

FCC SAR TEST REPORT

APPLICANT : Zebra Technologies Corporation
EQUIPMENT : Tablet
BRAND NAME : Zebra
Model Name : ET45BA
FCC ID : UZ7ET45BA
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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History of this test report

Report No.	Version	Description	Issued Date
FA230408	Rev. 01	Initial issue of report	Aug. 19, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Lenovo(Shanghai) Electronics Technology Co., Ltd., Tablet, ET45BA**, are as follows.

Highest Standalone 1g SAR Summary				
Equipment Class	Frequency Band		Body(Separation 0mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)	
Licensed	LTE	Band 2	1.23	1.59
		Band 5	1.24	
		Band 7	1.26	
		Band 12/17	1.24	
		Band 13	1.26	
		Band 14	1.23	
		Band 25	1.26	
		Band 26	1.24	
		Band 38	1.24	
		Band 41	1.26	
		Band 48	1.25	
		Band 66/4	1.26	
	Band 71	1.25		
	5GNR	n5	1.26	
		n7	1.25	
		n12	1.25	
		n13	1.25	
		n14	1.23	
		n25/2	1.25	
		n41/38	1.25	
		n48	1.26	
		n66	1.25	
		n71	1.24	
n77/78		1.25		
DTS	WLAN	2.4GHz WLAN	1.24	1.59
NII		5GHz WLAN	1.39	1.59
DTS	Bluetooth	Bluetooth	<0.10	1.59
DXX	NFC	13.56MHz	<0.10	1.59
Date of Testing:		2022/6/7 ~ 2022/8/26		
Remark:				
<p>1. This device supports LTE B4/B17 and B66/B12. Since the supported frequency span for LTE B4/B17 falls completely within the supports frequency span for LTE B66/B12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for B66/B12.</p> <p>2. This device supports 5GNR n2/n38/n78 and 5GNR n25/n41/n77. Since the supported frequency span for 5GNR n2/n38/n78 falls completely within the supports frequency span for 5GNR n25/n41/n77, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for 5GNR n25/n41/n77.</p>				

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

2. Administration Data

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR07-KS	CN1257	314309

Applicant	
Company Name	Zebra Technologies Corporation
Address	1 Zebra Plaza, Holtsville, NY 11742

Manufacturer	
Company Name	Zebra Technologies Corporation
Address	1 Zebra Plaza, Holtsville, NY 11742

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- IEC/IEEE 62209-1528:2020



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Tablet
Brand Name	Zebra
Model Name	ET45BA
FCC ID	UZ7ET45BA
IMEI Code	355561840003141
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13 : 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	LTE: QPSK, 16QAM, 64QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4G 802.11b/g/n/ac/ax HT20/VHT20/HE20 WLAN 5G 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 WLAN 5G 802.11ax HE20/HE40/HE80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	EV2-2
SW Version	ET45USERDEBUG 11 11-10-12.00-RG-U00-PRD-GSE MXJ release-keys
MFD	12MAY22
EUT Stage	Identical Prototype
Remark:	1. The device implements the power management and sensor detection for SAR compliance and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. 2. For Ant0/3, the device employs proximity sensors that detect the presence of the user's body also a finger or hand

- near the bottom face, edge 1 and edge 4 of the device, reduced power will be active. (P-sensor can't work at detecting presence of the user's body at other edges of the device.)
3. For Ant2/6, the device employs proximity sensors that detect the presence of the user's body also a finger or hand near the bottom face, edge 4 of the device, reduced power will be active. (P-sensor can't work at detecting presence of the user's body at other edges of the device.)
 4. For Ant7, the device employs proximity sensors that detect the presence of the user's body also a finger or hand near the bottom face, edge 1 of the device, reduced power will be active. (P-sensor can't work at detecting presence of the user's body at other edges of the device.)
 5. For WWAN when transmit simultaneous with WLAN, power reduction will be activated to body. For WLAN when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body.
 6. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
 7. For 5G NR, the simultaneous transmission analysis is used standalone SAR at total power level to show compliance.
 8. NSA and SA mode should perform SAR separately. For the bands, when channel bandwidth of SA and NSA is same, and the maximum power of NSA mode is same as SA total power level, SA SAR can represent NSA mode SAR. For the bands, when channel bandwidth of SA and NSA is different, choose the largest channel bandwidth with maximum power to perform SAR testing, so the largest channel bandwidth SAR can represent the smallest channel bandwidth SAR.
 9. When channel bandwidth of SA and NSA is same, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time. When channel bandwidth of SA and NSA is different, chose the largest channel bandwidth mode among SA and NSA to perform power measurement.
 10. 5G NR n41/n77/n78 supports HPUE, HPUE power and SAR testing performed separately.
 11. 5G NR n41/n77/n78 HUPE with higher power, 5G NR n41/n77/n78 HUPE SAR can represent power class 3 level SAR.
 12. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
 13. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
 14. This device supports 5G NR FR1 bands as following table, including NSA mode and SA mode.

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
SA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40, 50
	n12	FDD	15	5, 10, 15
	n13	FDD	15	5, 10
	n14	FDD	15	5, 10
	n25	FDD	15	5, 10, 15, 20
	n66	FDD	15	5, 10, 15, 20
	n71	FDD	15	5, 10, 15, 20
	n38	TDD	30	20, 30, 40
	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n48	TDD	30	10, 20, 40
	n77	TDD	30	20, 30, 40, 60, 80, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
NSA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20
	n12	FDD	15	5, 10, 15
	n25	FDD	15	5, 10, 15, 20
	n66	FDD	15	5, 10, 15, 20, 30
	n71	FDD	15	5, 10, 15, 20
	n38	TDD	30	20, 30, 40
	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n48	TDD	30	10, 20, 40
	n77	TDD	30	20, 30, 40, 60, 80, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100



Specification of Accessory				
Battery	Brand Name	Zebra	Model Number	BT-000455

Supported Unit Used in Test Configuration and System				
AC Adapter	Brand Name	Zebra	Part Number	PWR-WUA5V12W0US
Earphone 1	Brand Name	Zebra	Part Number	HDST-35MM-PTVP-01
Earphone 2	Brand Name	Zebra	Part Number	HDST-USBC-PTT1-01
USB Cable (Type C to Type A)	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
Type C-Audio Cable (Type C to 3.5mm)	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	UZ7ET45BA																																																														
Equipment Name	Tablet																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE release	R15, Cat 13																																																														
CA support	Yes, Uplink and Downlink																																																														
LTE Voice / Data requirements	Data only																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	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	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, Proximity Sensor. Power reduction will be active at bottom face, edge 1, and edge 4.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 14.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 4 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
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 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 5																
	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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 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	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782		23230		782	
M	23230		782		23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782		23230		782	
LTE Band 14																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Channel #		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23330		793		23330		793	
M	23330		793		23330		793		23330		793		23330		793	
H	23355		795.5		23330		793		23330		793		23330		793	
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23780		709		23780		709	
M	23790		710		23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711		23800		711	



LTE Band 25												
	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5
LTE Band 38												
	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)		
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610
LTE Band 41												
	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)		
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680
LTE Band 48												
	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)		
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560	55340	3560	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609	55830	3609	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641	56150	3641	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690	56640	3690	56640	3690
LTE Band 66												
	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	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	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)		
L	133147	665.5	133172	668	133197	670.5	133222	673	133222	673	133222	673
M	133247	675.5	133272	678	133297	680.5	133322	683	133322	683	133322	683
H	133447	695.5	133422	693	133397	690.5	133372	688	133372	688	133372	688

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		

2) LTE Bands tune up:

Band	Antenna	Sensor on Standalone DSI 1 Tune-up Limit	Sensor on Simultaneous DSI 3 Tune-up Limit	Sensor off Standalone DSI 0 Tune-up Limit	Sensor off Simultaneous DSI 2 Tune-up Limit	Default Tune-up Limit
LTE Band 4	Ant 0	19.7	17.1	23	20.4	25
LTE Band 66	Ant 0	19.7	17.1	23	20.4	25
LTE Band 2	Ant 0	20.1	17.5	22.8	20.20	24.5
LTE Band 25	Ant 0	20.1	17.5	22.8	20.20	24.5
LTE Band 12	Ant 0	22.3	19.7	25	25	25
LTE Band 17	Ant 0	22.3	19.7	25	25	25



4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13 : 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78 : 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n2	LTE B5/7/12/13/14/66/71/48
LTE Anchor Bands for n5	LTE B2/7/12/13/48/66
LTE Anchor Bands for n7	LTE B2/5/12/13/66
LTE Anchor Bands for n12	LTE B66
LTE Anchor Bands for n25	LTE B12/48/66
LTE Anchor Bands for n66	LTE B2/5/7/12/13/14/48/71
LTE Anchor Bands for n71	LTE B2/7/66
LTE Anchor Bands for n38	LTE B2/4/5/12/66/71
LTE Anchor Bands for n41	LTE B2/4/12/25/26/66/71
LTE Anchor Bands for n48	LTE B2/5/13/66
LTE Anchor Bands for n77	LTE B2/5/7/13/14/66
LTE Anchor Bands for n78	LTE B2/5/12/13/38/66/71

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band								
NR Band 2								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 7																
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520	505000	2525
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550	509000	2545



NR Band 12						
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	140300	701.5	140800	704	141300	706.5
M	141500	707.5	141500	707.5	141500	707.5
H	142700	713.5	142200	711	141700	708.5

NR Band 13				
	Bandwidth 5MHz		Bandwidth 10MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	155900	779.5	156400	782
M	156400	782		
H	156900	784.5		

NR Band 14				
	Bandwidth 5MHz		Bandwidth 10MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	158100	790.5	158600	793
M	158600	793		
H	159100	795.5		

NR Band 25								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5
H	382500	1912.5	382000	1910	381500	1907.5	381000	1905

NR Band 66										
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	345000	1725
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353000	1765

NR Band 71								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133100	665.5	133600	668	134100	670.5	134600	673
M	136100	680.5	136100	680.5	136100	680.5	136100	680.5
H	139100	695.5	138600	693	138100	690.5	137600	688

NR Band 38						
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	516000	2580	517002	2585.01	518004	2590.02
M	519000	2595	519000	2595	519000	2595
H	522000	2610	520998	2604.99	519996	2599.98

NR Band 41																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	506202	2531.01	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640

NR Band 48						
	Bandwidth 10MHz		Bandwidth 20MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	637000	3555	637334	3560.01	638000	3570
M	641666	3624.99	641666	3624.99	641666	3624.99
H	646332	3694.98	646000	3690	645332	3679.98



NR Band 77												
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648668	3730.02	649334	3740.01	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664668	3970.02	664334	3965.01	664000	3960	663334	3950.01	6626668	3940.02	662000	3930

NR Band 78																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3790.02	652334	3785.01	652000	3780	651668	3775.02	651334	3770.01	651000	3765	650668	3760.02	650334	3755.01		

For <3450 MHz ~ 3550 MHz >

NR Band 77												
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630668	3460.02	631000	3465	631334	3470.01	632000	3480	632668	3490.02		
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636000	3540	635668	3535.02	635334	3530.01	634668	3520.02	634000	3510		

NR Band 78																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636000	3540	635668	3535.02	635334	3530.01	635000	3525	634668	3520.02	634334	3515.01	634000	3510	633668	3505.02		

<For NR Overlap Bands Description>

1) NR Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n77	TDD	30	20, 30, 40, 60, 80, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n38	TDD	30	20,30,40
	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n2	FDD	15	20,15,10,5
	n25	FDD	15	20,15,10,5
SA	n77	TDD	30	20, 30, 40, 60, 80, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n38	TDD	30	20,30,40
	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n2	FDD	15	20,15,10,5
	n25	FDD	15	20,15,10,5

2) NR Bands Tune up:

Band	Antenna	Sensor on Standalone DSI 1 Tune-up Limit	Sensor on Simultaneous DSI 3 Tune-up Limit	Sensor off Standalone DSI 0 Tune-up Limit	Sensor off Simultaneous DSI 2 Tune-up Limit	Default Tune-up Limit
5G NR n77 SA	Ant 1	11.6	11.6	11.6	11.6	21
5G NR n77 NSA	Ant 1	11.6	11.6	11.6	11.6	21
5G NR n77-HPUE SA	Ant 3	9	9	22.1	22.1	27
5G NR n77-HPUE NSA	Ant 3	9	9	22.1	22.1	27
5G NR n77 SA	Ant 3	9	9	22.1	22.1	24
5G NR n77 NSA	Ant 3	9	9	22.1	22.1	24
5G NR n77 SA	Ant 4	12.7	12.7	12.7	12.7	21
5G NR n77 NSA	Ant 4	12.7	12.7	12.7	12.7	21
5G NR n77 SA	Ant 5	14.1	9	14.1	9	21
5G NR n77 NSA	Ant 5	14.1	9	14.1	9	21
5G NR n78 SA	Ant 1	11.6	11.6	11.6	11.6	21
5G NR n78 NSA	Ant 1	11.6	11.6	11.6	11.6	21
5G NR n78-HPUE SA	Ant 3	9	9	22.1	22.1	27
5G NR n78-HPUE NSA	Ant 3	9	9	22.1	22.1	27
5G NR n78 SA	Ant 3	9	9	22.1	22.1	24
5G NR n78 NSA	Ant 3	9	9	22.1	22.1	24
5G NR n78 SA	Ant 4	12.7	12.7	12.7	12.7	21
5G NR n78 NSA	Ant 4	12.7	12.7	12.7	12.7	21
5G NR n78 SA	Ant 5	14.1	9	14.1	9	21
5G NR n78 NSA	Ant 5	14.1	9	14.1	9	21
5G NR n38 SA	Ant 2	17.5	17.5	24	24	24
5G NR n38 NSA	Ant 2	17.5	17.5	24	24	24
5G NR n41 SA	Ant 2	17.5	17.5	24	24	24
5G NR n41 NSA	Ant 2	17.5	17.5	24	24	24
5G NR n41-HPUE SA	Ant 2	17.5	17.5	27	27	27
5G NR n41-HPUE NSA	Ant 2	17.5	17.5	27	27	27
5G NR n2 SA	Ant 0	19.7	17.1	25	22.8	25
5G NR n2 NSA	Ant 0	19.7	17.1	25	22.8	25
5G NR n2 SA	Ant 2	15.6	15.6	25	25	25
5G NR n2 NSA	Ant 2	15.6	15.6	25	25	25
5G NR n25 SA	Ant 0	19.7	17.1	25	22.8	25
5G NR n25 NSA	Ant 0	19.7	17.1	25	22.8	25
5G NR n25 SA	Ant 2	15.6	15.6	25	25	25
5G NR n25 NSA	Ant 2	15.6	15.6	25	25	25

5. Smart Transmit feature for RF Exposure compliance

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory SAR limit to account for all device design related uncertainty.
SAR char	P _{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

Item	Uncertainty dB (k=2)
Total uncertainty	1.5

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$



The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-averaged power limit, for each characterized technology and band.

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<Plimit for supported technologies and bands (Plimit in EFS file)>

Band	Antenna	Sensor On standalone DSI1	Sensor On simultaneous DSI3	Sensor Off standalone DSI0	Sensor Off simultaneous DSI2	Sensor On Pmax*	Sensor Off Pmax*
LTE Band 2	Ant0	19.10	16.50	21.80	19.20	23.50	23.50
LTE Band 2	Ant2	15.40	15.40	25.50	25.50	23.50	23.50
LTE Band 4	Ant0	18.70	16.10	22.00	19.40	24.00	24.00
LTE Band 5	Ant0	22.30	19.70	27.90	25.30	24.00	24.00
LTE Band 5	Ant2	24.00	24.00	31.00	31.00	24.00	24.00
LTE Band 7	Ant0	13.40	10.80	23.00	20.40	23.00	23.00
LTE Band 7	Ant2	16.00	16.00	27.80	27.80	23.00	23.00
LTE Band 12	Ant0	21.30	18.70	27.40	24.80	24.00	24.00
LTE Band 13	Ant0	21.60	19.00	26.90	24.30	23.00	23.00
LTE Band 14	Ant0	21.90	19.30	26.40	23.50	24.00	24.00
LTE Band 17	Ant0	21.30	18.70	27.40	24.80	24.00	24.00
LTE Band 25	Ant0	19.10	16.50	21.80	19.20	24.00	24.00
LTE Band 26	Ant0	22.20	19.60	26.20	23.60	23.00	23.00
LTE Band 66	Ant0	18.70	16.10	22.00	19.40	24.00	24.00
LTE Band 66	Ant2	16.50	16.50	27.90	27.90	24.00	24.00
LTE Band 71	Ant0	21.60	19.00	28.90	26.30	24.00	24.00
LTE Band 38	Ant0	13.30	10.70	24.70	22.10	21.00	21.00
LTE Band 41	Ant2	16.80	16.80	25.70	25.70	22.00	22.00
LTE Band 48	Ant3	8.50	8.50	21.50	21.50	21.50	21.50
FR1 n2	Ant0	18.70	16.10	24.40	21.80	24.00	24.00
FR1 n2	Ant2	14.60	14.60	26.10	26.10	24.00	24.00
FR1 n5	Ant0	21.80	19.20	26.50	26.50	24.00	24.00
FR1 n5	Ant2	23.50	23.50	31.10	31.10	24.00	24.00
FR1 n7	Ant0	13.00	10.40	23.00	20.40	23.00	23.00
FR1 n7	Ant2	15.70	15.70	25.30	25.30	23.00	23.00
FR1 n12	Ant0	21.70	19.10	27.70	25.10	23.00	23.00
FR1 n13	Ant0	22.20	19.60	27.10	24.50	23.00	23.00
FR1 n14	Ant0	22.20	19.60	27.00	24.40	23.00	23.00
FR1 n25	Ant0	18.70	16.10	24.40	21.80	24.00	24.00
FR1 n25	Ant2	14.60	14.60	26.10	26.10	24.00	24.00
FR1 n66	Ant0	18.30	15.70	21.40	18.80	24.00	24.00
FR1 n66	Ant2	17.10	17.10	28.20	28.20	24.00	24.00
FR1 n71	Ant0	22.00	19.40	29.10	26.50	23.00	23.00
FR1 n38	Ant2	16.50	16.50	26.10	26.10	23.00	23.00
FR1 n41	Ant2	16.50	16.50	26.10	26.10	23.00	23.00
FR1 n41 HPUE	Ant2	16.50	16.50	26.10	26.10	26.00	26.00
FR1 n41	Ant1	9.40	9.40	9.40	9.40	20.00	20.00
FR1 n41	Ant4	13.60	13.60	13.60	13.60	20.00	20.00
FR1 n41	Ant5	11.90	9.30	11.90	9.30	20.00	20.00
FR1 n48	Ant3	9.10	9.10	21.30	21.30	22.00	22.00
FR1 n77	Ant3	8.00	8.00	21.10	21.10	18.00	23.00
FR1 n77 HPUE	Ant3	8.00	8.00	21.10	21.10	18.00	26.00
FR1 n77	Ant1	10.60	10.60	10.60	10.60	20.00	20.00
FR1 n77	Ant4	11.70	11.70	11.70	11.70	20.00	20.00
FR1 n77	Ant5	13.10	8.00	13.10	8.00	20.00	20.00
FR1 n78	Ant3	8.00	8.00	21.10	21.10	18.00	23.00
FR1 n78 HPUE	Ant3	8.00	8.00	21.10	21.10	18.00	26.00



FR1 n78	Ant1	10.60	10.60	10.60	10.60	20.00	20.00
FR1 n78	Ant4	11.70	11.70	11.70	11.70	20.00	20.00
FR1 n78	Ant5	13.10	8.00	13.10	8.00	20.00	20.00

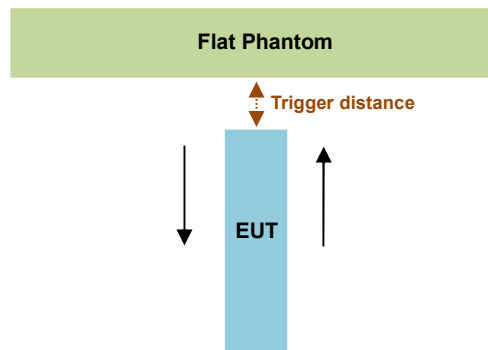
Note:

- 1) *Pmax is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + 1dB device uncertainty.
- 2) All Plimit power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., LTE TDD).
- 3) The max allowed output power is the Plimit + 1dB device uncertainty, and if Plimit is higher than Pmax, the device output power will be Pmax instead.
- 4) For ant1/4/5 has no SAR sensor, Plimit for DSI0 and DSI1 at standalone are the same, Plimit for DSI2 and DSI3 at simultaneous are the same.
- 5) LTE Band 2/5/7/66 Ant 2 only for EN-DC combination.
- 6) 5G NR n41/77/78 ant 1/4/5 supports SRS (Sounding Reference Signal) functionality.

6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency 5825MHz and lowest 750MHz frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensor placed coincident with antenna elements at the Bottom Face, Edge 1 and Edge 4 of the device are utilized to determine when the device comes in proximity of the user's body at the Bottom Face or Edge 1 or Edge 4 side of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
3. When the sensor is active, all WWAN/WLAN bands reduced power will be active.
4. The sensors used to detect the proximity of the user's body at the Bottom Face or Edge 1 or Edge 4 side for WWAN/WLAN of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).



<P-Sensor for ANT0>

Proximity Sensor Triggering Distance (mm)						
Position	Bottom Face		Edge 1		Edge 4	
	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards
Minimum	19	23	3	3	21	22

< P-Sensor for ANT2>

Proximity Sensor Triggering Distance (mm)				
Position	Bottom Face		Edge 4	
	Moving away	Moving towards	Moving away	Moving towards
Minimum	18	23	18	20

<P-Sensor for ANT3>

Proximity Sensor Triggering Distance (mm)						
Position	Bottom Face		Edge 1		Edge 4	
	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards
Minimum	19	23	3	3	21	22

< P-Sensor for ANT6>

Proximity Sensor Triggering Distance (mm)				
Position	Bottom Face		Edge 4	
	Moving away	Moving towards	Moving away	Moving towards
Minimum	18	19	14	16

< P-Sensor for ANT7>

Proximity Sensor Triggering Distance (mm)				
Position	Bottom Face		Edge 1	
	Moving away	Moving towards	Moving away	Moving towards
Minimum	17	19	11	13

<Proximity Sensor Triggering Coverage (KDB 616217 D04 section 6.3)>:

If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

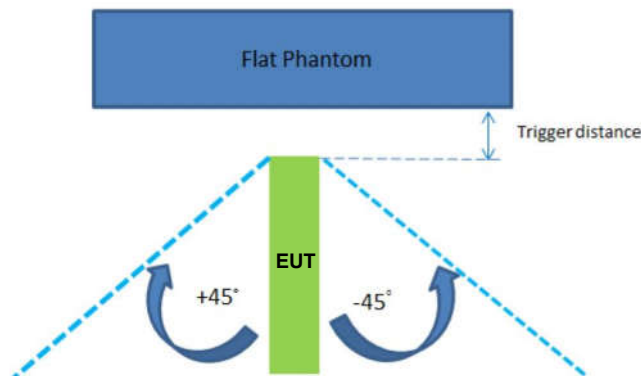
Illustrated in the internal photo exhibit, although the sensor is spatially offset, there is no trigger condition where the antenna is next to the user but the sensor is laterally further away, therefore proximity sensor coverage testing is not required.

This procedure is not required because antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

<Tablet Tilt angle influences to proximity sensor triggering (KDB 616217 D04 section 6.4)>:

The influence of table tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ from the vertical position at 0° , and the maximum output power remains in the reduced mode.



<P-Sensor for ANT0>

The Sensor Trigger Distance (mm)		
Position	Edge 1	Edge 4
Minimum	3	21

<P-Sensor for ANT2>

The Sensor Trigger Distance (mm)	
Position	Edge 4
Minimum	18

<P-Sensor for ANT3>

The Sensor Trigger Distance (mm)		
Position	Edge 1	Edge 4
Minimum	3	21

<P-Sensor for ANT6>

The Sensor Trigger Distance (mm)	
Position	Edge 4
Minimum	14

<P-Sensor for ANT7>

The Sensor Trigger Distance (mm)	
Position	Edge 1
Minimum	11

Proximity sensor power reduction

Exposure Position / wireless mode	Antenna	Bottom Face ⁽¹⁾	Edge 1 ⁽¹⁾	Edge 2	Edge 3	Edge 4 ⁽¹⁾
LTE Band 2	Ant0	2.7 dB	2.7 dB	0 dB	0 dB	2.7 dB
LTE Band 4	Ant0	3.3 dB	3.3 dB	0 dB	0 dB	3.3 dB
LTE Band 5	Ant0	1.7 dB	1.7 dB	0 dB	0 dB	1.7 dB
LTE Band 7	Ant0	9.6 dB	9.6 dB	0 dB	0 dB	9.6 dB
LTE Band 12	Ant0	2.7 dB	2.7 dB	0 dB	0 dB	2.7 dB
LTE Band 13	Ant0	1.4 dB	1.4 dB	0 dB	0 dB	1.4 dB
LTE Band 14	Ant0	2.1 dB	2.1 dB	0 dB	0 dB	2.1 dB
LTE Band 17	Ant0	2.7 dB	2.7 dB	0 dB	0 dB	2.7 dB
LTE Band 25	Ant0	2.7 dB	2.7 dB	0 dB	0 dB	2.7 dB
LTE Band 26	Ant0	0.8 dB	0.8 dB	0 dB	0 dB	0.8 dB
LTE Band 66	Ant0	3.3 dB	3.3 dB	0 dB	0 dB	3.3 dB
LTE Band 71	Ant0	2.4 dB	2.4 dB	0 dB	0 dB	2.4 dB
LTE Band 38	Ant0	7.7 dB	7.7 dB	0 dB	0 dB	7.7 dB
n2	Ant0	5.3 dB	5.3 dB	0 dB	0 dB	5.3 dB
n5	Ant0	2.2 dB	2.2 dB	0 dB	0 dB	2.2 dB
n7	Ant0	10.0 dB	10.0 dB	0 dB	0 dB	10.0 dB
n12	Ant0	1.3 dB	1.3 dB	0 dB	0 dB	1.3 dB
n13	Ant0	0.8 dB	0.8 dB	0 dB	0 dB	0.8 dB
n14	Ant0	0.8 dB	0.8 dB	0 dB	0 dB	0.8 dB
n25	Ant0	5.3 dB	5.3 dB	0 dB	0 dB	5.3 dB
n66	Ant0	3.1 dB	3.1 dB	0 dB	0 dB	3.1 dB
n71	Ant0	1.0 dB	1.0 dB	0 dB	0 dB	1.0 dB
LTE Band 48	Ant3	13.0 dB	13.0 dB	0 dB	0 dB	13.0 dB
FR1 n48	Ant3	12.2 dB	12.2 dB	0 dB	0 dB	12.2 dB
FR1 n77/78 PC2&3	Ant3	13.1 dB	13.1 dB	0 dB	0 dB	13.1 dB

Exposure Position / wireless mode	Antenna	Bottom Face ⁽¹⁾	Edge 1	Edge 2	Edge 3	Edge 4 ⁽¹⁾
LTE Band 2	Ant2	8.1 dB	0 dB	0 dB	0 dB	8.1 dB
LTE Band 7	Ant2	7.0 dB	0 dB	0 dB	0 dB	7.0 dB
LTE Band 66	Ant2	7.5 dB	0 dB	0 dB	0 dB	7.5 dB
LTE Band 41	Ant2	5.2 dB	0 dB	0 dB	0 dB	5.2 dB
FR1 n2	Ant2	9.4 dB	0 dB	0 dB	0 dB	9.4 dB
FR1 n5	Ant2	0.5 dB	0 dB	0 dB	0 dB	0.5 dB
FR1 n7	Ant2	7.3 dB	0 dB	0 dB	0 dB	7.3 dB
FR1 n25	Ant2	9.4 dB	0 dB	0 dB	0 dB	9.4 dB
FR1 n66	Ant2	6.9 dB	0 dB	0 dB	0 dB	6.9 dB
FR1 n41/38	Ant2	6.5 dB	0 dB	0 dB	0 dB	6.5 dB
FR1 n41 HPUE	Ant2	9.5 dB	0 dB	0 dB	0 dB	9.5 dB
WLAN 2.4GHz	Ant6	2.0 dB	0 dB	0 dB	0 dB	2.0 dB
WLAN 5.2GHz	Ant6	6.5 dB	0 dB	0 dB	0 dB	6.5 dB
WLAN 5.3GHz	Ant6	7.0 dB	0 dB	0 dB	0 dB	7.0 dB
WLAN 5.5GHz	Ant6	7.0 dB	0 dB	0 dB	0 dB	7.0 dB
WLAN 5.8GHz	Ant6	6.5 dB	0 dB	0 dB	0 dB	6.5 dB

Exposure Position / wireless mode	Antenna	Bottom Face ⁽¹⁾	Edge 1 ⁽¹⁾	Edge 2	Edge 3	Edge 4
WLAN 2.4GHz	Ant7	2.5 dB	2.5 dB	0 dB	0 dB	0 dB
WLAN 5.2GHz	Ant7	5.5 dB	5.5 dB	0 dB	0 dB	0 dB
WLAN 5.3GHz	Ant7	5.5 dB	5.5 dB	0 dB	0 dB	0 dB
WLAN 5.5GHz	Ant7	7.5 dB	7.5 dB	0 dB	0 dB	0 dB
WLAN 5.8GHz	Ant7	9.0 dB	9.0 dB	0 dB	0 dB	0 dB

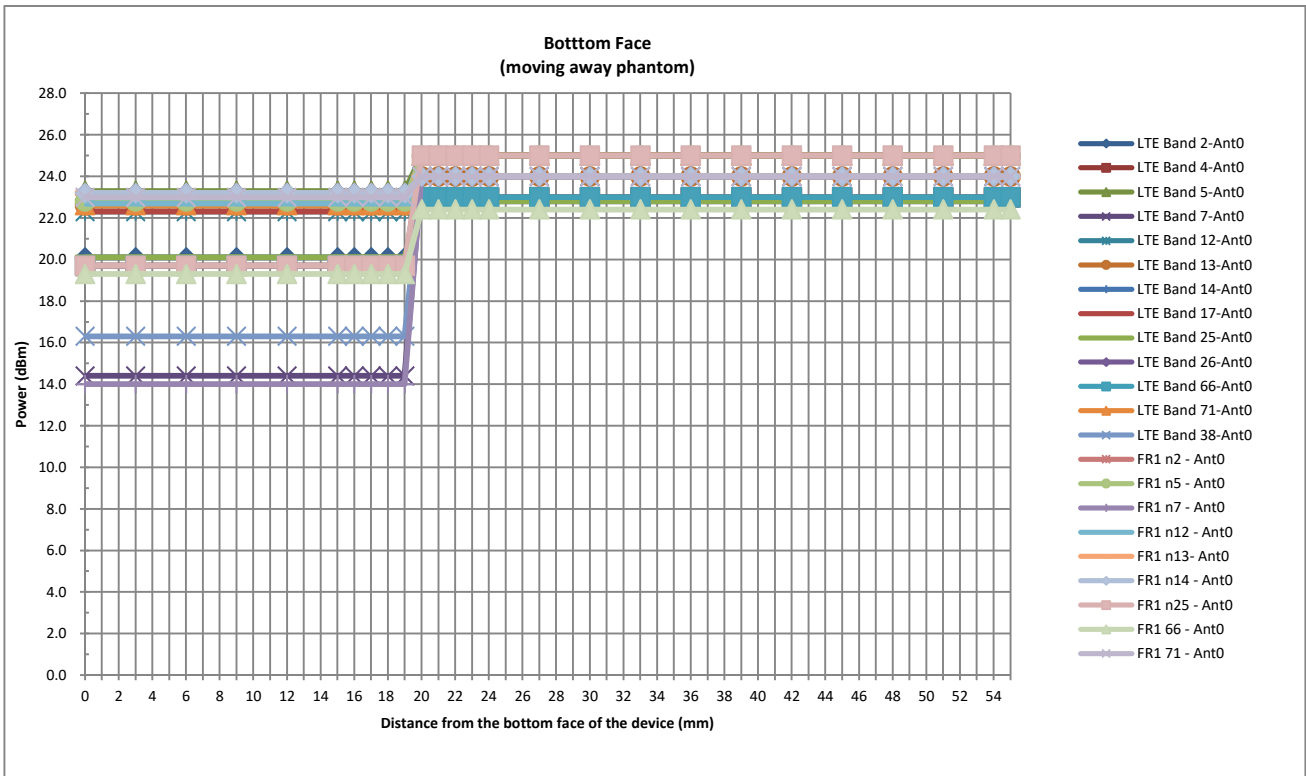
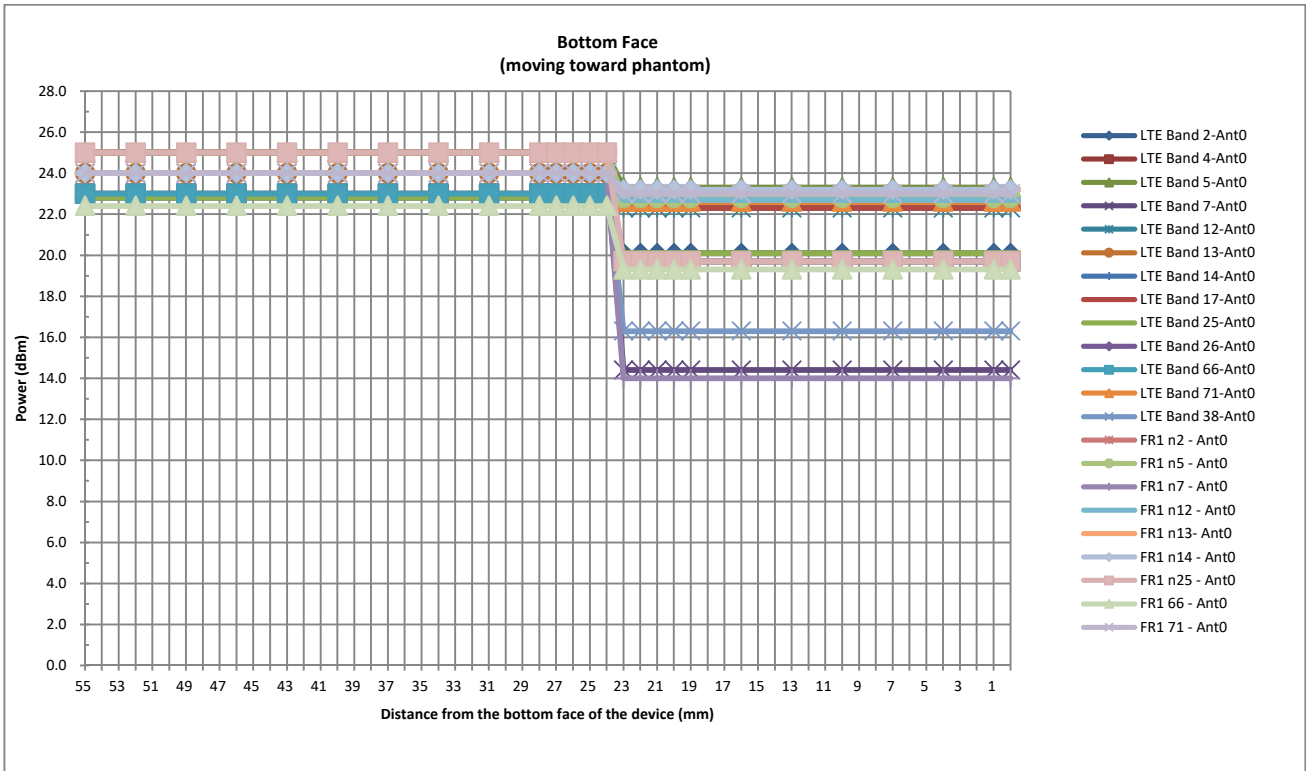
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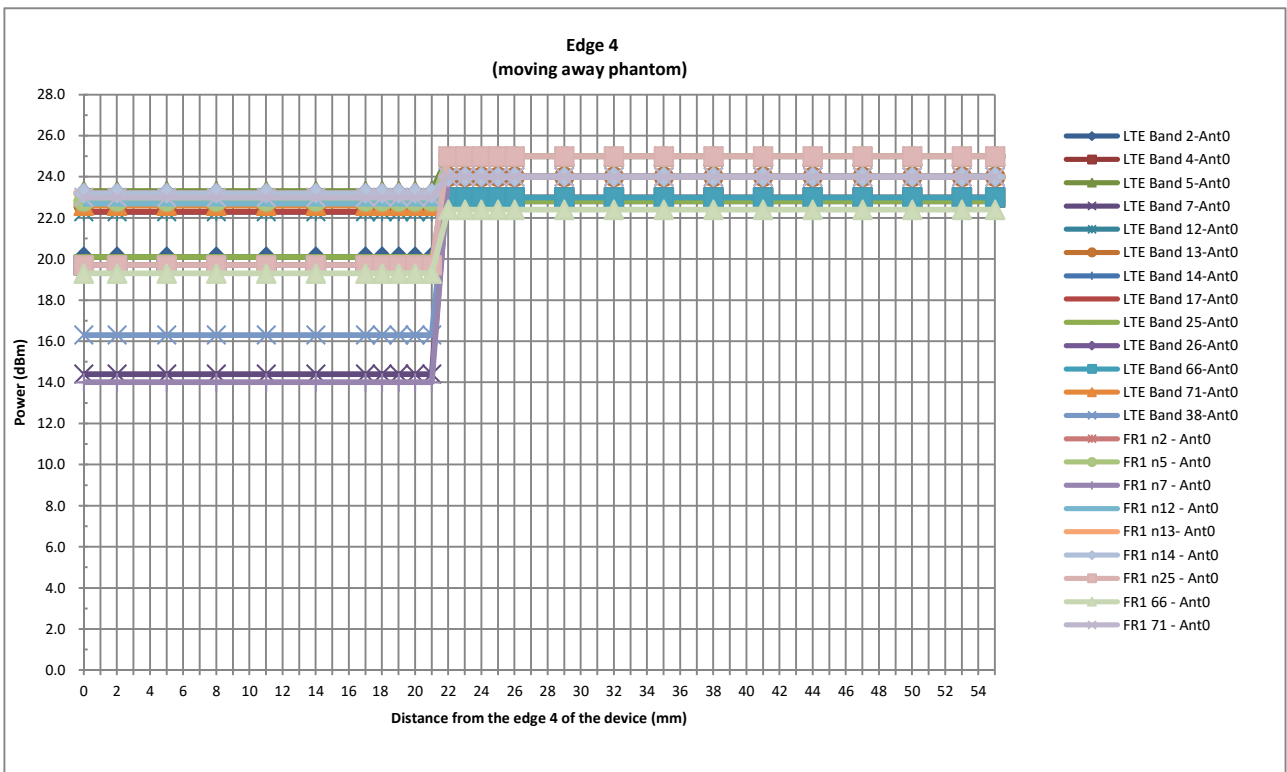
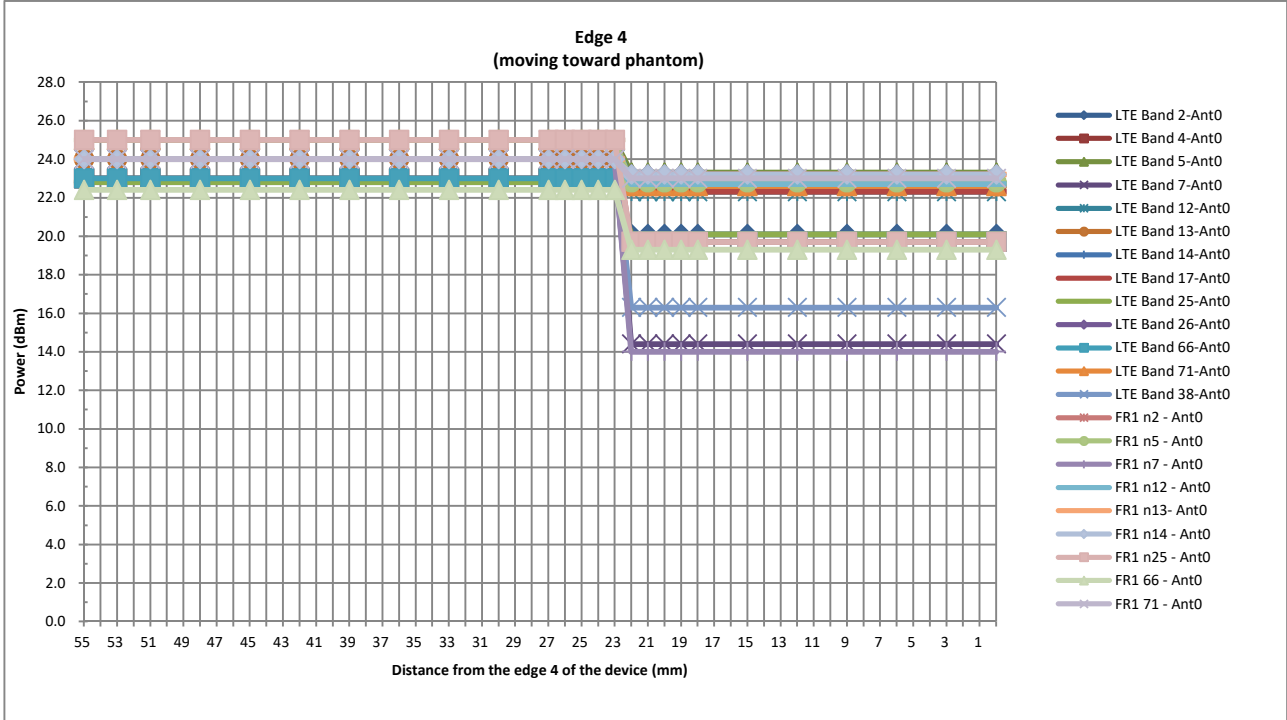
- ⁽¹⁾: Reduced maximum limit applied by activation of proximity sensor.
- Power reduction is not applicable for Bluetooth.
- Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown and described in exhibit "P-Sensor operational description"
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
 - For Ant0:
 - Bottom Face: 18 mm
 - Edge 1: 2 mm
 - Edge 4: 20 mm
 - For Ant2:
 - Bottom Face: 17 mm
 - Edge 4: 17mm
 - For Ant3:
 - Bottom Face: 18 mm
 - Edge 1: 2 mm
 - Edge 4: 20 mm
 - For Ant6:
 - Bottom Face: 17 mm
 - Edge 4: 13 mm
 - For Ant7:
 - Bottom Face: 16 mm
 - Edge 1: 10 mm

