

REPLY TO
ATTENTION OFDEPARTMENT OF THE ARMY
ARMY SPECTRUM MANAGEMENT OFFICE
6916 COOPER AVENUE, OPERATION BUILDING
FORT MEADE, MD 20755-7901

SAIS-AOS-P

26 August 2016

MEMORANDUM FOR DEPARTMENT OF COMMERCE, ATTN: CHAIRMAN, IRAC
SPECTRUM PLANNING SUBCOMMITTEE, ROOM 1087,
WASHINGTON, DC 20230SUBJECT: Revised Certification of Spectrum Support for Stage 4 MASTR V VHF/UHF Base
Station

1. Reference:

- a. NTIA Certification of Spectrum Support, 06 Apr 16, system: MASTR V VHF/UHF Base Station, SPS-18773/6, (Doc. 39314/6), Encl 1.
- b. EL-CID File, 01 Aug 16, subj: System Review of the Stage 4 MASTR V VHF/UHF Base Station, Encl 2.

2. Request Ref 1a be revised to add antenna Model "SC331-ST2LDF(D01-G10)".



3. The point of contact for information concerning frequency allocation for this system is Mr. Charles Briggs, SAIS-AOS-P, (301) 225-3757, E-Mail: Charles.L.Briggs4.ctr@Mail.Mil or Mr. Douglas E. Jones, SAIS-AOS-P, (301) 225-3773, E-Mail: Douglas.E.Jones120.civ@mail.mil.

2 Encls
as
DOUGLAS E. JONES
Army SPS Representative

CF: w/o encl

Cdr, Defense Systems Technical Area Tasks (DS TAT), ATTN: 15-1097 (C. Briggs),
6916 Cooper Avenue, Operations Building, Fort Meade, MD 20755-7901

FORM NTIA-44 (3/91)		U.S. DEPARTMENT OF COMMERCE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION		Classification UNCLASSIFIED		Control Number Doc. 39314/6 SPS-18773/6	
CERTIFICATION OF SPECTRUM SUPPORT							
Recipient Agency Air Force		System MASTR V VHF/UHF Base Station				Stage of Review 4 – Operational	
Section 1: OPERATING CHARACTERISTICS FOR WHICH SUPPORT IS CERTIFIED							
Frequency (MHz)	Emissions	Mean Power (W)	Station Class		Operating Location		
162.0375-173.2 173.4-174	8K00F1D 8K10F1D 8K10F1E 9K70D1W 9K80F1D 9K80D7W	110	FB FBR FX		US&P		
150.05-150.8 162.0375-173.2 173.4-174	7K69F1E 8K10F1D 8K10F1E 9K35G1W 9K64G1W 9K70D1W 9K80D7W	10-100					
380-399.9	8K00F1D 8K10F1D 8K10F1E 8K40F1D 9K70F1D 9K80F1D						
406.1-420	8K00F1D 8K00F1E 8K10F1D 8K10F1E 9K70D1W 9K80D7W						
Section 2: SOURCE DOCUMENTS							
Docket Number	Description of Document					Dated	
SPS-21413/2 SPS-18516/1 SPS-19521/1 SPS-17940/5	Department of Interior Request to Revise Air Force Certification NTIA Preliminary Assessment Air Force Request for Revised Certification of Spectrum Support Air Force Replacement Request for Stage 4 Spectrum Support					February 9, 2016 March 2, 2012 May 22, 2013 November 25, 2014	
Section 3: SPECTRUM PLANNING SUBCOMMITTEE (SPS) RECOMMENDATIONS							
<p>The SPS reviewed this system under the provisions of Chapter 10 of the NTIA Manual and recommends that:</p> <ol style="list-style-type: none"> 1. NTIA certify Stage 4 spectrum support for the MASTR V VHF/UHF Base Station as specified in Section 1. 2. Air Force be aware that any use of the bands 162.0375-173.2 MHz, 173.4-174 MHz, and 406.1-420 MHz by the military services is limited to non-tactical or intra-base operations subject to the provisions of the channeling plan specified in Sections 4.3.7 and 4.3.9 of the NTIA Manual, as referenced in Footnote G5 to the National Table of Frequency Allocations. 3. Air Force conduct operations of this system in the band 380-399.9 MHz in accordance with the provisions of Footnote G27 to the National Table of Frequency Allocations, which limits fixed and mobile services in that band to the military services. 4. Air Force establish and operate this system in accordance with the provisions of Section 8.2.19 of the NTIA Manual. 							
(Continued on Page 2)							
Downgrading Instructions		Classification UNCLASSIFIED			Page Number 1 of 2 pages		

Form NTIA-44 (3/91)	Classification	System
CONTINUATION PAGE	UNCLASSIFIED	MASTR V VHF/UHF Base Station
Section 3: SPS RECOMMENDATIONS		
(Continued from Page 1)		
<ol style="list-style-type: none"> 5. Air Force coordinate all frequency assignment actions for the band 380-399.9 MHz with the Military Advisory Group of the FAS in accordance with Section 1.3.2 of the NTIA Manual. 6. Air Force, if frequency availability dictates use of the bands 162.0375-173.2 MHz, 173.4-174 MHz or 406.1-420 MHz, give preference in selecting operating frequencies, insofar as possible to those channels designed "DoD" or "AGA" in the IRAC Supplement to the NTIA Manual. 7. Air Force be aware that congestion in the electromagnetic environment may preclude successfully coordinating interference-free frequency assignments in some geographical areas of the US&P, particularly in the bands 162.0375-173.2 MHz, 173.4-174 MHz and 406.1-420 MHz. 8. Air Force protect personnel from radiation levels that exceed generally accepted exposure criteria. 		
Name/Title of Recommending Official	Signature	Date
Binyam Tadesse SPS Vice Chairman		APR 06 2016
Section 4: NTIA CERTIFICATION		
<p>The Office of Spectrum Management concurs with the SPS recommendations in Section 3. This office certifies Stage 4 spectrum support for this system. This certification supersedes IRAC Doc. 39314/5 (SPS-18773/5) dated May 6, 2014.</p>		
Name/Title of Certifying Official	Signature	Date
Peter A. Tenhula Deputy Associate Administrator		APR 06 2016
Distribution	Classification	Page Number
IRAC, SPS, FAS	UNCLASSIFIED	2 of 2 pages

UNCLASSIFIED	
SECURITY SUMMARY & SPECIAL HANDLING REQUIREMENTS	
<p>The System Name is : MASTR V VHF/UHF Base Station</p> <p>The overall classification of this application is : UNCLASSIFIED</p>	
<p>Refer to your Security Manual for further guidance.</p>	
<p>The Application Level Special Handling is : A</p> <p>Approved for public release; distribution is unlimited (DoD Directive 5230.24)</p>	
DOWNGRADING INSTRUCTIONS	J/F 12/9628/2
	CLASSIFICATION UNCLASSIFIED
Special Handling Instruction : A	

CLASSIFICATION UNCLASSIFIED		PAGE 2	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION			
SELECTED FREQUENCIES			
(U) 150.0500 MHz - 150.8000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 173.4000 MHz - 174.0000 MHz		(U) 350.0000 MHz - 399.9000 MHz (U) 406.1000 MHz - 420.0000 MHz	
System Name (Nomenclature) (U)MASTR V VHF/UHF Base Station		Stage (U) 4 - Operational	
Coord. ID/Coord. Num. J/F 12/9628/2		NTIA Certified (U) No	
Agency (U)AF - Department of the Air Force		Date Of Import 8/29/2016 5:33:35 PM (GMT)	
Overall Security Unclassified		Date/Time Last Mod. 8/29/2016 5:42:04 PM (GMT)	
GEOGRAPHIC AREAS FOR STAGE 4			
(U) , (U) US&P Location Type : (U) Polygon			
Control Numbers: SPS- 21945/1		Predefined Trunking? (U) No	
SYSTEM INFORMATION			
System Description: (U) Provides secure and non-secure voice and data communications for a large number of users			
System Relationship and Essentiality: (U) P25 Trunking capability spectrum efficient communications and interoperability			
TARGET DATES			
System Termination:		System Activation: (U) 7/1/2010 System Approval: (U) 5/1/2010	
NSEP Use: (U) No		ITU Waiver: (U) No	
Number Of Units:			
Estimated Cost of the System: (U) \$ 18000000			
Replacement Information: (U) NA			
CLASSIFICATION UNCLASSIFIED			

CLASSIFICATION		UNCLASSIFIED		PAGE 3	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION					
STATIONS					
Station Name : (U) Land Mobile - Generic					
Station Name : (U) Fixed Base station <u>Transmitters</u> Nomenclature : (U) Base station (UHF) Nomenclature : (U) Fixed Base Station (VHF) Nomenclature : (U) Master V-H00M1 M150.8-M174 Nomenclature : (U) MASTR V, UHF Model SV-RTXMV <u>Receivers</u> Nomenclature : (U) Base Station RX Nomenclature : (U) Base Station (VHF) Nomenclature : (U) MASV-H00M1 M150.8-M174 Nomenclature : (U) MASTR V, UHF Model SV-RTXMV <u>Antennas</u> Nomenclature : (U) MASTR V TX antenna Nomenclature : (U) MASTR V RX antenna Nomenclature : (U) Fixed Base Station (VHF) Nomenclature : (U) ANDREW DB616E-BC Nomenclature : (U) DS4A00F36U-N Nomenclature : (U) SC331-ST2LDF(D01-G10)					
Station Name : (U) Fixed - Generic					
STATION INFORMATION					
Transmitting Station:			Receiving Station:		
(U)Fixed Base station - Generic			(U)Fixed - Generic		
Station Class: FX			Radio Service: Fixed		
LINK INFORMATION					
Transmitter:			Transmitter Antenna:		
(U) Base station (UHF)			(U) MASTR V RX antenna		
Receiver:			Receiver Antenna:		
(U) Generic			(U) Generic		
SELECTED MODES					
Frequency		Emission Designator		Power	
(U) 380.0000 MHz - 399.9000 MHz		(U) 8K40F1D		(U) 100 W Mean	
(U) 380.0000 MHz - 399.9000 MHz		(U) 9K70F1D		(U) 100 W Mean	
				Notes	
				PRI	
				PRI	
CLASSIFICATION		UNCLASSIFIED			

CLASSIFICATION UNCLASSIFIED		PAGE 4	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION			
(U) 380.0000 MHz - 399.9000 MHz (U) 380.0000 MHz - 399.9000 MHz	(U) 9K80F1D (U) 8K00F1D	(U) 100 W Mean (U) 100 W Mean	PRI PRI
LINK INFORMATION			
Transmitter: (U) Base station (UHF)		Transmitter Antenna: (U) MASTR V TX antenna	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz	Emission Designator (U) 9K70F1D (U) 8K40F1D (U) 9K80F1D (U) 8K00F1D (U) 9K70F1D (U) 8K40F1D (U) 9K80F1D (U) 8K00F1D	Power (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean	Notes PRI PRI PRI PRI PRI PRI PRI PRI
LINK INFORMATION			
Transmitter: (U) Base station (UHF)		Transmitter Antenna: (U) SC331-ST2LDF(D01-G10)	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 380.0000 MHz - 399.9000 MHz (U) 380.0000 MHz - 399.9000 MHz (U) 380.0000 MHz - 399.9000 MHz (U) 380.0000 MHz - 399.9000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz	Emission Designator (U) 9K70F1D (U) 8K40F1D (U) 9K80F1D (U) 8K00F1D (U) 8K40F1D (U) 8K00F1D (U) 9K70F1D (U) 9K80F1D	Power (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean	Notes PRI PRI PRI PRI PRI PRI PRI PRI
CLASSIFICATION UNCLASSIFIED			

