

RADIATED SPURIOUS EMISSIONS PORTIONS OF

FCC CFR47 PART 22 SUBPART H FCC CFR47 PART 24 SUBPART E INDUSTRY CANADA RSS-132 ISSUE 2 INDUSTRY CANADA RSS-133 ISSUE 5

CERTIFICATION TEST REPORT

FOR

TELEMATICS PLATFORMS

(GPS+WWAN (GSM, EGPRS, UTMS) +WLAN (802.11a/b/g) + BLUETOOOTH (Ver.2.0))

MODEL NUMBER: TVG-850 HSPA

FCC ID: JUP-TVG850HSPA IC ID: 1756A-TVG850HSPA

REPORT NUMBER: 10U13319-2, Revision A ISSUE DATE: SEPTEMBER 03, 2010

Prepared for

TRIMBLE MRM 888 TASMAN ROAD, MILPITAS, CA 95035, U.S.A.

Prepared by

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NVLAP LAB CODE 200065-0

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1. ATTESTATION OF TEST RESULTS

INDUSTRY CANADA RSS-133 Issue 5

COMPANY NAME:	TRIMBLE MRM 888 TASMAN ROAD, MILPITAS, CA 95035, U.S.A	Α.
EUT DESCRIPTION:	TELEMATICS PLATFORM Contains: GPS+WWAN (GS (802.11a/b/g) + BLUETOOC	M, EGPRS, UTMS) +WLAN 0TH (Ver.2.0)
MODEL:	TVG-850 HSPA	
SERIAL NUMBER:	355310030084031	
DATE TESTED:	JULY 29 TO AUGUST 04, 20	010
	APPLICABLE STANDARI	DS
	STANDARD	TEST RESULTS
CFR 4	7 Part 22 Subpart H	PASS (Radiated Portion)
CFR 4	7 Part 24 Subpart E	PASS (Radiated Portion)
INDUSTRY (CANADA RSS-132 Issue 2	PASS (Radiated Portion)

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:

THU CHAN ENGINEERING MANAGER COMPLIANCE CERTIFICATION SERVICES Tested By:

MENGISTU MEKURIA EMC ENGINEER COMPLIANCE CERTIFICATION SERVICES

PASS (Radiated Portion)

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 2, and RSS-133 Issue 5.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://www.ccsemc.com</u>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

TVG-850 HSPA is a telematics platform primarily intended for use in: transportation and distribution vehicles, telecommunications, and other vertical markets that may require high data rates, WiFi access point connections, and permit the use of an environmentally unsealed enclosure. TVG-850 performs data collection from the vehicle and other sensors, processes the data, and then sends the data wirelessly to a central data server using various wireless technologies. It also acts as a WiFi hotspot when in cellular coverage.

5.2. MAXIMUM RADIATED OUTPUT POWER

The transmitter has a maximum ERP & EIRP peak output powers as follows:

Part 22 Cellular Band

Frequency range (MHz)	Modulation	EF	RP
	Woodation	dBm	mW
824.2 - 848.8	GPRS	28.70	741.3
824.2 - 848.8	EGPRS	28.00	631.0
826.6 - 846.6	WCDMA	22.30	169.8

Part 24 PCS Band

Frequency range (MHz)	Modulation	Ell	RP
	Woodation	dBm	mW
1850.2 - 1909.8	GPRS	26.70	467.7
1850.2 - 1909.8	EGPRS	26.60	457.1
1852.4- 1907.6	WCDMA	22.30	169.8

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a multi-band PIFA antenna for the 900MHz and 1800MHz bands with a maximum peak gain of -0.25dBi for Cell band and 1.7dBi for PCS band.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the WWAN Module: K2_0_7_17

The Hardware Revision of WWAN Module: Rev. 1.0.

5.5. WORST-CASE CONFIGURATION AND MODE

Based on the conducted power measurement data sheet, the following modes have considered as the worst-case form each modulation scam, so the ERP, EIRP, and harmonic spurious emissions test have been conducted for these modulations.

Worst case modes for Cellular and PCS band:

- GPRS
- EGPRS
- WCDMA

5.6. DETAILS OF TESTED SYSTEM

I/O CABLES

			I/O CABLE	ELIST		
Cable	Port	# of	Connector	Cable	Cable	Remarks
No.		Identical	Туре	Туре	Length	
		Ports				
1	WWAN_Diversit	1	Fakra Purple	RG-174	3.0m	
2	GPS	1	Fakra Blue	RG-174	4.5m	Bundled Together
3	Battery	1	Wires	Un-Shielded	0.4m	
4	Ground	1	Wire	Un-Shielded	0.4m	

TEST SETUP

The EUT is stand alone unit with all ports are terminated by termination board during the tests. A link is established between the EUT and the Agilent 8960 communications test set.

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REPORT NO: 10U13184-2A FCC ID: JUP-TVG850HSPA

SETUP DIAGRAM



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

	TEST EQUIPMEN	T LIST		
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	08/24/10
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/31/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	07/14/11
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/14/11
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/14/11
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/11
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/11
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/12/11
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR

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7. RADIATED TEST RESULTS

7.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) & RSS-133 § 6.4 - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

RSS-132 4.4, SRSP503 5.1.3 - The maximum ERP shall be 11.5 Watts for mobile stations.

TEST PROCEDURE

ANSI / TIA / EIA 603C RSS-132; RSS-133

MODES TESTED

- GPRS
- EGPRS
- WCDMA

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RESULTS

Cellular Band (ERP)

			EF	RP
Mode	Channel	f (MHz)	dBm	mW
	128	824.20	28.00	630.96
GPRS	190	836.60	28.70	741.31
	251	848.80	28.60	724.44
	128	824.20	26.80	478.63
EGPRS	190	836.60	28.00	630.96
	251	848.80	27.30	537.03
	4357	826.40	22.30	169.82
WCDMA	4400	835.00	22.00	158.49
	4458	846.60	20.60	114.82

PCS Band (EIRP)

			El	RP
Mode	Channel	f (MHz)	dBm	mW
	512	1850.20	26.70	467.74
GPRS	661	1880.00	26.70	467.74
	810	1909.80	25.80	380.19
	512	1850.20	26.60	457.09
EGPRS	661	1880.00	25.70	371.54
	810	1909.80	26.10	407.38
	9262	1852.40	22.30	169.82
WCDMA	9400	1880.00	21.50	141.25
	9538	1907.60	21.90	154.88

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CELL BAND

GPRS MODE

		Complianc	e Certificatio	n Servic	es Cham	ber B	
ompany	:	TRIMBLE					
roject #	:	10U13319					
ate:		7/29/2010					
est Eng	ineer:	MENGISTU MI	EKURIA				
onfigur	ation:	EUT WITH MC	BILE MARK OF	TION F AN	TENNA		
lode:		TX. GPRS CEI	LL BAND				
est Equ leceivin substitut	g: Sunol T130 ion: Dipole S/	, and 3m Ch N: 00022117 Ant. Pol.	amber N-type , 6ft SMA Cab Path Loss	Cable (S le (SN # 2 ERP	etup this 08947003 Limit	one for testi) Warehouse Margin	ng EUT) Notes
est Equ leceivin substitut f MHz	g: Sunol T130 ion: Dipole S/ SA reading (dBm)	, and 3m Ch N: 00022117 Ant. Pol. (H/∨)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (S le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testi) Warehouse Margin (dB)	ng EUT) Notes
est Equ Receivin Substitut f MHz 824.20	g: Sunol T130 ion: Dipole S/ SA reading (dBm)	, and 3m Ch N: 00022117 Ant. Pol. (H/∨)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (S le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testi) Warehouse Margin (dB)	ng EUT) Notes
est Equ Receivin Substitut f MHz 824.20 824.20	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4	Cable (S le (SN # 2 ERP (dBm) 28.0 17 6	etup this 08947003 Limit (dBm) 38.5 38.5	one for testi) Warehouse Margin (dB) -10.5 -20.9	ng EUT) Notes
est Equ Receivin Substitut f MHz 824.20 824.20	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6 -12.8	e, and 3m Ch N: 00022117 Ant. Pol. (H/V) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6	etup this 08947003 Limit (dBm) 38.5 38.5	one for testi) Warehouse Margin (dB) -10.5 -20.9	ng EUT) Notes
est Equ Receivin Substitut MHz 824.20 824.20 836.60	g: Sunol T130 ion: Dipole S/ SA reading (dBm) -4.6 -12.8 4.0	o, and 3m Ch N: 00022117 Ant. Pol. (H/V) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6 28.7	etup this 08947003 Limit (dBm) 38.5 38.5 38.5	one for testi) Warehouse Margin (dB) -10.5 -20.9 -9.8	ng EUT) Notes
est Equ Receivin Substitut MHz 824.20 824.20 836.60 836.60	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6 -12.8 4.0 -13.3	9, and 3m Ch N: 00022117 Ant. Pol. (H/V) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6 28.7 17.4	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5	one for testi Warehouse Margin (dB) -10.5 -20.9 -9.8 -21.0	ng EUT) Notes
est Equ Receivin Substitut MHz 824.20 824.20 836.60 836.60	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6 -12.8 4.0 -13.3), and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6 28.7 17.4	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5 38.5	one for testi Warehouse Margin (dB) -10.5 -20.9 -9.8 -21.0	ng EUT) Notes
est Equ leceivin substitut f MHz	g: Sunol T130 ion: Dipole S/ SA reading (dBm)	, and 3m Ch N: 00022117 Ant. Pol. (H/V)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (S le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testi) Warehouse Margin (dB)	ng EUT) No
est Equ Receivin Substitut MHz 824.20 824.20 836.60 836.60	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6 -12.8 4.0 -13.3	e, and 3m Ch N: 00022117 Ant. Pol. (H/V) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6 28.7 17.4	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5	one for testi) Warehouse Margin (dB) -10.5 -20.9 -9.8 -21.0	ng EUT) Note:
est Equ Receivin Substitut MHz 824.20 824.20 836.60 836.60 848.80	g: Sunol T130 ion: Dipole S/ SA reading (dBm) 4.6 -12.8 4.0 -13.3 -3.4	e, and 3m Ch N: 00022117 Ant. Pol. (H/V) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7 32.0	Cable (S le (SN # 2 ERP (dBm) 28.0 17.6 28.7 17.4 28.6	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5 38.5	one for testi Warehouse Margin (dB) -10.5 -20.9 -9.8 -21.0 -9.8	ng EUT) Notes

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EGPRS MODE

		Complianc	e Certificatio	n Service	es Cham	ber B	
Company	:	TRIMBLE					
roject #		10U13319					
Date:		7/29/2010					
est Eng	ineer:	MENGISTU M	EKURIA				
Configura	ation:	EUT WITH MC	BILE MARK OF	TION F AN	TENNA		
/lode:		TX EGPRS C	FLI BAND				
est Equi eceiving ubstitut	ipment: g: Sunol T130 ion: Dipole S/), and 3m Ch N: 00022117	amber N-type , 6ft SMA Cab	Cable (S le (SN # 2	etup this 08947003	one for testin) Warehouse	ng EUT)
F <u>est Equ</u> Receiving Substitut f MHz	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm)), and 3m Ch N: 00022117 Ant. Pol. (H/∨)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (S le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testin) Warehouse Margin (dB)	ng EUT) Notes
F <u>est Equ</u> Receiving Substitut f MHz	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm)), and 3m Ch /N: 00022117 Ant. Pol. (H/∨)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (So le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testin) Warehouse Margin (dB)	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8), and 3m Ch N: 00022117 Ant. Pol. (H/∨) V	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6	Cable (S le (SN # 2 ERP (dBm) 26.8	etup this 08947003 Limit (dBm) 38.5	one for testin) Warehouse Margin (dB) -11.7	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20 824.20	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8 -13.1), and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4	Cable (So le (SN # 2 ERP (dBm) 26.8 17.3	etup this 08947003 Limit (dBm) 38.5 38.5	one for testin) Warehouse Margin (dB) -11.7 -21.2	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20 824.20	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8 -13.1), and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4	Cable (S) le (SN # 2 ERP (dBm) 26.8 17.3	etup this 08947003 Limit (dBm) 38.5 38.5	one for testin) Warehouse Margin (dB) -11.7 -21.2	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20 824.20 836.60	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8 -13.1 4.7	9, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7	Cable (S) le (SN # 2 ERP (dBm) 26.8 17.3 28.0	etup this 08947003 Limit (dBm) 38.5 38.5 38.5	one for testin) Warehouse Margin (dB) -11.7 -21.2 -10.5 -21.6	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20 824.20 836.60 836.60	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8 -13.1 4.7 -13.9	9, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 	Cable (S) le (SN # 2 ERP (dBm) 26.8 17.3 28.0 16.8	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5	one for testin) Warehouse Margin (dB) -11.7 -21.2 -10.5 -21.6	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 824.20 824.20 836.60 836.60 848.80	ipment: g: Sunol T130 ion: Dipole S/ SA reading (dBm) -5.8 -13.1 -4.7 -13.9 -4.6	9, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 32.6 30.4 32.7 30.7 32.0	Cable (S) le (SN # 2 ERP (dBm) 26.8 17.3 28.0 16.8 27.3	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5 38.5 38.5	one for testin) Warehouse Margin (dB) -11.7 -21.2 -10.5 -21.6 -11.1	ng EUT) Notes