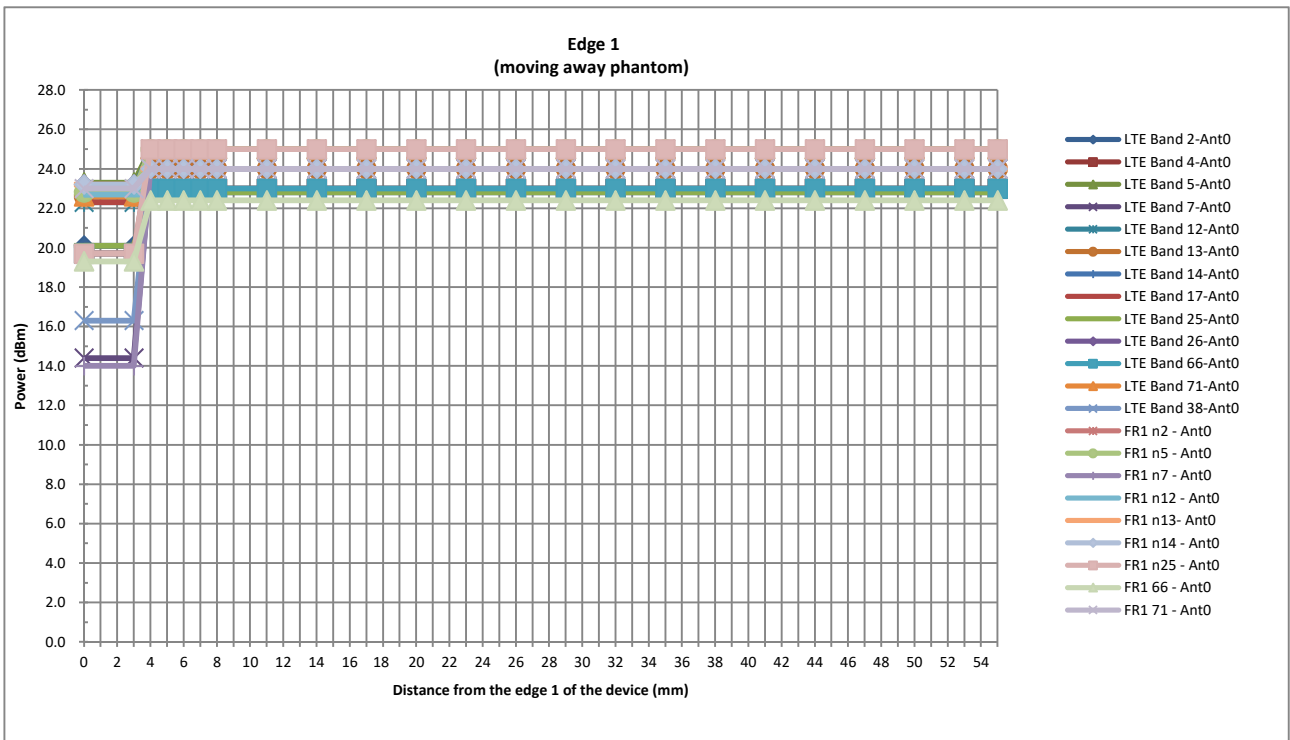
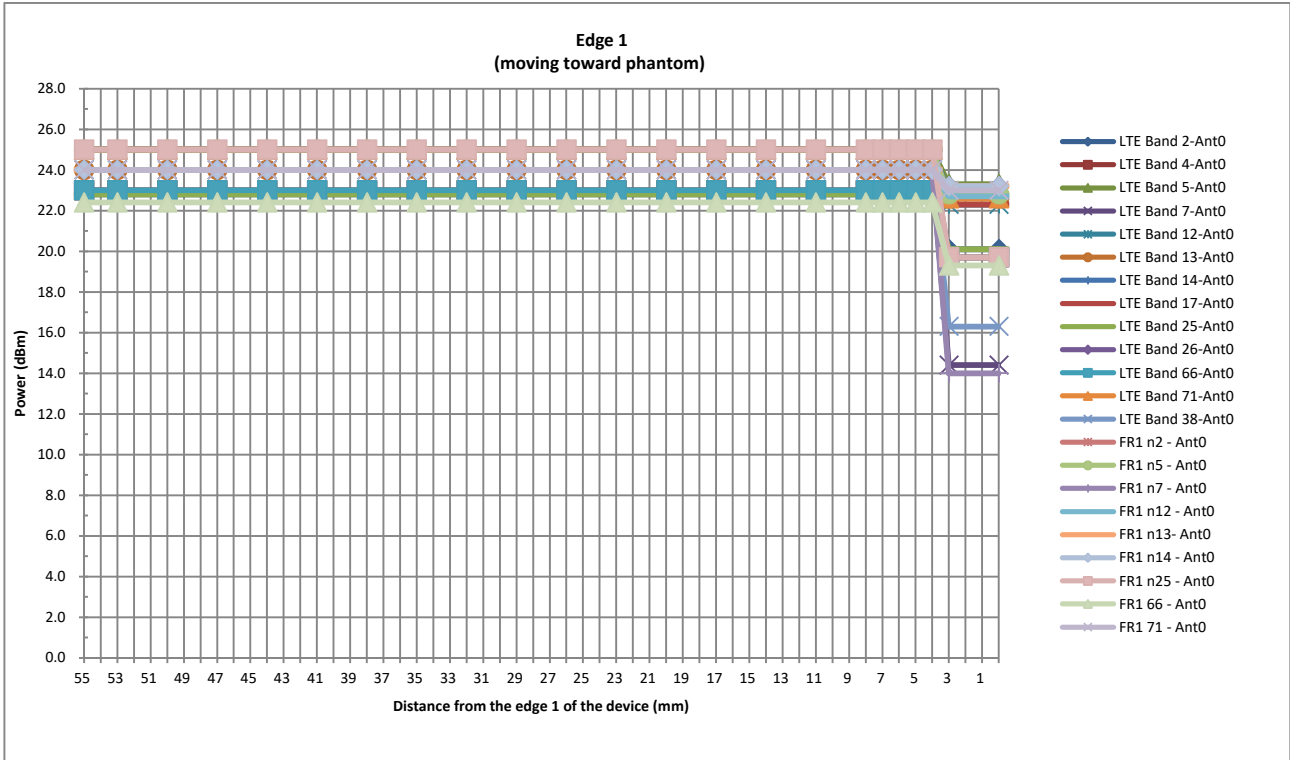


Power Measurement during Sensor Trigger distance testing for Ant.0

Band/Mode	Measured power reduction (dBm)		Reduction Levels
	w/o power back-off	w/ power back-off	(dB)
LTE Band 2	22.80	20.10	2.7
LTE Band 4	23.00	19.70	3.3
LTE Band 5	25.00	23.30	1.7
LTE Band 7	24.00	14.40	9.6
LTE Band 12	25.00	22.30	2.7
LTE Band 13	24.00	22.60	1.4
LTE Band 14	25.00	22.90	2.1
LTE Band 17	25.00	22.30	2.7
LTE Band 25	22.80	20.10	2.7
LTE Band 26	24.00	23.20	0.8
LTE Band 66	23.00	19.70	3.3
LTE Band 71	25.00	22.60	2.4
LTE Band 38	24.00	16.30	7.7
n2	25.00	19.70	5.3
n5	25.00	22.80	2.2
n7	24.00	14.00	10.0
n12	24.00	22.70	1.3
n13	24.00	23.20	0.8
n14	24.00	23.20	0.8
n25	25.00	19.70	5.3
n66	22.40	19.30	3.1
n71	24.00	23.00	1.0



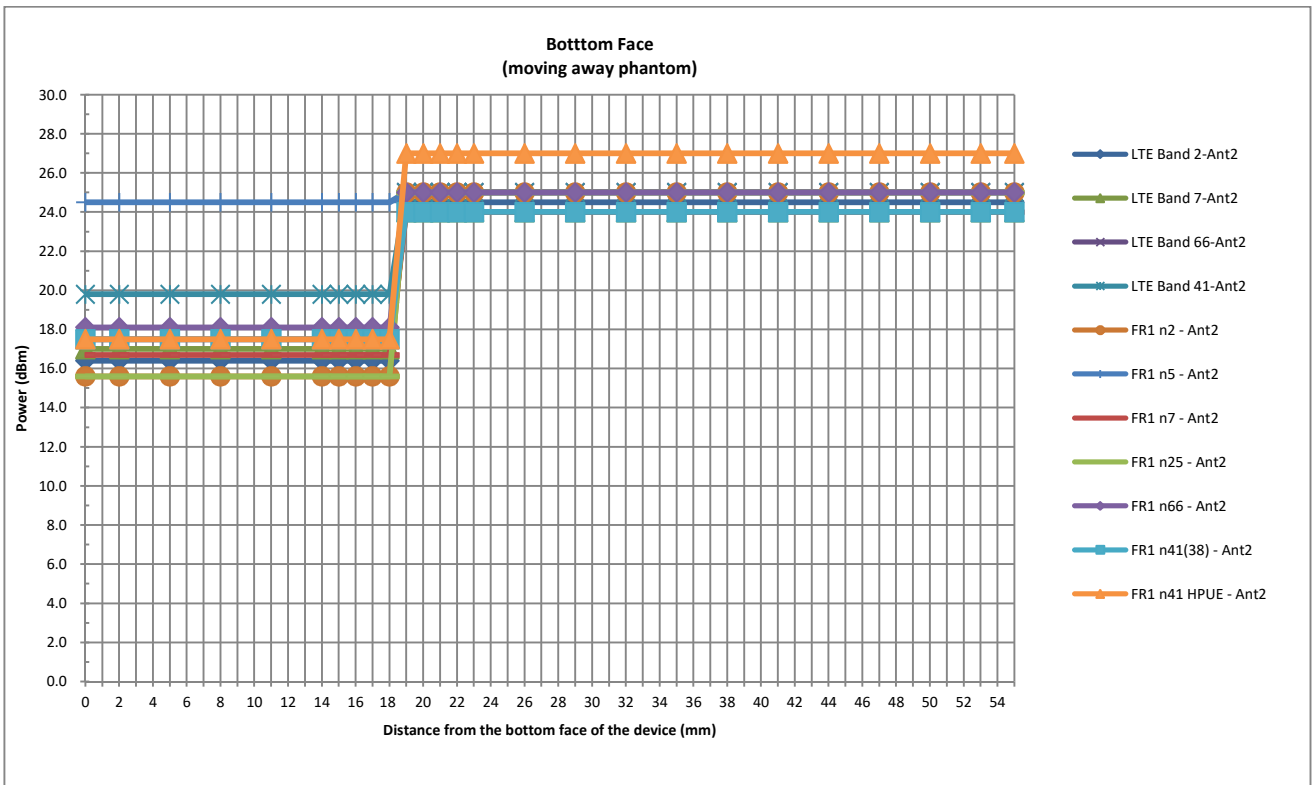
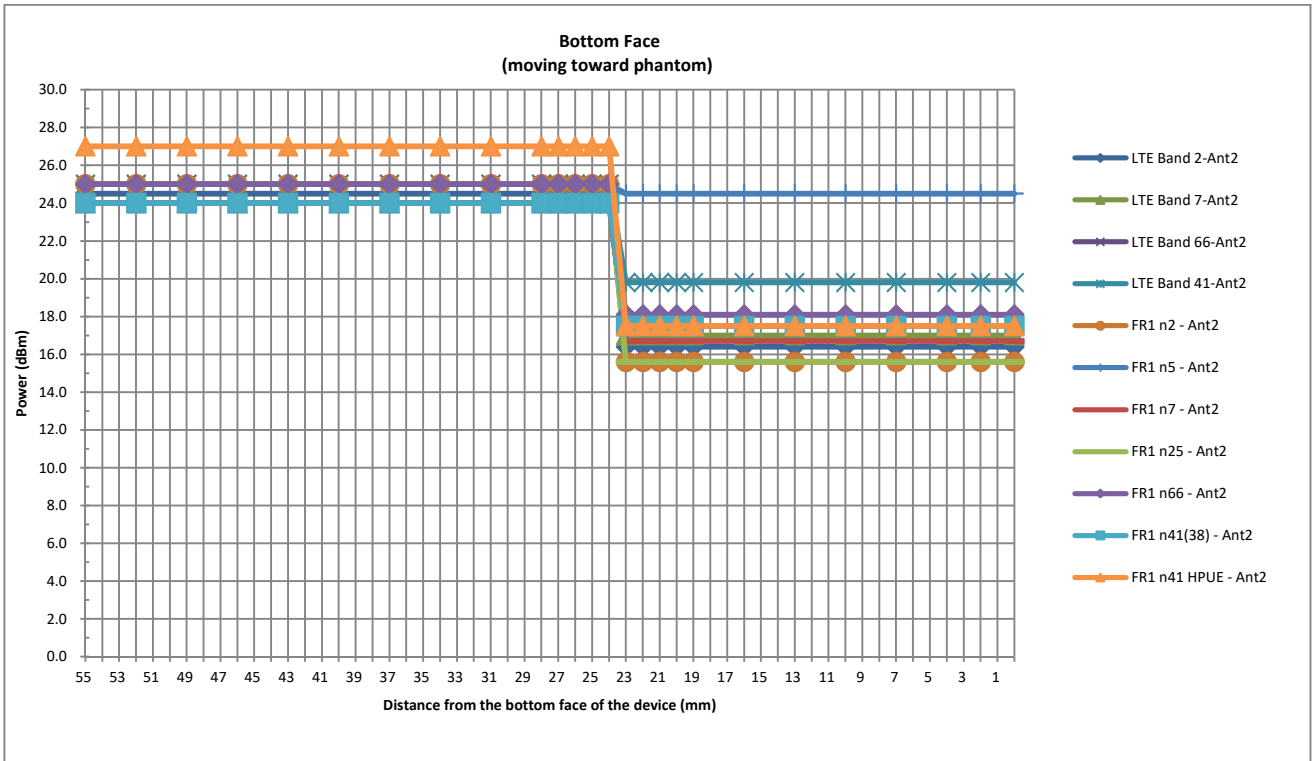


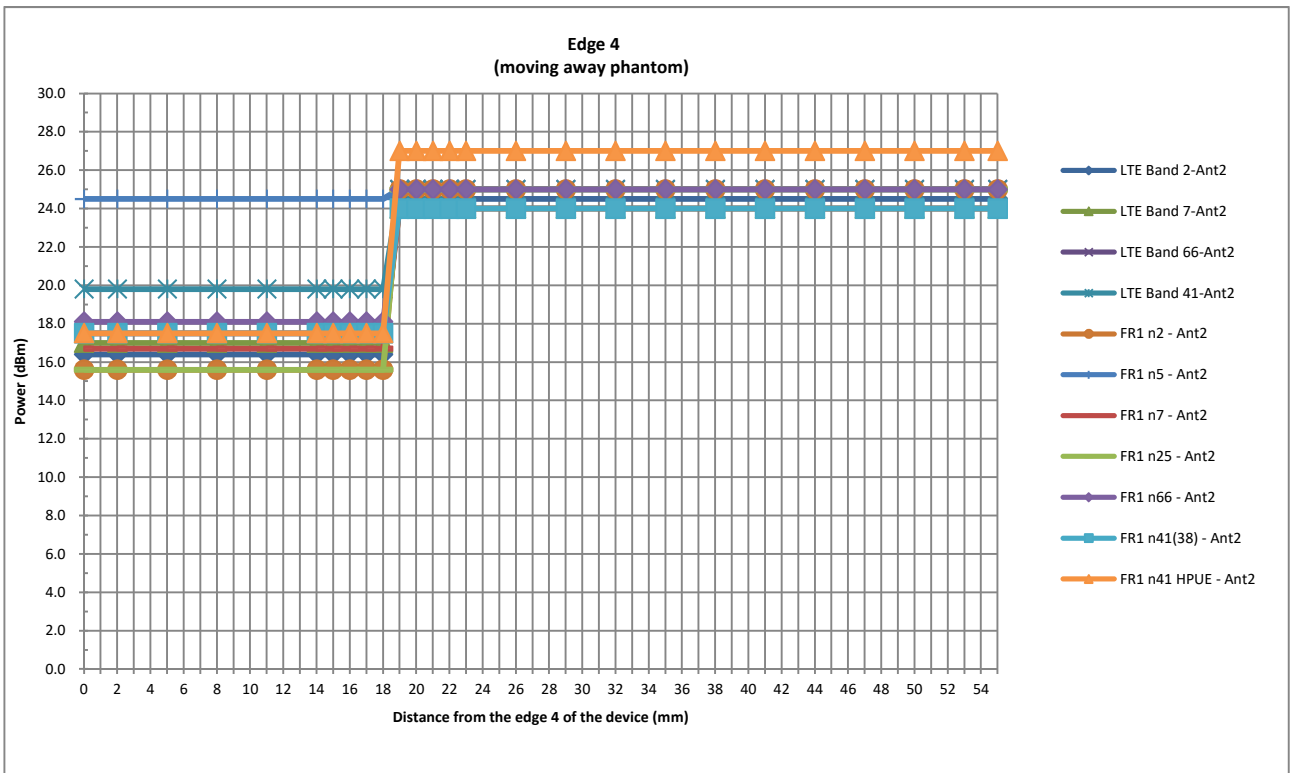
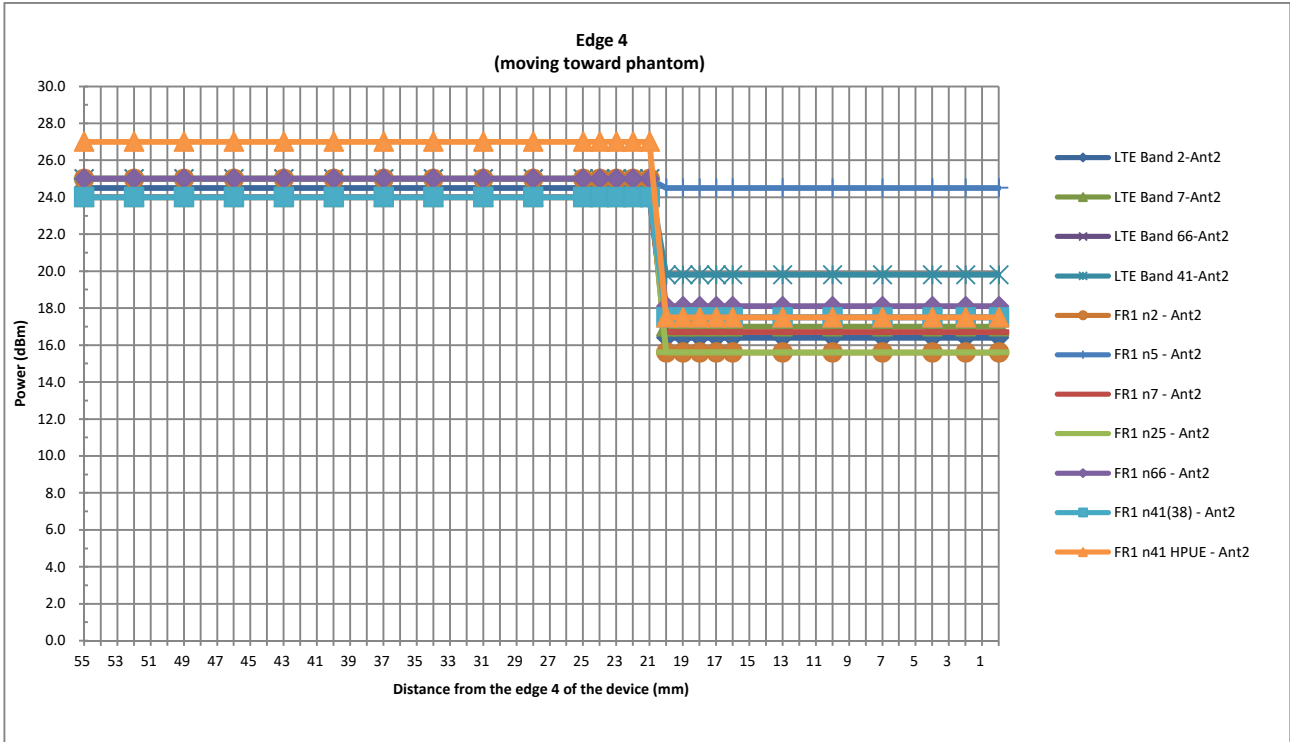




Power Measurement during Sensor Trigger distance testing for Ant.2

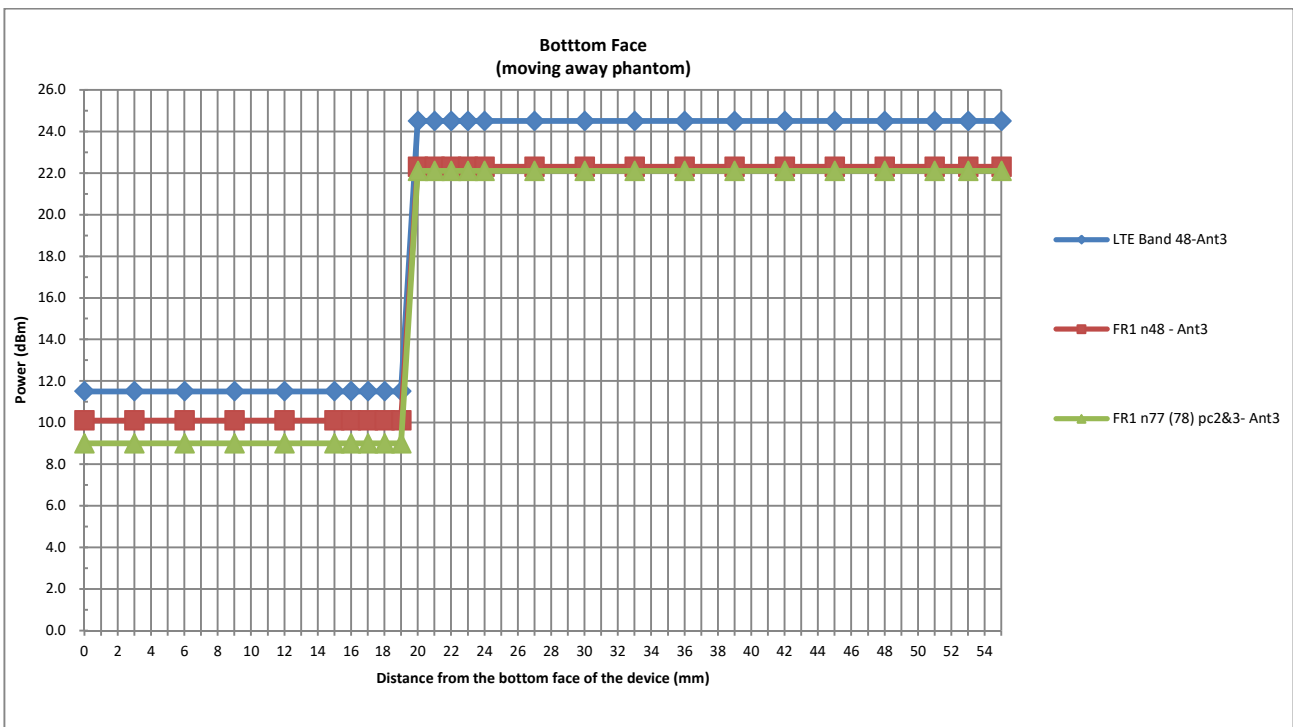
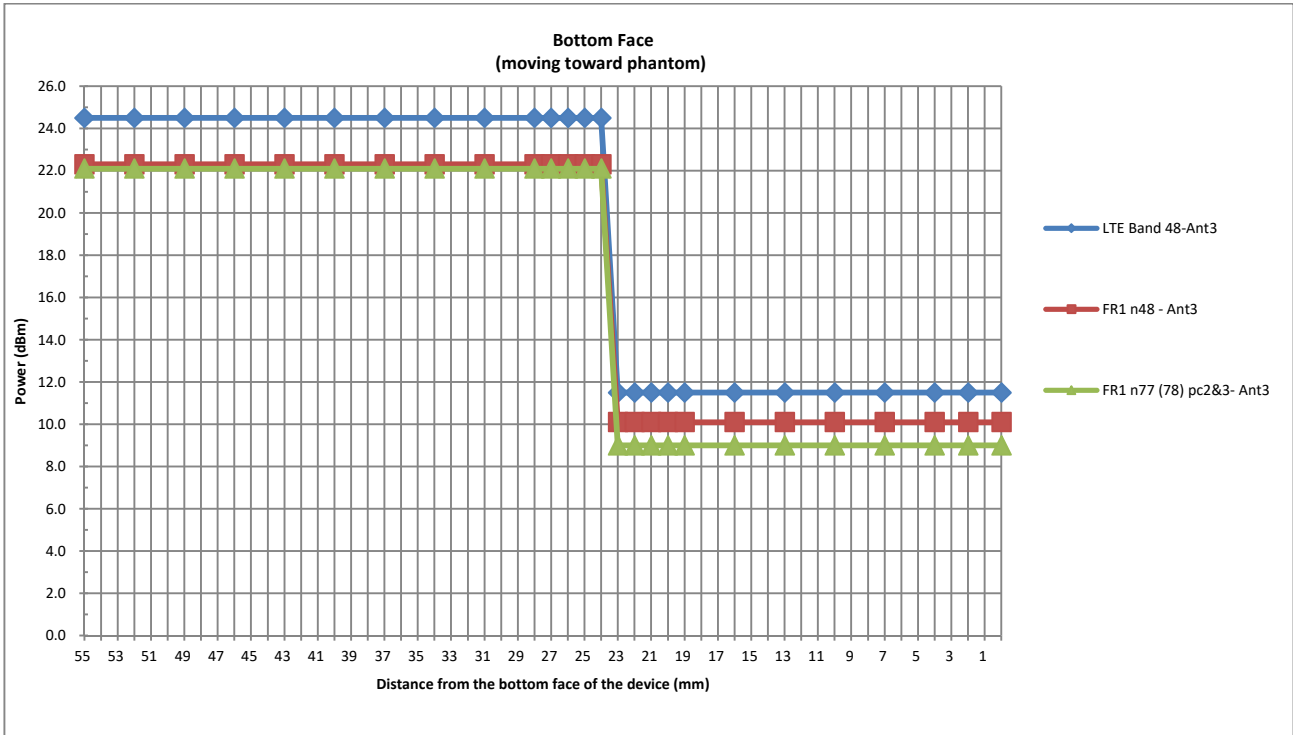
Band/Mode	Measured power reduction (dBm)		Reduction Levels
	w/o power back-off	w/ power back-off	(dB)
LTE Band 2	24.50	16.40	8.1
LTE Band 7	24.00	17.00	7.0
LTE Band 66	25.00	17.50	7.5
LTE Band 41	25.00	19.80	5.2
FR1 n2	25.00	15.60	9.4
FR1 n5	25.00	24.50	0.5
FR1 n7	24.00	16.70	7.3
FR1 n25	25.00	15.60	9.4
FR1 n66	25.00	18.10	6.9
FR1 n41/38	24.00	17.50	6.5
FR1 n41 HPUE	27.00	17.50	9.5

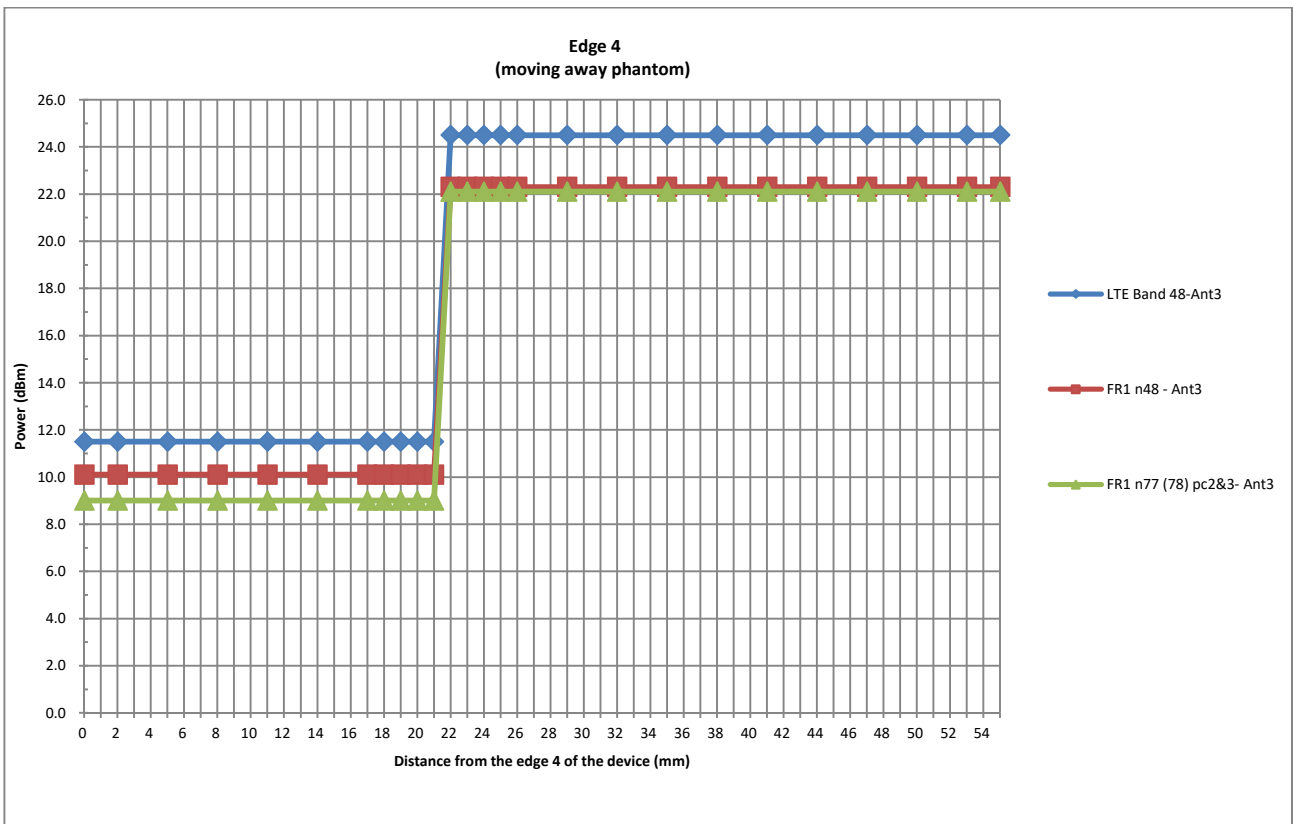
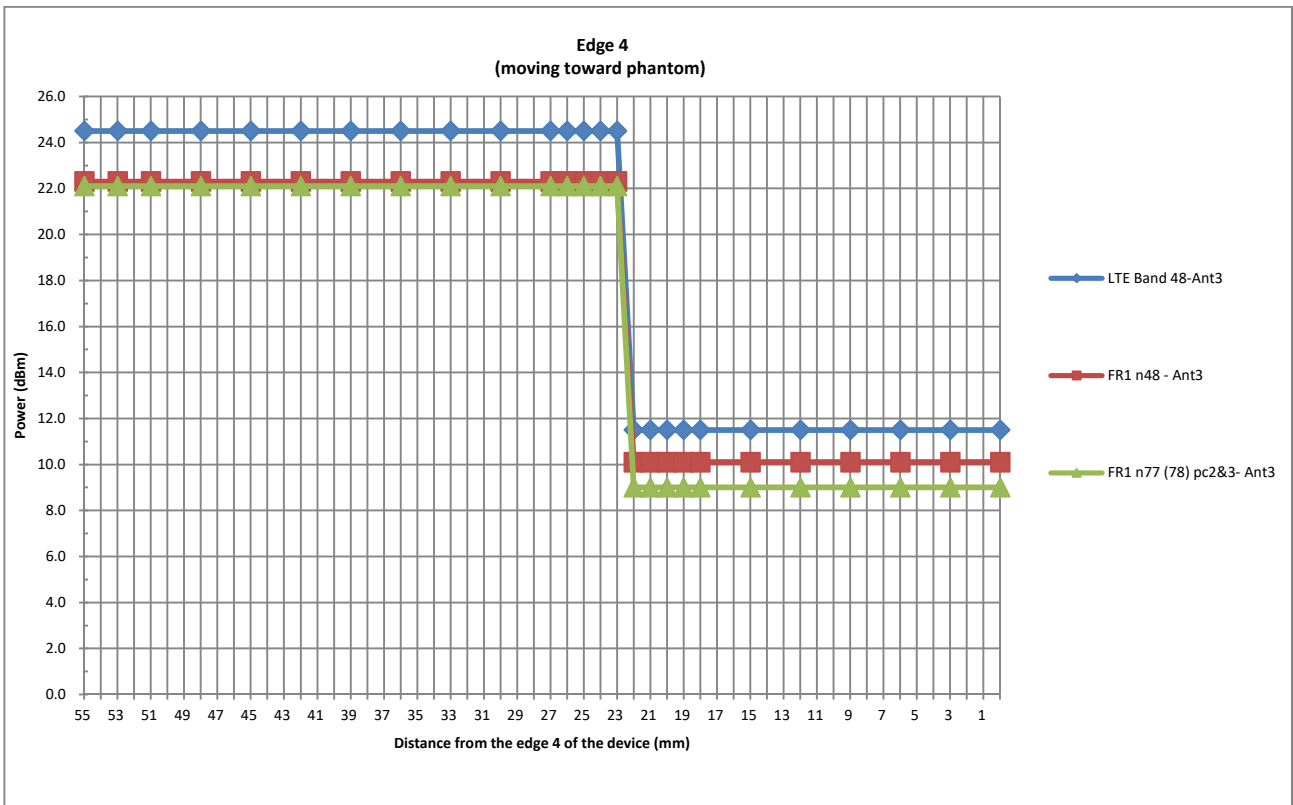


