INTERMOD

SECTION 20-5.1(4)(a)(v)

RADIO FREQUENCY INTERFERENCE ANALYSIS REPORT

PI Tower Development, LLC on behalf of T-Mobile

Site ID: PIVA033
Site Name: VA-Hampton-Wythe

October 9, 2017

SITESAFE®
RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

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No Harmful Interference is predicted as a result of T-Mobile's proposed collocation to the existing Public Safety systems operating in the vicinity of the site.

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1.0 Executive Summary

This report presents a radio frequency interference (RFI) analysis which was performed on the PIVA033-VA-Hampton-Wythe site. The RFI analysis consists of transmitter noise, receiver desensitization, intermodulation, harmonic and transmitter spurious output interference. The report consists of Sections that provide details of the communications site, antenna systems, operational frequencies and each interference analysis mode.

A summary of the interference analysis results is depicted in the following Table.

Interference Analysis Mode	Type Mix	Status	Summary	Worst-Case Margin (dB)
Transmitter Noise	N/A	Passed	No Interference was predicted	19.1
Receiver Desensitization	N/A	Passed	No Interference was predicted	44.2
Transmitter Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Transmitter Harmonics	N/A	Passed	No Interference was predicted	N/A
Transmitter Spurious Output	N/A	Passed	No Interference was predicted	N/A
Interference Level Summing - C/(I+N)	N/A	Passed	No Interference was predicted	N/A
Wideband IM Spectral Analysis	N/A	N/A	No Analysis performed	N/A

The analysis was performed with the setup options depicted in the Table below.

Analysis	Description
Receiver Performance	Receiver Sensitivity Threshold
Receiver Bandwidth	Receiver Dependent
Antenna Patterns Considered	No (Worst Case)
Measured Antenna Isolation Data	No
Filters/Multicouplers Considered	Yes
Number of Simultaneous Transmitters Mixed	5
Highest Intermodulation Order Tested	7
Condense Intermodulation Hit Quantity	Yes - 1000/Order
TX IM Bandwidth Multiplication	Yes
Tx/Rx Systems Excluded	None
Site File Name	PIVA033_VA-Hampton-Wythe.dta
Report File Name	PIVA033-VA-Hampton-Wythe.docx
WirelessSiteRFI Software Version	10.0.8

2.0 Site Description

The communication systems located at this site are described in this section as well as the configuration of the antenna systems.

The site parameters are:

Site Name: PIVA033-VA-Hampton-Wythe
Owner:
Site Description: Monopole=150' (AGL)
Address: 1821 Cemetery Lane
Hampton, VA 23661
Latitude: 37:0:4.1 N
Longitude: 76:22:59.09 W
Elevation: 7' (AMSL)
Notes: T-Mobile is proposing to install 8 antennas with 4 sectors on a new monopole at the 148' level.

2.1 Communications Systems

System	Provider	Technology	Frequency Band
1	T-Mobile (Proposed)	LTE-700	698 - 806 MHz - 700 MHz Band
2	T-Mobile (Proposed)	LTE-1900; LTE-2100	1850 - 1995 MHz - PCS; 1710 - 2180 MHz - AWS
3	Big Bethel Tower	FM Land Mobile	420 - 470 MHz - Land Mobile
4	Big Bethel Tower	FM Land Mobile	806 - 896 MHz - Land Mobile
5	Blue Bird Gap Farm Tower	FM Land Mobile	150 - 174 MHz - Land Mobile
6	Blue Bird Gap Farm Tower	FM Land Mobile	420 - 470 MHz - Land Mobile
7	Blue Bird Gap Farm Tower	FM Land Mobile	806 - 896 MHz - Land Mobile
8	City Hall Building	FM Land Mobile	150 - 174 MHz - Land Mobile
9	City Hall Building	FM Land Mobile	420 - 470 MHz - Land Mobile
10	City Hall Building	FM Land Mobile	746 - 806 MHz - 700 MHz Band
11	City Hall Building	FM Land Mobile	806 - 896 MHz - Land Mobile
12	Buckroe Tower	FM Land Mobile	420 - 470 MHz - Land Mobile
13	Buckroe Tower	FM Land Mobile	806 - 896 MHz - Land Mobile
14	Hampton City Hall to Big Bethel	Microwave	5925 - 6875 MHz - 5 GHz Microwave
15	Big Bethel back to City Hall	Microwave	5925 - 6875 MHz - 5 GHz Microwave
16	Hampton City Hall to Buckroe	Microwave	5925 - 6875 MHz - 5 GHz Microwave
17	Buckroe back to City Hall	Microwave	5925 - 6875 MHz - 5 GHz Microwave
18	Big Bethel to Blue Bird	Microwave	5925 - 6875 MHz - 5 GHz Microwave
19	Blue Bird back to Big Bethel	Microwave	5925 - 6875 MHz - 5 GHz Microwave
20	Blue Bird to Buckroe	Microwave	5925 - 6875 MHz - 5 GHz Microwave
21	Buckroe back to Blue Bird	Microwave	5925 - 6875 MHz - 5 GHz Microwave