CLASSIFICATION UNCLASSIFIED		PAGE 5	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION			
LINK INFORMATION			
Transmitter: (U) Fixed Base Station (VHF)		Transmitter Antenna: (U) Fixed Base Station (VHF)	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 150.0500 MHz - 150.8000 MHz (U) 150.0500 MHz - 150.8000 MHz (U) 150.0500 MHz - 150.8000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 173.4000 MHz - 174.0000 MHz (U) 173.4000 MHz - 174.0000 MHz (U) 173.4000 MHz - 174.0000 MHz	Emission Designator (U) 9K64G1W (U) 7K69F1E (U) 9K35G1W (U) 7K69F1E (U) 9K64G1W (U) 9K35G1W (U) 9K35G1W (U) 7K69F1E (U) 9K64G1W	Power (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean	Notes PRI PRI PRI PRI PRI PRI PRI PRI PRI
LINK INFORMATION			
Transmitter: (U) Master V-H00M1 M150.8-M174		Transmitter Antenna: (U) ANDREW DB616E-BC	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 162.0375 MHz - 173.2000 MHz (U) 173.4000 MHz - 174.0000 MHz (U) 173.4000 MHz - 174.0000 MHz (U) 173.4000 MHz - 174.0000 MHz (U) 173.4000 MHz - 174.0000 MHz	Emission Designator (U) 9K70D1W (U) 8K10F1E (U) 9K80F1D (U) 9K80D7W (U) 8K00F1D (U) 8K00F1D (U) 8K10F1E (U) 9K70D1W (U) 9K80D7W (U) 9K80F1D	Power (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean (U) 110 W Mean	Notes PRI PRI PRI PRI PRI PRI PRI PRI PRI PRI
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CLASSIFICATION UNCLASSIFIED			

CLASSIFICATION UNCLASSIFIED		PAGE 6	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION			
LINK INFORMATION			
Transmitter: (U) MASTR V, UHF Model SV-RTXMV		Transmitter Antenna: (U) DS4A00F36U-N	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz	Emission Designator (U) 8K00F1E (U) 9K80D7W (U) 9K70D1W (U) 8K00F1D	Power (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean	Notes PRI PRI PRI PRI
STATION INFORMATION			
Transmitting Station: (U)Fixed Base station - Generic		Receiving Station: (U)Land Mobile - Generic	
Station Class: FB		Radio Service: Land Mobile	
LINK INFORMATION			
Transmitter: (U) Base station (UHF)		Transmitter Antenna: (U) MASTR V RX antenna	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 350.0000 MHz - 399.9000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz (U) 406.1000 MHz - 420.0000 MHz	Emission Designator (U) 8K00F1D (U) 9K80F1D (U) 9K70F1D (U) 8K40F1D (U) 8K00F1D (U) 9K80F1D (U) 8K40F1D (U) 9K70F1D	Power (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean (U) 100 W Mean	Notes PRI PRI PRI PRI PRI PRI PRI PRI
CLASSIFICATION UNCLASSIFIED			

FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION

LINK INFORMATION

Transmitter:
(U) Base station (UHF)

Transmitter Antenna:
(U) MASTR V TX antenna

Receiver:
(U) GenericReceiver Antenna:
(U) Generic

SELECTED MODES

Frequency
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz

Emission Designator
(U) 8K00F1D
(U) 9K80F1D
(U) 9K70F1D
(U) 8K40F1D

Power
(U) 100 W Mean
(U) 100 W Mean
(U) 100 W Mean
(U) 100 W Mean

Notes
PRI
PRI
PRI
PRI

LINK INFORMATION

Transmitter:
(U) Base station (UHF)

Transmitter Antenna:
(U) SC331-ST2LDF(D01-G10)

Receiver:
(U) GenericReceiver Antenna:
(U) Generic

SELECTED MODES

Frequency
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz
(U) 380.0000 MHz - 399.9000 MHz
(U) 406.1000 MHz - 420.0000 MHz
(U) 406.1000 MHz - 420.0000 MHz
(U) 406.1000 MHz - 420.0000 MHz
(U) 406.1000 MHz - 420.0000 MHz

Emission Designator
(U) 8K00F1D
(U) 9K80F1D
(U) 8K40F1D
(U) 9K70F1D
(U) 9K70F1D
(U) 8K40F1D
(U) 8K00F1D
(U) 9K80F1D

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Notes
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LINK INFORMATION

Transmitter:
(U) Fixed Base Station (VHF)

Transmitter Antenna:
(U) Fixed Base Station (VHF)

Receiver:
(U) Generic

Receiver Antenna:
(U) Generic

CLASSIFICATION UNCLASSIFIED		PAGE 8	
FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION			
SELECTED MODES			
Frequency	Emission Designator	Power	Notes
(U) 150.0500 MHz - 150.8000 MHz	(U) 9K64G1W	(U) 100 W Mean	PRI
(U) 150.0500 MHz - 150.8000 MHz	(U) 7K69F1E	(U) 100 W Mean	PRI
(U) 150.0500 MHz - 150.8000 MHz	(U) 9K35G1W	(U) 100 W Mean	PRI
(U) 162.0375 MHz - 173.2000 MHz	(U) 7K69F1E	(U) 100 W Mean	PRI
(U) 162.0375 MHz - 173.2000 MHz	(U) 9K64G1W	(U) 100 W Mean	PRI
(U) 162.0375 MHz - 173.2000 MHz	(U) 9K35G1W	(U) 100 W Mean	PRI
(U) 173.4000 MHz - 174.0000 MHz	(U) 7K69F1E	(U) 100 W Mean	PRI
(U) 173.4000 MHz - 174.0000 MHz	(U) 9K35G1W	(U) 100 W Mean	PRI
(U) 173.4000 MHz - 174.0000 MHz	(U) 9K64G1W	(U) 100 W Mean	PRI
LINK INFORMATION			
Transmitter: (U) Master V-H00M1 M150.8-M174		Transmitter Antenna: (U) ANDREW DB616E-BC	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency	Emission Designator	Power	Notes
(U) 162.0375 MHz - 173.2000 MHz	(U) 8K00F1D	(U) 110 W Mean	PRI
(U) 162.0375 MHz - 173.2000 MHz	(U) 9K80F1D	(U) 110 W Mean	PRI
(U) 173.4000 MHz - 174.0000 MHz	(U) 9K80F1D	(U) 110 W Mean	PRI
(U) 173.4000 MHz - 174.0000 MHz	(U) 8K00F1D	(U) 110 W Mean	PRI
LINK INFORMATION			
Transmitter: (U) MASTR V, UHF Model SV-RTXMV		Transmitter Antenna: (U) DS4A00F36U-N	
Receiver: (U) Generic		Receiver Antenna: (U) Generic	
SELECTED MODES			
Frequency	Emission Designator	Power	Notes
(U) 406.1000 MHz - 420.0000 MHz	(U) 8K00F1D	(U) 100 W Mean	PRI
(U) 406.1000 MHz - 420.0000 MHz	(U) 8K00F1E	(U) 100 W Mean	PRI
(U) 406.1000 MHz - 420.0000 MHz	(U) 9K70D1W	(U) 100 W Mean	PRI
(U) 406.1000 MHz - 420.0000 MHz	(U) 9K80D7W	(U) 100 W Mean	PRI
CLASSIFICATION UNCLASSIFIED			

FULL RECORD PRINT FOR MASTR V VHF/UHF BASE STATION

CLASSIFICATION UNCLASSIFIED		PAGE 10
TRANSMITTER EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) MASTR V, UHF Model SV-RTXMV		Manufacturer: (U)HARRIS CORP
NTIA Approval Status: (U) Approved		Coordination ID: J/F 12
Date of Import: 8/29/2016 5:33:35 PM (GMT)		Date/Time Last Mod.: 7/29/2016 6:48:27 PM (GMT)
Fcc Acc. Number:		Radar/Comm: (U) Communications
Model Name: (U)MASTR V, UHF Model SV-RTXMV		Output Device: (U)Transistor
Tuning Method: (U) Synthesizer		Supp. of Harmonics: (U) No
Freq. Stability: (U) 0.1ppm		
POWER		
Power Type: Mean		
Power: (U) 100 W		
2ND HARMONIC CURVE		
(UNCLASSIFIED)		
Atten. -70.0 dB	Offset (Fo) 0.00000 kHz	
3RD HARMONIC CURVE		
(UNCLASSIFIED)		
Atten. -70.0 dB	Offset (Fo) 0.00000 kHz	
CLASSIFICATION UNCLASSIFIED		

TRANSMITTER EQUIPMENT CHARACTERISTICS

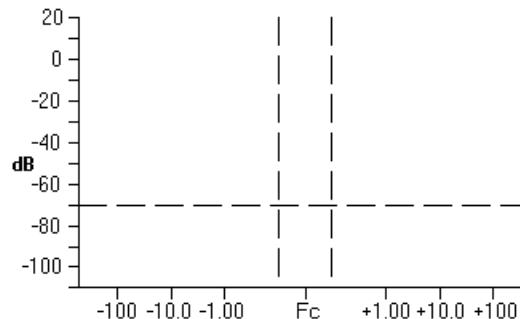
SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission

Atten.

-70.0 dB



FREQUENCIES

Tuning Range: (U) 406.0000 MHz - 420.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 6.2500 kHz

Freq Stability: (U) 0.1ppm

Number of Frequencies Required: (U) 10

Min. Separation: (U) 0.3000000 MHz

Supp. of Harmonics: (U) No

GPS EMISSION LEVELS

Wideband 1164-1240 MHz: (U) -133 dBw/MHz

Wideband 1559-1610 MHz: (U) -132 dBw/MHz

Narrowband 1164-1240 MHz: (U) -166 dBw

Narrowband 1559-1610 MHz: (U) -166 dBw

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Necessary BW: (U) 8.0000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 8.0000 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Max. Modulation Frequency: (U) 2.5000 kHz

Dig. Modulation Type:
(U) OTH - Other

Digital Bit Rate: (U) 12000 bps

Digital Peak Deviation: (U) 1.5625 kHz

Deviation Ratio: (U) 0.625

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

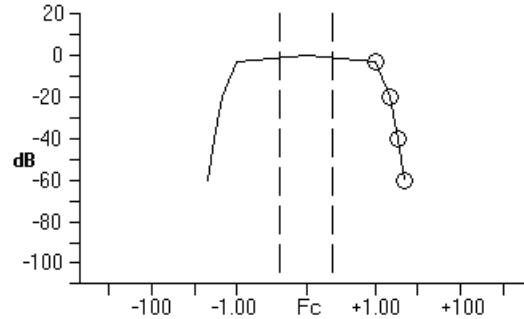
Level **Offset (Fo)**

-3.00 dB 1.0000 kHz

-20.0 dB 2.1500 kHz

-40.0 dB 3.5000 kHz

-60.0 dB 4.7500 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1E

Necessary BW: (U) 8.0000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 8.0000 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Max. Modulation Frequency: (U) 2.5000 kHz