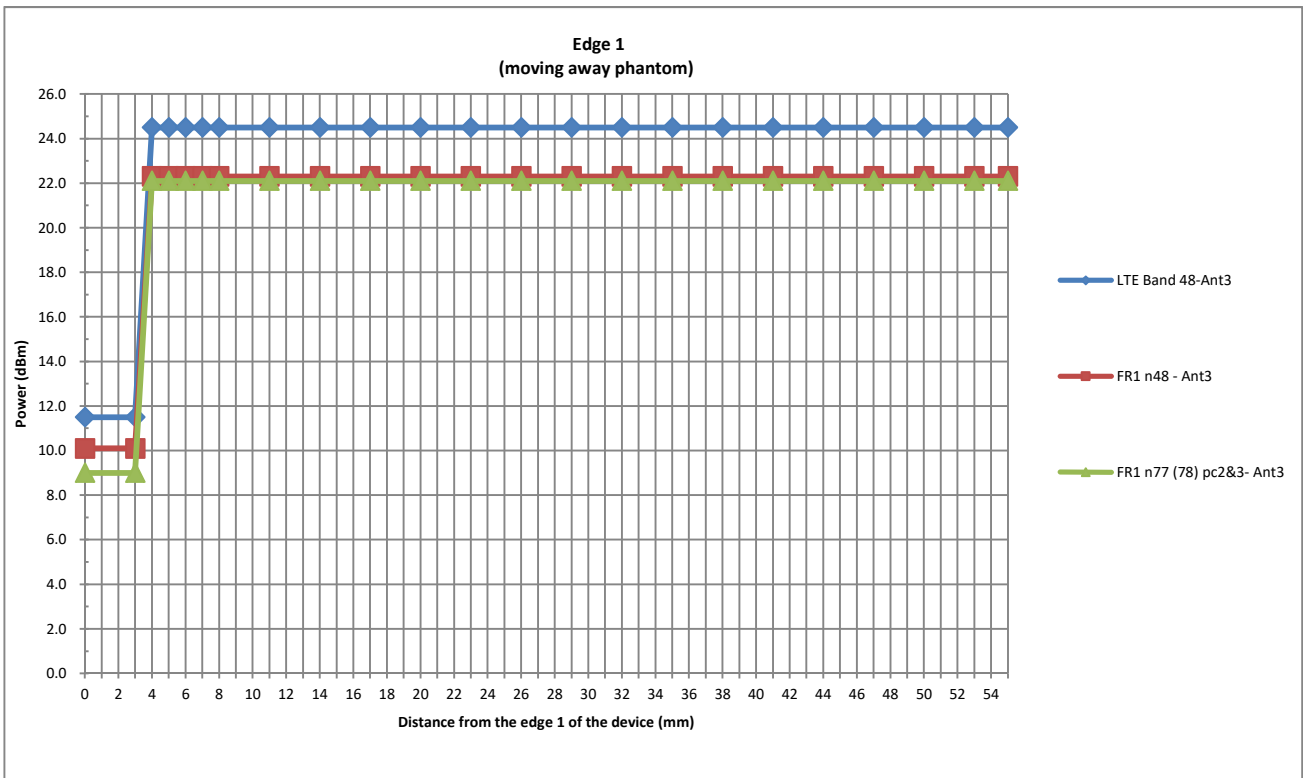
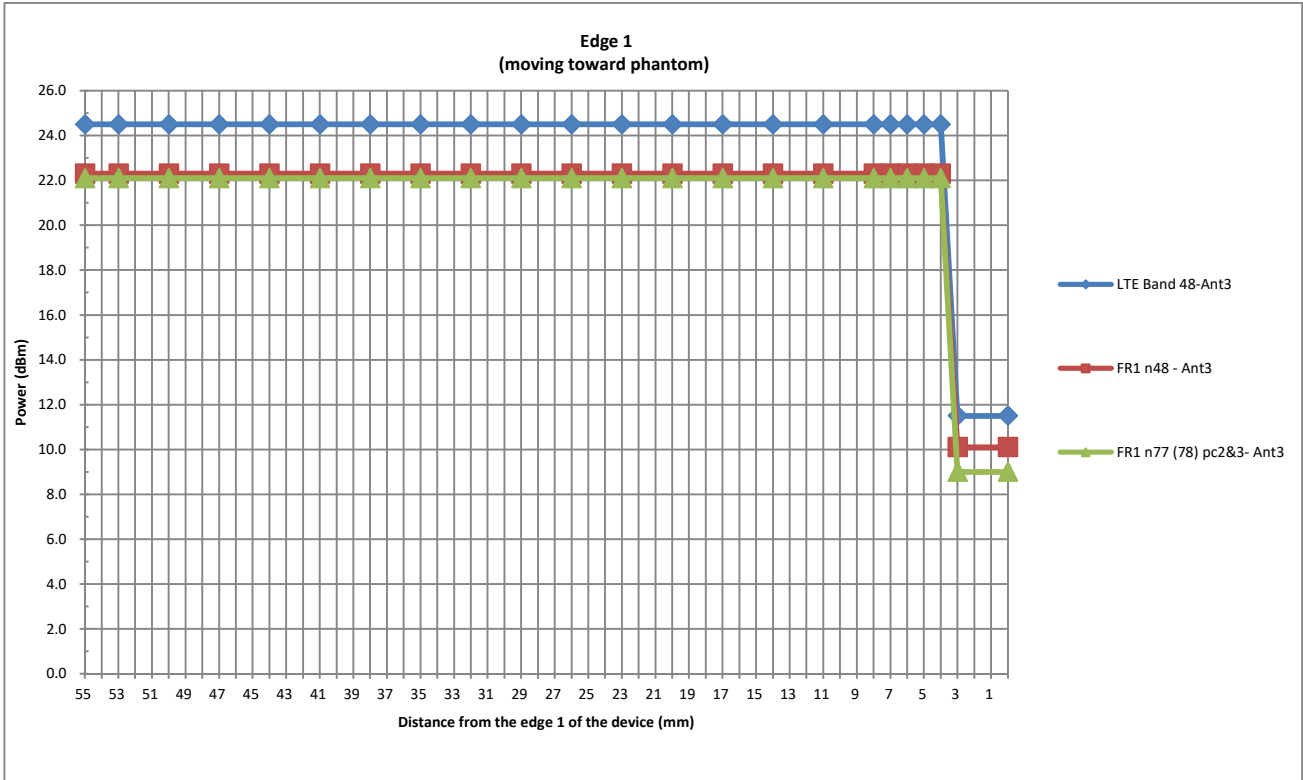


Power Measurement during Sensor Trigger distance testing for Ant.3

Band/Mode	Measured power reduction (dBm)		Reduction Levels (dB)
	w/o power back-off	w/ power back-off	
LTE Band 48	24.50	11.50	13.0
FR1 n48	22.30	10.10	12.2
FR1 n77/78 PC2&3	22.10	9.00	13.1

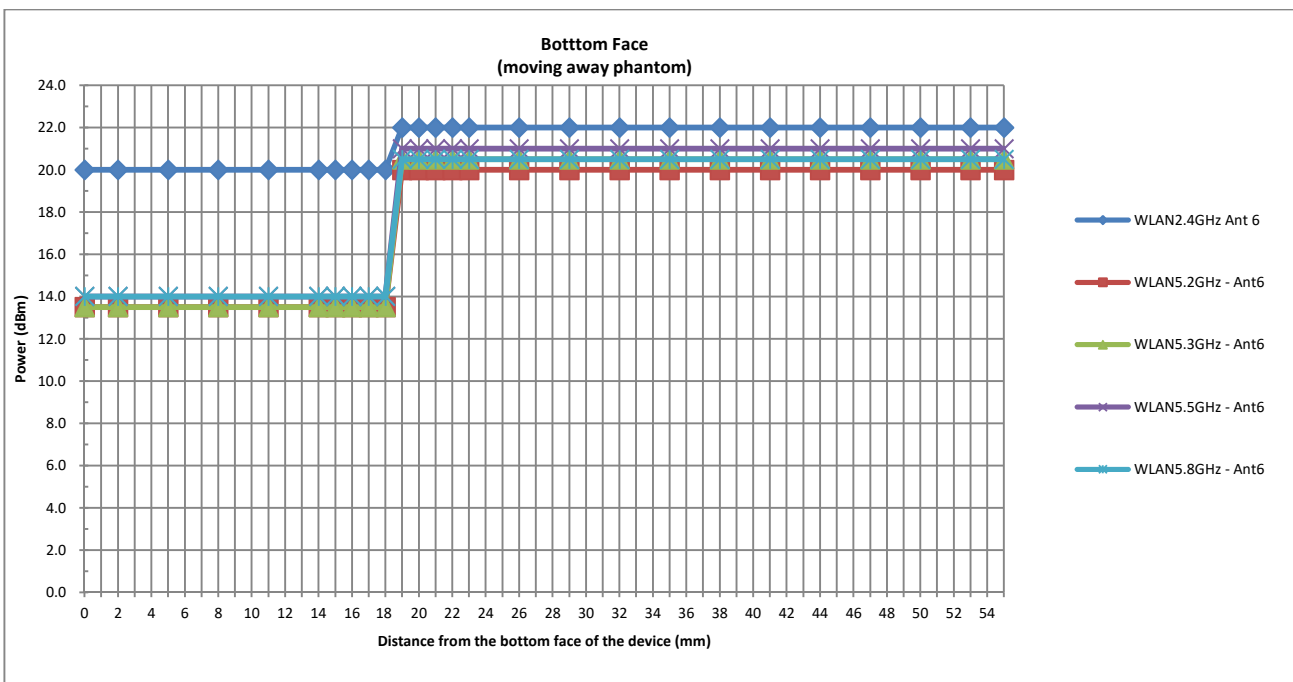
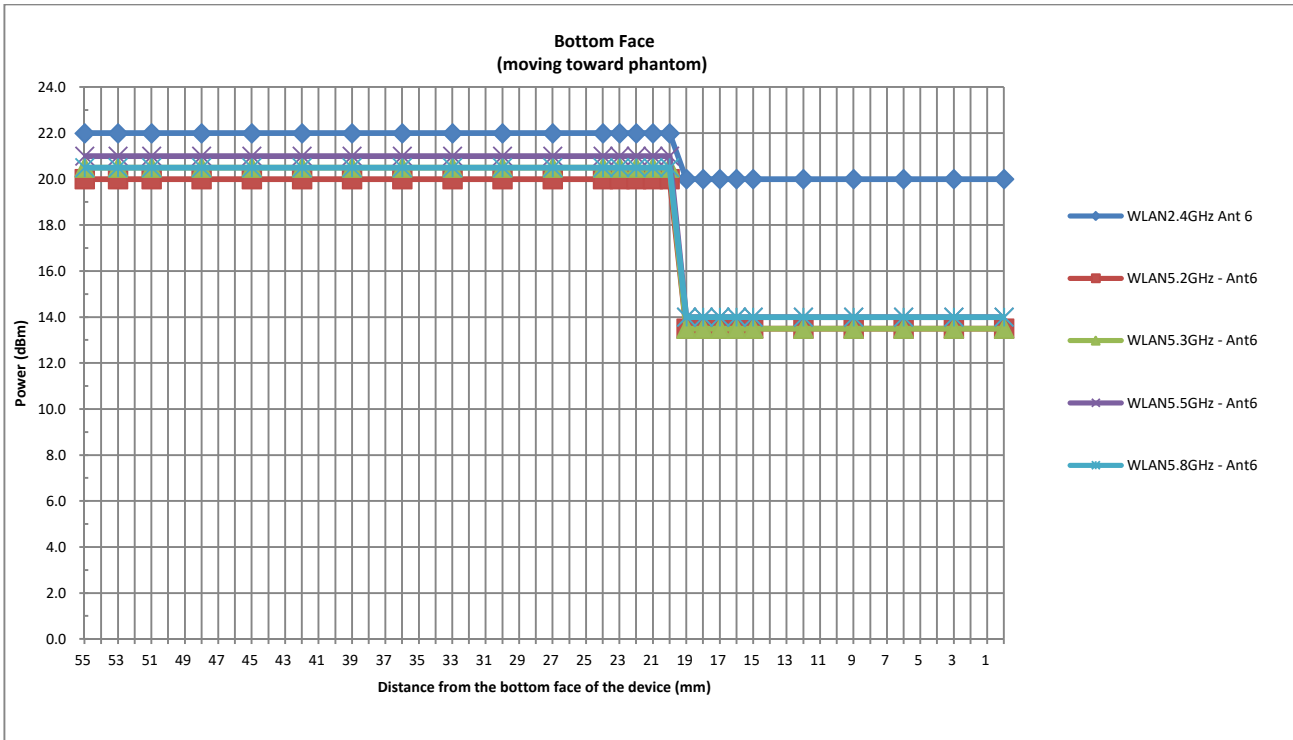


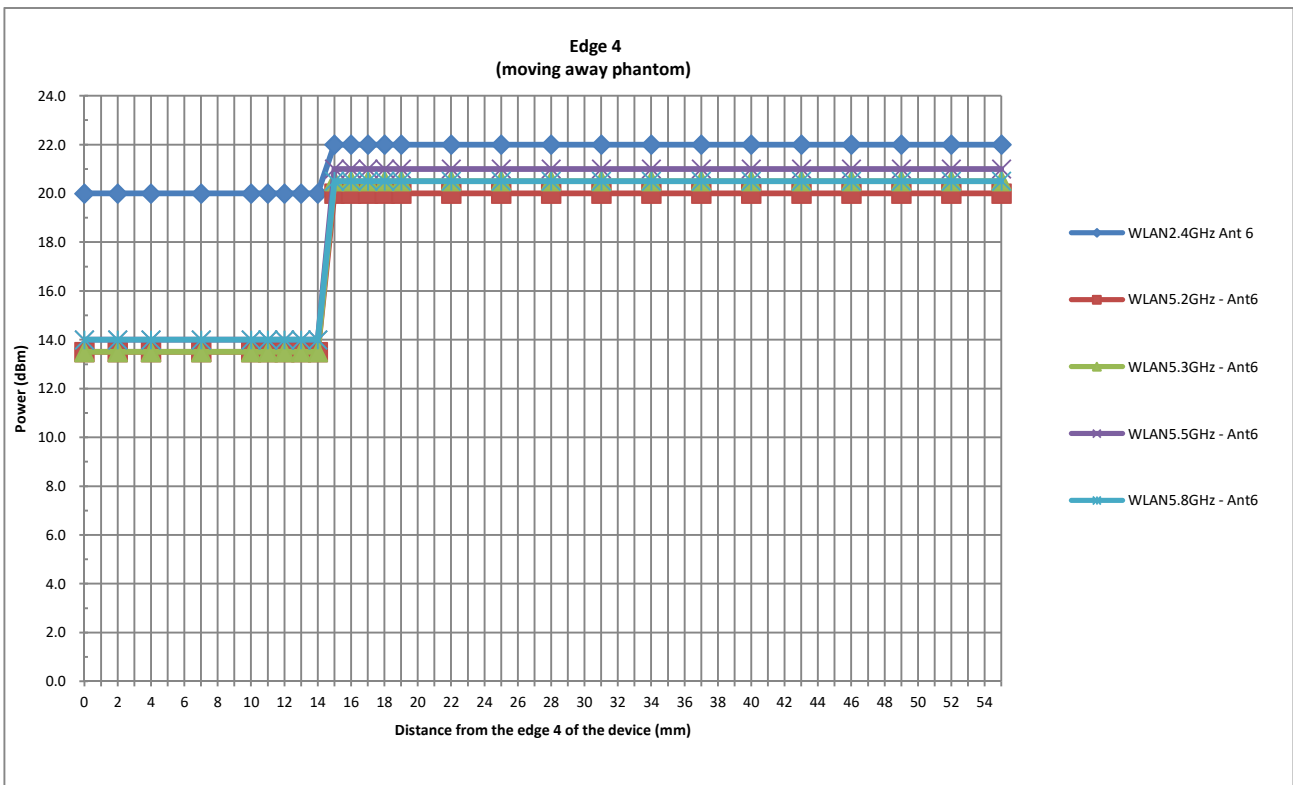
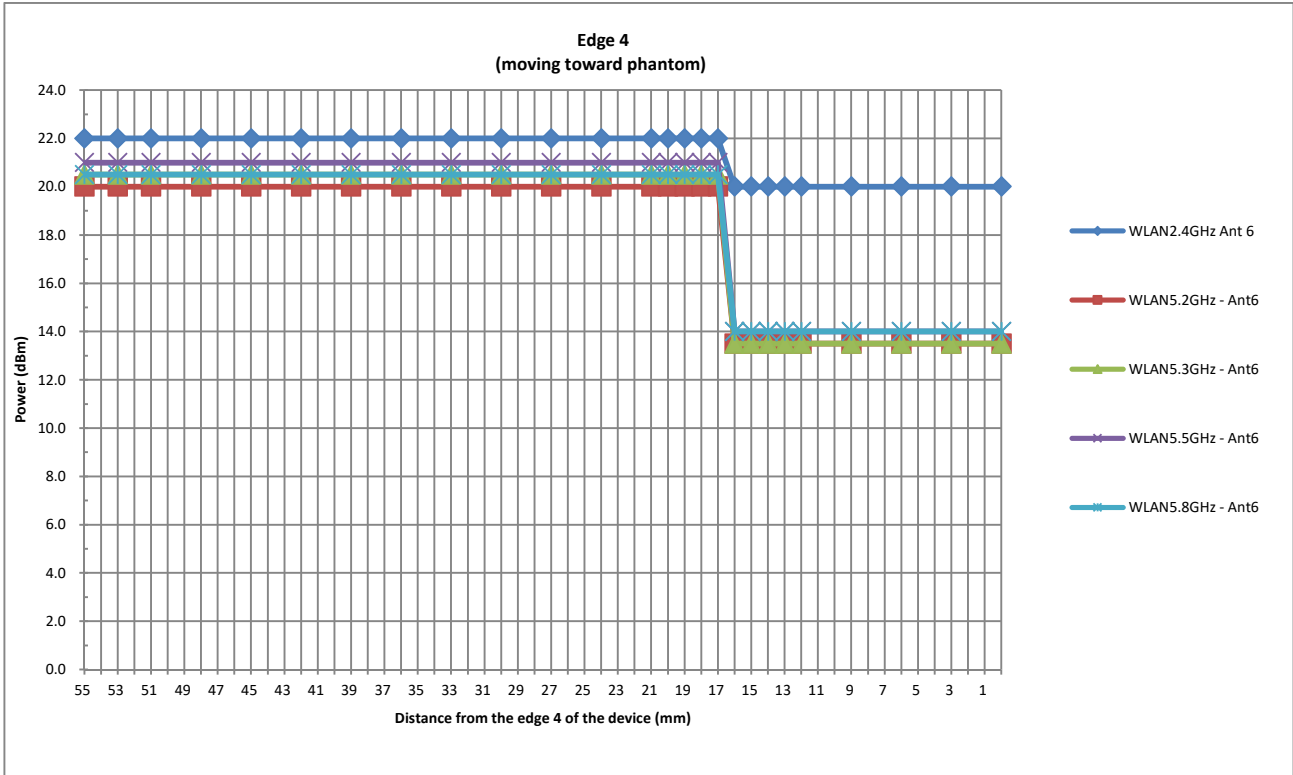




Power Measurement during Sensor Trigger distance testing for Ant.6

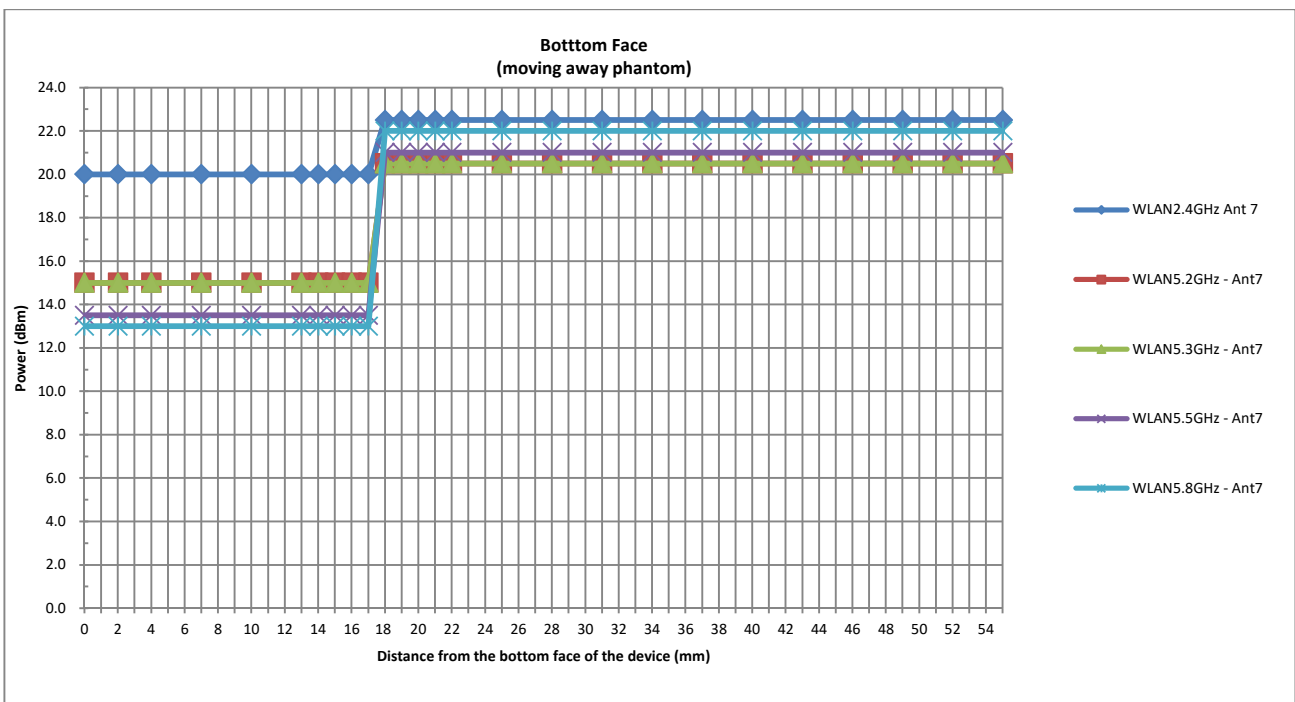
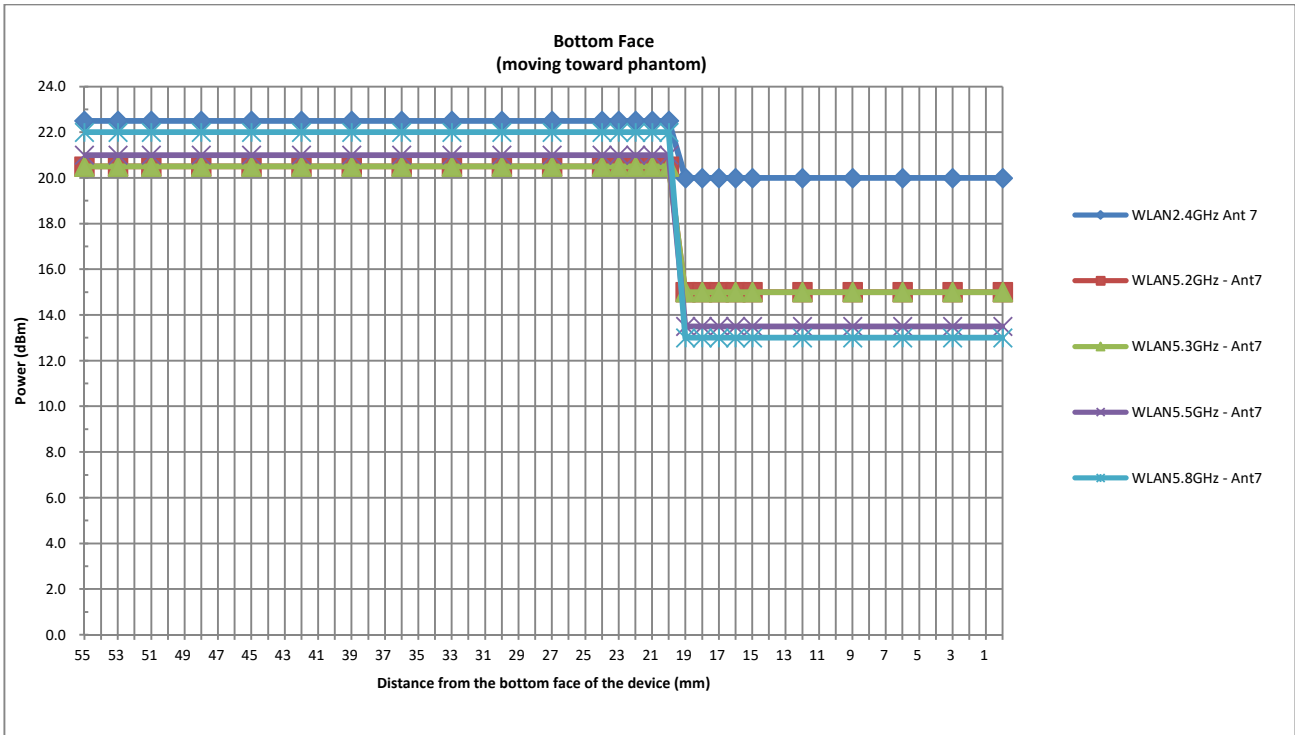
Band/Mode	Measured power reduction (dBm)		Reduction Levels (dB)
	w/o power back-off	w/ power back-off	
WLAN 2.4GHz	22.00	20.00	2.0
WLAN 5.2GHz	20.00	13.50	6.5
WLAN 5.3GHz	20.50	13.50	7.0
WLAN 5.5GHz	21.00	14.00	7.0
WLAN 5.8GHz	20.50	14.00	6.5

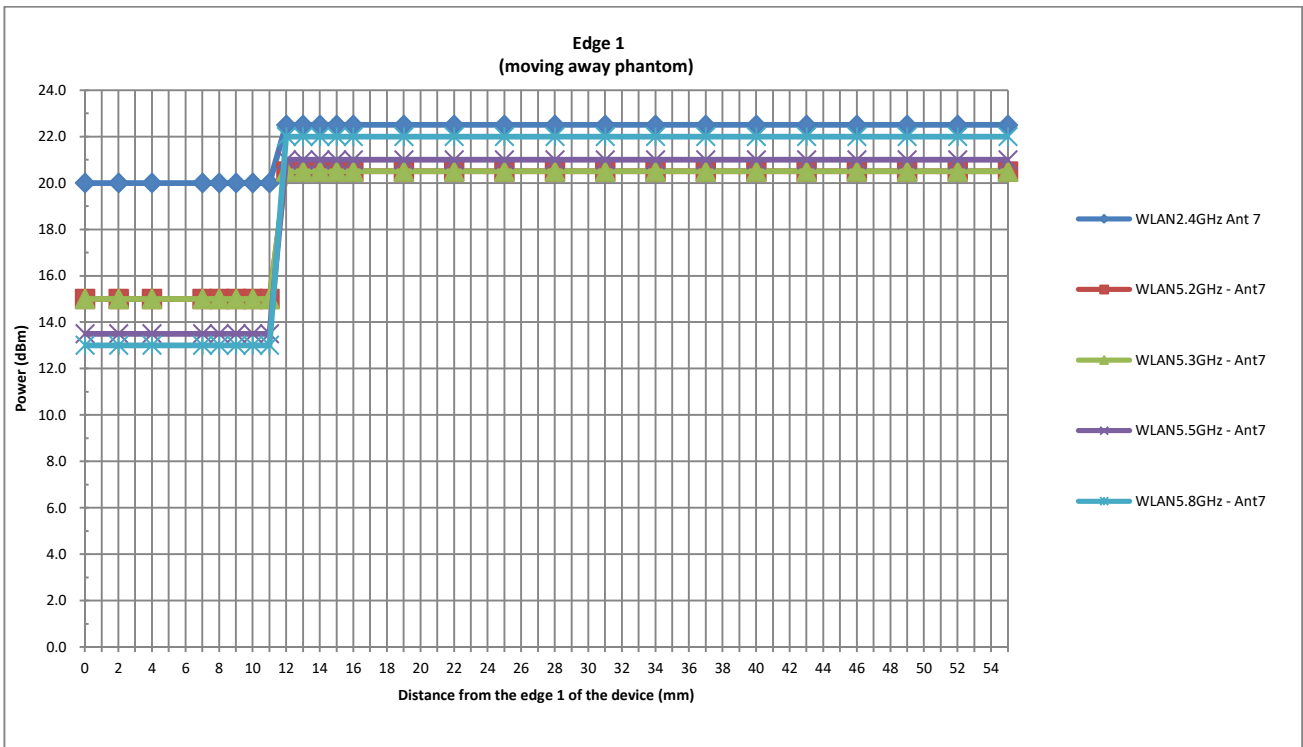
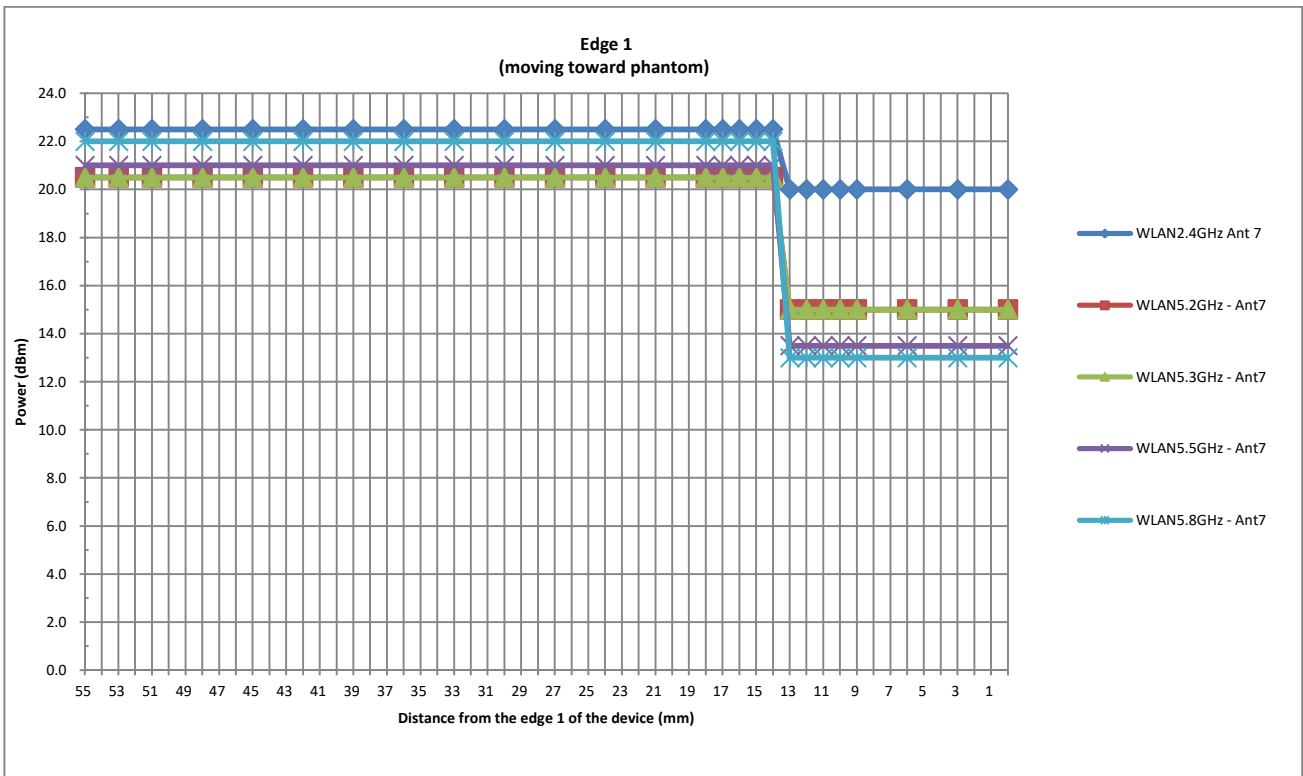




Power Measurement during Sensor Trigger distance testing for Ant.7

Band/Mode	Measured power reduction (dBm)		Reduction Levels (dB)
	w/o power back-off	w/ power back-off	
WLAN 2.4GHz	22.50	20.00	2.5
WLAN 5.2GHz	20.50	15.00	5.5
WLAN 5.3GHz	20.50	15.00	5.5
WLAN 5.5GHz	21.00	13.50	7.5
WLAN 5.8GHz	22.00	13.00	9.0





7. RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their 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.

7.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

8. Specific Absorption Rate (SAR)

8.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

8.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

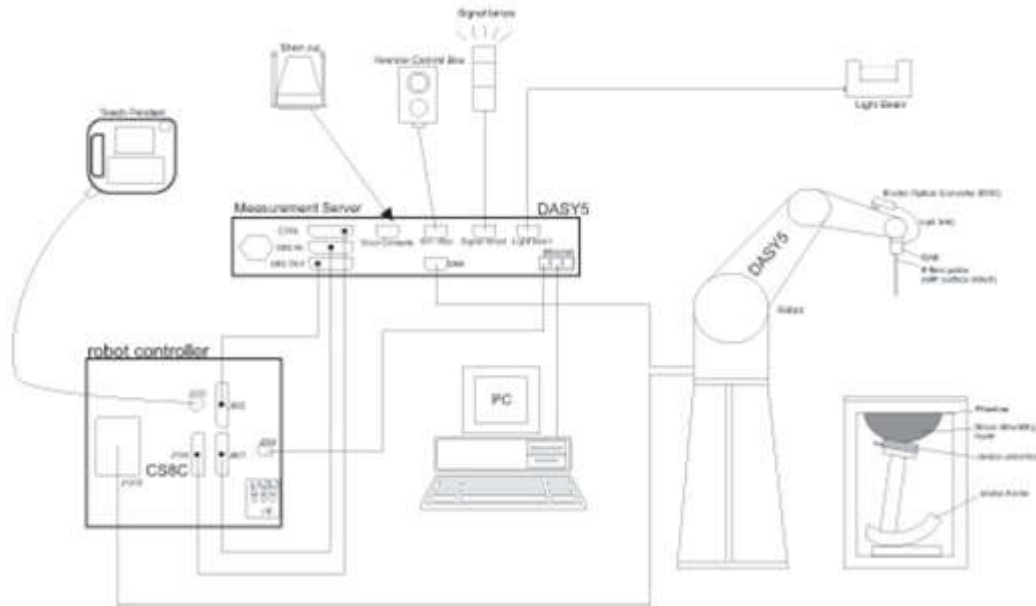
SAR is expressed in units of Watts per kilogram (W/kg)

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

9. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:




- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

9.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

9.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.


The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Fig 5.1 Photo of DAE


9.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

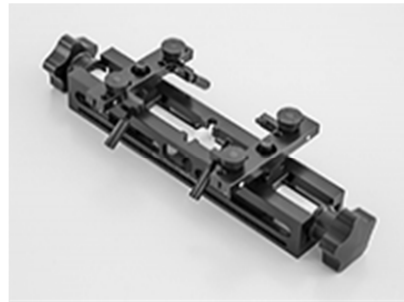
9.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

10.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

10.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

10.4 Zoom Scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

10.5 Volume Scan Procedures

The volume scan is used to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

10.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASy measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2022/2/24	2023/2/23
SPEAG	835MHz System Validation Kit	D835V2	4d162	2021/12/17	2022/12/16
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2023/2/23
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2021/12/20	2022/12/19
SPEAG	2450MHz System Validation Kit	D2450V2	924	2020/9/2	2023/9/1
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2023/11/25
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2020/11/25	2023/11/24
SPEAG	3700MHz System Validation Kit	D3700V2	1008	2020/11/25	2023/11/24
SPEAG	3900MHz System Validation Kit	D3900V2	1048	2020/5/14	2023/5/12
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2022/9/22
SPEAG	13MHz System Validation Kit	CLA13	1020	2022/6/3	2023/6/2
SPEAG	Data Acquisition Electronics	DAE4	1279	2021/9/21	2022/9/20
SPEAG	Data Acquisition Electronics	DAE4	1649	2022/3/30	2023/3/29
SPEAG	Data Acquisition Electronics	DAE4	1338	2021/12/1	2022/11/30
SPEAG	Dosimetric E-Field Probe	EX3DV4	7630	2022/3/4	2023/3/3
SPEAG	Dosimetric E-Field Probe	EX3DV4	7706	2022/1/20	2023/1/19
SPEAG	Dosimetric E-Field Probe	EX3DV4	7641	2022/4/11	2023/4/10
SPEAG	ELI4 Phantom	ELI V8.0	TP-2135	NCR	NCR
SPEAG	ELI4 Phantom	ELI V8.0	TP-2151	NCR	NCR
SPEAG	ELI4 Phantom	ELI 5.0	TP-1201	NCR	NCR
Rohde & Schwarz	Vector Signal Generator	SMBV100A	258305	2022/1/5	2023/1/4
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306173	2021/7/15	2022/7/14
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2022/7/14	2023/7/13
Agilent	ENA Series Network Analyzer	E5071C	MY46104587	2022/5/24	2023/5/23
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2022/1/24	2023/1/23
SPEAG	Dielectric Probe Kit	DAK12	1156	2022/7/28	2023/7/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2022/1/6	2023/1/5
Rohde & Schwarz	Power Meter	NRVD	102081	2021/8/12	2022/8/11
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2021/8/12	2022/8/11
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2021/8/12	2022/8/11
Rohde & Schwarz	Power Meter	NRVD	102081	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2022/7/14	2023/7/13
R&S	CBT BLUETOOTH TESTER	CBT	100641	2022/1/5	2023/1/4
EXA	Spectrum Analyzer	FSV7	101631	2021/10/14	2022/10/13
FLUKE	DIGITAC THERMOMETER	51II	97240029	2021/10/23	2022/10/22
Testo	Thermo-Hygrometer	608-H1	1241332102	2022/1/6	2023/1/5
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is $< -20\text{dB}$, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

12. System Verification

12.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1.