2.2 Antenna Systems

Ant #	Mfg	Antenna Model	Gain (dBd)	Hgt (ft)	Orient (deg)	Sec-tor	Ant Use	Transmission Line Type	Line Loss (/100')	Line Length (ft)
1	RFS	APXVA24_43-U-A20	13.98	148	0	A	Dplx	Fiber	0.001	178
2	RFS	APXVA24_43-U-A20	13.98	148	90	B	Dplx	Fiber	0.001	178
3	RFS	APXVA24_43-U-A20	13.98	148	180	C	Dplx	Fiber	0.001	178
4	RFS	APXVA24_43-U-A20	13.98	148	270	D	Dplx	Fiber	0.001	178
5	Ericsson	AIR 32 B2a B66A	15.86	148	0	A	Dplx	Fiber	0.001	178
6	Ericsson	AIR 32 B2a B66A	15.86	148	90	B	Dplx	Fiber	0.001	178
7	Ericsson	AIR 32 B2a B66A	15.86	148	180	C	Dplx	Fiber	0.001	178
8	Ericsson	AIR 32 B2a B66A	15.86	148	270	D	Dplx	Fiber	0.001	178
9	Generic	Omni	6.6	148	0		Dplx	7/8 in. Foam	0.85	178
10	Generic	Omni	9	148	0		Dplx	1-5/8 in. Foam	0.72	178
11	Generic	Omni	6	148	0		Tx/Rx	7/8 in. Foam	0.45	178
12	Generic	Omni	6.6	148	0		Dplx	7/8 in. Foam	0.85	178
13	Generic	Omni	9	148	0		Dplx	1-5/8 in. Foam	0.72	178
14	Generic	Omni	6	148	0		Tx/Rx	7/8 in. Foam	0.45	178
15	Generic	Omni	6.6	148	0		Dplx	7/8 in. Foam	0.85	178
16	Generic	Omni	9	148	0		Dplx	1-5/8 in. Foam	0.72	178
17	Generic	Omni	9	148	0		Dplx	1-5/8 in. Foam	0.72	178
18	Generic	Omni	6.6	148	0		Dplx	7/8 in. Foam	0.85	178
19	Generic	Omni	9	148	0		Dplx	1-5/8 in. Foam	0.72	178
20	Generic	Microwave	36.2	148	303.2		Dplx	EW	1.5	178
21	Generic	Microwave	36.2	148	123.2		Dplx	EW	1.5	178
22	Generic	Microwave	36.2	148	63.9		Dplx	EW	1.5	178
23	Generic	Microwave	36.2	148	243.9		Dplx	EW	1.5	178
24	Generic	Microwave	36.2	148	143.8		Dplx	EW	1.5	178
25	Generic	Microwave	36.2	148	323.8		Dplx	EW	1.5	178
26	Generic	Microwave	36.2	148	79.3		Dplx	EW	1.5	178
27	Generic	Microwave	36.2	148	259.3		Dplx	EW	1.5	178

3.0 Transmitter Frequencies

Freq #	Ant #	Provider	Model	Technology	Channel Label	ID	Frequency	Power (Watts)	BW (KHz)
1	1	T-Mobile (Proposed)	Ericsson	LTE-700		A	731.000000	50	5000
2	2	T-Mobile (Proposed)	Ericsson	LTE-700		B	731.000000	50	5000
3	3	T-Mobile (Proposed)	Ericsson	LTE-700		C	731.000000	50	5000
4	4	T-Mobile (Proposed)	Ericsson	LTE-700		D	731.000000	50	5000
5	5	T-Mobile (Proposed)	Ericsson	LTE-1900		E	1955.000000	32	10000
6	5	T-Mobile (Proposed)	Ericsson	LTE-1900		F	1965.000000	32	10000
7	5	T-Mobile (Proposed)	Ericsson	LTE-2100		G	2140.000000	32	10000
8	5	T-Mobile (Proposed)	Ericsson	LTE-2100		H	2150.000000	32	10000
9	6	T-Mobile (Proposed)	Ericsson	LTE-1900		I	1955.000000	32	10000
10	6	T-Mobile (Proposed)	Ericsson	LTE-1900		J	1965.000000	32	10000
11	6	T-Mobile (Proposed)	Ericsson	LTE-2100		K	2140.000000	32	10000
12	6	T-Mobile (Proposed)	Ericsson	LTE-2100		L	2150.000000	32	10000
13	7	T-Mobile (Proposed)	Ericsson	LTE-1900		M	1955.000000	32	10000
14	7	T-Mobile (Proposed)	Ericsson	LTE-1900		N	1965.000000	32	10000
15	7	T-Mobile (Proposed)	Ericsson	LTE-2100		O	2140.000000	32	10000
16	7	T-Mobile (Proposed)	Ericsson	LTE-2100		P	2150.000000	32	10000
17	8	T-Mobile (Proposed)	Ericsson	LTE-1900		Q	1955.000000	32	10000
18	8	T-Mobile (Proposed)	Ericsson	LTE-1900		R	1965.000000	32	10000
19	8	T-Mobile (Proposed)	Ericsson	LTE-2100		S	2140.000000	32	10000
20	8	T-Mobile (Proposed)	Ericsson	LTE-2100		T	2150.000000	32	10000
21	9	Big Bethel Tower	Other	FM Land Mobile		U	460.362500	100	11
22	10	Big Bethel Tower	Other	FM Land Mobile		V	851.012500	100	8
23	10	Big Bethel Tower	Other	FM Land Mobile		W	851.037500	100	8
24	10	Big Bethel Tower	Other	FM Land Mobile		X	851.287500	100	8
25	10	Big Bethel Tower	Other	FM Land Mobile		Y	851.450000	100	8
26	10	Big Bethel Tower	Other	FM Land Mobile		Z	851.512500	100	8
27	10	Big Bethel Tower	Other	FM Land Mobile		AA	851.537500	100	8
28	10	Big Bethel Tower	Other	FM Land Mobile		AB	851.562500	100	8
29	10	Big Bethel Tower	Other	FM Land Mobile		AC	851.812500	100	8
30	10	Big Bethel Tower	Other	FM Land Mobile		AD	852.062500	100	8
31	10	Big Bethel Tower	Other	FM Land Mobile		AE	853.325000	100	8
32	10	Big Bethel Tower	Other	FM Land Mobile		AF	853.687500	100	8
33	10	Big Bethel Tower	Other	FM Land Mobile		AG	853.835800	100	8
34	10	Big Bethel Tower	Other	FM Land Mobile		AH	853.912500	100	8
35	10	Big Bethel Tower	Other	FM Land Mobile		AI	854.712500	100	8
36	10	Big Bethel Tower	Other	FM Land Mobile		AJ	854.962500	100	8
37	10	Big Bethel Tower	Other	FM Land Mobile		AK	855.462500	100	8
38	10	Big Bethel Tower	Other	FM Land Mobile		AL	855.712500	100	8
39	10	Big Bethel Tower	Other	FM Land Mobile		AM	855.962500	100	8
40	10	Big Bethel Tower	Other	FM Land Mobile		AN	856.512500	100	8
41	10	Big Bethel Tower	Other	FM Land Mobile		AO	856.762500	100	8
42	10	Big Bethel Tower	Other	FM Land Mobile		AP	857.762500	100	8
43	10	Big Bethel Tower	Other	FM Land Mobile		AQ	858.637500	100	8
44	10	Big Bethel Tower	Other	FM Land Mobile		AR	858.762500	100	8
45	10	Big Bethel Tower	Other	FM Land Mobile		AS	859.762500	100	8
46	11	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AT	165.700000	100	16
47	12	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AU	460.362500	100	11
48	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AV	851.037500	100	8
49	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AW	851.287500	100	8
50	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AX	851.450000	100	8
51	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AY	851.537500	100	8
52	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AZ	851.562500	100	8
53	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BA	851.812500	100	8
54	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BB	852.012500	100	8
55	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BC	852.062500	100	8
56	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BD	852.512500	100	8
57	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BE	853.325000	100	8
58	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BF	853.687500	100	8
59	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BG	853.835800	100	8

