGPRS</li><li>• UMTS Rel 99</li><li>• HSDPA Rel 7, Cat14</li><li>• DC-HSDPA Rel 8, Cat24</li><li>• HSUPA Rel 6, Cat6</li><li>• LTE: QPSK, 16QAM</li></ul>
EUT Stage	Production Unit
Remark:	<ol style="list-style-type: none"><li>1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.</li><li>2. The differences between Sample 1 and Sample 2 are as below :<ol style="list-style-type: none"><li>(1) Sample 1 : EUT with HW version: PR3.2; SW version: FIH7160_MODEM_01.1326.00 Sample 2 : EUT with HW version: PR4.5; SW version: FIH7160_MODEM_01.1338.03</li><li>(2) Swap auxiliary and main antenna connectors' location.</li></ol></li></ol>

### **3. RF Exposure Limit Introduction**

The FCC categorizes the RF exposure limit based on the intended usage of the device and the user's awareness and ability to exercise control over his or her exposure. This is a consumer product to be used in the home, hence this device was evaluated by mobile device with general population/uncontrolled exposure condition. The definition of these category are shown as follows:

▪ **Mobile Devices:**

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitters' radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.

▪ **General Population/Uncontrolled Exposure:**

The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category and the general population/uncontrolled exposure limits apply to these devices.

Per OET Bulletin 65, the power density limit for General Population/Uncontrolled Exposure summary here:

**Table:** Limits for General Population/Uncontrolled Exposure

<b>Frequency Range (MHz)</b>	<b>Power Density (S) (mW/cm<sup>2</sup>)</b>
0.3–1.34	*(100)
1.34–30	*(180/f <sup>2</sup> )
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

f = frequency in MHz

\* = Plane-wave equivalent power density



**4. Maximum RF average output power among production units**

Mode	GSM 850 (Nominal)	GSM 1900 (Nominal)
GPRS/EDGE (GMSK, 1 Tx slot)	33	30
GPRS/EDGE (GMSK, 2 Tx slots)	33	30
GPRS/EDGE (GMSK, 3 Tx slots)	33	30
GPRS/EDGE (GMSK, 4 Tx slots)	32	29
EDGE (8PSK, 1 Tx slot)	28	27
EDGE (8PSK, 2 Tx slots)	28	27
EDGE (8PSK, 3 Tx slots)	27	26
EDGE (8PSK, 4 Tx slots)	26	25

Mode	WCDMA Band V (Nominal)	WCDMA Band II (Nominal)	WCDMA Band IV (Nominal)
RMC 12.2K	24.5	24.5	24.5
HSDPA Subtest-1	24.5	24.5	24.5
DC-HSDPA Subtest-1	24.5	24.5	24.5
HSUPA Subtest-5	24	24	24



LTE Band 2				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	20	≤ 18	24	0
QPSK	20	> 18	24	0
16QAM	20	≤ 18	23	1
16QAM	20	> 18	23	1
QPSK	15	≤ 16	24	0
QPSK	15	> 16	24	0
16QAM	15	≤ 16	23	1
16QAM	15	> 16	23	1
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1
QPSK	3	≤ 4	24	0
QPSK	3	> 4	24	0
16QAM	3	≤ 4	23	1
16QAM	3	> 4	23	1
QPSK	1.4	≤ 5	24	0
QPSK	1.4	> 5	24	0
16QAM	1.4	≤ 5	23	1
16QAM	1.4	> 5	23	1





LTE Band 4				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	20	≤ 18	24	0
QPSK	20	> 18	24	0
16QAM	20	≤ 18	23	1
16QAM	20	> 18	23	1
QPSK	15	≤ 16	24	0
QPSK	15	> 16	24	0
16QAM	15	≤ 16	23	1
16QAM	15	> 16	23	1
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1
QPSK	3	≤ 4	24	0
QPSK	3	> 4	24	0
16QAM	3	≤ 4	23	1
16QAM	3	> 4	23	1
QPSK	1.4	≤ 5	24	0
QPSK	1.4	> 5	24	0
16QAM	1.4	≤ 5	23	1
16QAM	1.4	> 5	23	1



LTE Band 5				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1
QPSK	3	≤ 4	24	0
QPSK	3	> 4	24	0
16QAM	3	≤ 4	23	1
16QAM	3	> 4	23	1
QPSK	1.4	≤ 5	24	0
QPSK	1.4	> 5	24	0
16QAM	1.4	≤ 5	23	1
16QAM	1.4	> 5	23	1



LTE Band 7				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	20	≤ 18	24	0
QPSK	20	> 18	24	0
16QAM	20	≤ 18	23	1
16QAM	20	> 18	23	1
QPSK	15	≤ 16	24	0
QPSK	15	> 16	24	0
16QAM	15	≤ 16	23	1
16QAM	15	> 16	23	1
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1

LTE Band 13				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1

LTE Band 17				
Modulation	BW (MHz)	RB size	Target MPR	Nominal Power
QPSK	10	≤ 12	24	0
QPSK	10	> 12	24	0
16QAM	10	≤ 12	23	1
16QAM	10	> 12	23	1
QPSK	5	≤ 8	24	0
QPSK	5	> 8	24	0
16QAM	5	≤ 8	23	1
16QAM	5	> 8	23	1

**Remark:**

1. By design, maximum LTE RF power of smaller supported bandwidth does not exceed the RF power of largest supported bandwidth; the information is included in "tune-up procedure" exhibit



**The table below summarized necessary items addressed in KDB 941225 D05 v02r02.**

FCC ID		RI7LN930												
EUT		Data Card												
Operating Frequency Range of each LTE transmission band		LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2506.5 MHz ~ 2537 MHz and 2553.5MHz ~ 2570MHz												
Channel Bandwidth		1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz												
Transmission (H, M, L) channel numbers and frequencies in each LTE band														
Band 17														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Frequency (MHz)		Channel #		Frequency (MHz)							
L	23755		706.5		23780		709							
M	23790		710		23790		710							
H	23825		713.5		23800		711							
Band 13														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Frequency (MHz)		Channel #		Frequency (MHz)							
L	23205		779.5		23230		782							
M	23230		782											
H	23255		784.5											
LTE Band 5														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829						
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5						
H	20643	848.3	20635	847.5	20625	846.5	20600	844						
LTE Band 4														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720		
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5		
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745		
LTE Band 2														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860		
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880		
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900		