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WCDMA MODE

		High Freq Complianc	e Certificatio	n Servic	leasurem es Cham	ient ber A	
Company	:	TRIMBLE					
Project #		10U13319					
Date:		8/2/2010					
est Eng	ineer:	MENGISTU M	EKURIA				
Configura	ation:	EUT WITH M	OBILE MARK O	PTION F AN	ITENNA		
/lode:		TX, WCDMA (ELL BAND				
Cest Equ Receivin Substitut	<u>pment:</u> g: Sunol T122 ion: Dipole S/	, and 3m Ch N: 00022117	amber N-type , 6ft SMA Cab	Cable (S le (SN # 2	etup this 08947003	one for testir) Warehouse	ng EUT)
<u>fest Equ</u> Receivin Substitut f MHz	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm)	, and 3m Ch N: 00022117 Ant. Pol. (H/V)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (So le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testir) Warehouse Margin (dB)	ng EUT) Notes
Cest Equ Receivin Substitut f MHz 826.40	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm)	, and 3m Ch N: 00022117 Ant. Pol. (H/∨)	amber N-type , 6ft SMA Cab Path Loss (dBm)	Cable (Sole (Sole (SN # 2 Le (SN # 2 ERP (dBm)	etup this 08947003 Limit (dBm)	one for testir) Warehouse Margin (dB)	ng EUT) Notes
Fest Equ Receivin Substitut f MHz 826.40 826.40	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm) -12.5 -18.6	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 34.8 30.5	Cable (So le (SN # 2 ERP (dBm) 22.3 12.0	etup this 08947003 Limit (dBm) 38.5 38.5	one for testir) Warehouse Margin (dB) -16.2 -26.5	ng EUT) Notes
Fest Equ Receivin Substitut f MHz 826.40 826.40	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm) -12.5 -18.6	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 34.8 30.5	Cable (S le (SN # 2 ERP (dBm) 22.3 12.0	etup this 08947003 Limit (dBm) 38.5 38.5	one for testir) Warehouse Margin (dB) -16.2 -26.5	ng EUT) Notes
Fest Equ Receiving Substitut f MHz 826.40 826.40 835.00	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm) -12.5 -18.6 -11.1	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 34.8 30.5 33.1	Cable (S le (SN # 2 ERP (dBm) 22.3 12.0 22.0	etup this 08947003 Limit (dBm) 38.5 38.5 38.5	one for testir) Warehouse Margin (dB) -16.2 -26.5 -16.4	ng EUT) Notes
Fest Equ Receiving Substitut MHz 826.40 826.40 835.00 835.00	pment: g: Sunol T122 ion: Dipole S/ SA reading (dBm) -12.5 -18.6 -11.1 -17.8	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 34.8 30.5 33.1 31.2	Cable (S le (SN # 2 ERP (dBm) 22.3 12.0 22.0 13.3	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5	one for testir) Warehouse (dB) -16.2 -26.5 -16.4 -25.1	ng EUT) Notes
Fest Equ Receivin Substitut f MHz 826.40 826.40 835.00 835.00	<u>pment:</u> g: Sunol T122 ion: Dipole S/ SA reading (dBm) -12.5 -18.6 -11.1 -17.8	, and 3m Ch N: 00022117 Ant. Pol. (H/∨) V H V H	amber N-type , 6ft SMA Cab Path Loss (dBm) 34.8 30.5 33.1 31.2 32 1	Cable (S- le (SN # 2 ERP (dBm) 22.3 12.0 22.0 13.3 20.6	etup this 08947003 Limit (dBm) 38.5 38.5 38.5 38.5 38.5	one for testir) Warehouse Margin (dB) -16.2 -26.5 -16.4 -25.1	ng EUT) Notes

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PCS BAND

GPRS MODE

Company	:	TRIMBLE					
Project #	:	10U13319					
Date:		7/29/2010					
Test Eng	ineer:	MENGISTU M	EKURIA				
Configur	ation:	EUT WITH MO	BILE MARK OPT	TON F ANT	ENNA		
Mode:		TX. GPRS PC	S BAND				
Receivin Substitut f	g: Horn T59, an ion: Horn T72 S SA reading	d Camber B Substitution, Ant. Pol.	SMA Cables 6ft SMA Cable Path Loss	(2089470 EIRP	03) Wareh	ouse Delta	Notes
Receivin Substitut f GHz	g: Horn T59, an ion: Horn T72 S SA reading (dBm)	d Camber B Substitution, Ant. Pol. (H/∨)	SMA Cables 6ft SMA Cable Path Loss (dBm)	(2089470 EIRP (dBm)	03) Wareh Limit (dBm)	Delta (dB)	Notes
Receivin Substitut f GHz	g: Horn T59, an ion: Horn T72 S SA reading (dBm)	d Camber B Substitution, Ant. Pol. (H/V)	SMA Cables 6ft SMA Cable Path Loss (dBm)	(2089470 EIRP (dBm)	03) Wareh Limit (dBm)	Delta (dB)	Notes
Receivin Substitut f GHz 1.850	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5	d Camber B Substitution, Ant. Pol. (H/V) V	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2	(2089470 EIRP (dBm) 26.7	03) Wareh Limit (dBm) 33.0	Delta (dB)	Notes
Receivin Substitut f GHz 1.850 1.850	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5 -23.5	d Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5	(2089470 EIRP (dBm) 26.7 16.0	03) Wareh Limit (dBm) 33.0 33.0	Delta (dB) -6.3 -17.0	Notes
Receivin Substitut f GHz 1.850 1.850	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5 -23.5	d Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3	(2089470 EIRP (dBm) 26.7 16.0	03) Wareh Limit (dBm) 33.0 33.0 33.0	Delta (dB) -6.3 -17.0	Notes
Receivin Substitut <u>f</u> <u>GHz</u> 1.850 1.850 1.880 1.880	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5 -23.5 -13.6 -22.5	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1	EIRP (dBm) 26.7 16.0 26.7 17.7	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0	Delta (dB) -6.3 -17.0 -6.3 -15.3	Notes
Receivin Substitut f GHz 1.850 1.850 1.880 1.880	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5 -23.5 -13.6 -22.5	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1	(2089470 EIRP (dBm) 26.7 16.0 26.7 17.7	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0	Delta (dB) -6.3 -17.0 -6.3 -15.3	Notes
Receivin Substitut f GHz 1.850 1.880 1.880 1.910	g: Horn T59, an ion: Horn T72 S SA reading (dBm) -13.5 -23.5 -13.6 -22.5 -14.4	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1 40.2	EIRP (dBm) 26.7 16.0 26.7 17.7 25.8	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0 33.0	Delta (dB) -6.3 -17.0 -6.3 -15.3 -7.2	Notes

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EGPRS MODE

		Complianc	e Certificatior	n Service	s Chamb	erB	
Company:		TRIMBLE					
Project #:		10U13319					
Date:		7/29/2010					
Test Engi	neer:	MENGISTU ME	EKURIA				
Configura	tion:	EUT WITH MO	DBILE MARK OP	TION F ANT	ENNA		
Mode:		TX, EGPRS PO	CS BAND				
Test Equi Receiving Substituti	<u>pment:</u> j: Horn T59, an on: Horn T72 S	d Camber B Substitution,	SMA Cables 6ft SMA Cable	(2089470	03) Wareh	Delta	Notes
Test Equi Receiving Substituti f GHz	<u>pment:</u> j: Horn T59, an on: Horn T72 S SA reading (dBm)	d Camber B Substitution, Ant. Pol. (H/V)	SMA Cables 6ft SMA Cable Path Loss (dBm)	(2089470 EIRP (dBm)	03) Wareh Limit (dBm)	Delta (dB)	Notes
Test Equi Receiving Substituti f GHz	pment:): Horn T59, an on: Horn T72 S SA reading (dBm)	d Camber B Substitution, Ant. Pol. (H/∨)	SMA Cables 6ft SMA Cable Path Loss (dBm)	(2089470 EIRP (dBm)	03) Wareh Limit (dBm)	Delta (dB)	Notes
Test Equi Receiving Substituti f GHz 1.850	<u>pment:</u> : Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 23.2	d Camber B Substitution, Ant. Pol. (H/V) V	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2	EIRP (dBm)	03) Wareh Limit (dBm) 33.0	Delta (dB) -6.4	Notes
Test Equi Receiving Substituti f GHz 1.850 1.850	pment: p: Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 -23.2	d Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5	EIRP (dBm) 26.6 16.3	03) Wareh Limit (dBm) 33.0 33.0	Delta (dB) -6.4 -16.7	Notes
Test Equi Receiving Substituti f GHz 1.850 1.850 1.880	<u>pment:</u>): Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 -23.2 -14.6	nd Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3	e (2089470 EIRP (dBm) 26.6 16.3 25.7	03) Wareh Limit (dBm) 33.0 33.0 33.0	Delta (dB) -6.4 -16.7 -7.3	Notes
Test Equi Receiving Substituti f GHz 1.850 1.850 1.880 1.880	pment:): Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 -23.2 -14.6 -22.3	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1	e (2089470 EIRP (dBm) 26.6 16.3 25.7 17.9	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0 33.0	Delta (dB) -6.4 -16.7 -7.3 -15.2	Notes
Test Equi Receiving Substituti f GHz 1.850 1.850 1.880 1.880	pment: : Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 -23.2 -14.6 -22.3	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1	e (2089470 EIRP (dBm) 26.6 16.3 25.7 17.9	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0	Delta (dB) -6.4 -16.7 -7.3 -15.2	Notes
Test Equi Receiving Substituti f GHz 1.850 1.880 1.880 1.910 1.010	pment: : Horn T59, an on: Horn T72 S SA reading (dBm) -13.6 -23.2 -14.6 -22.3 -14.1	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1 40.2	e (2089470 EIRP (dBm) 26.6 16.3 25.7 17.9 26.1	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0 33.0 33.0	Delta (dB) -6.4 -16.7 -7.3 -15.2 -7.0	Notes

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WCDMA MODE

		Compliance	e Certification	n Service	easurem s Chamb	ent er B	
Company	:	TRIMBLE					
Project #:		10U13319					
Date:		8/3/2010					
Test Engi	neer:	MENGISTU M	EKURIA				
Configura	ation:	EUT WITH MO	BILE MARK OP	TION F ANT	ENNA		
/lode:		TX, WCDMA P	CS BAND				
<u>Fest Equi</u> Receiving Substituti	p <u>ment:</u> g: Horn T59, an ion: Horn T72 S	d Camber B Substitution,	SMA Cables 6ft SMA Cable	(2089470	03) Wareh	nouse	Notoo
Test Equi Receiving Substituti f GHz	<u>pment:</u> g: Horn T59, an ion: Horn T72 S SA reading (dBm)	d Camber B Substitution, Ant. Pol. (H/V)	SMA Cables 6ft SMA Cable Path Loss (dBm)	(2089470 EIRP (dBm)	03) Wareh Limit (dBm)	ouse Delta (dB)	Notes
Test Equi Receiving Substituti f GHz	pment: g: Horn T59, an ion: Horn T72 S SA reading (dBm) -17.9	d Camber B Substitution, Ant. Pol. (H/V)	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2	(2089470 EIRP (dBm) 22.3	03) Wareh Limit (dBm) 33.0	Delta (dB)	Notes
Test Equi Receiving Substituti f GHz 1.852 1.852	pment: g: Horn T59, an ion: Horn T72 S SA reading (dBm) -17.9 -25.9	d Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5	(2089470 EIRP (dBm) 22.3 13.6	03) Wareh Limit (dBm) 33.0 33.0	Delta (dB) -10.7 -19.4	Notes
Test Equi Receiving Substituti f GHz 1.852 1.852	pment: g: Horn T59, an ion: Horn T72 S SA reading (dBm) -17.9 -25.9	d Camber B Substitution, Ant. Pol. (H/V) V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3	(2089470 EIRP (dBm) 22.3 13.6 21.5	03) Wareh Limit (dBm) 33.0 33.0 33.0	Delta (dB) -10.7 -19.4 -11.5	Notes
Test Equi Receiving Substituti GHz 1.852 1.852 1.880	pment: g: Horn T59, an ion: Horn T72 S SA reading (dBm) -17.9 -25.9 -18.8 -25.5	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1	(2089470 EIRP (dBm) 22.3 13.6 21.5 14.6	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0 33.0	Delta (dB) -10.7 -19.4 -11.5 -18.4	Notes
Test Equi Receiving Substituti f GHz 1.852 1.852 1.880 1.880 1.880	pment: g: Horn T59, an ion: Horn T72 S SA reading (dBm) -17.9 -25.9 -18.8 -25.5	d Camber B Substitution, Ant. Pol. (H/V) V H V H	SMA Cables 6ft SMA Cable Path Loss (dBm) 40.2 39.5 40.3 40.1 40.2	(2089470 EIRP (dBm) 22.3 13.6 21.5 14.6 21.9	03) Wareh Limit (dBm) 33.0 33.0 33.0 33.0 33.0	Delta (dB) -10.7 -19.4 -11.5 -18.4 -11.1	Notes

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7.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 IC: RSS-132, 4.5; RSS-233, 6.5

<u>LIMIT</u>

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P) dB$.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