60	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BH	853.912500	100	8
61	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BI	854.712500	100	8
62	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BJ	854.962500	100	8
63	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BK	855.462500	100	8
64	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BL	855.712500	100	8
65	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BM	855.962500	100	8
66	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BN	856.512500	100	8
67	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BO	856.762500	100	8
68	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BP	857.762500	100	8
69	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BQ	858.637500	100	8
70	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BR	858.762500	100	8
71	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BS	859.762500	100	8
72	14	City Hall Building	Other	FM Land Mobile		BT	154.265000	100	16
73	14	City Hall Building	Other	FM Land Mobile		BU	154.295000	100	16
74	15	City Hall Building	Other	FM Land Mobile		BV	453.050000	100	11
75	15	City Hall Building	Other	FM Land Mobile		BW	453.750000	100	11
76	16	City Hall Building	Other	FM Land Mobile		BX	773.531250	100	12.5
77	16	City Hall Building	Other	FM Land Mobile		BY	773.806250	100	12.5
78	16	City Hall Building	Other	FM Land Mobile		BZ	774.031250	100	12.5
79	16	City Hall Building	Other	FM Land Mobile		CA	774.081250	100	12.5
80	16	City Hall Building	Other	FM Land Mobile		CB	774.331250	100	12.5
81	17	City Hall Building	Other	FM Land Mobile		CC	806.037500	100	8
82	17	City Hall Building	Other	FM Land Mobile		CD	806.287500	100	8
83	17	City Hall Building	Other	FM Land Mobile		CE	806.562500	100	8
84	17	City Hall Building	Other	FM Land Mobile		CF	806.812500	100	8
85	17	City Hall Building	Other	FM Land Mobile		CG	809.712500	100	8
86	17	City Hall Building	Other	FM Land Mobile		CH	809.962500	100	8
87	17	City Hall Building	Other	FM Land Mobile		CI	810.462500	100	8
88	17	City Hall Building	Other	FM Land Mobile		CJ	810.712500	100	8
89	17	City Hall Building	Other	FM Land Mobile		CK	810.962500	100	8
90	17	City Hall Building	Other	FM Land Mobile		CL	811.512500	100	8
91	17	City Hall Building	Other	FM Land Mobile		CM	811.762500	100	8
92	17	City Hall Building	Other	FM Land Mobile		CN	812.762500	100	8
93	17	City Hall Building	Other	FM Land Mobile		CO	813.762500	100	8
94	17	City Hall Building	Other	FM Land Mobile		CP	814.762500	100	8
95	17	City Hall Building	Other	FM Land Mobile		CQ	851.450000	100	8
96	17	City Hall Building	Other	FM Land Mobile		CR	851.537500	100	8
97	17	City Hall Building	Other	FM Land Mobile		CS	852.062500	100	8
98	17	City Hall Building	Other	FM Land Mobile		CT	853.325000	100	8
99	17	City Hall Building	Other	FM Land Mobile		CU	853.687500	100	8
100	17	City Hall Building	Other	FM Land Mobile		CV	853.835800	100	8
101	17	City Hall Building	Other	FM Land Mobile		CW	853.912500	100	8
102	17	City Hall Building	Other	FM Land Mobile		CX	858.637500	100	8
103	18	Buckroe Tower	Other	FM Land Mobile		CY	460.362500	100	11
104	19	Buckroe Tower	Other	FM Land Mobile		CZ	851.012500	100	8
105	19	Buckroe Tower	Other	FM Land Mobile		DA	851.037500	100	8
106	19	Buckroe Tower	Other	FM Land Mobile		DB	851.287500	100	8
107	19	Buckroe Tower	Other	FM Land Mobile		DC	851.450000	100	8
108	19	Buckroe Tower	Other	FM Land Mobile		DD	851.537500	100	8
109	19	Buckroe Tower	Other	FM Land Mobile		DE	851.562500	100	8
110	19	Buckroe Tower	Other	FM Land Mobile		DF	851.812500	100	8
111	19	Buckroe Tower	Other	FM Land Mobile		DG	852.062500	100	8
112	19	Buckroe Tower	Other	FM Land Mobile		DH	853.325000	100	8
113	19	Buckroe Tower	Other	FM Land Mobile		DI	853.687500	100	8
114	19	Buckroe Tower	Other	FM Land Mobile		DJ	853.835800	100	8
115	19	Buckroe Tower	Other	FM Land Mobile		DK	853.912500	100	8
116	19	Buckroe Tower	Other	FM Land Mobile		DL	854.712500	100	8
117	19	Buckroe Tower	Other	FM Land Mobile		DM	854.962500	100	8
118	19	Buckroe Tower	Other	FM Land Mobile		DN	855.462500	100	8
119	19	Buckroe Tower	Other	FM Land Mobile		DO	855.712500	100	8
120	19	Buckroe Tower	Other	FM Land Mobile		DP	855.962500	100	8
121	19	Buckroe Tower	Other	FM Land Mobile		DQ	856.512500	100	8
122	19	Buckroe Tower	Other	FM Land Mobile		DR	856.762500	100	8
123	19	Buckroe Tower	Other	FM Land Mobile		DS	857.762500	100	8
124	19	Buckroe Tower	Other	FM Land Mobile		DT	858.637500	100	8
125	19	Buckroe Tower	Other	FM Land Mobile		DU	858.762500	100	8