LTE Band 7										
Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz				
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	20815	2506.5	20840	2509	20865	2511.5	20890	2514		
M	21095	2534.5	21070	2532	21045	2529.5	21020	2527		
H	21425	2567.5	21400	2565	21375	2562.5				
E category, uplink modulations used			Category 3, QPSK, and 16QAM							
LTE Voice / Data requirements			Data only							
LTE MPR permanently built-in by design			Yes, per 3GPP TS 36.101 v11.0.0							
			<b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</b>							
			<b>Modulation</b>	<b>Channel bandwidth / Transmission bandwidth (RB)</b>						<b>MPR (dB)</b>
				<b>1.4 MHz</b>	<b>3.0 MHz</b>	<b>5 MHz</b>	<b>10 MHz</b>	<b>15 MHz</b>	<b>20 MHz</b>	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1			
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1			
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2			
LTE A-MPR			In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing.							
Base station simulator used for Testing			Anritsu MT8820C							



**5. Conducted RF Output Power (Unit: dBm)**

**<GSM Conducted Power>**

Band GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
	TX Channel	128	189	251	128	189
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
GPRS (GMSK, 1 Tx slot) – CS1	32.77	32.89	32.92	23.77	23.89	23.92
GPRS (GMSK, 2 Tx slots) – CS1	32.64	32.70	32.75	26.64	26.70	26.75
GPRS (GMSK, 3 Tx slots) – CS1	32.04	32.28	32.38	27.78	28.02	28.12
GPRS (GMSK, 4 Tx slots) – CS1	30.66	31.03	31.06	27.66	28.03	28.06
EDGE (GMSK, 1 Tx slot) – MCS1	32.72	32.82	32.86	23.72	23.82	23.86
EDGE (GMSK, 2 Tx slots) – MCS1	32.62	32.68	32.70	26.62	26.68	26.70
EDGE (GMSK, 3 Tx slots) – MCS1	32.03	32.26	32.37	27.77	28.00	28.11
EDGE (GMSK, 4 Tx slots) – MCS1	30.65	31.02	31.04	27.65	28.02	28.04
EDGE (8PSK, 1 Tx slot) – MCS5	26.96	26.87	26.90	17.96	17.87	17.90
EDGE (8PSK, 2 Tx slots) – MCS5	26.93	26.84	26.86	20.93	20.84	20.86
EDGE (8PSK, 3 Tx slots) – MCS5	25.97	25.87	25.94	21.71	21.61	21.68
EDGE (8PSK, 4 Tx slots) – MCS5	24.67	24.58	24.61	21.67	21.58	21.61

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

Band GSM1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
	TX Channel	512	661	810	512	661
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
GPRS (GMSK, 1 Tx slot) – CS1	29.78	29.80	29.72	20.78	20.80	20.72
GPRS (GMSK, 2 Tx slots) – CS1	29.77	29.79	29.71	23.77	23.79	23.71
GPRS (GMSK, 3 Tx slots) – CS1	28.96	28.99	28.93	24.70	24.73	24.67
GPRS (GMSK, 4 Tx slots) – CS1	27.66	27.70	27.65	24.66	24.70	24.65
EDGE (GMSK, 1 Tx slot) – MCS1	29.77	29.79	29.71	20.77	20.79	20.71
EDGE (GMSK, 2 Tx slots) – MCS1	29.75	29.78	29.70	23.75	23.78	23.70
EDGE (GMSK, 3 Tx slots) – MCS1	28.92	28.98	28.92	24.66	24.72	24.66
EDGE (GMSK, 4 Tx slots) – MCS1	27.65	27.68	27.64	24.65	24.68	24.64
EDGE (8PSK, 1 Tx slot) – MCS5	25.95	26.06	26.20	16.95	17.06	17.20
EDGE (8PSK, 2 Tx slots) – MCS5	25.94	26.04	26.18	19.94	20.04	20.18
EDGE (8PSK, 3 Tx slots) – MCS5	25.21	25.31	25.50	20.95	21.05	21.24
EDGE (8PSK, 4 Tx slots) – MCS5	24.03	24.15	24.26	21.03	21.15	21.26

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB



**<WCDMA Conducted Power>**

Band		WCDMA V			WCDMA II			WCDMA IV		
TX Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	23.50	23.44	23.66	24.16	23.97	23.98	23.56	23.75	23.57
3GPP Rel 6	HSDPA Subtest-1	23.48	23.42	23.65	24.15	23.96	23.97	23.50	23.74	23.52
3GPP Rel 6	HSDPA Subtest-2	23.46	23.41	23.63	24.05	23.93	23.98	23.46	23.20	23.12
3GPP Rel 6	HSDPA Subtest-3	22.41	22.38	22.47	22.96	22.77	22.78	22.71	22.70	23.09
3GPP Rel 6	HSDPA Subtest-4	22.40	22.37	22.46	22.95	22.76	22.77	22.81	22.60	22.78
3GPP Rel 8	DC-HSDPA Subtest-1	23.45	23.41	23.64	24.09	23.95	23.96	23.45	23.72	23.49
3GPP Rel 8	DC-HSDPA Subtest-2	23.43	23.40	23.61	24.05	23.93	23.95	23.42	23.18	23.09
3GPP Rel 8	DC-HSDPA Subtest-3	22.39	22.36	22.45	23.11	22.92	22.95	22.69	22.68	23.05
3GPP Rel 8	DC-HSDPA Subtest-4	22.35	22.32	22.53	23.09	22.90	22.93	22.78	22.56	22.75
3GPP Rel 6	HSUPA Subtest-1	22.36	22.29	22.19	23.08	22.72	22.94	23.08	23.14	23.03
3GPP Rel 6	HSUPA Subtest-2	20.25	20.18	20.03	21.75	21.52	21.56	21.05	21.02	20.85
3GPP Rel 6	HSUPA Subtest-3	21.21	21.10	21.08	22.23	22.05	22.18	21.98	22.04	21.91
3GPP Rel 6	HSUPA Subtest-4	20.25	20.17	20.10	21.69	21.39	21.40	21.30	21.25	21.15
3GPP Rel 6	HSUPA Subtest-5	22.86	22.80	22.72	23.68	23.14	23.38	23.56	23.70	23.55
MPR result										
3GPP MPR specification	Subtest	WCDMA V			WCDMA II			WCDMA IV		
0	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	HSDPA Subtest-2	0.02	0.01	0.02	0.10	0.03	-0.01	0.04	0.54	0.40
≤ 0.5	HSDPA Subtest-3	1.07	1.04	1.18	1.19	1.19	1.19	0.79	1.04	0.43
≤ 0.5	HSDPA Subtest-4	1.08	1.05	1.19	1.20	1.20	1.20	0.69	1.14	0.74
0	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	HSDPA Subtest-2	0.02	0.01	0.03	0.04	0.02	0.01	0.03	0.54	0.40
≤ 0.5	HSDPA Subtest-3	1.06	1.05	1.19	0.98	1.03	1.01	0.76	1.04	0.44
≤ 0.5	HSDPA Subtest-4	1.10	1.09	1.11	1.00	1.05	1.03	0.67	1.16	0.74
≤ 0	HSUPA Subtest-1	0.50	0.51	0.53	0.60	0.42	0.44	0.48	0.56	0.52
≤ 2	HSUPA Subtest-2	2.61	2.62	2.69	1.93	1.62	1.82	2.51	2.68	2.70
≤ 1	HSUPA Subtest-3	1.65	1.70	1.64	1.45	1.09	1.20	1.58	1.66	1.64
≤ 2	HSUPA Subtest-4	2.61	2.63	2.62	1.99	1.75	1.98	2.26	2.45	2.40
≤ 0	HSUPA Subtest-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