- GPRS
- EGPRS
- WCDMA

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RESULTS

CELL BAND

GPRS MODE

Company: TRIMBLE Project #: 10013319 Date: 7/30/2010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, GPRS CELL BAND Image: Chamber B Pre-amplifer Filter f SA reading Ant. Pol. Distance Path Loss Preamp Filter ERP Limit I Low Ch. (824.20 MHz) (H/V) (m) (dB) (dB) 48.5 13.0 Low Ch. (824.20 MHz) 0 3.0 36.8 35.5 1.0 48.5 13.0 Low Ch. (824.20 MHz) 0 3.0 37.2 35.5 1.0 45.4 13.0 Low Ch. (824.20 MHz) - - - - - - Low Ch. (824.20 MHz) - - - - - - - Low Ch. (824.20 MHz) - - - - - - - Low Ch. (826.5 V 3.0 37.2 35.5 1.0 45.4 - <		
Project #: 10U13319 Date: 7/30/2010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, GPRS CELL BAND Filter Filter fm Chamber B V T145 8449B Filter f SA reading Ant. Pol. Distance Path Loss Preamplifer Filter ERP Limit I GHz (dBm) (H/V) (m) (dB) (dB) (dB) (dBm) (dBm) (dBm) Low Ch. (824.20 MHz) - - - - - Low Ch. (824.20 MHz) - - - - - Low Ch. (824.20 MHz) - - - - - Low Ch. (824.20 MHz) - - - - Low Ch. (824.20 MHz) - - - - - Low Ch. (824.20 MHz) - - - - - - Low Ch. (836.6 MHz) - - - - - - -		
Date: 7/30/2010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, GPRS CELL BAND End Pre-amplifer Filter 5m Chamber B T145 8449B Filter f SA reading Ant. Pol. Distance Path Loss Preamp GHz (dBm) (H/V) (m) (dB) (dB) (dBm) (dBm) Low Ch. @24.20 MHz) V 3.0 36.8 35.5 1.0 48.5 413.0 Law 3.0 346.8 35.5 1.0 45.4 13.0 J277 55.0 V 3.0 37.2 35.5 1.0 45.4 13.0 J273 60.3 H 3.0 37.3 35.5 1.0 52.2 13.0 J273 55.0 V 3.0 37.1 35.5 1.0 52.2 13.0 J273 60.3 H 3.0 37.5 1.0 52.2 13.0 J273 61.7 H 3.0		
Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, GPRS CELL BAND End Chamber Pre-amplifer Filter 5m Chamber B T145 8449B Filter Filter f SA reading Ant. Pol. Distance Path Loss Preamp Filter ERP Limit I GHz (dBm) (dHV) (m) (dB) (dB) (dBm) (dBm) Low Ch. (824.20 MHz) V 3.0 36.8 35.5 1.0 48.5 -13.0 L448 50.8 V 3.0 36.8 35.5 1.0 45.4 -13.0 J2473 52.6 V 3.0 37.2 35.5 1.0 45.4 -13.0 J2473 60.3 H 3.0 37.2 35.5 1.0 45.4 -13.0 J2473 60.3 H 3.0 37.1 35.5 1.0 52.2 -13.0 L473 54.8 V 3.0 41.3 35.5 1.0 52.2 <t< th=""><th></th><th></th></t<>		
Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, GPRS CELL BAND Chamber TX, GPRS CELL BAND Pre-amplifer Filter 5m Chamber B T145 8449B Filter Filter f SA reading (dBm) Ant. Pol. (H/V) Distance (m) Path Loss Preamplifer (dB) Filter ERP (dBm) Limit (dBm) I Low Ch. (824.20 MHz) 0 3.0 36.8 35.5 1.0 48.5 -13.0 Low Ch. (824.20 MHz) 0 3.0 41.7 35.4 1.0 45.4 13.0 1.648 50.8 V 3.0 31.7 35.5 1.0 45.4 -13.0 2.473 60.3 H 3.0 37.2 35.5 1.0 55.2 -13.0 2.473 60.3 H 3.0 37.1 35.5 1.0 52.2 13.0 2.473 60.3 H 3.0 37.1 35.5 1.0 52.2 13.0 2.473 50.5 H		
Mode: TX, GPRS CELL BAND Chamber Pre-amplifer Filter 5m Chamber B T145 8449B Filter f SA reading Ant. Pol. Distance Path Loss Preamp GHz (dBm) (H/V) (m) (dB) (dB) (dBm) (dBm) Low Ch. (824.20 MHz) - - - - - - Low Ch. (824.20 MHz) -		
Chamber Pre-amplifer Filter 5m Chamber B T145 8449B f SA reading Ant. Pol. (dBm) Distance Path Loss Preamp Filter Filter Imit (dBm) (dBm) <th></th> <th></th>		
5m Chamber B T145 8449B Filter 1 f SA reading Ant. Pol. (H/V) Distance Path Loss Preamp (dB) Filter (dBm) ERP (dBm) Limit (dBm) Low Ch. (824.20 MHz) (dB) (dB) (dB) (dB) (dB) (dB) (dBm) (dBm) Low Ch. (824.20 MHz) -	Limit	imit
f SA reading (dBm) Ant. Pol. (H/V) Distance (m) Path Loss (dB) Preamp (dB) Filter (dB) ERP (dBm) Limit (dBm) Low Ch. (824.20 MHz)	FCC PART 22	T 22
GHz (dBm) (H/V) (m) (dB) (dB) (dBm) (dBm) Low Ch. (824.20 MHz)	Delta	Note
Low Ch. (824-20 MHz) Image: style styl	(dB)	
1.648 50.8 V 3.0 36.8 35.5 1.0 48.5 -13.0 2.473 -52.6 V 3.0 41.7 35.4 1.0 48.5 -13.0 2.473 -52.6 V 3.0 41.1 35.5 1.0 45.4 -13.0 3.297 -55.0 V 3.0 44.1 35.5 1.0 45.4 -13.0 1.648 -57.9 H 3.0 37.2 35.5 1.0 -55.2 -13.0 2.473 -60.3 H 3.0 39.8 35.4 1.0 -54.9 -13.0 3.297 -61.7 H 3.0 39.8 35.5 1.0 -52.3 -13.0 3.297 -61.7 H 3.0 37.1 35.5 1.0 -52.2 -13.0 1.673 -54.8 V 3.0 37.1 35.5 1.0 48.7 -13.0 3.346 -58.4 V 3.0 44.3 35.5 1.0 48.7 -13.0 2.510 -57.6		
2.473 52.6 V 3.0 41.7 35.4 1.0 45.4 -13.0 3.297 .55.0 V 3.0 44.1 35.5 1.0 45.4 -13.0 3.297 .55.0 V 3.0 44.1 35.5 1.0 45.4 -13.0 1.648 .57.9 H 3.0 37.2 35.5 1.0 .55.2 -13.0 2.473 .60.3 H 3.0 39.8 35.4 1.0 .54.9 -13.0 3.297 .61.7 H 3.0 43.9 35.5 1.0 .52.3 .13.0 Mid Ch. (836.6 MHz)	-35.5	
3.297 55.0 V 3.0 44.1 35.5 1.0 45.4 13.0 1.648 .57.9 H 3.0 37.2 35.5 1.0 .55.2 .13.0 2.473 40.3 H 3.0 37.2 35.5 1.0 .55.2 .13.0 3.297 40.7 H 3.0 39.8 35.5 1.0 .52.3 .13.0 3.297 41.7 H 3.0 43.9 35.5 1.0 .52.3 .13.0 Mid Ch. (836.6 MHz)	-32.4	
1.648 -57.9 H 3.0 37.2 35.5 1.0 -55.2 -13.0 2.473 460.3 H 3.0 39.8 35.4 1.0 -54.9 -13.0 3.297 61.7 H 3.0 39.8 35.5 1.0 -52.3 -13.0 Mid Ch. (836.6 MHz)	-32.4	
2.4/3 40.3 H 3.0 39.8 35.4 1.0 54.9 -13.0 3.297 61.7 H 3.0 43.9 35.5 1.0 -52.3 -13.0 Mid Ch. (836.6 MHz)	42.2	
5.291 -51.7 H 3.0 43.9 35.5 1.0 -52.3 -13.0 Mid Ch. (836.6 MHz)	41.9	
Mid Ch. (836.6 MHz) V 3.0 37.1 35.5 1.0 -52.2 -13.0 1.673 54.8 V 3.0 37.1 35.5 1.0 -52.2 -13.0 2.510 52.9 V 3.0 41.8 35.4 1.0 45.5 -13.0 3.346 -58.4 V 3.0 44.3 35.5 1.0 48.7 -13.0 1.673 -55.5 H 3.0 37.5 35.5 1.0 -52.6 -13.0 2.510 -57.6 H 3.0 37.5 35.5 1.0 -52.6 -13.0 3.346 -62.1 H 3.0 44.1 35.5 1.0 -52.5 -13.0 3.346 -62.1 H 3.0 37.4 35.5 1.0 -52.5 -13.0 Hi Ch. (848.8 MHz) - - - - - - - 1.698 -52.8 V 3.0 37.4 35.5	-39.3	
Interpretation State V 3.0 37.1 35.5 1.0 52.2 -13.0 2.510 52.9 V 3.0 41.8 35.5 1.0 45.5 -13.0 3.346 58.4 V 3.0 44.3 35.5 1.0 48.7 -13.0 1.673 -55.5 H 3.0 37.5 35.5 1.0 48.7 -13.0 1.673 -55.5 H 3.0 37.5 35.5 1.0 -52.6 -13.0 5.50 57.6 H 3.0 37.5 35.5 1.0 -52.5 -13.0 3.346 -62.1 H 3.0 44.1 35.5 1.0 -52.5 -13.0 1.688 52.8 V 3.0 37.4 35.5 1.0 49.8 -13.0 1.546 48.6 V 3.0 42.0 35.4 1.0 41.1 13.0 1.395 57.9 V 3.0 42.0		
X1.5 X1.6 X1.7 X1.7 X1.7 X1.6 X1.2 Y1.3.0 2.510 52.9 V 3.0 41.8 35.4 1.0 45.5 13.0 3.346 58.4 V 3.0 44.3 35.5 1.0 48.7 -13.0 1.673 55.5 H 3.0 37.5 35.5 1.0 52.6 -13.0 2.510 57.6 H 3.0 39.9 35.4 1.0 52.1 -13.0 3.346 62.1 H 3.0 39.9 35.4 1.0 52.1 -13.0 3.346 62.1 H 3.0 37.4 35.5 1.0 -52.5 -13.0 41 Ch. (848.8 MHz)	-39.2	
3.346 58.4 V 3.0 44.3 35.5 1.0 48.7 13.0 1.673 55.5 H 3.0 37.5 35.5 1.0 -52.6 -13.0 1.673 55.5 H 3.0 37.5 35.5 1.0 -52.6 -13.0 2.510 57.6 H 3.0 39.9 35.4 1.0 -52.1 -13.0 3.346 62.1 H 3.0 39.9 35.4 1.0 -52.5 -13.0 Hi Ch. (848.8 MHz)	-32.5	
1.673 5.55 H 3.0 37.5 35.5 1.0 52.6 13.0 2.510 -57.6 H 3.0 39.9 35.4 1.0 -52.6 -13.0 3.346 -62.1 H 3.0 44.1 35.5 1.0 -52.5 -13.0 HI Ch. (848.8 MHz)	-35.7	
2.510 .57.6 H 3.0 39.9 35.4 1.0 .52.1 .13.0 3.346 .62.1 H 3.0 44.1 35.5 1.0 .52.5 .13.0 Hi Ch. (848.8 MHz)	-39.6	
3.346 62.1 H 3.0 44.1 35.5 1.0 52.5 -13.0 Hi Ch. (848.8 MHz)	-39.1	
Hi Ch. (848.8 MHz) V 3.0 37.4 35.5 1.0 49.8 -13.0 1.698 -52.8 V 3.0 37.4 35.5 1.0 49.8 -13.0 2.546 -48.6 V 3.0 42.0 35.4 1.0 41.1 -13.0 3.395 -57.9 V 3.0 44.4 35.5 1.0 48.1 -13.0 1.698 -58.1 H 3.0 37.7 35.5 1.0 51.9 13.0	-39.5	
In Ch. (940,6 milt) V 3.0 37.4 35.5 1.0 49.8 -13.0 1.698 -52.8 V 3.0 37.4 35.5 1.0 49.8 -13.0 2.546 48.6 V 3.0 42.0 35.4 1.0 41.1 -13.0 3.395 -57.9 V 3.0 44.4 35.5 1.0 48.1 -13.0 698 -58.1 H 3.0 37.7 35.5 1.0 54.1 -13.0		
2.546 48.6 V 3.0 42.0 35.4 1.0 41.1 -13.0 3.395 -57.9 V 3.0 44.4 35.5 1.0 48.1 -13.0 1698 58.1 H 3.0 37.7 35.5 1.0 51.9 13.0	-36.8	
3.395 57.9 V 3.0 44.4 35.5 1.0 48.1 13.0 1698 581 H 3.0 37.7 35.5 1.0 51.9 13.0	-28.1	
1698 581 H 30 377 355 10 549 130	-35.1	
	-41.9	
2.546 -56.8 H 3.0 40.1 35.4 1.0 -51.1 -13.0	-38.1	
3395 -62.0 H 3.0 44.3 35.5 1.0 -52.2 -13.0	-39.2	