Dig. Modulation Type:
(U) OTH - Other

Digital Bit Rate: (U) 12000 bps

Digital Peak Deviation: (U) 1.5625 kHz

Deviation Ratio: (U) 0.625

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

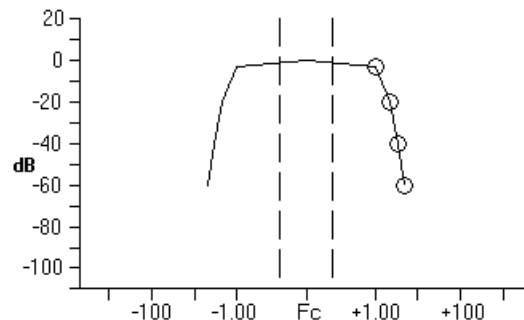
Level **Offset (Fo)**

-3.00 dB 1.0000 kHz

-20.0 dB 2.1500 kHz

-40.0 dB 3.5000 kHz

-60.0 dB 4.7500 kHz



CLASSIFICATION UNCLASSIFIED	PAGE 13										
TRANSMITTER EQUIPMENT CHARACTERISTICS											
EMISSION DESIGNATORS											
Em. Designator: (U) 9K70D1W	Necessary BW: (U) 9.7000 kHz										
Measured/Calculated: (U) Measured	Occupied Bandwidth: (U) 9.8000 kHz										
Modulation Type: (U) Digital Modulation	Spread Spectrum: No										
Max. Modulation Frequency: (U) 2.5000 kHz											
Dig. Modulation Type: (U) OTH - Other	Digital Bit Rate: (U) 12000 bps										
Digital Peak Deviation: (U) 1.5625 kHz	Deviation Ratio: (U) 0.625										
FUNDAMENTAL CURVE											
<p>(UNCLASSIFIED)</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <p>Meas/Calc: Measured</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Level</th> <th style="text-align: left;">Offset (Fo)</th> </tr> </thead> <tbody> <tr> <td>-3.00 dB</td> <td>1.2500 kHz</td> </tr> <tr> <td>-20.0 dB</td> <td>2.7500 kHz</td> </tr> <tr> <td>-40.0 dB</td> <td>3.3500 kHz</td> </tr> <tr> <td>-60.0 dB</td> <td>3.6000 kHz</td> </tr> </tbody> </table> </div> <div style="width: 50%; text-align: center;"> </div> </div>		Level	Offset (Fo)	-3.00 dB	1.2500 kHz	-20.0 dB	2.7500 kHz	-40.0 dB	3.3500 kHz	-60.0 dB	3.6000 kHz
Level	Offset (Fo)										
-3.00 dB	1.2500 kHz										
-20.0 dB	2.7500 kHz										
-40.0 dB	3.3500 kHz										
-60.0 dB	3.6000 kHz										
EMISSION DESIGNATORS											
Em. Designator: (U) 9K80D7W	Necessary BW: (U) 9.8000 kHz										
Measured/Calculated: (U) Measured	Occupied Bandwidth: (U) 9.8000 kHz										
Modulation Type: (U) Digital Modulation	Spread Spectrum: No										
Max. Modulation Frequency: (U) 2.5000 kHz											
Dig. Modulation Type: (U) OTH - Other	Digital Bit Rate: (U) 12000 bps										
Deviation Ratio: (U) 0.625											
CLASSIFICATION UNCLASSIFIED											

TRANSMITTER EQUIPMENT CHARACTERISTICS

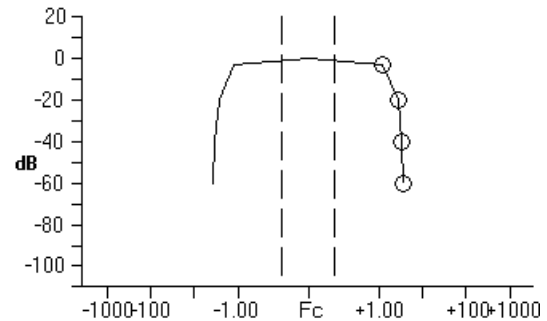
Digital Peak Deviation: (U) 1.5625 kHz

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

Level	Offset (Fo)
-3.00 dB	1.2500 kHz
-20.0 dB	2.7500 kHz
-40.0 dB	3.3500 kHz
-60.0 dB	3.6000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) Fixed Base Station (VHF)

Manufacturer: (U) HARRIS CORP

NTIA Approval Status: (U) Approved

Coordination ID: J/F 12

Date of Import: 8/29/2016 5:33:35 PM (GMT)

Date/Time Last Mod.: 7/29/2016 6:48:28 PM

Fcc Acc. Number: (U) OWDTR-0065-E

(GMT)
Radar/Comm: (U) Communications

Model Name: (U) Master V

Output Device: (U) Transistor

Tuning Method: (U) Synthesizer

Supp. of Harmonics: (U) Yes

Freq. Stability: (U) 0.1ppm

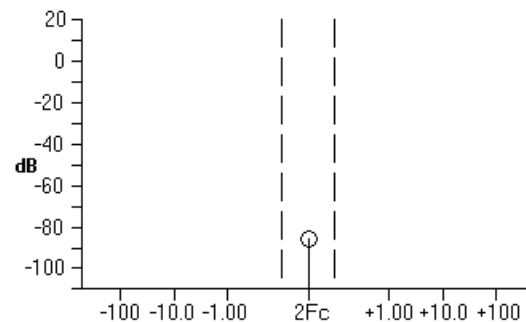
POWER

Power Type: Mean

Power: (U) 100 W

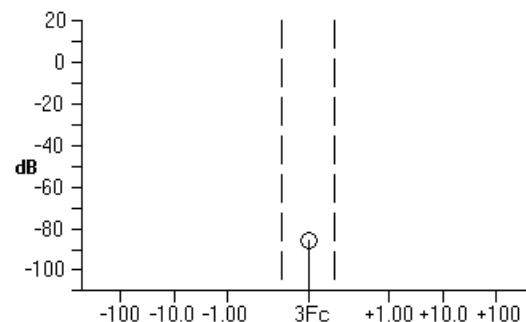
2ND HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dBOffset (Fo)
0.00000 kHz

3RD HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dBOffset (Fo)
0.00000 kHz

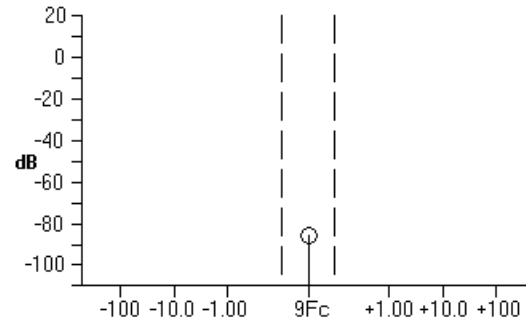
TRANSMITTER EQUIPMENT CHARACTERISTICS

OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dB

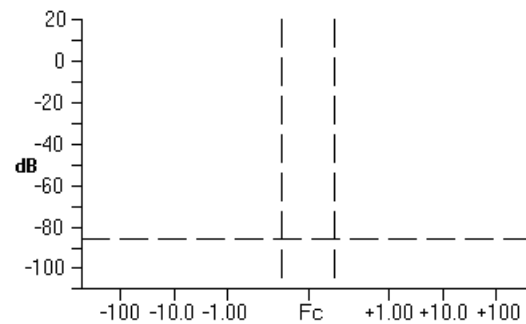
Offset (Fo)
0.00000 kHz



SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission
Atten.
-86.0 dB



FREQUENCIES

Tuning Range: (U) 150.0000 MHz - 174.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 1.2500 kHz

Freq Stability: (U) 0.1ppm

Number of Frequencies Required: (U) 1

Min. Separation: (U) 0.6000000 MHz

Supp. of Harmonics: (U) Yes

EMISSION DESIGNATORS

Em. Designator: (U) 7K69F1E

Necessary BW: (U) 7.6900 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 7.6900 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

TRANSMITTER EQUIPMENT CHARACTERISTICS

Max. Modulation Frequency: (U) 2.5000 kHz

Dig. Modulation Type:
(U) Multi-h CPM - Multi-index Continuous
Phase Modulation

Digital Bit Rate: (U) 9800 bps

Number of Digital States: (U) 4

Deviation Ratio: (U) 0.625

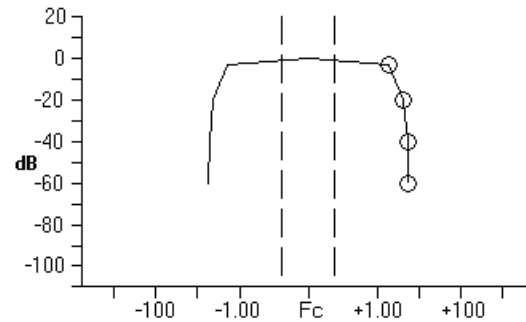
Digital Peak Deviation: (U) 1.5625 kHz

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

Level	Offset (Fo)
-3.00 dB	2.0000 kHz
-20.0 dB	4.3000 kHz
-40.0 dB	5.3000 kHz
-60.0 dB	5.4000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K64G1W

Necessary BW: (U) 9.6400 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 9.6400 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Max. Modulation Frequency: (U) 4.0000 kHz

Dig. Modulation Type:
(U) DQPSK - Differential Quadrature Phase
Shift Keying

Digital Bit Rate: (U) 12000 bps

Number of Digital States: (U) 4

Deviation Ratio: (U) 0.625

Digital Peak Deviation: (U) 2.5000 kHz

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

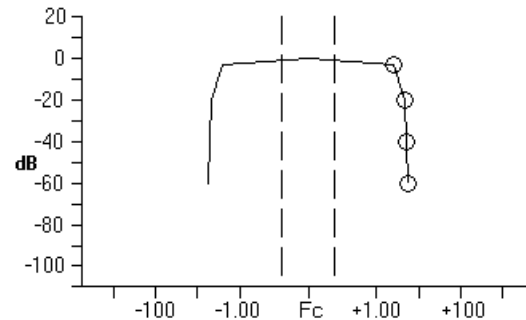
Level **Offset (Fo)**

-3.00 dB 2.5000 kHz

-20.0 dB 4.6700 kHz

-40.0 dB 5.2500 kHz

-60.0 dB 5.4500 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K35G1W**Necessary BW:** (U) 9.3500 kHz**Measured/Calculated:** (U) Measured**Occupied Bandwidth:** (U) 9.3500 kHz**Modulation Type:** (U) Digital Modulation**Spread Spectrum:** No**Max. Modulation Frequency:** (U) 4.0000 kHz**Dig. Modulation Type:**
(U) CQPSK - Coherent Quadrature Phase
Shift Keying**Digital Bit Rate:** (U) 12000 bps**Number of Digital States:** (U) 4**Deviation Ratio:** (U) 0.625**Digital Peak Deviation:** (U) 2.5000 kHz

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

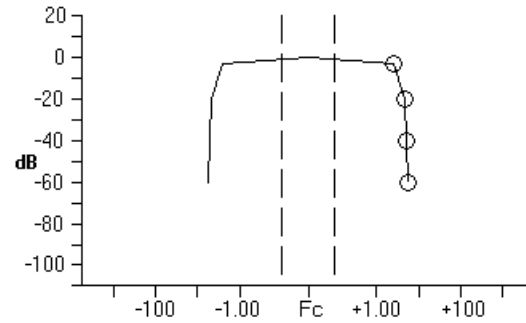
Meas/Calc: Measured**Level** **Offset (Fo)**

-3.00 dB 2.5000 kHz

-20.0 dB 4.6700 kHz

-40.0 dB 5.2500 kHz

-60.0 dB 5.4500 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 20	
TRANSMITTER EQUIPMENT CHARACTERISTICS			
Nomenclature: (U) Base station (UHF)		Manufacturer: (U)HARRIS CORP	
NTIA Approval Status: (U) Approved		Coordination ID: J/F 12	
Date of Import: 8/29/2016 5:33:35 PM (GMT)		Date/Time Last Mod.: 7/29/2016 6:48:29 PM (GMT)	
Fcc Acc. Number: (U) NA		Radar/Comm: (U) Communications	
Model Name: (U)M/A COM Model: MASV-N00M1 & MASV-R004		Output Device: (U)Transistor	
Tuning Method: (U) Synthesizer		Supp. of Harmonics: (U) No	
Freq. Stability: (U) 0.1ppm			
POWER			
Power Type: Mean			
Power: (U) 100 W			
2ND HARMONIC CURVE			
(UNCLASSIFIED)			
Atten. -70.0 dB	Offset (Fo) 0.00000 kHz	<p>The graph displays the 2nd harmonic curve. The y-axis represents power in dB, ranging from -100 to 20. The x-axis represents frequency offset in kHz, ranging from -100 to +100. A single peak is visible at the center frequency, labeled 2Fc, with a value of approximately -70 dB. The peak is marked with a circle and a vertical line extending to the x-axis.</p>	
3RD HARMONIC CURVE			
(UNCLASSIFIED)			
Atten. -70.0 dB	Offset (Fo) 0.00000 kHz	<p>The graph displays the 3rd harmonic curve. The y-axis represents power in dB, ranging from -100 to 20. The x-axis represents frequency offset in kHz, ranging from -100 to +100. A single peak is visible at the center frequency, labeled 3Fc, with a value of approximately -70 dB. The peak is marked with a circle and a vertical line extending to the x-axis.</p>	
CLASSIFICATION UNCLASSIFIED			