**<LTE Band 2 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				18700	18900	19100		18700	18900	19100
Frequency (MHz)				1860	1880	1900		1860	1880	1900
20	QPSK	1	0	22.50	22.38	22.12		0	0.05	0.00
20	QPSK	1	49	22.55	22.35	22.24	0	0.00	0.03	0.00
20	QPSK	1	99	21.92	22.16	21.85	0	0.63	0.22	0.39
20	QPSK	50	0	22.37	22.31	22.01	1	0.18	0.07	0.23
20	QPSK	50	24	22.34	22.37	22.14		0.21	0.01	0.10
20	QPSK	50	49	22.40	22.19	21.74		0.15	0.19	0.50
20	QPSK	100	0	22.34	22.27	21.85	1	0.21	0.11	0.39
20	16QAM	1	0	21.74	21.12	20.78		0.81	1.26	1.46
20	16QAM	1	49	21.92	21.68	21.41		0.63	0.70	0.83
20	16QAM	1	99	20.89	20.86	20.62	1	1.66	1.52	1.62
20	16QAM	50	0	21.41	21.25	21.11		1.14	1.13	1.13
20	16QAM	50	24	21.52	21.30	21.10		1.03	1.08	1.14
20	16QAM	50	49	21.45	21.14	20.81	2	1.10	1.24	1.43
20	16QAM	100	0	21.38	21.17	20.97		1.17	1.21	1.27
Channel				18675	18900	19125		18675	18900	19125
Frequency (MHz)				1857.5	1880	1902.5		1857.5	1880	1902.5
15	QPSK	1	0	21.68	20.94	20.60		0	0.00	0.20
15	QPSK	1	37	21.36	21.14	21.15	0	0.32	0.00	0.00
15	QPSK	1	74	21.08	21.03	20.65	0	0.60	0.11	0.50
15	QPSK	36	0	21.50	21.06	20.96	1	0.18	0.08	0.19
15	QPSK	36	19	21.45	21.09	21.13		0.23	0.05	0.02
15	QPSK	36	39	21.29	20.96	20.76		0.39	0.18	0.39
15	QPSK	75	0	21.36	21.13	20.84	1	0.32	0.01	0.31
15	16QAM	1	0	21.05	20.63	20.13		0.63	0.51	1.02
15	16QAM	1	37	21.05	20.71	20.64		0.63	0.43	0.51
15	16QAM	1	74	20.72	20.20	19.79	1	0.96	0.94	1.36
15	16QAM	38	0	20.63	20.49	20.30		1.05	0.65	0.85
15	16QAM	38	19	20.70	20.47	20.35		0.98	0.67	0.80
15	16QAM	38	39	20.66	20.25	20.14	2	1.02	0.89	1.01
15	16QAM	75	0	20.59	20.33	20.20		1.09	0.81	0.95
Channel				18650	18900	19150		18650	18900	19150
Frequency (MHz)				1855	1880	1905		1855	1880	1905
10	QPSK	1	0	23.15	22.24	21.99		0	0.00	0.00
10	QPSK	1	24	22.56	21.61	21.32	0	0.59	0.63	0.67
10	QPSK	1	49	22.50	21.99	21.82	0	0.65	0.25	0.17
10	QPSK	25	0	22.72	22.17	21.79	1	0.43	0.07	0.20
10	QPSK	25	12	22.56	21.84	21.30		0.59	0.40	0.69
10	QPSK	25	24	22.56	22.07	21.57		0.59	0.17	0.42
10	QPSK	50	0	22.70	22.05	21.68	1	0.45	0.19	0.31
10	16QAM	1	0	22.45	21.40	21.15		0.70	0.84	0.84
10	16QAM	1	24	22.32	20.87	20.34		0.83	1.37	1.65
10	16QAM	1	49	21.73	21.25	21.33	1	1.42	0.99	0.66
10	16QAM	25	0	21.77	21.05	20.76		1.38	1.19	1.23
10	16QAM	25	12	21.49	20.81	20.38		1.66	1.43	1.61
10	16QAM	25	24	21.72	20.99	20.74	2	1.43	1.25	1.25
10	16QAM	50	0	22.04	21.04	20.83		1.11	1.20	1.16