126	19	Buckroe Tower	Other	FM Land Mobile		DV	859.762500	100	8
127	20	Hampton City Hall to Big Bethel	Other	Microwave		DW	5974.850000	.63	5000
128	21	Big Bethel back to City Hall	Other	Microwave		DX	6226.890000	.63	5000
129	22	Hampton City Hall to Buckroe	Other	Microwave		DY	6034.150000	.63	5000
130	23	Buckroe back to City Hall	Other	Microwave		DZ	6286.190000	.63	5000
131	24	Big Bethel to Blue Bird	Other	Microwave		EA	6755.000000	.63	5000
132	25	Blue Bird back to Big Bethel	Other	Microwave		EB	6595.000000	.63	5000
133	26	Blue Bird to Buckroe	Other	Microwave		EC	6063.800000	.63	5000
134	27	Buckroe back to Blue Bird	Other	Microwave		ED	6315.840000	.63	5000

4.0 Receiver Frequencies

Freq #	Ant #	Provider	Model	Technology	Channel Label	ID	Frequency	Sen (dBm)	BW (KHz)
1	1	T-Mobile (Proposed)	Ericsson	LTE-700		A	701.000000	-102	5000
2	2	T-Mobile (Proposed)	Ericsson	LTE-700		B	701.000000	-102	5000
3	3	T-Mobile (Proposed)	Ericsson	LTE-700		C	701.000000	-102	5000
4	4	T-Mobile (Proposed)	Ericsson	LTE-700		D	701.000000	-102	5000
5	5	T-Mobile (Proposed)	Ericsson	LTE-1900		E	1875.000000	-102	10000
6	5	T-Mobile (Proposed)	Ericsson	LTE-1900		F	1885.000000	-102	10000
7	5	T-Mobile (Proposed)	Ericsson	LTE-2100		G	1740.000000	-102	10000
8	5	T-Mobile (Proposed)	Ericsson	LTE-2100		H	1750.000000	-102	10000
9	6	T-Mobile (Proposed)	Ericsson	LTE-1900		I	1875.000000	-102	10000
10	6	T-Mobile (Proposed)	Ericsson	LTE-1900		J	1885.000000	-102	10000
11	6	T-Mobile (Proposed)	Ericsson	LTE-2100		K	1740.000000	-102	10000
12	6	T-Mobile (Proposed)	Ericsson	LTE-2100		L	1750.000000	-102	10000
13	7	T-Mobile (Proposed)	Ericsson	LTE-1900		M	1875.000000	-102	10000
14	7	T-Mobile (Proposed)	Ericsson	LTE-1900		N	1885.000000	-102	10000
15	7	T-Mobile (Proposed)	Ericsson	LTE-2100		O	1740.000000	-102	10000
16	7	T-Mobile (Proposed)	Ericsson	LTE-2100		P	1750.000000	-102	10000
17	8	T-Mobile (Proposed)	Ericsson	LTE-1900		Q	1875.000000	-102	10000
18	8	T-Mobile (Proposed)	Ericsson	LTE-1900		R	1885.000000	-102	10000
19	8	T-Mobile (Proposed)	Ericsson	LTE-2100		S	1740.000000	-102	10000
20	8	T-Mobile (Proposed)	Ericsson	LTE-2100		T	1750.000000	-102	10000
21	9	Big Bethel Tower	Other	FM Land Mobile		U	465.362500	-116	11
22	10	Big Bethel Tower	Other	FM Land Mobile		V	806.012500	-116	8
23	10	Big Bethel Tower	Other	FM Land Mobile		W	806.037500	-116	8
24	10	Big Bethel Tower	Other	FM Land Mobile		X	806.287500	-116	8
25	10	Big Bethel Tower	Other	FM Land Mobile		Y	806.450000	-116	8
26	10	Big Bethel Tower	Other	FM Land Mobile		Z	806.512500	-116	8
27	10	Big Bethel Tower	Other	FM Land Mobile		AA	806.537500	-116	8
28	10	Big Bethel Tower	Other	FM Land Mobile		AB	806.562500	-116	8
29	10	Big Bethel Tower	Other	FM Land Mobile		AC	806.812500	-116	8
30	10	Big Bethel Tower	Other	FM Land Mobile		AD	807.062500	-116	8
31	10	Big Bethel Tower	Other	FM Land Mobile		AE	808.325000	-116	8
32	10	Big Bethel Tower	Other	FM Land Mobile		AF	808.687500	-116	8
33	10	Big Bethel Tower	Other	FM Land Mobile		AG	808.835800	-116	8
34	10	Big Bethel Tower	Other	FM Land Mobile		AH	808.912500	-116	8
35	10	Big Bethel Tower	Other	FM Land Mobile		AI	809.712500	-116	8
36	10	Big Bethel Tower	Other	FM Land Mobile		AJ	809.962500	-116	8
37	10	Big Bethel Tower	Other	FM Land Mobile		AK	810.462500	-116	8
38	10	Big Bethel Tower	Other	FM Land Mobile		AL	810.712500	-116	8
39	10	Big Bethel Tower	Other	FM Land Mobile		AM	810.962500	-116	8
40	10	Big Bethel Tower	Other	FM Land Mobile		AN	811.512500	-116	8
41	10	Big Bethel Tower	Other	FM Land Mobile		AO	811.762500	-116	8
42	10	Big Bethel Tower	Other	FM Land Mobile		AP	812.762500	-116	8
43	10	Big Bethel Tower	Other	FM Land Mobile		AQ	813.637500	-116	8
44	10	Big Bethel Tower	Other	FM Land Mobile		AR	813.762500	-116	8
45	10	Big Bethel Tower	Other	FM Land Mobile		AS	814.762500	-116	8
46	11	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AT	163.950000	-116	25
47	12	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AU	465.362500	-116	11
48	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AV	806.037500	-116	8
49	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AW	806.287500	-116	8
50	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AX	806.450000	-116	8
51	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AY	806.537500	-116	8
52	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		AZ	806.562500	-116	8
53	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BA	806.812500	-116	8
54	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BB	807.012500	-116	8
55	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BC	807.062500	-116	8
56	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BD	807.512500	-116	8
57	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BE	808.325000	-116	8
58	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BF	808.687500	-116	8
59	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BG	808.835800	-116	8
60	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BH	808.912500	-116	8