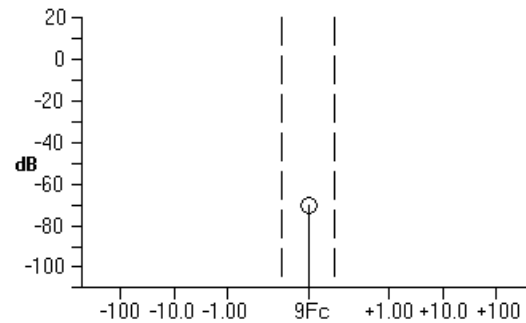
TRANSMITTER EQUIPMENT CHARACTERISTICS

OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-70.0 dB

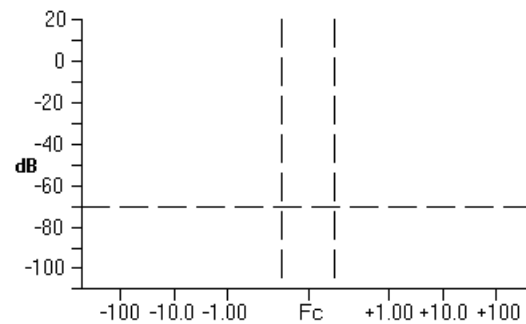
Offset (Fo)
0.00000 kHz



SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission
Atten.
-70.0 dB



FREQUENCIES

Tuning Range: (U) 350.0000 MHz - 520.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 12.500 kHz

Freq Stability: (U) 0.1ppm

Number of Frequencies Required: (U) 1600

Min. Separation: (U) 0.000001000000 MHz

Supp. of Harmonics: (U) No

GPS EMISSION LEVELS

Wideband 1164-1240 MHz: (U) 0.000 dBw/MHz

Wideband 1559-1610 MHz: (U) 0.000 dBw/MHz

Narrowband 1164-1240 MHz: (U) -80.2 dBw

Narrowband 1559-1610 MHz: (U) -81.0 dBw

CLASSIFICATION UNCLASSIFIED	PAGE 22																																		
TRANSMITTER EQUIPMENT CHARACTERISTICS																																			
EMISSION DESIGNATORS																																			
Em. Designator: (U) 8K00F1D	Necessary BW: (U) 8.0000 kHz																																		
Measured/Calculated: (U) Calculated	Occupied Bandwidth: (U) 8.0000 kHz																																		
Modulation Type: (U) Digital Modulation	Spread Spectrum: No																																		
Max. Modulation Frequency: (U) 2.5000 kHz																																			
Dig. Modulation Type: (U) OTH - Other																																			
Number of Digital States: (U) 4	Digital Bit Rate: (U) 12000 bps																																		
Digital Peak Deviation: (U) 1.5625 kHz	Deviation Ratio: (U) 0.625																																		
FUNDAMENTAL CURVE																																			
(UNCLASSIFIED)																																			
Meas/Calc: Measured <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Level</th> <th style="text-align: left; border-bottom: 1px solid black;">Offset (Fo)</th> </tr> </thead> <tbody> <tr> <td>-3.00 dB</td> <td>1.4500 kHz</td> </tr> <tr> <td>-20.0 dB</td> <td>4.5000 kHz</td> </tr> <tr> <td>-40.0 dB</td> <td>6.8500 kHz</td> </tr> <tr> <td>-60.0 dB</td> <td>9.0500 kHz</td> </tr> </tbody> </table>	Level	Offset (Fo)	-3.00 dB	1.4500 kHz	-20.0 dB	4.5000 kHz	-40.0 dB	6.8500 kHz	-60.0 dB	9.0500 kHz	<table border="1" style="display: none;"> <caption>Fundamental Curve Data Points (approximate)</caption> <thead> <tr> <th>Offset (kHz)</th> <th>Level (dB)</th> </tr> </thead> <tbody> <tr><td>-1.00</td><td>0</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>+1.00</td><td>0</td></tr> <tr><td>+2.00</td><td>-10</td></tr> <tr><td>+3.00</td><td>-20</td></tr> <tr><td>+4.00</td><td>-30</td></tr> <tr><td>+5.00</td><td>-40</td></tr> <tr><td>+6.00</td><td>-50</td></tr> <tr><td>+7.00</td><td>-60</td></tr> <tr><td>+8.00</td><td>-70</td></tr> <tr><td>+9.00</td><td>-80</td></tr> </tbody> </table>	Offset (kHz)	Level (dB)	-1.00	0	0	0	+1.00	0	+2.00	-10	+3.00	-20	+4.00	-30	+5.00	-40	+6.00	-50	+7.00	-60	+8.00	-70	+9.00	-80
Level	Offset (Fo)																																		
-3.00 dB	1.4500 kHz																																		
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+6.00	-50																																		
+7.00	-60																																		
+8.00	-70																																		
+9.00	-80																																		
EMISSION DESIGNATORS																																			
Em. Designator: (U) 9K80F1D	Necessary BW: (U) 9.8000 kHz																																		
Measured/Calculated: (U) Calculated	Occupied Bandwidth: (U) 9.8000 kHz																																		
Modulation Type: (U) Digital Modulation	Spread Spectrum: No																																		
Max. Modulation Frequency: (U) 2.5000 kHz																																			
Dig. Modulation Type:																																			
CLASSIFICATION UNCLASSIFIED																																			

CLASSIFICATION UNCLASSIFIED		PAGE 23										
TRANSMITTER EQUIPMENT CHARACTERISTICS												
(U) OTH - Other												
Digital Peak Deviation: (U) 1.5625 kHz	Deviation Ratio: (U) 0.625											
FUNDAMENTAL CURVE												
(UNCLASSIFIED)												
Meas/Calc: Measured <table border="1"> <thead> <tr> <th>Level</th> <th>Offset (Fo)</th> </tr> </thead> <tbody> <tr> <td>-3.00 dB</td> <td>2.5000 kHz</td> </tr> <tr> <td>-20.0 dB</td> <td>5.7000 kHz</td> </tr> <tr> <td>-40.0 dB</td> <td>6.9000 kHz</td> </tr> <tr> <td>-60.0 dB</td> <td>7.1000 kHz</td> </tr> </tbody> </table>		Level	Offset (Fo)	-3.00 dB	2.5000 kHz	-20.0 dB	5.7000 kHz	-40.0 dB	6.9000 kHz	-60.0 dB	7.1000 kHz	
Level	Offset (Fo)											
-3.00 dB	2.5000 kHz											
-20.0 dB	5.7000 kHz											
-40.0 dB	6.9000 kHz											
-60.0 dB	7.1000 kHz											
EMISSION DESIGNATORS												
Em. Designator: (U) 9K70F1D	Necessary BW: (U) 9.7000 kHz											
Measured/Calculated: (U) Calculated	Occupied Bandwidth: (U) 9.7000 kHz											
Modulation Type: (U) Digital Modulation	Spread Spectrum: No											
Max. Modulation Frequency: (U) 2.5000 kHz												
Dig. Modulation Type: (U) OTH - Other	Digital Bit Rate: (U) 12000 bps											
Digital Peak Deviation: (U) 1.5625 kHz	Deviation Ratio: (U) 0.625											
		Digital Bit Rate: (U) 12000 bps										
CLASSIFICATION UNCLASSIFIED												

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

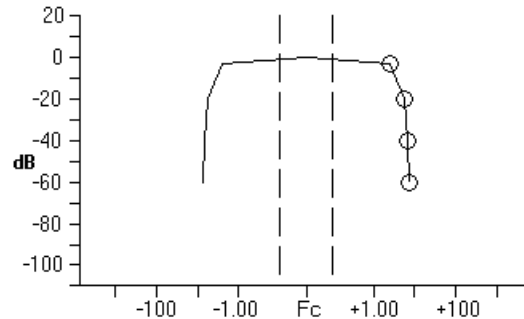
Level **Offset (Fo)**

-3.00 dB 2.5000 kHz

-20.0 dB 5.4500 kHz

-40.0 dB 6.8500 kHz

-60.0 dB 7.3000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8K40F1D

Necessary BW: (U) 8.4000 kHz

Measured/Calculated: (U) Calculated

Occupied Bandwidth: (U) 8.4000 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Max. Modulation Frequency: (U) 2.5000 kHz

Dig. Modulation Type:
(U) OTH - Other

Digital Bit Rate: (U) 1200 bps

Number of Digital States: (U) 4

Deviation Ratio: (U) 0.625

Digital Peak Deviation: (U) 1.5625 kHz

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

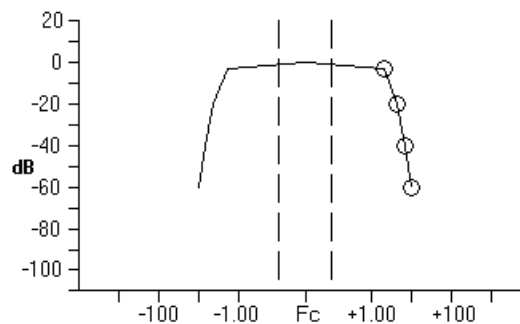
Meas/Calc: Calculated**Level** **Offset (Fo)**

-3.00 dB 1.9500 kHz

-20.0 dB 4.2500 kHz

-40.0 dB 6.9000 kHz

-60.0 dB 9.4000 kHz



TRANSMITTER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) Master V-H00M1 M150.8-M174

Manufacturer: (U) HARRIS CORP

NTIA Approval Status: (U) Approved

Coordination ID: J/F 12

Date of Import: 8/29/2016 5:33:35 PM (GMT)

Date/Time Last Mod.: 7/29/2016 6:48:30 PM

Fcc Acc. Number: (U) OWDTR-0065-E

(GMT)
Radar/Comm: (U) Communications

Model Name: (U) MASV-H001

Output Device: (U) Transistor

Tuning Method: (U) Synthesizer

Supp. of Harmonics: (U) No

Freq. Stability: (U) 0.1ppm

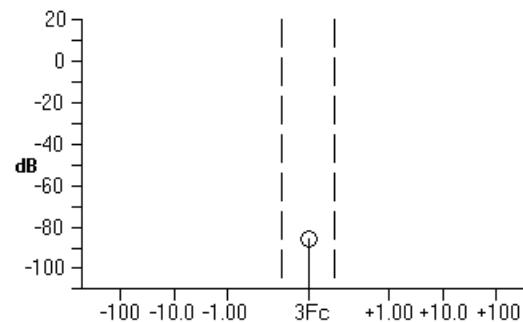
POWER

Power Type: Mean

Power: (U) 110 W

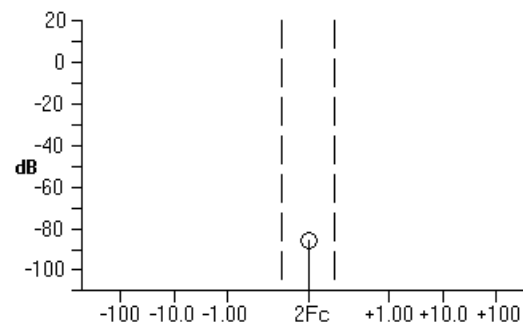
3RD HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dBOffset (Fo)
0.00000 kHz

2ND HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dBOffset (Fo)
0.00000 kHz