Channel				18625	18900	19175		18625	18900	19175	
Frequency (MHz)				1852.5	1880	1907.5		1852.5	1880	1907.5	
5	QPSK	1	0	22.70	21.34	21.06	0	0.00	0.43	0.32	
5	QPSK	1	12	22.40	21.77	21.38		0.30	0.00	0.00	
5	QPSK	1	24	22.16	21.23	20.74		0.54	0.54	0.64	
5	QPSK	12	0	22.62	21.66	21.23	1	0.08	0.11	0.15	
5	QPSK	12	6	22.39	21.72	21.32		0.31	0.05	0.06	
5	QPSK	12	11	22.14	21.71	21.20		0.56	0.06	0.18	
5	QPSK	25	0	22.17	21.62	21.17	1	0.53	0.15	0.21	
5	16QAM	1	0	21.67	20.57	20.30		1.03	1.20	1.08	
5	16QAM	1	12	21.74	20.99	20.73		0.96	0.78	0.65	
5	16QAM	1	24	21.16	20.46	20.19	2	1.54	1.31	1.19	
5	16QAM	12	0	21.55	20.61	20.37		1.15	1.16	1.01	
5	16QAM	12	6	21.38	20.69	20.45		1.32	1.08	0.93	
5	16QAM	12	11	21.20	20.58	20.40		1.50	1.19	0.98	
5	16QAM	25	0	21.24	20.57	20.28	2	1.46	1.20	1.10	
Channel				18615	18900	19185			18615	18900	19185
Frequency (MHz)				1851.5	1880	1908.5			1851.5	1880	1908.5
3	QPSK	1	0	22.42	20.85	20.64		0	0.00	0.36	0.22
3	QPSK	1	7	22.34	21.21	20.86	0.08		0.00	0.00	
3	QPSK	1	14	21.89	20.74	20.34	0.53		0.47	0.52	
3	QPSK	8	0	22.31	21.04	20.73	1	0.11	0.17	0.13	
3	QPSK	8	4	22.14	21.09	20.67		0.28	0.12	0.19	
3	QPSK	8	7	21.74	20.99	20.58		0.68	0.22	0.28	
3	QPSK	15	0	21.74	21.03	20.65	1	0.68	0.18	0.21	
3	16QAM	1	0	21.30	20.23	20.14		1.12	0.98	0.72	
3	16QAM	1	7	21.41	20.70	20.50		1.01	0.51	0.36	
3	16QAM	1	14	20.99	20.25	19.98	2	1.43	0.96	0.88	
3	16QAM	8	0	21.34	20.27	20.18		1.08	0.94	0.68	
3	16QAM	8	4	21.20	20.40	20.14		1.22	0.81	0.72	
3	16QAM	8	7	21.05	20.31	20.03		1.37	0.90	0.83	
3	16QAM	15	0	21.06	20.32	20.05	2	1.36	0.89	0.81	
Channel				18607	18900	19193			18607	18900	19193
Frequency (MHz)				1850.7	1880	1909.3			1850.7	1880	1909.3
1.4	QPSK	1	0	21.99	20.74	20.21		0	0.08	0.26	0.29
1.4	QPSK	1	2	22.07	21.00	20.50	0.00		0.00	0.00	
1.4	QPSK	1	5	21.56	20.64	20.18	0.51		0.36	0.32	
1.4	QPSK	3	0	21.92	20.91	20.36	0.15		0.09	0.14	
1.4	QPSK	3	1	21.96	20.99	20.41	0.11		0.01	0.09	
1.4	QPSK	3	2	21.85	20.97	20.43	0.22		0.03	0.07	
1.4	QPSK	6	0	21.78	20.89	20.28	1	0.29	0.11	0.22	
1.4	16QAM	1	0	21.18	20.25	19.79	1	0.89	0.75	0.71	
1.4	16QAM	1	2	21.34	20.54	20.20		0.73	0.46	0.30	
1.4	16QAM	1	5	20.90	20.22	20.00		1.17	0.78	0.50	
1.4	16QAM	3	0	21.01	20.07	19.91		1.06	0.93	0.59	
1.4	16QAM	3	1	21.10	20.14	19.98		0.97	0.86	0.52	
1.4	16QAM	3	2	21.13	20.14	20.03		0.94	0.86	0.47	
1.4	16QAM	6	0	21.11	20.10	19.92	2	0.96	0.90	0.58	



**<LTE Band 4 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				20050	20175	20300		20050	20175	20300
Frequency (MHz)				1720	1732.5	1745		1720	1732.5	1745
20	QPSK	1	0	22.12	22.52	22.05		0.54	0.31	0.55
20	QPSK	1	49	22.66	22.83	22.60	0	0.00	0.00	
20	QPSK	1	99	22.03	22.23	22.01	0.63	0.60	0.59	
20	QPSK	50	0	22.47	22.58	22.59	1	0.19	0.25	0.01
20	QPSK	50	24	22.65	22.74	22.57		0.01	0.09	0.03
20	QPSK	50	49	22.65	22.54	22.15		0.01	0.29	0.45
20	QPSK	100	0	22.54	22.54	22.51	1	0.12	0.29	0.09
20	16QAM	1	0	21.38	21.85	21.46		1.28	0.98	1.14
20	16QAM	1	49	21.85	22.01	21.80		0.81	0.82	0.80
20	16QAM	1	99	21.50	21.80	21.35	1	1.16	1.03	1.25
20	16QAM	50	0	21.33	21.52	21.74		1.33	1.31	0.86
20	16QAM	50	24	21.53	21.79	21.59		1.13	1.04	1.01
20	16QAM	50	49	21.52	21.76	21.30	2	1.14	1.07	1.30
20	16QAM	100	0	21.46	21.67	21.53		1.20	1.16	1.07
Channel				20025	20175	20325		20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5		1717.5	1732.5	1747.5
15	QPSK	1	0	22.30	22.15	22.58		0	0.15	0.49
15	QPSK	1	37	22.45	22.64	22.44	0.00		0.00	0.14
15	QPSK	1	74	22.02	22.02	22.00	0.43		0.62	0.58
15	QPSK	36	0	22.24	22.47	22.57	1	0.21	0.17	0.01
15	QPSK	36	19	22.35	22.63	22.52		0.10	0.01	0.06
15	QPSK	36	39	22.27	22.63	22.30		0.18	0.01	0.28
15	QPSK	75	0	22.25	22.59	22.52	1	0.20	0.05	0.06
15	16QAM	1	0	21.41	21.64	21.89		1.04	1.00	0.69
15	16QAM	1	37	21.74	22.23	21.76		0.71	0.41	0.82
15	16QAM	1	74	21.38	21.72	21.22	1	1.07	0.92	1.36
15	16QAM	38	0	21.34	21.83	21.69		1.11	0.81	0.89
15	16QAM	38	19	21.50	21.95	21.56		0.95	0.69	1.02
15	16QAM	38	39	21.46	21.80	21.33	2	0.99	0.84	1.25
15	16QAM	75	0	21.47	21.87	21.57		0.98	0.77	1.01
Channel				20000	20175	20350		20000	20175	20350
Frequency (MHz)				1715	1732.5	1750		1715	1732.5	1750
10	QPSK	1	0	22.59	22.38	22.37		0	0.00	0.03
10	QPSK	1	24	22.11	22.00	22.02	0.48		0.41	0.35
10	QPSK	1	49	22.19	22.41	22.25	0.40		0.00	0.12
10	QPSK	25	0	22.17	22.25	22.23	1	0.42	0.16	0.14
10	QPSK	25	12	22.00	22.03	22.00		0.59	0.38	0.37
10	QPSK	25	24	22.03	22.29	22.16		0.56	0.12	0.21
10	QPSK	50	0	22.08	22.26	22.24	1	0.51	0.15	0.13
10	16QAM	1	0	21.99	21.84	21.64		0.60	0.57	0.73
10	16QAM	1	24	21.06	21.35	21.07		1.53	1.06	1.30
10	16QAM	1	49	21.78	22.07	21.60	1	0.81	0.34	0.77
10	16QAM	25	0	21.52	21.66	21.31		1.07	0.75	1.06
10	16QAM	25	12	21.15	21.47	21.08		1.44	0.94	1.29
10	16QAM	25	24	21.51	21.70	21.23	2	1.08	0.71	1.14
10	16QAM	50	0	21.48	21.70	21.30		1.11	0.71	1.07