61	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BI	809.712500	-116	8
62	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BJ	809.962500	-116	8
63	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BK	810.462500	-116	8
64	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BL	810.712500	-116	8
65	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BM	810.962500	-116	8
66	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BN	811.512500	-116	8
67	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BO	811.762500	-116	8
68	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BP	812.762500	-116	8
69	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BQ	813.637500	-116	8
70	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BR	813.762500	-116	8
71	13	Blue Bird Gap Farm Tower	Other	FM Land Mobile		BS	814.762500	-116	8
72	14	City Hall Building	Other	FM Land Mobile		BT	154.265000	-116	25
73	14	City Hall Building	Other	FM Land Mobile		BU	154.295000	-116	25
74	15	City Hall Building	Other	FM Land Mobile		BV	453.050000	-116	11
75	15	City Hall Building	Other	FM Land Mobile		BW	453.750000	-116	1
76	16	City Hall Building	Other	FM Land Mobile		BX	803.531250	-116	12.5
77	16	City Hall Building	Other	FM Land Mobile		BY	803.806250	-116	12.5
78	16	City Hall Building	Other	FM Land Mobile		BZ	804.031250	-116	12.5
79	16	City Hall Building	Other	FM Land Mobile		CA	804.081250	-116	12.5
80	16	City Hall Building	Other	FM Land Mobile		CB	804.331250	-116	12.5
81	17	City Hall Building	Other	FM Land Mobile		CC	851.037500	-116	8
82	17	City Hall Building	Other	FM Land Mobile		CD	851.287500	-116	8
83	17	City Hall Building	Other	FM Land Mobile		CE	851.562500	-116	8
84	17	City Hall Building	Other	FM Land Mobile		CF	851.812500	-116	8
85	17	City Hall Building	Other	FM Land Mobile		CG	854.712500	-116	8
86	17	City Hall Building	Other	FM Land Mobile		CH	854.962500	-116	8
87	17	City Hall Building	Other	FM Land Mobile		CI	855.462500	-116	8
88	17	City Hall Building	Other	FM Land Mobile		CJ	855.712500	-116	8
89	17	City Hall Building	Other	FM Land Mobile		CK	855.962500	-116	8
90	17	City Hall Building	Other	FM Land Mobile		CL	856.512500	-116	8
91	17	City Hall Building	Other	FM Land Mobile		CM	856.762500	-116	8
92	17	City Hall Building	Other	FM Land Mobile		CN	857.762500	-116	8
93	17	City Hall Building	Other	FM Land Mobile		CO	858.762500	-116	8
94	17	City Hall Building	Other	FM Land Mobile		CP	859.762500	-116	8
95	17	City Hall Building	Other	FM Land Mobile		CQ	806.450000	-116	8
96	17	City Hall Building	Other	FM Land Mobile		CR	806.537500	-116	8
97	17	City Hall Building	Other	FM Land Mobile		CS	807.062500	-116	8
98	17	City Hall Building	Other	FM Land Mobile		CT	808.325000	-116	8
99	17	City Hall Building	Other	FM Land Mobile		CU	808.687500	-116	8
100	17	City Hall Building	Other	FM Land Mobile		CV	808.835800	-116	8
101	17	City Hall Building	Other	FM Land Mobile		CW	808.912500	-116	8
102	17	City Hall Building	Other	FM Land Mobile		CX	813.637500	-116	8
103	18	Buckroe Tower	Other	FM Land Mobile		CY	465.362500	-116	11
104	19	Buckroe Tower	Other	FM Land Mobile		CZ	806.012500	-116	8
105	19	Buckroe Tower	Other	FM Land Mobile		DA	806.037500	-116	8
106	19	Buckroe Tower	Other	FM Land Mobile		DB	806.287500	-116	8
107	19	Buckroe Tower	Other	FM Land Mobile		DC	806.450000	-116	8
108	19	Buckroe Tower	Other	FM Land Mobile		DD	806.537500	-116	8
109	19	Buckroe Tower	Other	FM Land Mobile		DE	806.562500	-116	8
110	19	Buckroe Tower	Other	FM Land Mobile		DF	806.812500	-116	8
111	19	Buckroe Tower	Other	FM Land Mobile		DG	807.062500	-116	8
112	19	Buckroe Tower	Other	FM Land Mobile		DH	808.325000	-116	8
113	19	Buckroe Tower	Other	FM Land Mobile		DI	808.687500	-116	8
114	19	Buckroe Tower	Other	FM Land Mobile		DJ	808.835800	-116	8
115	19	Buckroe Tower	Other	FM Land Mobile		DK	808.912500	-116	8
116	19	Buckroe Tower	Other	FM Land Mobile		DL	809.712500	-116	8
117	19	Buckroe Tower	Other	FM Land Mobile		DM	809.962500	-116	8
118	19	Buckroe Tower	Other	FM Land Mobile		DN	810.462500	-116	8
119	19	Buckroe Tower	Other	FM Land Mobile		DO	810.712500	-116	8
120	19	Buckroe Tower	Other	FM Land Mobile		DP	810.962500	-116	8
121	19	Buckroe Tower	Other	FM Land Mobile		DQ	811.512500	-116	8
122	19	Buckroe Tower	Other	FM Land Mobile		DR	811.762500	-116	8
123	19	Buckroe Tower	Other	FM Land Mobile		DS	812.762500	-116	8
124	19	Buckroe Tower	Other	FM Land Mobile		DT	813.637500	-116	8
125	19	Buckroe Tower	Other	FM Land Mobile		DU	813.762500	-116	8
126	19	Buckroe Tower	Other	FM Land Mobile		DV	814.762500	-116	8

