



**Dickey Rural Networks**

**Summer 2016**

**Warm Weather Proof of Performance**

**July 1-2, 2016**

Prepared by:





## Analog RF Proof of Performance Testing Methodology

### **System Description:**

Dickey Rural Networks CATV network is a fiber to the home (FTTH) system with an RF overlay. The headend is based in Oakes, ND. This headend receives all video signals and processes them for distribution. There is no frequency altering equipment downstream from this location.

The total system bandwidth is 860 MHz. Per FCC rules; plant testing will be performed on the analog bandwidth using 12 analog test channels evenly spread across the widest possible frequency range.

Digital RF tier customers are supplied with set tops by the operator. The RF performance of these units is a matter of the manufacturer's specifications. All are well known units in common usage throughout the industry (Motorola/Arris, Scientific Atlanta/Cisco).

### **Testing Equipment & Procedures:**

These system performance measurements were made by using the following test instruments: Tektronix 2715 spectrum analyzer, Tektronix TSG-120 test signal generator, JDSU SDA-4040D, CLI-1750, & CLI-1450 signal level meters, 100 Ft. length of RG-6 coaxial cable standard to the system.

SCTE Measurement Recommended Practices for Cable Systems are followed for all testing procedures. All tests were performed at locations meeting with FCC rules, and with the proper number of specified channels, based on system bandwidth.



The headend hardware was left in the normal operating condition, supplying the normal programming content for all tests that did not require alteration for testing. Second Order and C/N tests were performed during active video modulation, using vertical interface gating. The carrier was removed from the modulator to enable Composite Triple Beat testing. An FCC multiburst video test pattern was substituted for In Channel Frequency Response tests.







































# Location Report: RF Modulating Site (Headend)

Test Location:	Dickey Rural Headend Oakes, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)		Visual Carrier Frequency (MHz)		Aural Carrier Δ (dBc)		Aural Carrier Frequency Offset (MHz)	
2	55.2500	GUIDE	18.8		55.249927		-14.1		4.500000	
4	67.2500	CBS	19.3		67.249909		-14.9		4.499991	
5	77.2500	CSPN	19.1		77.249945		-13.2		4.499993	
6	83.2500	ABC	18.8		83.249887		-14.3		4.500017	
95 A5	91.2500	BEKcen	18.3		91.249991		-15.0		4.500000	
99 A1+	115.2750	TRNADO	18.7		115.274844		-15.5		4.499977	
14 A-+	121.2375	HSN	19.0		121.237162		-15.4		4.499985	
15 B++	127.2625	WEATHR	19.0		127.262147		-14.3		4.499982	
16 C-+	133.2375	DRNCOM	18.9		133.236874		-14.7		4.499969	
17 D	139.2500	QVC	18.7		139.249348		-15.7		4.499984	
7	175.2500	BEK	18.4		175.249992		-16.3		4.499977	
8	181.2500	CW	18.5		181.249502		-15.0		4.499977	
9	187.2500	DRNWE	18.1		187.249491		-13.7		4.499992	
10	193.2500	FOX	18.3		193.249748		-16.4		4.500037	
11	199.2500	NBC	18.5		199.249741		-15.3		4.499994	
12	205.2500	CSPAN2	18.8		205.249853		-15.6		4.499998	
13	211.2500	PBS	18.3		211.249014		-15.5		4.499977	
24 K+	223.2500	ESPN	18.4		223.248954		-14.5		4.499977	
25 L++	229.2625	ESPN2	18.1		229.261078		-14.4		4.499989	
26 M-+	235.2375	ESPNcl	18.9		235.236034		-13.8		4.499970	
27 N-+	241.2375	ESPNNew	18.8		241.235997		-15.0		4.499967	
28 O-+	247.2375	TBS	18.4		247.235952		-15.9		4.499968	
29 P-+	253.2375	LIFETM	18.6		253.235908		-15.1		4.499980	
30 Q-+	259.2375	DISNEY	18.6		259.235866		-15.1		4.499977	
31 R-+	265.2375	USA	18.6		265.235829		-15.2		4.499967	
32 S-+	271.2375	ABCfam	18.7		271.235925		-15.0		4.499975	
37 AA-+	301.2375	TNT	19.3		301.235751		-14.4		4.499978	
38 BB-+	307.2375	DISCVR	18.7		307.235714		-15.4		4.499971	
40 DD-+	319.2375	HEADLN	18.0		319.237050		-14.7		4.499992	
41 EE-+	325.2375	FOXsn	18.9		325.237040		-15.6		4.499993	
42 FF++	331.2750	ANIMAL	18.3		331.274055		-15.0		4.499978	
43 GG-+	337.2375	AMC	18.6		337.236537		-14.3		4.500005	
44 HH-+	343.2375	HISTRY	19.3		343.235843		-15.0		4.499967	
45 II-+	349.2375	TLC	19.0		349.235813		-16.2		4.499956	
46 JJ-+	355.2375	TOON	18.7		355.234984		-15.5		4.499971	
47 KK++	361.2625	HGTV	18.5		361.261481		-15.1		4.499987	
48 LL-+	367.2375	A&E	18.9		367.237762		-15.3		4.500010	

# Location Report: RF Modulating Site (Headend)

Test Location:	Dickey Rural Headend Oakes, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)		Visual Carrier Frequency (MHz)		Aural Carrier Δ (dBc)		Aural Carrier Frequency Offset (MHz)	
49 MM-+	373.2375	CNBC	18.9		373.237768		-14.9		4.499997	
50 NN-+	379.2375	OWN	18.6		379.237774		-14.9		4.499998	
51 OO-+	385.2375	TCM	18.6		385.237779		-15.1		4.500004	
52 PP-+	391.2375	OUTDR	19.2		391.237784		-15.7		4.500005	
53 QQ-+	397.2375	TRAVEL	18.8		397.237792		-14.9		4.499987	
54 RR	403.2500	CNN	18.5		403.250302		-15.1		4.499999	
55 SS	409.2500	DIY	17.8		409.250305		-13.1		4.500006	
56 TT	415.2500	NATGEO	18.8		415.247079		-15.0		4.499966	
57 UU	421.2500	FOXnew	19.1		421.247037		-13.9		4.499977	
59 WW	433.2500	MSNBC	18.5		433.246952		-15.1		4.499969	
60 XX	439.2500	BRAVO	19.0		439.246908		-13.7		4.499967	
61 YY	445.2500	DSNYxd	18.5		445.247906		-15.5		4.499979	
62 ZZ	451.2500	GOLF	18.3		451.246822		-15.5		4.499967	
64 BBB	463.2500	FOOD	18.4		463.246738		-13.1		4.499972	
65 CCC	469.2500	GSN	18.0		469.249284		-14.8		4.499991	
67 EEE	481.2500	FX	18.4		481.249266		-15.5		4.500026	
68 FFF	487.2500	FOXspt	19.0		487.249251		-15.0		4.499998	
69 GGG	493.2500	YouToo	18.8		493.249240		-15.4		4.499994	
70 HHH	499.2500	GAC	18.9		499.249229		-15.3		4.499988	
71 III	505.2500	truTV	18.4		505.249215		-15.2		4.499992	
72 JJJ	511.2500	HLMARK	18.6		511.249210		-14.4		4.499994	
73 KKK	517.2500	OXYGEN	19.0		517.249604		-14.1		4.500000	
74 LLL	523.2500	NBCspt	18.6		523.249602		-14.6		4.500000	
75 MMM	529.2500	ION	18.7		529.249596		-14.4		4.500108	
76 NNN	535.2500	RFD TV	19.0		535.248486		-14.8		4.499982	
77 OOO	541.2500	SyFy	18.8		541.249590		-14.7		4.499995	
78 PPP	547.2500	SPTMEN	18.9		547.249584		-14.9		4.499999	

# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Forbes, ND	
Date:	7/1/2016	
Video Standard:	NTSC	
	Pass	Fail

## Selected Test Channels



EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)	Visual Carrier Frequency (MHz)	Aural Carrier Δ (dBc)	Aural Carrier Frequency Offset (MHz)
2	55.2500	GUIDE	18.7	55.249928	-14.1	4.499984
7	175.2500	BEK	18.5	175.250018	-15.6	4.500000
26 M	235.2375	ESPNcl	18.9	235.236073	-14.6	4.499971
28 O-+	247.2375	TBS	18.2	247.236007	-15.8	4.499979
32 S-+	271.2375	ABCfam	18.5	271.236004	-15.3	4.499973
46 JJ-+	355.2375	TOON	18.7	355.235034	-15.5	4.499969
55 SS	409.2500	DIY	17.9	409.250342	-13.4	4.500010
59 WW	433.2500	MSNBC	18.0	433.247000	-15.3	4.499970
61 YY	445.2500	DSNYxd	18.3	445.247999	-15.7	4.499982
69 GGG	493.2500	YouToo	18.1	493.249280	-15.2	4.499985
71 III	505.2500	truTV	18.2	505.249257	-15.6	4.499993
78 PPP	547.2500	Sptman	18.2	547.249620	-14.6	4.500000

## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)	Coherent Second Order (dBc)	Coherent Triple Beat (dBc)	In Channel Response (dB)
2	55.2500	GUIDE	48.7	-69.50	-66.0	1.3
7	175.2500	BEK	49.8	-63.90	-64.5	1.1
26 M	235.2375	ESPNcl	51.4	-68.30	-63.5	0.9
28 O-+	247.2375	TBS	50.1	-69.50	-62.4	0.9
32 S-+	271.2375	ABCfam	50.8	-65.80	-63.6	0.9
46 JJ-+	355.2375	TOON	50.5	-68.40	-63.2	1.4
55 SS	409.2500	DIY	49.9	-65.00	-61.2	1.4
59 WW	433.2500	MSNBC	49.3	-63.70	-62.2	0.8
61 YY	445.2500	DSNYxd	49.9	-66.50	-60.1	0.7
69 GGG	493.2500	YouToo	50.0	-65.70	-59.7	0.7
71 III	505.2500	truTV	50.0	-66.70	-62.2	0.8
78 PPP	547.2500	Sptman	50.3	-66.50	-62.9	0.1

Hum & Low Frequency Disturbance	1.0%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Forbes, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/1/2016		7/2/2016
		Time	11:32:22 AM	5:32:22 PM	11:32:22 PM		5:32:22 AM
		Ext Temp	77°F	75°F	72°F		70°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	16.5	16.2	18.1	17.5	1.9	
4	67.2500	16.6	16.7	17.2	17.3	0.7	
5	77.2500	17.9	15.6	16.3	17.7	2.3	
6	83.2500	17.8	16.6	15.5	16.7	2.3	
95 A5	91.2500	15.9	17.1	16.3	16.5	1.2	
99 A1+	115.2750	16.7	17.0	17.0	15.8	1.2	
14 A-+	121.2375	16.6	15.6	15.6	18.2	2.6	
15 B++	127.2625	16.3	16.7	17.6	15.8	1.8	
16 C-+	133.2375	15.6	16.3	16.1	17.8	2.2	
17 D	139.2500	15.5	16.0	16.2	16.0	0.7	
7	175.2500	16.6	16.2	16.6	17.8	1.6	
8	181.2500	15.5	15.9	17.9	17.6	2.4	
9	187.2500	17.1	16.0	17.3	16.2	1.3	
10	193.2500	16.6	17.2	17.9	16.5	1.4	
11	199.2500	18.1	16.7	16.7	16.4	1.7	
12	205.2500	15.5	15.5	17.7	18.1	2.6	
13	211.2500	17.9	18.2	17.7	17.4	0.8	
24 K+	223.2500	16.5	15.6	16.1	16.1	0.9	
25 L++	229.2625	15.8	15.6	18.1	15.9	2.5	
26 M-+	235.2375	15.8	17.9	17.1	15.5	2.4	
27 N-+	241.2375	17.9	16.6	16.2	16.3	1.7	
28 O-+	247.2375	16.3	17.7	15.6	15.8	2.1	
29 P-+	253.2375	15.8	15.6	17.9	16.7	2.3	
30 Q-+	259.2375	16.6	16.5	15.6	18.0	2.4	
31 R-+	265.2375	16.5	16.1	17.3	17.1	1.2	
32 S-+	271.2375	16.4	15.5	16.8	16.1	1.3	
37 AA-+	301.2375	16.4	16.3	16.5	15.7	0.8	
38 BB-+	307.2375	17.3	15.9	16.9	16.6	1.4	
40 DD-+	319.2375	17.5	16.5	17.0	16.6	1.0	
41 EE-+	325.2375	16.1	16.1	18.0	16.5	1.9	
42 FF++	331.2750	15.6	18.2	17.2	17.9	2.6	
43 GG-+	337.2375	17.4	17.1	16.4	18.1	1.7	
44 HH-+	343.2375	16.7	18.2	15.8	17.3	2.4	
45 II-+	349.2375	17.3	18.1	17.9	17.6	0.8	
46 JJ-+	355.2375	16.1	16.8	15.9	17.9	2.0	
47 KK++	361.2625	16.1	18.2	16.8	15.7	2.5	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Forbes, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