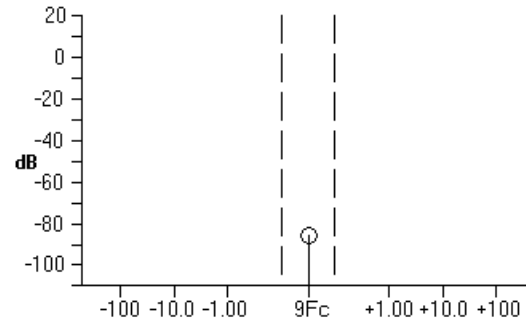
TRANSMITTER EQUIPMENT CHARACTERISTICS

OTHER HARMONIC CURVE

(UNCLASSIFIED)

Atten.
-86.0 dB

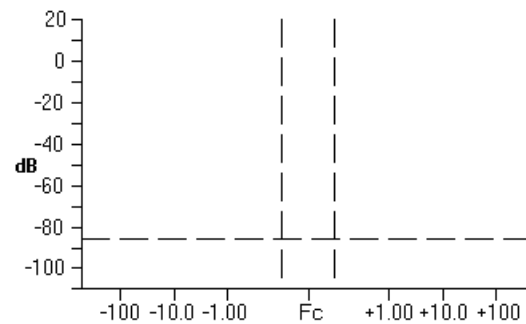
Offset (Fo)
0.00000 kHz



SPURIOUS EMISSION CURVE

(UNCLASSIFIED)

Maximum Spurious Emission
Atten.
-86.0 dB



FREQUENCIES

Tuning Range: (U) 150.8000 MHz - 174.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 6.2500 kHz

Freq Stability: (U) 0.1ppm

Number of Frequencies Required:

Min. Separation:

Supp. of Harmonics: (U) No

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Necessary BW: (U) 8.0000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth:

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

TRANSMITTER EQUIPMENT CHARACTERISTICS

Dig. Modulation Type:
(U)OTH - Other

Digital Bit Rate: (U) 12000 bps

Number of Digital States: (U) 4

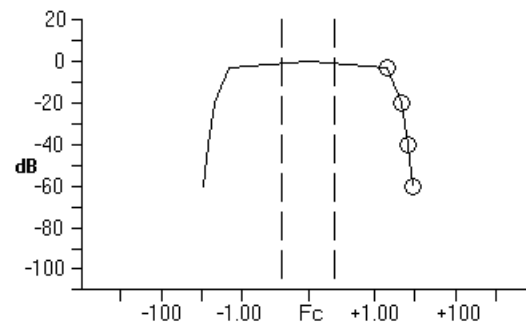
Deviation Ratio: (U) 0.625

Digital Peak Deviation: (U) 2.5000 kHz

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured
Level **Offset (Fo)**
 -3.00 dB 2.0000 kHz
 -20.0 dB 4.5000 kHz
 -40.0 dB 6.8500 kHz
 -60.0 dB 9.1000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K80F1D

Necessary BW: (U) 9.8000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth:

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Dig. Modulation Type:
(U)OTH - Other

Digital Bit Rate: (U) 12000 bps

Number of Digital States: (U) 4

Deviation Ratio: (U) 0.625

Digital Peak Deviation: (U) 2.5000 kHz

TRANSMITTER EQUIPMENT CHARACTERISTICS

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

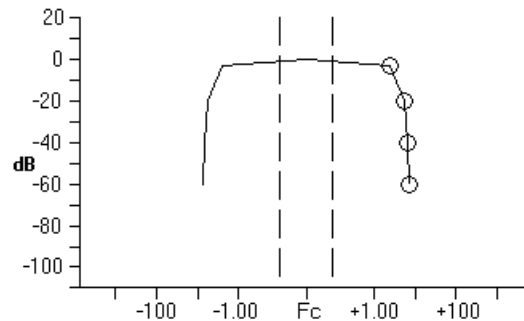
Level **Offset (Fo)**

-3.00 dB 2.5000 kHz

-20.0 dB 5.7000 kHz

-40.0 dB 6.9000 kHz

-60.0 dB 7.1000 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8K10F1E

Necessary BW: (U) 8.1000 kHz

Measured/Calculated: (U) Measured

Occupied Bandwidth: (U) 8.0000 kHz

Modulation Type: (U) Digital Modulation

Spread Spectrum: No

Max. Modulation Frequency: (U) 2.5000 kHz

Dig. Modulation Type:
(U) OTH - Other

Digital Bit Rate: (U) 12000 bps

Digital Peak Deviation: (U) 1.5625 kHz

Deviation Ratio: (U) 0.625

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

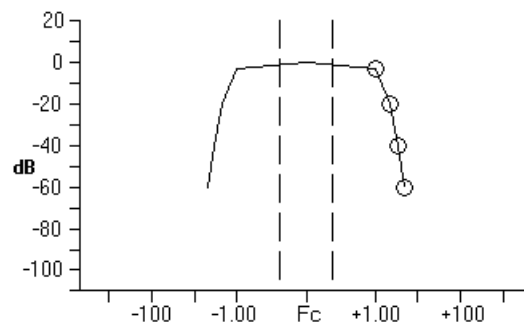
Level **Offset (Fo)**

-3.00 dB 1.0000 kHz

-20.0 dB 2.1500 kHz

-40.0 dB 3.5000 kHz

-60.0 dB 4.7500 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 30
TRANSMITTER EQUIPMENT CHARACTERISTICS		
EMISSION DESIGNATORS		
Em. Designator: (U) 9K70D1W	Necessary BW: (U) 9.7000 kHz	
Measured/Calculated: (U) Measured	Occupied Bandwidth: (U) 9.8000 kHz	
Modulation Type: (U) Digital Modulation	Spread Spectrum: No	
Max. Modulation Frequency: (U) 2.5000 kHz		
Dig. Modulation Type: (U) OTH - Other	Digital Bit Rate: (U) 12000 bps	
Digital Peak Deviation: (U) 1.5625 kHz	Deviation Ratio: (U) 0.625	
FUNDAMENTAL CURVE		
(UNCLASSIFIED)		
Meas/Calc: Measured Level Offset (Fo) -3.00 dB 1.2500 kHz -20.0 dB 2.7500 kHz -40.0 dB 3.3500 kHz -60.0 dB 3.6000 kHz		
EMISSION DESIGNATORS		
Em. Designator: (U) 9K80D7W	Necessary BW: (U) 9.8000 kHz	
Measured/Calculated: (U) Measured	Occupied Bandwidth: (U) 9.8000 kHz	
Modulation Type: (U) Digital Modulation	Spread Spectrum: No	
Max. Modulation Frequency: (U) 2.5000 kHz		
Dig. Modulation Type: (U) OTH - Other	Digital Bit Rate: (U) 12000 bps	
	Deviation Ratio: (U) 0.625	
CLASSIFICATION UNCLASSIFIED		

TRANSMITTER EQUIPMENT CHARACTERISTICS

Digital Peak Deviation: (U) 1.5625 kHz

FUNDAMENTAL CURVE

(UNCLASSIFIED)

Meas/Calc: Measured

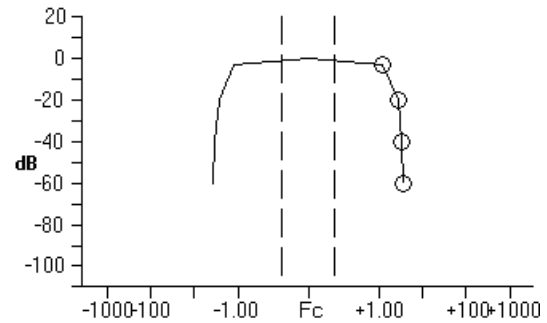
Level	Offset (Fo)
-------	-------------

-3.00 dB	1.2500 kHz
----------	------------

-20.0 dB	2.7500 kHz
----------	------------

-40.0 dB	3.3500 kHz
----------	------------

-60.0 dB	3.6000 kHz
----------	------------



RECEIVER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) MASTR V, UHF Model SV-RTXMV

Manufacturer: (U) HARRIS CORP

NTIA Approval Status: (U) Approved

Coordination ID: J/F 12

Date of Import: 8/29/2016 5:33:35 PM (GMT)

Date/Time Last Mod.: 7/29/2016 6:48:31 PM (GMT)

Model Name: (U) MASTR V, UHF Model SV-RTXMV

Fcc Acc. Number:

Image Reject: (U) 100 dB

Oscillator Tuned: (U) Above

Cond. Undesired Em.:

Proxy: No

Homodyne: No

FREQUENCIES

Tuning Range: (U) 406.0000 MHz - 420.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 6.2500 kHz

Freq. Stability: (U) 0.1ppm

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

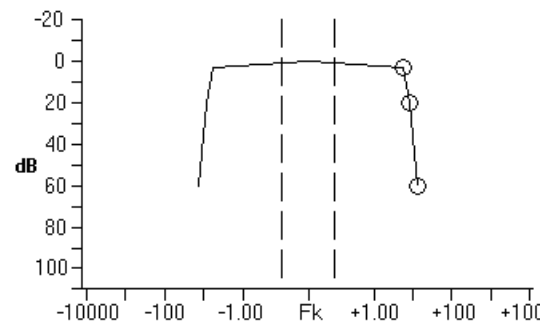
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

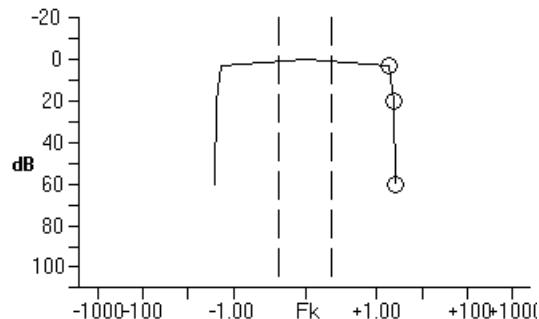
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1E

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

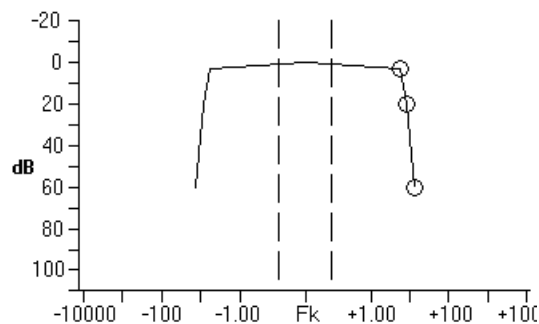
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

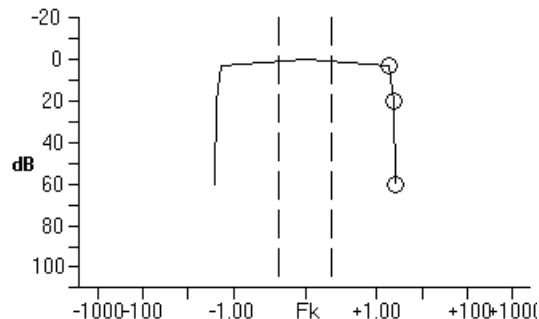
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K70D1W

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 9.7000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

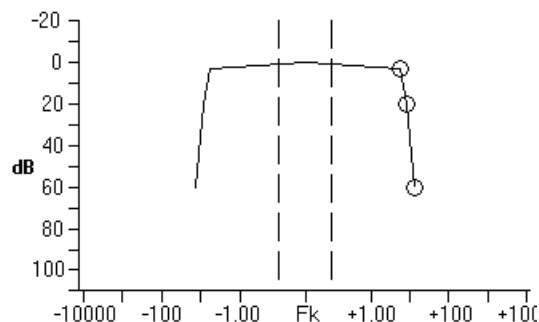
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

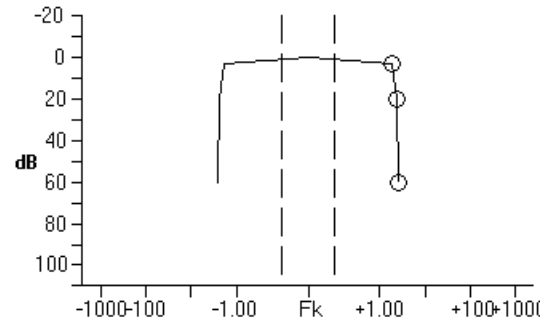
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