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EGPRS MODE

Compan Project# Date: Test Eng Configur Mode:	y: :: jineer: ation:	TRIMBLE 10U13319 7/30/2010 MENGISTU M EUT WITH MI TX, EGPRS C	EKURIA DBILE MARK O ELL BAND	PTION F ANTE	ENNA					
	Chambe	r	P	re-amplifer			Filter		Li	mit
5	m Chamber B	•	T145	8449B	-	Filter	1	•	FCC PAR	Т 22 🗸
f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch. (824.2 MHz)									
1.648	-51.3	V	3.0	36.8	35.5	1.0	49.0	-13.0	-36.0	
2.473	-53.9	V	3.0	41.7	35.4	1.0	-46.7	-13.0	-33.7	
3.297	-56.5	V	3.0	44.1	35.5	1.0	-46.9	-13.0	-33.9	
1.648	-59.3	H	3.0	37.2	35.5	1.0	-56.6	-13.0	43.6	
2.473	-60.0	H	3.0	39.8	35.4	1.0	-54.5	-13.0	41.5	
5.291	-61.2	Н	3.0	43.9	35.5	1.0	-51.8	-13.0	-38.8	
Mid Ch. (8	36.6 MHz)									
1.673	-55.9	V	3.0	37.1	35.5	1.0	-53.4	-13.0	-40.4	
2.510	-52.8	V	3.0	41.8	35.4	1.0	45.4	-13.0	-32.4	
3.346	-57.9	v	3.0	44.3	35.5	1.0	-48.1	-13.0	-35.1	
1.0/3	-55.4	H	3.0	31.5	35.5	1.0	-52.5	-13.0	-39.5	
2.510	-56.8	H	3.0	39.9 44.1	35.4 35.5	1.0	-51.3	-13.0	-38.3	
Hi Ch. (84	8.8 MHz)									
1.698	-53.2	V	3.0	37.4	35.5	1.0	-50.2	-13.0	-37.2	
2.546	47.9	V	3.0	42.0	35.4	1.0	40.4	-13.0	-27.4	
5.595	-57.0	v	3.0	44.4	35.5	1.0	4/.1	-13.0	-34.1	
1.698	-56.2	Н	3.0	31.1	35.5	1.0	-53.0	-13.0	-40.0	
2.346	-57.4	H	3.0	40.1	35.4	1.0	-51./	-13.0	-38./	
5.595	-02.0	п	3.0	44.3	33.3	1.0	-32.8	-13.0	-33.0	

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WCDMA MODE

Company: TRIMBLE Project #: 10013319 Date: 8/4/2010 Fest Engineer: Kekistru McKurka Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Vode: TX, WCDMA CELL BAND Image: Pre-amplifer Filter Limit For Chamber B Image: Pre-amplifer Filter Limit GH2 QBm) QBm) QBm) QBm) QBm) QBm) Mode: X X0 X3.0	Company Project #: Date: Fest Engi Configura	:	TRIMBLE		- Ingili i et	Juency Su	ostitution	Measurer	nent		
Froject #: 10U13319 Date: 8/4/2010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA CELL BAND Image: Chamber B Pre-amplifer Filter Limit For Chamber B Image: Chamber B Image: Chamber B Filter Limit f SA reading Ant. Pol. Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GH2 (dBm) (H/V) Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GH2 (dBm) (H/V) 0 3.0 36.9 35.5 1.0 53.9 43.0 40.9 L653 56.3 V 3.0 39.8 35.4 1.0 49.0 43.0 43.0 L653 55.6 V 3.0 37.3 35.5 1.0 53.6 43.0 43.7 L666 <th< th=""><th>Project #: Date: Fest Engi Configura</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>	Project #: Date: Fest Engi Configura										
IDVANCE Date: BUACID DETERMINE DEVICENTY DEVICENTY Chamber Filter Limit Filter Limit Chamber Pre-amplifer Filter Limit For Chamber B Pre-amplifer Filter Limit Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Limit Colspan="2">Limit Colspan="2">Colspan="2" Colspan="2"	Date: Fest Engi Configura	•	10U13319								
Charter Diskable Test Engineer: KeloSistU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Vode: TX, WCDMA CELL BAND Chamber Pre-amplifer Filter Limit FOC PART 22 Filter Limit FCC PART 22 f SA reading GHz Ant. Pol. (dBm) Distance (H/V) Path Loss Pre-amplifer (dBm) Filter Limit Delta Note 6Hz (dBm) (H/V) 0 36.9 35.5 1.0 53.9 13.0 40.9 .ow Ch. @2c6.6 MHz)	Fest Engi Configura		8/4/2010								
Filter Microsol of microsol Configuration: EUT WiTH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA CELL BAND Chamber Pre-amplifer Filter Limit For Chamber B Pre-amplifer Filter Limit FCC PART 22 f SA reading Ant. Pol. Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GHz (dBm) (H/V) Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GHz (dBm) (H/V) Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GHz (dBm) (H/V) Distance Path Loss Pre-amplifer Filter ERP Limit Delta Note GHz S6.3 V 3.0 36.9 35.5 1.0 53.9 13.0 40.9 1.306 63.4 H 3.0 37.3 35.5<	Configura	incer	MENCISTUM								
Chamber EUT WITH MUDBLE MARK OF HOUSE ANTENNA Wode: Filter Filter Limit Chamber • Pre-amplifer Filter Filter CCPART 22 f SA reading Ant. Pol. Distance Path Loss Preamplifer Filter ERP Limit PCC PART 22 f SA reading Ant. Pol. Distance Path Loss Preamplifer (dB) (dBm) (dBm) (dBm) (dBm) (dBm) Note GHz (dBm) (H/V) (m) (dB filter ERP Limit Delta Note .ow Ch. 826.6 MHz) 0 3.0 36.9 35.5 1.0 43.0 40.9 .a80 55.3 V 3.0 44.2 35.5 1.0 53.9 43.0 40.9 .a80 35.4 1.0 43.0 43.7 23.0 43.7 .a80 39.0 H 3.0 34.4 35.5 1.0 55.5 13.0 40.9	ະonngura	neer.									
I., WOUMA CELL DAND Pre-amplifer Filter Limit Filter 1 Limit Filter 1 Limit Colspan="2">Colspan="2">Limit Clamit Filter 1 Limit Clamit Filter 1 Limit Clamit Filter 1 Clamit		ation.		JEILE MARK U	PHONEANIC	INNA					
Filter Filter Filter Filter FCC PART 22 f SA reading (dBm) Ant. Pol. (H/V) Distance (dB) Path Loss (dB) Preamp (dB) Filter (dB) ERP (dB) Limit (dB) Delta (dB) Note 6Hz (dBm) (H/V) 0		Chambe	ar a	P	re-amplifer			Filter		Li	mit
5m Chamber B Index 8449B Image: Pice Part Loss Preamp (dB) Filter 1 PICC PART 22 f SA reading Ant. Pol. (dBm) Distance Path Loss Preamp (dB) (dBm) (dBm) (dBm) Note GHz (dBm) (H/V) (m) (dB)		Chambe	<u> </u>		21400			-	4	FOO DAD	T 00
f SA reading (dBm) Ant. Pol. (H/V) Distance (m) Path Loss (dB) Preamp (dB) Filter (dB) ERP (dBm) Limit (dBm) Delta (dB) Note 0.0v Ch. (826.6 MHz)	5m	n Chamber F	3 🗸	T145	8449B	-	Filter	1	-	FCC PAR	r 22 🗸
f SA reading (dBm) Ant. Pol. (H/V) Distance (m) Path Loss (dB) Preamp (dB) Filter (dB) ERP (dBm) Limit (dBm) Delta (dB) Note 0.ow Ch. (826.6 MHz)											
GHz (dBm) (H/V) (m) (dB) (dB) (dBm) (dBm) (dBm) (dBm) Low Ch. (826.6 MHz)	f	SA reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	ERP	Limit	Delta	Notes
ow Ch. (826.6 MHz) C <thc< th=""> <thc< th=""> <thc< th=""></thc<></thc<></thc<>	GHz	(dBm)	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
1.653 56.3 V 3.0 36.9 35.5 1.0 53.9 13.0 40.9 2.480 56.3 V 3.0 41.7 35.4 1.0 49.0 13.0 36.0 3.306 63.5 V 3.0 44.2 35.5 1.0 53.9 13.0 40.9 1.653 59.4 H 3.0 37.3 35.5 1.0 56.7 13.0 40.5 2.480 59.0 H 3.0 37.3 35.5 1.0 53.9 13.0 40.5 3.06 63.4 H 3.0 37.1 35.5 1.0 53.9 13.0 40.9 Wid Ch. (835.00 MHz)	.ow Ch. (8	26.6 MHz)		<u> </u>		_ †	<u> </u>	<u> </u>			
2.480 56.3 V 3.0 41.7 35.4 1.0 49.0 .13.0 .36.0 3.306 63.5 V 3.0 44.2 35.5 1.0 53.9 13.0 40.9 1.653 59.4 H 3.0 37.3 35.5 1.0 56.7 .13.0 43.7 .480 59.0 H 3.0 39.8 35.4 1.0 53.5 1.3.0 40.9 .4306 63.4 H 3.0 39.8 35.5 1.0 53.9 .13.0 40.9 .440 3.0 39.8 35.5 1.0 53.5 1.3.0 40.9 .4306 63.4 H 3.0 39.8 35.5 1.0 53.9 .13.0 40.9 .440 3.5 1.0 55.6 13.0 42.6 .505 .55.6 V 3.0 37.4 35.5 1.0 52.0 13.0 43.9 .505 .61.2 H 3.0 37.4 35.5 1.0 54.0	.653	-56.3	V	3.0	36.9	35.5	1.0	-53.9	-13.0	-40.9	
3.306 63.5 V 3.0 44.2 35.5 1.0 53.9 13.0 40.9 1.653 59.4 H 3.0 37.3 35.5 1.0 56.7 13.0 43.7 2.480 59.0 H 3.0 39.8 35.4 1.0 53.5 13.0 40.5 3.06 63.4 H 3.0 39.8 35.5 1.0 53.5 13.0 40.5 3.06 63.4 H 3.0 39.8 35.5 1.0 53.9 13.0 40.9 3.06 63.4 H 3.0 37.1 35.5 1.0 53.6 13.0 40.5 3.06 55.6 V 3.0 37.1 35.5 1.0 55.6 13.0 42.6 5.505 55.6 V 3.0 37.4 35.5 1.0 56.9 13.0 43.9 2.505 61.2 H 3.0 39.9 35.4 1.0 56.9 13.0 42.7 3.40 63.6 H 3.0 37.4 <td>.480</td> <td>-56.3</td> <td>V</td> <td>3.0</td> <td>41.7</td> <td>35.4</td> <td>1.0</td> <td>-49.0</td> <td>-13.0</td> <td>-36.0</td> <td></td>	.480	-56.3	V	3.0	41.7	35.4	1.0	-49.0	-13.0	-36.0	
1.653 59.4 H 3.0 37.3 35.5 1.0 56.7 -13.0 43.7 2.480 59.0 H 3.0 39.8 35.4 1.0 53.5 13.0 40.5 3.306 63.4 H 3.0 39.8 35.4 1.0 53.5 13.0 40.5 3.306 63.4 H 3.0 44.0 35.5 1.0 53.9 13.0 40.9 Wild Ch. (835.00 MHz)	.306	-63.5	V	3.0	44.2	35.5	1.0	-53.9	-13.0	40.9	
2.480 59.0 H 3.0 39.8 35.4 1.0 53.5 -13.0 40.5 3.306 63.4 H 3.0 44.0 35.5 1.0 53.9 13.0 40.9 Mid Ch. (835.00 MHz)	.653	-59.4	H	3.0	37.3	35.5	1.0	-56.7	-13.0	43.7	
3.306 63.4 H 3.0 44.0 35.5 1.0 53.9 -13.0 40.9 Mid Ch. (835.00 MHz)	.480	-59.0	Н	3.0	39.8	35.4	1.0	-53.5	-13.0	-40.5	
Mid Ch. (835.00 MHz) -	.306	-63.4	H	3.0	44.0	35.5	1.0	-53.9	-13.0	-40.9	
Mid Ch. (833.00 MHz) V 3.0 37.1 35.5 1.0 55.6 13.0 42.6 5.005 55.6 V 3.0 37.1 35.5 1.0 55.6 13.0 42.6 5.05 55.6 V 3.0 41.8 35.4 1.0 48.1 13.0 35.1 1.340 61.8 V 3.0 37.4 35.5 1.0 52.0 13.0 39.0 1.670 59.8 H 3.0 37.4 35.5 1.0 56.9 13.0 43.9 2.505 61.2 H 3.0 39.9 35.4 1.0 54.0 13.0 42.7 .340 63.6 H 3.0 37.4 35.5 1.0 54.0 13.0 42.7 .340 63.6 H 3.0 37.4 35.5 1.0 54.0 13.0 41.0 .693 56.4 V 3.0 37.4 35.5 1.0 53.8 13.0 40.8 .693 56.4 V 3.0 37.7	PLCE 0	25 00 MUL-)		_					4		
10/0 36.1 V 3.0 37.1 33.3 1.0 -13.0 -42.5 2.505 55.6 V 3.0 41.8 35.4 1.0 48.1 13.0 -35.1 3.40 61.8 V 3.0 41.8 35.5 1.0 52.0 -13.0 39.0 1.670 59.8 H 3.0 37.4 35.5 1.0 56.9 -13.0 43.9 5.05 61.2 H 3.0 37.4 35.5 1.0 55.7 13.0 42.7 1.340 63.6 H 3.0 34.1 35.5 1.0 54.0 13.0 41.0 1.340 63.6 H 3.0 37.4 35.5 1.0 54.0 13.0 41.0 1.340 63.6 H 3.0 37.4 35.5 1.0 53.5 13.0 40.5 .554 S56.4 V 3.0 37.4 35.5 1.0 53.8 13.0 40.5 .540 52.2 V 3.0 44.4 35	And Ch. (03	5.00 MHZ)	V	3.0	27.1	25.5	1.0	55.6	13.0	12.5	
1.300 1.30 1.00	.070	-50.1	V	3.0	41.8	35.5	1.0	-55.0	-13.0	-42.0	
1.540 5.6 4 2.50 1.0 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.00 5.6.0 1.3.0 43.9 1.00 5.6.9 1.3.0 43.9 1.00 5.6.1 1.00 5.6.7 1.3.0 42.7 1.00 5.6.0 1.3.0 42.7 1.00 5.6.0 1.00 5.6.0 1.00 41.0<	340	-55.0	v	3.0	41.0	35.5	1.0	-52.0	-13.0	-35.1	
1000 503 10 503 504 505 100 503 100 <td>670</td> <td>-59.8</td> <td>H</td> <td>3.0</td> <td>37.4</td> <td>35.5</td> <td>1.0</td> <td>-56.9</td> <td>-13.0</td> <td>43.9</td> <td></td>	670	-59.8	H	3.0	37.4	35.5	1.0	-56.9	-13.0	43.9	
340 63.6 H 3.0 44.1 35.5 1.0 54.0 1.3.0 41.0 11 Ch. (846.6 MHz)	.505	-61.2	H	3.0	39.9	35.4	1.0	-55.7	-13.0	42.7	
Hi Ch. (846.6 MHz) Joint Chi (846.6 MHz) <t< td=""><td>.340</td><td>-63.6</td><td>H</td><td>3.0</td><td>44.1</td><td>35.5</td><td>1.0</td><td>-54.0</td><td>-13.0</td><td>41.0</td><td></td></t<>	.340	-63.6	H	3.0	44.1	35.5	1.0	-54.0	-13.0	41.0	
Hi Ch. (846.6 MHz) V 3.0 37.4 35.5 1.0 53.5 13.0 40.5 1.693 56.4 V 3.0 37.4 35.5 1.0 53.5 13.0 40.5 2.540 52.2 V 3.0 41.9 35.4 1.0 44.7 13.0 31.7 3.86 63.7 V 3.0 44.4 35.5 1.0 53.8 13.0 40.8 693 60.4 H 3.0 37.7 35.5 1.0 57.3 13.0 44.3 1.539 59.0 H 3.0 40.1 35.4 1.0 53.4 13.0 40.4 1.386 63.5 H 3.0 44.3 35.5 1.0 53.7 13.0 40.4 1.386 63.5 H 3.0 44.3 35.5 1.0 53.7 13.0 40.7				1		1					
1.693 56.4 V 3.0 37.4 35.5 1.0 53.5 13.0 40.5 5.540 52.2 V 3.0 41.9 35.4 1.0 44.7 13.0 31.7 3.86 63.7 V 3.0 44.4 35.5 1.0 53.8 13.0 40.8 (693 60.4 H 3.0 37.7 35.5 1.0 57.3 13.0 40.8 (593 60.4 H 3.0 37.7 35.5 1.0 57.3 13.0 44.3 1.539 59.0 H 3.0 40.1 35.4 1.0 53.7 13.0 40.4 1.386 63.5 H 3.0 44.3 35.5 1.0 53.7 13.0 40.7	li Ch. (846	.6 MHz)		1							
2.540 52.2 V 3.0 41.9 35.4 1.0 44.7 -13.0 -31.7 3.86 63.7 V 3.0 44.4 35.5 1.0 53.8 -13.0 40.8 1.693 60.4 H 3.0 37.7 35.5 1.0 57.3 13.0 44.3 539 59.0 H 3.0 40.1 35.4 1.0 53.4 -13.0 40.4 1.386 63.5 H 3.0 40.1 35.4 1.0 53.7 -13.0 40.4	.693	-56.4	V	3.0	37.4	35.5	1.0	-53.5	-13.0	-40.5	
3.386 63.7 V 3.0 44.4 35.5 1.0 53.8 -13.0 40.8 1.693 -60.4 H 3.0 37.7 35.5 1.0 -57.3 -13.0 44.3 5.539 59.0 H 3.0 40.1 35.4 1.0 -53.4 -13.0 40.4 1.386 -63.5 H 3.0 44.3 35.5 1.0 -53.7 -13.0 40.4	.540	-52.2	V	3.0	41.9	35.4	1.0	-44.7	-13.0	-31.7	
1.693 60.4 H 3.0 37.7 35.5 1.0 57.3 -13.0 44.3 1.539 59.0 H 3.0 40.1 35.4 1.0 53.4 -13.0 40.4 1.386 63.5 H 3.0 44.3 35.5 1.0 53.7 -13.0 40.4	.386	-63.7	V	3.0	44.4	35.5	1.0	-53.8	-13.0	-40.8	
2.539 59.0 H 3.0 40.1 33.4 1.0 -53.4 -13.0 40.4 1.386 63.5 H 3.0 44.3 35.5 1.0 53.7 -13.0 40.7	.693	-60.4	H	3.0	37.7	35.5	1.0	-57.3	-13.0	44.3	
6,386 -63.5 H 3.0 44.3 35.5 1.0 -53.7 -13.0 40.7	.539	-59.0	H	3.0	40.1	35.4	1.0	-53.4	-13.0	40.4	
	.386	-63.5	H	3.0	44.3	35.5	1.0	-53.1	-13.0	-40.7	
				4	++	,J					