		Test #1	Test #2	Test #3	Test #4	
	Date	7/1/2016	7/1/2016	7/1/2016	7/2/2016	
	Time	11:32:22 AM	5:32:22 PM	11:32:22 PM	5:32:22 AM	
	Ext Temp	77°F	75°F	72°F	70°F	
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation
48 LL+	367.2375	16.2	18.2	17.0	16.1	2.1
49 MM+	373.2375	16.7	18.1	15.8	15.6	2.5
50 NN+	379.2375	18.2	18.2	15.8	17.1	2.4
51 OO+	385.2375	17.5	17.1	17.5	17.9	0.8
52 PP+	391.2375	16.4	16.5	16.4	17.6	1.2
53 QQ+	397.2375	17.7	16.2	17.6	18.1	1.9
54 RR	403.2500	17.7	17.8	16.1	17.5	1.7
55 SS	409.2500	17.0	16.9	17.1	16.0	1.1
56 TT	415.2500	16.6	15.7	15.6	17.5	1.9
57 UU	421.2500	18.2	15.8	17.0	15.9	2.4
59 WW	433.2500	15.8	18.1	15.5	18.2	2.7
60 XX	439.2500	17.3	15.8	17.9	16.7	2.1
61 YY	445.2500	16.3	16.9	15.9	17.7	1.8
62 ZZ	451.2500	16.4	15.6	17.3	16.3	1.7
64 BBB	463.2500	15.9	16.0	17.2	16.1	1.3
65 CCC	469.2500	16.4	15.9	16.0	16.5	0.6
67 EEE	481.2500	17.4	16.6	16.6	17.5	0.9
68 FFF	487.2500	17.5	16.9	17.9	17.3	1.0
69 GGG	493.2500	18.2	17.1	16.9	17.2	1.3
70 HHH	499.2500	16.8	15.5	17.8	16.0	2.3
71 III	505.2500	17.2	16.6	15.9	17.8	1.9
72 JJJ	511.2500	16.1	17.2	15.6	16.5	1.6
73 KKK	517.2500	18.2	18.1	15.6	16.3	2.6
74 LLL	523.2500	17.6	15.6	17.3	17.7	2.1
75 MMM	529.2500	18.2	16.7	17.5	15.8	2.4
76 NNN	535.2500	17.7	15.5	16.4	17.2	2.2
77 OOO	541.2500	17.6	18.1	18.0	16.7	1.4
78 PPP	547.2500	17.4	17.0	17.1	18.2	1.2

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail

# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Fort Ransom, ND	
Date:	7/1/2016	
Video Standard:	NTSC	
	Pass	Fail

## Selected Test Channels

EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)	Visual Carrier Frequency (MHz)	Aural Carrier Δ (dBc)	Aural Carrier Frequency Offset (MHz)
2	55.2500	GUIDE	17.7	55.249935	-14.0	4.500001
7	175.2500	BEK	17.5	175.250031	-14.7	4.499977
26 M	235.2375	ESPNcl	18.1	235.236098	-14.3	4.499974
28 O-+	247.2375	TBS	17.5	247.236009	-15.8	4.499977
32 S-+	271.2375	ABCfam	17.7	271.235995	-15.3	4.499981
46 JJ-+	355.2375	TOON	17.9	355.235039	-15.5	4.499970
55 SS	409.2500	DIY	17.5	409.250345	-13.4	4.500008
59 WW	433.2500	MSNBC	17.6	433.247004	-15.0	4.499968
61 YY	445.2500	DSNYxd	17.5	445.248038	-15.6	4.499972
69 GGG	493.2500	YouToo	17.6	493.249293	-15.2	4.499989
71 III	505.2500	truTV	17.3	505.249270	-15.4	4.499997
78 PPP	547.2500	Sptman	17.5	547.249633	-14.7	4.499991



## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)	Coherent Second Order (dBc)	Coherent Triple Beat (dBc)	In Channel Response (dB)
2	55.2500	GUIDE	50.0	-70.20	-67.2	0.0
7	175.2500	BEK	50.3	-65.30	-66.0	1.3
26 M	235.2375	ESPNcl	51.4	-70.00	-65.5	1.0
28 O-+	247.2375	TBS	50.0	-69.80	-65.4	1.1
32 S-+	271.2375	ABCfam	51.1	-68.50	-66.4	1.2
46 JJ-+	355.2375	TOON	51.9	-69.90	-65.9	1.0
55 SS	409.2500	DIY	50.8	-68.80	-62.4	0.8
59 WW	433.2500	MSNBC	50.5	-68.50	-66.7	1.4
61 YY	445.2500	DSNYxd	50.6	-69.60	-64.6	1.4
69 GGG	493.2500	YouToo	50.9	-68.50	-66.0	0.7
71 III	505.2500	truTV	51.2	-68.80	-64.5	0.9
78 PPP	547.2500	Sptman	51.6	-68.80	-67.1	1.3

Hum & Low Frequency Disturbance	0.7%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Fort Ransom, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	5:29:32 PM	11:29:32 PM	5:29:32 AM		11:29:32 AM
		Ext Temp	73°F	72°F	68°F		76°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	18.6	20.4	19.9	20.1	1.8	
4	67.2500	19.1	18.8	20.1	20.3	1.5	
5	77.2500	19.3	19.6	20.1	21.0	1.7	
6	83.2500	19.4	20.5	20.5	20.1	1.1	
95 A5	91.2500	18.3	18.4	19.8	20.8	2.5	
99 A1+	115.2750	19.3	20.2	20.6	20.9	1.6	
14 A-+	121.2375	18.6	19.9	20.1	20.2	1.6	
15 B++	127.2625	18.6	19.4	20.3	20.9	2.3	
16 C-+	133.2375	21.0	18.4	20.7	21.0	2.6	
17 D	139.2500	21.1	19.8	18.7	21.2	2.5	
7	175.2500	19.2	18.7	20.0	18.5	1.5	
8	181.2500	18.5	19.5	20.0	20.8	2.3	
9	187.2500	19.4	20.7	20.2	19.5	1.3	
10	193.2500	18.4	18.6	19.6	18.9	1.2	
11	199.2500	20.2	18.6	21.2	19.3	2.6	
12	205.2500	20.4	18.6	18.9	20.5	1.9	
13	211.2500	19.1	19.1	19.6	18.6	1.0	
24 K+	223.2500	20.3	19.7	19.5	20.5	1.0	
25 L++	229.2625	19.3	21.2	19.6	19.0	2.2	
26 M-+	235.2375	20.6	20.5	19.6	19.8	1.0	
27 N-+	241.2375	18.9	20.6	19.0	20.6	1.7	
28 O-+	247.2375	19.8	21.1	20.2	19.1	2.0	
29 P-+	253.2375	20.1	20.3	18.3	21.0	2.7	
30 Q-+	259.2375	18.5	21.0	20.3	18.6	2.5	
31 R-+	265.2375	19.4	18.5	20.2	19.0	1.7	
32 S-+	271.2375	18.5	19.1	20.4	18.8	1.9	
37 AA-+	301.2375	19.5	20.1	21.2	20.4	1.7	
38 BB-+	307.2375	18.9	19.2	19.7	21.1	2.2	
40 DD-+	319.2375	19.7	20.6	18.5	19.6	2.1	
41 EE-+	325.2375	20.3	18.5	18.8	18.6	1.8	
42 FF++	331.2750	19.3	18.9	21.0	20.7	2.1	
43 GG-+	337.2375	18.5	18.7	18.4	18.4	0.3	
44 HH-+	343.2375	18.4	20.9	18.5	20.5	2.5	
45 II-+	349.2375	19.3	20.3	20.5	20.3	1.2	
46 JJ-+	355.2375	19.8	19.8	20.6	19.0	1.6	
47 KK++	361.2625	19.1	19.0	21.2	20.6	2.2	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Fort Ransom, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