IF Freq. (Fk): 2.160000 MHz

Atten.	Offset (Fo)
3.00 dB	1.9250 kHz
20.0 dB	2.3250 kHz
60.0 dB	2.5750 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K80D7W

Sensitivities

Sensitivity: (U) -116 dBm
 Necessary BW: (U) 9.8000 kHz
 Perf. Value: (U) 5
 Noise Figure: (U) 9.00 dB
 Noise Temp. (U) 2014 K
 Spur. Reject (U) 90.0 dB
 Intermod. Reject:
 Adj. Channel Sel.:
 Perf. Crit.: (U) BER - Bit Error Rate

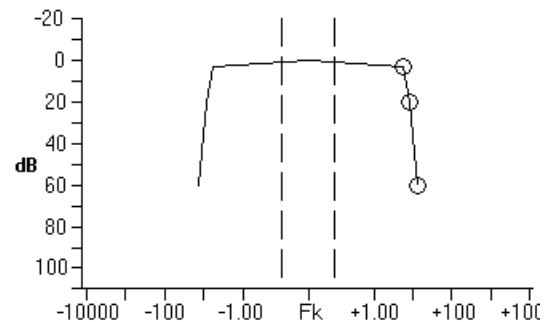
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

IF Freq. (Fk): 110.2000 MHz

Atten.	Offset (Fo)
3.00 dB	5.5000 kHz
20.0 dB	8.3750 kHz
60.0 dB	12.875 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

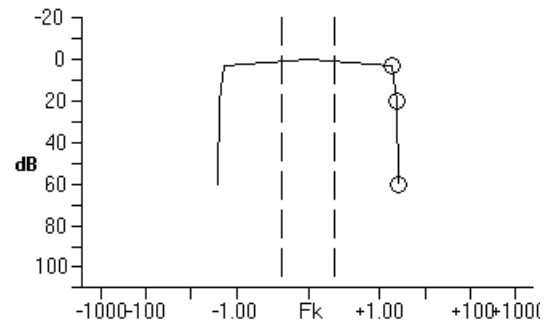
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

IF Freq. (Fk): 2.160000 MHz

Atten.	Offset (Fo)
3.00 dB	1.9250 kHz
20.0 dB	2.3250 kHz
60.0 dB	2.5750 kHz

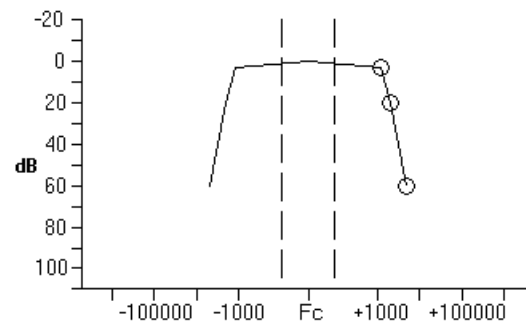


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

Atten.	Offset (Fo)
3.00 dB	1200.0 kHz
20.0 dB	2000.0 kHz
60.0 dB	5000.0 kHz



FREQUENCIES

Tuning Range: (U) 406.0000 MHz - 420.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 12.500 kHz

Freq. Stability: (U) 0.1ppm

RECEIVER EQUIPMENT CHARACTERISTICS

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

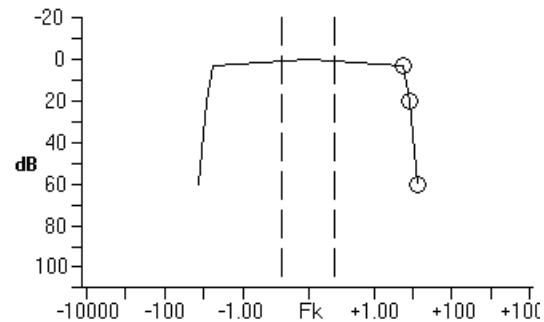
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

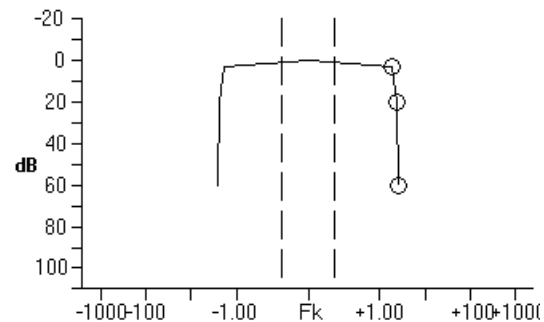
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1E

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

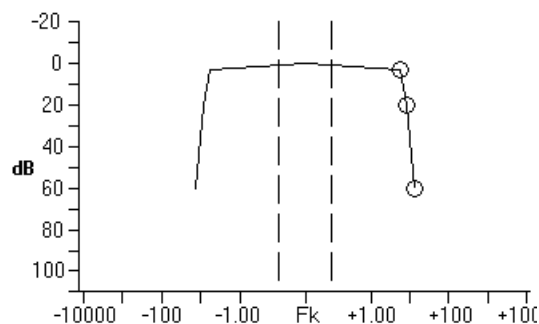
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

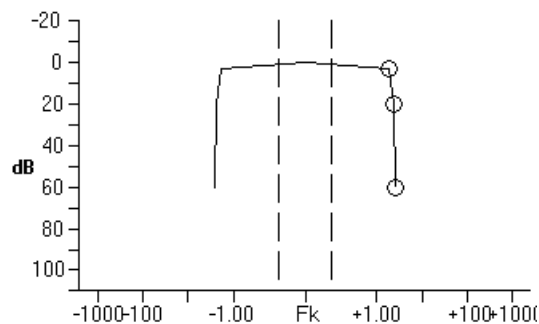
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

EMISSION DESIGNATORS

Em. Designator: (U) 9K70D1W

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 9.7000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

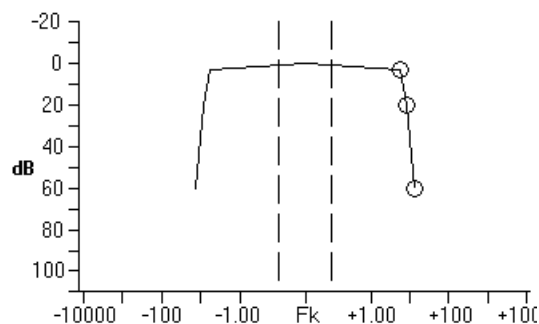
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

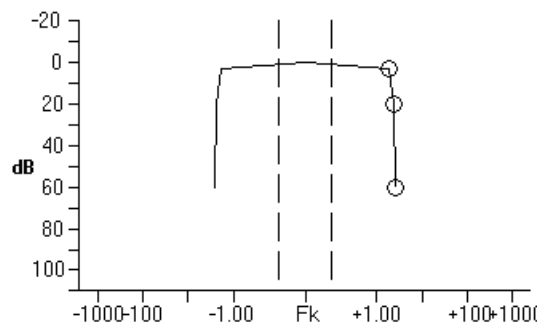
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

EMISSION DESIGNATORS

Em. Designator: (U) 9K80D7W

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 9.8000 kHz

Perf. Value: (U) 5

Noise Figure: (U) 9.00 dB

Noise Temp. (U) 2014 K

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

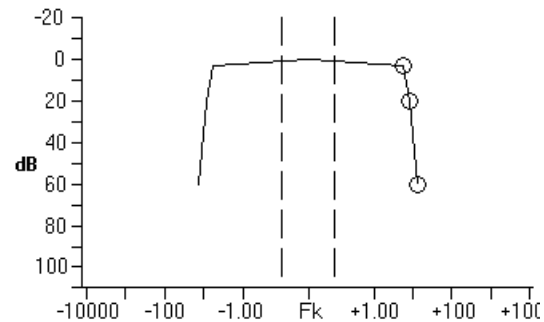
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 5.5000 kHz

20.0 dB 8.3750 kHz

60.0 dB 12.875 kHz



IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

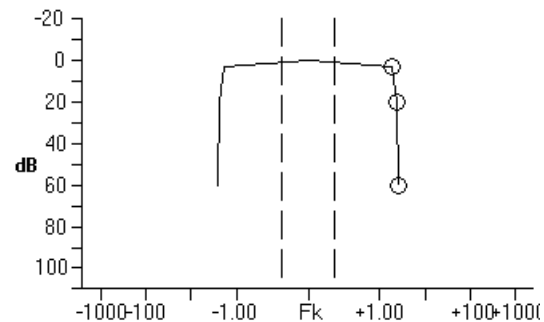
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 1.9250 kHz

20.0 dB 2.3250 kHz

60.0 dB 2.5750 kHz



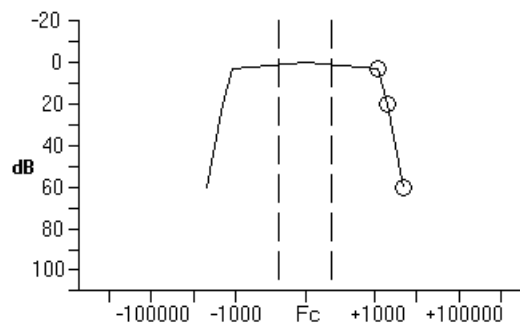
RECEIVER EQUIPMENT CHARACTERISTICS

RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

<u>Atten.</u>	<u>Offset (Fo)</u>
3.00 dB	1200.0 kHz
20.0 dB	2000.0 kHz
60.0 dB	5000.0 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) Base Station (VHF)

Manufacturer: (U) HARRIS CORP

NTIA Approval Status: (U) Approved

Coordination ID: J/F 12

Date of Import: 8/29/2016 5:33:35 PM (GMT)

Date/Time Last Mod.: 7/29/2016 6:48:32 PM (GMT)

Model Name: (U) Master V

Fcc Acc. Number: (U) OWDTR-0065-E

Image Reject: (U) 90.0 dB

Oscillator Tuned: (U) Either

Cond. Undesired Em.: (U) 0.000 dBm

Proxy: No

Homodyne: No

FREQUENCIES

Tuning Range: (U) 150.0000 MHz - 174.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 1.2500 kHz

Freq. Stability: (U) 0.1ppm

EMISSION DESIGNATORS

Em. Designator: (U) 7K96F1E

Sensitivities

Sensitivity: (U) -118 dBm

Necessary BW: (U) 7.9600 kHz

Perf. Value: (U) 5

Noise Figure: (U) 6.00 dB

Noise Temp. (U) 865 K

Spur. Reject (U) 90.0 dB

Intermod. Reject: (U) 80.0 dB

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB

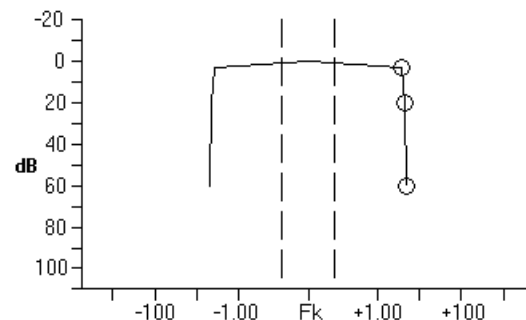
3.8500 kHz

20.0 dB

4.6500 kHz

60.0 dB

5.1500 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

EMISSION DESIGNATORS

Em. Designator: (U) 9K35G1D

Sensitivities

Sensitivity: (U) -118 dBm
Necessary BW: (U) 9.3500 kHz
Perf. Value: (U) 5
Noise Figure: (U) 6.00 dB
Noise Temp. (U) 865 K
Spur. Reject (U) 90.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) BER - Bit Error Rate

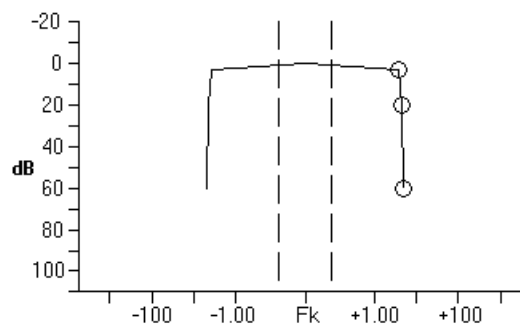
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Measured