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PCS BAND

GPRS MODE

			Co Above 1GH	mpliance Ca Iz High Fred	ertification Juency Sul	Services	Measurer	nent		
			Above Ioi	Zinghire	fuency ou	sitution	Measurer	nent		
Company:		TRIMBLE								
Project #:		10U13319								
Date:		7/30/2010								
Test Engi	neer:	MENGISTU ME	-KURIA							
Configura	tion	EUT WITH MO		DTION E ANTE	NNA					
Jodo:										
lode:		IX, GPRS PU	S BAND							
	Chambe	r	Pi	re-amplifer			Filter		Li	mit
5m	Chamber B	•	T145	8449B	•	Filter	1	-	FCC PAR	Т 24 🗸
			,			,		_	,	
f	SA reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
.ow Ch. (18	50.20 MHz)									
.700	-44.8	V	3.0	45.1	35.4	1.0	-34.0	-13.0	-21.0	
5.555	-52.6	V	3.0	49.2	35.4	1.0	-37.8	-13.0	-24.8	
.398	-51.5	V	3.0	51.3	35.7	1.0	-35.0	-13.0	-22.0	
.253	-63.4	v	3.0	53.6	35.6	1.0	-44.4	-13.0	-31.4	
1.100	-61.0	V	3.0	55.9	34.8	1.0	-39.0	-13.0	-26.0	
2.949	-67.6	V	3.0	58.0	34.0	1.0	42.6	-13.0	-29.6	
.700	-52.4	V	3.0	45.1	35.4	1.0	41.7	-13.0	-28.7	
.555	-62.6	Н	3.0	50.0	35.4	1.0	47.0	-13.0	-34.0	
.398	-57.5	Н	3.0	53.0	35.7	1.0	-39.2	-13.0	-26.2	
.253	-64.4	Н	3.0	55.1	35.6	1.0	43.9	-13.0	-30.9	
1.100	-65.7	H	3.0	56.0	34.8	1.0	43.4	-13.0	-30.4	
2.949	-67.8	Н	3.0	57.6	34.0	1.0	43.2	-13.0	-30.2	
	0 00 MU-)									
ma Ch. (18 2760	45.4	V	3.0	45.2	25.2	10	34.5	12.0	21.5	
640	-43.4	V	3.0	45.5	35.3	1.0	-54.5	-13.0	-21.3	
520	41 2	v	3.0		35.4	1.0	.24.4	-13.0	-20.0	
.400	-62.5	v	3.0	53.7	35.6	1.0	43.3	-13.0	-30.3	
1.280	-62.6	v	3.0	56.1	34.7	1.0	40.2	-13.0	-27.2	
3.160	-68.7	v	3.0	58.3	34.0	1.0	43.4	-13.0	-30.4	
.760	-56.5	H	3.0	45.5	35.3	1.0	45.3	-13.0	-32.3	
.640	-60.3	H	3.0	50.2	35.4	1.0	-44.5	-13.0	-31.5	
.520	-50.5	Н	3.0	53.1	35.7	1.0	-32.1	-13.0	-19.1	
.400	-62.5	Н	3.0	55.2	35.6	1.0	41.9	-13.0	-28.9	
1.280	-62.0	Н	3.0	56.1	34.7	1.0	-39.6	-13.0	-26.6	
3.160	-71.3	Н	3.0	57.9	34.0	1.0	-46.4	-13.0	-33.4	
li Ch. (1909).80 MHz)									
.820	-45.7	v	3.0	45.4	35.3	1.0	-34.5	-13.0	-21.5	
.729	44.9	V	3.0	49.4	35.4	1.0	-30.0	-13.0	-17.0	
.639	49.2	v	3.0	51.6	35.7	1.0	-32.3	-13.0	-19.3	
.549	-58.6	v	3.0	53.9	35.6	1.0	-39.2	-13.0	-26.2	
1.459	-64.1	v	3.0	56.3	34.6	1.0	41.4	-13.0	-28.4	
3.369	-65.8	v	3.0	58.5	33.9	1.0	40.2	-13.0	-27.2	
.820	-54.0	Н	3.0	45.7	35.3	1.0	42.5	-13.0	-29.5	
.729	-52.8	Н	3.0	50.3	35.4	1.0	-36.9	-13.0	-23.9	
.639	-56.0	Н	3.0	53.2	35.7	1.0	-37.4	-13.0	-24.4	
.549	-64.1	Н	3.0	55.4	35.6	1.0	43.2	-13.0	-30.2	
1.459	-64.2	Н	3.0	56.1	34.6	1.0	41.7	-13.0	-28.7	
3.369	-66.7	Н	3.0	58.2	33.9	1.0	41.4	-13.0	-28.4	
				<u> </u>					ļ	

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EGPRS MODE

Company: Project #: Date: Test Engi Configura Mode:	ineer: ation:	TRIMBLE 10U13319 7/30/2010 MENGISTU MI EUT WITH M(TX, EGPRS P(EKURIA DBILE MARK O CS BAND	PTION F ANTE	ENNA					
	Chambe	r	P	re-amplifer			Filter		Li	mit
5m	n Chamber B	•	T145	8449B	•	Filter	1	•	FCC PAR	T 24 🗸
f	SA reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	EIRP	Limit	Delta	Notes
GHZ	(aBm)	(H/V)	(m)	(aB)	(aB)	(aB)	(aBm)	(aBm)	(aB)	
2.700	-44.0	v	3.0	45.1	35.4	1.0	-33.3	-13.0	-20.3	
5.555	-50.7	v	3.0	49.2	35.4	1.0	-35.9	-13.0	-22.9	
7.398	-51.1	٧	3.0	51.3	35.7	1.0	-34.5	-13.0	-21.5	
).253	-57.7	V	3.0	53.6	35.6	1.0	-38.7	-13.0	-25.7	
11.100	-64.2	V	3.0	55.9	34.8	1.0	42.2	-13.0	-29.2	
3 700	-07.5	V	3.U 3.0	20.U 25.1	34.U 35.4	1.0	42.5	-13.0	-29.5	
5.555	-65.0	H	3.0	50.0	35.4	1.0	-49.4	-13.0	-36.4	
7.398	-57.2	H	3.0	53.0	35.7	1.0	-38.9	-13.0	-25.9	
9.253	-66.7	Н	3.0	55.1	35.6	1.0	-46.2	-13.0	-33.2	
11.100	-64.8	H	3.0	56.0	34.8	1.0	42.6	-13.0	-29.6	
12.949	-67.7	Н	3.0	0.10	54.0	1.0	43.1	-13.0	-30.1	
Mid Ch. (18	380.00 MHz)						-	-		
3.760	45.8	٧	3.0	45.3	35.3	1.0	-34.9	-13.0	-21.9	
5.640	-54.3	٧	3.0	49.3	35.4	1.0	-39.5	-13.0	-26.5	
7.520	41.3	V	3.0	51.4	35.7	1.0	-24.5	-13.0	-11.5	
9.400	-62.4	V	3.0	53.7	35.6	1.0	43.3	-13.0	-30.3	
13.160	-67.9	V	3.0	58.3	34.0	1.0	42.2	-13.0	-29.6	
3.760	-53.6	H	3.0	45.5	35.3	1.0	-42.4	-13.0	-29.4	
5.640	-62.0	Н	3.0	50.2	35.4	1.0	-46.3	-13.0	-33.3	
7.520	49.7	Н	3.0	53.1	35.7	1.0	-31.3	-13.0	-18.3	
9.400	-64.8	Н	3.0	55.2	35.6	1.0	44.1	-13.0	-31.1	
11.280	-62.0	H	3.0	56.1	34.7	1.0	-39.7	-13.0	-26.7	
13.100	-07.0	n	3.0	51.9	J4.U	1.0	-42.9	-13.0	-23.3	
Hi Ch. (190	9.80 MHz)							1		
3.820	45.6	٧	3.0	45.4	35.3	1.0	-34.5	-13.0	-21.5	
5.729	44.3	V	3.0	49.4	35.4	1.0	-29.4	-13.0	-16.4	
7.639	49.3	V	3.0	51.6	35.7	1.0	-32.4	-13.0	-19.4	
9.049	-59.6	V	3.0 3.0	56.2	35.6 31.6	1.0	40.2	-13.0	-21.2	
13.369	-64.6	V	3.0	58.5	33.9	1.0		-13.0	-26.1	
3.820	-56.8	H	3.0	45.7	35.3	1.0	-45.4	-13.0	-32.4	
5.729	-56.5	H	3.0	50.3	35.4	1.0	-40.6	-13.0	-27.6	
7.639	-59.6	Н	3.0	53.2	35.7	1.0	41.1	-13.0	-28.1	
9.549	-59.9	Н	3.0	55.4	35.6	1.0	-39.0	-13.0	-26.0	
11.459	-67.4	H	3.0	56.1	34.6	1.0	44.9	-13.0	-31.9	
12 200	-68.4	Н	3.0	J99.7	55.9	1.0	45.1	-13.0	-30.1	