		Test #1	Test #2	Test #3	Test #4	
	Date	7/1/2016	7/1/2016	7/2/2016	7/2/2016	
	Time	5:29:32 PM	11:29:32 PM	5:29:32 AM	11:29:32 AM	
	Ext Temp	73°F	72°F	68°F	76°F	
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation
48 LL+	367.2375	20.2	21.1	21.0	21.0	0.9
49 MM+	373.2375	19.2	20.0	21.2	19.2	2.0
50 NN+	379.2375	18.3	20.5	18.3	18.3	2.2
51 OO+	385.2375	18.6	21.1	20.6	19.4	2.5
52 PP+	391.2375	19.5	18.8	19.2	20.2	1.4
53 QQ+	397.2375	19.2	20.1	20.5	19.0	1.5
54 RR	403.2500	19.0	20.5	19.1	18.3	2.2
55 SS	409.2500	19.7	18.4	20.9	19.0	2.5
56 TT	415.2500	20.9	18.7	19.4	18.3	2.6
57 UU	421.2500	21.0	19.3	19.4	20.3	1.7
59 WW	433.2500	20.3	20.2	21.1	19.1	2.0
60 XX	439.2500	21.1	18.5	20.0	19.7	2.6
61 YY	445.2500	20.3	20.4	21.2	21.0	0.9
62 ZZ	451.2500	19.6	19.9	18.7	21.1	2.4
64 BBB	463.2500	19.2	19.4	18.4	19.5	1.1
65 CCC	469.2500	19.8	20.3	21.1	20.2	1.3
67 EEE	481.2500	18.9	19.6	19.8	18.4	1.4
68 FFF	487.2500	19.8	20.8	18.4	18.4	2.4
69 GGG	493.2500	20.8	18.8	20.9	19.9	2.1
70 HHH	499.2500	19.8	19.6	18.8	18.7	1.1
71 III	505.2500	18.3	20.3	20.0	20.9	2.6
72 JJJ	511.2500	19.1	18.6	19.3	18.5	0.8
73 KKK	517.2500	18.3	21.0	19.0	20.3	2.7
74 LLL	523.2500	18.9	18.7	20.1	20.4	1.7
75 MMM	529.2500	20.2	19.1	20.8	21.1	2.0
76 NNN	535.2500	20.2	18.6	20.1	18.3	1.9
77 OOO	541.2500	19.1	21.0	18.9	18.3	2.7
78 PPP	547.2500	20.6	18.9	20.6	20.5	1.7

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail

# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Jud, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

## Selected Test Channels



EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)	Visual Carrier Frequency (MHz)	Aural Carrier Δ (dBc)	Aural Carrier Frequency Offset (MHz)
2	55.2500	GUIDE	18.9	55.249931	-14.0	4.499993
7	175.2500	BEK	18.8	175.250021	-15.6	4.500000
26 M	235.2375	ESPNcl	19.2	235.236067	-14.7	4.499976
28 O-+	247.2375	TBS	19.0	247.235994	-15.8	4.499975
32 S-+	271.2375	ABCfam	18.9	271.235980	-15.3	4.499983
46 JJ-+	355.2375	TOON	19.2	355.235022	-15.2	4.499965
55 SS	409.2500	DIY	18.8	409.250324	-13.3	4.500007
59 WW	433.2500	MSNBC	18.9	433.246983	-15.3	4.499969
61 YY	445.2500	DSNYxd	19.0	445.247970	-15.7	4.499985
69 GGG	493.2500	YouToo	19.3	493.249265	-15.6	4.499990
71 III	505.2500	truTV	18.9	505.249236	-15.6	4.499999
78 PPP	547.2500	Sptman	19.1	547.249603	-14.5	4.499995

## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)	Coherent Second Order (dBc)	Coherent Triple Beat (dBc)	In Channel Response (dB)
2	55.2500	GUIDE	48.4	-68.20	-65.9	1.1
7	175.2500	BEK	48.9	-64.00	-63.5	1.3
26 M	235.2375	ESPNcl	49.9	-67.60	-65.2	0.9
28 O-+	247.2375	TBS	49.9	-67.50	-64.2	1.0
32 S-+	271.2375	ABCfam	50.2	-66.80	-64.4	1.2
46 JJ-+	355.2375	TOON	50.3	-68.20	-65.5	1.4
55 SS	409.2500	DIY	49.7	-65.20	-62.5	1.3
59 WW	433.2500	MSNBC	49.3	-67.00	-63.5	1.4
61 YY	445.2500	DSNYxd	49.3	-66.20	-62.3	1.3
69 GGG	493.2500	YouToo	50.4	-66.20	-64.4	1.1
71 III	505.2500	truTV	50.1	-68.30	-64.4	0.9
78 PPP	547.2500	Sptman	50.4	-68.10	-64.3	0.8

Hum & Low Frequency Disturbance	0.8%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Jud, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	2:20:18 PM	8:20:18 PM	2:20:18 AM		8:20:18 AM
		Ext Temp	75°F	72°F	66°F		70°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	18.1	19.1	18.0	19.3	1.3	
4	67.2500	18.5	19.9	19.9	18.6	1.4	
5	77.2500	19.4	18.0	18.0	18.4	1.4	
6	83.2500	19.3	19.2	18.1	18.5	1.2	
95 A5	91.2500	19.9	19.1	18.0	18.2	1.9	
99 A1+	115.2750	18.1	18.3	18.5	18.3	0.4	
14 A-+	121.2375	19.1	19.9	18.7	19.8	1.2	
15 B++	127.2625	18.0	18.1	19.0	19.8	1.8	
16 C-+	133.2375	19.7	18.7	19.0	18.0	1.7	
17 D	139.2500	18.7	18.4	18.2	18.2	0.5	
7	175.2500	18.3	19.2	19.9	18.4	1.6	
8	181.2500	18.9	19.0	18.0	18.7	1.0	
9	187.2500	18.0	19.1	19.5	18.2	1.5	
10	193.2500	18.2	19.4	18.0	18.0	1.4	
11	199.2500	18.5	18.3	19.6	18.4	1.3	
12	205.2500	19.9	19.4	18.5	19.8	1.4	
13	211.2500	19.2	18.2	19.3	18.7	1.1	
24 K+	223.2500	18.4	19.9	19.1	19.9	1.5	
25 L++	229.2625	18.9	19.9	18.5	19.4	1.4	
26 M-+	235.2375	19.1	19.4	18.5	18.9	0.9	
27 N-+	241.2375	19.3	18.1	19.7	19.3	1.6	
28 O-+	247.2375	18.4	18.2	18.7	18.5	0.5	
29 P-+	253.2375	18.7	19.3	19.8	18.5	1.3	
30 Q-+	259.2375	18.1	19.2	18.4	19.6	1.5	
31 R-+	265.2375	19.3	19.1	19.8	19.7	0.7	
32 S-+	271.2375	19.6	19.3	19.4	18.6	1.0	
37 AA-+	301.2375	18.0	18.2	19.1	19.5	1.5	
38 BB-+	307.2375	19.5	19.1	18.6	19.9	1.3	
40 DD-+	319.2375	19.8	20.0	19.0	18.2	1.8	
41 EE-+	325.2375	20.0	19.5	18.1	18.1	1.9	
42 FF++	331.2750	18.8	18.6	18.3	18.2	0.6	
43 GG-+	337.2375	18.2	19.5	19.9	18.8	1.7	
44 HH-+	343.2375	19.6	19.5	18.6	19.7	1.1	
45 II-+	349.2375	19.4	18.9	18.7	18.0	1.4	
46 JJ-+	355.2375	18.7	19.4	19.5	18.9	0.8	
47 KK++	361.2625	19.4	18.4	18.9	19.7	1.3	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Jud, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