Channel				19975	20175	20375		19975	20175	20375	
Frequency (MHz)				1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	
5	QPSK	1	0	22.38	22.17	22.06	0	0.07	0.38	0.31	
5	QPSK	1	12	22.45	22.55	22.37		0.00	0.00	0.00	
5	QPSK	1	24	22.01	22.08	22.07		0.44	0.47	0.30	
5	QPSK	12	0	22.40	22.39	22.25	1	0.05	0.16	0.12	
5	QPSK	12	6	22.38	22.46	22.35		0.07	0.09	0.02	
5	QPSK	12	11	22.21	22.46	22.31		0.24	0.09	0.06	
5	QPSK	25	0	22.26	22.32	22.32	1	0.19	0.23	0.05	
5	16QAM	1	0	21.57	21.57	21.30		0.88	0.98	1.07	
5	16QAM	1	12	21.65	22.00	21.64		0.80	0.55	0.73	
5	16QAM	1	24	21.15	21.49	21.28	2	1.30	1.06	1.09	
5	16QAM	12	0	21.46	21.65	21.33		0.99	0.90	1.04	
5	16QAM	12	6	21.42	21.74	21.40		1.03	0.81	0.97	
5	16QAM	12	11	21.25	21.75	21.31		1.20	0.80	1.06	
5	16QAM	25	0	21.30	21.78	21.28	2	1.15	0.77	1.09	
Channel				19965	20175	20385			19965	20175	20385
Frequency (MHz)				1711.5	1732.5	1753.5			1711.5	1732.5	1753.5
3	QPSK	1	0	22.55	22.29	22.11		0	0.14	0.31	0.29
3	QPSK	1	7	22.69	22.60	22.40	0.00		0.00	0.00	
3	QPSK	1	14	22.04	22.24	22.09	0.65		0.36	0.31	
3	QPSK	8	0	22.36	22.41	22.19	1	0.33	0.19	0.21	
3	QPSK	8	4	22.30	22.47	22.27		0.39	0.13	0.13	
3	QPSK	8	7	22.20	22.42	22.14		0.49	0.18	0.26	
3	QPSK	15	0	22.25	22.33	22.13	1	0.44	0.27	0.27	
3	16QAM	1	0	21.48	21.63	21.28		1.21	0.97	1.12	
3	16QAM	1	7	21.66	21.99	21.56		1.03	0.61	0.84	
3	16QAM	1	14	21.28	21.66	21.24	2	1.41	0.94	1.16	
3	16QAM	8	0	21.57	21.66	21.28		1.12	0.94	1.12	
3	16QAM	8	4	21.54	21.69	21.37		1.15	0.91	1.03	
3	16QAM	8	7	21.45	21.68	21.26		1.24	0.92	1.14	
3	16QAM	15	0	21.46	21.62	21.21	2	1.23	0.98	1.19	
Channel				19957	20175	20393			19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3			1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.31	22.32	22.05		0	0.20	0.19	0.22
1.4	QPSK	1	2	22.51	22.51	22.27	0.00		0.00	0.00	
1.4	QPSK	1	5	22.21	22.23	22.03	0.30		0.28	0.24	
1.4	QPSK	3	0	22.37	22.32	22.13	0.14		0.19	0.14	
1.4	QPSK	3	1	22.43	22.41	22.17	0.08		0.10	0.10	
1.4	QPSK	3	2	22.41	22.40	22.21	0.10		0.11	0.06	
1.4	QPSK	6	0	22.29	22.27	22.11	1	0.22	0.24	0.16	
1.4	16QAM	1	0	21.61	21.70	21.25	1	0.90	0.81	1.02	
1.4	16QAM	1	2	21.82	21.98	21.49		0.69	0.53	0.78	
1.4	16QAM	1	5	21.50	21.74	21.25		1.01	0.77	1.02	
1.4	16QAM	3	0	21.57	21.58	21.22		0.94	0.93	1.05	
1.4	16QAM	3	1	21.58	21.69	21.29		0.93	0.82	0.98	
1.4	16QAM	3	2	21.59	21.71	21.33		0.92	0.80	0.94	
1.4	16QAM	6	0	21.53	21.67	21.30		2	0.98	0.84	0.97