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WCDMA MODE

Company: TRIMBLE Project #: 10U13319 Date: 77302010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA PCS BAND Image: Filter Filter Limit FOR Chamber Image: Filter Limit FCC PART 24 f SA reading Ant. Pol. Distance Path Loss Pre-amplifer Filter Limit Delta Note GHz (dBm) (H/V) (m) (dB) (dB) G(B) 30.5 5557 66.6 V 3.0 45.1 35.4 1.0 43.5 13.0 30.5 5557 68.4 H 3.0 53.0 35.4 1.0 43.0 33.0 35.4 1.0 43.0 33.0 5.557 68.4 H 3.0 53.0 35.7 1.0 50.0 37.7 H 3.0 53.0 35.7				ADOVE IGF		quency Su	usuluuon	Weasure	nent		
Project #: 10U13319 Date: 7302010 Test Engineer: MCNISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA PCS BAND Filter Filter Limit For Chamber T145 8449B Filter Filter Image: Chamber B T145 8449B Filter Filter Image: Chamber B Image: Chamber B Chamber B f SA reading Ant. Pol. (m) Distance Path Loss Pre-amplifer Filter EIRP (dBm) Limit Delta Note GHz (dBm) (HV) 0 0 92.354 1.0 43.5 13.0 30.5 Stor 56.6 V 3.0 45.1 35.4 1.0 43.5 33.8 7.410 68.6 V 3.0 53.4 1.0 43.5 33.8 7.410 68.4 H 3.0 53.0 35.7 1.0 52.8 13.0 39.8 7.410 68.9 H 3.0 45.3 35.3 1.0 4	Company	<i> </i> :	TRIMBLE								
Date: 7.30/2010 Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA PCS BAND Chamber T Filter Filter Son Chamber B T T145 8449B Filter Filter Limit For Chamber B T Distance Path Loss Preamplifer Filter Limit Delta Not GHz (dBm) (H/V) (m) (dB) GHZ EIRP Limit Delta Not 3.705 54.3 V 3.0 45.1 35.4 1.0 43.5 13.0 30.5 5557 66.6 V 3.0 45.3 35.4 1.0 43.5 13.0 38.8 7.410 68.9 H 3.0 53.0 35.7 1.0 50.7 41.3 38.8 7.410 68.9 H 3.0 45.3 35.3 1.0 42.2 13.0 38.8 <tr< th=""><th>Project#</th><th>:</th><th>10U13319</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr<>	Project#	:	10U13319								
Test Engineer: MENGISTU MEKURIA Configuration: EUT WITH MOBILE MARK OPTION F ANTENNA Mode: TX, WCDMA PCS BAND Chamber Pre-amplifer Filter Limit f SA reading GHz Ant. Pol. (dBm) Distance (m) Path Loss Pre-amplifer Filter Limit f SA reading GHz Ant. Pol. (dBm) Distance (m) Path Loss Pre-amplifer Filter Limit Delta Not 557 56.6 V 3.0 45.1 35.4 1.0 43.5 43.0 30.5 557 66.6 V 3.0 51.3 35.7 1.0 42.5 43.0 36.9 557 66.9 H 3.0 53.0 35.4 1.0 52.0 43.0 38.8 7.410 68.4 H 3.0 53.0 35.4 1.0 42.2 43.0 33.8 7.410 68.4 H 3.0 53.0 35.4 1.0 42.2 43.0 33.8 7.410 68.4 H	Date	-	7/30/2010								
Increase	Test End	ineer:	MENGISTU M								
Chamber Fre-amplifer Filter Limit For Chamber B T145 8449B Filter Filter Limit For Chamber B Other State Distance Path Loss Preamplifer Filter Limit FCC PART 24 f SA reading GHz Ant. Pol. Distance Path Loss Preamp Filter EIRP Limit Delta Note GHz (dBm) (H/V) (m) (dB) (dB) (dBm) (dB) (dB) (dB) Note Jords 54.3 V 3.0 45.1 35.4 1.0 51.8 13.0 30.5 55.7 557 66.6 V 3.0 51.3 35.7 1.0 52.0 13.0 39.8 7.410 68.8 V 3.0 53.7 1.0 50.7 13.0 39.8 7.410 68.9 H 3.0 53.0 35.7 1.0 50.7 13.0 37.7 Mid Ch. (1880 MHz)	Configur	ation:	ELIT WITH M								
Chamber Pre-amplifer Filter Limit 5m Chamber B - T145 8449B - Filter 1 - Limit F SA reading Ant. Pol. (dBm) Distance Path Loss Preamp Filter 1 - Filter 1 - GHz (dBm) (HV) (m) (dB) (dB) (dBm) (dB) Note 3.705 54.3 V 3.0 45.1 35.4 1.0 43.5 13.0 30.5 5.557 66.6 V 3.0 45.3 35.4 1.0 43.5 13.0 38.8 A10 68.8 V 3.0 45.3 35.4 1.0 49.9 13.0 36.9 5.557 68.4 H 3.0 50.0 35.4 1.0 50.7 13.0 37.7 A10 68.9 H 3.0 10.0 50.7 13.0 37.1 5.257 68.4 H 3.0 53.3 1.0 <	Mada	ation.									
Chamber Pre-amplifer Filter Limit 5m Chamber B T145 8449B Filter 1 FCC PART 24 f SA reading Ant. Pol. (dBm) Distance Path Loss Preamplifer Filter 1 FCC PART 24 f SA reading Ant. Pol. (dBm) Distance Path Loss Preamplifer (dBm) (dBm) Delta Note own Ch (1852.4 Mitz). 0 0 43.5 1.0 43.5 1.3.0 30.5 557 557 66.6 V 3.0 51.3 35.7 1.0 52.8 13.0 38.8 410 68.6 V 3.0 53.0 35.7 1.0 52.8 13.0 39.0 7.05 60.9 H 3.0 53.0 35.7 1.0 50.7 13.0 37.7 410 68.9 H 3.0 53.0 35.7 1.0 50.7 13.0 37.7 760 53.1 V 3.0 45.3 35.3 1.0	node.		IA, WODINA F	CS DAND							
Sm Chamber B T145 8449B Filter 1 FCC PART 24 f SA reading GHz Ant. Pol. (dBm) Distance (H/V) Path Loss (m) Preamp (dB) Filter (dB) Limit (dBm) Delta (dBm) Note 500 Ch (1852.4 MHz).		Chambe	r	Р	re-amplifer			Filter			_imit
f SA reading (dBm) Ant. Pol. (H/V) Distance (m) Path Loss (dB) Preamp (dB) Filter (dB) EIRP (dBm) Limit (dBm) Delta (dB) Note (dB) Low Ch (1852.4 MHz).	51	n Chamber B	• •	T145	8449B	-	Filter	1	-	FCC PA	RT 24 🗸
f SA reading Ant. Pol. Distance Path Loss Preamp (dB) Filter (dB) EIRP (dB) Limit (dB) Delta (dB) Note GHz (dBm) (H/V) (m) (dB) (dB) (dB) (dBm) (dB) (dBm) (dB) (dBm) (dBm) (dB) (dBm) (dB) (dB) (dBm) (dB) (dB) (dBm) (dB) 30.5 5557 566.6 V 3.0 45.3 35.4 1.0 51.8 13.0 38.8 30.0 35.7 1.0 52.8 13.0 36.9 35.5 55.57 468.4 H 3.0 53.0 35.7 1.0 50.7 13.0 37.7 30.0 37.7 30.0 37.7 30.0 37.7 30.0 37.7 30.0 35.4 1.0 46.8 13.0 33.8 35.4 1.0 46.8 13.0 3	1			,		_	,		_		
GHz (dBm) (H/V) (m) (dB) (dB) (dB) (dBm) (dBm) (dB) Low Ch (1852.4 MHz).	f	SA reading	Ant. Pol.	Distance	Path Loss	Preamp	Filter	EIRP	Limit	Delta	Notes
Low Ch (1852.4 MHz). Image: Market Mither Market Mark	GHz	(dBm)	(H/∨)	(m)	(dB)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
3.705 54.3 V 3.0 45.1 35.4 1.0 43.5 -13.0 30.5 5.557 466.6 V 3.0 49.2 35.4 1.0 51.8 -13.0 38.8 7.410 488.6 V 3.0 45.3 35.7 1.0 52.0 -13.0 39.0 3.705 60.9 H 3.0 45.3 35.4 1.0 49.2 -13.0 36.9 5.557 488.4 H 3.0 50.0 35.4 1.0 52.8 -13.0 39.8 7.410 68.9 H 3.0 53.0 35.7 1.0 50.7 -13.0 37.7 Mid Ch. (1880 MHz)	Low Ch (1	852.4 MHz).									
5.57 66.6 V 3.0 49.2 35.4 1.0 51.8 -13.0 38.8 7.410 68.6 V 3.0 51.3 35.7 1.0 -52.0 -13.0 39.0 3.705 60.9 H 3.0 45.3 35.4 1.0 -49.9 -13.0 39.0 5.557 68.4 H 3.0 50.0 35.4 1.0 -52.8 -13.0 39.8 7.410 68.9 H 3.0 53.0 35.7 1.0 -50.7 -13.0 37.7 Mid Ch. (1880 MHz) S760 53.1 V 3.0 45.3 35.3 1.0 42.2 -13.0 29.2 5.640 61.7 V 3.0 45.5 35.3 1.0 49.3 8.760 60.7 H 3.0 45.5 35.3 1.0 49.5 -13.0 36.5 5.640 69.0 H 3.0 53.1 35.7 <t< td=""><td>3.705</td><td>-54.3</td><td>V</td><td>3.0</td><td>45.1</td><td>35.4</td><td>1.0</td><td>43.5</td><td>-13.0</td><td>-30.5</td><td></td></t<>	3.705	-54.3	V	3.0	45.1	35.4	1.0	43.5	-13.0	-30.5	