Fig 11.1 Photo of Liquid Height for Body SAR

12.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	Head	22.9	0.905	41.729	0.89	41.90	1.69	-0.41	±5	2022/6/7
835	Head	22.8	0.934	41.475	0.90	41.50	3.78	-0.06	±5	2022/6/10
1750	Head	22.9	1.351	40.007	1.37	40.10	-1.39	-0.23	±5	2022/6/14
1900	Head	22.7	1.432	39.777	1.40	40.00	2.29	-0.56	±5	2022/6/20
2450	Head	22.8	1.764	39.366	1.80	39.20	-2.00	0.42	±5	2022/6/25
2600	Head	22.8	1.878	39.162	1.96	39.00	-4.18	0.42	±5	2022/6/28
3500	Head	22.8	2.834	39.051	2.91	37.90	-2.61	3.04	±5	2022/6/30
3700	Head	22.9	3.024	38.720	3.12	37.70	-3.08	2.71	±5	2022/7/4
3900	Head	22.6	3.228	38.420	3.32	37.50	-2.77	2.45	±5	2022/7/10
5250	Head	22.7	4.641	36.197	4.71	35.90	-1.46	0.83	±5	2022/7/15
5600	Head	22.9	4.985	35.584	5.07	35.50	-1.68	0.24	±5	2022/7/20
5750	Head	22.8	5.219	35.277	5.22	35.40	-0.02	-0.35	±5	2022/7/26
13	Head	22.9	0.757	53.700	0.75	55.00	0.93	-2.36	±5	2022/7/30
3500	Head	22.7	2.787	39.101	2.91	37.90	-4.23	3.17	±5	2022/8/25
3900	Head	22.8	3.192	38.388	3.32	37.50	-3.86	2.37	±5	2022/8/25
2450	Head	22.9	1.824	39.200	1.80	39.20	1.33	0.00	±5	2022/8/25
5250	Head	22.8	4.673	35.377	4.71	35.90	-0.79	-1.46	±5	2022/8/25
5600	Head	22.7	5.083	34.739	5.07	35.50	0.26	-2.14	±5	2022/8/26
5750	Head	22.8	5.258	34.452	5.22	35.40	0.73	-2.68	±5	2022/8/26

12.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2022/6/7	750	Head	50	1087	7630	1279	0.415	8.58	8.3	-3.26
2022/6/10	835	Head	50	4d162	7630	1279	0.505	9.64	10.1	4.77
2022/6/14	1750	Head	50	1090	7630	1279	1.910	37.00	38.2	3.24
2022/6/20	1900	Head	50	5d182	7630	1279	2.110	39.60	42.2	6.57
2022/6/25	2450	Head	50	924	7630	1279	2.710	51.40	54.2	5.45
2022/6/28	2600	Head	50	1061	7630	1279	2.910	56.60	58.2	2.83
2022/6/30	3500	Head	50	1037	7630	1279	3.620	68.00	72.4	6.47
2022/7/4	3700	Head	50	1008	7630	1279	3.480	67.60	69.6	2.96
2022/7/10	3900	Head	50	1048	7706	1649	3.450	70.20	69	-1.71
2022/7/15	5250	Head	50	1113	7630	1279	4.330	80.50	86.6	7.58
2022/7/20	5600	Head	50	1113	7630	1279	4.390	83.40	87.8	5.28
2022/7/26	5750	Head	50	1113	7630	1279	4.230	80.00	84.6	5.75
2022/7/30	13	Head	250	1020	7641	1338	0.135	0.568	0.54	-5.26
2022/8/25	3500	Head	50	1037	7630	1279	3.480	68.00	69.6	2.35
2022/8/25	3900	Head	50	1048	7706	1649	3.270	70.20	65.4	-6.84
2022/8/25	2450	Head	50	924	7630	1279	2.680	51.40	53.6	4.28
2022/8/25	5250	Head	50	1113	7630	1279	4.030	80.50	80.6	0.12
2022/8/26	5600	Head	50	1113	7630	1279	4.050	83.40	81	-2.88
2022/8/26	5750	Head	50	1113	7630	1279	4.030	80.00	80.6	0.75

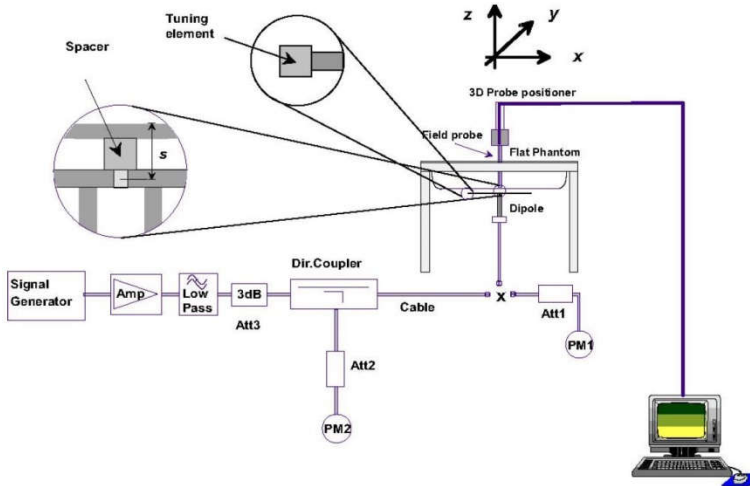


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo



13. RF Exposure Positions

13.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

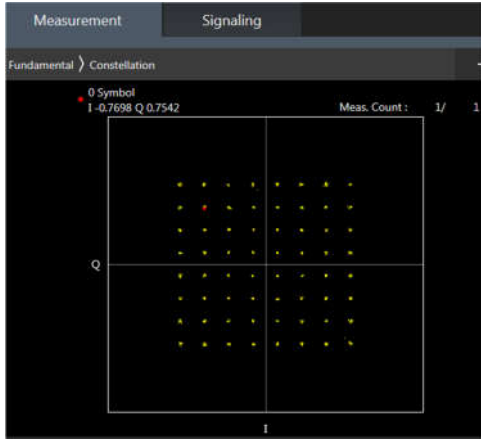


14. Conducted RF Output Power (Unit: dBm)

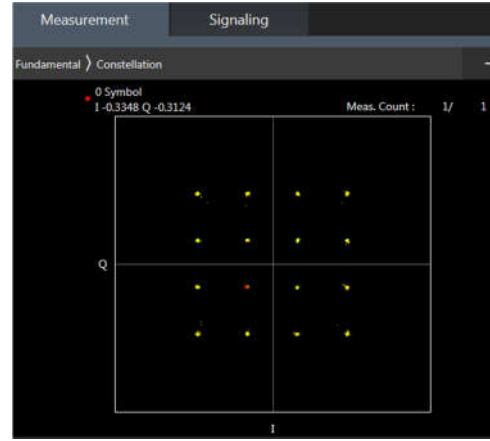
<LTE Conducted Power>

General Note:

1. Anritsu MT8821C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 / B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4/17 SAR test was covered by Band 66/12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to May 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

Default Power Mode

Ant0

Band 2								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100	24.5	0
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.45	23.57	23.47	23.5	1
20	QPSK	1	49	23.55	23.54	23.50		
20	QPSK	1	99	23.48	23.46	23.55		
20	QPSK	50	0	22.58	22.61	22.56	23.5	1
20	QPSK	50	24	22.50	22.57	22.39		
20	QPSK	50	50	22.48	22.58	22.59		
20	QPSK	100	0	22.56	22.63	22.52	23.5	1
20	16QAM	1	0	22.44	22.66	22.47		
20	16QAM	1	49	22.49	22.58	22.53		
20	16QAM	1	99	22.45	22.60	22.44	22.5	2
20	16QAM	50	0	21.56	21.68	21.72		
20	16QAM	50	24	21.56	21.72	21.48		
20	16QAM	50	50	21.57	21.70	21.61	22.5	2
20	16QAM	100	0	21.54	21.59	21.37		
20	64QAM	1	0	21.54	21.62	21.43		
20	64QAM	1	49	21.43	21.43	21.45	22.5	2
20	64QAM	1	99	21.48	21.59	21.50		
20	64QAM	50	0	20.64	20.55	20.51		
20	64QAM	50	24	20.56	20.50	20.50	21.5	3
20	64QAM	50	50	20.51	20.77	20.60		
20	64QAM	100	0	20.55	20.76	20.39		
Channel				18675	18900	19125	24.5	0
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.30	23.48	23.43	23.5	1
15	QPSK	1	37	23.42	23.42	23.39		
15	QPSK	1	74	23.40	23.34	23.50		
15	QPSK	36	0	22.45	22.57	22.50	23.5	1
15	QPSK	36	20	22.38	22.49	22.29		
15	QPSK	36	39	22.43	22.52	22.52		
15	QPSK	75	0	22.44	22.51	22.42	23.5	1
15	16QAM	1	0	22.40	22.59	22.43		



15	16QAM	1	37	22.43	22.46	22.43		
15	16QAM	1	74	22.42	22.46	22.41		
15	16QAM	36	0	21.50	21.63	21.64	22.5	2
15	16QAM	36	20	21.48	21.59	21.41		
15	16QAM	36	39	21.49	21.55	21.47		
15	16QAM	75	0	21.40	21.53	21.31		
15	64QAM	1	0	21.47	21.49	21.36	22.5	2
15	64QAM	1	37	21.35	21.40	21.31		
15	64QAM	1	74	21.36	21.46	21.46		
15	64QAM	36	0	20.56	20.41	20.40	21.5	3
15	64QAM	36	20	20.51	20.39	20.42		
15	64QAM	36	39	20.38	20.70	20.56		
15	64QAM	75	0	20.50	20.68	20.34		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.41	23.42	23.36	24.5	0
10	QPSK	1	25	23.51	23.49	23.45		
10	QPSK	1	49	23.34	23.39	23.54		
10	QPSK	25	0	22.50	22.56	22.51	23.5	1
10	QPSK	25	12	22.38	22.51	22.28		
10	QPSK	25	25	22.35	22.53	22.44		
10	QPSK	50	0	22.47	22.48	22.45		
10	16QAM	1	0	22.30	22.59	22.34	23.5	1
10	16QAM	1	25	22.40	22.43	22.41		
10	16QAM	1	49	22.38	22.54	22.31		
10	16QAM	25	0	21.47	21.58	21.62	22.5	2
10	16QAM	25	12	21.52	21.67	21.37		
10	16QAM	25	25	21.47	21.58	21.54		
10	16QAM	50	0	21.50	21.46	21.23		
10	64QAM	1	0	21.40	21.56	21.34	22.5	2
10	64QAM	1	25	21.37	21.34	21.37		
10	64QAM	1	49	21.37	21.56	21.37		
10	64QAM	25	0	20.54	20.50	20.47	21.5	3
10	64QAM	25	12	20.48	20.46	20.38		
10	64QAM	25	25	20.40	20.70	20.50		
10	64QAM	50	0	20.44	20.69	20.33		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.40	23.51	23.33	24.5	0
5	QPSK	1	12	23.44	23.50	23.40		
5	QPSK	1	24	23.35	23.36	23.52		
5	QPSK	12	0	22.49	22.53	22.49	23.5	1
5	QPSK	12	7	22.46	22.48	22.24		
5	QPSK	12	13	22.39	22.51	22.51		
5	QPSK	25	0	22.41	22.48	22.44		
5	16QAM	1	0	22.37	22.62	22.41	23.5	1
5	16QAM	1	12	22.38	22.49	22.46		
5	16QAM	1	24	22.42	22.53	22.37		
5	16QAM	12	0	21.50	21.63	21.66	22.5	2
5	16QAM	12	7	21.44	21.65	21.44		
5	16QAM	12	13	21.51	21.60	21.56		
5	16QAM	25	0	21.45	21.53	21.33		
5	64QAM	1	0	21.41	21.50	21.30	22.5	2
5	64QAM	1	12	21.38	21.39	21.32		
5	64QAM	1	24	21.40	21.53	21.41		
5	64QAM	12	0	20.57	20.52	20.44	21.5	3



5	64QAM	12	7	20.49	20.46	20.45		
5	64QAM	12	13	20.45	20.70	20.48		
5	64QAM	25	0	20.41	20.64	20.24		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.33	23.48	23.33	24.5	0
3	QPSK	1	8	23.45	23.40	23.42		
3	QPSK	1	14	23.44	23.41	23.53		
3	QPSK	8	0	22.54	22.52	22.52	23.5	1
3	QPSK	8	4	22.40	22.52	22.32		
3	QPSK	8	7	22.36	22.53	22.52		
3	QPSK	15	0	22.41	22.52	22.47	23.5	1
3	16QAM	1	0	22.35	22.60	22.42		
3	16QAM	1	8	22.37	22.46	22.45		
3	16QAM	1	14	22.41	22.46	22.30	22.5	2
3	16QAM	8	0	21.45	21.55	21.59		
3	16QAM	8	4	21.44	21.65	21.36		
3	16QAM	8	7	21.46	21.57	21.54	22.5	2
3	16QAM	15	0	21.45	21.46	21.29		
3	64QAM	1	0	21.41	21.57	21.34		
3	64QAM	1	8	21.38	21.30	21.35	22.5	2
3	64QAM	1	14	21.40	21.46	21.36		
3	64QAM	8	0	20.55	20.43	20.39		
3	64QAM	8	4	20.52	20.36	20.41	21.5	3
3	64QAM	8	7	20.46	20.70	20.48		
3	64QAM	15	0	20.42	20.65	20.27		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.31	23.43	23.35	24.5	0
1.4	QPSK	1	3	23.43	23.50	23.37		
1.4	QPSK	1	5	23.41	23.34	23.51		
1.4	QPSK	3	0	23.35	23.42	23.42		
1.4	QPSK	3	1	23.36	23.43	23.22		
1.4	QPSK	3	3	23.24	23.39	23.43		
1.4	QPSK	6	0	22.51	22.57	22.42	23.5	1
1.4	16QAM	1	0	22.31	22.55	22.43	23.5	1
1.4	16QAM	1	3	22.43	22.51	22.46		
1.4	16QAM	1	5	22.40	22.48	22.32		
1.4	16QAM	3	0	22.42	22.61	22.67		
1.4	16QAM	3	1	22.50	22.66	22.43		
1.4	16QAM	3	3	22.54	22.67	22.53		
1.4	16QAM	6	0	21.45	21.46	21.29	22.5	2
1.4	64QAM	1	0	21.44	21.50	21.34	22.5	2
1.4	64QAM	1	3	21.34	21.35	21.42		
1.4	64QAM	1	5	21.44	21.45	21.41		
1.4	64QAM	3	0	21.57	21.48	21.47		
1.4	64QAM	3	1	21.46	21.43	21.39		
1.4	64QAM	3	3	21.38	21.64	21.53		
1.4	64QAM	6	0	20.50	20.68	20.29	21.5	3



Band 4								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	24.03	24.18	24.16	25	0
20	QPSK	1	49	24.00	24.00	23.92		
20	QPSK	1	99	24.08	24.07	24.06		
20	QPSK	50	0	23.11	23.21	22.99	24	1
20	QPSK	50	24	22.94	23.00	22.95		
20	QPSK	50	50	23.04	23.10	23.12		
20	QPSK	100	0	23.21	23.26	23.16	24	1
20	16QAM	1	0	23.09	23.13	23.05		
20	16QAM	1	49	23.00	23.01	22.95		
20	16QAM	1	99	23.02	23.12	23.03	23	2
20	16QAM	50	0	22.08	22.20	22.06		
20	16QAM	50	24	22.01	22.10	21.95		
20	16QAM	50	50	22.19	22.13	22.02	23	2
20	16QAM	100	0	22.26	22.25	22.20		
20	64QAM	1	0	22.09	22.13	22.05		
20	64QAM	1	49	21.93	22.11	22.02	23	2
20	64QAM	1	99	22.05	22.10	22.16		
20	64QAM	50	0	20.97	21.19	21.16		
20	64QAM	50	24	21.05	21.06	20.92	22	3
20	64QAM	50	50	21.10	21.18	21.13		
20	64QAM	100	0	21.23	21.19	21.09		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.99	24.04	24.10	25	0
15	QPSK	1	37	23.89	23.90	23.81		
15	QPSK	1	74	24.00	24.01	23.98		
15	QPSK	36	0	22.96	23.03	22.83	24	1
15	QPSK	36	20	22.90	22.96	22.78		
15	QPSK	36	39	22.88	22.95	22.98		
15	QPSK	75	0	23.08	23.14	22.99	24	1
15	16QAM	1	0	22.94	23.07	22.89		
15	16QAM	1	37	22.88	22.91	22.90		
15	16QAM	1	74	23.00	22.99	22.94	23	2
15	16QAM	36	0	21.94	22.07	22.03		
15	16QAM	36	20	21.88	22.07	21.85		
15	16QAM	36	39	22.01	21.98	21.88	23	2
15	16QAM	75	0	22.19	22.19	22.15		
15	64QAM	1	0	21.96	22.05	21.90		
15	64QAM	1	37	21.80	21.95	21.96	23	2
15	64QAM	1	74	21.91	21.96	22.13		
15	64QAM	36	0	20.86	21.13	21.07		
15	64QAM	36	20	21.02	21.01	20.86	22	3
15	64QAM	36	39	21.05	21.06	21.00		
15	64QAM	75	0	21.07	21.14	21.03		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.90	24.02	24.13	25	0
10	QPSK	1	25	23.83	23.97	23.74		
10	QPSK	1	49	23.90	23.96	23.90		
10	QPSK	25	0	23.01	23.05	22.93	24	1



10	QPSK	25	12	22.77	22.92	22.82		
10	QPSK	25	25	22.87	22.98	22.99		
10	QPSK	50	0	23.17	23.21	23.11		
10	16QAM	1	0	23.07	23.06	23.03	24	1
10	16QAM	1	25	22.97	22.98	22.84		
10	16QAM	1	49	22.84	23.02	22.94		
10	16QAM	25	0	22.01	22.05	21.92	23	2
10	16QAM	25	12	21.87	21.98	21.90		
10	16QAM	25	25	22.10	22.02	21.85		
10	16QAM	50	0	22.15	22.12	22.16		
10	64QAM	1	0	21.93	21.97	21.90	23	2
10	64QAM	1	25	21.88	22.07	21.85		
10	64QAM	1	49	21.94	21.97	22.08		
10	64QAM	25	0	20.82	21.01	21.02	22	3
10	64QAM	25	12	20.89	20.98	20.83		
10	64QAM	25	25	21.07	21.05	21.05		
10	64QAM	50	0	21.19	21.16	21.06		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.96	24.09	23.98	25	0
5	QPSK	1	12	23.90	23.95	23.84		
5	QPSK	1	24	23.99	23.98	23.89		
5	QPSK	12	0	22.95	23.15	22.81	24	1
5	QPSK	12	7	22.91	22.83	22.84		
5	QPSK	12	13	22.88	23.07	23.04		
5	QPSK	25	0	23.04	23.13	23.11	24	1
5	16QAM	1	0	23.00	23.04	22.90		
5	16QAM	1	12	22.89	22.87	22.92		
5	16QAM	1	24	22.89	23.07	22.88	23	2
5	16QAM	12	0	22.03	22.10	21.91		
5	16QAM	12	7	21.89	21.94	21.79		
5	16QAM	12	13	22.14	21.98	21.94	22	3
5	16QAM	25	0	22.11	22.23	22.15		
5	64QAM	1	0	21.97	22.07	21.91		
5	64QAM	1	12	21.81	22.07	21.94	23	2
5	64QAM	1	24	21.92	22.07	22.06		
5	64QAM	12	0	20.88	21.14	21.02		
5	64QAM	12	7	20.98	20.99	20.75	22	3
5	64QAM	12	13	20.97	21.08	20.95		
5	64QAM	25	0	21.15	21.09	21.07		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.99	24.12	23.99	25	0
3	QPSK	1	8	23.93	23.93	23.76		
3	QPSK	1	14	23.93	23.90	23.92		
3	QPSK	8	0	23.01	23.08	22.87	24	1
3	QPSK	8	4	22.88	22.97	22.89		
3	QPSK	8	7	22.88	23.00	23.02		
3	QPSK	15	0	23.08	23.16	23.05	24	1
3	16QAM	1	0	23.07	22.96	22.90		
3	16QAM	1	8	22.84	22.98	22.92		
3	16QAM	1	14	22.86	23.09	22.94	23	2
3	16QAM	8	0	21.99	22.12	21.93		
3	16QAM	8	4	21.97	22.01	21.88		
3	16QAM	8	7	22.10	21.98	21.87	23	2
3	16QAM	15	0	22.12	22.22	22.06		



3	64QAM	1	0	21.98	22.02	21.88	23	2
3	64QAM	1	8	21.77	22.01	21.99		
3	64QAM	1	14	21.98	22.02	22.08		
3	64QAM	8	0	20.81	21.09	21.12	22	3
3	64QAM	8	4	20.93	20.93	20.89		
3	64QAM	8	7	21.01	21.09	21.05		
3	64QAM	15	0	21.11	21.15	20.98		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.90	24.12	24.14	25	0
1.4	QPSK	1	3	23.91	23.85	23.77		
1.4	QPSK	1	5	23.96	23.92	23.92		
1.4	QPSK	3	0	23.96	24.12	23.89		
1.4	QPSK	3	1	23.80	23.91	23.89		
1.4	QPSK	3	3	23.96	24.08	23.96		
1.4	QPSK	6	0	23.14	23.22	23.09	24	1
1.4	16QAM	1	0	23.05	23.10	22.99	24	1
1.4	16QAM	1	3	22.94	22.90	22.87		
1.4	16QAM	1	5	22.88	22.98	22.87		
1.4	16QAM	3	0	22.97	23.03	22.96		
1.4	16QAM	3	1	22.98	22.96	22.81		
1.4	16QAM	3	3	23.07	22.96	22.97		
1.4	16QAM	6	0	22.23	22.14	22.05	23	2
1.4	64QAM	1	0	21.97	22.10	21.92	23	2
1.4	64QAM	1	3	21.76	21.98	21.86		
1.4	64QAM	1	5	21.97	21.99	22.10		
1.4	64QAM	3	0	21.92	22.04	22.00		
1.4	64QAM	3	1	21.95	22.03	21.86		
1.4	64QAM	3	3	22.00	22.07	22.00		
1.4	64QAM	6	0	21.11	21.08	20.97		



Band 5								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	24.06	24.21	24.09	25	0
10	QPSK	1	25	23.94	24.08	23.94		
10	QPSK	1	49	24.07	24.12	24.09		
10	QPSK	25	0	23.11	23.29	23.03	24	1
10	QPSK	25	12	23.03	23.20	23.03		
10	QPSK	25	25	23.11	23.20	23.25		
10	QPSK	50	0	23.25	23.32	23.30	24	1
10	16QAM	1	0	23.10	23.33	23.13		
10	16QAM	1	25	23.12	23.15	23.03		
10	16QAM	1	49	23.19	23.15	23.08	23	2
10	16QAM	25	0	22.13	22.24	22.04		
10	16QAM	25	12	22.10	22.03	22.06		
10	16QAM	25	25	22.21	22.31	22.06	23	2
10	16QAM	50	0	22.33	22.26	22.16		
10	64QAM	1	0	22.24	22.26	22.22		
10	64QAM	1	25	22.00	22.12	22.13	23	2
10	64QAM	1	49	22.08	22.21	22.03		
10	64QAM	25	0	21.16	21.25	21.10		
10	64QAM	25	12	21.12	21.08	20.94	22	3
10	64QAM	25	25	21.12	21.18	21.20		
10	64QAM	50	0	21.36	21.33	21.19		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	24.02	24.18	23.95	25	0
5	QPSK	1	12	23.92	23.97	23.82		
5	QPSK	1	24	23.93	24.04	24.02		
5	QPSK	12	0	23.08	23.20	22.88	24	1
5	QPSK	12	7	22.95	23.13	22.90		
5	QPSK	12	13	23.00	23.16	23.11		
5	QPSK	25	0	23.22	23.15	23.15	24	1
5	16QAM	1	0	23.06	23.15	23.04		
5	16QAM	1	12	23.08	23.00	22.96		
5	16QAM	1	24	23.02	23.07	22.92	23	2
5	16QAM	12	0	22.01	22.19	21.89		
5	16QAM	12	7	22.05	21.89	21.91		
5	16QAM	12	13	22.09	22.17	21.95	23	2
5	16QAM	25	0	22.27	22.10	22.07		
5	64QAM	1	0	22.22	22.23	22.04		
5	64QAM	1	12	21.95	22.09	22.11	23	2
5	64QAM	1	24	22.01	22.03	21.87		
5	64QAM	12	0	21.01	21.12	21.08		
5	64QAM	12	7	20.94	20.93	20.83	22	3
5	64QAM	12	13	21.02	21.02	21.09		
5	64QAM	25	0	21.30	21.22	21.08		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	24.02	24.09	23.95	25	0
3	QPSK	1	8	23.77	23.94	23.85		
3	QPSK	1	14	23.92	23.98	23.92		
3	QPSK	8	0	23.00	23.15	22.91	24	1



3	QPSK	8	4	22.92	23.04	22.99		
3	QPSK	8	7	23.03	23.04	23.22		
3	QPSK	15	0	23.22	23.24	23.15		
3	16QAM	1	0	23.07	23.17	22.97	24	1
3	16QAM	1	8	23.01	23.06	22.92		
3	16QAM	1	14	23.09	23.11	23.04		
3	16QAM	8	0	22.05	22.09	22.01	23	2
3	16QAM	8	4	21.99	22.01	21.90		
3	16QAM	8	7	22.11	22.26	21.98		
3	16QAM	15	0	22.28	22.22	22.03		
3	64QAM	1	0	22.10	22.23	22.14	23	2
3	64QAM	1	8	21.97	21.97	21.97		
3	64QAM	1	14	21.92	22.07	21.95		
3	64QAM	8	0	21.00	21.15	20.99	22	3
3	64QAM	8	4	20.96	20.96	20.88		
3	64QAM	8	7	21.06	21.10	21.17		
3	64QAM	15	0	21.32	21.19	21.16		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.91	24.17	23.92	25	0
1.4	QPSK	1	3	23.81	24.04	23.90		
1.4	QPSK	1	5	23.96	24.07	23.95		
1.4	QPSK	3	0	24.02	24.20	23.85		
1.4	QPSK	3	1	23.95	24.04	23.85		
1.4	QPSK	3	3	24.08	24.06	24.16		
1.4	QPSK	6	0	23.12	23.16	23.14	24	1
1.4	16QAM	1	0	22.98	23.16	23.00	24	1
1.4	16QAM	1	3	23.06	23.01	23.01		
1.4	16QAM	1	5	23.15	23.01	22.97		
1.4	16QAM	3	0	22.98	23.20	22.95		
1.4	16QAM	3	1	22.98	22.95	23.01		
1.4	16QAM	3	3	23.07	23.17	22.95		
1.4	16QAM	6	0	22.22	22.16	22.00	23	2
1.4	64QAM	1	0	22.07	22.12	22.07	23	2
1.4	64QAM	1	3	21.91	22.08	22.09		
1.4	64QAM	1	5	22.05	22.14	22.01		
1.4	64QAM	3	0	22.13	22.20	21.96		
1.4	64QAM	3	1	21.97	22.02	21.85		
1.4	64QAM	3	3	22.07	22.05	22.04		
1.4	64QAM	6	0	21.33	21.23	21.12	22	3



Band 7								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.29	23.39	23.34	24	0
20	QPSK	1	49	23.25	23.35	23.20		
20	QPSK	1	99	23.11	23.29	23.25		
20	QPSK	50	0	22.55	22.58	22.50	23	1
20	QPSK	50	24	22.40	22.53	22.38		
20	QPSK	50	50	22.37	22.51	22.47		
20	QPSK	100	0	22.36	22.48	22.32	23	1
20	16QAM	1	0	22.28	22.37	22.35		
20	16QAM	1	49	22.17	22.28	22.11		
20	16QAM	1	99	22.11	22.28	22.20	22	2
20	16QAM	50	0	21.46	21.55	21.50		
20	16QAM	50	24	21.49	21.57	21.39		
20	16QAM	50	50	21.38	21.52	21.38	22	2
20	16QAM	100	0	21.46	21.49	21.38		
20	64QAM	1	0	21.12	21.29	21.23		
20	64QAM	1	49	21.21	21.32	21.21	22	2
20	64QAM	1	99	21.11	21.27	21.09		
20	64QAM	50	0	20.45	20.57	20.51		
20	64QAM	50	24	20.40	20.54	20.46	21	3
20	64QAM	50	50	20.28	20.45	20.28		
20	64QAM	100	0	20.41	20.47	20.31		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.12	23.22	23.21	24	0
15	QPSK	1	37	23.09	23.27	23.05		
15	QPSK	1	74	23.08	23.21	23.17		
15	QPSK	36	0	22.50	22.42	22.46	23	1
15	QPSK	36	20	22.31	22.48	22.24		
15	QPSK	36	39	22.32	22.33	22.30		
15	QPSK	75	0	22.25	22.34	22.19	23	1
15	16QAM	1	0	22.21	22.23	22.23		
15	16QAM	1	37	22.02	22.19	22.06		
15	16QAM	1	74	22.00	22.26	22.06	22	2
15	16QAM	36	0	21.40	21.51	21.39		
15	16QAM	36	20	21.33	21.49	21.25		
15	16QAM	36	39	21.31	21.39	21.23	22	2
15	16QAM	75	0	21.38	21.43	21.35		
15	64QAM	1	0	20.94	21.11	21.19		
15	64QAM	1	37	21.04	21.15	21.07	22	2
15	64QAM	1	74	20.98	21.16	20.98		
15	64QAM	36	0	20.36	20.46	20.44		
15	64QAM	36	20	20.37	20.42	20.41	21	3
15	64QAM	36	39	20.21	20.30	20.17		
15	64QAM	75	0	20.33	20.40	20.15		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.23	23.31	23.17	24	0
10	QPSK	1	25	23.20	23.28	23.02		
10	QPSK	1	49	23.04	23.21	23.22		
10	QPSK	25	0	22.49	22.55	22.35	23	1



10	QPSK	25	12	22.38	22.45	22.25		
10	QPSK	25	25	22.32	22.41	22.30		
10	QPSK	50	0	22.30	22.38	22.18		
10	16QAM	1	0	22.11	22.23	22.33	23	1
10	16QAM	1	25	22.00	22.20	22.04		
10	16QAM	1	49	22.02	22.20	22.17		
10	16QAM	25	0	21.30	21.39	21.45	22	2
10	16QAM	25	12	21.34	21.51	21.28		
10	16QAM	25	25	21.35	21.45	21.33		
10	16QAM	50	0	21.34	21.43	21.31		
10	64QAM	1	0	20.98	21.20	21.12	22	2
10	64QAM	1	25	21.13	21.27	21.13		
10	64QAM	1	49	21.04	21.20	20.98		
10	64QAM	25	0	20.28	20.52	20.40	21	3
10	64QAM	25	12	20.25	20.49	20.37		
10	64QAM	25	25	20.17	20.31	20.19		
10	64QAM	50	0	20.29	20.34	20.13		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.26	23.31	23.22	24	0
5	QPSK	1	12	23.22	23.18	23.08		
5	QPSK	1	24	23.02	23.21	23.19		
5	QPSK	12	0	22.43	22.41	22.46	23	1
5	QPSK	12	7	22.34	22.46	22.26		
5	QPSK	12	13	22.21	22.34	22.37		
5	QPSK	25	0	22.28	22.34	22.25		
5	16QAM	1	0	22.22	22.24	22.19	23	1
5	16QAM	1	12	22.09	22.16	22.03		
5	16QAM	1	24	21.95	22.17	22.16		
5	16QAM	12	0	21.29	21.41	21.35	22	2
5	16QAM	12	7	21.38	21.50	21.34		
5	16QAM	12	13	21.30	21.42	21.22		
5	16QAM	25	0	21.37	21.45	21.35		
5	64QAM	1	0	21.10	21.20	21.18	22	2
5	64QAM	1	12	21.11	21.15	21.19		
5	64QAM	1	24	21.04	21.19	20.96		
5	64QAM	12	0	20.28	20.41	20.47		
5	64QAM	12	7	20.36	20.51	20.44	21	3
5	64QAM	12	13	20.19	20.32	20.19		
5	64QAM	25	0	20.28	20.30	20.19		



Band 12								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	24.05	24.13	24.00	25	0
10	QPSK	1	25	23.95	23.87	23.89		
10	QPSK	1	49	23.98	24.10	23.95		
10	QPSK	25	0	23.01	23.15	22.92	24	1
10	QPSK	25	12	22.91	23.11	22.87		
10	QPSK	25	25	22.98	23.03	23.12		
10	QPSK	50	0	23.01	23.19	23.04	24	1
10	16QAM	1	0	22.99	23.17	23.12		
10	16QAM	1	25	23.05	23.04	23.01		
10	16QAM	1	49	23.08	22.98	22.94	23	2
10	16QAM	25	0	22.02	22.21	22.04		
10	16QAM	25	12	22.01	21.96	22.01		
10	16QAM	25	25	22.12	22.14	22.05	23	2
10	16QAM	50	0	22.12	22.22	22.21		
10	64QAM	1	0	22.06	21.99	22.08		
10	64QAM	1	25	21.83	22.03	21.86	23	2
10	64QAM	1	49	22.08	22.07	22.10		
10	64QAM	25	0	20.91	21.17	21.12		
10	64QAM	25	12	21.10	20.99	20.93	22	3
10	64QAM	25	25	21.12	21.18	21.06		
10	64QAM	50	0	21.23	21.10	21.01		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.94	23.95	23.88	25	0
5	QPSK	1	12	23.93	23.73	23.81		
5	QPSK	1	24	23.80	23.99	23.78		
5	QPSK	12	0	22.93	23.11	22.81	24	1
5	QPSK	12	7	22.82	22.96	22.84		
5	QPSK	12	13	22.95	22.97	23.10		
5	QPSK	25	0	22.87	23.13	22.97	24	1
5	16QAM	1	0	22.94	23.06	23.10		
5	16QAM	1	12	22.97	22.91	22.89		
5	16QAM	1	24	22.99	22.87	22.92	23	2
5	16QAM	12	0	21.92	22.14	21.98		
5	16QAM	12	7	21.84	21.78	21.91		
5	16QAM	12	13	22.03	22.09	22.01	23	2
5	16QAM	25	0	22.09	22.06	22.08		
5	64QAM	1	0	21.95	21.86	21.97		
5	64QAM	1	12	21.70	21.92	21.73	23	2
5	64QAM	1	24	21.95	21.92	21.95		
5	64QAM	12	0	20.84	21.12	21.08		
5	64QAM	12	7	20.93	20.89	20.84	22	3
5	64QAM	12	13	21.01	21.12	20.99		
5	64QAM	25	0	21.15	21.05	20.88		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.88	24.01	23.95	25	0
3	QPSK	1	8	23.92	23.70	23.73		
3	QPSK	1	14	23.83	23.93	23.83		
3	QPSK	8	0	22.97	23.02	22.86	24	1



3	QPSK	8	4	22.83	22.97	22.80		
3	QPSK	8	7	22.90	23.01	22.96		
3	QPSK	15	0	22.86	23.02	22.88		
3	16QAM	1	0	22.84	23.12	23.07	24	1
3	16QAM	1	8	22.89	22.95	22.83		
3	16QAM	1	14	22.91	22.90	22.81		
3	16QAM	8	0	22.00	22.17	21.95	23	2
3	16QAM	8	4	21.93	21.92	21.89		
3	16QAM	8	7	22.02	22.11	22.02		
3	16QAM	15	0	21.99	22.05	22.13		
3	64QAM	1	0	21.88	21.88	21.95	23	2
3	64QAM	1	8	21.73	21.85	21.78		
3	64QAM	1	14	22.02	21.99	22.06		
3	64QAM	8	0	20.80	21.09	20.96	22	3
3	64QAM	8	4	21.05	20.82	20.83		
3	64QAM	8	7	20.96	21.12	21.02		
3	64QAM	15	0	21.15	20.92	20.86		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	24.03	24.02	23.85	25	0
1.4	QPSK	1	3	23.87	23.79	23.82		
1.4	QPSK	1	5	23.87	24.03	23.78		
1.4	QPSK	3	0	23.82	24.07	23.80		
1.4	QPSK	3	1	23.70	23.91	23.78		
1.4	QPSK	3	3	23.89	23.84	24.00		
1.4	QPSK	6	0	22.87	23.02	23.00	24	1
1.4	16QAM	1	0	22.89	23.11	23.05	24	1
1.4	16QAM	1	3	22.87	23.01	22.96		
1.4	16QAM	1	5	22.96	22.88	22.82		
1.4	16QAM	3	0	22.82	23.06	22.90		
1.4	16QAM	3	1	22.93	22.79	22.85		
1.4	16QAM	3	3	23.04	22.95	22.84		
1.4	16QAM	6	0	22.04	22.14	22.18	23	2
1.4	64QAM	1	0	21.93	21.86	22.04	23	2
1.4	64QAM	1	3	21.67	22.01	21.75		
1.4	64QAM	1	5	21.98	21.92	21.98		
1.4	64QAM	3	0	21.73	22.06	22.05		
1.4	64QAM	3	1	21.90	21.91	21.77		
1.4	64QAM	3	3	22.01	22.04	21.92		
1.4	64QAM	6	0	21.13	21.06	20.91	22	3



Band 13								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		22.99		24	0
10	QPSK	1	25		22.87			
10	QPSK	1	49		22.80			
10	QPSK	25	0		22.12		23	1
10	QPSK	25	12		22.03			
10	QPSK	25	25		21.98			
10	QPSK	50	0		21.96		23	1
10	16QAM	1	0		22.15			
10	16QAM	1	25		22.07			
10	16QAM	1	49		22.14		22	2
10	16QAM	25	0		21.06			
10	16QAM	25	12		20.90			
10	16QAM	25	25		20.99		22	2
10	16QAM	50	0		20.92			
10	64QAM	1	0		21.04			
10	64QAM	1	25		20.97		22	2
10	64QAM	1	49		21.03			
10	64QAM	25	0		20.13			
10	64QAM	25	12		19.96		21	3
10	64QAM	25	25		20.08			
10	64QAM	50	0		19.86			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.83	22.85	22.74	24	0
5	QPSK	1	12	22.55	22.78	22.62		
5	QPSK	1	24	22.64	22.76	22.52		
5	QPSK	12	0	22.01	22.08	21.88	23	1
5	QPSK	12	7	21.90	21.96	21.80		
5	QPSK	12	13	21.82	21.85	21.81		
5	QPSK	25	0	21.75	21.85	21.78	23	1
5	16QAM	1	0	22.01	22.07	21.94		
5	16QAM	1	12	21.85	21.96	21.77		
5	16QAM	1	24	21.99	21.96	21.88	22	2
5	16QAM	12	0	20.87	21.01	20.93		
5	16QAM	12	7	20.65	20.88	20.75		
5	16QAM	12	13	20.72	20.92	20.89	22	2
5	16QAM	25	0	20.80	20.75	20.86		
5	64QAM	1	0	20.89	20.87	20.87		
5	64QAM	1	12	20.74	20.81	20.67	22	2
5	64QAM	1	24	20.74	20.94	20.82		
5	64QAM	12	0	20.04	20.03	19.92		
5	64QAM	12	7	19.74	19.84	19.71	21	3
5	64QAM	12	13	19.83	19.99	19.80		
5	64QAM	25	0	19.75	19.76	19.68		