**<LTE Band 5 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				20450	20525	20600		20450	20525	20600
Frequency (MHz)				829	836.5	844		829	836.5	844
10	QPSK	1	0	22.83	23.25	22.91		0	0.37	0.00
10	QPSK	1	24	22.57	22.85	22.44	0	0.63	0.40	0.51
10	QPSK	1	49	23.20	22.84	22.95	0	0.00	0.41	0.00
10	QPSK	25	0	22.62	23.08	22.62	1	0.58	0.17	0.33
10	QPSK	25	12	22.58	22.86	22.41		0.62	0.39	0.54
10	QPSK	25	24	22.94	22.86	22.86		0.26	0.39	0.09
10	QPSK	50	0	22.69	23.12	22.80	1	0.51	0.13	0.15
10	16QAM	1	0	22.15	22.51	22.32	1	1.05	0.74	0.63
10	16QAM	1	24	22.01	22.21	21.73		1.19	1.04	1.22
10	16QAM	1	49	22.54	22.19	22.35		0.66	1.06	0.60
10	16QAM	25	0	21.80	22.28	21.90	2	1.40	0.97	1.05
10	16QAM	25	12	21.58	21.89	21.76		1.62	1.36	1.19
10	16QAM	25	24	22.05	21.95	22.12		1.15	1.30	0.83
10	16QAM	50	0	21.84	22.11	22.08		1.36	1.14	0.87
Channel				20425	20525	20625		20425	20525	20625
Frequency (MHz)				826.5	836.5	846.5		826.5	836.5	846.5
5	QPSK	1	0	22.67	22.99	22.64		0	0.35	0.22
5	QPSK	1	12	23.02	23.21	23.14	0	0.00	0.00	0.00
5	QPSK	1	24	22.88	22.60	22.51	0	0.14	0.61	0.63
5	QPSK	12	0	22.87	23.18	22.80	1	0.15	0.03	0.34
5	QPSK	12	6	22.98	23.20	22.89		0.04	0.01	0.25
5	QPSK	12	11	23.00	22.98	22.90		0.02	0.23	0.24
5	QPSK	25	0	22.85	22.98	22.74	1	0.17	0.23	0.40
5	16QAM	1	0	21.78	22.26	21.85	1	1.24	0.95	1.29
5	16QAM	1	12	22.23	22.41	22.41		0.79	0.80	0.73
5	16QAM	1	24	22.10	21.85	21.82		0.92	1.36	1.32
5	16QAM	12	0	21.90	22.38	22.05	2	1.12	0.83	1.09
5	16QAM	12	6	21.93	22.38	22.26		1.09	0.83	0.88
5	16QAM	12	11	22.17	22.11	22.25		0.85	1.10	0.89
5	16QAM	25	0	21.98	22.15	22.15		1.04	1.06	0.99
Channel				20415	20525	20635		20415	20525	20635
Frequency (MHz)				825.5	836.5	847.5		825.5	836.5	847.5
3	QPSK	1	0	22.64	23.12	22.65		0	0.40	0.10
3	QPSK	1	7	23.04	23.22	22.84	0	0.00	0.00	0.00
3	QPSK	1	14	22.62	22.62	22.24	0	0.42	0.60	0.60
3	QPSK	8	0	22.83	23.11	22.75	1	0.21	0.11	0.09
3	QPSK	8	4	22.76	23.05	22.79		0.28	0.17	0.05
3	QPSK	8	7	22.71	22.86	22.73		0.33	0.36	0.11
3	QPSK	15	0	22.70	22.92	22.70	1	0.34	0.30	0.14
3	16QAM	1	0	21.81	22.28	21.94	1	1.23	0.94	0.90
3	16QAM	1	7	22.20	22.46	22.32		0.84	0.76	0.52
3	16QAM	1	14	21.78	21.79	21.73		1.26	1.43	1.11
3	16QAM	8	0	21.76	22.24	22.04	2	1.28	0.98	0.80
3	16QAM	8	4	21.79	22.18	22.08		1.25	1.04	0.76
3	16QAM	8	7	21.76	21.94	21.98		1.28	1.28	0.86
3	16QAM	15	0	21.81	22.04	21.93		1.23	1.18	0.91



BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				20407	20525	20643		20407	20525	20643
Frequency (MHz)				824.7	836.5	848.3		824.7	836.5	848.3
1.4	QPSK	1	0	22.37	22.85	22.57	0	0.21	0.04	0.12
1.4	QPSK	1	2	22.58	22.89	22.69		0.00	0.00	0.00
1.4	QPSK	1	5	22.17	22.57	22.17		0.41	0.32	0.52
1.4	QPSK	3	0	22.36	22.79	22.60		0.22	0.10	0.09
1.4	QPSK	3	1	22.48	22.82	22.54		0.10	0.07	0.15
1.4	QPSK	3	2	22.55	22.76	22.34		0.03	0.13	0.35
1.4	QPSK	6	0	22.48	22.69	22.33		1	0.10	0.20
1.4	16QAM	1	0	21.87	22.22	22.00	1	0.71	0.67	0.69
1.4	16QAM	1	2	22.14	22.39	22.18		0.44	0.50	0.51
1.4	16QAM	1	5	21.85	22.00	21.63		0.73	0.89	1.06
1.4	16QAM	3	0	21.74	22.17	21.97		0.84	0.72	0.72
1.4	16QAM	3	1	21.80	22.29	21.94		0.78	0.60	0.75
1.4	16QAM	3	2	21.89	22.24	21.75		0.69	0.65	0.94
1.4	16QAM	6	0	21.87	22.25	21.78		2	0.71	0.64