IF Freq. (Fk): 2.160000 MHz

<u>Atten.</u>	<u>Offset (Fo)</u>
3.00 dB	3.8500 kHz
20.0 dB	4.6500 kHz
60.0 dB	5.1500 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 9K64G1W

Sensitivities

Sensitivity: (U) -118 dBm
Necessary BW: (U) 9.6400 kHz
Perf. Value: (U) 5
Noise Figure: (U) 6.00 dB
Noise Temp. (U) 865 K
Spur. Reject (U) 90.0 dB
Intermod. Reject: (U) 80.0 dB
Adj. Channel Sel.:
Perf. Crit.: (U) BER - Bit Error Rate

RECEIVER EQUIPMENT CHARACTERISTICS

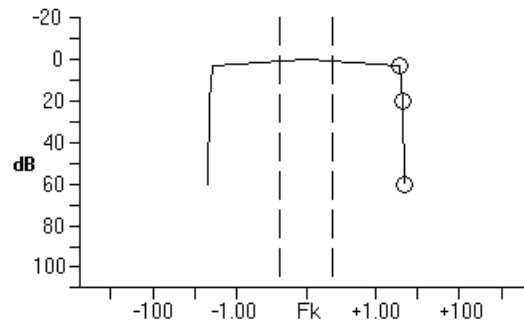
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

IF Freq. (Fk): 2.160000 MHz

<u>Atten.</u>	<u>Offset (Fo)</u>
3.00 dB	3.8500 kHz
20.0 dB	4.6500 kHz
60.0 dB	5.1500 kHz

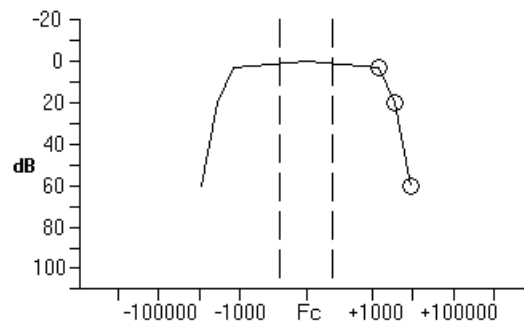


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

<u>Atten.</u>	<u>Offset (Fo)</u>
3.00 dB	1375.0 kHz
20.0 dB	3500.0 kHz
60.0 dB	9000.0 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

Nomenclature: (U) Base Station RX

Manufacturer: (U) M/A COM MAC

NTIA Approval Status: (U) Approved

Coordination ID: J/F 12

Date of Import: 8/29/2016 5:33:35 PM (GMT)

Date/Time Last Mod.: 7/29/2016 6:48:33 PM (GMT)

Model Name:

Fcc Acc. Number:

Image Reject: (U) 100 dB

Oscillator Tuned: (U) Either

Cond. Undesired Em.: (U) 0.000 dBm

Proxy: No

Homodyne: No

FREQUENCIES

Tuning Range: (U) 350.0000 MHz - 520.0000 MHz

Tuning Method: (U) Synthesizer

Tuning Increment: (U) 12.500 kHz

Freq. Stability: (U) 0.1ppm

EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Sensitivities

Sensitivity: (U) -116 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 480

Noise Figure: (U) 9.00 dB

Noise Temp.

Spur. Reject (U) 90.0 dB

Intermod. Reject:

Adj. Channel Sel.:

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

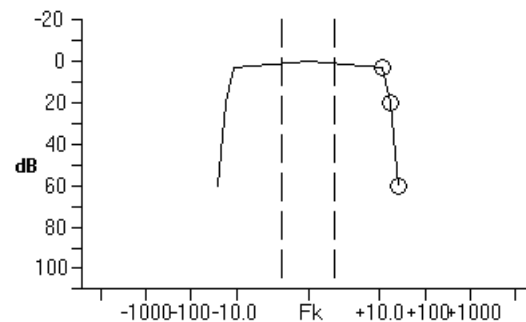
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 11.000 kHz

20.0 dB 16.750 kHz

60.0 dB 25.750 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

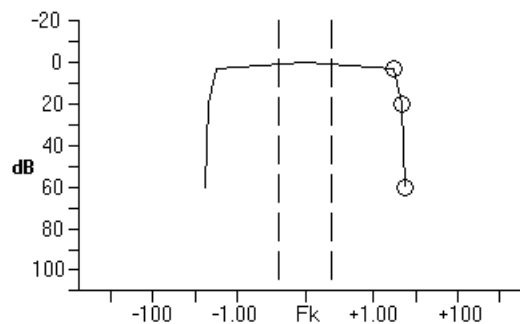
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

IF Freq. (Fk): 2.160000 MHz

Atten.	Offset (Fo)
3.00 dB	3.0000 kHz
20.0 dB	4.8500 kHz
60.0 dB	5.7500 kHz

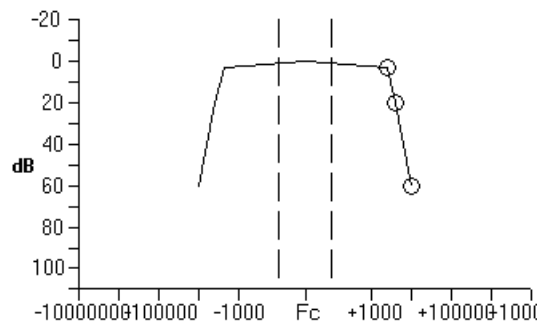


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

Atten.	Offset (Fo)
3.00 dB	2400.0 kHz
20.0 dB	4000.0 kHz
60.0 dB	10000 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 47									
RECEIVER EQUIPMENT CHARACTERISTICS											
Nomenclature: (U) MASV-H00M1 M150.8-M174		Manufacturer: (U) TYCHO-TECH									
NTIA Approval Status: (U) Approved		Coordination ID: J/F 12									
Date of Import: 8/29/2016 5:33:35 PM (GMT)		Date/Time Last Mod.: 7/29/2016 6:48:34 PM (GMT)									
Model Name: (U) MASV-H001		Fcc Acc. Number: (U) OWDTR-0065-E									
Image Reject: (U) 100 dB		Oscillator Tuned:									
Cond. Undesired Em.: (U) -111 dBm		Proxy: No									
Homodyne: No											
FREQUENCIES											
Tuning Range: (U) 150.8000 MHz - 174.0000 MHz		Tuning Method:									
Tuning Increment: (U) 6.2500 kHz		Freq. Stability: (U) 0.1ppm									
EMISSION DESIGNATORS											
Em. Designator: (U) 9K80F1D		Sensitivities Sensitivity: (U) -118 dBm Necessary BW: (U) 9.8000 kHz Perf. Value: (U) 0.1 Noise Figure: (U) 6.00 dB Noise Temp. (U) 865 K Spur. Reject (U) 90.0 dB Intermod. Reject: (U) 80.0 dB Adj. Channel Sel.: (U) 100 dB Perf. Crit.: (U) BER - Bit Error Rate									
IF SELECTIVITY CURVE											
(UNCLASSIFIED)											
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Measured/Calculated: Measured</p> <p>IF Freq. (Fk): 110.2000 MHz</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Atten.</th> <th style="text-align: left; border-bottom: 1px solid black;">Offset (Fo)</th> </tr> </thead> <tbody> <tr> <td>3.00 dB</td> <td>11.000 kHz</td> </tr> <tr> <td>20.0 dB</td> <td>16.750 kHz</td> </tr> <tr> <td>60.0 dB</td> <td>25.750 kHz</td> </tr> </tbody> </table> </div> <div style="width: 50%; text-align: center;"> <p>The graph shows the IF selectivity curve. The y-axis is labeled 'dB' and ranges from -20 to 100 in increments of 20. The x-axis is labeled with frequency offsets: -1000, -100, -10.0, Fk, +10.0, +100, +1000. The curve is a flat line at 0 dB between -10.0 and +10.0 kHz. Outside this range, the curve drops sharply. Three data points are plotted and labeled with circles: one at 0 dB (at Fk), one at 20 dB (at approximately +10.0 kHz), and one at 60 dB (at approximately +25.75 kHz).</p> </div> </div>				Atten.	Offset (Fo)	3.00 dB	11.000 kHz	20.0 dB	16.750 kHz	60.0 dB	25.750 kHz
Atten.	Offset (Fo)										
3.00 dB	11.000 kHz										
20.0 dB	16.750 kHz										
60.0 dB	25.750 kHz										
CLASSIFICATION UNCLASSIFIED											

RECEIVER EQUIPMENT CHARACTERISTICS

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

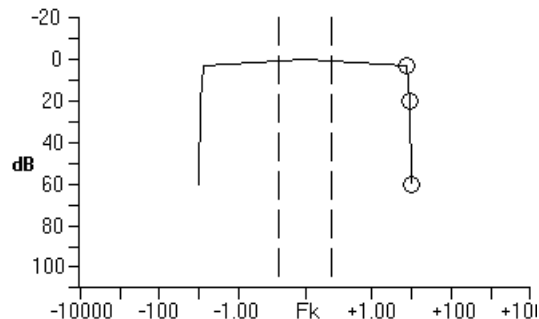
IF Freq. (Fk): 2.160000 MHz

Atten. Offset (Fo)

3.00 dB 7.7000 kHz

20.0 dB 9.6000 kHz

60.0 dB 10.300 kHz



EMISSION DESIGNATORS

Em. Designator: (U) 8K00F1D

Sensitivities

Sensitivity: (U) -118 dBm

Necessary BW: (U) 8.0000 kHz

Perf. Value: (U) 0.1

Noise Figure: (U) 6.00 dB

Noise Temp. (U) 865 K

Spur. Reject (U) 90.0 dB

Intermod. Reject: (U) 80.0 dB

Adj. Channel Sel.: (U) 100 dB

Perf. Crit.: (U) BER - Bit Error Rate

IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated:Measured

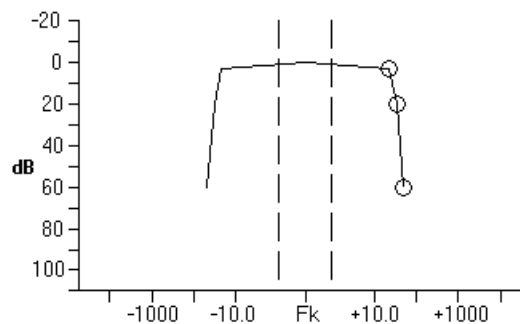
IF Freq. (Fk): 110.2000 MHz

Atten. Offset (Fo)

3.00 dB 22.000 kHz

20.0 dB 33.500 kHz

60.0 dB 51.500 kHz



RECEIVER EQUIPMENT CHARACTERISTICS

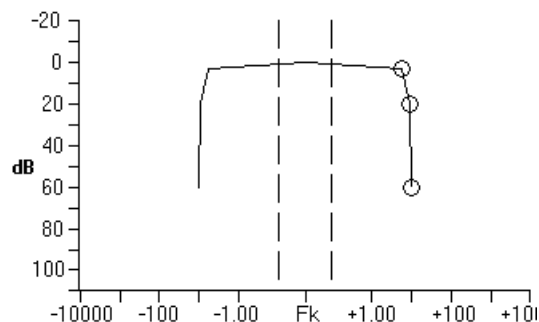
IF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