Band 14								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23330				
Frequency (MHz)				793				
10	QPSK	1	0		24.15		25	0
10	QPSK	1	25		24.09			
10	QPSK	1	49		24.01			
10	QPSK	25	0		23.19		24	1
10	QPSK	25	12		23.10			
10	QPSK	25	25		23.06			
10	QPSK	50	0		23.14		24	1
10	16QAM	1	0		23.45			
10	16QAM	1	25		23.49			
10	16QAM	1	49		23.48		23	2
10	16QAM	25	0		22.05			
10	16QAM	25	12		22.12			
10	16QAM	25	25		22.27		23	2
10	16QAM	50	0		22.21			
10	64QAM	1	0		22.33			
10	64QAM	1	25		22.30		23	2
10	64QAM	1	49		22.23			
10	64QAM	25	0		21.08			
10	64QAM	25	12		21.21		22	3
10	64QAM	25	25		21.18			
10	64QAM	50	0		21.25			
Channel				23305	23330	23355	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				790.5	793	795.5		
5	QPSK	1	0	23.93	24.03	23.90	25	0
5	QPSK	1	12	23.89	23.93	23.79		
5	QPSK	1	24	23.87	23.94	23.80		
5	QPSK	12	0	23.03	23.03	22.97	24	1
5	QPSK	12	7	22.91	23.00	22.83		
5	QPSK	12	13	22.72	23.04	22.90		
5	QPSK	25	0	22.89	23.07	22.87	24	1
5	16QAM	1	0	23.19	23.31	23.39		
5	16QAM	1	12	23.45	23.39	23.36		
5	16QAM	1	24	23.41	23.39	23.25	23	2
5	16QAM	12	0	21.77	21.88	21.84		
5	16QAM	12	7	21.85	22.03	21.84		
5	16QAM	12	13	22.17	22.17	22.14	23	2
5	16QAM	25	0	22.07	22.07	22.02		
5	64QAM	1	0	22.17	22.16	22.12		
5	64QAM	1	12	22.10	22.26	22.22	23	2
5	64QAM	1	24	21.93	22.16	21.95		
5	64QAM	12	0	20.94	21.04	20.95		
5	64QAM	12	7	21.00	21.16	21.00	22	3
5	64QAM	12	13	20.83	21.03	20.84		
5	64QAM	25	0	21.01	21.09	21.05		



Band 17								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.93	24.06	23.97	25	0
10	QPSK	1	25	23.91	23.88	23.97		
10	QPSK	1	49	23.96	23.94	23.92		
10	QPSK	25	0	22.90	23.11	23.03	24	1
10	QPSK	25	12	22.80	23.04	22.94		
10	QPSK	25	25	22.97	22.99	23.10		
10	QPSK	50	0	22.96	23.09	23.05	24	1
10	16QAM	1	0	22.87	23.18	23.12		
10	16QAM	1	25	22.82	22.98	22.93		
10	16QAM	1	49	22.87	22.89	22.93	23	2
10	16QAM	25	0	22.11	22.13	22.04		
10	16QAM	25	12	22.03	21.99	21.96		
10	16QAM	25	25	22.13	22.06	22.04	23	2
10	16QAM	50	0	22.19	22.13	22.15		
10	64QAM	1	0	22.05	22.07	22.10		
10	64QAM	1	25	21.95	22.04	21.93	23	2
10	64QAM	1	49	22.09	22.07	22.03		
10	64QAM	25	0	20.95	21.04	21.00		
10	64QAM	25	12	20.93	20.93	20.91	22	3
10	64QAM	25	25	20.95	20.98	21.11		
10	64QAM	50	0	21.20	21.23	21.13		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.90	23.90	23.79	25	0
5	QPSK	1	12	23.85	23.73	23.90		
5	QPSK	1	24	23.85	23.85	23.76		
5	QPSK	12	0	22.73	23.06	23.01	24	1
5	QPSK	12	7	22.71	22.90	22.81		
5	QPSK	12	13	22.81	22.89	23.03		
5	QPSK	25	0	22.81	22.91	23.02	24	1
5	16QAM	1	0	22.78	23.07	22.96		
5	16QAM	1	12	22.70	22.81	22.88		
5	16QAM	1	24	22.76	22.71	22.86	23	2
5	16QAM	12	0	22.03	21.98	21.96		
5	16QAM	12	7	21.92	21.87	21.81		
5	16QAM	12	13	22.02	21.96	21.86	23	2
5	16QAM	25	0	22.13	22.07	22.06		
5	64QAM	1	0	21.88	21.98	22.05		
5	64QAM	1	12	21.87	21.94	21.79	23	2
5	64QAM	1	24	22.04	21.94	21.95		
5	64QAM	12	0	20.83	20.98	20.92		
5	64QAM	12	7	20.84	20.80	20.84	22	3
5	64QAM	12	13	20.90	20.83	21.02		
5	64QAM	25	0	21.03	21.19	20.99		



Band 25								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.94	23.98	23.89	25	0
20	QPSK	1	49	23.77	23.94	23.84		
20	QPSK	1	99	23.84	23.84	23.77		
20	QPSK	50	0	22.88	23.16	22.96	24	1
20	QPSK	50	24	23.06	23.03	22.87		
20	QPSK	50	50	22.98	22.94	22.93		
20	QPSK	100	0	22.87	23.05	22.85		
20	16QAM	1	0	23.11	23.16	23.18	24	1
20	16QAM	1	49	23.18	23.19	23.17		
20	16QAM	1	99	23.00	23.08	23.10		
20	16QAM	50	0	21.86	21.86	21.86	23	2
20	16QAM	50	24	21.87	21.99	21.84		
20	16QAM	50	50	21.87	21.92	21.91		
20	16QAM	100	0	21.90	21.85	21.68		
20	64QAM	1	0	21.88	21.92	21.90	23	2
20	64QAM	1	49	22.06	21.96	22.08		
20	64QAM	1	99	21.99	22.01	21.94		
20	64QAM	50	0	21.04	21.09	20.87	22	3
20	64QAM	50	24	20.94	20.95	20.93		
20	64QAM	50	50	20.93	21.01	20.88		
20	64QAM	100	0	20.90	20.92	20.77		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.81	23.86	23.85	25	0
15	QPSK	1	37	23.72	23.86	23.78		
15	QPSK	1	74	23.69	23.73	23.65		
15	QPSK	36	0	22.80	23.07	22.81	24	1
15	QPSK	36	20	22.92	22.99	22.75		
15	QPSK	36	39	22.83	22.82	22.79		
15	QPSK	75	0	22.73	22.92	22.81		
15	16QAM	1	0	23.00	23.06	23.06	24	1
15	16QAM	1	37	23.10	23.14	23.11		
15	16QAM	1	74	22.88	22.94	23.03		
15	16QAM	36	0	21.78	21.74	21.77	23	2
15	16QAM	36	20	21.73	21.91	21.71		
15	16QAM	36	39	21.78	21.88	21.85		
15	16QAM	75	0	21.86	21.72	21.64		
15	64QAM	1	0	21.81	21.79	21.78	23	2
15	64QAM	1	37	22.02	21.92	22.03		
15	64QAM	1	74	21.93	21.96	21.86		
15	64QAM	36	0	20.99	21.00	20.78	22	3
15	64QAM	36	20	20.90	20.80	20.84		
15	64QAM	36	39	20.84	20.94	20.74		
15	64QAM	75	0	20.81	20.79	20.67		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.82	23.94	23.81	25	0
10	QPSK	1	25	23.69	23.88	23.79		
10	QPSK	1	49	23.75	23.73	23.70		
10	QPSK	25	0	22.81	23.12	22.91	24	1



10	QPSK	25	12	23.02	22.92	22.73		
10	QPSK	25	25	22.85	22.83	22.82		
10	QPSK	50	0	22.75	22.92	22.82		
10	16QAM	1	0	23.08	23.11	23.14	24	1
10	16QAM	1	25	23.14	23.09	23.08		
10	16QAM	1	49	22.93	23.04	23.03		
10	16QAM	25	0	21.78	21.71	21.79	23	2
10	16QAM	25	12	21.83	21.91	21.76		
10	16QAM	25	25	21.82	21.79	21.79		
10	16QAM	50	0	21.76	21.78	21.64		
10	64QAM	1	0	21.84	21.88	21.81	23	2
10	64QAM	1	25	21.99	21.88	22.03		
10	64QAM	1	49	21.85	21.95	21.82		
10	64QAM	25	0	20.94	20.96	20.83	22	3
10	64QAM	25	12	20.82	20.90	20.88		
10	64QAM	25	25	20.90	20.92	20.76		
10	64QAM	50	0	20.82	20.84	20.64		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	23.89	23.92	23.84	25	0
5	QPSK	1	12	23.63	23.87	23.72		
5	QPSK	1	24	23.79	23.79	23.71		
5	QPSK	12	0	22.75	23.10	22.85	24	1
5	QPSK	12	7	23.00	22.96	22.79		
5	QPSK	12	13	22.92	22.90	22.85		
5	QPSK	25	0	22.84	22.96	22.72		
5	16QAM	1	0	22.97	23.03	23.10	24	1
5	16QAM	1	12	23.06	23.12	23.10		
5	16QAM	1	24	22.96	22.94	23.05		
5	16QAM	12	0	21.74	21.74	21.81	23	2
5	16QAM	12	7	21.80	21.86	21.77		
5	16QAM	12	13	21.75	21.86	21.82		
5	16QAM	25	0	21.86	21.73	21.64		
5	64QAM	1	0	21.83	21.81	21.79	23	2
5	64QAM	1	12	22.00	21.84	21.95		
5	64QAM	1	24	21.86	21.93	21.86		
5	64QAM	12	0	20.99	21.01	20.84		
5	64QAM	12	7	20.83	20.81	20.80	22	3
5	64QAM	12	13	20.84	20.95	20.84		
5	64QAM	25	0	20.78	20.78	20.71		
Channel				26055	26340	26675		
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	23.84	23.94	23.80	25	0
3	QPSK	1	8	23.67	23.87	23.71		
3	QPSK	1	14	23.73	23.77	23.69		
3	QPSK	8	0	22.75	23.06	22.91	24	1
3	QPSK	8	4	22.96	22.89	22.77		
3	QPSK	8	7	22.86	22.83	22.89		
3	QPSK	15	0	22.75	22.97	22.70		
3	16QAM	1	0	23.04	23.07	23.08	24	1
3	16QAM	1	8	23.11	23.12	23.10		
3	16QAM	1	14	22.94	22.97	22.95		
3	16QAM	8	0	21.79	21.72	21.76	23	2
3	16QAM	8	4	21.75	21.87	21.69		
3	16QAM	8	7	21.80	21.87	21.85		
3	16QAM	15	0	21.85	21.81	21.59		



3	64QAM	1	0	21.79	21.86	21.86	23	2
3	64QAM	1	8	22.02	21.81	21.97		
3	64QAM	1	14	21.92	21.95	21.85		
3	64QAM	8	0	20.93	20.95	20.73	22	3
3	64QAM	8	4	20.81	20.82	20.85		
3	64QAM	8	7	20.84	20.92	20.76		
3	64QAM	15	0	20.84	20.88	20.71		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	23.90	23.86	23.74	25	0
1.4	QPSK	1	3	23.69	23.83	23.69		
1.4	QPSK	1	5	23.80	23.69	23.71		
1.4	QPSK	3	0	23.76	23.92	23.70		
1.4	QPSK	3	1	23.74	23.77	23.64		
1.4	QPSK	3	3	23.67	23.66	23.66		
1.4	QPSK	6	0	22.73	22.90	22.74	24	1
1.4	16QAM	1	0	23.03	23.09	23.08	24	1
1.4	16QAM	1	3	23.14	23.11	23.06		
1.4	16QAM	1	5	22.89	22.95	23.01		
1.4	16QAM	3	0	22.79	22.78	22.77		
1.4	16QAM	3	1	22.77	22.85	22.69		
1.4	16QAM	3	3	22.80	22.81	22.87		
1.4	16QAM	6	0	21.81	21.76	21.62	23	2
1.4	64QAM	1	0	21.80	21.80	21.80	23	2
1.4	64QAM	1	3	22.00	21.85	22.00		
1.4	64QAM	1	5	21.89	21.93	21.82		
1.4	64QAM	3	0	21.93	21.99	21.83		
1.4	64QAM	3	1	21.80	21.81	21.82		
1.4	64QAM	3	3	21.83	21.98	21.80		
1.4	64QAM	6	0	20.82	20.89	20.63		



Band 26								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.21	23.23	23.01	24	0
15	QPSK	1	37	23.03	22.97	22.91		
15	QPSK	1	74	23.05	23.11	23.05		
15	QPSK	36	0	22.07	22.18	22.02	23	1
15	QPSK	36	20	22.10	22.11	22.03		
15	QPSK	36	39	22.01	22.10	21.98		
15	QPSK	75	0	22.08	22.26	22.13	23	1
15	16QAM	1	0	22.27	22.27	22.13		
15	16QAM	1	37	22.27	22.34	22.37		
15	16QAM	1	74	22.24	22.28	22.15	22	2
15	16QAM	36	0	21.02	21.18	21.09		
15	16QAM	36	20	20.99	21.21	20.96		
15	16QAM	36	39	21.00	21.03	21.01	22	2
15	16QAM	75	0	21.07	21.18	21.17		
15	64QAM	1	0	21.18	21.33	21.18		
15	64QAM	1	37	21.07	21.19	21.22	22	2
15	64QAM	1	74	21.05	21.12	21.11		
15	64QAM	36	0	20.07	20.16	20.06		
15	64QAM	36	20	20.15	20.14	20.11	21	3
15	64QAM	36	39	20.00	20.13	20.01		
15	64QAM	75	0	20.11	20.06	19.98		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.17	23.10	22.95	24	0
10	QPSK	1	25	23.00	22.88	22.78		
10	QPSK	1	49	23.01	22.94	22.97		
10	QPSK	25	0	21.95	22.05	21.98	23	1
10	QPSK	25	12	22.04	22.02	22.00		
10	QPSK	25	25	21.92	21.97	21.93		
10	QPSK	50	0	22.02	22.19	22.01	23	1
10	16QAM	1	0	22.16	22.19	21.97		
10	16QAM	1	25	22.11	22.28	22.32		
10	16QAM	1	49	22.15	22.25	22.08	22	2
10	16QAM	25	0	20.87	21.02	20.91		
10	16QAM	25	12	20.95	21.19	20.93		
10	16QAM	25	25	20.88	20.87	20.93	22	2
10	16QAM	50	0	21.03	21.05	21.13		
10	64QAM	1	0	21.10	21.21	21.11		
10	64QAM	1	25	20.99	21.04	21.06	22	2
10	64QAM	1	49	20.97	21.07	21.03		
10	64QAM	25	0	19.99	20.02	20.02		
10	64QAM	25	12	20.03	20.03	20.05	21	3
10	64QAM	25	25	19.93	20.08	19.83		
10	64QAM	50	0	20.01	19.93	19.82		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.07	23.07	22.97	24	0
5	QPSK	1	12	22.95	22.93	22.88		
5	QPSK	1	24	23.02	22.99	22.89		
5	QPSK	12	0	22.03	22.11	21.92	23	1



5	QPSK	12	7	22.05	21.97	21.94		
5	QPSK	12	13	21.98	21.93	21.85		
5	QPSK	25	0	21.98	22.09	22.04		
5	16QAM	1	0	22.10	22.10	21.99	23	1
5	16QAM	1	12	22.24	22.20	22.32		
5	16QAM	1	24	22.20	22.22	22.01		
5	16QAM	12	0	20.90	21.15	20.95	22	2
5	16QAM	12	7	20.92	21.05	20.90		
5	16QAM	12	13	20.85	20.90	20.93		
5	16QAM	25	0	20.99	21.14	21.01		
5	64QAM	1	0	21.11	21.18	21.07	22	2
5	64QAM	1	12	21.01	21.10	21.14		
5	64QAM	1	24	20.88	21.00	20.96		
5	64QAM	12	0	20.05	20.11	19.89	21	3
5	64QAM	12	7	20.05	19.98	20.01		
5	64QAM	12	13	19.95	20.06	19.95		
5	64QAM	25	0	20.08	19.97	19.88		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.16	23.12	22.84	24	0
3	QPSK	1	8	22.96	22.92	22.79		
3	QPSK	1	14	22.96	22.97	22.96		
3	QPSK	8	0	21.93	22.04	21.99	23	1
3	QPSK	8	4	22.05	22.07	21.96		
3	QPSK	8	7	21.92	22.03	21.81		
3	QPSK	15	0	22.02	22.13	22.03		
3	16QAM	1	0	22.16	22.09	22.05	23	1
3	16QAM	1	8	22.20	22.21	22.31		
3	16QAM	1	14	22.11	22.19	22.04		
3	16QAM	8	0	20.95	21.08	20.97	22	2
3	16QAM	8	4	20.82	21.05	20.79		
3	16QAM	8	7	20.89	20.94	20.89		
3	16QAM	15	0	21.01	21.05	21.03		
3	64QAM	1	0	21.08	21.22	21.06	22	2
3	64QAM	1	8	20.93	21.11	21.04		
3	64QAM	1	14	20.88	20.95	21.06		
3	64QAM	8	0	20.04	20.02	19.93		
3	64QAM	8	4	20.08	20.08	19.93	21	3
3	64QAM	8	7	19.90	20.01	19.91		
3	64QAM	15	0	19.94	19.93	19.94		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.05	23.16	22.85	24	0
1.4	QPSK	1	3	22.94	22.94	22.76		
1.4	QPSK	1	5	22.99	22.98	22.91		
1.4	QPSK	3	0	22.96	23.08	22.95		
1.4	QPSK	3	1	23.03	23.00	22.90		
1.4	QPSK	3	3	22.89	23.00	22.90	23	1
1.4	16QAM	1	0	22.23	22.11	22.08	23	1
1.4	16QAM	1	3	22.17	22.29	22.26		
1.4	16QAM	1	5	22.07	22.10	22.06		
1.4	16QAM	3	0	21.99	22.13	21.92		
1.4	16QAM	3	1	21.95	22.15	21.80		
1.4	16QAM	3	3	21.97	21.86	21.92		
1.4	16QAM	6	0	20.91	21.05	21.00	22	2



1.4	64QAM	1	0	21.09	21.30	21.13	22	2
1.4	64QAM	1	3	21.04	21.02	21.10		
1.4	64QAM	1	5	20.99	21.10	21.02		
1.4	64QAM	3	0	20.96	21.08	21.02		
1.4	64QAM	3	1	21.02	21.10	21.04		
1.4	64QAM	3	3	20.89	21.05	20.96		
1.4	64QAM	6	0	19.93	19.97	19.89	21	3

Band 66								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572	25	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	24.10	24.23	24.16		
20	QPSK	1	49	24.03	24.07	24.07	24	1
20	QPSK	1	99	24.11	24.14	24.00		
20	QPSK	50	0	23.16	23.30	23.25		
20	QPSK	50	24	23.13	23.25	23.14	24	1
20	QPSK	50	50	23.08	23.22	23.05		
20	QPSK	100	0	23.04	23.25	23.02		
20	16QAM	1	0	23.52	23.58	23.54	24	1
20	16QAM	1	49	23.52	23.59	23.53		
20	16QAM	1	99	23.37	23.45	23.40		
20	16QAM	50	0	22.10	22.15	22.16	23	2
20	16QAM	50	24	22.13	22.24	22.17		
20	16QAM	50	50	22.31	22.33	22.21		
20	16QAM	100	0	22.17	22.36	22.21	23	2
20	64QAM	1	0	22.25	22.41	22.37		
20	64QAM	1	49	22.23	22.38	22.35		
20	64QAM	1	99	22.20	22.25	22.18	22	3
20	64QAM	50	0	21.28	21.22	21.13		
20	64QAM	50	24	21.16	21.28	21.28		
20	64QAM	50	50	21.24	21.29	21.15	22	3
20	64QAM	100	0	21.24	21.26	21.17		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	24.01	24.11	24.11		
15	QPSK	1	37	23.92	24.01	23.90	24	1
15	QPSK	1	74	23.97	24.01	23.96		
15	QPSK	36	0	23.02	23.17	23.12		
15	QPSK	36	20	23.04	23.13	23.09	24	1
15	QPSK	36	39	22.95	23.06	22.91		
15	QPSK	75	0	22.88	23.12	22.85		
15	16QAM	1	0	23.48	23.50	23.47	24	1
15	16QAM	1	37	23.47	23.43	23.36		
15	16QAM	1	74	23.28	23.39	23.37		
15	16QAM	36	0	21.98	21.97	22.10	23	2
15	16QAM	36	20	21.98	22.14	22.10		
15	16QAM	36	39	22.28	22.16	22.04		
15	16QAM	75	0	22.06	22.33	22.12	23	2
15	64QAM	1	0	22.12	22.26	22.32		
15	64QAM	1	37	22.09	22.20	22.25		
15	64QAM	1	74	22.13	22.14	22.16	22	3
15	64QAM	36	0	21.10	21.14	20.99		
15	64QAM	36	20	21.05	21.13	21.20		
15	64QAM	36	39	21.12	21.21	21.05		



15	64QAM	75	0	21.14	21.17	21.09		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	24.07	24.14	24.02	25	0
10	QPSK	1	25	23.87	23.95	23.90		
10	QPSK	1	49	24.04	24.08	23.84		
10	QPSK	25	0	23.13	23.21	23.20	24	1
10	QPSK	25	12	23.09	23.16	23.02		
10	QPSK	25	25	22.92	23.11	22.90		
10	QPSK	50	0	22.89	23.15	22.97	24	1
10	16QAM	1	0	23.47	23.43	23.37		
10	16QAM	1	25	23.40	23.47	23.50		
10	16QAM	1	49	23.26	23.29	23.33	23	2
10	16QAM	25	0	21.95	22.03	22.00		
10	16QAM	25	12	21.99	22.07	22.06		
10	16QAM	25	25	22.26	22.24	22.04	23	2
10	16QAM	50	0	22.12	22.20	22.15		
10	64QAM	1	0	22.12	22.38	22.20		
10	64QAM	1	25	22.19	22.30	22.25	23	2
10	64QAM	1	49	22.09	22.20	22.06		
10	64QAM	25	0	21.16	21.04	21.03		
10	64QAM	25	12	21.10	21.12	21.11	22	3
10	64QAM	25	25	21.09	21.20	21.06		
10	64QAM	50	0	21.09	21.24	21.10		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.99	24.21	24.03	25	0
5	QPSK	1	12	23.99	23.89	24.02		
5	QPSK	1	24	24.02	24.01	23.94		
5	QPSK	12	0	23.12	23.21	23.20	24	1
5	QPSK	12	7	23.05	23.10	23.03		
5	QPSK	12	13	22.96	23.16	23.01		
5	QPSK	25	0	22.93	23.16	22.98	24	1
5	16QAM	1	0	23.40	23.45	23.42		
5	16QAM	1	12	23.49	23.53	23.38		
5	16QAM	1	24	23.22	23.41	23.31	23	2
5	16QAM	12	0	21.98	22.12	22.08		
5	16QAM	12	7	22.00	22.22	22.09		
5	16QAM	12	13	22.24	22.19	22.17	23	2
5	16QAM	25	0	22.15	22.18	22.10		
5	64QAM	1	0	22.20	22.27	22.19		
5	64QAM	1	12	22.06	22.23	22.22	23	2
5	64QAM	1	24	22.07	22.10	22.12		
5	64QAM	12	0	21.25	21.11	21.08		
5	64QAM	12	7	21.06	21.20	21.25	22	3
5	64QAM	12	13	21.19	21.21	20.98		
5	64QAM	25	0	21.16	21.10	21.04		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	24.06	24.11	24.01	25	0
3	QPSK	1	8	23.96	23.92	23.98		
3	QPSK	1	14	24.02	24.07	23.86		
3	QPSK	8	0	23.05	23.20	23.09	24	1
3	QPSK	8	4	22.98	23.18	23.01		
3	QPSK	8	7	22.92	23.20	22.92		
3	QPSK	15	0	22.97	23.10	22.99		



3	16QAM	1	0	23.47	23.46	23.45	24	1
3	16QAM	1	8	23.41	23.42	23.36		
3	16QAM	1	14	23.29	23.32	23.29		
3	16QAM	8	0	22.04	22.01	22.01	23	2
3	16QAM	8	4	22.05	22.11	22.12		
3	16QAM	8	7	22.26	22.21	22.18		
3	16QAM	15	0	22.15	22.28	22.05	23	2
3	64QAM	1	0	22.21	22.23	22.29		
3	64QAM	1	8	22.14	22.36	22.22		
3	64QAM	1	14	22.08	22.12	22.10	22	3
3	64QAM	8	0	21.16	21.18	21.09		
3	64QAM	8	4	21.01	21.15	21.15		
3	64QAM	8	7	21.09	21.23	20.98	22	3
3	64QAM	15	0	21.12	21.18	21.00		
Channel				131979	132322	132665		
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	24.00	24.10	24.12	25	0
1.4	QPSK	1	3	23.85	23.95	23.93		
1.4	QPSK	1	5	24.00	23.99	23.87		
1.4	QPSK	3	0	24.13	24.14	24.08		
1.4	QPSK	3	1	23.98	24.12	23.98		
1.4	QPSK	3	3	23.98	24.12	24.03		
1.4	QPSK	6	0	23.00	23.10	22.99	24	1
1.4	16QAM	1	0	23.48	23.46	23.47	24	1
1.4	16QAM	1	3	23.45	23.48	23.45		
1.4	16QAM	1	5	23.25	23.41	23.27		
1.4	16QAM	3	0	22.95	23.09	23.09		
1.4	16QAM	3	1	22.98	23.11	23.00		
1.4	16QAM	3	3	23.21	23.15	23.11		
1.4	16QAM	6	0	22.13	22.20	22.16	23	2
1.4	64QAM	1	0	22.17	22.24	22.26	23	2
1.4	64QAM	1	3	22.15	22.33	22.26		
1.4	64QAM	1	5	22.05	22.22	22.01		
1.4	64QAM	3	0	22.14	22.19	21.98		
1.4	64QAM	3	1	22.03	22.16	22.12		
1.4	64QAM	3	3	22.22	22.21	22.11		
1.4	64QAM	6	0	21.15	21.14	21.08	22	3



Band 71								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				133222	133322	133372		
Frequency (MHz)				673	683	688		
20	QPSK	1	0	23.63	23.75	23.70	25	0
20	QPSK	1	49	23.59	23.71	23.53		
20	QPSK	1	99	23.68	23.66	23.55		
20	QPSK	50	0	22.75	22.86	22.72	24	1
20	QPSK	50	24	22.70	22.77	22.68		
20	QPSK	50	50	22.65	22.68	22.68		
20	QPSK	100	0	22.67	22.88	22.63		
20	16QAM	1	0	22.78	22.80	22.83	24	1
20	16QAM	1	49	22.66	22.84	22.58		
20	16QAM	1	99	22.64	22.74	22.58		
20	16QAM	50	0	21.79	21.81	21.79	23	2
20	16QAM	50	24	21.78	21.71	21.67		
20	16QAM	50	50	21.64	21.63	21.76		
20	16QAM	100	0	21.70	21.79	21.76		
20	64QAM	1	0	21.70	21.72	21.87	23	2
20	64QAM	1	49	21.68	21.74	21.71		
20	64QAM	1	99	21.63	21.78	21.69		
20	64QAM	50	0	20.82	20.90	20.86	22	3
20	64QAM	50	24	20.68	20.72	20.68		
20	64QAM	50	50	20.70	20.69	20.71		
20	64QAM	100	0	20.66	20.83	20.69		
Channel				133197	133297	133397	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				670.5	680.5	690.5		
15	QPSK	1	0	23.48	23.70	23.66	25	0
15	QPSK	1	37	23.53	23.68	23.36		
15	QPSK	1	74	23.63	23.54	23.37		
15	QPSK	36	0	22.58	22.72	22.58	24	1
15	QPSK	36	20	22.62	22.74	22.56		
15	QPSK	36	39	22.52	22.52	22.56		
15	QPSK	75	0	22.59	22.73	22.56		
15	16QAM	1	0	22.69	22.71	22.72	24	1
15	16QAM	1	37	22.57	22.67	22.44		
15	16QAM	1	74	22.60	22.59	22.50		
15	16QAM	36	0	21.77	21.66	21.77	23	2
15	16QAM	36	20	21.67	21.69	21.52		
15	16QAM	36	39	21.56	21.58	21.69		
15	16QAM	75	0	21.63	21.68	21.67		
15	64QAM	1	0	21.67	21.66	21.80	23	2
15	64QAM	1	37	21.60	21.58	21.67		
15	64QAM	1	74	21.58	21.73	21.56		
15	64QAM	36	0	20.78	20.86	20.77	22	3
15	64QAM	36	20	20.62	20.54	20.61		
15	64QAM	36	39	20.63	20.57	20.55		
15	64QAM	75	0	20.56	20.66	20.56		
Channel				133172	133272	133422	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				668	678	693		
10	QPSK	1	0	23.53	23.68	23.58	25	0
10	QPSK	1	25	23.53	23.72	23.42		
10	QPSK	1	49	23.60	23.50	23.48		
10	QPSK	25	0	22.69	22.74	22.62	24	1



10	QPSK	25	12	22.63	22.64	22.64		
10	QPSK	25	25	22.61	22.57	22.57		
10	QPSK	50	0	22.64	22.80	22.58		
10	16QAM	1	0	22.67	22.64	22.76	24	1
10	16QAM	1	25	22.56	22.77	22.53		
10	16QAM	1	49	22.60	22.68	22.55		
10	16QAM	25	0	21.71	21.64	21.68	23	2
10	16QAM	25	12	21.75	21.58	21.52		
10	16QAM	25	25	21.48	21.60	21.73		
10	16QAM	50	0	21.58	21.63	21.63		
10	64QAM	1	0	21.66	21.66	21.71	23	2
10	64QAM	1	25	21.57	21.68	21.69		
10	64QAM	1	49	21.50	21.63	21.62		
10	64QAM	25	0	20.73	20.82	20.78	22	3
10	64QAM	25	12	20.64	20.59	20.64		
10	64QAM	25	25	20.66	20.67	20.61		
10	64QAM	50	0	20.58	20.79	20.58		
Channel				133147	133247	133447	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				665.5	675.5	695.5		
5	QPSK	1	0	23.47	23.70	23.53	25	0
5	QPSK	1	12	23.48	23.73	23.48		
5	QPSK	1	24	23.58	23.48	23.47		
5	QPSK	12	0	22.70	22.75	22.65	24	1
5	QPSK	12	7	22.64	22.64	22.58		
5	QPSK	12	13	22.59	22.54	22.66		
5	QPSK	25	0	22.59	22.73	22.46		
5	16QAM	1	0	22.63	22.62	22.70	24	1
5	16QAM	1	12	22.58	22.80	22.48		
5	16QAM	1	24	22.48	22.70	22.56		
5	16QAM	12	0	21.72	21.70	21.73	23	2
5	16QAM	12	7	21.74	21.57	21.65		
5	16QAM	12	13	21.53	21.57	21.67		
5	16QAM	25	0	21.62	21.62	21.62		
5	64QAM	1	0	21.63	21.55	21.75	23	2
5	64QAM	1	12	21.55	21.61	21.54		
5	64QAM	1	24	21.60	21.72	21.64		
5	64QAM	12	0	20.65	20.75	20.79	22	3
5	64QAM	12	7	20.52	20.63	20.61		
5	64QAM	12	13	20.65	20.55	20.60		
5	64QAM	25	0	20.48	20.66	20.51		



Ant2

Band 2 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	24.28	24.32	24.22	24.5	0
20	QPSK	1	49	24.25	24.28	24.21		
20	QPSK	1	99	24.15	24.25	24.20		
20	QPSK	50	0	23.31	23.41	23.29	23.5	1
20	QPSK	50	24	23.29	23.36	23.30		
20	QPSK	50	50	23.27	23.39	23.35		
20	QPSK	100	0	23.30	23.42	23.29	23.5	1
20	16QAM	1	0	23.47	23.31	23.49		
20	16QAM	1	49	23.43	23.23	23.47		
20	16QAM	1	99	23.32	23.46	23.43	22.5	2
20	16QAM	50	0	22.39	22.48	22.44		
20	16QAM	50	24	22.34	22.43	22.37		
20	16QAM	50	50	22.30	22.45	22.42	22.5	2
20	16QAM	100	0	22.47	22.25	22.49		
20	64QAM	1	0	22.20	22.27	22.20		
20	64QAM	1	49	22.18	22.28	22.23	22.5	2
20	64QAM	1	99	22.21	22.25	22.20		
20	64QAM	50	0	21.33	21.43	21.28		
20	64QAM	50	24	21.31	21.43	21.33	21.5	3
20	64QAM	50	50	21.40	21.45	21.38		
20	64QAM	100	0	21.24	21.39	21.28		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	24.25	24.23	24.09	24.5	0
15	QPSK	1	37	24.12	24.24	24.07		
15	QPSK	1	74	24.02	24.21	24.13		
15	QPSK	36	0	23.26	23.34	23.25	23.5	1
15	QPSK	36	20	23.17	23.27	23.26		
15	QPSK	36	39	23.17	23.36	23.21		
15	QPSK	75	0	23.26	23.38	23.15	23.5	1
15	16QAM	1	0	23.40	23.49	23.42		
15	16QAM	1	37	23.38	23.43	23.40		
15	16QAM	1	74	23.19	23.34	23.40	22.5	2
15	16QAM	36	0	22.29	22.44	22.30		
15	16QAM	36	20	22.24	22.31	22.28		
15	16QAM	36	39	22.24	22.32	22.34	22.5	2
15	16QAM	75	0	22.33	22.47	22.35		
15	64QAM	1	0	22.15	22.16	22.12		
15	64QAM	1	37	22.05	22.14	22.13	22.5	2
15	64QAM	1	74	22.08	22.19	22.06		
15	64QAM	36	0	21.23	21.30	21.22		
15	64QAM	36	20	21.24	21.36	21.27	21.5	3
15	64QAM	36	39	21.36	21.39	21.26		
15	64QAM	75	0	21.10	21.30	21.13		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	24.23	24.28	24.17	24.5	0
10	QPSK	1	25	24.13	24.13	24.06		
10	QPSK	1	49	24.09	24.21	24.05		
10	QPSK	25	0	23.25	23.28	23.21	23.5	1



10	QPSK	25	12	23.21	23.25	23.25		
10	QPSK	25	25	23.21	23.28	23.24		
10	QPSK	50	0	23.20	23.34	23.23		
10	16QAM	1	0	23.43	23.47	23.37	23.5	1
10	16QAM	1	25	23.32	23.38	23.41		
10	16QAM	1	49	23.26	23.36	23.38		
10	16QAM	25	0	22.27	22.42	22.40	22.5	2
10	16QAM	25	12	22.24	22.39	22.27		
10	16QAM	25	25	22.22	22.37	22.34		
10	16QAM	50	0	22.36	22.47	22.44		
10	64QAM	1	0	22.11	22.14	22.16	22.5	2
10	64QAM	1	25	22.12	22.18	22.17		
10	64QAM	1	49	22.14	22.19	22.06		
10	64QAM	25	0	21.26	21.31	21.13	21.5	3
10	64QAM	25	12	21.25	21.31	21.23		
10	64QAM	25	25	21.35	21.31	21.25		
10	64QAM	50	0	21.13	21.32	21.14		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	24.20	24.21	24.14	24.5	0
5	QPSK	1	12	24.18	24.22	24.15		
5	QPSK	1	24	24.06	24.11	24.07		
5	QPSK	12	0	23.24	23.29	23.17	23.5	1
5	QPSK	12	7	23.26	23.28	23.18		
5	QPSK	12	13	23.18	23.27	23.27		
5	QPSK	25	0	23.17	23.29	23.21		
5	16QAM	1	0	23.35	23.36	23.35	23.5	1
5	16QAM	1	12	23.40	23.41	23.42		
5	16QAM	1	24	23.29	23.42	23.33		
5	16QAM	12	0	22.34	22.41	22.37	22.5	2
5	16QAM	12	7	22.21	22.35	22.25		
5	16QAM	12	13	22.23	22.39	22.28		
5	16QAM	25	0	22.37	22.45	22.40		
5	64QAM	1	0	22.10	22.21	22.11	22.5	2
5	64QAM	1	12	22.10	22.17	22.18		
5	64QAM	1	24	22.17	22.17	22.15		
5	64QAM	12	0	21.24	21.33	21.20	21.5	3
5	64QAM	12	7	21.16	21.39	21.30		
5	64QAM	12	13	21.30	21.33	21.32		
5	64QAM	25	0	21.20	21.30	21.20		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	24.24	24.20	24.16	24.5	0
3	QPSK	1	8	24.15	24.19	24.11		
3	QPSK	1	14	24.01	24.15	24.10		
3	QPSK	8	0	23.26	23.30	23.22	23.5	1
3	QPSK	8	4	23.17	23.32	23.19		
3	QPSK	8	7	23.17	23.31	23.30		
3	QPSK	15	0	23.18	23.38	23.24		
3	16QAM	1	0	23.34	23.47	23.35	23.5	1
3	16QAM	1	8	23.33	23.42	23.42		
3	16QAM	1	14	23.19	23.42	23.39		
3	16QAM	8	0	22.30	22.42	22.35	22.5	2
3	16QAM	8	4	22.25	22.31	22.28		
3	16QAM	8	7	22.20	22.36	22.28		
3	16QAM	15	0	22.37	22.50	22.41		



3	64QAM	1	0	22.06	22.18	22.14	22.5	2
3	64QAM	1	8	22.12	22.22	22.13		
3	64QAM	1	14	22.09	22.19	22.09		
3	64QAM	8	0	21.24	21.30	21.25	21.5	3
3	64QAM	8	4	21.20	21.36	21.25		
3	64QAM	8	7	21.32	21.34	21.27		
3	64QAM	15	0	21.19	21.28	21.16		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	24.20	24.22	24.15	24.5	0
1.4	QPSK	1	3	24.21	24.20	24.08		
1.4	QPSK	1	5	24.11	24.15	24.10		
1.4	QPSK	3	0	24.11	24.26	24.18		
1.4	QPSK	3	1	24.20	24.26	24.22		
1.4	QPSK	3	3	24.08	24.20	24.23		
1.4	QPSK	6	0	23.22	23.39	23.23	23.5	1
1.4	16QAM	1	0	23.36	23.35	23.41	23.5	1
1.4	16QAM	1	3	23.31	23.44	23.39		
1.4	16QAM	1	5	23.26	23.42	23.35		
1.4	16QAM	3	0	23.28	23.28	23.29		
1.4	16QAM	3	1	23.21	23.34	23.24		
1.4	16QAM	3	3	23.20	23.29	23.30		
1.4	16QAM	6	0	22.38	22.41	22.37	22.5	2
1.4	64QAM	1	0	22.12	22.16	22.06	22.5	2
1.4	64QAM	1	3	22.08	22.21	22.12		
1.4	64QAM	1	5	22.08	22.20	22.10		
1.4	64QAM	3	0	22.17	22.27	22.09		
1.4	64QAM	3	1	22.14	22.34	22.20		
1.4	64QAM	3	3	22.21	22.25	22.29		
1.4	64QAM	6	0	21.17	21.29	21.15	21.5	3