		Test #1	Test #2	Test #3	Test #4	
	Date	7/1/2016	7/1/2016	7/2/2016	7/2/2016	
	Time	2:20:18 PM	8:20:18 PM	2:20:18 AM	8:20:18 AM	
	Ext Temp	75°F	72°F	66°F	70°F	
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation
48 LL+	367.2375	18.5	18.4	19.0	18.1	0.9
49 MM+	373.2375	18.1	18.6	19.9	19.4	1.8
50 NN+	379.2375	18.3	18.0	19.5	19.5	1.5
51 OO+	385.2375	18.2	19.7	19.3	20.0	1.8
52 PP+	391.2375	18.5	19.9	19.0	18.5	1.4
53 QQ+	397.2375	18.7	18.9	20.0	18.2	1.8
54 RR	403.2500	18.3	18.8	18.8	18.1	0.7
55 SS	409.2500	20.0	19.4	19.6	18.2	1.8
56 TT	415.2500	19.9	19.3	20.0	18.6	1.4
57 UU	421.2500	18.8	19.7	19.4	18.3	1.4
59 WW	433.2500	19.4	18.2	18.3	19.9	1.7
60 XX	439.2500	19.6	19.8	19.0	19.8	0.8
61 YY	445.2500	18.1	19.0	20.0	18.7	1.9
62 ZZ	451.2500	19.6	19.4	19.1	18.7	0.9
64 BBB	463.2500	19.0	19.8	20.0	18.5	1.5
65 CCC	469.2500	19.6	19.4	19.2	19.2	0.4
67 EEE	481.2500	18.6	18.1	19.5	19.0	1.4
68 FFF	487.2500	20.0	19.0	18.1	19.2	1.9
69 GGG	493.2500	18.0	18.0	18.5	18.7	0.7
70 HHH	499.2500	19.0	18.7	19.0	20.0	1.3
71 III	505.2500	20.0	19.2	19.8	18.9	1.1
72 JJJ	511.2500	19.6	18.4	20.0	18.8	1.6
73 KKK	517.2500	18.3	19.1	18.0	19.5	1.5
74 LLL	523.2500	18.6	19.9	19.5	18.2	1.7
75 MMM	529.2500	18.8	20.0	19.4	18.6	1.4
76 NNN	535.2500	19.0	18.0	18.6	18.8	1.0
77 OOO	541.2500	19.6	19.6	18.4	19.4	1.2
78 PPP	547.2500	19.4	19.4	19.1	20.0	0.9

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail

# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Lisbon, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

## Selected Test Channels



EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)		Visual Carrier Frequency (MHz)		Aural Carrier Δ (dBc)		Aural Carrier Frequency Offset (MHz)	
2	55.2500	GUIDE	15.3		55.249915		-14.0		4.499983	
7	175.2500	BEK	15.3		175.250025		-15.6		4.499999	
26 M	235.2375	ESPNcl	15.7		235.236134		-14.2		4.499973	
28 O-+	247.2375	TBS	15.5		247.236044		-15.8		4.499971	
32 S-+	271.2375	ABCfam	15.7		271.236002		-15.4		4.499974	
46 JJ-+	355.2375	TOON	15.6		355.235027		-15.4		4.499969	
55 SS	409.2500	DIY	15.3		409.250301		-13.4		4.499999	
59 WW	433.2500	MSNBC	15.4		433.246966		-15.3		4.499974	
61 YY	445.2500	DSNYxd	15.2		445.247896		-15.5		4.499974	
69 GGG	493.2500	YouToo	15.0		493.249240		-14.9		4.499997	
71 III	505.2500	truTV	15.3		505.249227		-15.6		4.499978	
78 PPP	547.2500	Sptman	15.2		547.249591		-14.7		4.500000	

## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)		Coherent Second Order (dBc)		Coherent Triple Beat (dBc)		In Channel Response (dB)	
2	55.2500	GUIDE	52.5		-71.80		-69.3		0.9	
7	175.2500	BEK	51.4		-65.40		-69.1		1.0	
26 M	235.2375	ESPNcl	54.2		-72.20		-69.3		1.1	
28 O-+	247.2375	TBS	53.2		-65.90		-68.6		1.1	
32 S-+	271.2375	ABCfam	53.7		-70.60		-67.6		1.2	
46 JJ-+	355.2375	TOON	55.3		-71.80		-69.0		0.8	
55 SS	409.2500	DIY	53.6		-69.80		-68.7		0.9	
59 WW	433.2500	MSNBC	54.1		-70.30		-68.7		1.4	
61 YY	445.2500	DSNYxd	53.3		-69.50		-68.7		1.3	
69 GGG	493.2500	YouToo	53.5		-67.10		-69.6		0.7	
71 III	505.2500	truTV	53.9		-68.40		-69.0		1.0	
78 PPP	547.2500	Sptman	54.0		-69.40		-69.0		0.8	