127	20	Hampton City Hall to Big Bethel	Other	Microwave		DW	6226.890000	-72	5000
128	21	Big Bethel back to City Hall	Other	Microwave		DX	5974.850000	-72	5000
129	22	Hampton City Hall to Buckroe	Other	Microwave		DY	6286.190000	-72	5000
130	23	Buckroe back to City Hall	Other	Microwave		DZ	6034.150000	-72	5000
131	24	Big Bethel to Blue Bird	Other	Microwave		EA	6595.000000	-72	5000
132	25	Blue Bird back to Big Bethel	Other	Microwave		EB	6755.000000	-72	5000
133	26	Blue Bird to Buckroe	Other	Microwave		EC	6315.840000	-72	5000
134	27	Buckroe back to Blue Bird	Other	Microwave		ED	6063.800000	-72	5000

5.0 Transmitter Noise Analysis

Transmitter noise interference occurs because a transmitter radiates energy on its operating frequency as well as frequencies above and below the assigned frequency. The energy that is radiated above and below the assigned frequency is known as sideband noise energy and extends for several megahertz on either side of the operating frequency. This undesired noise energy can fall within the passband of a nearby receiver even if the receiver's operating frequency is several megahertz away. The transmitter noise appears as "on-channel" noise interference and cannot be filtered out at the receiver. It is on the receiver's operating frequency and competes with the desired signal, which in effect, degrades the operational performance.

The analysis predicts each transmitter's noise signal level present at the input of each receiver. It takes into account the transmitter's noise characteristics, frequency separation, power output, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in both systems. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required, if any, to prevent receiver performance degradation caused by transmitter noise interference. The Table below depicts the results of this analysis. For each receiver, the transmitter that has the worst-case impact is displayed. The Signal Margin represents the margin in dB, before the receiver's performance is degraded. A negative number indicates that the performance is degraded and the value indicates how much additional isolation is required to prevent receiver performance degradation.

Receiver Provider	Receive Channel	Receive Frequency (MHz)	Transmitter Provider	Transmit Channel	Transmit Frequency (MHz)	Attn Required (dB)	Attn Provided (dB)	Signal Margin (dB)
None								

No transmitter noise interference problems were predicted.

6.0 Receiver Desensitization Analysis

Receiver desensitization interference occurs when an undesired signal from a nearby "off-frequency" transmitter is sufficiently close to a receiver's operating frequency. The signal may get through the RF selectivity of the receiver. If this undesired signal is of sufficient amplitude, the receiver's critical voltage and current levels are altered and the performance of the receiver is degraded at its operating frequency. The gain of the receiver is reduced, thereby reducing the performance of the receiver.

A transmitter can be operating several megahertz away from the receiver frequency and/or its antenna can be located several thousand feet from the receiver's antenna and still cause interference.

The analysis predicts each transmitter's signal level present at the input of each receiver. It takes into account the transmitter's power output, frequency separation, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in both systems. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required, if any, to prevent receiver performance degradation caused by receiver desensitization interference. The Table below depicts the results of this analysis. For each receiver, the transmitter that has the worst-case impact is displayed. The Signal Margin represents the margin in dB, before the receiver's performance is degraded. A negative number indicates that the performance is degraded and the value indicates how much additional isolation is required to prevent receiver performance degradation.

Receiver Provider	Receive Channel	Receive Frequency (MHz)	Transmitter Provider	Transmit Channel	Transmit Frequency (MHz)	Attn Required (dB)	Attn Provided (dB)	Signal Margin (dB)
None								

No receiver desensitization interference problems were predicted.

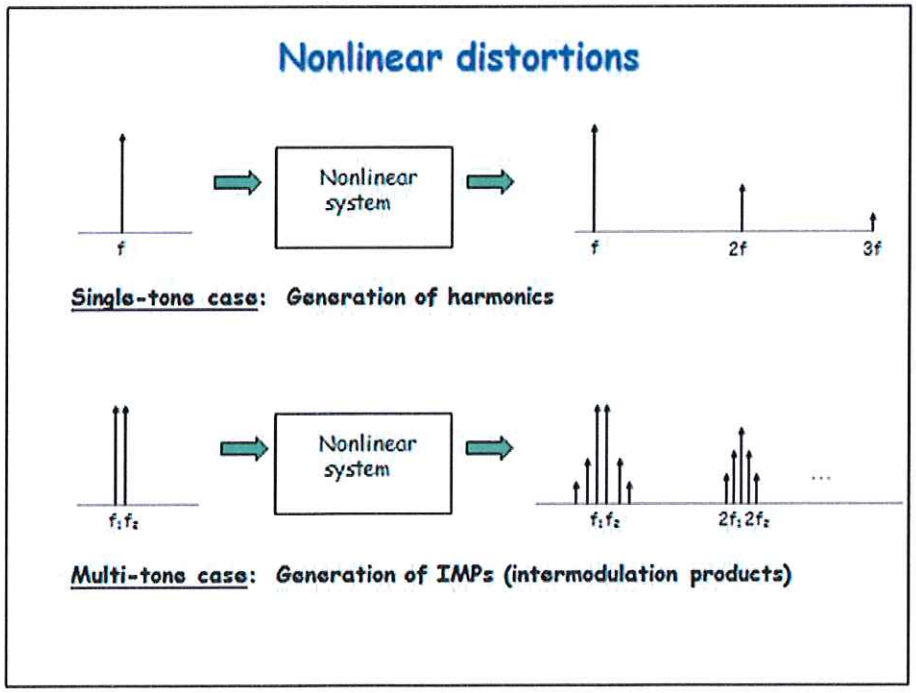
7.0 Intermodulation Interference Analysis