Band 5 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	24.21	24.27	24.12	25	0
10	QPSK	1	25	24.01	24.07	24.03		
10	QPSK	1	49	23.92	24.05	23.93		
10	QPSK	25	0	23.22	23.43	23.34	24	1
10	QPSK	25	12	23.20	23.32	23.19		
10	QPSK	25	25	23.27	23.41	23.15		
10	QPSK	50	0	23.36	23.46	23.29	24	1
10	16QAM	1	0	23.36	23.32	23.24		
10	16QAM	1	25	23.37	23.43	23.37		
10	16QAM	1	49	23.38	23.36	23.38	23	2
10	16QAM	25	0	22.18	22.30	22.23		
10	16QAM	25	12	22.28	22.28	22.34		
10	16QAM	25	25	22.24	22.32	22.22	23	2
10	16QAM	50	0	22.22	22.37	22.41		
10	64QAM	1	0	22.13	22.29	22.01		
10	64QAM	1	25	22.05	22.05	22.00	23	2
10	64QAM	1	49	21.97	22.16	22.08		
10	64QAM	25	0	21.13	21.25	21.14		
10	64QAM	25	12	21.31	21.37	21.20	22	3
10	64QAM	25	25	21.40	21.35	21.28		
10	64QAM	50	0	21.27	21.40	21.26		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	24.15	24.10	23.97	25	0
5	QPSK	1	12	23.89	23.93	23.96		
5	QPSK	1	24	23.89	23.93	23.86		
5	QPSK	12	0	23.09	23.31	23.21	24	1
5	QPSK	12	7	23.15	23.15	23.05		
5	QPSK	12	13	23.09	23.26	23.07		
5	QPSK	25	0	23.20	23.32	23.26	24	1
5	16QAM	1	0	23.30	23.16	23.19		
5	16QAM	1	12	23.29	23.33	23.32		
5	16QAM	1	24	23.21	23.27	23.24	23	2
5	16QAM	12	0	22.12	22.18	22.14		
5	16QAM	12	7	22.17	22.12	22.22		
5	16QAM	12	13	22.13	22.25	22.06	23	2
5	16QAM	25	0	22.12	22.20	22.26		
5	64QAM	1	0	22.06	22.26	21.85		
5	64QAM	1	12	22.01	22.01	21.85	23	2
5	64QAM	1	24	21.81	22.04	22.06		
5	64QAM	12	0	21.05	21.08	21.06		
5	64QAM	12	7	21.18	21.34	21.13	22	3
5	64QAM	12	13	21.35	21.25	21.24		
5	64QAM	25	0	21.19	21.27	21.11		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	24.08	24.15	23.96	25	0
3	QPSK	1	8	23.91	24.04	23.90		
3	QPSK	1	14	23.89	23.98	23.90		
3	QPSK	8	0	23.17	23.28	23.18	24	1



3	QPSK	8	4	23.10	23.19	23.13		
3	QPSK	8	7	23.12	23.35	23.11		
3	QPSK	15	0	23.28	23.41	23.17		
3	16QAM	1	0	23.30	23.26	23.18	24	1
3	16QAM	1	8	23.33	23.27	23.29		
3	16QAM	1	14	23.25	23.18	23.27		
3	16QAM	8	0	22.13	22.14	22.14	23	2
3	16QAM	8	4	22.25	22.23	22.26		
3	16QAM	8	7	22.22	22.27	22.07		
3	16QAM	15	0	22.18	22.34	22.29		
3	64QAM	1	0	21.97	22.24	21.87	23	2
3	64QAM	1	8	21.98	21.91	21.85		
3	64QAM	1	14	21.81	22.02	21.91		
3	64QAM	8	0	21.04	21.08	21.11	22	3
3	64QAM	8	4	21.20	21.19	21.06		
3	64QAM	8	7	21.24	21.24	21.22		
3	64QAM	15	0	21.21	21.23	21.10		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	24.10	24.21	24.03	25	0
1.4	QPSK	1	3	23.98	23.97	23.92		
1.4	QPSK	1	5	23.89	23.98	23.83		
1.4	QPSK	3	0	24.05	24.17	24.09		
1.4	QPSK	3	1	23.90	23.94	23.87		
1.4	QPSK	3	3	23.81	23.89	23.84		
1.4	QPSK	6	0	23.16	23.30	23.23	24	1
1.4	16QAM	1	0	23.13	23.24	23.16	24	1
1.4	16QAM	1	3	23.20	23.27	23.10		
1.4	16QAM	1	5	23.21	23.43	23.16		
1.4	16QAM	3	0	23.19	23.20	23.21		
1.4	16QAM	3	1	23.22	23.41	23.34		
1.4	16QAM	3	3	23.24	23.29	23.34		
1.4	16QAM	6	0	22.01	22.23	22.09	23	2
1.4	64QAM	1	0	22.13	22.12	22.19	23	2
1.4	64QAM	1	3	22.08	22.21	22.18		
1.4	64QAM	1	5	22.06	22.22	22.26		
1.4	64QAM	3	0	21.99	22.21	21.90		
1.4	64QAM	3	1	22.11	22.19	22.19		
1.4	64QAM	3	3	22.13	22.24	22.28		
1.4	64QAM	6	0	21.24	21.38	21.20	22	3



Band 7 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.87	23.22	23.05	24	0
20	QPSK	1	49	22.75	23.04	22.83		
20	QPSK	1	99	22.82	23.16	22.97		
20	QPSK	50	0	22.46	22.48	22.34	23.5	0.5
20	QPSK	50	24	22.34	22.37	22.25		
20	QPSK	50	50	22.20	22.34	22.27		
20	QPSK	100	0	22.25	22.37	22.20		
20	16QAM	1	0	22.40	22.54	22.51	23.5	0.5
20	16QAM	1	49	22.33	22.36	22.19		
20	16QAM	1	99	22.36	22.41	22.36		
20	16QAM	50	0	21.26	21.35	21.31	22.5	1.5
20	16QAM	50	24	21.25	21.38	21.28		
20	16QAM	50	50	21.13	21.27	21.14		
20	16QAM	100	0	21.37	21.43	21.34		
20	64QAM	1	0	21.74	21.78	21.75	22.5	1.5
20	64QAM	1	49	21.42	21.52	21.44		
20	64QAM	1	99	21.67	21.71	21.65		
20	64QAM	50	0	20.51	20.56	20.42	21.5	2.5
20	64QAM	50	24	20.37	20.44	20.37		
20	64QAM	50	50	20.38	20.43	20.39		
20	64QAM	100	0	20.37	20.42	20.33		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.81	23.12	22.94	24	0
15	QPSK	1	37	22.68	22.87	22.68		
15	QPSK	1	74	22.71	23.10	22.82		
15	QPSK	36	0	22.29	22.44	22.31	23.5	0.5
15	QPSK	36	20	22.25	22.33	22.09		
15	QPSK	36	39	22.14	22.30	22.11		
15	QPSK	75	0	22.10	22.26	22.14		
15	16QAM	1	0	22.37	22.52	22.43	23.5	0.5
15	16QAM	1	37	22.15	22.28	22.13		
15	16QAM	1	74	22.28	22.33	22.34		
15	16QAM	36	0	21.12	21.30	21.14	22.5	1.5
15	16QAM	36	20	21.19	21.27	21.20		
15	16QAM	36	39	21.05	21.19	20.98		
15	16QAM	75	0	21.20	21.26	21.24		
15	64QAM	1	0	21.64	21.61	21.70	22.5	1.5
15	64QAM	1	37	21.31	21.36	21.33		
15	64QAM	1	74	21.57	21.66	21.49		
15	64QAM	36	0	20.39	20.41	20.36	21.5	2.5
15	64QAM	36	20	20.23	20.32	20.21		
15	64QAM	36	39	20.36	20.30	20.34		
15	64QAM	75	0	20.23	20.36	20.17		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.79	23.04	22.94	24	0
10	QPSK	1	25	22.62	22.89	22.73		
10	QPSK	1	49	22.78	23.06	22.86		
10	QPSK	25	0	22.30	22.31	22.18	23.5	0.5



10	QPSK	25	12	22.31	22.20	22.15		
10	QPSK	25	25	22.17	22.25	22.18		
10	QPSK	50	0	22.20	22.33	22.13		
10	16QAM	1	0	22.24	22.49	22.37	23.5	0.5
10	16QAM	1	25	22.24	22.29	22.07		
10	16QAM	1	49	22.19	22.31	22.18		
10	16QAM	25	0	21.09	21.24	21.29	22.5	1.5
10	16QAM	25	12	21.20	21.21	21.21		
10	16QAM	25	25	20.97	21.20	21.00		
10	16QAM	50	0	21.30	21.32	21.22		
10	64QAM	1	0	21.63	21.62	21.58	22.5	1.5
10	64QAM	1	25	21.33	21.39	21.32		
10	64QAM	1	49	21.60	21.56	21.62		
10	64QAM	25	0	20.47	20.46	20.26	21.5	2.5
10	64QAM	25	12	20.24	20.31	20.29		
10	64QAM	25	25	20.26	20.37	20.21		
10	64QAM	50	0	20.29	20.39	20.20		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.78	23.09	23.01	24	0
5	QPSK	1	12	22.61	22.90	22.78		
5	QPSK	1	24	22.79	23.09	22.83		
5	QPSK	12	0	22.39	22.33	22.24	23.5	0.5
5	QPSK	12	7	22.20	22.26	22.19		
5	QPSK	12	13	22.15	22.24	22.15		
5	QPSK	25	0	22.12	22.23	22.15		
5	16QAM	1	0	22.27	22.45	22.43	23.5	0.5
5	16QAM	1	12	22.29	22.27	22.04		
5	16QAM	1	24	22.27	22.26	22.26		
5	16QAM	12	0	21.15	21.28	21.23	22.5	1.5
5	16QAM	12	7	21.14	21.21	21.19		
5	16QAM	12	13	21.04	21.22	21.05		
5	16QAM	25	0	21.21	21.28	21.27		
5	64QAM	1	0	21.69	21.75	21.59	22.5	1.5
5	64QAM	1	12	21.37	21.40	21.41		
5	64QAM	1	24	21.50	21.62	21.62		
5	64QAM	12	0	20.34	20.42	20.36	21.5	2.5
5	64QAM	12	7	20.29	20.33	20.30		
5	64QAM	12	13	20.29	20.40	20.29		
5	64QAM	25	0	20.30	20.30	20.18		



Band 66 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.94	23.97	23.88	25	0
20	QPSK	1	49	23.80	23.88	23.83		
20	QPSK	1	99	23.67	23.85	23.72		
20	QPSK	50	0	23.00	23.14	23.10	24	1
20	QPSK	50	24	22.93	23.08	22.94		
20	QPSK	50	50	23.08	23.09	22.95		
20	QPSK	100	0	23.14	23.17	23.05	24	1
20	16QAM	1	0	23.04	23.07	22.95		
20	16QAM	1	49	23.17	23.21	23.13		
20	16QAM	1	99	23.04	23.14	23.07	23	2
20	16QAM	50	0	21.90	22.06	21.94		
20	16QAM	50	24	22.04	22.08	22.03		
20	16QAM	50	50	21.96	22.14	22.03	23	2
20	16QAM	100	0	22.00	22.19	22.16		
20	64QAM	1	0	21.96	21.96	21.83		
20	64QAM	1	49	21.82	21.81	21.75	23	2
20	64QAM	1	99	21.74	21.88	21.80		
20	64QAM	50	0	20.96	21.08	20.95		
20	64QAM	50	24	21.13	21.19	20.95	22	3
20	64QAM	50	50	21.07	21.11	20.95		
20	64QAM	100	0	21.02	21.18	21.05		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.26	23.29	23.33	25	0
15	QPSK	1	37	23.21	23.29	23.26		
15	QPSK	1	74	23.14	23.26	23.16		
15	QPSK	36	0	22.45	22.52	22.57	24	1
15	QPSK	36	20	22.39	22.47	22.35		
15	QPSK	36	39	22.38	22.58	22.30		
15	QPSK	75	0	22.55	22.60	22.53	24	1
15	16QAM	1	0	22.48	22.53	22.33		
15	16QAM	1	37	22.62	22.55	22.56		
15	16QAM	1	74	22.37	22.53	22.47	23	2
15	16QAM	36	0	21.32	21.41	21.36		
15	16QAM	36	20	21.49	21.42	21.43		
15	16QAM	36	39	21.37	21.54	21.44	23	2
15	16QAM	75	0	21.34	21.52	21.49		
15	64QAM	1	0	21.32	21.37	21.24		
15	64QAM	1	37	21.23	21.19	21.17	23	2
15	64QAM	1	74	21.15	21.24	21.20		
15	64QAM	36	0	20.25	20.47	20.29		
15	64QAM	36	20	20.49	20.59	20.44	22	3
15	64QAM	36	39	20.57	20.59	20.37		
15	64QAM	75	0	20.41	20.57	20.42		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.29	23.36	23.39	25	0
10	QPSK	1	25	23.18	23.24	23.19		
10	QPSK	1	49	23.18	23.28	23.05		
10	QPSK	25	0	22.43	22.49	22.59	24	1



10	QPSK	25	12	22.39	22.44	22.39		
10	QPSK	25	25	22.38	22.49	22.35		
10	QPSK	50	0	22.54	22.65	22.52		
10	16QAM	1	0	22.49	22.53	22.31	24	1
10	16QAM	1	25	22.55	22.57	22.51		
10	16QAM	1	49	22.46	22.49	22.42		
10	16QAM	25	0	21.24	21.43	21.37	23	2
10	16QAM	25	12	21.37	21.53	21.48		
10	16QAM	25	25	21.36	21.54	21.45		
10	16QAM	50	0	21.37	21.57	21.52		
10	64QAM	1	0	21.33	21.45	21.19	23	2
10	64QAM	1	25	21.18	21.23	21.15		
10	64QAM	1	49	21.10	21.27	21.30		
10	64QAM	25	0	20.35	20.41	20.31	22	3
10	64QAM	25	12	20.47	20.59	20.31		
10	64QAM	25	25	20.54	20.59	20.45		
10	64QAM	50	0	20.39	20.53	20.42		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.35	23.29	23.26	25	0
5	QPSK	1	12	23.15	23.22	23.18		
5	QPSK	1	24	23.08	23.25	23.18		
5	QPSK	12	0	22.35	22.65	22.51	24	1
5	QPSK	12	7	22.38	22.43	22.33		
5	QPSK	12	13	22.50	22.47	22.29		
5	QPSK	25	0	22.51	22.67	22.44	24	1
5	16QAM	1	0	22.50	22.49	22.45		
5	16QAM	1	12	22.61	22.65	22.52		
5	16QAM	1	24	22.44	22.57	22.42	23	2
5	16QAM	12	0	21.28	21.47	21.29		
5	16QAM	12	7	21.46	21.51	21.48		
5	16QAM	12	13	21.31	21.49	21.37	22	3
5	16QAM	25	0	21.33	21.58	21.53		
5	64QAM	1	0	21.38	21.39	21.26		
5	64QAM	1	12	21.15	21.18	21.06	23	2
5	64QAM	1	24	21.20	21.23	21.16		
5	64QAM	12	0	20.29	20.44	20.44		
5	64QAM	12	7	20.47	20.49	20.33	22	3
5	64QAM	12	13	20.44	20.60	20.35		
5	64QAM	25	0	20.44	20.58	20.38		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.35	23.33	23.27	25	0
3	QPSK	1	8	23.22	23.30	23.14		
3	QPSK	1	14	23.05	23.23	23.19		
3	QPSK	8	0	22.47	22.63	22.59	24	1
3	QPSK	8	4	22.41	22.40	22.42		
3	QPSK	8	7	22.46	22.47	22.29		
3	QPSK	15	0	22.56	22.66	22.46	24	1
3	16QAM	1	0	22.45	22.47	22.31		
3	16QAM	1	8	22.58	22.58	22.46		
3	16QAM	1	14	22.47	22.52	22.47	23	2
3	16QAM	8	0	21.22	21.42	21.35		
3	16QAM	8	4	21.42	21.48	21.36		
3	16QAM	8	7	21.32	21.52	21.51	23	2
3	16QAM	15	0	21.45	21.51	21.60		



3	64QAM	1	0	21.25	21.44	21.16	23	2
3	64QAM	1	8	21.26	21.32	21.06		
3	64QAM	1	14	21.20	21.26	21.24		
3	64QAM	8	0	20.33	20.42	20.43	22	3
3	64QAM	8	4	20.52	20.54	20.42		
3	64QAM	8	7	20.53	20.52	20.37		
3	64QAM	15	0	20.45	20.60	20.39		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.33	23.37	23.26	25	0
1.4	QPSK	1	3	23.24	23.21	23.22		
1.4	QPSK	1	5	23.14	23.22	23.10		
1.4	QPSK	3	0	23.25	23.31	23.38		
1.4	QPSK	3	1	23.09	23.27	23.25		
1.4	QPSK	3	3	23.20	23.39	23.21		
1.4	QPSK	6	0	22.57	22.66	22.43	24	1
1.4	16QAM	1	0	22.49	22.43	22.31	24	1
1.4	16QAM	1	3	22.48	22.59	22.45		
1.4	16QAM	1	5	22.53	22.50	22.43		
1.4	16QAM	3	0	22.29	22.48	22.32		
1.4	16QAM	3	1	22.36	22.56	22.35		
1.4	16QAM	3	3	22.41	22.58	22.49		
1.4	16QAM	6	0	21.37	21.48	21.49	23	2
1.4	64QAM	1	0	21.36	21.44	21.17	23	2
1.4	64QAM	1	3	21.15	21.26	21.07		
1.4	64QAM	1	5	21.18	21.22	21.27		
1.4	64QAM	3	0	21.36	21.52	21.35		
1.4	64QAM	3	1	21.46	21.50	21.32		
1.4	64QAM	3	3	21.51	21.61	21.42		
1.4	64QAM	6	0	20.48	20.58	20.47	22	3



Reduced Power Mode for DSI 0

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Band 2								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.47	21.64	21.21	22.8	0
20	QPSK	1	49	21.35	21.44	21.34		
20	QPSK	1	99	21.37	21.32	21.41		
20	QPSK	50	0	21.32	21.58	21.45	22.8	0
20	QPSK	50	24	21.26	21.21	21.37		
20	QPSK	50	50	21.57	21.39	21.35		
20	QPSK	100	0	21.20	21.52	21.48	22.8	0
20	16QAM	1	0	21.22	21.43	21.31		
20	16QAM	1	49	21.48	21.35	21.38		
20	16QAM	1	99	21.53	21.47	21.53	22.5	0.3
20	16QAM	50	0	21.20	21.24	21.32		
20	16QAM	50	24	21.56	21.35	21.45		
20	16QAM	50	50	21.47	21.22	21.39	22.5	0.3
20	16QAM	100	0	21.39	21.49	21.32		
20	64QAM	1	0	21.29	21.36	21.31		
20	64QAM	1	49	21.60	21.38	21.37	22.5	0.3
20	64QAM	1	99	21.39	21.54	21.35		
20	64QAM	50	0	20.73	20.75	20.57		
20	64QAM	50	24	20.65	20.62	20.72	21.5	1.3
20	64QAM	50	50	20.63	20.65	20.57		
20	64QAM	100	0	20.64	20.67	20.53		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	21.43	21.51	21.12	22.8	0
15	QPSK	1	37	21.21	21.43	21.33		
15	QPSK	1	74	21.34	21.25	21.37		
15	QPSK	36	0	21.18	21.57	21.38	22.8	0
15	QPSK	36	20	21.15	21.17	21.29		
15	QPSK	36	39	21.54	21.38	21.23		
15	QPSK	75	0	21.10	21.53	21.36	22.8	0
15	16QAM	1	0	21.14	21.39	21.19		
15	16QAM	1	37	21.47	21.34	21.37		
15	16QAM	1	74	21.45	21.42	21.52	22.5	0.3
15	16QAM	36	0	21.08	21.19	21.29		
15	16QAM	36	20	21.43	21.26	21.38		
15	16QAM	36	39	21.36	21.15	21.34	22.5	0.3
15	16QAM	75	0	21.38	21.40	21.21		
15	64QAM	1	0	21.21	21.28	21.25		
15	64QAM	1	37	21.56	21.28	21.24	22.5	0.3
15	64QAM	1	74	21.39	21.48	21.35		
15	64QAM	36	0	20.62	20.61	20.46		
15	64QAM	36	20	20.57	20.49	20.59	21.5	1.3
15	64QAM	36	39	20.56	20.55	20.47		
15	64QAM	75	0	20.52	20.63	20.49		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	21.47	21.58	21.17	22.8	0
10	QPSK	1	25	21.35	21.46	21.23		
10	QPSK	1	49	21.30	21.34	21.40		



10	QPSK	25	0	21.31	21.48	21.44	22.8	0
10	QPSK	25	12	21.16	21.17	21.27		
10	QPSK	25	25	21.59	21.40	21.33		
10	QPSK	50	0	21.11	21.49	21.40	22.8	0
10	16QAM	1	0	21.22	21.37	21.30		
10	16QAM	1	25	21.40	21.32	21.35		
10	16QAM	1	49	21.50	21.41	21.50	22.5	0.3
10	16QAM	25	0	21.12	21.23	21.31		
10	16QAM	25	12	21.56	21.27	21.37		
10	16QAM	25	25	21.43	21.14	21.43	22.5	0.3
10	16QAM	50	0	21.39	21.46	21.30		
10	64QAM	1	0	21.27	21.26	21.22		
10	64QAM	1	25	21.54	21.40	21.34	21.5	1.3
10	64QAM	1	49	21.40	21.45	21.25		
10	64QAM	25	0	20.63	20.74	20.59		
10	64QAM	25	12	20.58	20.61	20.76	21.5	1.3
10	64QAM	25	25	20.55	20.69	20.46		
10	64QAM	50	0	20.55	20.69	20.44		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.36	21.62	21.21	22.8	0
5	QPSK	1	12	21.30	21.32	21.26		
5	QPSK	1	24	21.30	21.29	21.35		
5	QPSK	12	0	21.26	21.51	21.35	22.8	0
5	QPSK	12	7	21.24	21.18	21.31		
5	QPSK	12	13	21.47	21.29	21.27		
5	QPSK	25	0	21.14	21.45	21.49	22.8	0
5	16QAM	1	0	21.18	21.44	21.25		
5	16QAM	1	12	21.48	21.31	21.30		
5	16QAM	1	24	21.48	21.48	21.42	22.5	0.3
5	16QAM	12	0	21.10	21.15	21.26		
5	16QAM	12	7	21.51	21.30	21.45		
5	16QAM	12	13	21.44	21.11	21.28	22.5	0.3
5	16QAM	25	0	21.27	21.47	21.26		
5	64QAM	1	0	21.17	21.36	21.28		
5	64QAM	1	12	21.59	21.27	21.27	21.5	1.3
5	64QAM	1	24	21.28	21.44	21.25		
5	64QAM	12	0	20.74	20.73	20.50		
5	64QAM	12	7	20.61	20.55	20.73	21.5	1.3
5	64QAM	12	13	20.52	20.52	20.55		
5	64QAM	25	0	20.54	20.67	20.49		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.38	21.53	21.07	22.8	0
3	QPSK	1	8	21.31	21.40	21.34		
3	QPSK	1	14	21.25	21.21	21.29		
3	QPSK	8	0	21.18	21.49	21.43	22.8	0
3	QPSK	8	4	21.26	21.08	21.33		
3	QPSK	8	7	21.57	21.35	21.21		
3	QPSK	15	0	21.13	21.52	21.47	22.8	0
3	16QAM	1	0	21.13	21.29	21.28		
3	16QAM	1	8	21.42	21.28	21.28		
3	16QAM	1	14	21.46	21.43	21.45	22.5	0.3
3	16QAM	8	0	21.21	21.15	21.19		
3	16QAM	8	4	21.55	21.24	21.41		
3	16QAM	8	7	21.42	21.12	21.27	22.5	0.3



3	16QAM	15	0	21.30	21.46	21.26		
3	64QAM	1	0	21.24	21.29	21.18	22.5	0.3
3	64QAM	1	8	21.55	21.24	21.31		
3	64QAM	1	14	21.37	21.43	21.36		
3	64QAM	8	0	20.68	20.69	20.45	21.5	1.3
3	64QAM	8	4	20.55	20.50	20.71		
3	64QAM	8	7	20.59	20.63	20.46		
3	64QAM	15	0	20.52	20.58	20.45		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.32	21.52	21.09	22.8	0
1.4	QPSK	1	3	21.26	21.43	21.24		
1.4	QPSK	1	5	21.24	21.23	21.32		
1.4	QPSK	3	0	21.23	21.49	21.31		
1.4	QPSK	3	1	21.16	21.08	21.27		
1.4	QPSK	3	3	21.50	21.38	21.34		
1.4	QPSK	6	0	21.19	21.37	21.37	22.8	0
1.4	16QAM	1	0	21.15	21.36	21.31	22.8	0
1.4	16QAM	1	3	21.46	21.34	21.23		
1.4	16QAM	1	5	21.39	21.44	21.51		
1.4	16QAM	3	0	21.07	21.16	21.19		
1.4	16QAM	3	1	21.47	21.29	21.43		
1.4	16QAM	3	3	21.36	21.22	21.32		
1.4	16QAM	6	0	21.38	21.39	21.18	22.5	0.3
1.4	64QAM	1	0	21.21	21.27	21.23	22.5	0.3
1.4	64QAM	1	3	21.48	21.23	21.36		
1.4	64QAM	1	5	21.35	21.45	21.23		
1.4	64QAM	3	0	20.62	20.70	20.50		
1.4	64QAM	3	1	20.63	20.59	20.61		
1.4	64QAM	3	3	20.57	20.56	20.56		
1.4	64QAM	6	0	20.61	20.64	20.42	21.5	1.3



Band 4								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.29	22.34	22.23	23	0
20	QPSK	1	49	22.20	22.30	22.16		
20	QPSK	1	99	22.18	22.21	22.12		
20	QPSK	50	0	21.97	22.15	22.11	23	0
20	QPSK	50	24	21.87	21.95	21.91		
20	QPSK	50	50	21.93	21.98	21.96		
20	QPSK	100	0	22.05	22.12	21.98		
20	16QAM	1	0	21.99	22.03	21.92	23	0
20	16QAM	1	49	21.96	21.98	21.96		
20	16QAM	1	99	21.74	21.92	21.89		
20	16QAM	50	0	21.86	22.02	21.95	23	0
20	16QAM	50	24	22.05	22.08	22.02		
20	16QAM	50	50	22.00	22.05	21.95		
20	16QAM	100	0	22.01	22.04	21.99		
20	64QAM	1	0	21.79	21.96	21.82	23	0
20	64QAM	1	49	21.89	22.05	21.91		
20	64QAM	1	99	21.86	21.93	21.88		
20	64QAM	50	0	20.97	21.19	21.16	22	1
20	64QAM	50	24	21.05	21.06	20.92		
20	64QAM	50	50	21.10	21.18	21.13		
20	64QAM	100	0	21.23	21.19	21.09		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.25	22.28	22.18	23	0
15	QPSK	1	37	22.10	22.27	22.01		
15	QPSK	1	74	22.07	22.08	21.97		
15	QPSK	36	0	21.84	22.05	22.01	23	0
15	QPSK	36	20	21.79	21.90	21.83		
15	QPSK	36	39	21.78	21.93	21.92		
15	QPSK	75	0	21.96	22.09	21.87		
15	16QAM	1	0	21.85	21.88	21.79	23	0
15	16QAM	1	37	21.80	21.88	21.80		
15	16QAM	1	74	21.61	21.78	21.86		
15	16QAM	36	0	21.78	21.99	21.82	23	0
15	16QAM	36	20	21.99	21.94	21.85		
15	16QAM	36	39	21.91	21.97	21.78		
15	16QAM	75	0	21.99	21.86	21.89		
15	64QAM	1	0	21.62	21.93	21.76	23	0
15	64QAM	1	37	21.82	21.94	21.85		
15	64QAM	1	74	21.78	21.88	21.72		
15	64QAM	36	0	20.86	21.13	21.07	22	1
15	64QAM	36	20	21.02	21.01	20.86		
15	64QAM	36	39	21.05	21.06	21.00		
15	64QAM	75	0	21.07	21.14	21.03		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.16	22.30	22.07	23	0
10	QPSK	1	25	22.11	22.17	22.07		
10	QPSK	1	49	22.09	22.11	22.04		
10	QPSK	25	0	21.85	22.03	22.02	23	0



10	QPSK	25	12	21.71	21.92	21.81		
10	QPSK	25	25	21.85	21.80	21.90		
10	QPSK	50	0	21.98	22.08	21.83		
10	16QAM	1	0	21.89	21.91	21.79	23	0
10	16QAM	1	25	21.89	21.87	21.81		
10	16QAM	1	49	21.66	21.74	21.82		
10	16QAM	25	0	21.84	21.86	21.82	23	0
10	16QAM	25	12	22.01	22.00	21.94		
10	16QAM	25	25	21.96	21.93	21.93		
10	16QAM	50	0	21.93	21.93	21.87		
10	64QAM	1	0	21.63	21.82	21.70	23	0
10	64QAM	1	25	21.77	21.90	21.88		
10	64QAM	1	49	21.82	21.84	21.75		
10	64QAM	25	0	20.82	21.01	21.02	22	1
10	64QAM	25	12	20.89	20.98	20.83		
10	64QAM	25	25	21.07	21.05	21.05		
10	64QAM	50	0	21.19	21.16	21.06		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.23	22.22	22.10	23	0
5	QPSK	1	12	22.06	22.19	22.01		
5	QPSK	1	24	22.16	22.19	21.99		
5	QPSK	12	0	21.86	22.09	21.98	23	0
5	QPSK	12	7	21.78	21.83	21.86		
5	QPSK	12	13	21.84	21.86	21.82		
5	QPSK	25	0	21.93	22.07	21.93		
5	16QAM	1	0	21.86	21.98	21.87	23	0
5	16QAM	1	12	21.87	21.96	21.87		
5	16QAM	1	24	21.64	21.79	21.73		
5	16QAM	12	0	21.78	21.92	21.90	23	0
5	16QAM	12	7	21.90	22.03	21.93		
5	16QAM	12	13	21.95	21.94	21.79		
5	16QAM	25	0	21.96	21.89	21.87		
5	64QAM	1	0	21.75	21.84	21.68	23	0
5	64QAM	1	12	21.76	21.89	21.86		
5	64QAM	1	24	21.77	21.90	21.85		
5	64QAM	12	0	20.88	21.14	21.02	22	1
5	64QAM	12	7	20.98	20.99	20.75		
5	64QAM	12	13	20.97	21.08	20.95		
5	64QAM	25	0	21.15	21.09	21.07		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.23	22.31	22.07	23	0
3	QPSK	1	8	22.07	22.14	22.07		
3	QPSK	1	14	22.12	22.13	22.07		
3	QPSK	8	0	21.89	22.03	22.05	23	0
3	QPSK	8	4	21.84	21.79	21.87		
3	QPSK	8	7	21.87	21.85	21.80		
3	QPSK	15	0	21.91	22.04	21.90		
3	16QAM	1	0	21.91	21.91	21.79	23	0
3	16QAM	1	8	21.89	21.90	21.83		
3	16QAM	1	14	21.61	21.87	21.81		
3	16QAM	8	0	21.79	21.93	21.78	23	0
3	16QAM	8	4	21.95	21.99	21.92		
3	16QAM	8	7	21.84	21.89	21.90		
3	16QAM	15	0	21.97	21.94	21.90		



3	64QAM	1	0	21.74	21.85	21.77	23	0
3	64QAM	1	8	21.74	21.88	21.79		
3	64QAM	1	14	21.69	21.85	21.72		
3	64QAM	8	0	20.81	21.09	21.12	22	1
3	64QAM	8	4	20.93	20.93	20.89		
3	64QAM	8	7	21.01	21.09	21.05		
3	64QAM	15	0	21.11	21.15	20.98		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.11	22.27	22.09	23	0
1.4	QPSK	1	3	22.07	22.25	22.04		
1.4	QPSK	1	5	22.05	22.04	22.01		
1.4	QPSK	3	0	21.93	22.11	22.08		
1.4	QPSK	3	1	21.82	21.83	21.88		
1.4	QPSK	3	3	21.91	21.81	21.89		
1.4	QPSK	6	0	22.00	22.10	21.86		
1.4	16QAM	1	0	21.91	21.93	21.87	23	0
1.4	16QAM	1	3	21.90	21.86	21.82		
1.4	16QAM	1	5	21.65	21.82	21.80		
1.4	16QAM	3	0	21.69	21.91	21.79		
1.4	16QAM	3	1	22.01	22.03	22.00		
1.4	16QAM	3	3	21.86	22.01	21.86		
1.4	16QAM	6	0	21.90	21.89	21.91	23	0
1.4	64QAM	1	0	21.61	21.90	21.80	23	0
1.4	64QAM	1	3	21.78	22.00	21.88		
1.4	64QAM	1	5	21.83	21.79	21.73		
1.4	64QAM	3	0	21.92	22.04	22.00		
1.4	64QAM	3	1	21.95	22.03	21.86		
1.4	64QAM	3	3	22.00	22.07	22.00		
1.4	64QAM	6	0	21.11	21.08	20.97		



Band 5								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	24.06	24.21	24.09	25	0
10	QPSK	1	25	23.94	24.08	23.94		
10	QPSK	1	49	24.07	24.12	24.09		
10	QPSK	25	0	23.11	23.29	23.03	24	1
10	QPSK	25	12	23.03	23.20	23.03		
10	QPSK	25	25	23.11	23.20	23.25		
10	QPSK	50	0	23.25	23.32	23.30	24	1
10	16QAM	1	0	23.10	23.33	23.13		
10	16QAM	1	25	23.12	23.15	23.03		
10	16QAM	1	49	23.19	23.15	23.08	23	2
10	16QAM	25	0	22.13	22.24	22.04		
10	16QAM	25	12	22.10	22.03	22.06		
10	16QAM	25	25	22.21	22.31	22.06	23	2
10	16QAM	50	0	22.33	22.26	22.16		
10	64QAM	1	0	22.24	22.26	22.22		
10	64QAM	1	25	22.00	22.12	22.13	23	2
10	64QAM	1	49	22.08	22.21	22.03		
10	64QAM	25	0	21.16	21.25	21.10		
10	64QAM	25	12	21.12	21.08	20.94	22	3
10	64QAM	25	25	21.12	21.18	21.20		
10	64QAM	50	0	21.36	21.33	21.19		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	24.02	24.18	23.95	25	0
5	QPSK	1	12	23.92	23.97	23.82		
5	QPSK	1	24	23.93	24.04	24.02		
5	QPSK	12	0	23.08	23.20	22.88	24	1
5	QPSK	12	7	22.95	23.13	22.90		
5	QPSK	12	13	23.00	23.16	23.11		
5	QPSK	25	0	23.22	23.15	23.15	24	1
5	16QAM	1	0	23.06	23.15	23.04		
5	16QAM	1	12	23.08	23.00	22.96		
5	16QAM	1	24	23.02	23.07	22.92	23	2
5	16QAM	12	0	22.01	22.19	21.89		
5	16QAM	12	7	22.05	21.89	21.91		
5	16QAM	12	13	22.09	22.17	21.95	23	2
5	16QAM	25	0	22.27	22.10	22.07		
5	64QAM	1	0	22.22	22.23	22.04		
5	64QAM	1	12	21.95	22.09	22.11	23	2
5	64QAM	1	24	22.01	22.03	21.87		
5	64QAM	12	0	21.01	21.12	21.08		
5	64QAM	12	7	20.94	20.93	20.83	22	3
5	64QAM	12	13	21.02	21.02	21.09		
5	64QAM	25	0	21.30	21.22	21.08		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	24.02	24.09	23.95	25	0
3	QPSK	1	8	23.77	23.94	23.85		
3	QPSK	1	14	23.92	23.98	23.92		
3	QPSK	8	0	23.00	23.15	22.91	24	1



3	QPSK	8	4	22.92	23.04	22.99		
3	QPSK	8	7	23.03	23.04	23.22		
3	QPSK	15	0	23.22	23.24	23.15		
3	16QAM	1	0	23.07	23.17	22.97	24	1
3	16QAM	1	8	23.01	23.06	22.92		
3	16QAM	1	14	23.09	23.11	23.04		
3	16QAM	8	0	22.05	22.09	22.01	23	2
3	16QAM	8	4	21.99	22.01	21.90		
3	16QAM	8	7	22.11	22.26	21.98		
3	16QAM	15	0	22.28	22.22	22.03		
3	64QAM	1	0	22.10	22.23	22.14	23	2
3	64QAM	1	8	21.97	21.97	21.97		
3	64QAM	1	14	21.92	22.07	21.95		
3	64QAM	8	0	21.00	21.15	20.99	22	3
3	64QAM	8	4	20.96	20.96	20.88		
3	64QAM	8	7	21.06	21.10	21.17		
3	64QAM	15	0	21.32	21.19	21.16		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.91	24.17	23.92	25	0
1.4	QPSK	1	3	23.81	24.04	23.90		
1.4	QPSK	1	5	23.96	24.07	23.95		
1.4	QPSK	3	0	24.02	24.20	23.85		
1.4	QPSK	3	1	23.95	24.04	23.85		
1.4	QPSK	3	3	24.08	24.06	24.16		
1.4	QPSK	6	0	23.12	23.16	23.14	24	1
1.4	16QAM	1	0	22.98	23.16	23.00	24	1
1.4	16QAM	1	3	23.06	23.01	23.01		
1.4	16QAM	1	5	23.15	23.01	22.97		
1.4	16QAM	3	0	22.98	23.20	22.95		
1.4	16QAM	3	1	22.98	22.95	23.01		
1.4	16QAM	3	3	23.07	23.17	22.95		
1.4	16QAM	6	0	22.22	22.16	22.00	23	2
1.4	64QAM	1	0	22.07	22.12	22.07	23	2
1.4	64QAM	1	3	21.91	22.08	22.09		
1.4	64QAM	1	5	22.05	22.14	22.01		
1.4	64QAM	3	0	22.13	22.20	21.96		
1.4	64QAM	3	1	21.97	22.02	21.85		
1.4	64QAM	3	3	22.07	22.05	22.04		
1.4	64QAM	6	0	21.33	21.23	21.12	22	3