Hum & Low Frequency Disturbance	0.9%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Lisbon, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	2:20:18 PM	8:20:18 PM	2:20:18 AM		8:20:18 AM
		Ext Temp	75°F	72°F	69°F		71°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	12.9	12.2	14.9	15.0	2.8	
4	67.2500	12.1	14.3	13.7	14.1	2.2	
5	77.2500	12.1	13.7	12.7	13.6	1.6	
6	83.2500	14.3	12.3	14.7	13.5	2.4	
95 A5	91.2500	12.2	12.4	14.8	14.7	2.6	
99 A1+	115.2750	14.8	13.4	12.3	13.4	2.5	
14 A-+	121.2375	14.4	14.4	14.1	13.5	0.9	
15 B++	127.2625	13.0	14.6	12.6	12.8	2.0	
16 C-+	133.2375	14.4	12.7	15.1	12.6	2.5	
17 D	139.2500	13.6	14.6	13.4	13.9	1.2	
7	175.2500	13.5	14.0	14.3	14.1	0.8	
8	181.2500	12.7	14.6	15.1	12.8	2.4	
9	187.2500	14.6	12.6	13.4	14.9	2.3	
10	193.2500	14.5	13.3	12.6	13.2	1.9	
11	199.2500	14.2	14.2	13.6	14.7	1.1	
12	205.2500	14.6	12.7	14.1	13.7	1.9	
13	211.2500	14.0	12.4	12.4	12.4	1.6	
24 K+	223.2500	14.5	12.3	13.6	14.7	2.4	
25 L++	229.2625	14.4	12.5	12.3	13.8	2.1	
26 M-+	235.2375	13.3	13.7	12.4	13.2	1.3	
27 N-+	241.2375	12.6	14.8	13.9	13.3	2.2	
28 O-+	247.2375	13.3	14.1	13.5	13.1	1.0	
29 P-+	253.2375	13.0	12.3	13.6	12.7	1.3	
30 Q-+	259.2375	12.1	12.9	13.9	12.1	1.8	
31 R-+	265.2375	14.5	14.8	14.1	13.9	0.9	
32 S-+	271.2375	12.2	12.8	13.7	12.6	1.5	
37 AA-+	301.2375	13.3	15.0	13.1	13.6	1.9	
38 BB-+	307.2375	13.6	14.6	13.3	13.8	1.3	
40 DD-+	319.2375	14.2	13.3	13.7	14.5	1.2	
41 EE-+	325.2375	12.9	14.8	14.9	12.8	2.1	
42 FF++	331.2750	13.7	13.0	14.0	14.7	1.7	
43 GG-+	337.2375	15.1	13.8	13.7	12.1	3.0	
44 HH-+	343.2375	13.9	13.6	14.6	14.4	1.0	
45 II-+	349.2375	14.7	13.3	12.9	14.6	1.8	
46 JJ-+	355.2375	13.4	12.6	13.1	13.2	0.8	
47 KK++	361.2625	13.3	14.0	12.8	14.6	1.8	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Lisbon, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

EIA Channel	Standard Frequency (MHz)	Test #1	Test #2	Test #3	Test #4	24 Hour Deviation	
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	2:20:18 PM	8:20:18 PM	2:20:18 AM		8:20:18 AM
		Ext Temp	75°F	72°F	69°F		71°F
Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)			
48 LL+	367.2375	12.7	14.4	13.7	14.6	1.9	
49 MM+	373.2375	13.1	13.5	12.1	13.7	1.6	
50 NN+	379.2375	14.6	15.1	13.7	12.3	2.8	
51 OO+	385.2375	12.2	12.4	13.9	14.5	2.3	
52 PP+	391.2375	14.5	12.4	14.2	12.1	2.4	
53 QQ+	397.2375	13.4	14.8	13.6	13.8	1.4	
54 RR	403.2500	13.9	13.6	14.6	12.8	1.8	
55 SS	409.2500	14.1	13.1	12.5	14.9	2.4	
56 TT	415.2500	13.1	12.4	14.6	13.4	2.2	
57 UU	421.2500	14.8	14.5	12.6	12.5	2.3	
59 WW	433.2500	13.0	13.7	13.7	13.3	0.7	
60 XX	439.2500	14.8	13.8	14.3	12.9	1.9	
61 YY	445.2500	13.7	13.0	14.4	12.6	1.8	
62 ZZ	451.2500	13.7	13.5	12.2	14.9	2.7	
64 BBB	463.2500	14.0	12.7	15.1	13.1	2.4	
65 CCC	469.2500	12.3	13.7	12.1	12.7	1.6	
67 EEE	481.2500	14.8	13.5	12.2	15.0	2.8	
68 FFF	487.2500	13.2	14.7	14.9	13.6	1.7	
69 GGG	493.2500	14.2	13.3	12.6	13.4	1.6	
70 HHH	499.2500	13.6	12.9	15.1	12.9	2.2	
71 III	505.2500	13.5	12.1	14.3	14.3	2.2	
72 JJJ	511.2500	13.9	13.3	14.2	12.1	2.1	
73 KKK	517.2500	14.4	12.4	13.7	13.7	2.0	
74 LLL	523.2500	14.8	13.1	12.1	13.1	2.7	
75 MMM	529.2500	12.9	12.5	12.1	13.2	1.1	
76 NNN	535.2500	13.4	12.6	14.8	12.4	2.4	
77 OOO	541.2500	12.4	13.4	15.1	12.4	2.7	
78 PPP	547.2500	13.2	12.9	13.6	14.4	1.5	

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail



# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Litchville, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

## Selected Test Channels



EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)	Visual Carrier Frequency (MHz)	Aural Carrier Δ (dBc)	Aural Carrier Frequency Offset (MHz)
2	55.2500	GUIDE	12.3	55.249931	-13.5	4.499995
7	175.2500	BEK	13.5	175.250027	-15.7	4.499969
26 M	235.2375	ESPNcl	14.0	235.236085	-14.8	4.499981
28 O-+	247.2375	TBS	13.9	247.236025	-15.8	4.499979
32 S-+	271.2375	ABCfam	13.7	271.236004	-15.4	4.499972
46 JJ-+	355.2375	TOON	13.5	355.235033	-15.1	4.499970
55 SS	409.2500	DIY	13.3	409.250312	-13.9	4.500010
59 WW	433.2500	MSNBC	13.7	433.246988	-15.1	4.499969
61 YY	445.2500	DSNYxd	13.9	445.248007	-15.1	4.499959
69 GGG	493.2500	YouToo	13.5	493.249275	-15.1	4.499989
71 III	505.2500	truTV	13.4	505.249267	-15.0	4.499990
78 PPP	547.2500	Sptman	14.4	547.249632	-15.9	4.500015

## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)	Coherent Second Order (dBc)	Coherent Triple Beat (dBc)	In Channel Response (dB)
2	55.2500	GUIDE	51.2	-70.00	-68.6	0.8
7	175.2500	BEK	51.4	-63.20	-69.0	1.3
26 M	235.2375	ESPNcl	51.0	-69.40	-68.2	1.1
28 O-+	247.2375	TBS	52.5	-69.30	-68.6	1.0
32 S-+	271.2375	ABCfam	51.9	-68.90	-68.3	1.1
46 JJ-+	355.2375	TOON	51.6	-70.00	-68.4	0.7
55 SS	409.2500	DIY	50.8	-65.10	-68.7	1.3
59 WW	433.2500	MSNBC	50.9	-67.40	-68.7	1.4
61 YY	445.2500	DSNYxd	51.2	-68.30	-68.4	0.9
69 GGG	493.2500	YouToo	51.6	-68.60	-69.0	0.9
71 III	505.2500	truTV	51.2	-70.10	-68.7	1.2
78 PPP	547.2500	Sptman	53.2	-69.30	-69.4	0.9