A10 68.6 V 3.0 51.3 35.7 1.0 -52.0 -13.0 39.0 3.705 60.9 H 3.0 45.3 35.4 1.0 49.9 -13.0 36.9 5.57 68.4 H 3.0 50.0 35.4 1.0 49.9 -13.0 39.8 7.410 68.9 H 3.0 53.0 35.7 1.0 -50.7 -13.0 37.7 H 3.0 53.0 35.7 1.0 -50.7 -13.0 37.7 H 3.0 53.0 35.7 1.0 -50.7 -13.0 37.7 H 3.0 45.3 35.3 1.0 42.2 -13.0 -29.2 5640 61.7 V 3.0 45.3 35.3 1.0 46.8 -13.0 37.1 3.760 60.7 H 3.0 45.5 35.3 1.0 49.3 -13.0 36.5 5.640 69.0 H 3.0 53.1 35.7 1.0 53.3 -13.0 36.5 </td <td>5.557</td> <td>-66.6</td> <td>V</td> <td>3.0</td> <td>49.2</td> <td>35.4</td> <td>1.0</td> <td>-51.8</td> <td>-13.0</td> <td>-38.8</td> <td></td>	5.557	-66.6	V	3.0	49.2	35.4	1.0	-51.8	-13.0	-38.8	
3.705 460.9 H 3.0 45.3 35.4 1.0 49.9 -13.0 -36.9 5.557 468.4 H 3.0 50.0 35.4 1.0 -52.8 -13.0 39.8 7.410 468.9 H 3.0 53.0 35.7 1.0 -50.7 13.0 37.7 H 3.0 53.0 35.7 1.0 -50.7 13.0 37.7 Mid Ch. (1880 MHz) H 3.0 45.3 35.3 1.0 42.2 -13.0 27.9 S/60 53.1 V 3.0 45.3 35.3 1.0 42.2 -13.0 29.2 5.640 61.7 V 3.0 45.5 35.3 1.0 49.5 -13.0 37.1 3.760 60.7 H 3.0 51.4 35.7 1.0 -50.1 -13.0 37.1 3.760 69.0 H 3.0 50.2 35.3 1.0 49.5 -13.0 36.5 5.640 69.0 H 3.0 53.1 35.7 <	7.410	-68.6	V	3.0	51.3	35.7	1.0	-52.0	-13.0	-39.0	
3.57 406.4 H 3.0 50.0 35.4 1.0 -52.8 -13.0 -39.8 7.410 68.9 H 3.0 53.0 35.7 1.0 -50.7 -13.0 37.7 Mid Ch. (1880 MHz) H S.760 -53.1 V 3.0 45.3 35.3 1.0 42.2 -13.0 29.2 S640 61.7 V 3.0 45.5 35.3 1.0 49.5 -13.0 37.1 3.760 50.7 H 3.0 51.4 35.7 1.0 -50.1 -13.0 37.1 3.760 66.8 V 3.0 51.4 35.7 1.0 -50.1 -13.0 36.5 5.640 69.0 H 3.0 50.2 35.4 1.0 -53.3 -13.0 36.5 5.640 69.0 H 3.0 53.1 35.7	3.705	-60.9	H	3.0	45.3	35.4	1.0	49.9	-13.0	-36.9	
H 3.0 33.0 35.7 1.0 -30.7 -13.0 -37.7 Mid Ch. (1880 MHz) Mid Ch. (1800 MHz) Mid Ch. (1900 MHz) Mid Ch. (1907 MHz) Mi	0.007 7 4 10	-68.4	H	3.0	52.0	50.4 25.7	1.0	-52.8	-13.0	-39.8	
Mid Ch. (1880 MHz) V 3.0 45.3 35.3 1.0 42.2 -13.0 -29.2 5.640 61.7 V 3.0 49.3 35.4 1.0 46.8 -13.0 -29.2 5.640 61.7 V 3.0 49.3 35.4 1.0 46.8 -13.0 -37.1 5.720 66.8 V 3.0 45.5 35.3 1.0 49.5 -13.0 36.5 5.640 69.0 H 3.0 50.2 35.4 1.0 53.3 -13.0 36.5 5.640 69.0 H 3.0 50.2 35.4 1.0 53.3 -13.0 36.5 5.640 69.0 H 3.0 53.1 35.7 1.0 49.9 -13.0 36.5 5.640 68.3 H 3.0 53.1 35.7 1.0 49.9 -13.0 36.9 41 Ch. (1907.6MHz)	.410	-00.9	П	3.0	55.0	33.1	1.0	-30.7	-13.0	-31.1	
Mid Ch. (1880 MHz) V 3.0 45.3 35.3 1.0 42.2 -13.0 -29.2 5.640 61.7 V 3.0 49.3 35.4 1.0 46.8 -13.0 -33.8 7.520 66.8 V 3.0 51.4 35.7 1.0 46.8 -13.0 -37.1 3.760 60.7 H 3.0 51.4 35.7 1.0 50.1 13.0 37.1 3.760 60.7 H 3.0 50.2 35.4 1.0 49.5 -13.0 -36.5 5.640 69.0 H 3.0 50.2 35.4 1.0 53.3 13.0 40.3 7.520 68.3 H 3.0 53.1 35.7 1.0 49.9 -13.0 -36.9 41 Ch. (1907.6MHz) - - - - - - - - - - - - - - - - - - <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
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7.520 66.8 V 3.0 51.4 35.7 1.0 -50.1 -13.0 -37.1 3.760 40.7 H 3.0 45.5 35.3 1.0 49.5 -13.0 -36.5 5.640 49.0 H 3.0 50.2 35.4 1.0 -53.3 -13.0 -36.5 7.520 468.3 H 3.0 50.2 35.4 1.0 -53.3 -13.0 -40.3 7.520 468.3 H 3.0 53.1 35.7 1.0 -49.9 -13.0 -36.9 Hi Ch. (1907.6MHz)	5.640	-61.7	V	3.0	49.3	35.4	1.0	-46.8	-13.0	-33.8	
3.760 60.7 H 3.0 45.5 35.3 1.0 49.5 .13.0 36.5 5.640 69.0 H 3.0 50.2 35.4 1.0 53.3 .13.0 40.3 7.520 68.3 H 3.0 53.1 35.7 1.0 49.9 .13.0 36.5 4i Ch. (1907.6MHz)	/.520	-66.8	V	3.0	51.4	35.7	1.0	-50.1	-13.0	-37.1	
5.640 69.0 H 3.0 50.2 35.4 1.0 -53.3 -13.0 40.3 7.520 68.3 H 3.0 53.1 35.7 1.0 49.9 -13.0 -36.9 Hi Ch. (1907.6MHz)	3.760	-60.7	Н	3.0	45.5	35.3	1.0	49.5	-13.0	-36.5	
7.520 68.3 H 3.0 53.1 35.7 1.0 49.9 -13.0 -36.9 III Ch. (1907.6MHz) IIII Ch. (1907.6MHz) IIII Ch. (19	5.640	-69.0	Н	3.0	50.2	35.4	1.0	-53.3	-13.0	-40.3	
Hi Ch. (1907.6MHz) V 3.0 45.4 35.3 1.0 -39.8 -13.0 -26.8 3.815 50.9 V 3.0 49.4 35.4 1.0 45.3 -13.0 -26.8 5.723 60.3 V 3.0 51.6 35.7 1.0 49.4 -13.0 -36.4 3.815 58.9 H 3.0 45.7 35.3 1.0 47.5 -13.0 34.5 5.723 66.7 H 3.0 50.3 35.4 1.0 50.8 -13.0 34.5 7.630 46.7 H 3.0 50.3 35.4 1.0 50.8 -13.0 34.5 5.723 66.7 H 3.0 53.2 35.7 1.0 -50.5 -13.0 -37.8 7.630 49.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 -37.5	7.520	-68.3	Н	3.0	53.1	35.7	1.0	49.9	-13.0	-36.9	
hi Ch. (190/.6MHz) V 3.0 45.4 35.3 1.0 -39.8 -13.0 -26.8 .815 50.9 V 3.0 45.4 35.3 1.0 -49.8 -13.0 32.3 .630 66.3 V 3.0 51.6 35.7 1.0 49.4 -13.0 36.4 .815 58.9 H 3.0 45.7 35.3 1.0 47.5 -13.0 34.5 .723 66.7 H 3.0 50.3 35.4 1.0 -50.8 -13.0 37.8 .630 69.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 37.5											
5.610 -3.0 4.0 -3.3 1.0 -39.8 -13.0 -26.8 5.723 60.3 V 3.0 49.4 35.4 1.0 -49.3 -13.0 32.3 6.630 V 3.0 49.4 35.4 1.0 -45.3 -13.0 32.3 6.630 V 3.0 51.6 35.7 1.0 -49.4 -13.0 36.4 3.815 58.9 H 3.0 45.7 35.3 1.0 -47.5 -13.0 34.5 5.723 66.7 H 3.0 50.3 35.4 1.0 -50.8 -13.0 34.5 7.630 69.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 37.8	Hi Ch. (19	07.6MHz)		2.0	45.4	25.2	4.0	20.0	42.0		
5.723 -00.3 V 3.0 49.4 33.4 1.0 -43.3 -13.0 -32.3 7.630 -66.3 V 3.0 51.6 35.7 1.0 49.4 -13.0 -36.4 3.815 -58.9 H 3.0 45.7 35.3 1.0 47.5 -13.0 34.5 5.723 -66.7 H 3.0 50.3 35.4 1.0 -50.8 -13.0 37.8 7.630 -69.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 37.5	5.815	-50.9	V	3.0	45.4	35.3	1.0	-39.8	-13.0	-26.8	
3.00 40.3 V 3.0 31.0 35.7 1.0 49.4 -13.0 -36.4 8.815 -58.9 H 3.0 45.7 35.3 1.0 47.5 -13.0 34.5 5.723 -66.7 H 3.0 50.3 35.4 1.0 -50.8 -13.0 37.8 7.630 -69.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 37.5	7.620	-60.3	V	3.0	49.4	30.4	1.0	43.3	-13.0	-32.3	
5.723 46.7 H 3.0 50.3 35.4 1.0 -47.3 -13.0 34.3 7.630 49.0 H 3.0 50.3 35.4 1.0 -50.8 -13.0 37.8 7.630 49.0 H 3.0 53.2 35.7 1.0 -50.5 -13.0 37.5	3 815	-00.5	V H	3.0	51.0 45.7	35.7	1.0	43.4	-13.0	-30.4	
	723	-50.5	н Н	3.0	50.3	35.5	1.0	-50.8	-13.0	37.8	
	630	-69.0	H	3.0	53.2	35.4	1.0	-50.0	-13.0	-37.5	
		-00.0	••	5.0		33.1	1.0		-13.0	~~~~	