Band 7								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.29	23.39	23.34	24	0
20	QPSK	1	49	23.25	23.35	23.20		
20	QPSK	1	99	23.11	23.29	23.25		
20	QPSK	50	0	22.55	22.58	22.50	23	1
20	QPSK	50	24	22.40	22.53	22.38		
20	QPSK	50	50	22.37	22.51	22.47		
20	QPSK	100	0	22.36	22.48	22.32	23	1
20	16QAM	1	0	22.28	22.37	22.35		
20	16QAM	1	49	22.17	22.28	22.11		
20	16QAM	1	99	22.11	22.28	22.20	22	2
20	16QAM	50	0	21.46	21.55	21.50		
20	16QAM	50	24	21.49	21.57	21.39		
20	16QAM	50	50	21.38	21.52	21.38	21	3
20	16QAM	100	0	21.46	21.49	21.38		
20	64QAM	1	0	21.12	21.29	21.23		
20	64QAM	1	49	21.21	21.32	21.21	22	2
20	64QAM	1	99	21.11	21.27	21.09		
20	64QAM	50	0	20.45	20.57	20.51		
20	64QAM	50	24	20.40	20.54	20.46	21	3
20	64QAM	50	50	20.28	20.45	20.28		
20	64QAM	100	0	20.41	20.47	20.31		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.12	23.22	23.21	24	0
15	QPSK	1	37	23.09	23.27	23.05		
15	QPSK	1	74	23.08	23.21	23.17		
15	QPSK	36	0	22.50	22.42	22.46	23	1
15	QPSK	36	20	22.31	22.48	22.24		
15	QPSK	36	39	22.32	22.33	22.30		
15	QPSK	75	0	22.25	22.34	22.19	23	1
15	16QAM	1	0	22.21	22.23	22.23		
15	16QAM	1	37	22.02	22.19	22.06		
15	16QAM	1	74	22.00	22.26	22.06	22	2
15	16QAM	36	0	21.40	21.51	21.39		
15	16QAM	36	20	21.33	21.49	21.25		
15	16QAM	36	39	21.31	21.39	21.23	22	2
15	16QAM	75	0	21.38	21.43	21.35		
15	64QAM	1	0	20.94	21.11	21.19		
15	64QAM	1	37	21.04	21.15	21.07	22	2
15	64QAM	1	74	20.98	21.16	20.98		
15	64QAM	36	0	20.36	20.46	20.44		
15	64QAM	36	20	20.37	20.42	20.41	21	3
15	64QAM	36	39	20.21	20.30	20.17		
15	64QAM	75	0	20.33	20.40	20.15		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.23	23.31	23.17	24	0
10	QPSK	1	25	23.20	23.28	23.02		
10	QPSK	1	49	23.04	23.21	23.22		
10	QPSK	25	0	22.49	22.55	22.35	23	1



10	QPSK	25	12	22.38	22.45	22.25		
10	QPSK	25	25	22.32	22.41	22.30		
10	QPSK	50	0	22.30	22.38	22.18		
10	16QAM	1	0	22.11	22.23	22.33	23	1
10	16QAM	1	25	22.00	22.20	22.04		
10	16QAM	1	49	22.02	22.20	22.17		
10	16QAM	25	0	21.30	21.39	21.45	22	2
10	16QAM	25	12	21.34	21.51	21.28		
10	16QAM	25	25	21.35	21.45	21.33		
10	16QAM	50	0	21.34	21.43	21.31		
10	64QAM	1	0	20.98	21.20	21.12	22	2
10	64QAM	1	25	21.13	21.27	21.13		
10	64QAM	1	49	21.04	21.20	20.98		
10	64QAM	25	0	20.28	20.52	20.40	21	3
10	64QAM	25	12	20.25	20.49	20.37		
10	64QAM	25	25	20.17	20.31	20.19		
10	64QAM	50	0	20.29	20.34	20.13		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.26	23.31	23.22	24	0
5	QPSK	1	12	23.22	23.18	23.08		
5	QPSK	1	24	23.02	23.21	23.19		
5	QPSK	12	0	22.43	22.41	22.46	23	1
5	QPSK	12	7	22.34	22.46	22.26		
5	QPSK	12	13	22.21	22.34	22.37		
5	QPSK	25	0	22.28	22.34	22.25		
5	16QAM	1	0	22.22	22.24	22.19	23	1
5	16QAM	1	12	22.09	22.16	22.03		
5	16QAM	1	24	21.95	22.17	22.16		
5	16QAM	12	0	21.29	21.41	21.35	22	2
5	16QAM	12	7	21.38	21.50	21.34		
5	16QAM	12	13	21.30	21.42	21.22		
5	16QAM	25	0	21.37	21.45	21.35		
5	64QAM	1	0	21.10	21.20	21.18	22	2
5	64QAM	1	12	21.11	21.15	21.19		
5	64QAM	1	24	21.04	21.19	20.96		
5	64QAM	12	0	20.28	20.41	20.47		
5	64QAM	12	7	20.36	20.51	20.44	21	3
5	64QAM	12	13	20.19	20.32	20.19		
5	64QAM	25	0	20.28	20.30	20.19		



Band 12								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	24.05	24.13	24.00	25	0
10	QPSK	1	25	23.95	23.87	23.89		
10	QPSK	1	49	23.98	24.10	23.95		
10	QPSK	25	0	23.01	23.15	22.92	24	1
10	QPSK	25	12	22.91	23.11	22.87		
10	QPSK	25	25	22.98	23.03	23.12		
10	QPSK	50	0	23.01	23.19	23.04	24	1
10	16QAM	1	0	22.99	23.17	23.12		
10	16QAM	1	25	23.05	23.04	23.01		
10	16QAM	1	49	23.08	22.98	22.94	23	2
10	16QAM	25	0	22.02	22.21	22.04		
10	16QAM	25	12	22.01	21.96	22.01		
10	16QAM	25	25	22.12	22.14	22.05	23	2
10	16QAM	50	0	22.12	22.22	22.21		
10	64QAM	1	0	22.06	21.99	22.08		
10	64QAM	1	25	21.83	22.03	21.86	23	2
10	64QAM	1	49	22.08	22.07	22.10		
10	64QAM	25	0	20.91	21.17	21.12		
10	64QAM	25	12	21.10	20.99	20.93	22	3
10	64QAM	25	25	21.12	21.18	21.06		
10	64QAM	50	0	21.23	21.10	21.01		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.94	23.95	23.88	25	0
5	QPSK	1	12	23.93	23.73	23.81		
5	QPSK	1	24	23.80	23.99	23.78		
5	QPSK	12	0	22.93	23.11	22.81	24	1
5	QPSK	12	7	22.82	22.96	22.84		
5	QPSK	12	13	22.95	22.97	23.10		
5	QPSK	25	0	22.87	23.13	22.97	24	1
5	16QAM	1	0	22.94	23.06	23.10		
5	16QAM	1	12	22.97	22.91	22.89		
5	16QAM	1	24	22.99	22.87	22.92	23	2
5	16QAM	12	0	21.92	22.14	21.98		
5	16QAM	12	7	21.84	21.78	21.91		
5	16QAM	12	13	22.03	22.09	22.01	23	2
5	16QAM	25	0	22.09	22.06	22.08		
5	64QAM	1	0	21.95	21.86	21.97		
5	64QAM	1	12	21.70	21.92	21.73	23	2
5	64QAM	1	24	21.95	21.92	21.95		
5	64QAM	12	0	20.84	21.12	21.08		
5	64QAM	12	7	20.93	20.89	20.84	22	3
5	64QAM	12	13	21.01	21.12	20.99		
5	64QAM	25	0	21.15	21.05	20.88		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.88	24.01	23.95	25	0
3	QPSK	1	8	23.92	23.70	23.73		
3	QPSK	1	14	23.83	23.93	23.83		
3	QPSK	8	0	22.97	23.02	22.86	24	1



3	QPSK	8	4	22.83	22.97	22.80		
3	QPSK	8	7	22.90	23.01	22.96		
3	QPSK	15	0	22.86	23.02	22.88		
3	16QAM	1	0	22.84	23.12	23.07	24	1
3	16QAM	1	8	22.89	22.95	22.83		
3	16QAM	1	14	22.91	22.90	22.81		
3	16QAM	8	0	22.00	22.17	21.95	23	2
3	16QAM	8	4	21.93	21.92	21.89		
3	16QAM	8	7	22.02	22.11	22.02		
3	16QAM	15	0	21.99	22.05	22.13		
3	64QAM	1	0	21.88	21.88	21.95	23	2
3	64QAM	1	8	21.73	21.85	21.78		
3	64QAM	1	14	22.02	21.99	22.06		
3	64QAM	8	0	20.80	21.09	20.96	22	3
3	64QAM	8	4	21.05	20.82	20.83		
3	64QAM	8	7	20.96	21.12	21.02		
3	64QAM	15	0	21.15	20.92	20.86		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	24.03	24.02	23.85	25	0
1.4	QPSK	1	3	23.87	23.79	23.82		
1.4	QPSK	1	5	23.87	24.03	23.78		
1.4	QPSK	3	0	23.82	24.07	23.80		
1.4	QPSK	3	1	23.70	23.91	23.78		
1.4	QPSK	3	3	23.89	23.84	24.00		
1.4	QPSK	6	0	22.87	23.02	23.00	24	1
1.4	16QAM	1	0	22.89	23.11	23.05	24	1
1.4	16QAM	1	3	22.87	23.01	22.96		
1.4	16QAM	1	5	22.96	22.88	22.82		
1.4	16QAM	3	0	22.82	23.06	22.90		
1.4	16QAM	3	1	22.93	22.79	22.85		
1.4	16QAM	3	3	23.04	22.95	22.84		
1.4	16QAM	6	0	22.04	22.14	22.18	23	2
1.4	64QAM	1	0	21.93	21.86	22.04	23	2
1.4	64QAM	1	3	21.67	22.01	21.75		
1.4	64QAM	1	5	21.98	21.92	21.98		
1.4	64QAM	3	0	21.73	22.06	22.05		
1.4	64QAM	3	1	21.90	21.91	21.77		
1.4	64QAM	3	3	22.01	22.04	21.92		
1.4	64QAM	6	0	21.13	21.06	20.91	22	3



Band 13								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		22.99		24	0
10	QPSK	1	25		22.87			
10	QPSK	1	49		22.80			
10	QPSK	25	0		22.12		23	1
10	QPSK	25	12		22.03			
10	QPSK	25	25		21.98			
10	QPSK	50	0		21.96		23	1
10	16QAM	1	0		22.15			
10	16QAM	1	25		22.07			
10	16QAM	1	49		22.14		22	2
10	16QAM	25	0		21.06			
10	16QAM	25	12		20.90			
10	16QAM	25	25		20.99		22	2
10	16QAM	50	0		20.92			
10	64QAM	1	0		21.04			
10	64QAM	1	25		20.97		22	2
10	64QAM	1	49		21.03			
10	64QAM	25	0		20.13			
10	64QAM	25	12		19.96		21	3
10	64QAM	25	25		20.08			
10	64QAM	50	0		19.86			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.83	22.85	22.74	24	0
5	QPSK	1	12	22.55	22.78	22.62		
5	QPSK	1	24	22.64	22.76	22.52		
5	QPSK	12	0	22.01	22.08	21.88	23	1
5	QPSK	12	7	21.90	21.96	21.80		
5	QPSK	12	13	21.82	21.85	21.81		
5	QPSK	25	0	21.75	21.85	21.78	23	1
5	16QAM	1	0	22.01	22.07	21.94		
5	16QAM	1	12	21.85	21.96	21.77		
5	16QAM	1	24	21.99	21.96	21.88	22	2
5	16QAM	12	0	20.87	21.01	20.93		
5	16QAM	12	7	20.65	20.88	20.75		
5	16QAM	12	13	20.72	20.92	20.89	22	2
5	16QAM	25	0	20.80	20.75	20.86		
5	64QAM	1	0	20.89	20.87	20.87		
5	64QAM	1	12	20.74	20.81	20.67	22	2
5	64QAM	1	24	20.74	20.94	20.82		
5	64QAM	12	0	20.04	20.03	19.92		
5	64QAM	12	7	19.74	19.84	19.71	21	3
5	64QAM	12	13	19.83	19.99	19.80		
5	64QAM	25	0	19.75	19.76	19.68		



Band 14								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23330				
Frequency (MHz)				793				
10	QPSK	1	0		24.15		25	0
10	QPSK	1	25		24.09			
10	QPSK	1	49		24.01			
10	QPSK	25	0		23.19		24	1
10	QPSK	25	12		23.10			
10	QPSK	25	25		23.06			
10	QPSK	50	0		23.14		24	1
10	16QAM	1	0		23.45			
10	16QAM	1	25		23.49			
10	16QAM	1	49		23.48		23	2
10	16QAM	25	0		22.05			
10	16QAM	25	12		22.12			
10	16QAM	25	25		22.27		23	2
10	16QAM	50	0		22.21			
10	64QAM	1	0		22.33			
10	64QAM	1	25		22.30		23	2
10	64QAM	1	49		22.23			
10	64QAM	25	0		21.08			
10	64QAM	25	12		21.21		22	3
10	64QAM	25	25		21.18			
10	64QAM	50	0		21.25			
Channel				23305	23330	23355	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				790.5	793	795.5		
5	QPSK	1	0	23.93	24.03	23.90	25	0
5	QPSK	1	12	23.89	23.93	23.79		
5	QPSK	1	24	23.87	23.94	23.80		
5	QPSK	12	0	23.03	23.03	22.97	24	1
5	QPSK	12	7	22.91	23.00	22.83		
5	QPSK	12	13	22.72	23.04	22.90		
5	QPSK	25	0	22.89	23.07	22.87	24	1
5	16QAM	1	0	23.19	23.31	23.39		
5	16QAM	1	12	23.45	23.39	23.36		
5	16QAM	1	24	23.41	23.39	23.25	23	2
5	16QAM	12	0	21.77	21.88	21.84		
5	16QAM	12	7	21.85	22.03	21.84		
5	16QAM	12	13	22.17	22.17	22.14	23	2
5	16QAM	25	0	22.07	22.07	22.02		
5	64QAM	1	0	22.17	22.16	22.12		
5	64QAM	1	12	22.10	22.26	22.22	23	2
5	64QAM	1	24	21.93	22.16	21.95		
5	64QAM	12	0	20.94	21.04	20.95		
5	64QAM	12	7	21.00	21.16	21.00	22	3
5	64QAM	12	13	20.83	21.03	20.84		
5	64QAM	25	0	21.01	21.09	21.05		



Band 17								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.93	24.06	23.97	25	0
10	QPSK	1	25	23.91	23.88	23.97		
10	QPSK	1	49	23.96	23.94	23.92		
10	QPSK	25	0	22.90	23.11	23.03	24	1
10	QPSK	25	12	22.80	23.04	22.94		
10	QPSK	25	25	22.97	22.99	23.10		
10	QPSK	50	0	22.96	23.09	23.05	24	1
10	16QAM	1	0	22.87	23.18	23.12		
10	16QAM	1	25	22.82	22.98	22.93		
10	16QAM	1	49	22.87	22.89	22.93	23	2
10	16QAM	25	0	22.11	22.13	22.04		
10	16QAM	25	12	22.03	21.99	21.96		
10	16QAM	25	25	22.13	22.06	22.04	23	2
10	16QAM	50	0	22.19	22.13	22.15		
10	64QAM	1	0	22.05	22.07	22.10		
10	64QAM	1	25	21.95	22.04	21.93	23	2
10	64QAM	1	49	22.09	22.07	22.03		
10	64QAM	25	0	20.95	21.04	21.00		
10	64QAM	25	12	20.93	20.93	20.91	22	3
10	64QAM	25	25	20.95	20.98	21.11		
10	64QAM	50	0	21.20	21.23	21.13		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.90	23.90	23.79	25	0
5	QPSK	1	12	23.85	23.73	23.90		
5	QPSK	1	24	23.85	23.85	23.76		
5	QPSK	12	0	22.73	23.06	23.01	24	1
5	QPSK	12	7	22.71	22.90	22.81		
5	QPSK	12	13	22.81	22.89	23.03		
5	QPSK	25	0	22.81	22.91	23.02	24	1
5	16QAM	1	0	22.78	23.07	22.96		
5	16QAM	1	12	22.70	22.81	22.88		
5	16QAM	1	24	22.76	22.71	22.86	23	2
5	16QAM	12	0	22.03	21.98	21.96		
5	16QAM	12	7	21.92	21.87	21.81		
5	16QAM	12	13	22.02	21.96	21.86	23	2
5	16QAM	25	0	22.13	22.07	22.06		
5	64QAM	1	0	21.88	21.98	22.05		
5	64QAM	1	12	21.87	21.94	21.79	23	2
5	64QAM	1	24	22.04	21.94	21.95		
5	64QAM	12	0	20.83	20.98	20.92		
5	64QAM	12	7	20.84	20.80	20.84	22	3
5	64QAM	12	13	20.90	20.83	21.02		
5	64QAM	25	0	21.03	21.19	20.99		



Band 25								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	21.47	21.65	21.29	22.8	0
20	QPSK	1	49	21.48	21.47	21.38		
20	QPSK	1	99	21.42	21.40	21.42		
20	QPSK	50	0	21.43	21.59	21.49	22.8	0
20	QPSK	50	24	21.40	21.33	21.46		
20	QPSK	50	50	21.57	21.47	21.41		
20	QPSK	100	0	21.25	21.53	21.48	22.8	0
20	16QAM	1	0	21.35	21.47	21.44		
20	16QAM	1	49	21.52	21.36	21.48		
20	16QAM	1	99	21.56	21.57	21.58	22.8	0
20	16QAM	50	0	21.30	21.34	21.45		
20	16QAM	50	24	21.57	21.40	21.55		
20	16QAM	50	50	21.48	21.28	21.41	22.8	0
20	16QAM	100	0	21.47	21.53	21.31		
20	64QAM	1	0	21.32	21.49	21.38		
20	64QAM	1	49	21.60	21.44	21.50	22.8	0
20	64QAM	1	99	21.44	21.56	21.46		
20	64QAM	50	0	20.82	20.87	20.65		
20	64QAM	50	24	20.72	20.73	20.71	22	0.8
20	64QAM	50	50	20.71	20.79	20.66		
20	64QAM	100	0	20.68	20.70	20.55		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	21.39	21.61	21.19	22.8	0
15	QPSK	1	37	21.40	21.44	21.20		
15	QPSK	1	74	21.36	21.37	21.30		
15	QPSK	36	0	21.40	21.54	21.41	22.8	0
15	QPSK	36	20	21.37	21.28	21.34		
15	QPSK	36	39	21.41	21.40	21.38		
15	QPSK	75	0	21.08	21.45	21.37	22.8	0
15	16QAM	1	0	21.32	21.43	21.38		
15	16QAM	1	37	21.40	21.28	21.42		
15	16QAM	1	74	21.43	21.55	21.51	22.8	0
15	16QAM	36	0	21.17	21.29	21.37		
15	16QAM	36	20	21.45	21.37	21.42		
15	16QAM	36	39	21.37	21.13	21.34	22.8	0
15	16QAM	75	0	21.40	21.37	21.20		
15	64QAM	1	0	21.29	21.32	21.33		
15	64QAM	1	37	21.49	21.35	21.39	22.8	0
15	64QAM	1	74	21.26	21.44	21.33		
15	64QAM	36	0	20.77	20.78	20.56		
15	64QAM	36	20	20.68	20.58	20.62	22	0.8
15	64QAM	36	39	20.62	20.72	20.52		
15	64QAM	75	0	20.59	20.57	20.45		
Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	21.38	21.59	21.24	22.8	0
10	QPSK	1	25	21.44	21.36	21.22		
10	QPSK	1	49	21.36	21.36	21.28		
10	QPSK	25	0	21.38	21.56	21.42	22.8	0



10	QPSK	25	12	21.31	21.17	21.42		
10	QPSK	25	25	21.44	21.43	21.34		
10	QPSK	50	0	21.17	21.40	21.42		
10	16QAM	1	0	21.23	21.42	21.37	22.8	0
10	16QAM	1	25	21.38	21.25	21.36		
10	16QAM	1	49	21.46	21.46	21.47		
10	16QAM	25	0	21.18	21.21	21.37	22.8	0
10	16QAM	25	12	21.54	21.27	21.52		
10	16QAM	25	25	21.31	21.20	21.34		
10	16QAM	50	0	21.37	21.48	21.28		
10	64QAM	1	0	21.19	21.41	21.34	22.8	0
10	64QAM	1	25	21.57	21.33	21.43		
10	64QAM	1	49	21.42	21.40	21.30		
10	64QAM	25	0	20.72	20.74	20.61	22	0.8
10	64QAM	25	12	20.60	20.68	20.66		
10	64QAM	25	25	20.68	20.70	20.54		
10	64QAM	50	0	20.60	20.62	20.42		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	21.42	21.52	21.14	22.8	0
5	QPSK	1	12	21.44	21.35	21.28		
5	QPSK	1	24	21.36	21.29	21.24		
5	QPSK	12	0	21.26	21.48	21.38	22.8	0
5	QPSK	12	7	21.34	21.22	21.29		
5	QPSK	12	13	21.49	21.31	21.27		
5	QPSK	25	0	21.11	21.39	21.38		
5	16QAM	1	0	21.21	21.35	21.34	22.8	0
5	16QAM	1	12	21.39	21.22	21.42		
5	16QAM	1	24	21.44	21.40	21.42		
5	16QAM	12	0	21.17	21.18	21.34	22.8	0
5	16QAM	12	7	21.49	21.28	21.38		
5	16QAM	12	13	21.37	21.18	21.26		
5	16QAM	25	0	21.43	21.40	21.18		
5	64QAM	1	0	21.25	21.32	21.33	22.8	0
5	64QAM	1	12	21.57	21.32	21.45		
5	64QAM	1	24	21.32	21.43	21.32		
5	64QAM	12	0	20.77	20.79	20.62	22	0.8
5	64QAM	12	7	20.61	20.59	20.58		
5	64QAM	12	13	20.62	20.73	20.62		
5	64QAM	25	0	20.56	20.56	20.49		
Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	21.31	21.56	21.12	22.8	0
3	QPSK	1	8	21.33	21.33	21.30		
3	QPSK	1	14	21.38	21.25	21.37		
3	QPSK	8	0	21.30	21.46	21.40	22.8	0
3	QPSK	8	4	21.29	21.22	21.33		
3	QPSK	8	7	21.40	21.38	21.29		
3	QPSK	15	0	21.15	21.39	21.46		
3	16QAM	1	0	21.27	21.29	21.27	22.8	0
3	16QAM	1	8	21.36	21.23	21.42		
3	16QAM	1	14	21.51	21.45	21.42		
3	16QAM	8	0	21.14	21.17	21.31	22.8	0
3	16QAM	8	4	21.44	21.26	21.38		
3	16QAM	8	7	21.38	21.25	21.35		
3	16QAM	15	0	21.31	21.48	21.25		



3	64QAM	1	0	21.16	21.36	21.30	22.8	0
3	64QAM	1	8	21.57	21.42	21.41		
3	64QAM	1	14	21.32	21.42	21.39		
3	64QAM	8	0	20.71	20.73	20.51	22	0.8
3	64QAM	8	4	20.59	20.60	20.63		
3	64QAM	8	7	20.62	20.70	20.54		
3	64QAM	15	0	20.62	20.66	20.49		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	21.56	21.62	21.49	22.8	0
1.4	QPSK	1	3	21.44	21.30	21.42		
1.4	QPSK	1	5	21.33	21.32	21.37		
1.4	QPSK	3	0	21.39	21.44	21.38		
1.4	QPSK	3	1	21.31	21.40	21.32		
1.4	QPSK	3	3	21.48	21.36	21.31		
1.4	QPSK	6	0	21.08	21.42	21.37	22.8	0
1.4	16QAM	1	0	21.21	21.44	21.39	22.8	0
1.4	16QAM	1	3	21.35	21.20	21.42		
1.4	16QAM	1	5	21.38	21.51	21.52		
1.4	16QAM	3	0	21.23	21.22	21.33		
1.4	16QAM	3	1	21.43	21.30	21.53		
1.4	16QAM	3	3	21.37	21.12	21.34		
1.4	16QAM	6	0	21.38	21.44	21.14	22.8	0
1.4	64QAM	1	0	21.27	21.39	21.22	22.8	0
1.4	64QAM	1	3	21.54	21.27	21.36		
1.4	64QAM	1	5	21.29	21.46	21.41		
1.4	64QAM	3	0	21.27	21.43	21.31		
1.4	64QAM	3	1	21.27	21.27	21.42		
1.4	64QAM	3	3	21.49	21.41	21.32		
1.4	64QAM	6	0	20.60	20.67	20.41	22	0.8



Band 26								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.21	23.23	23.01	24	0
15	QPSK	1	37	23.03	22.97	22.91		
15	QPSK	1	74	23.05	23.11	23.05		
15	QPSK	36	0	22.07	22.18	22.02	23	1
15	QPSK	36	20	22.10	22.11	22.03		
15	QPSK	36	39	22.01	22.10	21.98		
15	QPSK	75	0	22.08	22.26	22.13	23	1
15	16QAM	1	0	22.27	22.27	22.13		
15	16QAM	1	37	22.27	22.34	22.37		
15	16QAM	1	74	22.24	22.28	22.15	22	2
15	16QAM	36	0	21.02	21.18	21.09		
15	16QAM	36	20	20.99	21.21	20.96		
15	16QAM	36	39	21.00	21.03	21.01	22	2
15	16QAM	75	0	21.07	21.18	21.17		
15	64QAM	1	0	21.18	21.33	21.18		
15	64QAM	1	37	21.07	21.19	21.22	22	2
15	64QAM	1	74	21.05	21.12	21.11		
15	64QAM	36	0	20.07	20.16	20.06		
15	64QAM	36	20	20.15	20.14	20.11	21	3
15	64QAM	36	39	20.00	20.13	20.01		
15	64QAM	75	0	20.11	20.06	19.98		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.17	23.10	22.95	24	0
10	QPSK	1	25	23.00	22.88	22.78		
10	QPSK	1	49	23.01	22.94	22.97		
10	QPSK	25	0	21.95	22.05	21.98	23	1
10	QPSK	25	12	22.04	22.02	22.00		
10	QPSK	25	25	21.92	21.97	21.93		
10	QPSK	50	0	22.02	22.19	22.01	23	1
10	16QAM	1	0	22.16	22.19	21.97		
10	16QAM	1	25	22.11	22.28	22.32		
10	16QAM	1	49	22.15	22.25	22.08	22	2
10	16QAM	25	0	20.87	21.02	20.91		
10	16QAM	25	12	20.95	21.19	20.93		
10	16QAM	25	25	20.88	20.87	20.93	22	2
10	16QAM	50	0	21.03	21.05	21.13		
10	64QAM	1	0	21.10	21.21	21.11		
10	64QAM	1	25	20.99	21.04	21.06	22	2
10	64QAM	1	49	20.97	21.07	21.03		
10	64QAM	25	0	19.99	20.02	20.02		
10	64QAM	25	12	20.03	20.03	20.05	21	3
10	64QAM	25	25	19.93	20.08	19.83		
10	64QAM	50	0	20.01	19.93	19.82		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.07	23.07	22.97	24	0
5	QPSK	1	12	22.95	22.93	22.88		
5	QPSK	1	24	23.02	22.99	22.89		
5	QPSK	12	0	22.03	22.11	21.92	23	1
5	QPSK	12	7	22.05	21.97	21.94		



5	QPSK	12	13	21.98	21.93	21.85		
5	QPSK	25	0	21.98	22.09	22.04		
5	16QAM	1	0	22.10	22.10	21.99	23	1
5	16QAM	1	12	22.24	22.20	22.32		
5	16QAM	1	24	22.20	22.22	22.01		
5	16QAM	12	0	20.90	21.15	20.95	22	2
5	16QAM	12	7	20.92	21.05	20.90		
5	16QAM	12	13	20.85	20.90	20.93		
5	16QAM	25	0	20.99	21.14	21.01	22	2
5	64QAM	1	0	21.11	21.18	21.07		
5	64QAM	1	12	21.01	21.10	21.14		
5	64QAM	1	24	20.88	21.00	20.96	21	3
5	64QAM	12	0	20.05	20.11	19.89		
5	64QAM	12	7	20.05	19.98	20.01		
5	64QAM	12	13	19.95	20.06	19.95	21	3
5	64QAM	25	0	20.08	19.97	19.88		
Channel				26705	26865	27025		
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.16	23.12	22.84	24	0
3	QPSK	1	8	22.96	22.92	22.79		
3	QPSK	1	14	22.96	22.97	22.96		
3	QPSK	8	0	21.93	22.04	21.99	23	1
3	QPSK	8	4	22.05	22.07	21.96		
3	QPSK	8	7	21.92	22.03	21.81		
3	QPSK	15	0	22.02	22.13	22.03	23	1
3	16QAM	1	0	22.16	22.09	22.05		
3	16QAM	1	8	22.20	22.21	22.31		
3	16QAM	1	14	22.11	22.19	22.04	22	2
3	16QAM	8	0	20.95	21.08	20.97		
3	16QAM	8	4	20.82	21.05	20.79		
3	16QAM	8	7	20.89	20.94	20.89	22	2
3	16QAM	15	0	21.01	21.05	21.03		
3	64QAM	1	0	21.08	21.22	21.06		
3	64QAM	1	8	20.93	21.11	21.04	22	2
3	64QAM	1	14	20.88	20.95	21.06		
3	64QAM	8	0	20.04	20.02	19.93		
3	64QAM	8	4	20.08	20.08	19.93	21	3
3	64QAM	8	7	19.90	20.01	19.91		
3	64QAM	15	0	19.94	19.93	19.94		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.05	23.16	22.85	24	0
1.4	QPSK	1	3	22.94	22.94	22.76		
1.4	QPSK	1	5	22.99	22.98	22.91		
1.4	QPSK	3	0	22.96	23.08	22.95	23	1
1.4	QPSK	3	1	23.03	23.00	22.90		
1.4	QPSK	3	3	22.89	23.00	22.90		
1.4	QPSK	6	0	22.03	22.19	22.01	23	1
1.4	16QAM	1	0	22.23	22.11	22.08	23	1
1.4	16QAM	1	3	22.17	22.29	22.26		
1.4	16QAM	1	5	22.07	22.10	22.06		
1.4	16QAM	3	0	21.99	22.13	21.92	23	1
1.4	16QAM	3	1	21.95	22.15	21.80		
1.4	16QAM	3	3	21.97	21.86	21.92		
1.4	16QAM	6	0	20.91	21.05	21.00	22	2
1.4	64QAM	1	0	21.09	21.30	21.13	22	2



1.4	64QAM	1	3	21.04	21.02	21.10		
1.4	64QAM	1	5	20.99	21.10	21.02		
1.4	64QAM	3	0	20.96	21.08	21.02		
1.4	64QAM	3	1	21.02	21.10	21.04		
1.4	64QAM	3	3	20.89	21.05	20.96		
1.4	64QAM	6	0	19.93	19.97	19.89		
							21	3

Band 66								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	22.16	22.21	22.19	23	0
20	QPSK	1	49	22.15	22.19	22.18		
20	QPSK	1	99	22.20	22.19	22.15		
20	QPSK	50	0	22.13	22.20	22.15	23	0
20	QPSK	50	24	22.03	22.19	22.17		
20	QPSK	50	50	22.05	22.16	22.10		
20	QPSK	100	0	22.08	22.16	22.12		
20	16QAM	1	0	22.02	22.03	22.08	23	0
20	16QAM	1	49	22.09	22.10	22.04		
20	16QAM	1	99	22.05	22.13	22.11		
20	16QAM	50	0	22.03	22.10	22.00	23	0
20	16QAM	50	24	22.16	22.08	22.17		
20	16QAM	50	50	22.17	22.19	22.00		
20	16QAM	100	0	22.07	22.10	22.19		
20	64QAM	1	0	22.09	22.16	22.09	23	0
20	64QAM	1	49	22.12	22.08	22.10		
20	64QAM	1	99	22.15	22.11	22.07		
20	64QAM	50	0	21.18	21.12	21.03	22	1
20	64QAM	50	24	21.06	21.18	21.18		
20	64QAM	50	50	21.14	21.19	21.05		
20	64QAM	100	0	21.14	21.16	21.07		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.01	22.20	22.14	23	0
15	QPSK	1	37	22.07	22.10	22.04		
15	QPSK	1	74	22.03	22.06	22.00		
15	QPSK	36	0	22.07	22.13	21.99	23	0
15	QPSK	36	20	21.98	22.10	22.11		
15	QPSK	36	39	21.97	22.10	21.95		
15	QPSK	75	0	21.91	22.13	22.02		
15	16QAM	1	0	21.88	21.86	21.94	23	0
15	16QAM	1	37	22.00	22.05	21.92		
15	16QAM	1	74	21.90	21.98	21.95		
15	16QAM	36	0	21.94	21.98	21.83	23	0
15	16QAM	36	20	22.12	22.01	22.11		
15	16QAM	36	39	22.04	22.09	21.88		
15	16QAM	75	0	22.14	21.96	22.16		
15	64QAM	1	0	22.03	22.04	21.95	23	0
15	64QAM	1	37	21.97	21.95	21.94		
15	64QAM	1	74	22.01	21.96	21.93		
15	64QAM	36	0	21.00	21.04	20.89	22	1
15	64QAM	36	20	20.95	21.03	21.10		
15	64QAM	36	39	21.02	21.11	20.95		
15	64QAM	75	0	21.04	21.07	20.99		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.10	22.19	22.05	23	0
10	QPSK	1	25	22.10	22.07	22.11		
10	QPSK	1	49	22.03	22.03	22.12		
10	QPSK	25	0	21.95	22.06	21.99	23	0
10	QPSK	25	12	21.87	22.15	22.06		
10	QPSK	25	25	21.94	22.08	22.00		
10	QPSK	50	0	21.98	22.10	21.94	23	0
10	16QAM	1	0	21.90	21.86	21.91		
10	16QAM	1	25	21.96	22.02	21.92		
10	16QAM	1	49	21.98	21.97	22.05	23	0
10	16QAM	25	0	22.00	21.95	21.84		
10	16QAM	25	12	22.15	21.91	22.02		
10	16QAM	25	25	22.12	22.09	21.96	23	0
10	16QAM	50	0	22.11	22.08	22.15		
10	64QAM	1	0	22.06	22.10	22.07		
10	64QAM	1	25	22.01	22.02	22.07	23	0
10	64QAM	1	49	22.09	22.00	21.95		
10	64QAM	25	0	21.06	20.94	20.93		
10	64QAM	25	12	21.00	21.02	21.01	22	1
10	64QAM	25	25	20.99	21.10	20.96		
10	64QAM	50	0	20.99	21.14	21.00		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.05	22.19	22.07	23	0
5	QPSK	1	12	22.11	22.02	22.16		
5	QPSK	1	24	22.08	22.02	22.06		
5	QPSK	12	0	22.10	22.16	22.08	23	0
5	QPSK	12	7	21.94	22.07	22.15		
5	QPSK	12	13	21.90	21.99	22.08		
5	QPSK	25	0	21.96	22.13	21.97	23	0
5	16QAM	1	0	21.89	21.98	21.98		
5	16QAM	1	12	22.05	22.02	21.97		
5	16QAM	1	24	22.01	22.04	21.95	23	0
5	16QAM	12	0	21.91	21.96	21.96		
5	16QAM	12	7	22.15	21.91	22.04		
5	16QAM	12	13	22.16	22.02	21.91	23	0
5	16QAM	25	0	22.19	21.96	22.02		
5	64QAM	1	0	21.94	21.99	21.93		
5	64QAM	1	12	22.05	22.02	22.02	23	0
5	64QAM	1	24	22.06	22.01	22.04		
5	64QAM	12	0	21.15	21.01	20.98		
5	64QAM	12	7	20.96	21.10	21.15	22	1
5	64QAM	12	13	21.09	21.11	20.88		
5	64QAM	25	0	21.06	21.00	20.94		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.12	22.17	22.16	23	0
3	QPSK	1	8	22.03	22.15	22.03		
3	QPSK	1	14	22.17	22.05	22.12		
3	QPSK	8	0	22.06	22.17	22.09	23	0
3	QPSK	8	4	21.90	22.11	22.10		
3	QPSK	8	7	21.98	22.13	22.08		
3	QPSK	15	0	21.97	22.10	21.97	23	0
3	16QAM	1	0	21.93	21.99	22.05		



3	16QAM	1	8	21.93	22.05	22.00		
3	16QAM	1	14	21.93	22.10	22.05		
3	16QAM	8	0	21.86	22.00	21.98	23	0
3	16QAM	8	4	22.12	21.91	22.02		
3	16QAM	8	7	22.15	22.05	21.86		
3	16QAM	15	0	22.07	22.04	22.10		
3	64QAM	1	0	21.95	22.04	21.99	23	0
3	64QAM	1	8	21.99	22.00	21.99		
3	64QAM	1	14	22.05	22.04	21.97		
3	64QAM	8	0	21.06	21.08	20.99	22	1
3	64QAM	8	4	20.91	21.05	21.05		
3	64QAM	8	7	20.99	21.13	20.88		
3	64QAM	15	0	21.02	21.08	20.90		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.07	22.15	22.07	23	0
1.4	QPSK	1	3	22.00	22.04	22.14		
1.4	QPSK	1	5	22.06	22.12	22.13		
1.4	QPSK	3	0	21.97	22.06	22.10		
1.4	QPSK	3	1	21.99	22.12	22.05		
1.4	QPSK	3	3	22.01	22.02	22.01		
1.4	QPSK	6	0	21.96	22.02	22.08	23	0
1.4	16QAM	1	0	21.86	21.88	22.00	23	0
1.4	16QAM	1	3	21.97	22.04	21.91		
1.4	16QAM	1	5	21.97	22.09	21.98		
1.4	16QAM	3	0	21.99	22.03	21.89		
1.4	16QAM	3	1	22.17	22.00	22.09		
1.4	16QAM	3	3	22.13	22.07	21.94		
1.4	16QAM	6	0	22.16	21.94	22.14	23	0
1.4	64QAM	1	0	22.02	22.14	22.06	23	0
1.4	64QAM	1	3	22.05	22.02	21.96		
1.4	64QAM	1	5	22.03	22.00	22.01		
1.4	64QAM	3	0	22.04	22.09	21.88		
1.4	64QAM	3	1	21.93	22.06	22.02		
1.4	64QAM	3	3	22.12	22.11	22.01		
1.4	64QAM	6	0	21.05	21.04	20.98	22	1