Hum & Low Frequency Disturbance	0.8%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Litchville, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	4:35:18 PM	10:35:18 PM	4:35:18 AM		10:35:18 AM
		Ext Temp	70°F	72°F	67°F		70°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	18.7	20.2	19.1	19.0	1.5	
4	67.2500	19.6	19.0	19.0	19.5	0.6	
5	77.2500	19.2	19.7	19.5	18.9	0.8	
6	83.2500	20.0	19.3	19.4	20.0	0.7	
95 A5	91.2500	18.8	20.0	19.4	19.3	1.2	
99 A1+	115.2750	18.9	19.7	19.8	20.2	1.3	
14 A-+	121.2375	19.9	20.0	18.7	19.4	1.3	
15 B++	127.2625	19.5	19.7	18.8	19.5	0.9	
16 C-+	133.2375	18.8	19.9	18.8	18.8	1.1	
17 D	139.2500	19.2	19.6	18.9	19.7	0.8	
7	175.2500	19.9	19.7	19.6	19.5	0.4	
8	181.2500	19.4	18.8	19.7	18.8	0.9	
9	187.2500	19.2	20.1	19.6	19.0	1.1	
10	193.2500	19.2	20.1	19.3	19.4	0.9	
11	199.2500	18.8	20.1	18.8	19.9	1.3	
12	205.2500	18.9	20.0	19.3	19.0	1.1	
13	211.2500	19.3	19.3	18.8	20.0	1.2	
24 K+	223.2500	18.8	19.3	20.2	19.8	1.4	
25 L++	229.2625	19.4	19.9	19.8	19.9	0.5	
26 M-+	235.2375	18.7	20.2	19.2	20.0	1.5	
27 N-+	241.2375	19.8	18.8	19.1	19.6	1.0	
28 O-+	247.2375	18.9	19.9	19.4	19.6	1.0	
29 P-+	253.2375	20.0	18.7	19.5	18.7	1.3	
30 Q-+	259.2375	19.1	19.6	19.5	19.9	0.8	
31 R-+	265.2375	19.6	20.2	18.7	19.5	1.5	
32 S-+	271.2375	19.8	19.6	19.8	19.0	0.8	
37 AA-+	301.2375	19.0	20.1	19.4	18.9	1.2	
38 BB-+	307.2375	18.9	19.9	19.0	19.1	1.0	
40 DD-+	319.2375	18.8	20.1	19.2	19.1	1.3	
41 EE-+	325.2375	19.7	18.8	19.7	19.9	1.1	
42 FF++	331.2750	20.2	19.4	19.1	19.3	1.1	
43 GG-+	337.2375	19.1	20.2	19.7	19.7	1.1	
44 HH-+	343.2375	20.0	19.7	18.9	19.3	1.1	
45 II-+	349.2375	20.0	20.2	19.5	19.8	0.7	
46 JJ-+	355.2375	18.7	18.9	19.0	19.1	0.4	
47 KK++	361.2625	19.7	19.4	18.7	18.8	1.0	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Litchville, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

		Test #1	Test #2	Test #3	Test #4	
	Date	7/1/2016	7/1/2016	7/2/2016	7/2/2016	
	Time	4:35:18 PM	10:35:18 PM	4:35:18 AM	10:35:18 AM	
	Ext Temp	70°F	72°F	67°F	70°F	
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation
48 LL-+	367.2375	19.7	19.3	18.8	20.0	1.2
49 MM-+	373.2375	19.2	19.3	19.8	19.2	0.6
50 NN-+	379.2375	19.3	19.8	20.0	20.2	0.9
51 OO-+	385.2375	18.8	19.4	19.8	19.9	1.1
52 PP-+	391.2375	19.0	19.9	19.8	18.8	1.1
53 QQ-+	397.2375	19.3	19.4	20.0	19.5	0.7
54 RR	403.2500	18.7	18.8	19.2	19.1	0.5
55 SS	409.2500	19.4	19.9	19.7	20.0	0.6
56 TT	415.2500	20.2	19.0	20.0	18.7	1.5
57 UU	421.2500	20.1	18.7	18.7	19.1	1.4
59 WW	433.2500	19.2	20.2	19.0	19.9	1.2
60 XX	439.2500	20.2	20.0	18.8	19.6	1.4
61 YY	445.2500	19.6	19.4	19.3	19.4	0.3
62 ZZ	451.2500	19.5	20.2	19.8	19.3	0.9
64 BBB	463.2500	19.1	19.2	19.6	19.8	0.7
65 CCC	469.2500	18.8	18.9	20.1	19.8	1.3
67 EEE	481.2500	19.1	19.7	19.2	20.2	1.1
68 FFF	487.2500	19.7	19.3	19.0	19.7	0.7
69 GGG	493.2500	19.4	18.8	19.3	18.8	0.6
70 HHH	499.2500	19.2	19.7	20.1	19.2	0.9
71 III	505.2500	19.7	18.7	19.7	19.2	1.0
72 JJJ	511.2500	19.8	19.8	19.0	20.2	1.2
73 KKK	517.2500	19.6	19.7	19.1	19.2	0.6
74 LLL	523.2500	19.3	18.9	19.8	19.3	0.9
75 MMM	529.2500	19.1	19.5	19.7	19.7	0.6
76 NNN	535.2500	18.7	19.2	19.0	19.6	0.9
77 OOO	541.2500	18.7	20.1	19.5	18.7	1.4
78 PPP	547.2500	18.7	20.0	19.8	19.2	1.3

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail

# Location Report: Analog RF Subscriber NID (FTTH)

Test Location:	Rutland, ND	
Date:	7/1/2016	
Video Standard:	NTSC	
	Pass	Fail

## Selected Test Channels



EIA Channel	Standard Frequency (MHz)	Program	Visual Carrier Level (dBmV)	Visual Carrier Frequency (MHz)	Aural Carrier Δ (dBc)	Aural Carrier Frequency Offset (MHz)
2	55.2500	GUIDE	12.6	55.249931	-13.8	4.499999
7	175.2500	BEK	13.7	175.250010	-15.3	4.499994
26 M	235.2375	ESPNcl	14.7	235.236121	-14.4	4.499969
28 O-+	247.2375	TBS	14.4	247.236055	-15.9	4.499968
32 S-+	271.2375	ABCfam	14.5	271.236044	-15.7	4.499970
46 JJ-+	355.2375	TOON	14.4	355.235049	-15.4	4.499967
55 SS	409.2500	DIY	14.2	409.250360	-13.4	4.499997
59 WW	433.2500	MSNBC	14.5	433.246996	-15.5	4.499969
61 YY	445.2500	DSNYxd	14.1	445.247972	-15.1	4.499980
69 GGG	493.2500	YouToo	14.7	493.249273	-15.2	4.499994
71 III	505.2500	truTV	14.8	505.249240	-15.5	4.499994
78 PPP	547.2500	Sptman	14.8	547.249593	-14.7	4.499985