Note: No other emissions were detected greater than -40dB to the limit.

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7.3. RECEIVER SPURIOUS EMISSIONS

LIMIT

RSS-Gen 7.2.2

Spurious Emission Limits for Receivers:

Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

TEST PROCEDURE

The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (local oscillator frequency, intermediate frequency or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

RESULTS

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SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



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Page 28 of 37

Test Eng:: MENCISTU MEKURIA Date: 07/30/10 Project #: I0U13319 Company: RIMBLE EUT Description: TELEMATICS PLATFORMS EUT Target: FCC CLASS B Mode Oper: TWOE (WORST-CASE) f Measurement Frequency Amp Presamp Gain Margin Margin Margin vs. Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Rad Analyzer Reading Filter Filter Inset Calulated Field Strength CL Cable Loss Limit Filter Strength Limit Corr. Limit Pield Strength Limit f Read AF CL Amp DCorr Filter Strength Limit f Measure Africa Antenna Factor Corr. Limit Filter Strength Limit f Measure Reading Africa Antenna Factor Corr. Limit Africa Antenna Factor Corr. Limit Africa Antenna Factor f Measure Reading Africa Antenna Factor Corr. Limit Field Strength Limit 129.604 3.0 452.7 12.0 1.3 28.9 0.0 0	30-1000M Compliar	Hz Frequ .ce Certii	ency Meas fication Se	urement rvices, Fi	t remon	t 5m Ch	amber							
	Test Engr		MENGIST	IU MEKU	RIA									
	Date:		07/30/10											
	Project #:		10U13319	9										
EUT Description. TELEMATICS PLATFORMS EUT MN: TVG-850 HSPA Test Target: FCC CLASS B Mode Oper: TX MODE (WORST-CASE) f Measurement Frequency Amp Preamp Gain Margin Margin vs. Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Margin Margin vs. Limit Read Analyzer Reading Filter Filter Insert Loss Kanna Antenna Factor Corr. Limit f Measurement Frequency Amp D Corr Filter Insert Loss Limit Margin Ant Pol Notes f Margin Margin Ant Pol Det Notes f Mith (m) dB/m dB dB dB dB dB US	Company	:	TRIMBLI	E										
EUT M/N: TVG-850 HSPA Test Target: FCC CLASS B Mode Oper: TX MODE (WORST-CASE) f Measurement Frequency Amp Preamp Gain Margin Margin Margin vs. Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Margin Margin vs. Limit Read Analyzer Reading Filter Filter Insert Loss AF Antenna Factor Corr. Calculated Field Strength cl Cable Loss Limit Field Strength Limit Margin Margin Notes MHz (m) dBuV dB dB dB dB Corr. Limit Margin Ant. Pol. Det. Notes MHz (m) dBuV dB/m dB dB dB dB dB dB dB Margin Ant. Pol. Det. Notes 129.604 3.0 49.2 13.7 1.0 29.4 0.0 0.0 33.1 43.5 -9.0 H P 210.491 3.0 52.7 12.0 1.3 28.9	EUT Desci	ription:	TELEMAT	IICS PLA	TFOR	MS								
FCC CLASS B Mode Oper: TX MODE (WORST-CASE) f Measurement Frequency Amp Preamp Gain Margin Margin Margin vs. Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Margin Margin vs. Limit Read Analyzer Reading Filter Filter Insert Loss Margin Margin Margin vs. Limit AF Antenna Factor Corr. Calculated Field Strength Limit Filter Sitter. Filter Filter Insert Loss MHz (m) dBwV dB/m dB dB Corr. Limit Margin Ant. Pol. Det. Notes MHz (m) dBwV dB/m dB dB dB O.0 34.5 43.5 -9.0 H P 129.604 3.0 52.7 12.0 1.3 28.9 0.0 0.0 34.5 43.5 -9.0 H P 210.491 3.0 52.7 12.0 1.3 28.9 0.0 0.0 38.7 46.0 -7.3 H P	EUT M/N:		TVG-850	HSPA										
Mode Oper: TX MODE (WORST-CASE) f Measurement Frequency Amp Preamp Gain Margin Margin Margin vs. Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Margin Margin vs. Limit Read Analyzer Reading Filter Filter Insert Loss Gorn Calculated Field Strength AF Antenna Factor Corr. Calculated Field Strength Margin Margin Ant.Pol Det. Notes f Mir Read AF CL Calculated Field Strength Margin Ant.Pol Det. Notes f Mir Magin Add BuV dB dB dB dB dB dB dB Margin Ant.Pol Det. Notes f Dist Read AF CL Amp D Corr Filter Limit Margin Margin Ant.Pol Det. Notes glio.491 3.0 58.7 12.0 1.3 28.9 0.0 0.0 38.7 46.0 -3.9 H P	Test Targe	et:	FCC CL	ASS B										
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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		f	Measurem	ent Frequ	ency	Amp	Preamp (Gain			Margin	Margin vs.	Limit	
Read AF CL Analyzer Reading Attenna Factor Cabel Loss Filter Corr. Filter Insert Loss Calculated Field Strength Limit Corr. Limit Field Strength Limit f Dist MHz Read (n) AF dBuV CL Amp dB D Corr Filter Field Strength Limit Limit Margin dBuV/m Ant Pol dB Det V/H Det P/A/QP Notes 129.604 3.0 49.2 13.7 1.0 29.4 0.0 0.0 34.5 43.5 -9.0 H P 210.491 3.0 58.7 12.0 1.3 28.9 0.0 0.0 37.1 43.5 -6.4 H QP 225.008 3.0 57.7 11.9 1.4 28.9 0.0 0.0 38.6 46.0 -7.3 H P 225.008 3.0 46.6 19.1 2.6 29.6 0.0 0.0 38.7 46.0 -7.3 H P 211.807 3.0 46.6 19.1 2.6 29.6 0.0 0.0 <		Dist	Distance t	o Antenn	a	D Corr	Distance	Correct	to 3 meters					
AF CL Antenna Factor Cable Loss Corr. Limit Calculated Field Strength Field Strength Limit f Dist (m) Read BBuV AF dB CL Ang BB D Corr. BB Filter BB Corr. BB Limit Margin BBuV/m Ant Pol BB Det V/H P/A/QP 129.604 3.0 49.2 13.7 1.0 29.4 0.0 0.0 34.5 43.5 -9.0 H P 210.491 3.0 58.7 12.0 1.3 28.9 0.0 0.0 37.1 43.5 -0.3 H P 210.491 3.0 52.7 12.0 1.3 28.9 0.0 0.0 37.1 43.5 -6.4 H QP 210.491 3.0 57.7 11.9 1.4 28.9 0.0 0.0 38.7 46.0 -3.9 H P 210.491 3.0 46.6 19.1 2.6 29.6 0.0 0.0 38.7 46.0 -7.3 H P <		Read	Analyzer l	Reading		Filter	Filter Ins	ert Loss						
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		CL	Cable Los:	5		Limit	Field Stre	ngth Lir	nit					
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	MHz	<u>(m)</u>	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	210.491	3.0	58.7	12.0	1.3	28.9	0.0	0.0	43.2	43.5	-0.3	H	Р	
225.008 3.0 57.7 11.9 1.4 28.9 0.0 0.0 42.1 46.0 -3.9 H P 615.864 3.0 47.4 18.4 2.4 29.6 0.0 0.0 38.7 46.0 -7.3 H P 680.787 3.0 46.6 19.1 2.6 29.5 0.0 0.0 38.6 46.0 -7.4 H P 705.148 3.0 46.8 19.3 2.6 29.5 0.0 0.0 38.7 46.0 -6.8 H P 745.590 3.0 45.3 20.0 2.7 29.4 0.0 0.0 38.7 46.0 -7.3 H P 745.590 3.0 45.3 12.0 1.3 28.9 0.0 0.0 37.9 43.5 -5.6 V P 211.807 3.0 43.8 18.4 2.4 29.6 0.0 0.0 37.7 46.0 -8.3 V P 25.018 3.0 43.8 18.4 2.4 29.6	210.491	3.0	52.7	12.0	1.3	28.9	0.0	0.0	37.1	43.5	-6.4	H	QP	
515.864 3.0 47.4 18.4 2.4 29.6 0.0 0.0 38.7 46.0 -7.3 H P 580.787 3.0 46.6 19.1 2.6 29.6 0.0 0.0 38.7 46.0 -7.3 H P 580.787 3.0 46.6 19.1 2.6 29.6 0.0 0.0 38.6 46.0 -7.4 H P 705.148 3.0 46.8 19.3 2.6 29.5 0.0 0.0 38.7 46.0 -7.3 H P 705.148 3.0 45.3 20.0 2.7 29.4 0.0 0.0 38.7 46.0 -7.3 H P 211.807 3.0 53.5 12.0 1.3 28.9 0.0 0.0 37.7 46.0 -8.3 V P 225.008 3.0 53.3 11.9 1.4 28.9 0.0 0.0 35.0 46.0 -11.0 V P 615.984 3.0 39.4 21.2 2.9 28.9	225.008	3.0	57.7	11.9	1.4	28.9	0.0	0.0	42.1	46.0	-3.9	H	P	
680.787 3.0 46.6 19.1 2.6 29.6 0.0 0.0 38.6 46.0 -7.4 H P 705.148 3.0 46.8 19.3 2.6 29.5 0.0 0.0 39.2 46.0 -7.4 H P 705.148 3.0 46.8 19.3 2.6 29.5 0.0 0.0 39.2 46.0 -6.8 H P 745.590 3.0 45.3 20.0 2.7 29.4 0.0 0.0 38.7 46.0 -7.3 H P 211.807 3.0 53.5 12.0 1.3 28.9 0.0 0.0 37.9 43.5 -5.6 V P 225.008 3.0 53.3 11.9 1.4 28.9 0.0 0.0 37.7 46.0 -8.3 V P 615.984 3.0 43.8 18.4 2.4 29.6 0.0 0.0 35.0 46.0 -11.0 V P 839.313 3.0 39.4 21.2 2.9 28.6	615.864	3.0	47.4	18.4	2.4	29.6	0.0	0.0	38.7	46.0	-7.3	H	P	
(05.143 (3.0 (40.8 (15.3) (2.6 (25.5) (0.0 (0.0 (3.7) (40.0 (-0.4) (1 P 745.590 3.0 45.3 20.0 2.7 29.4 0.0 0.0 38.7 46.0 -7.3 H P 211.807 3.0 53.5 12.0 1.3 28.9 0.0 0.0 37.7 43.5 -5.6 V P 225.008 3.0 53.3 11.9 1.4 28.9 0.0 0.0 37.7 46.0 -8.3 V P 225.008 3.0 43.8 18.4 2.4 29.6 0.0 0.0 35.0 46.0 -11.0 V P 839.313 3.0 39.4 21.2 2.9 28.9 0.0 0.0 35.0 46.0 -11.4 V P 906.516 3.0 39.0 21.6 3.0 28.6 0.0 0.0 35.0 46.0	580.787	3.0	40.0	19.1	2.0	29.6	0.0	0.0	38.0	46.0	-7.4	H		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	/UD.148	3.0	40.8	19.3	2.0	29.5	0.0	0.0	37.2	40.0	-0.8	п ч	P D	
211.607 3.0 53.3 11.3 1.4 28.9 0.0 0.0 37.7 46.0 -8.3 V P 225.008 3.0 53.3 11.9 1.4 28.9 0.0 0.0 37.7 46.0 -8.3 V P 615.984 3.0 43.8 18.4 2.4 29.6 0.0 0.0 35.0 46.0 -11.0 V P 839.313 3.0 39.4 21.2 2.9 28.9 0.0 0.0 34.6 46.0 -11.4 V P 906.516 3.0 39.0 21.6 3.0 28.6 0.0 0.0 35.0 46.0 -11.4 V P	(42.270 711 907	3.0	47.J	12.0	12	27.4	0.0	0.0	JO./ 27.0	40.0	-7.3	n v	P D	
11.5 11.5 11.4 12.5 0.0 0.0 0.1.7 40.0 -0.1.3 V P 615.984 3.0 43.8 18.4 2.4 29.6 0.0 0.0 35.0 46.0 -11.0 V P 839.313 3.0 39.4 21.2 2.9 28.9 0.0 0.0 34.6 46.0 -11.4 V P 906.516 3.0 39.0 21.6 3.0 28.6 0.0 0.0 35.0 46.0 -11.4 V P	111.0U/ 775 009	3.0	E3.2	11.0	1.3	20.7	0.0	0.0	37.7	45.7	-7.U	V V	P D	
310 30.1 39.4 21.2 2.9 28.9 0.0 0.0 34.6 46.0 -11.4 V P 906.516 3.0 39.0 21.6 3.0 28.6 0.0 0.0 35.0 46.0 -11.4 V P	615 984	3.0	43.8	11.5	24	20.5	0.0	0.0	35.0	46.0	-0.5	v	P	
906.516 3.0 39.0 21.6 3.0 28.6 0.0 0.0 35.0 46.0 -11.0 V P	839 313	3.0	30 4	21.2	2.4	29.0	0.0	0.0	34.6	46.0	-11.0	v	P	
		3.0	39.0	21.6	3.0	28.6	0.0	0.0	35.0	46.0	-11.0	v	P	
	906.516	···•					0.0			1010			•	

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DATE: SEPTEMBER 03, 2010 IC: 1756A-TVG850HSPA

SPURIOUS EMISSIONS ABOVE 1000 MHz

Compar Project Date: Test Er Configu Mode:	ny: #: ngineer: tration:		TRIMBLE 10U13319 7/30/2010 MENGISTU N EUT WITH M RX MODE	MEKURI IOBILE I	A MARK	OPTION	F ANTENN	IA.							
Test Ec H T59; 1	luipmen Iorn 1- S/N: 324	<u>tt:</u> 18GHz 5 @3m	Pre-ar	nplifer Agilent :	1-26 3008A0	GHz	Pre-am	plifer	26-40GH	z	Но	orn > 18G	iHz	•	Limit RX RSS 210
Hi Fre 3' 3' c	quency Ca cable 2 able 22	bles 22807700 807700	12' c	able 2 ble 228	28076 07600	500 •	20' ca 20' cab	ble 22 le 228	2807500 07500		HPF		ject Filte	r <u>Peak</u> RB [*] RBw=	<u>x Measurements</u> W=VBW=1MHz ge Measurements 1MHz ; VBW=10Hz
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.135 1.490	3.0 3.0 3.0	53.6 46.3	33.3 29.8 23.0	24.4 25.7 24.4	25 29 25	-36.0 -35.8 36.0	0.0 0.0	0.0 0.0	44.5 39.2	24.2 22.7 24.8	74 74 74	54 54	-29.5 -34.8	-29.8 -31.3	H H V
1.310 1.490	3.0 3.0	51.9 51.4	32.4 31.3	25.1 25.7	2.7 2.9	-35.9 -35.8	0.0 0.0 0.0	0.0 0.0 0.0	43.8 44.3	24.3 24.2	74 74 74	54 54 54	-30.2 -29.7	-29.7 -29.8	v v
Rev. 07.2	2.09 f	Measurem	ent Frequenc	y		Amp	Preamp	Gain				Avg Lim	Average I	ield Strengtl	h Limit
Dist Distance to Antenna D Corr Read Analyzer Reading Avg AF Antenna Factor Peak			Distance Correct to 3 meters Average Field Strength @ 3 m Calculated Peak Field Strength				Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit								

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7.4. POWER LINE CONDUCTED EMISSION

The EUT is operated by 12Vdc battery therefore no power line conducted emission test needed.

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8. REQUIREMENTS - LIMITATION OF EXPOSURE

8.1. LIMITS

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)
(A) Lim	nits for Occupational	I/Controlled Exposu	res	
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 8
(B) Limits	for General Populati	ion/Uncontrolled Exp	posure	
0.3–1.34 1.34–30	614 824 <i>/</i> f	1.63 2.19/f	*(100) *(180/f²)	30 30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)
30–300 300–1500 1500–100,000	27.5	0.073	0.2 f/1500 1.0	30 30 30

f = frequency in MHz

f = frequency in MHz * = Plane-wave equivalent power density NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occu-pational/controlled limits apply provided he or she is made aware of the potential for exposure. NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be ex-posed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure.

exposure or can not exercise control over their exposure.

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IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5

·	. J	,		
1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m ²)	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	280/f	2.19/ <i>f</i>		6
10–30	28	2.19/ <i>f</i>		6
30–300	28	0.073	2*	6
300–1 500	1.585 <i>f</i> ^{0.5}	0.0042f ^{0.5}	f/150	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	616 000 /f ^{1.2}
150 000-300 000) 0.158 <i>f</i> ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616 000 /f ^{1.2}

Exposure Limits for Persons Not Classed As RF and Microwave Exposed Workers (Including the General Public)

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f, is in MHz.

- 2. A power density of 10 W/m^2 is equivalent to 1 mW/cm^2 .
- A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

LIMITS APPLICABLE TO THE EUT

For mobile radio equipment operating in the cellular phone band, the lowest power density limit is calculated using the lowest frequency, as 824 MHz / $1500 = 0.55 \text{ mW/cm}^2$ (FCC) and 824 MHz / $150 = 5.5 \text{ W/m}^2$ (IC).

For operation in the PCS band and the 2.4 GHz band, from FCC 1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm² and from IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m².

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8.2. EQUATIONS

Power density is given by:

where

S = Power density in W/m^2

EIRP = Equivalent Isotropic Radiated Power in W

D = Separation distance in m

Where applicable (for example, multi-slot cell phone applications) a duty cycle factor may be applied.

Source-based time-averaged EIRP = (DC / 100) * EIRP

where

DC = Duty Cycle in %, as applicable

EIRP = Equivalent Isotropic Radiated Power in W

For multiple colocated transmitters operating simultaneously in frequency bands where the limit is identical, the total power density is calculated using the total EIRP obtained by summing the Power * Gain product (in linear units) of each transmitter.

Total EIRP = (P1 * G1) + (P2 * G2) + ... + (Pn * Pn)

where

Px = Power of transmitter x

Gx = Numeric gain of antenna x

For multiple colocated transmitters operating simultaneously in frequency bands where different limits apply, either the lowest limit applicable to the co-located transmitters can be applied or a fraction of the exposure limit is established for each band, such that the sum of the fractions is less than or equal to one.

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

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8.3. RESULTS

8.3.1. CO-LOCATED RESULTS FOR SIMULTANEOUS OPERATION IN THE CELLULAR BAND AND 2.4 GHz BAND

Band	Mode	Separation	Output	Antenna Gain	Duty	IC Power
		Distance	Power	With Cable Loss	Cycle	Density
		(m)	(dBm)	(dBi)	(%)	(W/m^2)
850 MHz	Cell		31.98	-0.25	100	
2.4 GHz	WLAN		16.45	1.70	100	
Com	bined	0.20				3.09

The co-located Power Density is less than 5.5 W/m², which is the most stringent of the limits for each separate transmitter (5.5 W/m² and 10 W/m² for the WAN and WLAN respectively).

8.3.2. CO-LOCATED RESULTS FOR SIMULTANEOUS OPERATION IN THE PCS BAND AND 2.4 GHz BAND

Band	Mode	Separation	Output	Antenna Gain	Duty	IC Power
		Distance	Power	With Cable Loss	Cycle	Density
		(m)	(dBm)	(dBi)	(%)	(W/m^2)
1900 MHz	PCS		29.98	1.70	100	
2.4 GHz	WLAN		16.45	1.70	100	
Com	bined	0.20				3.06

The co-located Power Density is less than 10 W/m², which is the limit for each separate transmitter.