**<LTE Band 7 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				20890	21020			20890	21020	
Frequency (MHz)				2514	2527			2514	2527	
20	QPSK	1	0	22.62	22.05			0.52	0.58	
20	QPSK	1	49	23.14	22.63		0	0.00	0.00	
20	QPSK	1	99	22.56	22.05			0.58	0.58	
20	QPSK	50	0	22.91	22.50			0.23	0.13	
20	QPSK	50	24	22.97	22.59		1	0.17	0.04	
20	QPSK	50	49	22.98	22.39			0.16	0.24	
20	QPSK	100	0	22.85	22.34			0.29	0.29	
20	16QAM	1	0	21.57	21.15		1	1.57	1.48	
20	16QAM	1	49	22.08	22.30			1.06	0.33	
20	16QAM	1	99	21.66	21.46			1.48	1.17	
20	16QAM	50	0	21.77	21.54		2	1.37	1.09	
20	16QAM	50	24	21.88	21.91			1.26	0.72	
20	16QAM	50	49	21.77	21.68			1.37	0.95	
20	16QAM	100	0	21.78	21.71			1.36	0.92	
Channel				20865	21045	21375		20865	21045	21375
Frequency (MHz)				2511.5	2529.5	2562.5		2511.5	2529.5	2562.5
15	QPSK	1	0	22.32	22.28	22.10		0	0.70	0.38
15	QPSK	1	37	23.02	22.66	22.54	0.00		0.00	0.00
15	QPSK	1	74	22.35	22.03	22.01	0.67		0.63	0.53
15	QPSK	36	0	22.72	22.48	22.48	1	0.30	0.18	0.06
15	QPSK	36	19	22.82	22.56	22.48		0.20	0.10	0.06
15	QPSK	36	39	22.56	22.42	22.17		0.46	0.24	0.37
15	QPSK	75	0	22.58	22.34	22.33	1	0.44	0.32	0.21
15	16QAM	1	0	21.58	21.21	21.57		1.44	1.45	0.97
15	16QAM	1	37	22.13	21.96	21.91		0.89	0.70	0.63
15	16QAM	1	74	21.48	21.36	21.21	2	1.54	1.30	1.33
15	16QAM	38	0	21.68	21.53	21.65		1.34	1.13	0.89
15	16QAM	38	19	21.80	21.58	21.67		1.22	1.08	0.87
15	16QAM	38	39	21.59	21.42	21.51		1.43	1.24	1.03
15	16QAM	75	0	21.58	21.36	21.59		1.44	1.30	0.95
Channel				20840	21070	21400		20840	21070	21400
Frequency (MHz)				2509	2532	2565	2509	2532	2565	
10	QPSK	1	0	22.65	22.64	22.64	0	0.00	0.00	0.00
10	QPSK	1	24	22.20	22.07	22.11		0.45	0.57	0.53
10	QPSK	1	49	22.57	22.39	22.10		0.08	0.25	0.54
10	QPSK	25	0	22.55	22.31	22.33	1	0.10	0.33	0.31
10	QPSK	25	12	22.27	22.07	22.02		0.38	0.57	0.62
10	QPSK	25	24	22.45	22.17	22.03		0.20	0.47	0.61
10	QPSK	50	0	22.49	22.00	22.15	1	0.16	0.64	0.49
10	16QAM	1	0	21.46	21.66	21.82		1.19	0.98	0.82
10	16QAM	1	24	21.10	21.29	21.34		1.55	1.35	1.30
10	16QAM	1	49	21.57	21.72	21.57	2	1.08	0.92	1.07
10	16QAM	25	0	21.44	21.49	21.58		1.21	1.15	1.06
10	16QAM	25	12	21.15	21.17	21.23		1.50	1.47	1.41
10	16QAM	25	24	21.34	21.40	21.40		1.31	1.24	1.24
10	16QAM	50	0	21.35	21.35	21.46		1.30	1.29	1.18



Channel				20815	21095	21425		20815	21095	21425
Frequency (MHz)				2506.5	2534.5	2567.5		2506.5	2534.5	2567.5
5	QPSK	1	0	22.39	22.37	22.56	0	0.57	0.19	0.19
5	QPSK	1	12	22.96	22.56	22.75		0.00	0.00	0.00
5	QPSK	1	24	22.56	22.14	22.10		0.40	0.42	0.65
5	QPSK	12	0	22.62	22.38	22.45	1	0.34	0.18	0.30
5	QPSK	12	6	22.80	22.44	22.45		0.16	0.12	0.30
5	QPSK	12	11	22.75	22.37	22.36		0.21	0.19	0.39
5	QPSK	25	0	22.59	22.37	22.31	1	0.37	0.19	0.44
5	16QAM	1	0	21.59	21.48	21.85		1.37	1.08	0.90
5	16QAM	1	12	21.97	21.82	22.24		0.99	0.74	0.51
5	16QAM	1	24	21.59	21.42	21.73	2	1.37	1.14	1.02
5	16QAM	12	0	21.67	21.49	21.90		1.29	1.07	0.85
5	16QAM	12	6	21.88	21.56	21.97		1.08	1.00	0.78
5	16QAM	12	11	21.84	21.51	21.84	2	1.12	1.05	0.91
5	16QAM	25	0	21.65	21.44	21.83		1.31	1.12	0.92



**<LTE Band 13 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.	
Channel					23230				23230		
Frequency (MHz)					782				782		
10	QPSK	1	0		22.98		0		0.14		
10	QPSK	1	24		22.64				0.48		
10	QPSK	1	49		23.12				0.00		
10	QPSK	25	0		22.98		1		0.14		
10	QPSK	25	12		22.62				0.50		
10	QPSK	25	24		22.70				0.42		
10	QPSK	50	0		22.76		1		0.36		
10	16QAM	1	0		22.51				0.61		
10	16QAM	1	24		21.65				1.47		
10	16QAM	1	49		22.73		2		0.39		
10	16QAM	25	0		21.97				1.15		
10	16QAM	25	12		21.64				1.48		
10	16QAM	25	24		21.73		2		1.39		
10	16QAM	50	0		21.82				1.30		
Channel				23205	23230	23255			23205	23230	23255
Frequency (MHz)				779.5	782	784.5		779.5	782	784.5	
5	QPSK	1	0	22.97	22.72	22.65	0	0.02	0.00	0.12	
5	QPSK	1	12	22.99	22.67	22.75			0.00	0.05	0.02
5	QPSK	1	24	22.80	22.31	22.77			0.19	0.41	0.00
5	QPSK	12	0	22.94	22.62	22.56	1	0.05	0.10	0.21	
5	QPSK	12	6	22.95	22.45	22.58			0.04	0.27	0.19
5	QPSK	12	11	22.91	22.45	22.70			0.08	0.27	0.07
5	QPSK	25	0	22.97	22.57	22.52	1	0.02	0.15	0.25	
5	16QAM	1	0	22.28	22.10	21.86			0.71	0.62	0.91
5	16QAM	1	12	22.55	22.07	22.14			0.44	0.65	0.63
5	16QAM	1	24	22.20	22.03	22.30	2	0.79	0.69	0.47	
5	16QAM	12	0	22.44	22.09	22.04			0.55	0.63	0.73
5	16QAM	12	6	22.23	21.98	21.96			0.76	0.74	0.81
5	16QAM	12	11	22.08	21.97	22.20	2	0.91	0.75	0.57	
5	16QAM	25	0	22.12	21.62	21.95			0.87	1.10	0.82