## RF Carrier Performance Measurements

EIA Channel	Standard Frequency (MHz)	Program	Carrier to Noise (dB)	Coherent Second Order (dBc)	Coherent Triple Beat (dBc)	In Channel Response (dB)
2	55.2500	GUIDE	48.9	-70.70	-68.7	1.4
7	175.2500	BEK	52.1	-63.20	-69.7	1.1
26 M	235.2375	ESPNcl	52.0	-71.30	-69.6	0.8
28 O-+	247.2375	TBS	52.1	-70.70	-68.8	0.9
32 S-+	271.2375	ABCfam	51.5	-70.20	-69.2	1.0
46 JJ-+	355.2375	TOON	51.8	-70.80	-69.3	1.4
55 SS	409.2500	DIY	50.8	-71.40	-69.3	0.7
59 WW	433.2500	MSNBC	50.9	-70.40	-69.0	1.2
61 YY	445.2500	DSNYxd	50.9	-70.90	-69.0	1.3
69 GGG	493.2500	YouToo	52.2	-71.10	-70.0	1.3
71 III	505.2500	truTV	51.9	-70.00	-69.6	1.1
78 PPP	547.2500	Sptman	53.2	-70.60	-69.6	0.9

Hum & Low Frequency Disturbance	1.0%
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# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Rutland, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail 

		Test #1	Test #2	Test #3	Test #4		
		Date	7/1/2016	7/1/2016	7/2/2016		7/2/2016
		Time	4:35:18 PM	10:35:18 PM	4:35:18 AM		10:35:18 AM
		Ext Temp	73°F	70°F	68°F		71°F
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation	
2	55.2500	13.7	15.0	15.1	15.9	2.2	
4	67.2500	13.8	15.8	13.9	15.5	2.0	
5	77.2500	15.3	15.5	16.1	15.1	1.0	
6	83.2500	15.1	15.0	13.6	14.3	1.5	
95 A5	91.2500	16.4	14.1	15.7	16.3	2.3	
99 A1+	115.2750	14.3	14.6	14.3	15.7	1.4	
14 A-+	121.2375	14.8	13.6	14.5	15.4	1.8	
15 B++	127.2625	14.9	16.1	15.3	15.8	1.2	
16 C-+	133.2375	14.3	14.8	15.2	15.3	1.0	
17 D	139.2500	13.8	13.9	14.6	13.7	0.9	
7	175.2500	15.4	15.9	14.9	13.9	2.0	
8	181.2500	15.2	15.6	15.6	14.7	0.9	
9	187.2500	16.1	14.7	15.2	16.0	1.4	
10	193.2500	15.6	13.7	15.1	15.1	1.9	
11	199.2500	13.8	16.4	15.2	15.9	2.6	
12	205.2500	15.0	13.7	13.6	16.1	2.5	
13	211.2500	14.5	15.1	15.1	14.7	0.6	
24 K+	223.2500	16.2	14.3	16.1	15.4	1.9	
25 L++	229.2625	14.2	14.5	15.5	15.7	1.5	
26 M-+	235.2375	15.9	16.2	15.3	14.4	1.8	
27 N-+	241.2375	14.6	15.8	14.8	16.2	1.6	
28 O-+	247.2375	15.9	14.4	16.2	15.1	1.8	
29 P-+	253.2375	13.6	15.1	14.0	14.5	1.5	
30 Q-+	259.2375	14.1	13.8	13.7	16.3	2.6	
31 R-+	265.2375	15.5	16.2	14.0	14.8	2.2	
32 S-+	271.2375	15.6	14.7	15.3	15.0	0.9	
37 AA-+	301.2375	16.2	13.6	15.1	15.3	2.6	
38 BB-+	307.2375	15.3	15.0	15.6	14.4	1.2	
40 DD-+	319.2375	15.1	13.9	14.3	16.4	2.5	
41 EE-+	325.2375	15.9	16.3	15.9	14.1	2.2	
42 FF++	331.2750	14.7	13.6	14.8	13.9	1.2	
43 GG-+	337.2375	14.1	15.4	16.4	16.0	2.3	
44 HH-+	343.2375	16.2	15.5	16.0	15.0	1.2	
45 II-+	349.2375	14.4	15.1	14.0	13.7	1.4	
46 JJ-+	355.2375	16.4	14.6	15.6	14.6	1.8	
47 KK++	361.2625	15.8	15.7	16.0	16.1	0.4	

# 24 Hour Test Report: Analog RF Subscriber NID (FTTH)

Test Location:	Rutland, ND		
Date:	7/1/2016		
Video Standard:	NTSC		
	Pass		Fail

		Test #1	Test #2	Test #3	Test #4	
	Date	7/1/2016	7/1/2016	7/2/2016	7/2/2016	
	Time	4:35:18 PM	10:35:18 PM	4:35:18 AM	10:35:18 AM	
	Ext Temp	73°F	70°F	68°F	71°F	
EIA Channel	Standard Frequency (MHz)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	Video Level (dBmV)	24 Hour Deviation
48 LL+	367.2375	14.0	15.8	13.9	14.7	1.9
49 MM+	373.2375	15.9	15.1	16.4	15.6	1.3
50 NN+	379.2375	16.2	14.4	15.3	15.7	1.8
51 OO+	385.2375	14.0	13.7	14.5	15.9	2.2
52 PP+	391.2375	14.2	13.6	14.1	14.9	1.3
53 QQ+	397.2375	15.0	16.4	14.7	13.9	2.5
54 RR	403.2500	14.6	13.8	14.2	14.7	0.9
55 SS	409.2500	14.3	15.9	15.7	15.2	1.6
56 TT	415.2500	15.8	14.1	16.0	15.0	1.9
57 UU	421.2500	15.6	15.4	15.6	16.3	0.9
59 WW	433.2500	14.3	16.4	14.4	15.2	2.1
60 XX	439.2500	15.1	14.5	14.7	15.9	1.4
61 YY	445.2500	15.2	15.0	15.8	15.9	0.9
62 ZZ	451.2500	15.5	14.5	14.1	14.8	1.4
64 BBB	463.2500	13.9	14.4	14.5	15.2	1.3
65 CCC	469.2500	13.7	16.0	15.7	13.9	2.3
67 EEE	481.2500	15.9	15.7	14.0	13.6	2.3
68 FFF	487.2500	15.2	15.9	14.7	15.9	1.2
69 GGG	493.2500	13.7	15.5	15.0	15.5	1.8
70 HHH	499.2500	14.3	15.7	16.0	16.4	2.1
71 III	505.2500	15.3	16.2	16.3	16.0	1.0
72 JJJ	511.2500	13.9	14.6	14.2	15.6	1.7
73 KKK	517.2500	14.5	15.4	14.7	16.4	1.9
74 LLL	523.2500	15.8	15.7	16.3	15.6	0.7
75 MMM	529.2500	14.9	16.4	14.3	13.8	2.6
76 NNN	535.2500	14.7	15.4	13.6	14.1	1.8
77 OOO	541.2500	15.0	15.9	14.4	15.8	1.5
78 PPP	547.2500	16.1	15.3	13.6	14.9	2.5

	Limits			
Minimum Video Carrier Level	3.0 dBmV	Pass		Fail
Max Delta Video Level	15.0 dB	Pass		Fail
Minimum Delta Video/Audio	10.0 dB	Pass		Fail
Max Delta Video/Audio	17.0 dB	Pass		Fail
Max Delta Adjacent Channels	3.0 dB	Pass		Fail
Max 24 Hour Deviation	8.0 dB	Pass		Fail