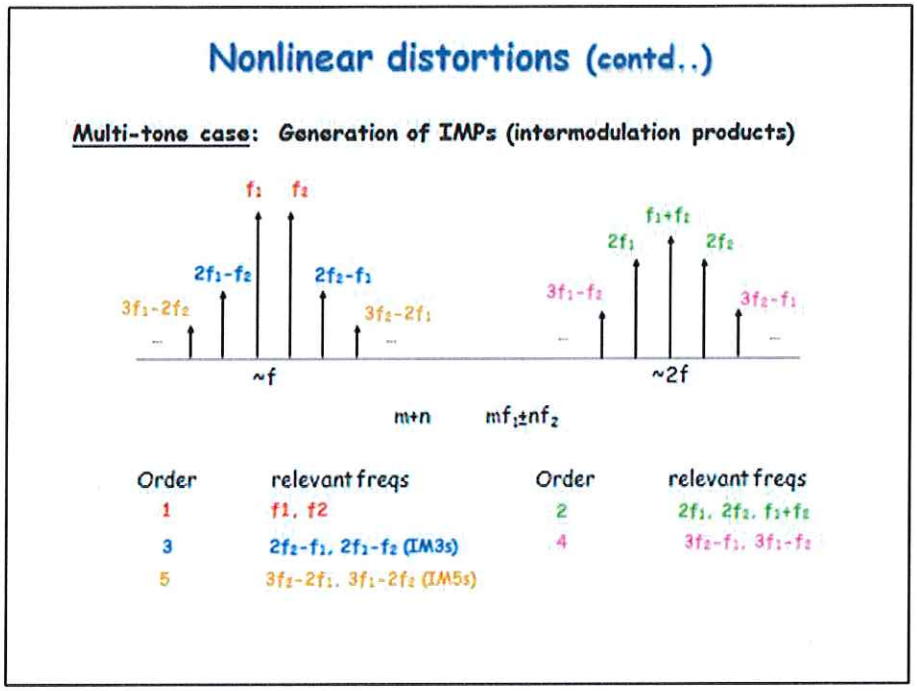
There are three basic categories of Intermodulation (IM) interference. They are receiver produced, transmitter produced, and "other" radiated IM. Transmitter produced IM is the result of one or more transmitters impressing a signal in the non-linear final output stage circuitry of another transmitter, usually via antenna coupling. The IM product frequency is then re-radiated from the transmitter's antenna. Receiver produced IM is the result of two or more transmitter signals mixing in a receiver RF amplifier or mixer stage when operating in a non-linear range.

"Other" radiated IM is the result of transmitter signals mixing in other non-linear junctions. These junctions are usually metallic, such as rusty bolts on a tower, dissimilar metallic junctions, or other non-linear metallic junctions in the area. IM products can also be caused by non-linearity in the transmission system such as antenna, transmission line, or connectors.

Communication sites with co-located transmitters, usually have RF coupling between each transmitter and antenna system. This results in the signals of each transmitter entering the nonlinear final output (PA) circuitry of the other transmitters. When intermodulation (IM) products are created in the output circuitry and they fall within the passband of the final amplifier, the IM products are re-radiated and may interfere with receivers at the same site or at other nearby sites. Additionally, these strong transmitter signals may directly enter a receiver and drive the RF amplifier into a nonlinear operation, or if not filtered effectively by the receiver input circuitry, these signals could mix in the nonlinear circuitry of the receiver front-end or mixer, creating IM products directly in the receiver.

The frequencies of IM mixing are known as nonlinear distortions. The images below depict how these IM products are derived when passing through a nonlinear junction/system.





Not all of the mixing possibilities are significant in creating interference signals. Some fall "out-of-band" of the receiver and the higher order IM products are usually weaker in signal strength.

7.1 Transmitter Generated Intermodulation Analysis

Intermodulation in transmitters occurs when a signal from another transmitter is impressed on the nonlinear final output stage circuitry, usually via antenna coupling. The power level of the IM product is determined by the power level of the incoming extraneous signal from another transmitter and by a conversion loss factor. The conversion loss factor takes into account the mixing efficiency of the transmitter's final output stage. Conversion loss differs with transmitter design, adjustment, frequency separation of the source signals, and with the order of the IM product.

The analysis calculates all possible IM product frequencies that could potentially interfere with receivers at the communications site based on each receiver's individual bandwidth. It then predicts each IM signal level present at the input of each affected receiver. For each IM frequency, the analysis considers all possible sources of IM generation in the transmitters. For example, if there are four transmitters involve, the analysis will calculate the IM signal level that would be generated in each transmitter. For this example, that would be four possible mixing conditions.

The analysis takes into account the transmitter's power output, modulation bandwidth, conversion losses, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna

separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for each IM interference signal that occurs. Receivers experiencing transmitter generated intermodulation interference are depicted in the following Table.

Tx 1 Source Mix Tx		Tx 2 Source		TX 3 Source		Tx 4 Source		Tx 5 Source		Intermod Hit			Affected Receiver	Attn Need
ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	Freq (MHz)	Ord	ID	Freq (MHz)	
None														

No transmitter generated intermodulation interference problems were predicted.

7.2 Receiver Generated Intermodulation Analysis

Within a receiver, when two or more strong off-channel signals enter and mix in the receiver and one of the IM product frequencies created coincides with the receiver operating frequency, potential interference results. This internal IM mixing process takes place in the receiver's RF amplifier when it operates in a nonlinear range and/or in the first mixer, which, of course, has been designed to operate as a nonlinear device.

Receivers have a similar conversion loss type factor and receiver performance is commonly described in terms of conversion loss with respect to the 2A - B type products. Here, conversion loss is the ratio of a specified level of A and B to the level of the resulting IM product, when the product is viewed as an equivalent on-channel signal. Receiver conversion loss varies with input levels, AGC action, and product order.

The analysis calculates all possible IM product frequencies that could potentially interfere with receivers at the communications site based on each receiver's individual bandwidth. It then predicts each IM signal level present at the input of each affected receiver. For each IM frequency, the analysis considers that the IM signal is generated directly in the receiver.

The analysis takes into account the transmitter's power output, modulation bandwidth, conversion losses, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for each IM interference signal that occurs. Receivers experiencing receiver generated intermodulation interference are depicted in the following Table.