**<LTE Band 17 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Target MPR	MPR Low Ch. / Freq.	MPR Middle Ch. / Freq.	MPR High Ch. / Freq.
Channel				23780	23790	23800		23780	23790	23800
Frequency (MHz)				709	710	711		709	710	711
10	QPSK	1	0	23.00	23.02	23.10		0	0.05	0.14
10	QPSK	1	24	22.36	22.49	22.69	0.69		0.67	0.63
10	QPSK	1	49	23.05	23.16	23.32	0.00		0.00	0.00
10	QPSK	25	0	22.97	23.02	23.02	1	0.08	0.14	0.30
10	QPSK	25	12	22.69	22.87	22.80		0.36	0.29	0.52
10	QPSK	25	24	23.04	23.02	23.27		0.01	0.14	0.05
10	QPSK	50	0	22.95	23.04	23.20	1	0.10	0.12	0.12
10	16QAM	1	0	22.29	22.30	22.38		0.76	0.86	0.94
10	16QAM	1	24	21.75	21.86	21.83		1.30	1.30	1.49
10	16QAM	1	49	22.54	22.76	22.78	2	0.51	0.40	0.54
10	16QAM	25	0	22.04	22.01	22.08		1.01	1.15	1.24
10	16QAM	25	12	21.80	21.85	21.85		1.25	1.31	1.47
10	16QAM	25	24	22.16	22.10	22.30	2	0.89	1.06	1.02
10	16QAM	50	0	22.08	22.21	22.27		0.97	0.95	1.05
Channel				23755	23790	23825			23755	23790
Frequency (MHz)				706.5	710	713.5		706.5	710	713.5
5	QPSK	1	0	22.91	22.78	22.77	0	0.39	0.44	0.50
5	QPSK	1	12	23.30	23.22	23.27		0.00	0.00	0.00
5	QPSK	1	24	22.80	22.79	23.23		0.50	0.43	0.04
5	QPSK	12	0	23.15	22.98	23.02	1	0.15	0.24	0.25
5	QPSK	12	6	23.28	23.20	23.15		0.02	0.02	0.12
5	QPSK	12	11	23.20	23.18	23.20		0.10	0.04	0.07
5	QPSK	25	0	23.12	23.12	23.09	1	0.18	0.10	0.18
5	16QAM	1	0	22.21	21.92	22.04		1.09	1.30	1.23
5	16QAM	1	12	22.63	22.57	22.69		0.67	0.65	0.58
5	16QAM	1	24	22.15	22.23	22.49	2	1.15	0.99	0.78
5	16QAM	12	0	22.22	22.14	22.17		1.08	1.08	1.10
5	16QAM	12	6	22.31	22.33	22.40		0.99	0.89	0.87
5	16QAM	12	11	22.23	22.31	22.64	2	1.07	0.91	0.63
5	16QAM	25	0	22.25	22.26	22.49		1.05	0.96	0.78



### 6. Radio Frequency Radiation Exposure Evaluation

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

For this device, the calculation is as follows:

<For this device, the calculation is as follows>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP/EIRP (W)	Maximum ERP/EIRP Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm2)	Limit (mW/cm2)
GPRS 850 (1 Tx slot)	824.2	5.0	33.0	3.85	7.0	794.33	0.16	0.55
GPRS 850 (2 Tx slots)	824.2	5.0	33.0	3.85	7.0	1584.89	0.32	0.55
GPRS 850 (3 Tx slots)	824.2	5.0	33.0	3.85	7.0	2365.92	0.47	0.55
GPRS 850 (4 Tx slots)	824.2	5.0	32.0	3.05	7.0	2511.89	0.50	0.55
EGPRS 850 (1 Tx slot)	824.2	5.0	28.0	1.22	7.0	251.19	0.05	0.55
EGPRS 850 (2 Tx slots)	824.2	5.0	28.0	1.22	7.0	251.19	0.05	0.55
EGPRS 850 (3 Tx slots)	824.2	5.0	27.0	0.97	7.0	594.29	0.12	0.55
EGPRS 850 (4 Tx slots)	824.2	5.0	26.0	0.77	7.0	630.96	0.13	0.55
GPRS 1900 (1 Tx slot)	1850.2	3.0	30.0	2.00	2.0	251.19	0.05	1.00
GPRS 1900 (2 Tx slots)	1850.2	3.0	30.0	2.00	2.0	501.19	0.10	1.00
GPRS 1900 (3 Tx slots)	1850.2	3.0	30.0	2.00	2.0	748.17	0.15	1.00
GPRS 1900 (4 Tx slots)	1850.2	3.0	29.0	1.58	2.0	794.33	0.16	1.00
EGPRS 1900 (1 Tx slot)	1850.2	3.0	27.0	1.00	2.0	125.89	0.03	1.00
EGPRS 1900 (2 Tx slots)	1850.2	3.0	27.0	1.00	2.0	251.19	0.05	1.00
EGPRS 1900 (3 Tx slots)	1850.2	3.0	26.0	0.79	2.0	297.85	0.06	1.00
EGPRS 1900 (4 Tx slots)	1850.2	3.0	25.0	0.63	2.0	316.23	0.06	1.00
WCDMA Band 5	826.4	5.0	24.5	0.54	7.0	891.25	0.18	0.55
WCDMA Band 4	1712.4	5.5	24.5	1.00	1.0	1000.00	0.20	1.00
WCDMA Band 2	1852.4	3.0	24.5	0.56	2.0	562.34	0.11	1.00
LTE Band 17	706.5	5.0	24.0	0.48	3.0	794.33	0.16	0.47
LTE Band 13	779.5	5.0	24.0	0.48	3.0	794.33	0.16	0.52
LTE Band 5	824.7	5.0	24.0	0.48	7.0	794.33	0.16	0.55
LTE Band 4	1710.7	5.5	24.0	0.89	1.0	891.25	0.18	1.00
LTE Band 2	1850.7	3.0	24.0	0.50	2.0	501.19	0.10	1.00
LTE Band 7	2504.0	5.0	24.0	0.79	2.0	794.33	0.16	1.00

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.



**Conclusion:**

Based on FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gain do not exceed the limits for each given frequency band per wireless technology as follow table:

Technology	Band	Maximum Conducted Power (dBm)	Maximum Stanalone Antenna Gain (dBi)
GSM	GSM850	33.0	5.0
	GSM1900	30.0	3.0
UMTS	Band 5	24.5	5.0
	Band 4	24.5	5.5
	Band 2	24.5	3.0
LTE	Band 17	24.0	5.0
	Band 13	24.0	5.0
	Band 5	24.0	5.0
	Band 4	24.0	5.5
	Band 2	24.0	3.0
	Band 7	24.0	5.0