IF Freq. (Fk): 2.160000 MHz

Atten.	Offset (Fo)
3.00 dB	6.0000 kHz
20.0 dB	9.3000 kHz
60.0 dB	10.300 kHz

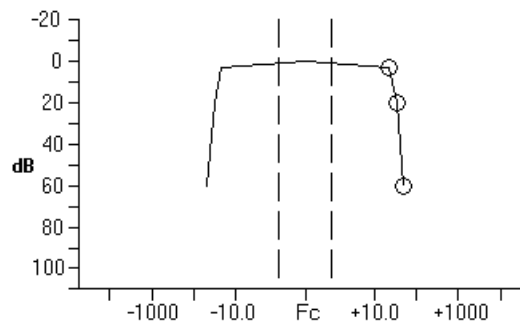


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

Atten.	Offset (Fo)
3.00 dB	22.000 kHz
20.0 dB	33.500 kHz
60.0 dB	51.500 kHz

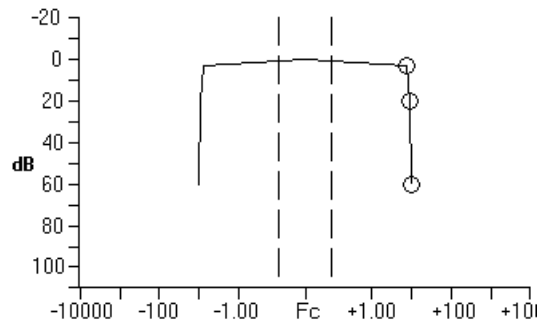


RF SELECTIVITY CURVE

(UNCLASSIFIED)

Measured/Calculated: Calculated

Atten.	Offset (Fo)
3.00 dB	7.7000 kHz
20.0 dB	9.3000 kHz
60.0 dB	10.300 kHz



CLASSIFICATION UNCLASSIFIED		PAGE 50
ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) DS4A00F36U-N		Manufacturer: (U) dbSpectra
NTIA Approval Status: (U) Approved		Coordination ID: J/F 12
Date of Import: 8/29/2016 5:33:35 PM (GMT)		Date/Time Last Mod.: 7/29/2016 6:48:35 PM (GMT)
Model Name: (U)DS4A00F36U-n		Antenna Type:(U) Vertical Dipole
Antenna Category: Linear		
FREQUENCIES		
Lower Frequency Limit: (U) 406.0000 MHz Upper Frequency Limit: (U) 436.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical		Atten. Rel/Act:(U) Relative dB
BEAMWIDTH		
Horizontal: (U) 360 degrees		Vertical: (U) 80.0 degrees
SCAN CHARACTERISTICS		
GAIN		
Main Beam: (U) 0.000 dBi		1st Horz. Side Lobe Atten.: (U) 0.000 dB
		1st Ver. Side Lobe Atten.: (U) 0.000 dB
CLASSIFICATION UNCLASSIFIED		

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ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) Fixed Base Station (VHF)	Manufacturer: (U) ANDREW CORP	
NTIA Approval Status: (U) Approved	Coordination ID: J/F 12	
Date of Import: 8/29/2016 5:33:35 PM (GMT)	Date/Time Last Mod.: 7/29/2016 6:48:36 PM (GMT)	
Model Name:	Antenna Type:(U) Dipole Array	
Antenna Category: Linear		
FREQUENCIES		
Lower Frequency Limit: (U) 150.0000 MHz Upper Frequency Limit: (U) 174.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical	Atten. Rel/Act:(U) Relative dB	
BEAMWIDTH		
Horizontal: (U) 360 degrees	Vertical: (U) 16.0 degrees	
SCAN CHARACTERISTICS		
GAIN		
Main Beam: (U) 8.10 dBi	1st Horz. Side Lobe Atten.: (U) 0.000 dB	
	1st Ver. Side Lobe Atten.: (U) 0.000 dB	
CLASSIFICATION UNCLASSIFIED		

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ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) MASTR V RX antenna	Manufacturer: (U) KATHREIN INC.	
NTIA Approval Status: (U) Approved	Coordination ID: J/F 12	
Date of Import: 8/29/2016 5:33:35 PM (GMT)	Date/Time Last Mod.: 7/29/2016 6:48:37 PM (GMT)	
Model Name: (U) k751637	Antenna Type: (U) Collinear Array	
Antenna Category: Phased Array		
FREQUENCIES		
Lower Frequency Limit: (U) 380.0000 MHz Upper Frequency Limit: (U) 400.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical	Atten. Rel/Act:	
Num. Main Beam:	Num. Elements:	
BEAMWIDTH		
Horizontal: (U) 360 degrees	Vertical: (U) 17.0 degrees	
SCAN CHARACTERISTICS		
Vertical Scan Type: (U) Fixed	Vertical Scan Rate:	
GAIN		
Main Beam: (U) 5.50 dBi		
CLASSIFICATION UNCLASSIFIED		

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ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) MASTR V TX antenna	Manufacturer: (U) KATHREIN INC.	
NTIA Approval Status: (U) Approved	Coordination ID: J/F 12	
Date of Import: 8/29/2016 5:33:35 PM (GMT)	Date/Time Last Mod.: 7/29/2016 6:48:38 PM (GMT)	
Model Name: (U) k751537	Antenna Type: (U) Collinear Array	
Antenna Category: Phased Array		
FREQUENCIES		
Lower Frequency Limit: (U) 380.0000 MHz Upper Frequency Limit: (U) 400.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical	Atten. Rel/Act:	
Num. Main Beam:	Num. Elements:	
BEAMWIDTH		
Horizontal: (U) 360 degrees	Vertical: (U) 30.0 degrees	
SCAN CHARACTERISTICS		
Vertical Scan Type: (U) Fixed	Vertical Scan Rate:	
GAIN		
Main Beam: (U) 3.00 dBi		
CLASSIFICATION UNCLASSIFIED		

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ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) ANDREW DB616E-BC		Manufacturer: (U) ANDREW CORP
NTIA Approval Status: (U) Approved		Coordination ID: J/F 12
Date of Import: 8/29/2016 5:33:35 PM (GMT)		Date/Time Last Mod.: 7/29/2016 6:48:39 PM (GMT)
Model Name: (U) DB616E-BC		Antenna Type: (U) Collinear Array
Antenna Category: Linear		
FREQUENCIES		
Lower Frequency Limit: (U) 160.0000 MHz Upper Frequency Limit: (U) 174.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical		Atten. Rel/Act: (U) Relative dB
BEAMWIDTH		
Horizontal: (U) 360 degrees		Vertical: (U) 18.0 degrees
SCAN CHARACTERISTICS		
GAIN		
Main Beam: (U) 7.60 dBi		1st Horz. Side Lobe Atten.:
		1st Ver. Side Lobe Atten.:
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ANTENNA EQUIPMENT CHARACTERISTICS		
Nomenclature: (U) SC331-ST2LDF(D01-G10)	Manufacturer: (U) Sinclair Technologies	
NTIA Approval Status: (U) Unapproved	Coordination ID: J/F 12	
Date of Import: 8/29/2016 5:33:35 PM (GMT)	Date/Time Last Mod.: 7/26/2016 7:23:15 PM (GMT)	
Model Name: (U) SC331-ST2LDF(D01-G10)	Antenna Type:(U) Collinear Array	
Antenna Category: Linear		
FREQUENCIES		
Lower Frequency Limit: (U) 410.0000 MHz Upper Frequency Limit: (U) 430.0000 MHz		
ANTENNA CHARACTERISTICS		
Polarization: (U) Vertical	Atten. Rel/Act:(U) Actual dBi	
BEAMWIDTH		
Horizontal: (U) 360 degrees	Vertical: (U) 7.50 degrees	
SCAN CHARACTERISTICS		
GAIN		
Main Beam: (U) 12.1 dBi	1st Horz. Side Lobe Lvl.: (U) 12.1 dB	
	1st Ver. Side Lobe Lvl.: (U) 2.10 dB	
CLASSIFICATION UNCLASSIFIED		

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Frequency List

Tx Station	Rx Station	Frequency (MHz)	Em. Des.	Radio Service	Stn. Classes
(U) Fixed Base station	(U) Fixed	(U) 150.0500 - 150.8000	(U) 7K69F1E	Fixed	FX
			(U) 9K35G1W		
			(U) 9K64G1W		
		(U) 162.0375 - 173.2000	(U) 7K69F1E		
			(U) 8K00F1D		
			(U) 8K10F1E		
			(U) 9K35G1W		
			(U) 9K64G1W		
			(U) 9K70D1W		
			(U) 9K80D7W		
			(U) 9K80F1D		
		(U) 173.4000 - 174.0000	(U) 7K69F1E		
			(U) 8K00F1D		
			(U) 8K10F1E		
			(U) 9K35G1W		
			(U) 9K64G1W		
			(U) 9K70D1W		
		(U) 350.0000 - 399.9000	(U) 9K80D7W		
			(U) 9K80F1D		
			(U) 8K00F1D		
		(U) 380.0000 - 399.9000	(U) 8K40F1D		
			(U) 9K70F1D		
			(U) 9K80F1D		
		(U) 406.1000 - 420.0000	(U) 8K00F1D		
			(U) 9K80F1D		
			(U) 8K00F1D		
			(U) 8K00F1E		
			(U) 8K40F1D		
			(U) 9K70D1W		
			(U) 9K70F1D		
			(U) 9K80D7W		
			(U) 9K80F1D		
	(U) Land Mobile	(U) 150.0500 - 150.8000	(U) 7K69F1E	Land Mobile	FB
			(U) 9K35G1W		
			(U) 9K64G1W		
		(U) 162.0375 - 173.2000	(U) 7K69F1E		
			(U) 8K00F1D		
			(U) 9K35G1W		
			(U) 9K64G1W		
			(U) 9K80F1D		
			(U) 7K69F1E		
		(U) 173.4000 - 174.0000	(U) 8K00F1D		
			(U) 9K35G1W		
			(U) 9K64G1W		

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Tx Station	Rx Station	Frequency (MHz)	Em. Des.	Radio Service	Stn. Classes
(U) Fixed Base station	(U) Land Mobile	(U) 173.4000 - 174.0000	(U) 9K80F1D	Land Mobile	FB
			(U) 8K00F1D		
			(U) 8K40F1D		
		(U) 350.0000 - 399.9000	(U) 9K70F1D		
			(U) 9K80F1D		
			(U) 8K00F1D		
		(U) 380.0000 - 399.9000	(U) 9K80F1D		
			(U) 8K00F1D		
		(U) 406.1000 - 420.0000	(U) 8K00F1D		
			(U) 8K00F1E		
			(U) 8K40F1D		
			(U) 9K70D1W		
			(U) 9K70F1D		
			(U) 9K80D7W		
			(U) 9K80F1D		

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Table of Contents For
(U) MASTR V VHF/UHF Base Station

1. (U) Security Page
2. (U) Full Record Print

Detail Transmitters

10. (U) MASTR V, UHF Model SV-RTXMV
15. (U) Fixed Base Station (VHF)
20. (U) Base station (UHF)
26. (U) Master V-H00M1 M150.8-M174

Detail Receivers

32. (U) MASTR V, UHF Model SV-RTXMV
42. (U) Base Station (VHF)
45. (U) Base Station RX
47. (U) MASV-H00M1 M150.8-M174

Detail Antennas

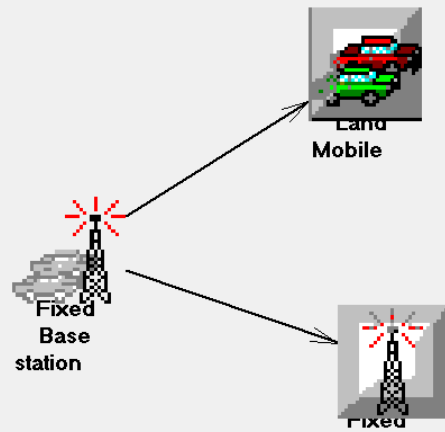
50. (U) DS4A00F36U-N
51. (U) Fixed Base Station (VHF)
52. (U) MASTR V RX antenna
53. (U) MASTR V TX antenna
54. (U) ANDREW DB616E-BC
55. (U) SC331-ST2LDF(D01-G10)

ALSO:

- (U) Line Diagram
- (U) Frequency List

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Line Diagram: MASTR V VHF/UHF Base Station



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