Tx 1 Source		Tx 2 Source		TX 3 Source		Tx 4 Source		Tx 5 Source		Intermod Hit		Affected Receiver		Attn Need
ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	Freq (MHz)	Ord	ID	Freq (MHz)	
None														

No receiver generated intermodulation interference problems were predicted.

8.0 Transmitter Harmonic Output Interference Analysis

Transmitter harmonic interference is due to non-linear characteristics in a transmitter. The harmonics are typically created due to frequency multiplers and the non-linear design of the final output stage of the transmitter. If the harmonic signal falls within the passband of a nearby receiver and the signal level is of sufficient amplitude, it can degrade the performance of the receiver.

The analysis takes into account the transmitter's harmonic characteristics, output level, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for any harmonics that fall within a receiver's passband. Receivers experiencing transmitter harmonic interference are depicted in the following Table.

Transmitter		Harmonic		Affected Receiver		Attn Needed
ID	Frequency (MHz)	Frequency (MHz)	Order	ID	Frequency (MHz)	
None						

No transmitter generated harmonic interference problems were predicted.

9.0 Transmitter Spurious Output Interference Analysis

Transmitter spurious output interference can be attributed to many different factors in a transmitter. The generation of spurious frequencies could be due to non-linear characteristics in a transmitter or possibly the physical placement of components and unwanted coupling. If a spurious signal falls within the passband of a nearby receiver and the signal level is of sufficient amplitude, it can degrade the performance of the receiver.

The analysis takes into account a transmitter's spurious output specification, output levels, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for any transmitter spurious signals that fall within a receiver's passband. Receivers experiencing transmitter spurious output interference are depicted in the following Table.

Transmitter		Affected Receiver		Attn Needed
ID	Frequency (MHz)	ID	Frequency (MHz)	
None				

No transmitter generated spurious interference problems were predicted.

10.0 Interference Power Level Summing Analysis

This section of the report provides a simulation of Intermodulation (IM) interference, transmitter wideband noise and receiver desensitization interference occurring on each individual receiver when all transmitters at the site are active at the same instance in time. Even though individual interference modes may not be reported in other report sections, this summing analysis represents a worst-case interference scenario.

However, the probability of this interference occurrence for an individual receiver could be low since it depends on the utilization of the transmitters involved in the interference generation.

The carrier-to-noise C/(I + N) ratio for each receiver is based on the aggregate of interference power levels. A negative C/(I + N) ratio indicates that the performance of the receiver could possibly be degraded by the value shown.

The following Table presents this data:

Receiver		Interference Power Level (dBw)				
Channel Label	Freq (MHz)	Tx Noise	Rx Desense	IM Power	Aggregate	C / (I+N)
None						

11.0 Discussion and Recommendations

Sitesafe has provided FCC research on this site and used this information whenever possible in this study. Public Safety systems operating in the vicinity of the site were included in this analysis as required by the local jurisdiction. The City of Hampton antennas were modeled worse case at the T-Mobile antenna centerline of 148 feet.

Conclusion: there is no indication that the proposed collocation will cause interference to the existing Public Safety systems operating in the vicinity of the site.

12.0 Professional Certification

Engineering Statement Re:

Potential for Interference to Existing Services

At

PIVA033-VA-Hampton-Wythe, for PI Tower Development, LLC on behalf of T-Mobile

My signature on this study hereby certifies and affirms:

That I am employed by Sitesafe, Inc. which provides engineering services to clients in the Radio Communications field; and

That I have examined the technical information supplied by PI Tower Development, LLC on behalf of T-Mobile and their representatives relating to their intention to install antennas, transmitters and associated technical equipment on an existing communication site, on an existing tower/structure, currently identified as PIVA033-VA-Hampton-Wythe; and

That the technical equipment to be installed by T-Mobile represents the state of the art and that it has been carefully designed to preclude the possibility of interference to other services, including the transmission and reception of broadcast AM, FM, and Television and other communications services, such as police, fire, utility and other public safety and public service facilities as well as private communications installations, such as cordless telephones, and Citizen's Band and Radio Amateur stations; and

That the equipment to be installed by T-Mobile, meets or exceeds all Federal Communications Commission emission requirements to avoid interfering with other services and home/business equipment; and

That frequency information provided by PI Tower Development, LLC on behalf of T-Mobile concerning existing installations on this structure has been examined to estimate the potential for interference to existing and proposed operations, resulting from the introduction of the T-Mobile's operation; and

That this examination involved the computation of intermodulation products, transmitter harmonics, receiver desensitization, and transmitter spurious emissions produced by the combination of frequencies associated with existing services known to currently operate at the PIVA033-VA-Hampton-Wythe site, and these frequencies, which could be used by others at the PIVA033-VA-Hampton-Wythe site

That intermodulation products were computed (as a minimum) for the fundamental (f_0), second ($2\ f_0$) thru seventh ($7\ f_0$) harmonic components of frequencies at this site; and

That predicted products were not found to potentially cause intermodulation to T-Mobile's proposed operations or to the other licenses currently operating at the PIVA033-VA-Hampton-Wythe site; and

That no additional isolation needs to be provided between antennas in the horizontal and vertical planes, and the attenuation along the nadir and zenith associated with vertical plane radiation patterns; and

That after examination the levels of RF energy present at the PIVA033-VA-Hampton-Wythe site, receiver sensitivity will not be degraded by either the existing or T-Mobile's proposed operations; and

That, if interference were to occur as a result of T-Mobile's operations, T-Mobile would be expected to recognize its responsibility to act promptly to take steps necessary to correct the interference, including, but not limited to, filtering and frequency coordination; and

In summary, it is stated here that there is not an indication that the installation being proposed by T-Mobile will create interference to their own operations, or the operations of any of the services currently operating at the PIVA033-VA-Hampton-Wythe site. Even in the event that, upon installation of T-Mobile's equipment, interference was determined to exist and to be the actual interference source, frequency coordination and filtering would be T-Mobile's primary corrective course of action, and should successfully eliminate the problem.

October 9, 2017

Certain generic technical assumptions regarding power settings, filtering, and equipment characteristics were made in preparing this analysis, as this technical information was not made available by the client.

Thank You for Using Sitesafe for Your RF Engineering Needs.