Band 71								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				133222	133322	133372		
Frequency (MHz)				673	683	688		
20	QPSK	1	0	23.63	23.75	23.70	25	0
20	QPSK	1	49	23.59	23.71	23.53		
20	QPSK	1	99	23.68	23.66	23.55		
20	QPSK	50	0	22.75	22.86	22.72	24	1
20	QPSK	50	24	22.70	22.77	22.68		
20	QPSK	50	50	22.65	22.68	22.68		
20	QPSK	100	0	22.67	22.88	22.63		
20	16QAM	1	0	22.78	22.80	22.83	24	1
20	16QAM	1	49	22.66	22.84	22.58		
20	16QAM	1	99	22.64	22.74	22.58		
20	16QAM	50	0	21.79	21.81	21.79	23	2
20	16QAM	50	24	21.78	21.71	21.67		
20	16QAM	50	50	21.64	21.63	21.76		
20	16QAM	100	0	21.70	21.79	21.76		
20	64QAM	1	0	21.70	21.72	21.87	23	2
20	64QAM	1	49	21.68	21.74	21.71		
20	64QAM	1	99	21.63	21.78	21.69		
20	64QAM	50	0	20.82	20.90	20.86	22	3
20	64QAM	50	24	20.68	20.72	20.68		
20	64QAM	50	50	20.70	20.69	20.71		
20	64QAM	100	0	20.66	20.83	20.69		
Channel				133197	133297	133397	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				670.5	680.5	690.5		
15	QPSK	1	0	23.48	23.70	23.66	25	0
15	QPSK	1	37	23.53	23.68	23.36		
15	QPSK	1	74	23.63	23.54	23.37		
15	QPSK	36	0	22.58	22.72	22.58	24	1
15	QPSK	36	20	22.62	22.74	22.56		
15	QPSK	36	39	22.52	22.52	22.56		
15	QPSK	75	0	22.59	22.73	22.56		
15	16QAM	1	0	22.69	22.71	22.72	24	1
15	16QAM	1	37	22.57	22.67	22.44		
15	16QAM	1	74	22.60	22.59	22.50		
15	16QAM	36	0	21.77	21.66	21.77	23	2
15	16QAM	36	20	21.67	21.69	21.52		
15	16QAM	36	39	21.56	21.58	21.69		
15	16QAM	75	0	21.63	21.68	21.67		
15	64QAM	1	0	21.67	21.66	21.80	23	2
15	64QAM	1	37	21.60	21.58	21.67		
15	64QAM	1	74	21.58	21.73	21.56		
15	64QAM	36	0	20.78	20.86	20.77	22	3
15	64QAM	36	20	20.62	20.54	20.61		
15	64QAM	36	39	20.63	20.57	20.55		
15	64QAM	75	0	20.56	20.66	20.56		
Channel				133172	133272	133422	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				668	678	693		
10	QPSK	1	0	23.53	23.68	23.58	25	0
10	QPSK	1	25	23.53	23.72	23.42		
10	QPSK	1	49	23.60	23.50	23.48		
10	QPSK	25	0	22.69	22.74	22.62	24	1



10	QPSK	25	12	22.63	22.64	22.64		
10	QPSK	25	25	22.61	22.57	22.57		
10	QPSK	50	0	22.64	22.80	22.58		
10	16QAM	1	0	22.67	22.64	22.76	24	1
10	16QAM	1	25	22.56	22.77	22.53		
10	16QAM	1	49	22.60	22.68	22.55		
10	16QAM	25	0	21.71	21.64	21.68	23	2
10	16QAM	25	12	21.75	21.58	21.52		
10	16QAM	25	25	21.48	21.60	21.73		
10	16QAM	50	0	21.58	21.63	21.63		
10	64QAM	1	0	21.66	21.66	21.71	23	2
10	64QAM	1	25	21.57	21.68	21.69		
10	64QAM	1	49	21.50	21.63	21.62		
10	64QAM	25	0	20.73	20.82	20.78	22	3
10	64QAM	25	12	20.64	20.59	20.64		
10	64QAM	25	25	20.66	20.67	20.61		
10	64QAM	50	0	20.58	20.79	20.58		
Channel				133147	133247	133447	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				665.5	675.5	695.5		
5	QPSK	1	0	23.47	23.70	23.53	25	0
5	QPSK	1	12	23.48	23.73	23.48		
5	QPSK	1	24	23.58	23.48	23.47		
5	QPSK	12	0	22.70	22.75	22.65	24	1
5	QPSK	12	7	22.64	22.64	22.58		
5	QPSK	12	13	22.59	22.54	22.66		
5	QPSK	25	0	22.59	22.73	22.46		
5	16QAM	1	0	22.63	22.62	22.70	24	1
5	16QAM	1	12	22.58	22.80	22.48		
5	16QAM	1	24	22.48	22.70	22.56		
5	16QAM	12	0	21.72	21.70	21.73	23	2
5	16QAM	12	7	21.74	21.57	21.65		
5	16QAM	12	13	21.53	21.57	21.67		
5	16QAM	25	0	21.62	21.62	21.62		
5	64QAM	1	0	21.63	21.55	21.75	23	2
5	64QAM	1	12	21.55	21.61	21.54		
5	64QAM	1	24	21.60	21.72	21.64		
5	64QAM	12	0	20.65	20.75	20.79	22	3
5	64QAM	12	7	20.52	20.63	20.61		
5	64QAM	12	13	20.65	20.55	20.60		
5	64QAM	25	0	20.48	20.66	20.51		



Ant2

Band 2 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	24.28	24.32	24.22	24.5	0
20	QPSK	1	49	24.25	24.28	24.21		
20	QPSK	1	99	24.15	24.25	24.20		
20	QPSK	50	0	23.31	23.41	23.29	23.5	1
20	QPSK	50	24	23.29	23.36	23.30		
20	QPSK	50	50	23.27	23.39	23.35		
20	QPSK	100	0	23.30	23.42	23.29	23.5	1
20	16QAM	1	0	23.47	23.31	23.49		
20	16QAM	1	49	23.43	23.23	23.47		
20	16QAM	1	99	23.32	23.46	23.43	22.5	2
20	16QAM	50	0	22.39	22.48	22.44		
20	16QAM	50	24	22.34	22.43	22.37		
20	16QAM	50	50	22.30	22.45	22.42	22.5	2
20	16QAM	100	0	22.47	22.25	22.49		
20	64QAM	1	0	22.20	22.27	22.20		
20	64QAM	1	49	22.18	22.28	22.23	22.5	2
20	64QAM	1	99	22.21	22.25	22.20		
20	64QAM	50	0	21.33	21.43	21.28		
20	64QAM	50	24	21.31	21.43	21.33	21.5	3
20	64QAM	50	50	21.40	21.45	21.38		
20	64QAM	100	0	21.24	21.39	21.28		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	24.25	24.23	24.09	24.5	0
15	QPSK	1	37	24.12	24.24	24.07		
15	QPSK	1	74	24.02	24.21	24.13		
15	QPSK	36	0	23.26	23.34	23.25	23.5	1
15	QPSK	36	20	23.17	23.27	23.26		
15	QPSK	36	39	23.17	23.36	23.21		
15	QPSK	75	0	23.26	23.38	23.15	23.5	1
15	16QAM	1	0	23.40	23.49	23.42		
15	16QAM	1	37	23.38	23.43	23.40		
15	16QAM	1	74	23.19	23.34	23.40	22.5	2
15	16QAM	36	0	22.29	22.44	22.30		
15	16QAM	36	20	22.24	22.31	22.28		
15	16QAM	36	39	22.24	22.32	22.34	22.5	2
15	16QAM	75	0	22.33	22.47	22.35		
15	64QAM	1	0	22.15	22.16	22.12		
15	64QAM	1	37	22.05	22.14	22.13	22.5	2
15	64QAM	1	74	22.08	22.19	22.06		
15	64QAM	36	0	21.23	21.30	21.22		
15	64QAM	36	20	21.24	21.36	21.27	21.5	3
15	64QAM	36	39	21.36	21.39	21.26		
15	64QAM	75	0	21.10	21.30	21.13		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	24.23	24.28	24.17	24.5	0
10	QPSK	1	25	24.13	24.13	24.06		
10	QPSK	1	49	24.09	24.21	24.05		
10	QPSK	25	0	23.25	23.28	23.21	23.5	1



10	QPSK	25	12	23.21	23.25	23.25		
10	QPSK	25	25	23.21	23.28	23.24		
10	QPSK	50	0	23.20	23.34	23.23		
10	16QAM	1	0	23.43	23.47	23.37	23.5	1
10	16QAM	1	25	23.32	23.38	23.41		
10	16QAM	1	49	23.26	23.36	23.38		
10	16QAM	25	0	22.27	22.42	22.40	22.5	2
10	16QAM	25	12	22.24	22.39	22.27		
10	16QAM	25	25	22.22	22.37	22.34		
10	16QAM	50	0	22.36	22.47	22.44		
10	64QAM	1	0	22.11	22.14	22.16	22.5	2
10	64QAM	1	25	22.12	22.18	22.17		
10	64QAM	1	49	22.14	22.19	22.06		
10	64QAM	25	0	21.26	21.31	21.13	21.5	3
10	64QAM	25	12	21.25	21.31	21.23		
10	64QAM	25	25	21.35	21.31	21.25		
10	64QAM	50	0	21.13	21.32	21.14		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	24.20	24.21	24.14	24.5	0
5	QPSK	1	12	24.18	24.22	24.15		
5	QPSK	1	24	24.06	24.11	24.07		
5	QPSK	12	0	23.24	23.29	23.17	23.5	1
5	QPSK	12	7	23.26	23.28	23.18		
5	QPSK	12	13	23.18	23.27	23.27		
5	QPSK	25	0	23.17	23.29	23.21		
5	16QAM	1	0	23.35	23.36	23.35	23.5	1
5	16QAM	1	12	23.40	23.41	23.42		
5	16QAM	1	24	23.29	23.42	23.33		
5	16QAM	12	0	22.34	22.41	22.37	22.5	2
5	16QAM	12	7	22.21	22.35	22.25		
5	16QAM	12	13	22.23	22.39	22.28		
5	16QAM	25	0	22.37	22.45	22.40		
5	64QAM	1	0	22.10	22.21	22.11	22.5	2
5	64QAM	1	12	22.10	22.17	22.18		
5	64QAM	1	24	22.17	22.17	22.15		
5	64QAM	12	0	21.24	21.33	21.20	21.5	3
5	64QAM	12	7	21.16	21.39	21.30		
5	64QAM	12	13	21.30	21.33	21.32		
5	64QAM	25	0	21.20	21.30	21.20		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	24.24	24.20	24.16	24.5	0
3	QPSK	1	8	24.15	24.19	24.11		
3	QPSK	1	14	24.01	24.15	24.10		
3	QPSK	8	0	23.26	23.30	23.22	23.5	1
3	QPSK	8	4	23.17	23.32	23.19		
3	QPSK	8	7	23.17	23.31	23.30		
3	QPSK	15	0	23.18	23.38	23.24		
3	16QAM	1	0	23.34	23.47	23.35	23.5	1
3	16QAM	1	8	23.33	23.42	23.42		
3	16QAM	1	14	23.19	23.42	23.39		
3	16QAM	8	0	22.30	22.42	22.35	22.5	2
3	16QAM	8	4	22.25	22.31	22.28		
3	16QAM	8	7	22.20	22.36	22.28		
3	16QAM	15	0	22.37	22.50	22.41		



3	64QAM	1	0	22.06	22.18	22.14	22.5	2
3	64QAM	1	8	22.12	22.22	22.13		
3	64QAM	1	14	22.09	22.19	22.09		
3	64QAM	8	0	21.24	21.30	21.25	21.5	3
3	64QAM	8	4	21.20	21.36	21.25		
3	64QAM	8	7	21.32	21.34	21.27		
3	64QAM	15	0	21.19	21.28	21.16		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	24.20	24.22	24.15	24.5	0
1.4	QPSK	1	3	24.21	24.20	24.08		
1.4	QPSK	1	5	24.11	24.15	24.10		
1.4	QPSK	3	0	24.11	24.26	24.18		
1.4	QPSK	3	1	24.20	24.26	24.22		
1.4	QPSK	3	3	24.08	24.20	24.23		
1.4	QPSK	6	0	23.22	23.39	23.23	23.5	1
1.4	16QAM	1	0	23.36	23.35	23.41	23.5	1
1.4	16QAM	1	3	23.31	23.44	23.39		
1.4	16QAM	1	5	23.26	23.42	23.35		
1.4	16QAM	3	0	23.28	23.28	23.29		
1.4	16QAM	3	1	23.21	23.34	23.24		
1.4	16QAM	3	3	23.20	23.29	23.30		
1.4	16QAM	6	0	22.38	22.41	22.37	22.5	2
1.4	64QAM	1	0	22.12	22.16	22.06	22.5	2
1.4	64QAM	1	3	22.08	22.21	22.12		
1.4	64QAM	1	5	22.08	22.20	22.10		
1.4	64QAM	3	0	22.17	22.27	22.09		
1.4	64QAM	3	1	22.14	22.34	22.20		
1.4	64QAM	3	3	22.21	22.25	22.29		
1.4	64QAM	6	0	21.17	21.29	21.15	21.5	3



Band 5 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	24.21	24.27	24.12	25	0
10	QPSK	1	25	24.01	24.07	24.03		
10	QPSK	1	49	23.92	24.05	23.93		
10	QPSK	25	0	23.22	23.43	23.34	24	1
10	QPSK	25	12	23.20	23.32	23.19		
10	QPSK	25	25	23.27	23.41	23.15		
10	QPSK	50	0	23.36	23.46	23.29	24	1
10	16QAM	1	0	23.36	23.32	23.24		
10	16QAM	1	25	23.37	23.43	23.37		
10	16QAM	1	49	23.38	23.36	23.38	23	2
10	16QAM	25	0	22.18	22.30	22.23		
10	16QAM	25	12	22.28	22.28	22.34		
10	16QAM	25	25	22.24	22.32	22.22	23	2
10	16QAM	50	0	22.22	22.37	22.41		
10	64QAM	1	0	22.13	22.29	22.01		
10	64QAM	1	25	22.05	22.05	22.00	23	2
10	64QAM	1	49	21.97	22.16	22.08		
10	64QAM	25	0	21.13	21.25	21.14		
10	64QAM	25	12	21.31	21.37	21.20	22	3
10	64QAM	25	25	21.40	21.35	21.28		
10	64QAM	50	0	21.27	21.40	21.26		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	24.15	24.10	23.97	25	0
5	QPSK	1	12	23.89	23.93	23.96		
5	QPSK	1	24	23.89	23.93	23.86		
5	QPSK	12	0	23.09	23.31	23.21	24	1
5	QPSK	12	7	23.15	23.15	23.05		
5	QPSK	12	13	23.09	23.26	23.07		
5	QPSK	25	0	23.20	23.32	23.26	24	1
5	16QAM	1	0	23.30	23.16	23.19		
5	16QAM	1	12	23.29	23.33	23.32		
5	16QAM	1	24	23.21	23.27	23.24	23	2
5	16QAM	12	0	22.12	22.18	22.14		
5	16QAM	12	7	22.17	22.12	22.22		
5	16QAM	12	13	22.13	22.25	22.06	23	2
5	16QAM	25	0	22.12	22.20	22.26		
5	64QAM	1	0	22.06	22.26	21.85		
5	64QAM	1	12	22.01	22.01	21.85	23	2
5	64QAM	1	24	21.81	22.04	22.06		
5	64QAM	12	0	21.05	21.08	21.06		
5	64QAM	12	7	21.18	21.34	21.13	22	3
5	64QAM	12	13	21.35	21.25	21.24		
5	64QAM	25	0	21.19	21.27	21.11		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	24.08	24.15	23.96	25	0
3	QPSK	1	8	23.91	24.04	23.90		
3	QPSK	1	14	23.89	23.98	23.90		
3	QPSK	8	0	23.17	23.28	23.18	24	1



3	QPSK	8	4	23.10	23.19	23.13		
3	QPSK	8	7	23.12	23.35	23.11		
3	QPSK	15	0	23.28	23.41	23.17		
3	16QAM	1	0	23.30	23.26	23.18	24	1
3	16QAM	1	8	23.33	23.27	23.29		
3	16QAM	1	14	23.25	23.18	23.27		
3	16QAM	8	0	22.13	22.14	22.14	23	2
3	16QAM	8	4	22.25	22.23	22.26		
3	16QAM	8	7	22.22	22.27	22.07		
3	16QAM	15	0	22.18	22.34	22.29		
3	64QAM	1	0	21.97	22.24	21.87	23	2
3	64QAM	1	8	21.98	21.91	21.85		
3	64QAM	1	14	21.81	22.02	21.91		
3	64QAM	8	0	21.04	21.08	21.11	22	3
3	64QAM	8	4	21.20	21.19	21.06		
3	64QAM	8	7	21.24	21.24	21.22		
3	64QAM	15	0	21.21	21.23	21.10		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	24.10	24.21	24.03	25	0
1.4	QPSK	1	3	23.98	23.97	23.92		
1.4	QPSK	1	5	23.89	23.98	23.83		
1.4	QPSK	3	0	24.05	24.17	24.09		
1.4	QPSK	3	1	23.90	23.94	23.87		
1.4	QPSK	3	3	23.81	23.89	23.84		
1.4	QPSK	6	0	23.16	23.30	23.23	24	1
1.4	16QAM	1	0	23.13	23.24	23.16	24	1
1.4	16QAM	1	3	23.20	23.27	23.10		
1.4	16QAM	1	5	23.21	23.43	23.16		
1.4	16QAM	3	0	23.19	23.20	23.21		
1.4	16QAM	3	1	23.22	23.41	23.34		
1.4	16QAM	3	3	23.24	23.29	23.34		
1.4	16QAM	6	0	22.01	22.23	22.09	23	2
1.4	64QAM	1	0	22.13	22.12	22.19	23	2
1.4	64QAM	1	3	22.08	22.21	22.18		
1.4	64QAM	1	5	22.06	22.22	22.26		
1.4	64QAM	3	0	21.99	22.21	21.90		
1.4	64QAM	3	1	22.11	22.19	22.19		
1.4	64QAM	3	3	22.13	22.24	22.28		
1.4	64QAM	6	0	21.24	21.38	21.20	22	3



Band 7 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.87	23.22	23.05	24	0
20	QPSK	1	49	22.75	23.04	22.83		
20	QPSK	1	99	22.82	23.16	22.97		
20	QPSK	50	0	22.46	22.48	22.34	23.5	0.5
20	QPSK	50	24	22.34	22.37	22.25		
20	QPSK	50	50	22.20	22.34	22.27		
20	QPSK	100	0	22.25	22.37	22.20	23.5	0.5
20	16QAM	1	0	22.40	22.54	22.51		
20	16QAM	1	49	22.33	22.36	22.19		
20	16QAM	1	99	22.36	22.41	22.36	22.5	1.5
20	16QAM	50	0	21.26	21.35	21.31		
20	16QAM	50	24	21.25	21.38	21.28		
20	16QAM	50	50	21.13	21.27	21.14	22.5	1.5
20	16QAM	100	0	21.37	21.43	21.34		
20	64QAM	1	0	21.74	21.78	21.75		
20	64QAM	1	49	21.42	21.52	21.44	22.5	1.5
20	64QAM	1	99	21.67	21.71	21.65		
20	64QAM	50	0	20.51	20.56	20.42		
20	64QAM	50	24	20.37	20.44	20.37	21.5	2.5
20	64QAM	50	50	20.38	20.43	20.39		
20	64QAM	100	0	20.37	20.42	20.33		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.81	23.12	22.94	24	0
15	QPSK	1	37	22.68	22.87	22.68		
15	QPSK	1	74	22.71	23.10	22.82		
15	QPSK	36	0	22.29	22.44	22.31	23.5	0.5
15	QPSK	36	20	22.25	22.33	22.09		
15	QPSK	36	39	22.14	22.30	22.11		
15	QPSK	75	0	22.10	22.26	22.14	23.5	0.5
15	16QAM	1	0	22.37	22.52	22.43		
15	16QAM	1	37	22.15	22.28	22.13		
15	16QAM	1	74	22.28	22.33	22.34	22.5	1.5
15	16QAM	36	0	21.12	21.30	21.14		
15	16QAM	36	20	21.19	21.27	21.20		
15	16QAM	36	39	21.05	21.19	20.98	22.5	1.5
15	16QAM	75	0	21.20	21.26	21.24		
15	64QAM	1	0	21.64	21.61	21.70		
15	64QAM	1	37	21.31	21.36	21.33	22.5	1.5
15	64QAM	1	74	21.57	21.66	21.49		
15	64QAM	36	0	20.39	20.41	20.36		
15	64QAM	36	20	20.23	20.32	20.21	21.5	2.5
15	64QAM	36	39	20.36	20.30	20.34		
15	64QAM	75	0	20.23	20.36	20.17		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.79	23.04	22.94	24	0
10	QPSK	1	25	22.62	22.89	22.73		
10	QPSK	1	49	22.78	23.06	22.86		
10	QPSK	25	0	22.30	22.31	22.18	23.5	0.5



10	QPSK	25	12	22.31	22.20	22.15		
10	QPSK	25	25	22.17	22.25	22.18		
10	QPSK	50	0	22.20	22.33	22.13		
10	16QAM	1	0	22.24	22.49	22.37	23.5	0.5
10	16QAM	1	25	22.24	22.29	22.07		
10	16QAM	1	49	22.19	22.31	22.18		
10	16QAM	25	0	21.09	21.24	21.29	22.5	1.5
10	16QAM	25	12	21.20	21.21	21.21		
10	16QAM	25	25	20.97	21.20	21.00		
10	16QAM	50	0	21.30	21.32	21.22		
10	64QAM	1	0	21.63	21.62	21.58	22.5	1.5
10	64QAM	1	25	21.33	21.39	21.32		
10	64QAM	1	49	21.60	21.56	21.62		
10	64QAM	25	0	20.47	20.46	20.26	21.5	2.5
10	64QAM	25	12	20.24	20.31	20.29		
10	64QAM	25	25	20.26	20.37	20.21		
10	64QAM	50	0	20.29	20.39	20.20		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.78	23.09	23.01	24	0
5	QPSK	1	12	22.61	22.90	22.78		
5	QPSK	1	24	22.79	23.09	22.83		
5	QPSK	12	0	22.39	22.33	22.24	23.5	0.5
5	QPSK	12	7	22.20	22.26	22.19		
5	QPSK	12	13	22.15	22.24	22.15		
5	QPSK	25	0	22.12	22.23	22.15		
5	16QAM	1	0	22.27	22.45	22.43	23.5	0.5
5	16QAM	1	12	22.29	22.27	22.04		
5	16QAM	1	24	22.27	22.26	22.26		
5	16QAM	12	0	21.15	21.28	21.23	22.5	1.5
5	16QAM	12	7	21.14	21.21	21.19		
5	16QAM	12	13	21.04	21.22	21.05		
5	16QAM	25	0	21.21	21.28	21.27		
5	64QAM	1	0	21.69	21.75	21.59	22.5	1.5
5	64QAM	1	12	21.37	21.40	21.41		
5	64QAM	1	24	21.50	21.62	21.62		
5	64QAM	12	0	20.34	20.42	20.36	21.5	2.5
5	64QAM	12	7	20.29	20.33	20.30		
5	64QAM	12	13	20.29	20.40	20.29		
5	64QAM	25	0	20.30	20.30	20.18		



Band 66 ENDC								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.40	23.44	23.41	25	0
20	QPSK	1	49	23.32	23.36	23.31		
20	QPSK	1	99	23.21	23.33	23.22		
20	QPSK	50	0	22.49	22.67	22.63	24	1
20	QPSK	50	24	22.46	22.56	22.48		
20	QPSK	50	50	22.55	22.62	22.47		
20	QPSK	100	0	22.62	22.70	22.57		
20	16QAM	1	0	22.56	22.61	22.47	24	1
20	16QAM	1	49	22.66	22.68	22.59		
20	16QAM	1	99	22.55	22.63	22.59		
20	16QAM	50	0	21.36	21.54	21.41	23	2
20	16QAM	50	24	21.53	21.60	21.52		
20	16QAM	50	50	21.46	21.63	21.53		
20	16QAM	100	0	21.49	21.66	21.64		
20	64QAM	1	0	21.42	21.49	21.34	23	2
20	64QAM	1	49	21.29	21.34	21.22		
20	64QAM	1	99	21.25	21.38	21.32		
20	64QAM	50	0	20.42	20.56	20.46	22	3
20	64QAM	50	24	20.63	20.66	20.49		
20	64QAM	50	50	20.59	20.64	20.48		
20	64QAM	100	0	20.55	20.65	20.54		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.26	23.29	23.33	25	0
15	QPSK	1	37	23.21	23.29	23.26		
15	QPSK	1	74	23.14	23.26	23.16		
15	QPSK	36	0	22.45	22.52	22.57	24	1
15	QPSK	36	20	22.39	22.47	22.35		
15	QPSK	36	39	22.38	22.58	22.30		
15	QPSK	75	0	22.55	22.60	22.53		
15	16QAM	1	0	22.48	22.53	22.33	24	1
15	16QAM	1	37	22.62	22.55	22.56		
15	16QAM	1	74	22.37	22.53	22.47		
15	16QAM	36	0	21.32	21.41	21.36	23	2
15	16QAM	36	20	21.49	21.42	21.43		
15	16QAM	36	39	21.37	21.54	21.44		
15	16QAM	75	0	21.34	21.52	21.49		
15	64QAM	1	0	21.32	21.37	21.24	23	2
15	64QAM	1	37	21.23	21.19	21.17		
15	64QAM	1	74	21.15	21.24	21.20		
15	64QAM	36	0	20.25	20.47	20.29	22	3
15	64QAM	36	20	20.49	20.59	20.44		
15	64QAM	36	39	20.57	20.59	20.37		
15	64QAM	75	0	20.41	20.57	20.42		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.29	23.36	23.39	25	0
10	QPSK	1	25	23.18	23.24	23.19		
10	QPSK	1	49	23.18	23.28	23.05		
10	QPSK	25	0	22.43	22.49	22.59	24	1



10	QPSK	25	12	22.39	22.44	22.39		
10	QPSK	25	25	22.38	22.49	22.35		
10	QPSK	50	0	22.54	22.65	22.52		
10	16QAM	1	0	22.49	22.53	22.31	24	1
10	16QAM	1	25	22.55	22.57	22.51		
10	16QAM	1	49	22.46	22.49	22.42		
10	16QAM	25	0	21.24	21.43	21.37	23	2
10	16QAM	25	12	21.37	21.53	21.48		
10	16QAM	25	25	21.36	21.54	21.45		
10	16QAM	50	0	21.37	21.57	21.52		
10	64QAM	1	0	21.33	21.45	21.19	23	2
10	64QAM	1	25	21.18	21.23	21.15		
10	64QAM	1	49	21.10	21.27	21.30		
10	64QAM	25	0	20.35	20.41	20.31	22	3
10	64QAM	25	12	20.47	20.59	20.31		
10	64QAM	25	25	20.54	20.59	20.45		
10	64QAM	50	0	20.39	20.53	20.42		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.35	23.29	23.26	25	0
5	QPSK	1	12	23.15	23.22	23.18		
5	QPSK	1	24	23.08	23.25	23.18		
5	QPSK	12	0	22.35	22.65	22.51	24	1
5	QPSK	12	7	22.38	22.43	22.33		
5	QPSK	12	13	22.50	22.47	22.29		
5	QPSK	25	0	22.51	22.67	22.44	24	1
5	16QAM	1	0	22.50	22.49	22.45		
5	16QAM	1	12	22.61	22.65	22.52		
5	16QAM	1	24	22.44	22.57	22.42	23	2
5	16QAM	12	0	21.28	21.47	21.29		
5	16QAM	12	7	21.46	21.51	21.48		
5	16QAM	12	13	21.31	21.49	21.37	23	2
5	16QAM	25	0	21.33	21.58	21.53		
5	64QAM	1	0	21.38	21.39	21.26		
5	64QAM	1	12	21.15	21.18	21.06	23	2
5	64QAM	1	24	21.20	21.23	21.16		
5	64QAM	12	0	20.29	20.44	20.44		
5	64QAM	12	7	20.47	20.49	20.33	22	3
5	64QAM	12	13	20.44	20.60	20.35		
5	64QAM	25	0	20.44	20.58	20.38		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.35	23.33	23.27	25	0
3	QPSK	1	8	23.22	23.30	23.14		
3	QPSK	1	14	23.05	23.23	23.19		
3	QPSK	8	0	22.47	22.63	22.59	24	1
3	QPSK	8	4	22.41	22.40	22.42		
3	QPSK	8	7	22.46	22.47	22.29		
3	QPSK	15	0	22.56	22.66	22.46	24	1
3	16QAM	1	0	22.45	22.47	22.31		
3	16QAM	1	8	22.58	22.58	22.46		
3	16QAM	1	14	22.47	22.52	22.47	23	2
3	16QAM	8	0	21.22	21.42	21.35		
3	16QAM	8	4	21.42	21.48	21.36		
3	16QAM	8	7	21.32	21.52	21.51	23	2
3	16QAM	15	0	21.45	21.51	21.60		



3	64QAM	1	0	21.25	21.44	21.16	23	2
3	64QAM	1	8	21.26	21.32	21.06		
3	64QAM	1	14	21.20	21.26	21.24		
3	64QAM	8	0	20.33	20.42	20.43	22	3
3	64QAM	8	4	20.52	20.54	20.42		
3	64QAM	8	7	20.53	20.52	20.37		
3	64QAM	15	0	20.45	20.60	20.39		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.33	23.37	23.26	25	0
1.4	QPSK	1	3	23.24	23.21	23.22		
1.4	QPSK	1	5	23.14	23.22	23.10		
1.4	QPSK	3	0	23.25	23.31	23.38		
1.4	QPSK	3	1	23.09	23.27	23.25		
1.4	QPSK	3	3	23.20	23.39	23.21		
1.4	QPSK	6	0	22.57	22.66	22.43	24	1
1.4	16QAM	1	0	22.49	22.43	22.31	24	1
1.4	16QAM	1	3	22.48	22.59	22.45		
1.4	16QAM	1	5	22.53	22.50	22.43		
1.4	16QAM	3	0	22.29	22.48	22.32		
1.4	16QAM	3	1	22.36	22.56	22.35		
1.4	16QAM	3	3	22.41	22.58	22.49		
1.4	16QAM	6	0	21.37	21.48	21.49	23	2
1.4	64QAM	1	0	21.36	21.44	21.17	23	2
1.4	64QAM	1	3	21.15	21.26	21.07		
1.4	64QAM	1	5	21.18	21.22	21.27		
1.4	64QAM	3	0	21.36	21.52	21.35		
1.4	64QAM	3	1	21.46	21.50	21.32		
1.4	64QAM	3	3	21.51	21.61	21.42		
1.4	64QAM	6	0	20.48	20.58	20.47		



Reduced Power Mode for DSI 1

Ant0

Band 2								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.08	19.14	19.07	20.1	0
20	QPSK	1	49	19.04	19.09	18.93		
20	QPSK	1	99	19.02	19.03	19.04		
20	QPSK	50	0	18.94	19.10	19.04	20.1	0
20	QPSK	50	24	18.85	19.05	18.88		
20	QPSK	50	50	18.97	18.92	18.84		
20	QPSK	100	0	18.85	19.01	18.99	20.1	0
20	16QAM	1	0	18.76	18.94	18.88		
20	16QAM	1	49	18.84	18.94	18.78		
20	16QAM	1	99	18.78	18.94	19.00	20.1	0
20	16QAM	50	0	18.78	18.91	18.84		
20	16QAM	50	24	19.07	18.96	18.92		
20	16QAM	50	50	19.10	19.11	18.75	20.1	0
20	16QAM	100	0	19.11	18.97	18.93		
20	64QAM	1	0	18.93	18.94	18.98		
20	64QAM	1	49	18.84	18.89	18.90	20.1	0
20	64QAM	1	99	19.06	18.85	18.87		
20	64QAM	50	0	18.91	18.89	19.02		
20	64QAM	50	24	18.78	19.08	18.88	20.1	0
20	64QAM	50	50	18.94	18.89	18.89		
20	64QAM	100	0	18.99	18.97	18.84		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.02	19.02	19.06	20.1	0
15	QPSK	1	37	18.99	19.06	18.89		
15	QPSK	1	74	18.90	18.95	18.90		
15	QPSK	36	0	18.92	19.07	18.97	20.1	0
15	QPSK	36	20	18.85	18.92	18.75		
15	QPSK	36	39	18.92	18.80	18.76		
15	QPSK	75	0	18.85	18.98	18.88	20.1	0
15	16QAM	1	0	18.68	18.82	18.88		
15	16QAM	1	37	18.84	18.83	18.77		
15	16QAM	1	74	18.66	18.87	18.98	20.1	0
15	16QAM	36	0	18.70	18.88	18.84		
15	16QAM	36	20	19.05	18.88	18.89		
15	16QAM	36	39	18.96	19.06	18.71	20.1	0
15	16QAM	75	0	19.07	18.88	18.94		
15	64QAM	1	0	18.83	18.94	18.88		
15	64QAM	1	37	18.71	18.87	18.76	20.1	0
15	64QAM	1	74	19.01	18.72	18.77		
15	64QAM	36	0	18.79	18.76	18.95		
15	64QAM	36	20	18.76	19.00	18.89	20.1	0
15	64QAM	36	39	18.81	18.90	18.87		
15	64QAM	75	0	18.95	18.91	18.79		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.03	19.12	18.99	20.1	0
10	QPSK	1	25	19.08	19.09	18.93		
10	QPSK	1	49	18.93	18.96	19.06		



10	QPSK	25	0	18.91	19.10	18.97	20.1	0
10	QPSK	25	12	18.77	19.02	18.82		
10	QPSK	25	25	18.96	18.84	18.79		
10	QPSK	50	0	18.86	18.99	18.90	20.1	0
10	16QAM	1	0	18.80	18.93	18.80		
10	16QAM	1	25	18.84	18.90	18.69		
10	16QAM	1	49	18.74	18.97	18.94	20.1	0
10	16QAM	25	0	18.70	18.89	18.76		
10	16QAM	25	12	19.00	18.94	18.89		
10	16QAM	25	25	19.01	19.01	18.68	20.1	0
10	16QAM	50	0	19.11	18.95	18.84		
10	64QAM	1	0	18.92	18.96	18.95		
10	64QAM	1	25	18.78	18.82	18.87	20.1	0
10	64QAM	1	49	19.03	18.86	18.91		
10	64QAM	25	0	18.83	18.88	18.98		
10	64QAM	25	12	18.78	19.09	18.90	20.1	0
10	64QAM	25	25	18.95	18.94	18.79		
10	64QAM	50	0	18.91	18.88	18.84		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.02	19.02	18.95	20.1	0
5	QPSK	1	12	19.00	19.02	18.82		
5	QPSK	1	24	18.92	19.00	18.96		
5	QPSK	12	0	18.83	19.03	18.92	20.1	0
5	QPSK	12	7	18.87	18.98	18.84		
5	QPSK	12	13	18.85	18.91	18.77		
5	QPSK	25	0	18.73	18.89	18.98	20.1	0
5	16QAM	1	0	18.72	18.94	18.88		
5	16QAM	1	12	18.78	18.81	18.79		
5	16QAM	1	24	18.79	18.89	18.88	20.1	0
5	16QAM	12	0	18.69	18.87	18.78		
5	16QAM	12	7	18.95	18.84	18.87		
5	16QAM	12	13	19.09	19.13	18.63	20.1	0
5	16QAM	25	0	19.11	18.89	18.80		
5	64QAM	1	0	18.86	18.85	18.92		
5	64QAM	1	12	18.72	18.86	18.78	20.1	0
5	64QAM	1	24	18.98	18.82	18.85		
5	64QAM	12	0	18.81	18.79	19.02		
5	64QAM	12	7	18.67	19.06	18.86	20.1	0
5	64QAM	12	13	18.90	18.77	18.87		
5	64QAM	25	0	18.94	18.88	18.80		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.10	19.13	19.13	20.1	0
3	QPSK	1	8	19.10	19.03	18.93		
3	QPSK	1	14	19.04	19.05	19.06		
3	QPSK	8	0	18.96	19.11	19.04	20.1	0
3	QPSK	8	4	18.85	19.07	18.88		
3	QPSK	8	7	18.97	18.93	18.89		
3	QPSK	15	0	18.87	19.04	19.06	20.1	0
3	16QAM	1	0	18.80	19.00	18.94		
3	16QAM	1	8	18.90	18.91	18.84		
3	16QAM	1	14	18.75	19.00	18.97	20.1	0
3	16QAM	8	0	18.84	18.97	18.79		
3	16QAM	8	4	19.06	18.92	18.89		
3	16QAM	8	7	19.02	19.10	18.81	20.1	0



3	16QAM	15	0	19.11	18.97	18.95		
3	64QAM	1	0	18.91	18.97	18.96	20.1	0
3	64QAM	1	8	18.91	18.94	18.93		
3	64QAM	1	14	19.08	18.80	18.89		
3	64QAM	8	0	18.87	18.95	18.95	20.1	0
3	64QAM	8	4	18.75	19.04	18.80		
3	64QAM	8	7	18.87	18.84	18.95		
3	64QAM	15	0	18.97	19.00	18.87		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	18.98	19.09	18.93	20.1	0
1.4	QPSK	1	3	18.94	19.00	18.82		
1.4	QPSK	1	5	19.00	19.01	18.93		
1.4	QPSK	3	0	18.87	19.00	18.96		
1.4	QPSK	3	1	18.81	18.98	18.78		
1.4	QPSK	3	3	18.92	18.83	18.75		
1.4	QPSK	6	0	18.71	18.95	18.98	20.1	0
1.4	16QAM	1	0	18.74	18.87	18.77	20.1	0
1.4	16QAM	1	3	18.82	18.79	18.78		
1.4	16QAM	1	5	18.77	18.90	18.88		
1.4	16QAM	3	0	18.70	18.90	18.69		
1.4	16QAM	3	1	19.03	18.92	18.86		
1.4	16QAM	3	3	19.04	19.07	18.64		
1.4	16QAM	6	0	19.07	18.83	18.85	20.1	0
1.4	64QAM	1	0	18.92	18.84	18.92	20.1	0
1.4	64QAM	1	3	18.73	18.84	18.76		
1.4	64QAM	1	5	19.00	18.79	18.85		
1.4	64QAM	3	0	18.76	18.86	19.02		
1.4	64QAM	3	1	18.71	19.01	18.76		
1.4	64QAM	3	3	18.92	18.82	18.75		
1.4	64QAM	6	0	18.88	18.89	18.83	20.1	0